Japan's Scientific Progress report on Small Cetaceans in the fiscal year 2022(April 2022 to March 2023), with statistical data for the *calendar year* 2022

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This report summarizes statistical data on small cetacean fisheries in 2022（calendar year) as well as research conducted during the fiscal year 2022 (April 2022 to March 2023) by the Fisheries Resources Institute (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.

1. SPECIES AND STOCKS STUDIED

Common name	Scientific name	Area/stock(s)	Items referred to
Dall's porpoise	*Phocoenoides dalli*	Off Pacific coast, Okhotsk Sea and Japan Sea	2.1.1, 5.1, 5.2.2, 5.3, 8.1
Finless porpoise	*Neophocaena asiaeorientalis*	Coastal waters of Japan	5.2.2, 5.3, 8.1
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	Off Pacific coast, and Japan Sea	2.1.1, 4.1, 5.1, 5.2.2, 5.3
Striped dolphin	*Stenella coeruleoalba*	Off Pacific coast	2.1.1, 2.1.2, 4.2, 4.4, 5.1, 5.3
Pantropical spotted dolphin	*Stenella attenuate*	Off Pacific coast	2.1.1, 5.1, 5.3
Bottlenose dolphin	*Tursiops truncates*	Off Pacific coast and East China Sea	2.1.1, 2.1.2, 2.2, 3.1.1, 3.1.2, 3.1.3, 3.2, 4.2, 4.4, 5.1, 5.3
Rough-toothed dolphin	*Steno bredanensis*	Off Pacific coast	5.1, 5.3
Melon-headed whale	*Peponocephala electra*	Off Pacific coast	2.1.2, 4.2, 4.3, 4.4, 5.1, 5.3
Risso's dolphin	*Grampus griseus*	Off pacific coast and Japan Sea	2.1.1, 2.1.2, 4.2, 4.4, 5.1, 5.2.2, 5.3
Short-finned pilot whale	*Globicephala macrorhynchus*	Off pacific coast and East China Sea	2.1.1, 2.1.2, 4.1, 4.2, 4.4, 5.1, 5.3
False killer whale	*Pseudorca crassidens*	Off Pacific coast	4.2, 5.1, 5.3
Killer whale	*Orcinus orca*	Off Pacific coast	5.3, 8.1
Baird's beaked whale	*Berardius bairdii*	Off Pacific coast, Okhotsk Sea and Okhotsk Sea	2.1.1, 2.1.2, 2.2, 3.1.3, 3.2, 4.1, 4.2, 4.4, 5.1, 5.3, 8.1
Additional species	-	Around Japan, others	5.2.2, 5.3

2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic

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

The 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 2022 (April 2022 to March 2023).

Species	Date	Area	No. of sightings	Contact institute
Baird's beaked whale	13/06/22-29/07/22	Pacific	27	FRI
	26/09/22-20/10/22		6	
Bottlenose dolphin	13/06/22-29/07/22		2	
	26/09/22-20/10/22		4	
Pantropical spotted dolphin	13/06/22-29/07/22		5	
Striped dolphin	13/06/22-29/07/22		8	
Short-beaked common dolphin	13/06/22-29/07/22		14	
Pacific white-sided dolphin	13/06/22-29/07/22		16	
Dall's porpoise	13/06/22-29/07/22		42	
	26/09/22-20/10/22		4	
Risso's dolphin	13/06/22-29/07/22		32	
Southern form Short-finned pilot whale	13/06/22-29/07/22		4	
Northern form Short-finned pilot whale	26/09/22-20/10/22		5	
Cuvier's beaked whale	13/06/22-29/07/22		6	
Stejneger's beaked whale.	13/06/22-29/07/22		1	
Dwarf sperm whale	13/06/22-29/07/22		1	

"No. of sightings" indicates the numbers of schools sighted. These sightings were made during the sighting survey for Baird's beaked whale conducted in Pacific (from 13 June to 29 July 2022) and the sighting survey for Northern form Short-finned pilot whale (from 26 September to 20 October 2022), using the research vessel Kaiyo-maru No.7.

