

Japan. Progress report on small cetacean research, April 2017 to March 2018, with statistical data for the *calendar year 2017*

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This report summarizes statistical data on small cetacean fisheries in 2017 (calendar year) as well as researches conducted during the period from April 2017 to March 2018 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/67b 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, Sea of Japan, and Okhotsk Sea	2.1.1, 5.1, 5.2.2, 5.3, 8.1
Finless porpoise	<i>Neophocaena asiaeorientalis</i>	Coastal waters of Japan	2.1.1, 2.2, 5.2.2, 5.3, 8.1
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	Off Pacific coast, and Sea of Japan	2.1.1, 2.1.2, 3.1.3, 3.2, 4.2, 5.1, 5.2.2, 5.3
Striped dolphin	<i>Stenella coeruleoalba</i>	Off Pacific coast	2.1.1, 2.1.2, 4.2, 4.4, 5.1, 5.3
Pantropical spotted dolphin	<i>Stenella attenuate</i>	Off Pacific coast	2.1.1, 2.1.2, 4.2, 4.4, 5.1, 5.3
Bottlenose dolphin	<i>Tursiops truncates</i>	Off Pacific coast, and East China Sea	2.1.1, 3.1.2, 4.2, 4.4, 5.1, 5.2.2, 5.3
Rough-toothed dolphin	<i>Steno bredanensis</i>	Off Pacific coast	3.1.2, 4.2, 5.1, 5.3
Melon-headed whale	<i>Peponocephala electra</i>	Off Pacific coast	4.2, 4.4, 5.1, 5.3
Risso's dolphin	<i>Grampus griseus</i>	Off pacific coast	2.1.1, 2.1.2, 4.2, 4.4, 5.1, 5.2.2, 5.3, 8.2
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Western North Pacific, and East China Sea	2.1.1, 2.1.2, 4.2, 4.4, 5.1, 5.3
False killer whale	<i>Pseudorca crassidens</i>	Off Pacific coast	4.2, 5.1, 5.3
Killer whale	<i>Orcinus orca</i>	Off Pacific coast	2.1.1, 2.1.2, 5.3, 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, 8.1
Additional species	-	Around Japan	2.1.1, 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 in the North Pacific, using the research vessels with a top barrel. During the cruises, the following small cetaceans were sighted. The sightings of large cetaceans were described in the National Progress Report submitted to the IWC/SC/67b meeting.

Table 1. Small cetaceans sighted by dedicated shipboard surveys conducted during the period of April 2017 to March 2018.

Species	Date	Area	No. of sightings	Contact institute
Baird's beaked whale	17/07-17-31/08/17	western North Pacific	22	NRIFSF
Bottlenose dolphin	17/07/17-31/08/17	western North Pacific	1	
Pantropical spotted dolphin	17/07/17-31/08/17	western North Pacific	4	
Striped dolphin	17/07/17-31/08/17	western North Pacific	14	
	26/02/18-16/03/18	western North Pacific	5	
Pacific white-sided dolphin	17/07/17-31/08/17	western North Pacific	23	
	26/02/18-16/03/18	western North Pacific	2	
Risso's dolphin	17/07/17-31/08/17	western North Pacific	13	
	26/02/18-16/03/18	western North Pacific	5	
Southern form short-finned pilot whale	17/07/17-31/08/17	western North Pacific	1	
Killer whale	17/07/17-31/08/17	western North Pacific	1	
	26/02/18-16/03/18	western North Pacific	1	
<i>dalli</i> -type Dall's porpoise	17/07/17-31/08/17	western North Pacific	7	
<i>truei</i> -type Dall's porpoise	17/07/17-31/08/17	western North Pacific	7	
Unidentified type Dall's porpoise	17/07/17-31/08/17	western North Pacific	35	

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

1) Sighting survey for Baird's beaked whales in the Japanese Pacific coast, using the research vessel Kaiyo-maru No.7.

