

# Japan's Scientific Progress report on Small Cetaceans in the fiscal year 2020(April 2020 to March 2021), with statistical data for the *calendar year 2020*

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This report summarizes statistical data on small cetacean fisheries in 2020 (calendar year) as well as research conducted during the fiscal year 2020 (April 2020 to March 2021) by the National Research Institute of Far Seas Fisheries (until July 19<sup>th</sup> 2020, hereafter NRIFSF) and Fisheries Resources Institute (Reorganized on July 20, hereafter FRI) 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 organizations concerned. 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, Okhotsk Sea and Japan Sea	2.1.2, 5.1, 5.3, 8.1
Finless porpoise	<i>Neophocaena asiaeorientalis</i>	Coastal waters of Japan	5.2.2, 5.3, 8.1
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	Off Pacific coast, and Japan Sea	2.1.2, 4.2, 5.1
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, 4.1, 5.1
Bottlenose dolphin	<i>Tursiops truncatus</i>	Off Pacific coast and East China Sea	2.1.1, 2.1.2, 3.1.2, 3.1.3, 3.2, 4.2, 4.4, 5.1, 5.3
Rough-toothed dolphin	<i>Steno bredanensis</i>	Off Pacific coast	2.1.1, 5.1, 5.3
Melon-headed whale	<i>Peponocephala electra</i>	Off Pacific coast	2.1.1, 4.1, 4.2, 4.4, 5.1, 5.3
Risso's dolphin	<i>Grampus griseus</i>	Off Pacific coast and Japan Sea	2.1.1, 2.1.2, 2.2, 4.2, 4.4, 5.1, 5.3, 8.1
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Off Pacific coast and East China Sea	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	5.3, 8.1
Baird's beaked whale	<i>Berardius bairdii</i>	Off Pacific coast, Okhotsk Sea and Okhotsk Sea	2.1.2, 2.2, 3.1.3, 4.2, 5.1, 5.3, 8.1
Additional species	-	Around Japan, others	5.2.2, 5.3

## 2. SIGHTINGS DATA

### 2.1 Field work

\* National Research Institute of Far Seas Fisheries (NRIFSF) was reorganized into Fisheries Resources Institute (FRI) in July 2020.

### 2.1.1 Systematic

The NRIFSF (FRI) and FAJ conducted a dedicated shipboard sighting survey in the North Pacific, using a research vessel with a top barrel. During the survey, the following small cetaceans were sighted.

Table 1. Small cetaceans sighted in the dedicated shipboard survey conducted during the fiscal year 2020 (April 2020 to March 2021).

Species	Date	Area	No. of sightings	Contact institute
Rough-toothed dolphin	19/05/20-06/07/20	Pacific	5	NRIFSF/ FRI
Bottlenose dolphin	19/05/20-06/07/20	Pacific	9	
Spinner dolphin	19/05/20-06/07/20	Pacific	1	
Pantropical spotted dolphin	19/05/20-06/07/20	Pacific	5	
Striped dolphin	19/05/20-06/07/20	Pacific	1	
Fraiser's dolphin	19/05/20-06/07/20	Pacific	1	
Risso's dolphin	19/05/20-06/07/20	Pacific	30	
Southern form Short-finned pilot whale	19/05/20-06/07/20	Pacific	12	
Melon-headed whale	19/05/20-06/07/20	Pacific	4	
Pygmy killer whale	19/05/20-06/07/20	Pacific	1	
Pygmy sperm whale	19/05/20-06/07/20	Pacific	1	
Dwarf sperm whale	19/05/20-06/07/20	Pacific	2	
Longman's beaked whale	19/05/20-06/07/20	Pacific	1	
Blainville's beaked whale	19/05/20-06/07/20	Pacific	1	

"No. of sightings" indicates the numbers of schools sighted. These sightings were made during the sighting survey for small cetacean conducted in the East China sea and the Pacific, from 19 May to 6 July 2020, using the research vessel Kaiyo-maru No.7.

### 2.1.2 Opportunistic, platforms of opportunity

Opportunistic sighting data have been collected during small-type whaling (renamed as "Coastal base type whaling" due to the amendment of the Fishery Act on December 1st, 2020, hereafter coastal base type whaling) and dolphin fishery operations. They mainly consist of sightings of target species at the fishing grounds (e.g. the Baird's beaked whale, the short-finned pilot whale, and the Risso's, bottlenose, striped, spotted and Pacific white-sided dolphin).