2.1.2 Opportunistic, platforms of opportunity

Opportunistic sighting data have been collected during coastal base type whaling (renamed from "small-type whaling" due to the amendment 2.1.1of the Fishery Act on December 1st, 2020, hereafter coastal base type whaling) and dolphin fishery operations. The data 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 melon-headed whale).

2.2 Analyses/development of techniques

Kanaji and Sasaki have estimated abundance trends for fishery-targeted cetacean species (e.g. common bottlenose dolphin) and rarely-seen species (e.g. pygmy killer whale) using the data from shipboard sighting survey in 2019-2021 and published abundance estimates.

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 and submitted.

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data

Photo-identification for bottlenose dolphins driven in Taiji-based fishing boats was conducted. These photos were matched with those taken during the dedicated sighting surveys.

3.1.2 Artificial marking data

With the cooperation of the Taiji Whale Museum, and the Mie University, FRI attached plastic tags to the dorsal fins of two southern forms of short-finned pilot whales and 11 common bottlenose dolphins caught by the Taiji dolphin drive fishery.

3.1.3 Telemetry data

Under the joint project among NRIFSF (or FRI), the Taiji Whale Museum and the Mie University, a satellite tag (SPOT tag, Wildlife Computers) was attached to the dorsal fin of three bottlenose dolphins in November 2022, January, and February 2023. After released to the sea, their movements were tracked up to 53, 70, and 46 days, respectively. During the ship survey conducted in the summery of 2022, pop-up archival tags (MiniPAT, Wildlife Computers Ltd.) was attached on the body of two bottlenose dolphins in July. Data was obtained during 7days from one bottlenose dolphin.

3.2 Analyses/development of techniques

Kanaji and Sasaki has analyzed the movement ranges of common bottlenose dolphins and those relationship with environmental variations along Kuroshio current. Those results were published as Kanaji et al. (2022).

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

4.1 Biopsy samples

The FRI collected each one biopsy samples from Southern and Northern form short-finned pilot whales and two pacific white-sided dolphins during the fiscal year 2022 (April 2022 to March 2023).

4.2 Samples from directed catches or bycatches

The national quota of Baird's beaked whales for the mentioned period was 76 animals for the coastal base type whaling (includes 10 animal carryover from the last year's quota). Whaling operation was conducted from 3 April to 10 April and from 2 August to 13 September at the land station in Wadaura on the Pacific coast, and from 30 July to 19 November 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 24 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 small-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 Wadaura land stations. No pilot whales were encountered during the operation at the Wadaura land station. 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 from 1 September to 29 September 2022, from 10 November to 25 December 2022, and from 5 January to 28 February 2023. They examined 13 southern form short-finned pilot whales, 231 melon-headed whales, and 137 striped dolphins, 97 Risso's and 38 bottlenose dolphins.

Of the individuals surveyed, the samples obtained from the base type whaling and the drive fishery at Taiji during the period of April 2022 to March 2023 are shown in Table 4.

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 2022 season. These samples will be sent to FRI for age determination and genetic examinations.

Table 4. Samples collected from small cetaceans caught by the small-type whaling and driven fishery during the fiscal year 2021 (April 2021 to March 2022).

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	24	Y	NRIFSF (FRI)
Southern form short-finned pilot whale	Western North Pacific	To, Ma, O, U, Te, and sk	13	Y	
Bottlenose dolphin	Western North Pacific	To, Ma, O, U, Te, C, and sk	38	Y	
Risso's dolphin	Western North Pacific	To, Ma, O, U, Te, C, and sk	97	Y	
Striped dolphin	Western North Pacific	To, Ma, O, U, Te, C, and sk	137	Y	
Melon-headed whale	Western North Pacific	To, Ma, O, U, Te, C, and sk	231	Y	

E: epidydymis, 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 NRIFSF/FRA was not conducted during the fiscal year 2022 (April 2022 to March 2023).

