

Japan. Progress report on small cetacean research, April 2015 to March 2016, with statistical data for the calendar year 2015

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This report summarizes statistical data on small cetacean fisheries in 2015 (calendar year) as well as researches conducted during the period from April 2015 to March 2016 by the National Research Institute of Far Seas Fisheries (hereafter NRIFSF) of the Japan Fisheries Research and Education Agency (hereafter FRA) and the Fisheries Agency of the Ministry of Agriculture, Forestry and Fisheries, the Government of Japan (hereafter FAJ) with the cooperation of other related organizations. This report covers information on small cetaceans which is not included in the “National Progress report”, <https://portal.iwc.int/progressreportspublic> (submitted to the IWC/SC/66b meeting). The Government of Japan considers management of small cetaceans is outside the competence of the International Convention for the Regulation of Whaling.

1. SPECIES AND STOCKS STUDIED

Common name	Scientific name	Area/stock(s)	Items referred to
Dall's porpoise	<i>Phocoenoides dalli</i>	Off Pacific coast, and Sea of Japan	2.1.1, 5.1, 5.2.2, 5.3, 8.1
Finless porpoise	<i>Neophocaena phocaenoides</i>	Coastal waters of Japan	2.1.1, 2.2, 5.2.2, 5.3, 8.1, 8.2
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	Off Pacific coast, and Sea of Japan	2.1.1, 3.1.3, 3.2, 4.2, 5.1, 5.2.2, 5.3
Striped dolphin	<i>Stenella coeruleoalba</i>	Western North Pacific	2.1.1, 4.2, 4.4, 5.1, 5.3
Pantropical spotted dolphin	<i>Stenella attenuata</i>	Off Pacific coast	2.1.1, 3.1.3, 3.2, 4.1, 4.4, 5.1
Bottlenose dolphin	<i>Tursiops truncatus</i>	Off Pacific coast, and East China Sea	2.1.1, 3.1.2, 3.1.3, 4.1, 4.2, 4.4, 5.1, 5.3, 8.2
Risso's dolphin	<i>Grampus griseus</i>	Western North Pacific	2.1.1, 4.2, 4.4, 5.1, 5.3
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Western North Pacific, and East China Sea	2.1.1, 4.2, 4.4, 5.1, 5.3
False killer whale	<i>Pseudorca crassidens</i>	Off Pacific coast and East China Sea	2.1.1, 4.2, 5.1
Killer whale	<i>Orcinus orca</i>	Coastal waters of Japan	2.1.1, 2.1.2, 8.1
Baird's beaked whale	<i>Berardius bairdii</i>	Off Pacific coast, Sea of Japan and Okhotsk Sea	2.1.1, 2.1.2, 4.2, 4.4, 5.1, 5.3, 8.1
Additional species	-	Around Japan	2.1.1, 4.1, 5.2.2, 5.3

2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic

The NRIFSF and FAJ conducted two dedicated shipboard sighting surveys using research vessels in the North Pacific. All of the vessels are equipped with a top barrel. During the cruises, the following provisional numbers

of small cetaceans were sighted. The sightings of large cetaceans were described in the National Progress report submitted to the IWC/SC/66b meeting.

Table 1. Sightings of small cetaceans by dedicated shipboard surveys during the period from April 2015 to March 2016.