Research period was from 17 July to 31 September 2017.

2) Sighting survey for Pacific white-sided dolphins in the Japanese Pacific coast, using the research vessel Shunyo-maru.

Research period was from 26 February to 16 March 2018.

An aerial sighting survey was conducted to obtain information on distribution and abundance of cetaceans inhabiting around Japanese waters. During the period of 27 to 30 July 2017, Yu Kanaji, Hiroko Sasaki, Hiroto Murase, and Hideyoshi Yoshida (NRIFSF) conducted the sighting survey at waters off Pacific coast of Eastern Japan, from a small plane (twin engines, bubble window) flying at 80 knots and 700 feet in altitude. They searched 634.5 nautical miles and encountered two schools (30 animals) of the Pacific white-sided dolphin, 16 schools (100 animals) of the Risso's dolphin, and two schools (6 animals) of unidentified species of Ziphiidae.

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 NEWREP-NP coastal component off Abashiri, northeast Japan conducted in June and July 2017, sightings of 7 schools (31 animals) of the Baird's beaked whale and of 3 schools (6 animals) of the killer whale were obtained by the sampling vessels.

2.2 Analyses/development of techniques

Kanaji progressed abundance estimation of six species of small odontocetes by analysing the sighting data from surveys conducted in 2014 and 2015 and completed the estimation. Kanaji and Sasaki conducted abundance estimation using the spatial modelling with the conventional line transect method.

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- Sylpheed Ltd., 14 bottlenose dolphins, three rough-toothed dolphins, and an individual of the southern form short-finned pilot whale caught by the Taiji dolphin drive fishery during the period from September 2017 to February 2018 were released to the ocean, with the small plastic tags attached on their dorsal fin.

3.1.3 Telemetry data

Shingo Minamikawa (NRIFSF) deployed pop-up archival transmitting (PAT) tag (miniPAT, Wildlife Computers) on two Pacific white-sided dolphins swimming in the western North Pacific (coastal area of Japan) in July and August. The lengths of tagging period were 9 and 22 days, respectively.

Table 2.1. PAT data of small cetaceans collected during the period from April 2017 to March 2018.

Species	Tag type	No. deployed	No. popped up	No. retrieved	Contact institute
Pacific white-sided dolphin	miniPAT	2	2	0	NRIFSF

3.2 Analyses/development of techniques

Minamikawa proceeded the analysis of the PAT tag data from two Pacific white-sided dolphins.

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

4.1 Biopsy samples

The NRIFSF collected no biopsy samples from small cetaceans during the period from April 2017 to March 2018.

4.2 Samples from directed catches or bycatches

Samples collected from small cetaceans caught by the small-type whaling and the drive fishery at Taiji during the period of April 2017 to March 2018 are shown in Table 4.

The national quota of Baird's beaked whales for the mentioned period was 69 animals for small-type whaling (includes 3 animals carryover from the last year's quota). Whaling operation was conducted from 25 to 31 May, from 14 July to 23 August, and from 5 to 24 November at the land station in Wadoura on the Pacific coast, from 13 June to 25 August and from 6 to 29 November at the land station in Ayukawa on the Pacific coast, from 20 July to 24 August and from 2 to 8 November at the land station in Abashiri on the Okhotsk coast. The operation at the land station in Hakodate on the Sea of Japan coast was not conducted. A total of 28 animals (four off Abashiri, 24 off the Pacific coast) were taken by five catcher boats (*Seiwa-maru*, *Kohei-maru* #8, *Taisho-maru* #3, *Katsu-maru* #7, and *Sumitomo-maru* #51). All the catches were examined and biological samples were taken by seven 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 #3*) in the same periods of the operations for Baird's beaked whales, but operation was not conducted for the form.

