

**JAPAN PROGRESS REPORT ON SMALL CETACEAN RESEARCHES**  
**June 2001 to April 2002**

(compiled by)

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This report summarizes small cetacean fisheries and researches conducted during period from June 2001 to April 2002 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 June 2001 to March 2002 which is submitted to 54th IWC/SC meeting. In April 2002, H.Yoshida has changed his position from the Institute of Cetacean Research (hereafter ICR) to NRIFSF.

**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, 7.1, 8
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Off Pacific coast, western North Pacific, East China Sea	4.2, 4.4, 7.1, 8
False killer whale	<i>Pseudorca crassidens</i>	Off Pacific coast	7.1, 4.2.
Killer whale	<i>Orcinus orca</i>	Antarctic, North Pacific off Pacific coast	2.1.1
Striped dolphin	<i>Stenella coeruleoalba</i>	Off Pacific coast, Western North Pacific	3.1.2, 4.2, 4.4, 5, 7.1, 8
Dall's porpoise	<i>Phocoenoides dalli</i>	Off Pacific coast, Okhotsk Sea, Sea of Japan	2.1.1, 4.2, 7.1, 8
Bottlenose dolphin	<i>Tursiops truncatus</i>	Kagoshima Bay, off Pacific coast	2.1.1, 3.1.1, 3.1.2, 3.1.3, 3.2, 4.1., 4.2, 5, 7.1, 8.
Spotted dolphin	<i>Stenella attenuata</i>	Off Pacific coast	2.1.1, 3.1.2, 4.2, 4.4, 7.1, 8.
Finless porpoise	<i>Neophocoena phocenooides</i>	Coastal waters of Japan	7.1, 8
Risso's dolphin	<i>Grampus griseus</i>	Western North Pacific	2.1.1, 4.2, 4.4, 5, 7.1, 8
Additional species taken or sighted during dolphin fisheries or small type whaling operation	-	Off Pacific coast, Sea of Okhotsk	2.1.1, 2.1.2, 4.1, 4.2, 7.1,
Additional species sighted during the sighting cruise	-	North Pacific, Sea of Okhotsk, Southern Hemisphere	2.1.1, 2.1.2
Additional species stranded	-	Around Japan	4.3, 8

**2.Sighting data (this section overlap with description of sighting data in SC/54/Japan /Progrep.)**

**2.1 Field work**

**2.1.1 Systematic**

Table 1. Name of vessels, researchers on board for the sighting and other survey in the North Pacific and the Southern Hemisphere by the Japanese vessels from May 2001 to March 2002.

Name of vessel	Main objective	Period and region	Researchers on board
[North Pacific]			
<i>Shonan-maru No.2</i>	Longitudinal sighting survey for Bryde's whales	July 23-Sep 20, Mid-latitudinal waters	Miyashita, T.(July 23-Aug.20), Okamura, H. (Aug.21-Sep.20), Minamikawa, S.(Aug.21-Sep.20), Shikada, T.(FRA)
<i>Kyoshin-maru No.2</i>	Longitudinal sighting survey for Bryde's whales	July 23-Sep 20, Mid-latitudinal waters	Noji, S.(FRA) and Sato, H. (FRA)
<i>Kurosaki</i>	Sighting of minke and Baird's beaked whale	July 23 – Sep. 5, Off the Pacific coast of the northern Japan	Saito, T.(FRA), Hayashi, T. (FRA), Okumura, T.(FRA), Tanaka, Y.(FRA)
<i>Kyo-maru No.1</i>	Sighting of Bryde's whales	Aug. 18- Sep.19, Western North Pacific	Shimada, H. and Hirano, J.(FRA)
<i>Rosa Rugosa</i>	Sighting survey	Aug. 29-Sep. 6, Coastal waters of southern part of the Kuril Islands	Kato, H., Yoshida, H. (ICR), Morino, K. and Okumura, T. (FRA) and Fujikawa, E. (Hokkaido Univ.)
<i>Kurosaki</i>	Biopsy and marking for dolphins	Nov. 1-30, Off the Pacific coast of Japan	Saito, T.(FRA), Sato, H.(FRA), Tanaka, Y.(FRA) and Ryono, A.(FRA)
<i>Kanou-maru</i>	Sighting and acoustic survey	Jan.18-Mar.18,2002 Lower latitudinal waters in the western North Pacific	Shimada, H. (Feb22-Mar.18), Noji, S.(FRA), Okumura, T.(FRA), Endo, K.(FRA)
[Southern Hemisphere]			
<i>Shonan-maru</i>	Sighting SOWER/Blue& Antarctic	Dec.20-Feb.18, 2002 Area V-west (130-165E)	Ensor, P. (New Zealand), Kariya, T.(Japan), Olson, P. (USA), Rankin, S. (USA)
<i>Shonan-maru No.2</i>	Sighting SOWER/Blue& Antarctic	Dec.20-Feb.18, 2002 Area V-west (130-165E)	Sekiguchi, K.(Japan), Cotton, J.(USA), Hucke-Gaete, R.(Chile), Ljungblad, D.(USA)