Species	Date	Area	No. of sightings	Contact institute
<i>dalli</i> -type Dall's porpoise	27/07/15-11/09/15	western North Pacific	9	NRIFSF
Pacific white-sided dolphin	27/07/15-11/09/15	western North Pacific	1	
Striped dolphin	27/07/15-11/09/15	western North Pacific	21	
Pantropical spotted dolphin	21/05/15-8/06/15	western North Pacific	6	
	27/07/15-11/09/15		1	
Short-beaked common dolphin	27/07/15-11/09/15	western North Pacific	3	
Rough-toothed dolphin	21/05/15-8/06/15	western North Pacific	2	
	27/07/15-11/09/15		1	
Bottlenose dolphin	21/05/15-8/06/15	western North Pacific	5	
	27/07/15-11/09/15		3	
Killer whale	21/05/15-8/06/15	western North Pacific	3	
Northern form short-finned pilot whale	27/07/15-11/09/15	western North Pacific	5	
Southern form short-finned pilot whale	21/05/15-8/06/15	western North Pacific	2	
	27/07/15-11/09/15		4	
False killer whale	21/05/15-8/06/15	western North Pacific	3	
Risso's dolphin	21/05/15-8/06/15	western North Pacific	2	
	27/07/15-11/09/15		13	
Melon-headed whale	21/05/15-8/06/15	western North Pacific	1	
	27/07/15-11/09/15		1	
Pygmy killer whale	21/05/15-8/06/15	western North Pacific	2	
Baird's beaked whale	27/07/15-11/09/15	western North Pacific	15	NRIFSF
Cuvier's beaked whale	27/07/15-11/09/15	western North Pacific	1	
Stejneger's beaked whale	27/07/15-11/09/15	western North Pacific	2	
Longman's beaked whale	21/05/15-8/06/15	western North Pacific	1	

No. of sightings indicates number of schools sighted. All sightings were made by the following two shipboard surveys.

- 1) Small cetacean sighting survey in the East China Sea and waters around Nansei Islands, using the research vessel *Shunyo-maru*. Research period was from 21 May to 8 June 2015.
- 2) Sighting survey for Baird's beaked whales in the Japanese Pacific coast, using the research vessel *Kaiyo-maru No.8*. Research period was from 27 July to 11 September 2015.

In cooperation with the Whale Watching Association in Tosa Bay (WATB), the NRIFSF conducted a sighting survey for Bryde's whales in the coastal waters off Kochi in July 2015, using a total of ten whale watching boats belong to the WATB. The boats (5 -10t) were without top barrels, and sighting information derived from those boats are excluded from the above table. The survey lasted five days in July, and Toshiya Kishiro (NRIFSF*), six research assistants and ten fishermen members of WATB acted as the researchers on board. Besides Bryde's

whale sightings, a total of two schools (330 animals) of long-beaked common dolphins were sighted. (*current affiliation: Japan Fisheries Research and Education Agency, Headquarters, Research Management Department)

Two aerial sighting surveys were conducted to obtain information on distribution and abundance of cetaceans inhabiting Japanese coastal waters. Waters off Kushiro was surveyed from 15 to 17 September 2015. Tomio Miyashita (NRIFSF), Hideyoshi Yoshida (NRIFSF), and Kaoru Hattori (Hokkaido National Fisheries Institute) searched the sea surface for cetaceans, from a small plane (twin engines, bubble window) flying at 135 knots and 700 feet in altitude. They searched 1,519 nautical miles and encountered an individual of killer whale, an individual of beluga whale, 64 schools (219 individuals) of Dall's porpoises, and 11 schools (30 animals) of harbor porpoises. Aerial sighting survey for finless porpoises was conducted in the Seto Inland Sea from 30 July to 4 August 2015, from a small plane (single engine, high-wing). Yoshida, Kiyomi Nakamura (Suma Aqualife Park Kobe), Tomomi Aiso (Shimonoseki Marine Science Museum), Futoshi Akagi (Miyajima Aquarium), and Megumi Ishikawa (Osaka Aquarium Kaiyukan) searched the sea surface for finless porpoises, from a plane flying at 80 knots and 500 feet in altitude. They surveyed 1,450 nautical miles and encountered the 203 schools (354 animals) of finless porpoises. Other species were not sighted.

2.1.2 Opportunistic, platforms of opportunity

Opportunistic sighting data have been collected during small-type whaling and dolphin fishery operations. They mainly consist of sightings of target species within the fishing grounds (e.g. Baird's beaked whales, southern form short-finned pilot and false killer whales, Risso's, bottlenose, striped, spotted and pacific white-sided dolphins).

During the JARPN II coastal component off Kushiro, northeast Japan conducted in September and October 2015, sightings of 5 schools (17 animals) of Baird's beaked whales and of 29 schools (147 animals) of killer whales were reported by the small-type whaling vessels.