The national quota of 36 southern form short-finned pilot whales was set for the small-type whaling at the Taiji and Wadoura land stations. Two animals were taken by catcher boats (*Katsu-maru #7* and *Sumitomo-maru #51*) at the Wadoura during the operation for Baird's beaked whales. In addition, the national quota of twenty false killer whales for small-type whaling at Taiji was set in the same periods for the southern form short-finned pilot whale operation, but operation was not conducted.

The surveys for animals caught by the drive fishery at Taiji was conducted to collect data and samples for life history and genetic studies, by 9 researchers during the periods of 1 September to 6 October 2017, of 10 November to 25 December 2017, and 5 January to 28 February 2018. They examined 54 southern form short-finned pilot and 131 melon-headed whales and 418 striped, 158 Risso's, two rough-toothed, and two Pacific white-sided dolphins.

Hiroshi Ohizumi (Tokai University) investigated 44 animals including bottlenose, striped, pantropical spotted, and Risso's dolphins caught by hand harpoon fishery at Taiji in May 2017. Stomach contents, gonads, and teeth of the animals were collected for the feeding habit study.

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 2017 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 2017 to March 2018.

Table 4. Samples collected from small cetaceans caught by the small-type whaling and driven fishery during the period of April 2017 to March 2018.

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	24	Y	NRIFS
	Okhotsk Sea	To, Ma, O, U, Te, E, V, and Sk	4	Y	
Southern form short-finned pilot whale	Western North Pacific	To, Ma, O, U, Te, E, V, and Sk	50	Y	
Risso's dolphin	Western North Pacific	To, Ma, O, U, Te, and Sk	145	Y	
Striped dolphin	Western North Pacific	To, Ma, O, U, Te, and Sk	366	Y	
Melon-headed whale	Western North Pacific	To, Ma, O, U, Te, and Sk	123	Y	
Rough-toothed dolphin	Western North Pacific	To, Ma, O, U, Te, and Sk	2	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, 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 2017 to March 2018.

4.4 Analyses/development of techniques

Maeda determined ages of a total of 241 animals (southern form short-finned pilot whale, bottlenose and Risso's dolphins) taken by the drive fishery at Taiji. Maeda also examined ovaries of 85 animals (Baird's beaked whales caught by the small-type whaling and southern form short-finned pilot and melon-headed whales and bottlenose, Risso's, striped, and Pantropical spotted dolphins caught by the drive fishery) and investigated histological samples of testis, mammary gland, and uterine horn of a total of 111 animals (southern form short-finned pilot whales and bottlenose and Risso's dolphins taken by drive fishery at Taiji) for studies on 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 288 animals.

5. STATISTICS FOR SMALL CETACEANS

5.1 For the calendar year 2017

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

Regarding the dolphin fisheries, management season has been set from 1 August to 31 July of the next year for Dall's porpoise fisheries, and from 1 October to 30 September of the next year for other species, since 1996. The management season for fisheries in Wakayama Prefecture has been set from 1 September to 31 August of the next year. Following the guideline on IWC national progress report, the statistics on dolphin fisheries covers catches from 1 January to 31 December 2017, while FAJ manages dolphin fisheries by their own fisheries season aforementioned. Thus, in some cases, catches aggregated by calendar year 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 2017/2018 season was same with that of the last season, except that quota was newly set for the melon-headed whale (390 animals) and the rough-toothed dolphin (40 animals). Catch quota for other species is 5,900 animals for *dalli*-type Dall's porpoises, 5,900 for *truei*-type Dall's porpoises, 460 for Risso's dolphins, 500 for bottlenose dolphins, 470 for pantropical spotted dolphins, 550 for striped dolphins, 360 for Pacific white-sided dolphins, 166 for southern form short-finned pilot whales, and 100 for false killer whales.

Corresponding operational months by prefecture in 2017 were as follows: hand harpoon fishery was permitted for nine months (1 January to 31 August and 1-31 December) in Okinawa prefecture, for eight months (1 January to 31 August) in Wakayama, for six months (1 January to 30 April and 1 November to 31 December) in Aomori, Miyagi, Iwate, and Chiba, and for 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 2017.