Regardless of the target species of sighting cruises, sightings of small cetaceans were recorded. The NRIFS and FAJ conducted a total of nine sighting and related surveys from May 2001 to March 2002 in the North Pacific and the Southern Hemisphere. Those are seven cruises in the former water and two in the latter. All of the vessels except one vessel are equipped with a top barrel. Names of the vessels, researchers on board, and period of each cruise are given in Table 1.

In the North Pacific, of a total seven cruises, six cruises were mainly engaged in sighting survey with skin biopsy at an opportunistic base. Miyashita (NRIFS) and Shimada (NRIFS) worked in planning, track designs, and searching methods of all the above cruises. Total searching distances made during the cruises were 3,406 n.miles, 10,591 n.miles. and 2,814 n.miles for the Southern Hemisphere, the North Pacific in summer and the North Pacific from autumn to winter, respectively. During these cruises, Bryde's whale sighting survey was oversighted by Shimada. Additional sighting surveys to examine the longitudinal distribution of Bryde's whales were conducted using two research vessels. In addition, systematic sighting data were also obtained during the biopsy/marking survey. The results from the offshore sighting cruises are given in Tables 2, 3 (surveys in summer season) and 4 (in winter season).

The IWC/SOWER Antarctic sighting cruise was conducted under auspices of the IWC/SOWER (Southern Ocean Whale and Ecosystem Research) program from 20 December 2001 to 18 February 2002. This cruise consisted of the blue whale research component and the minke whale assessment component. The main purpose of the blue whale component was to obtain scientific information relevant to developing shipboard identification methods for separating “true” blue whales (*Balaenoptera musculus intermedia*) from “pygmy” blue whales (*B. m. brevicauda*). For this purpose, acoustic recording, skin biopsy, digital video recording and photographing were prepared in addition to sighting survey. The government of Japan offered two research vessels (*Shonan-maru* and *Shonan-maru #2*) and crew for this program, as has been in the case for the last 24 years. H. Kato (NRIFSF) acted as an organizer of the cruise and as a member of the steering group of the program. The period of 47 days was assigned for covering the whole research area (Area VW, i.e. 130°-165°E), however, the coverage resulted in longitudinally 20° (130°-150°E) area due to extremely poor weather conditions. Fourteen sightings (35 animals) of blue whale were encountered during the survey. P. Ensor (New Zealand) acted as a cruise leader. K. Sekiguchi (Japan) participated in the cruise as a senior scientist, Cotton (USA), Hucke-Gaete (Chile), Kariya (Japan), Ljungblad (USA), Olsen (USA) and Rankin (USA) as researchers. The details of the survey and results will be separately reported at the 54th IWC/SC meeting.

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 July and September 2001, using 24 whale watching boats that belong to the WATB. The survey lasted for 12 days and T. Kishiro (NRIFSF), three research assistants (Kagoshima University, Hokkaido University and Kochi University) and the total of 28 members of WATB acted as the researchers on board. A total of 31 schools (57 individuals) of Bryde’s whales were sighted during the survey. In addition to them, common dolphins (five schools), bottlenose dolphins (one school), Risso’s dolphins (three schools) and dwarf sperm whales (one school) were sighted.

The sighting surveys on Bryde’s whales were also conducted in the coastal waters off Kasasa, southwest end of Kyushu Island, in June and August 2001, under the cooperation among the NRIFSF, Kagoshima prefecture government (KAPG), and Nomaie Fishery Cooperative Union (NFCU). Thirty-one whale watching boats of NFCU were used as the research vessels. The surveys lasted for 10 days. Kishiro and 15 research assistants (Kagoshima University) acted as the researchers on board. A total of 16 schools (22 individuals) of Bryde’s whales were sighted during the surveys. In addition to them, spinner dolphins (19 schools), spotted dolphins (seven schools), bottlenose dolphins (six schools), rough-toothed dolphins (one school) and Risso’s dolphins (eight schools) were sighted.

In order to obtain distributional information of cetaceans in the coastal waters of southern part of the Kuril Islands, a sighting survey was conducted from 29 August to 6 September 2001, using the research vessel *Rosa Rugosa*. H. Kato joined the survey as the cruise leader and H. Yoshida (ICR) also participated as the senior researcher. The survey was conducted under the co-sponsorship of ICR and Hokkaido University. Searching a total of 509.3 n.miles, the survey obtained sightings of 283 schools of cetaceans in a total, including 29 common minke, one humpback, 22 sperm, 10 Baird’s beaked, and two killer whale schools and 158 Dall’s and six harbor porpoise and 26 Pacific white-sided dolphin schools.