2.2 Analyses/development of techniques

Yu Kanaji (NRIFSF) forwarded analyses to estimate spatial distribution and abundance for several small odontocetes using long-term sighting data.

Yoshida, Nakamura, Aiso, Akagi, and Ishikawa conducted abundance estimation of finless porpoises in the Seto Inland Sea, using sighting data from 2015 aerial sighting survey.

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data

Natural marking was not applied.

3.1.2 Artificial marking data

Under the cooperation between the NRIFSF and the Taiji Whale Museum, 53 bottlenose dolphins taken by the Taiji dolphin drive fishery during a period from 18 September 2015 to 11 February 2016 were released to the ocean, with the small plastic tags attached on their dorsal fin.

3.1.3 Telemetry data

Kanaji deployed pop-up archival transmitting (PAT) tags (miniPAT, Wildlife Computers) on a pantropical spotted dolphin and a bottlenose dolphin swimming in the East China Sea in May–June. The lengths of tagging period were 11 and 10 days, respectively.

Shingo Minamikawa (NRIFSF) deployed pop-up archival transmitting (PAT) tags (miniPAT, Wildlife Computers) on a Pacific white-sided dolphin swimming in the western North Pacific (coastal area of Japan) in August. The lengths of tagging period were 7 days.

Table 2.1. PAT data of small cetaceans collected during the period from April 2015 to March 2016.

Species	Tag type	No. deployed	No. popped up	No. retrieved	Contact institute
Pacific white-sided dolphin	miniPAT	1	1	0	NRIFSF
Pantropical spotted dolphin	miniPAT	1	1	0	NRIFSF
Bottlenose dolphin	miniPAT	1	1	0	NRIFSF

3.2 Analyses/development of techniques

Minamikawa proceeded the analysis of the PAT tag data of each of a Pacific white-sided dolphin, a pantropical spotted dolphin and a bottlenose dolphin.

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

4.1 Biopsy samples

During the two shipboard surveys mentioned in 2.1.1, 10 biopsy samples were collected from small cetaceans as show in Table 3.

Table 3. Biopsy samples of small cetaceans collected during the period from April 2015 to March 2016.

Species	Area/stock	no. collected	Archived(Y/N)	No. analyzed	Total holdings	Contact institute
Pantropical Spotted dolphin	W North Pacific	5	Y	0	5	NRIFSF
Bottlenose dolphin	W North Pacific	4	Y	0	4	NRIFSF
Rough-toothed dolphin	W North Pacific	1	Y	0	1	NRIFSF

4.2 Samples from directed catches or bycatches

Samples of small cetaceans from commercial catches collected during the period from April 2015 to March 2016 are shown in Table 4.

The national quota of Baird's beaked whales was 66 animals for small-type whaling. Fishing season was from 25 May to 25 June for land station in Hakodate on the Sea of Japan coast, 20 June to 21 August for land station in Wadoura on the Pacific coast, 20 June to 31 August and 31 October to 28 November for land station in Ayukawa on the Pacific coast, 1 to 13 August for land station in Abashiri on the Okhotsk coast. A total of 57 whales (ten off Hakodate, two off Abashiri, 45 off the Pacific coast) were taken by five catcher boats (*Seiwa-maru*, *Kohei-maru #8*, *Taisho-maru #28*, *Katsu-maru #7* and *Sumitomo-maru #51*). All the catches were examined and biological samples were taken by three researchers.

The national quota of northern form short-finned pilot whales for small-type whaling was 36 animals. Fishing season was set for two boats (*Kohei-maru #8* and *Taisho-maru #28*) in the same periods of the operations for Baird's beaked whales, but operation was not conducted for the pilot whales.