During the survey conducted in October 2020, 7 schools (92 animals) of Baird's beaked whale, four schools (320 animals) of Pacific white-sided dolphin, one school (four animals) of Dall's porpoise and one school (5 animals) of harbor porpoise obtained by small whale watching ship.

## 2.2 Analyses/development of techniques

Kanaji and Maeda have worked on developing stock assessment models to combine the data from multiple sources such as absolute abundance estimates, historical catch statistics, and fisher's logbook.

Kanaji has reanalyzed historical sighting survey data to clarify the patterns of mixed-species group formation of delphinid species and suggested possible existence of interspecific competitions.

Kanaji published the result of the species distribution modelling (SDM) to estimate spatiotemporal patterns of Risso's dolphins' abundance off the Pacific coast of Japan and proposed the approach to estimate population trend of the species inhabiting a dynamic ocean environment.

Sasaki and Kanaji have continued to analyse shipboard sighting survey data in 2008, 2009, 2015, 2016 and 2017 to estimate abundance of Baird's beaked whales.

### 3. MARKING DATA

#### 3.1 Field work

##### 3.1.1 Natural marking data

Natural marking data were not collected.

##### 3.1.2 Artificial marking data

With the cooperation of the Taiji Whale Museum and the Mie University, NRIFS (or FRI) attached plastic tags to one southern forms of short-finned pilot whales and 40 bottlenose dolphins caught by the Taiji dolphin drive fishery from September 2020 to February 2021, and animals were released to the sea soon after the tagging.

##### 3.1.3 Telemetry data

Under the joint project among NRIFS (or FRI), the Taiji Whale Museum and the Mie University, a satellite tag (SPLASH tags, Wildlife Computers) was attached to the dorsal fin of four bottlenose dolphins, and a MiniPAT tag was attached to one bottlenose dolphin. These dolphins were caught by fishers in Taiji through November and December 2020. After released to the sea, their movements were tracked up to 11 to 100 days. The tag popped 13th days after release. The joint project between NRIFS (or FRI) and Tokyo University of Agriculture planned to attach satellite tags to Dall's porpoises. However, porpoises were scarcely seen this year and they couldn't accomplish it. They also deployed two smart position and temperature transmitting tags (SPOT tags, Wildlife Computers) on Baird's beaked whales by using LK-Arts system from the small ship at Abashiri, Hokkaido, October 2020. Data had derived from one beaked whale for 26 days.

Table 2.1. Telemetry data of small cetaceans collected during the period from April 2020 to March 2021.

Species	Tag type	No. deployed	No. data available	No. popped up	No. retrieved	Contact institute
Bottlenose dolphin	SPLASH	4	4	-	0	NRIFS/FRI
Bottlenose dolphin	miniPAT	1	1	1	0	NRIFS/FRI
Baird's beaked whale	SPOT	2	1	-	0	NRIFS/FRI

#### 3.2 Analyses/development of techniques

Kanaji and Sasaki has applied state-space models to the satellite-tracking data of 12 bottlenose dolphins and estimated their movement patterns.

### 4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

#### 4.1 Biopsy samples

The NRIFS collected each one biopsy samples from melon-headed whale and pantropical spotted dolphin during the fiscal year 2020 (April 2020 to March 2021).

#### 4.2 Samples from directed catches or bycatches

Samples collected from small cetaceans caught by the coastal base type whaling and the drive fishery at Taiji during the period of April 2020 to March 2021 are shown in Table 4.

The national quota of Baird's beaked whales for the mentioned period was 72 animals for the coastal base type whaling (includes 6 animal carryovers from the last year's quota). Whaling operation was conducted from 30

June to 5 August at the land station in Wadoura on the Pacific coast, from 27 June to 7 August at the land station in Ayukawa on the Pacific coast. The operation at the Sea of Japan and at the Okhotsk coast was not conducted. A total of 19 Baird's beaked whales (off the Pacific coast) were taken by four catcher boats (*Kohei-maru* #8, *Taisho-maru* #3, *Katsu-maru* #7, and *Sumitomo-maru* #51). All the animals were examined and biological samples were taken by two researchers.