The ICR and NRIFSF conducted sighting surveys with Caribbean scientists in the coastal waters of the Caribbean countries. The purpose of the surveys was to obtain further information on distribution of cetaceans, especially for humpback and sperm whales. H. Yoshida (ICR) joined pre-survey meetings held in Dominica and St. Lucia. Sequentially, he conducted the sighting survey in the coastal waters of St. Vincent and the Grenadines and Grenada in the period of 19-23 March 2002, with scientists of St. Vincent and the Grenadines and Grenada. Unfortunately, due to poor weather conditions, only one sighting of bottlenose dolphin school was collected during the survey with 104.5n.miles of primary searching.

In addition, Miyashita took part in the Korean sighting survey in the Yellow Sea in September 2001 for oversight task requested from the IWC/SC. The survey was conducted using *R/V Tamgu 3* to get the information on the distribution and density of common minke whales.

#### 2.1.2 Opportunistic, platforms of opportunity

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

Under the cooperation among NRIFSF, Nomaie Fishery Cooperative Union (NFCU) and Faculty of Fisheries, Kagoshima University opportunistic sighting data of Bryde’s whales have been collected during the whale watching operations in the coastal waters off Kasasa, southwest end of Kyushu Island.

### 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 preserved 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 43 Bryde's whales (Kochi), 36 Bryde's whales (Kasasa) and 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

T. Saito (FRA) and H. Sato (FRA) conducted "dart-tag" marking and got a total of 95 successes for 93 striped dolphins, one bottlenose dolphin and one spotted dolphin during the *Kurosaki* cruise. These are also given in Table 5.

##### 3.1.3 Telemetry data

Using the further improved attachment system, Iwasaki, K. Shimetani (Taiji Fishery Cooperative Union), J. Morishita (FAJ) and Kato conducted satellite tracking of a bottlenose dolphin. The dolphin was released on 22 January 2002, however, it brought position data only in the day released (signal received on 17 February again but resulted in invalid locations).

#### 3.2 Analyses/development of techniques

For longer period of satellite tracking of dolphins, Iwasaki tried fusion of attachment bolt and nut made of delrin by heat. This attempt would be effective if the melting temperature of the material was reasonably low. Improvement of attachment system is still ongoing.

### 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.

#### 4.2 Samples from direct catches or bycatch

The national quota of Baird's beaked whales was 62 animals, with permitted operation periods of 7 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 Wadaura on the Pacific coast and 1 to 20 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 Wadaura) were taken using four catcher boats (*Koei-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 five biologists; Kishiro, T. Hara (FAJ), S. Tabata (FAJ), T. Isoda (FAJ) and H. Ohizumi (NRIFSF).

The national quota of northern form short-finned pilot whales for the small-type whaling was 50 whales with a permitted season of 1 October to 30 November 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 T. Hayashi (FAJ). 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 40 whales were taken using three catcher boats (*Katsu-maru* #7, *Sumitomo-maru* #31, and *Seiwa-maru*) and two land stations (Taiji and Wadaura). All of the catches were examined and sampled by Kishiro, S. Saino (FAJ), H. Sato (FAJ), M. Kawashima (FAJ) and Hara. 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 to 30 September. A total of 17 individuals were taken by *Katsu-maru* #7, *Sumitomo-maru* #31 and *Seiwa-maru*, and examined by Kishiro, Saino, Sato, Kawashima and Hara. In Taiji during May-June 2001, the researchers also collected samples from the hand harpoon catches at an opportunistic base, including 13 bottlenose, nine spotted, five striped and one Fraser's dolphins (**One Fraser's dolphin was caught by mistake and discarded to the sea**).

Iwasaki and his colleagues (T. Hara (FRA), S. Saino (FRA), H. Sato (FRA) and T. Isoda (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 2001 and 8 January to 14 February 2002. They examined a total of 1,207 individuals composed of 490 striped dolphins, 306 Risso's dolphins, 209 southern

form short-finned pilot whales and 184 bottlenose dolphins and 18 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. In the Sea of Japan off Hokkaido, A. Wada of Hokkaido Wakkanai Fisheries Experimental Station and his colleague collected samples from 17 *dalli*-type Dall's porpoises during 8-16 May 2001 on board the hand harpoon fishing boats registered in Hokkaido. T. Goto of Iwate Fisheries Technology Center (hereafter IFTC) and his colleagues collected samples from 57 *dalli*-type Dall's porpoises (40 in the Sea of Japan off Hokkaido in 4-10 June and 17 in the Okhotsk Sea off Hokkaido during 24-26 September, respectively) and 50 *truei*-type Dall's porpoises (off Iwate during 11-19 March). During April and November-March, K. Onodera (IFTC), K. Miura (IFTC) and Goto recorded color type, sex and body length and collected DNA samples from Dall's porpoises landed to the Kamaishi Fish Market including 982 *truei*- and 99 *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 27 southern form short-finned pilot whales and five false killer whales. Details of biological materials collected through above activities are given in Table 7.