The national quota of southern form short-finned pilot whales for small-type whaling was 36 animals. From 5 May to 21 August 2015, 15 animals were taken by three catcher boats (*Seiwa-maru*, *Katsu-maru #7* and *Sumitomo-maru #51*) at Taiji land station, and five animals was taken by *Sumitomo-maru #51* at Wadoura land station. In addition, a national quota of twenty false killer whales for small-type whaling in Taiji in the same periods of the operations for southern form short-finned pilot whales was set, but no false killer whales were encountered during the period. All the catch animals were examined and biological samples were taken by the researchers.

Under contract with FRA and supervised by NRIFS, the Tokai University collected stomach contents of two southern form short-finned pilot whales and a Risso's, 6 bottlenose, and 5 striped dolphins caught by hand harpoon fisheries and small-type whaling off Taiji, for feeding habit studies.

The surveys for catches of drive fisheries in Taiji to collect data and samples for life history and genetic studies were conducted by eight researchers during the periods from 11 November to 24 December 2015, and 6 January to 28 February 2016. They examined 46 southern form short-finned pilot whales, and 428 striped, 66 bottlenose, 123 Risso's, and two Pacific white-sided dolphins.

Okinawa Prefectural Government requested fishermen to collect teeth and skin samples as a part of supervision of the fishery, from southern form short-finned pilot whales, and bottlenose dolphins which were caught by hand harpoon fishery (crossbow fishery) in Okinawa in 2015 season. Those samples will be sent to NRIFS for age determination and genetic examinations.

Sample collection of small cetaceans from bycatches by the NRIFS was not conducted during the period from April 2015 to March 2016.

Table 4. Samples of small cetaceans from direct catches collected during the period from April 2015 to March 2016.

Species	Area	Tissue type(s)	No. Collected	Archived (Y/N)	Contact Institute
Baird's beaked whale	Western North Pacific	To, Ma, O, U, Te, E, V, and Sk	45	Y	NRIFS
	Okhotsk Sea	To, Ma, O, U, Te, E, V, and Sk	2	Y	
	Sea of Japan	To, Ma, O, U, Te, E, V, and Sk	10	Y	
Southern form short-finned pilot whale	Western North Pacific	To, Ma, O, U, Te, E, V, Sk, and St	66	Y	
Risso's dolphin	Western North Pacific	To, Ma, O, U, Te, sk, and St	123	Y	
Bottlenose dolphin	Western North Pacific	To, Ma, O, U, Te, sk, and St	66	Y	
Striped dolphin	Western North Pacific	To, Ma, O, U, Te, sk, and St	428	Y	
Pacific white-sided dolphin	Western North Pacific	To, Ma, O, U, Te, and sk	2	Y	

E: epididymis, Ma: mammary gland, O: ovaries, Sk: skin, St: stomach content, Te: testis, To: tooth, U: uterine horn, V: vertebral epiphysis.

4.3 Samples from stranded animals

Sample collection from stranded small cetaceans by the NRIFS was not conducted during the period from April 2015 to March 2016.

4.4 Analyses/development of techniques

Kishiro and Kozue Ishida (Tokyo University of Marine Science and Technology) determined age of 79 Baird's beaked whales caught by small-type whaling at the Pacific coast in 2012 and 2014, using teeth samples, and examined age dependent change on the external morphology of teeth of Baird's beaked whales.

Kishiro examined ovaries samples from a total of 147 animals and histological samples of testis from a total of 163 animals (Baird's beaked whales, southern form short-finned pilot whales, bottlenose, striped, pantropical spotted and Risso's dolphins) taken by small-type whaling and hand-harpoon fisheries for determination of the sexual maturity. Kishiro also examined vertebral samples of a total of 222 animals (Baird's beaked whales, and southern and northern form of short-finned pilot whales) for determination of the physical maturity.

Hikari Maeda (NRIFS) determined ages of a total of 95 animals (southern form short-finned pilot whales and bottlenose dolphins) taken by hand harpoon fishery in Okinawa and drive fishery in Taiji. Maeda

also examined ovaries samples of 12 southern form short-finned pilot whales and histological samples of testis, mammary gland, and uterine horn of a total of 104 animals (southern form short-finned pilot whales and bottlenose dolphins) taken by drive fishery in Taiji for determination of the sexual maturity.