The national quota of northern form short-finned pilot whales for coastal base type whaling was 36 animals. During the operation for common minke whales off Sanriku coast, catcher boats encountered northern form short-finned pilot whales, but no whales were caught because fishermen prioritized operation for common minke whales. The national quota of 33 southern form short-finned pilot whales was set for the coastal base type whaling at the Taiji and Wadoura land stations. A pilot whale was taken by *Sumitomo-maru* #51 during the operation for Baird's beaked whales at Wadoura and biological examination and sampling was conducted for the animal. The operation at the Taiji station was not conducted, thus false killer whales allocated a quota of 20 animals and southern form short-finned pilot whales were not caught.

The surveys for animals caught by the drive fishery at Taiji were conducted to collect data and samples for life history and genetic studies, by 7 researchers during the periods 28 April 2020 and from 1 September to 29 September 2020, from 10 November to 25 December 2020, and from 5 January to 28 February 2021. They examined 12 southern form short-finned pilot whales, 120 melon-headed whales, and 219 striped dolphins, 112 Risso's, 3 bottlenose, and 7 Pacific white-sided dolphins.

Ohizumi (Tokai University) collected stomach contents of 28 animals including Risso's dolphins and striped dolphins in February 2021, caught by drive fishery at Taiji 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 small cetaceans caught by hand harpoon fishery (crossbow fishery) in Okinawa in 2020 season. These samples will be sent to FRI for age determination and genetic examinations.

Samples of small cetaceans from bycatches by the NRIFS was collected from one Stejneger's beaked whale in August 2020 in Abashiri, Hokkaido, Japan.

Table 4. Samples collected from small cetaceans caught by the coastal base type whaling and driven fishery during the fiscal year 2020 (April 2020 to March 2021).

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, Sk and C	19	Y	NRIFS /FRI
Southern form short-finned pilot whale	Western North Pacific	To, Ma, O, U, Te, C and sk	13	Y	
Bottlenose dolphin	Western North Pacific	To, Ma, O, U, Te, C, and sk	3	Y	
Risso's dolphin	Western North Pacific	To, Ma, O, U, Te, C, and sk	112	Y	
Striped dolphin	Western North Pacific	To, Ma, O, U, Te, C, and sk	219	Y	
Melon-headed whale	Western North Pacific	To, Ma, O, U, Te, C, and sk	120	Y	
Pacific white-sided dolphin	Western North Pacific	To, Ma, O, U, Te, C, and sk	7	Y	

E: epididymis, Ma: mammary gland, O: ovaries, Sk: skin, Te: testis, To: tooth, U: uterine horn, V: vertebral epiphysis, C: crystalline lens.

#### 4.3 Samples from stranded animals

Sample collection from stranded small cetaceans by the NRIFS/FRA was not conducted during the fiscal year 2020 (April 2020 to March 2021).

#### 4.4 Analyses/development of techniques

Maeda determined ages of a total of 175 animals (southern form short-finned pilot and melon-headed whales, and bottlenose, Risso's and striped dolphins) taken by the drive fishery at Taiji. Maeda also examined ovaries of 43 animals (southern form short-finned pilot and melon-headed whales and bottlenose, Risso's and striped dolphins) caught by the drive fishery and investigated histological samples of testis, mammary gland, and uterine horn of a total of 187 animals (Melon-headed whales and bottlenose and Risso's dolphins) taken by drive fishery at Taiji, for studies on sexual maturity.

Maeda measured the racemization rate of aspartic acid in the ocular lens of 60 Risso's dolphin to examine a method for age estimation using aspartic acid racemization.

Yoshida accumulated SNPs data from 192 animals, to advance the stock structure study of small cetaceans around Japan.

## 5. STATISTICS FOR SMALL CETACEANS

### 5.1 For the calendar year 2020

Target species, fishing season, quota, catcher boats and actual catches for the coastal base type whaling are provided in section 4.2.

Regarding the dolphin fisheries, management season has been set from 1 August to 31 July of the following year for Dall's porpoise fisheries, and from 1 October to 30 September of the following 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 following year. The statistics on dolphin fisheries covers catches of the calendar year (1 January to 31 December), while FAJ manages dolphin fisheries by their own fishing season aforementioned. Thus, in some cases, catches aggregated by calendar year may exceed the seasonal (fishing yearly) catch in appearance, but the actual seasonal catch is below the allocated catch quota. Direct small cetacean catches are given in Table 5 in this section by prefecture and by 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 2020/2021 season was 4,137 animals for *dalli*-type Dall's porpoises, 4,398 for *truei*-type Dall's porpoises, 398 for Risso's dolphins, 374 for bottlenose dolphins, 329 for pantropical spotted dolphins, 521 for striped dolphins, 127 for southern form short-finned pilot whales, 91 for false killer whales, 260 for Pacific white-sided dolphins, 30 for rough-toothed dolphins, and 363 for melon-headed whales.