Ohizumi, Kishiro and Isoda (FRA) collected stomach contents of 35 Baird's beaked whales caught by small-type whaling, including eight individuals at Hakodate in May, 25 at Wada from July to August, and two at Abashiri in September, respectively. In the coastal waters of Iwate, Isoda (FRA) and Sato (FRA) collected stomach contents of 43 *truei*-type Dall's porpoises onboard a commercial hand harpoon fishing boat. Hara (FRA) collected stomach contents of one southern form short-finned pilot whale onboard a commercial crossbow fishing boat in Okinawa.

#### 4.3 Samples from stranded animals

Iwasaki, Kishiro and Isoda collected samples from a stranded Cuvier's beaked whale at Shimizu, Shizuoka prefecture, on 27 November 2001, for life history, genetic and morphological studies. Yoshida confirmed the species using mitochondrial DNA sequences.

#### 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.

Kishiro and Y. Uemura (Nihon University) examined teeth and reproductive organs of 340 Risso's dolphins taken by small-type whaling, hand harpoon and drive fisheries through 1990 to 2000. They found that among 21 schools taken by the drive fishery, seven schools consisted of only males and six schools of only immature individuals and mature females, and suggested that this species would form the several types of small groups different in sex and maturity. Kishiro examined the external body proportion and body scars of Risso's dolphins by sex and maturity, and suggested that the slight sexual dimorphism appeared in relative size of appendages (length of flipper and span of flukes of mature males were 0.9-1.8% larger than those of females and immature males) and accumulation of the body scars (more frequent in mature males).

Takahashi (Tohoku University), Iwasaki and their colleagues analyzed composition of collagen isotopes in the luteal cell, extracellular matrix and paravascular tissue in the regressing corpus luteum of the striped dolphins. They suggested that the Type collagen is produced by luteal cells. X. F. Zhang (Institute of hydrobiology, Peoples Republic of China), Iwasaki and Kato continued life history study of spotted dolphins taken at Taiji by the drive fishery in 1991 to 1997. H. Koike (Kyushu University) and Iwasaki preliminarily analyzed stable isotopes in the teeth of striped dolphins to elucidate the food difference between coastal and offshore individuals. They suggested fluctuation in stable isotopes (carbon and nitrogen) composition among schools and areas.

Ohizumi and T. Isoda (FRA) analyzed stomach contents of toothed whales caught by small-type whaling and hand harpoon fishery in 2000. They detected variations of stomach contents in some species of small cetaceans as follows: 1) Southern form short-finned pilot whales caught off Taiji (Pacific coast of central Japan) fed on squids and large mesopelagic fishes, 2) Baird's beaked whales in the northern Sea of Japan fed mainly on mesopelagic squids and 3) Off Taiji, Risso's dolphins and short-finned pilot whales showed a difference in prey composition. The former fed mainly on smaller squids, but the latter mainly on larger squids and fishes. They partly analyzed stomach content samples collected in 2001 and obtained results similar to above conclusions. Further analyses are ongoing.

## 5. Pollution studies

Iwasaki analyzed testosterone and PCBs levels in the testis tissues of 30 adult bottlenose dolphins. But no apparent correlations were detected.

(Item6 – omitted)

## **7. Statistics for small cetacean**

### *7.1 For the calendar year 2001*

Target species, permitted operational season, 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 52<sup>nd</sup> 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 2001 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 2001/2002 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 2001 (January – September in 2001 and October – December of the 2001/2002 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 7 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).

### *7.2 Earlier years' statistics*

There are no changes from the last year' statistics.

## **8. 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 Re-search, 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.

## **9. Other studies and analyses**

Ohizumi, Kishiro and Iwasaki reviewed available information on prey preference and biological parameters of Baird's beaked whale, short-finned pilot whale and Dall's porpoise. They continue to renew the parameters for ecosystem modeling by Okamura.