Yoshida carried forward the mtDNA sequence analysis in order to accumulate information on stock structure of small cetaceans around Japan, using tissue samples from 240 animals.

Hiroshi Ohizumi (Tokai University) continued to survey of feeding habits of small toothed whales caught in Taiji by small-type whaling and hand harpoon fishery. Stomach contents collected in May 2015 were analysed for two southern form short-finned pilot whales and a Risso's, 6 bottlenose, and 5 striped dolphins. Numbers of collecting those samples were also referred in Item 4.2.

Kanaji analysed carbon and nitrogen isotope ratio ($^{13}\text{C}/^{12}\text{C}$ and $^{15}\text{N}/^{14}\text{N}$) of several small odontocetes using skin biopsy samples collected from ship-based surveys.

5. STATISTICS FOR SMALL CETACEANS

5.1 For the calendar year 2015

For small-type whaling, the target species, fishing season, quota, catcher boats and actual catches are the same as shown in section 4.2.

For dolphin fisheries, management season has been started on 1 August and closed on 31 July for Dall's porpoise fisheries, and from 1 October to 30 September for other species, since 1996. The management season for fisheries in Wakayama Prefecture has been started on 1 September and closed on 31 August. As has been the case in previous years, the statistics, following the guideline for IWC national progress report, cover catches from 1 January to 31 December 2015, while FAJ manages dolphin fisheries by their own yearly season aforementioned. Thus, in some cases, the calendar yearly catch may exceed the seasonal (yearly) catch in appearance, but the actual seasonal catch is well below the allocated catch quota. Direct small cetacean catches are given in Table 5 in this section by prefecture and type of fisheries. The data have been collected by the International Affairs Division of the FAJ based on reports from the prefectural governments.

Catch quota for dolphin fisheries for the 2015/2016 season was revised from the last season, that is, 6,212 *dalli*-type Dall's porpoise, 6,152 *truei*-type Dall's porpoises, 469 Risso's dolphins, 558 bottlenose dolphins, 515 pantropical spotted dolphins, 565 striped dolphins, and 151 southern form short-finned pilot whales. Catch quota for false killer whales (100 animals) and Pacific white-sided dolphins (360 animals) remained constant since 2007/2008 season.

Corresponding operational months by prefecture in 2015 were as follows: hand harpoon fishery for porpoises and dolphins was permitted for nine months (1 January to 31 August and 1-31 December) in Okinawa prefecture; eight months (1 January to 31 August) in Wakayama; six months (1 January to 30 April and 1 November to 31 December) in Aomori, Miyagi, Iwate and Chiba; and 4.5 months (1 May to 15 June and 1 August to 31 October) in Hokkaido. Drive fishery was permitted for nine months in Wakayama (1 January to 31 May and 1 September to 31 December) and for seven months in Shizuoka (1 January to 31 March and 1 September to 31 December).

Table 5. Direct catch of small cetacean in 2014.

Species	Type of fishery	Prefecture ¹⁾	Total landed ²⁾
Baird's beaked whale	Small-type whaling	Hokkaido	12
		Miyagi	21
		Chiba	24
<i>dalli</i> -type Dall's porpoise	Hand harpoon	Iwate ³⁾	11
		Miyagi	4
<i>truei</i> -type Dall's porpoise		Iwate	1,549
		Miyagi	28
Pacific white-sided dolphin	Driving	Wakayama	7
Striped dolphin	Hand harpoon	Wakayama	22
	Driving		353
Pantropical spotted dolphin	Driving	Wakayama	59
Bottlenose dolphin	Hand harpoon	Wakayama	43
	Driving		181
Risso's dolphin	Hand harpoon	Wakayama	13
	Driving		211
Southern form short-finned pilot whale	Small-type whaling	Wakayama	15
		Chiba	5
	Driving	Wakayama	80
	Hand harpoon	Okinawa	9
False killer whale	Hand harpoon	Okinawa	1

1) Catches by small-type whaling and drive fishery were recorded at the place of landing of products. Catches by hand harpoon fishery were recorded at 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 prefectural governments to the Fisheries Agency. They are a compilation of landing slips (hand harpoon fisheries in Iwate and Hokkaido) or reports from individual fishermen or fishery cooperative unions (other prefectures).