4.4 Analyses/development of techniques

Maeda determined ages of a total of 198 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 84 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 152 animals (Melon-headed whales and bottlenose and Risso's dolphins) taken by drive fishery at Taiji, for studies on sexual maturity.

Yoshida conducted SNPs analysis, to advance the stock structure study of small cetaceans around Japan.

5. STATISTICS FOR SMALL CETACEANS

5.1 For the calendar year 2022

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 2022/2023 season was 4,137 animals for *dalli*-type Dall's porpoises, 4,398 for *truei*-type Dall's porpoises, 398 for Risso's dolphins, 350 for bottlenose dolphins, 329 for pantropical

spotted dolphins, 521 for striped dolphins, 127 for southern form short-finned pilot whales , 63 for false killer whales, 234 for Pacific white-sided dolphins, 30 for rough-toothed dolphins, and 363 for melon-headed whales.

Corresponding operational months by prefecture in 2021 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 2022.

Species	Type of fishery	Prefecture[1)]	Total landed[2)]
Baird's beaked whale	Coastal base type whaling	Miyagi	17
		Chiba	7
dalli-type Dall' porpoise	Hand harpoon	Iwate	3
		Miyagi	1
truei-type Dall' porpoise	Hand harpoon	Iwate	669
		Miyagi	10
Striped dolphin	Drive	Wakayama	178
Bottlenose dolphin	Hand harpoon	Wakayama	0
	Drive		70
	Hand harpoon	Okinawa	1
Melon-headed whale	Drive	Wakayama	148
Risso's dolphin	Drive	Wakayama	159
Southern form short-finned pilot whale	Drive	Wakayama	13
	Hand harpoon	Okinawa	8

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 2021

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 2022, 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 2022.

Species	No. of animals	Location[1)]	Fate[2)]	Gear[3)]	Target fish species[4)]	Source or contact

Harbor porpoise	3	Hokkaido	K	FPN	NA	FAJ
	2		R	FPN		
dalli-type Dall's porpoise	1	Hokkaido	K	FPN		
Finless porpoise	1	Aichi	K	MIS		
	2	Osaka	K	MIS		
	2	Hiroshima	K	GNS		
	12	Kagawa	Unknown*	FPN		
	1	Nagasaki	K	MIS		
	1	Oita	K	GNS		
Risso's dolphin	12	Wakayama	R	FPN		
Pacific white-sided dolphin	1	Hokkaido	K	FPN		

1) Recorded at the place of fishing gears.

2) Fate of whale: D = discarded dead or seriously injured, K = (use or possession for academic purposes), 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

* D, R either

5.3 Strandings of small cetaceans

Provisional figures for strandings of small cetaceans in Japan, for the period January-December 2022, 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 2022.

Species	No. strandings	No. postmortems	Contact person(s)/ Institute(s)
dalli-type Dall's porpoise	11	11	FAJ
Harbor porpoise	10	10	
Finless porpoise	114	114	
Pacific white-sided dolphin	28	28	
Striped dolphin	37	36	
Pantropical spotted dolphin	1	1	
Common dolphin*	5	5	
Rough-toothed dolphin	1	1	
Bottlenose dolphin	3	3	
Indo-Pacific bottlenose dolphin	2	2	
Fraser's dolphin	1	1	
Risso's dolphin	12	12	
Killer whale	2	2	

Short-finned pilot whale	2	2	
False killer whale	1	1	
Melon-headed whale	1	1	
Pygmy killer whale	2	2	
Cuvier's beaked whale	3	3	
Stejneger's beaked whale	1	1	
Blainville's beaked whale	1	1	
Longman's beaked whale	1	1	
Dwarf sperm whale	1	1	
Pygmy sperm whale	7	6	
Unidentified small cetacean	11	11	

*Includes those formerly classified as long-beaked common dolphin.

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 2022 (April 2022 to March 2023).

7. LITERATURE CITED

None.

8. PUBLICATION ON SMALL CETACEANS

8.1 Published or In Press' papers only

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8.2 Unpublished literature

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