## **10. Publications (excluding IWC volumes and documents submitted to the IWC meetings and including papers on large cetaceans)**

Endo, N., Kato, H., Kishiro, T., Suzuki, M. and Asahina, K. 2002. Osmotic presser and ingredient analysis of urine of bottlenose dolphin and Baird's beaked whale. Abstracts. The annual meeting of the Japanese society of fisheries science. p68. 2002 April, Kinki University . (in Japanese)

Iwasaki, T., Kishiro, T. and Kato, H. 2001 Small cetacean resources management in Japan. *Aquabiology* 23 (3) :254-63 (in Japanese with English summary)

Iwasaki, T. 2001 Satellite tracking of small cetaceans. Abstract for the meeting of the The Mammalogical Society of Japan. p.46 (in Japanese)

Iwasaki, T., Kai, T., Tanakura, H. and Kato, H. 2001 Satellite tracking of two bottlenose dolphins driven to Taiji,

- Japan. Abstract . 14th Biennial Conference on the Biology of Marine Mammals. p106 2001 November, Vancouver
- Iwasaki, T. 2001 Satellite tracking of cetaceans. *Aquabiology* 23 (6):559-64 (in Japanese with English summary)
- Iwasaki, T. and Kubo, N. 2001 Northbound migration of a humpback whale *Megaptera novaeangliae* along the Pacific coast of Japan. *Mammal Study* 26 (1): 77-82.
- Iwasaki, T. and Hara T. 2001 How to conduct the examination of catches by the Japanese dolphin fisheries. *Enyo* 109:2-7. (in Japanese)
- Iwasaki, T. and Kato, H. (compiled) 2001 Japan progress report on small cetacean researches, May 2000 to May 2001. <http://www.jfa.maff.go.jp/whale/document/2000progressreport.pdf>
- Iwasaki, T. 2002 Dall's porpoise. p52-53. In: Current status of the international fishery resources, 75pp, Fisheries Agency of Japan and Fisheries Research Agency of Japan. (in Japanese)
- Kato, H. 2001 Preface - Current status and direction of cetacean population study in Japan. *Aquabiology* 23 (3):220-3. (in Japanese)
- Kato, H. 2001. Overview of blue whale recovery project under IWC/SOWER and its background. Abstract. Workshop on ecology, lactation and reproduction strategies of marine mammals in the Arctic region. Obihiro University, Obihiro, 26<sup>th</sup> – 27<sup>th</sup>, September 2001.
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- Kato, H., Tamura, T. 2001 Preliminary Considerations on Potential Competition between Southern blue-fin Tuna and Marine Mammals, especially Cetaceans CCSBT4th ERSCSBT-ERS/0111/71 8pp 2001 November Tokyo
- Kato, H. and Ohsumi, S. (eds.). 2002. *Towards the sustainable use of cetacean stock – the fore front of cetacean stock studies*. Seibutukenkyu-sha, Tokyo, 216pp. (in Japanese)
- Kato, H. and Yoshida, H. 2002. Cetaceans around the Iturup Island, southern Kurile Islands. Extend abstract. Symposium on Nature and Conservation of the Southern Kuril Islands (The northern Four Islands). Hokkaido Prefectural Culture Exchange Center. Nemuro. March 9<sup>th</sup> 2002. (in Japanese).
- Kawahara, S. 2001 Ecosystem and cetaceans. *Aquabiology* 23(3):250-3.
- Kishiro, T. 2001 Age determination of toothed whales and dolphins *Aquabiology* 23(4): 377-82. (in Japanese)
- Kishiro, T. 2001 External morphology of Risso's dolphin off the Pacific coast of Japan. 14th Biennial Conference on the Biology of Marine Mammals. p115 2001 November, Vancouver
- Kishiro, T. 2002. Baird's beaked whales. p54-55. In: Current status of the international fishery resources, 75pp, Fisheries Agency of Japan and Fishery Research Agency of Japan. (in Japanese)
- Koike, Y., Mihara, S., Nishida, S., Hayashi, K., Ito, S., Iwasaki, T. and Ohsumi, S. 2001 Stable isotope analysis of cetacean tissue. Abstract for the meeting of The Mammalogical Society of Japan p.47 (in Japanese)
- Miyashita, T. 2001 The state and future of the Japanese whale sighting survey. *Aquabiology* 23 (3):264-8. (in Japanese)
- Miyashita, T. 2002. Minke whale. 56-57. (In: Current status of the international fishery resources, 75pp, Fisheries Agency of Japan and Fisheries Research Agency of Japan. (in Japanese)
- Ohizumi, H. 2001 Dietary studies of toothed whales: A review of technical issues and new topics. International Commemorative Symposium: Abstract. 70th anniversary of the Japanese Society of Fisheries Science. p81 2001 October Yokohama
- Ohizumi, H. and Miyazaki, N. 2001 Nitrogen and carbon stable isotope ratios in the muscle of Dall's porpoises (*Phocoenoides dalli*). Abstract. 14th Biennial Conference on the Biology of Marine Mammals. 2001 November, Vancouver
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Table 2. Small cetaceans sighted by Japanese dedicated sighting surveys (*Shonan-maru* and *Shonan-maru No.2*) in the Southern Hemisphere in the 2001/2002 austral summer season (including SOWER/Blue whale cruises, SOWER/Antarctic cruises and those before and after the cruises)

The number is given by 10° square based on the noon position of vessels. Key: K = killer, Zi = Cuvier's beaked whale, Zx = ziphiids, Ba = Arnoux's beaked whale.