3) Small portions of catches by hand harpoon fishery off Hokkaido were reported as meat by fishermen and thus have been converted into the number of *dalli*-type Dall's porpoises at 50kg/porpoise (c.f. Ishikawa et al. 1990) by respective prefectural governments.

5.2 Non-natural mortality for the calendar year 2015

5.2.1 Observed or reported ship strikes

We do not have data collecting system for ship strike incidence of small cetaceans.

5.2.2 Fishery bycatch

Provisional figures for incidental mortality of small cetaceans (bycatch) by Japanese fisheries, by Prefecture in January-December 2015, are shown in Table 6. Species and figures are based on the reports of prefecture governments to the FAJ, which are reports from individual fishermen or fishery cooperative unions.

Table 6. Fishery bycatch of small cetaceans in 2015.

Species	No. of animals	Location ¹⁾	Fate ²⁾	Gear ³⁾	Target fish species ⁴⁾	Source or contact
<i>dalli</i> -type	1	Hokkaido	K	GNS	NA	FAJ
Dall's porpoise	5		K	FPN		
Harbour porpoise	8	Hokkaido	K	GNS		
Finless porpoise	1	Osaka	K	GNS		
	1	Okayama	K	MIS		
	1	Yamaguchi	D	GNS		
	3	Nagasaki	K	GNS		
	1	Kumamoto	D	FPN		
Pacific white-sided Dolphin	1	Aomori	D	GNS		
	5	Iwate	R	FPN		
	6	Ishikawa	K(alive)	FPN		
Northern right whale dolphin	1	Hokkaido	K	MIS		

1) Recorded at the place of fishing gears.

2) Fate of whale: D = discarded dead or seriously injured, K = kept for sale or specimen, R = released alive

3) Described using "FAO FISHING DESCRIPTION AND CODES", that is, stationary uncovered pound nets (FPN), set gillnets (GNS) and miscellaneous gear (MIS).

4) Target fish species: NA = not available

5.3 Strandings of small cetaceans

Provisional figures for strandings of small cetaceans in Japan, for the period January-December 2015, are shown in Table 7. Species and figures are based on reports of prefecture governments to the FAJ, which are reports from individual fishermen, fishery cooperative associations or the general public. No. of post mortems in Table 7 indicated the number of dead animals when they stranded.

Table 7. Strandings of small cetaceans in 2015.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)
<i>dalli</i> -type Dall's porpoise	10	10	FAJ
Harbor porpoise	4	4	
Finless porpoise	141	140	
Pacific white-sided dolphin	13	13	
Striped dolphin	19	19	
Long-beaked common dolphin	2	2	
Bottlenose dolphin	2	2	
Indo-Pacific bottlenose dolphin	2	2	
Rough-toothed dolphin	3	3	
Risso's dolphin	6	6	
Short-finned pilot whale	1	1	
Melon-headed whale	161	115	
Pygmy killer whale	2	2	
Cuvier's beaked whale	3	2	
Hubbs' beaked whale	2	2	
Stejneger's beaked whale	9	9	
Blainville's beaked whale	1	1	
Dwarf sperm whale	5	5	
Pygmy sperm whale	5	4	
Unidentified cetaceans	22	22	

In addition, the Institute of Cetacean Research (4-5 Toyomi, Chuo-ku, Tokyo 104-0055, Japan), and the National Science Museum (4-1-1, Amakubo, tsukuba, Ibaragi 305-0005, Japan) voluntarily collected relevant information on strandings.

5.4 Earlier years' statistics

There are no changes in earlier years' statistics.

6. OTHER STUDIES AND ANALYSES

No other studies or analyses on small cetaceans were conducted during the period from April 2015 to March 2016.

7. LITERATURE CITED

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8. PUBLICATION ON SMALL CETACEANS

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8.2 Unpublished literature

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