Species	Type of fishery	Prefecture ¹⁾	Total landed ²⁾
Baird's beaked whale	Small-type whaling	Hokkaido	4
		Miyagi	14
		Chiba	10
<i>dalli</i> -type Dall's porpoise	Hand harpoon	Iwate ³⁾	5
		Miyagi	2
<i>truei</i> -type Dall's porpoise		Iwate	1,342
		Miyagi	22
Pacific white-sided dolphin	Drive	Wakayama	21
Striped dolphin	Hand harpoon	Wakayama	18

	Drive		299
Pantropical spotted dolphin	Hand harpoon	Wakayama	27
	Drive		17
Bottlenose dolphin	Hand harpoon	Wakayama	47
	Drive		127
	Hand harpoon	Okinawa	3
Rough-toothed dolphin	Drive	Wakayama	27
Melon-headed whale	Drive	Wakayama	156
Risso's dolphin	Hand harpoon	Wakayama	7
	Drive		118
Southern form short-finned pilot whale	Small-type whaling	Chiba	2
	Drive	Wakayama	57
	Hand harpoon	Okinawa	22
False killer whale	Hand harpoon	Okinawa	2

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).

5.2 Non-natural mortality for the calendar year 2017

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 2017, 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 2017.

Species	No. of animals	Location ¹⁾	Fate ²⁾	Gear ³⁾	Target fish species ⁴⁾	Source or contact
<i>dalli</i> -type Dall's porpoise	1	Aomori	D	GNS	NA	FAJ
Harbour porpoise	3	Hokkaido	K	FPN		
	6		K	GNS		
Risso's dolphin	1	Miyazaki	A	FPN		
Bottlenose dolphin	1	Kanagawa	K	FPN		
	1	Nagasaki	K	GNS		
	1	Oita	A	FPN		
	1	Miyazaki	A	FPN		
Pacific white-sided Dolphin	2	Aomori	A/R	FPN		
	1	Kanagawa	K	FPN		

	3	Ishikawa	A	FPN
Finless porpoise	1	Miyagi	A	FPN
	1	Mie	K	GNS
	5	Osaka	K	GNS
	1	Hyogo	K	GNS
	2	Okayama	K	GNS
	1	Hiroshima	K	GNS
	2	Kagawa	R	GNS
	1	Fukuoka	K	FPN
	5		K	GNS
	2	Nagasaki	K	GNS
	1		K	FPN
	Unidentified small cetacean	1	Nagasaki	K

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 2017, 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 2017.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)
<i>dalli</i> -type Dall's porpoise	7	7	FAJ
Harbor porpoise	11	11	
Finless porpoise	171	169	
Pacific white-sided dolphin	19	19	
Striped dolphin	36	36	
Pantropical spotted dolphin	1	1	
Long-beaked common dolphin	1	1	
Short-beaked common dolphin	1	1	
Bottlenose dolphin	7	7	
Indo-Pacific bottlenose dolphin	2	2	
Risso's dolphin	16	15	
Short-finned pilot whale	2	2	
False killer whale	3	3	
Melon-headed whale	5	5	
Pygmy killer whale	9	9	

Rough-toothed dolphin	16	16
Fraser's dolphin	1	1
Killer whale	2	2
Cuvier's beaked whale	1	1
Baird's beaked whale	2	2
Hubbs' beaked whale	1	1
Stejneger's beaked whale	3	3
Ginkgo-toothed Beaked Whale	2	2
Blainville's beaked whale	1	1
Dwarf sperm whale	6	6
Pygmy sperm whale	7	7
Unidentified small cetaceans	25	25

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 corrections in earlier years' statistics.

6. OTHER STUDIES AND ANALYSES

No other studies or analyses on small cetaceans were conducted during the period from April 2017 to March 2018.