Corresponding operational months by prefecture in 2020 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 2020.

Species	Type of fishery	Prefecture <sup>1)</sup>	Total landed <sup>2)</sup>
Baird's beaked whale	Coastal base type whaling	Miyagi	10
		Chiba	9
<i>truei</i> -type Dall's porpoise	Hand harpoon	Iwate	925
		Miyagi	3
Pacific white-sided dolphin	Drive	Wakayama	15
Striped dolphin	Drive	Wakayama	373
Bottlenose dolphin	Hand harpoon	Wakayama	3
	Drive		135
	Hand harpoon	Okinawa	2
Pantropical spotted dolphin	Drive	Wakayama	76

Melon-headed whale	Drive	Wakayama	230
Risso's dolphin	Drive	Wakayama	167
Southern form short-finned pilot whale	Coastal base type whaling	Chiba	1
	Drive	Wakayama	14
	Hand harpoon	Okinawa	7

1) Catches by the coastal base type whaling and the drive fishery were recorded at the place of landing of products. Catches by the hand harpoon fishery were recorded at the place of registration of vessels.

2) Statistics of the coastal base type whaling are based on reports of researchers 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 fishermen cooperatives (other prefectures).

## 5.2 Non-natural mortality for the calendar year 2020

### 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 2020, 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 fishermen cooperatives.

Table 6. Fishery bycatch of small cetaceans in 2020.

Species	No. of animals	Location <sup>1)</sup>	Fate <sup>2)</sup>	Gear <sup>3)</sup>	Target fish species <sup>4)</sup>	Source or contact
<i>dalli</i> -type Dall's porpoise	2	Hokkaido	K	FPN	NA	FAJ
	1		R			
	2		K	GNS		
Finless porpoise	5	Mie	K	FPN		
	1			GNS		
	2	Osaka	K	FPN		
	1		K	GNS		
	1	Okayama	K	UN		
	1	Yamaguchi	D	UN		
	1	Ehime	K	GNS		
	1	Fukuoka	K	FPN		
	1	Saga	R	FPN		
	1	Nagasaki	K	GNS		
Long-beaked common dolphin	1	Osaka	K	UN		
	1	Miyazaki	A	FPN		
Stejneger's beaked whale	1	Hokkaido	K	FPN		

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 2020, are shown in Table 7. Species and figures are based on reports of prefecture governments to the FAJ, which compile information from individual fishermen, fishermen cooperatives or the general public. Number of postmortems in Table 7 indicate the numbers of dead animals when they stranded.

Table 7. Strandings of small cetaceans in 2020.

Species	No. strandings	No. postmortems	Contact person(s)/ Institute(s)
<i>dalli</i> -type Dall's porpoise	6	6	FAJ
Harbor porpoise	17	17	
Finless porpoise	242	242	
Pacific white-sided dolphin	34	34	
Striped dolphin	56	56	
Long-beaked common dolphin	1	1	
Rough-toothed dolphin	3	3	
Bottlenose dolphin	12	12	
Indo-Pacific bottlenose dolphin	4	4	
F1 hybrid of bottlenose dolphin and Indo-Pacific bottlenose dolphin	1	0	
Risso's dolphin	5	5	
Short-finned pilot whale	1	0	
False killer whale	1	1	
Melon-headed whale	3	3	
Fraser's dolphin	1	1	
Killer whale	2	2	
White whale	1	1	
Baird's beaked whale	5	5	
Stejneger's beaked whale	4	4	
Longman's beaked whale	1	1	
Dwarf sperm whale	5	5	
Pygmy sperm whale	7	7	
Unidentified small cetaceans	29	29	

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 study nor analysis on small cetaceans was conducted during the fiscal year 2020 (April 2020 to March 2021).

## 7. LITERATURE CITED

None.

## 8. PUBLICATION ON SMALL CETACEANS

### 8.1 Published or In Press' papers only

- Kanaji, Y. 2021. Killer whale. The Current status of international fishery stocks. Fisheries Agency and Japan Fisheries Research and Education Agency. [http://kokushi.fra.go.jp/R02/R02\\_58\\_KIW.pdf](http://kokushi.fra.go.jp/R02/R02_58_KIW.pdf). 3pp. (in Japanese)
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### 8.2 Unpublished literature

None.