10° square	Distance (n.miles)	No. of small cetaceans sighted			
		K	Zi	Zx	Ba
A 20	345	-	7	33	-
21	282	-	-	2	-
B 20	1,407	3	-	69	30
21	1,062	197	-	6	-
22	22	30	-	-	-
D 21	288	15	-	17	23
Total	3,406	245	7	127	53

Table 3. Small cetaceans sighted by Japanese dedicated surveys (*Kyoshin-maru*

No.2, *Shonan-maru No.2*, *Kyo-maru No.1* and *Kurosaki*) operated in the North Pacific during 2001 summer season (April to September 2001) in addition two local line transect surveys off Kochi and Kagoshima in June to September. The number is given by 10° square based on the noon position of vessels. Key : Br = bryde's whale , Ps = long-finned pilot whale and Pn= short-finned pilot whale. For other species see Table 2.

10° Square	Distance (n.miles)	No. of small cetaceans sighted					
		K	Zi	Zx	Ba	Ps	Pn
K 20	1,281	-	-	1	-	-	-
L 20	979	2	-	6	-	-	-
27	101	-	-	4	-	-	-
M 19	236	-	-	-	-	-	-
20	1,763	-	-	9	-	-	-
21	1,957	1	9	43	140	432	5
22	793	-	3	37	6	33	-
23	855	9	-	63	-	20	-
24	682	5	2	40	-	15	-
25	700	-	-	21	-	-	-
26	1,045	-	-	57	-	-	-
27	174	-	-	5	-	-	-
N 21	6	-	-	-	-	-	-
22	19	-	-	-	-	-	-
	10,591	17	14	286	146	500	5

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 2001/20002 autumn-winter season (October 2001- March 2002) . For species key see Tables 2 and 3.

10 <sup>3</sup> square	Distance (n.miles)	No. of small cetaceans sighted			
		K	Zi	Zx	Ps
J 23	245	-	-	-	-
24	108	-	-	-	-
K 21	10	-	-	-	-
22	102	-	-	-	-
23	131	3	-	-	-
24	9	-	-	-	-
L 19	47	-	-	-	-
20	362	-	-	1	-
21	35	-	-	-	-
22	412	-	-	2	45
M 21	1,353	-	7	17	57
Total	2,814	3	7	20	102

Table 5. Artificial marking data released by NRIFSF, June 2001-March 2002.

Species	Area	No. marked
Striped dolphin	N.Pacific	93
Bottlenose dolphin	N.Pacific	1
Spotted dolphin	N.Pacific	1

Table 6. Biopsy samples collected through Japanese research, June 2001 - March 2002.

Species	Area	No. Collected	Archived (Y/N)	No. analyzed	Total Holdings	Contact Institute
Striped dolphin	N. Pacific	4	Y	0	4	NRIFSF
Spotted dolphin	N. Pacific	1	Y	0	1	NRIFSF

Table 7. Samples collected during operations by small-type whaling and dolphin fisheries and samples from bycatch, May<sup>1)</sup> 2001-March 2002.

Species	Area	Type of fishery	No. collected	Archived (Y/N)	Tissue type(s)	Contact Institute	
Striped dolphin	N.Pacific	Hand harpoon	48	Y	Tooth (To), skin (Sk), muscle (M), ovary (O), uterine horn (U) and testis (Te)	NRIFSF	
		Driving	447	Y	To, S, M, O, U and Te	NRIFSF	
Spotted dolphin	N.Pacific	Hand harpoon	9	Y	To, S, M, O, U, Te and stomach contents (St)	NRIFSF	
Bottlenose dolphin	N.Pacific	Hand harpoon	13	Y	To, Sk, M, O, U, Te	NRIFSF and St	
		Driving	184	Y	To, Sk, M, O, U and Te	NRIFSF	
Risso's dolphin	N.Pacific	Small-type whaling	17	Y	To, Sk, liver (L), M, O, U, Te, epididymis (E), vertebral epiphysis (V) and St	NRIFSF	
		Hand harpoon	7	Y	To, Sk, L, M, O, U and Te	NRIFSF	
		Driving	299	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	40	Y	To, Sk, L, M, O, U, Te, E, V and St	NRIFSF
Driving			209	Y	To, Sk, L, M, O, U and Te	NRIFSF	
E. China Sea		Hand harpoon (crossbow)	28	Y	To, Sk, L, M, O, U, Te	NRIFSF and St	
False killer whale	N.Pacific	Driving	18	Y	To, Sk, L, M, O, U and Te	NRIFSF	
		E. China Sea	Hand harpoon (crossbow)	5	Y	To, Sk, L, M, O, U, Te	NRIFSF and St
Fraser's dolphin	N.Pacific	Hand Harpoon	1	Y	To, Sk, L, M, O, U and Te	NRIFSF	
Dall's porpoise	<i>Dalli-type</i>	Okhotsk Sea	Hand harpoon	17	Y	To, Sk, L, M, O, U and Te	NRIFSF
			Sea of Japan	Hand harpoon	57	Y	To, Sk, L, M, O, U, Te
	<i>truei-type</i>	N.Pacific	Hand harpoon	50	Y	To, Sk, L, M, O, U, Te	NRIFSF and St
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) Fishing season for small-type whaling started in May (see 4.2.). And the corresponding table in the last year's report does not include samples collected in May 2001.