7. LITERATURE CITED

Ishikawa, H., Fujise, Y., Saino, S. and Zenitani, R. 1990. III. Report on onboard biological research on the dolphin hand harpoon boats in the Okhotsk Sea and waters off the Pacific coast of northern Honshu Island.p53-78. In: Report on dolphin research around Japan (1989 fiscal year). 78pp. Institute of Cetacean Research

8. PUBLICATION ON SMALL CETACEANS

8.1 Published or In Press' papers only

Kanaji, Y. 2017. Survey and analysis methods for conservation and management of marine mammals (9): Abundance estimation. *Aquabiology* 39:512-522. (in Japanese)

Kanaji, Y. 2018. Killer whale. In Ota, T. (ed) The Current status of International fishery stocks. Fisheries Agency and Japan Fisheries Research and Education Agency. http://kokushi.fra.go.jp/H28/H28_56.pdf. 2pp. (in Japanese)

Kanaji, Y. and Miyashita, T. 2018. Dall's porpoise. In Ota, T. (ed) The Current status of international fishery stocks. Fisheries Agency and Japan Fisheries Research and Education Agency. http://kokushi.fra.go.jp/H29/H29_48.pdf. 6pp. (in Japanese)

Maeda, H. and Kishiro, T. 2018. Baird's beaked whale, *Berardius bairdii*, Sea of Japan, Sea of Okhotsk and Pacific Ocean. In Ota, T. (ed) The Current status of international fishery stocks. Fisheries Agency and Fisheries Research Agency. http://kokushi.job.affrc.go.jp/H29/H29_47.pdf. 5pp. (in Japanese)

Ogawa, N., Yoshida, H., Nakamura, G., and Kato, H. 2017. Abundance and distribution of finless porpoises in

Ise Bay and Mikawa Bay, central Japan. Bulletin of the Japanese Society of Fisheries Oceanography 81:29-35 (in Japanese with English summary)

Yoshida, H. 2018. Fisheries and research on small cetaceans (review). In Ota, T. (ed) The Current status of international fishery stocks. Fisheries Agency and Japan Fisheries Research and Education Agency. http://kokushi.fra.go.jp/H29/H29_47.pdf. 4pp. (in Japanese)

Yoshida, H. 2018. Finless porpoise In Ota,T. (ed.) The Current status of international fishery stocks. Fisheries Agency and Japan Fisheries Research and Education Agency. http://kokushi.fra.go.jp/H29/H29_55.pdf. 5pp. (in Japanese)

8.2 Unpublished literature

Kanaji, Y., Sasaki, H. and Okamoto, R. 2018. Observations of small cetacean schools by the unmanned aerial vehicle (drone)-Attempt to improve school size estimation-. Abstract for 2018 Spring Meeting of the Japanese Society of Fisheries Science. p. 45. (in Japanese)

Kanaji, Y. and Gerrodette, T. 2017. Abundance estimation of Risso's dolphins using a hierarchical Bayesian spatial model. Abstracts for 2017 Annual Meeting of the Japanese Society of Fisheries Oceanography. p. 73. (in Japanese)

Kanaji, Y., Sasaki, H., Setou, S., Miyashita, T., Minamikawa, S. and Yoshida, H. Spatial distribution of six species of Delphinidae in the western North Pacific between 1985 and 2015. The 22nd Biennial Conference on the Biology of Marine Mammals: Abstract book. p. 191.

Sasaki, H., Kanaji, Y. and Minamikawa, S. 2017. Spatial distribution of Baird's beaked whales (*Berardius bairdii*) off the Pacific coast of northern Japan in the summer between 2003 and 2009. The 22nd Biennial Conference on the Biology of Marine Mammals.

Maeda, H., Yoshida, H. and Kishiro, T. 2017. Recent age at sexual Maturity of the southern form short-finned pilot whale off Japan. The 22nd Biennial Conference on the Biology of Marine Mammals.