Table 8. Catch of small cetaceans by Japanese fisheries by type of fisheries by Prefecture, January-December 2001. Unless otherwise stated species and figures are those reported (provisional figures).

Species	Prefecture <sup>1)</sup>	Type of fishery	Direct catch <sup>2)</sup>	Incidental catch	Live capture
Dall's porpoise <i>dalli</i> -type	Hokkaido <sup>3)</sup>	Hand harpoon	1,413	0	0
	Iwate <sup>3)</sup>	Hand harpoon	6,960	0	0
	Miyagi	Hand harpoon	57	0	0
	Total		8,430	0	0
<i>truei</i> -type	Hokkaido	Hand harpoon	100	0	0
	Iwate	Hand harpoon	8,120	0	0
	Total		8,220	0	0
Harbor porpoise	Hokkaido	Trap net	0	1	0
Finless porpoise	Aichi	Trap net	0	2	0
	Aichi	Other coastal fishery	0	2	0
	Yamaguchi	Other coastal fishery	0	4	1
	Total		0	8	1
Pacific white-sided dolphin	Hokkaido	Trap net	0	0	1
	Ishikawa	Trap net	0	0	2
	Kyoto	Trap net	0	0	3
	Total		0	0	6
Striped dolphin	Wakayama	Hand harpoon	66	0	0
	Wakayama	Driving	418	0	0
	Total		484	0	0
Spotted dolphin	Wakayama	Hand harpoon	10	0	0
Bottlenose dolphin	Wakayama	Hand harpoon	44	0	0
	Wakayama	Driving	195	0	12
	Okinawa	Hand harpoon	8	0	0
	Total		247	0	12
Risso's dolphin	Niigata	Trap net	0	1	0
	Wakayama	Small-type whaling	17	0	0
	Wakayama	Hand harpoon	107	0	0
	Wakayama	Driving	350	0	3
	Total		474	1	3
Short-finned pilot whale northern form southern form	Miyagi	Small-type whaling	47	0	0
	Chiba	Small-type whaling	4	0	0
	Wakayama	Small-type whaling	36	0	0
	Wakayama	Driving	210	0	2
	Okinawa	Hand harpoon	92	0	0
	Total		342	0	2
False killer whale	Wakayama	Driving	18	0	11
	Okinawa	Hand harpoon	8	0	0
	Total		26	0	11
Dwarf sperm whale	Okinawa	Long line	0	1	0
Baird's beaked whale	Hokkaido	Small-type whaling	10	0	0
	Miyagi	Small-type whaling	26	0	0
	Chiba	Small-type whaling	26	0	0
	Total		62	0	0
Unidentified dolphin	Kagoshima	Other coastal fishery	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, four Pacific white-sided dolphins and two harbor porpoises in Hokkaido (trap net), 54 unidentified dolphins in Niigata (trap net), 26 Pacific white-sided dolphins in Kyoto (trap net), seven common dolphins in Kagoshima (two by large-mesh drift net and five by trap net, respectively) and two finless porpoises in Aichi (other coastal fishery).

Table 9. Summary of small cetacean catches by Japanese fisheries and small cetacean strandings in 2001, 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]	Long line [I]	Trap net [I]	Other coastal fisheries [I]	Strandings [I]	Total
Dall's porpoise									
<i>dalli</i> -type	0	8,430	0	0	0	0	0	2	8,432
<i>truei</i> -type	0	8,220	0	0	0	0	0	0	8,220
Harbor porpoise	0	0	0	0	0	1	0	2	3
Finless porpoise	0	0	0	1	0	2	6	76	85
Common dolphin	0	0	0	0	0	0	0	2	2
Pacific white-sided dolphin	0	0	0	6	0	0	0	7	13
Striped dolphin	0	66	418	0	0	0	0	2	486
Spotted dolphin	0	10	0	0	0	0	0	2	12
Bottlenose dolphin	0	52	195	12	0	0	0	9	268
Risso's dolphin	17	107	350	3	0	1	0	6	484
Pygmy killer whale	0	0	0	0	0	0	0	4	4
Melon-headed whale	0	0	0	0	0	0	0	79	79
Short-finned pilot whale									
northern form	47	0	0	0	0	0	0	0	47
southern form	40	92	210	2	0	0	0	1	345
False killer whale	0	8	18	11	0	0	0	0	37
Baird's beaked whale	62	0	0	0	0	0	0	9	71
Cuvier's beaked whale	0	0	0	0	0	0	0	3	3
Stejneger's beaked whale	0	0	0	0	0	0	0	18	18
Hubb's beaked whale	0	0	0	0	0	0	0	1	1
Ginkgo-tooth whale	0	0	0	0	0	0	0	1	1
<i>Mesoplodon</i> sp.	0	0	0	0	0	0	0	1	1
Dwarf sperm whale	0	0	0	0	1	0	0	2	3
Pygmy sperm whale	0	0	0	0	0	0	0	6	6
Unidentified dolphin	0	0	0	0	0	0	1	5	6
Unidentified cetacean	0	0	0	0	0	0	0	6	6
Total	166	16,985	1,191	35	1	4	7	244	18,633

Table 10. Strandings of small cetaceans in Japan, January-December 2000. Species and figures are based on reports of prefecture governments to the Fisheries Agency which are reports from individual fishermen, fishery cooperative unions or the general public (provisional figures).

Species and stocks	Prefecture <sup>1)</sup>	No. of individuals	Species and stocks	Prefecture <sup>1)</sup>	No. of individuals
Dall's porpoise ( <i>dalli</i> -type)	Hokkaido	1	Pygmy killer whale	Okinawa	4
	Aomori	1	Melon-headed whale	Ibaraki	30 <sup>3)</sup>
	Total	2		Miyazaki	1
Harbor porpoise	Akita	1		Kagoshima	48
	Niigata	1		Total	79
	Total	2	Short-finned pilot whale	Kagoshima	1
Finless porpoise	Ibaraki	1	(southern form)		
	Chiba	1	Baird's beaked whale	Hokkaido	7
	Shizuoka	1		Aomori	1
	Aichi	35		Akita	1
	Mie	21		Total	9
	Ishikawa	1	Cuvier's beaked whale	Ibaraki	1
	Osaka	1		Shizuoka	1
	Hyogo	1		Okinawa	1
	Yamaguchi	5 <sup>2)</sup>		Total	3
	Fukuoka	4	Stejneger's beaked whale	Hokkaido	1
	Saga	2		Aomori	5
	Nagasaki	1		Akita	3
	Oita	2		Miyagi	1
	Total	76		Kanagawa	1
	Common dolphin	Yamaguchi	1		Niigata
Kagoshima		1		Ishikawa	2
Total		2		Total	18
Pacific white-sided Dolphin	Akita	3	Hubb's beaked whale	Miyagi	1
	Yamagata	1	Ginkgo-tooth whale	Hokkaido	1
	Ishikawa	3	<i>Mesoplodon</i> sp.	Ishikawa	1
	Total	7	Dwarf sperm whale	Miyazaki	1
Striped dolphin	Shizuoka	1		Kagoshima	1
	Kochi	1		Total	2
	Total	2	Pygmy sperm whale	Chiba	4
Spotted dolphin	Okinawa	2		Shizuoka	1
Bottlenose dolphin	Yamagata	1		Nagasaki	1
	Tokyo	1		Total	6
	Chiba	1	Unidentified dolphin	Miyagi	2
	Toyama	1		Niigata	1
	Ishikawa	1		Yamaguchi	1
	Tottori	1		Kagoshima	1
	Kagoshima	3		Total	5
	Total	9	Unidentified cetacean	Chiba	1
Risso's dolphin	Shizuoka	1		Tokyo	2
	Ishikawa	2		Niigata	1
	Yamaguchi	1		Toyama	2
	Kochi	1		Total	6
	Miyazaki	1			
	Total	6			

1) Recorded to the prefecture where strandings occurred.

2) One of five was rescued and sent to aquarium.

3) Four of 30 were rescued and sent to aquarium.

4) Besides above records, following cetaceans were stranded or accidentally entered the harbor but were safely driven to the sea, 161-171 Melon-headed dolphins (35-45 in Ibaraki and 126 in Kagoshima), four finless porpoises (two in Aichi, one in Yamaguchi and one in Fukuoka), four Risso's dolphins (two in Yamaguchi, one in Chiba and one in Ishikawa), two southern form short-finned pilot whales (one in Fukuoka and one in Okinawa) and one unidentified

dolphins in Miyagi.