

Japan's Scientific Progress report on Small Cetaceans in the fiscal year 2023(April 2023 to March 2024), with statistical data for the *calendar year 2023*

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This report summarizes statistical data on small cetacean fisheries in 2023 (calendar year) as well as research conducted during the fiscal year 2023 (April 2023 to March 2024) by the Fisheries Resources Institute (hereafter FRI) of the Japan Fisheries Research and Education Agency 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 STUDIED

Common name	Scientific name	Area/stock(s)
Dall's porpoise	<i>Phocoenoides dalli</i>	Off Pacific coast, Okhotsk Sea and Japan Sea
Finless porpoise	<i>Neophocaena asiaeorientalis</i>	Coastal waters of Japan
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	Off Pacific coast, and Japan Sea
Striped dolphin	<i>Stenella coeruleoalba</i>	Off Pacific coast
Pantropical spotted dolphin	<i>Stenella attenuate</i>	Off Pacific coast
Bottlenose dolphin	<i>Tursiops truncatus</i>	Off Pacific coast and East China Sea
Rough-toothed dolphin	<i>Steno bredanensis</i>	Off Pacific coast
Melon-headed whale	<i>Peponocephala electra</i>	Off Pacific coast
Risso's dolphin	<i>Grampus griseus</i>	Off Pacific coast and Japan Sea
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Off Pacific coast and East China Sea
False killer whale	<i>Pseudorca crassidens</i>	Off Pacific coast
Killer whale	<i>Orcinus orca</i>	Off Pacific coast
Baird's beaked whale	<i>Berardius bairdii</i>	Off Pacific coast, Okhotsk Sea and Okhotsk Sea
Other species	-	Around Japan, others

2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic sighting survey

The FRI and FAJ conducted a dedicated shipboard sighting survey in the North Pacific and the southern Sea of Okhotsk, using a research vessel with a top barrel. During the survey, the small cetaceans shown in Table 1 were sighted.

Table 1. Small cetaceans sighted in the dedicated shipboard survey conducted during the fiscal year 2023 (April 2023 to March 2024).

Species	Date	Area	No. of sightings	Contact institute	
Baird's beaked whale	09/06/23-25/07/23	Pacific the southern Sea of Okhotsk	22	FRI	
	10/10/23-30/10/23		6		
Pacific white-sided dolphin	09/06/23-25/07/23		17		
	10/10/23-30/10/23		15		
Dall's porpoise	09/06/23-25/07/23		59		
	10/10/23-30/10/23		60		
Bottlenose dolphin	09/06/23-25/07/23		Pacific		5
Pantropical spotted dolphin			6		
Striped dolphin			21		
Short-beaked common dolphin			8		
Rough-toothed dolphin			5		
Spinner dolphin			1		
Risso's dolphin			13		
False killer whale			1		
Southern form of short-finned pilot whale (<i>Magondo</i>)		24			
Northern form of short-finned pilot whale (<i>Tappanaga</i>)		25			
Cuvier's beaked whale		66			

"No. of sightings" indicates the numbers of schools sighted. These sightings were made during the sighting survey for Baird's beaked whale conducted in the Pacific (from 9 June to 25 July 2023) and the southern Sea of Okhotsk (from 10 to 30 October 2023), 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 2.1.1 of 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 the 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 and published these results in Kanaji et al. (2023).

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 published these results in Sasaki et al. (2023)

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 5 common bottlenose dolphins caught by the Taiji dolphin drive fishery.

3.1.3 Telemetry data

Under the joint project among 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 September and October 2023. After released to the sea, their movements were tracked up to 100, 6, and 8 days, respectively.

3.2 Analyses/development of techniques

None.

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

4.1 Biopsy samples

The FRI collected each one biopsy samples from pacific white-sided dolphin, pantropical spotted dolphin, bottlenose dolphin, striped dolphin and two short-beaked common dolphins in the fiscal year 2023 (April 2023 to March 2024).

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 up to 10 animals of carryover from the last year's quota). Whaling operation was conducted from 15 June to 4 July at land station in Hachinohe facing the Sea of Japan, from 13 July to 20 August and from 25 October to 9 November at the land station in Wadoura on the Pacific coast, and from 24 June to 18 August and from 25 October to 23 November at the land station in Ayukawa on the Pacific coast. The operation at the Okhotsk coast was not conducted. A total of 28 Baird's beaked whales (ten off the Sea of Japan coast, eighteen 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 targeted for biological samplings, which were conducted by two researchers.

The national quota of northern form of short-finned pilot whales (*Tappanaga*) for small-type whaling was 36 animals. During the operation for common minke whales off Sanriku coast, catcher boats encountered northern form of short-finned pilot whales, but no whales were caught because fishermen prioritized operation for common minke whales. The national quota of 33 southern form of short-finned pilot whales (*Magondo*) was set

for the coastal base type whaling at the Taiji and Wadoura land stations. No pilot whales were encountered during the operation at the Wadoura land station. The operation at the Taiji station was conducted from 18 August to 20 August, but no false killer whales (20 animals of annual quotas) and southern form of short-finned pilot whales were 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 2023, from 10 November to 25 December 2023, and from 5 January to 28 February 2024. They examined 59 melon-headed whales, and 215 striped dolphins, 80 Risso's and 10 bottlenose dolphins.

Of the individuals surveyed, the samples obtained from the coastal base type whaling and the drive fishery at Taiji during the period of April 2023 to March 2024 are shown in Table 2.

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 2023 season. These samples will be sent to FRI for age determination and genetic examinations.

Table 2. Samples collected from small cetaceans caught by the small-type whaling and driven fishery during the fiscal year 2023 (April 2023 to March 2024).

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	28	Y	FRI
Bottlenose dolphin	Western North Pacific	To, Ma, O, U, Te, C, and Sk	10	Y	
Risso's dolphin	Western North Pacific	To, Ma, O, U, Te, C, and Sk	80	Y	
Striped dolphin	Western North Pacific	To, Ma, O, U, Te, C, and Sk	215	Y	
Melon-headed whale	Western North Pacific	To, Ma, O, U, Te, C, and Sk	59	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 FRI was not conducted during the fiscal year 2023 (April 2023 to March 2024).

4.4 Analyses/development of techniques

Maeda determined ages of a total of 212 animals (southern form of 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 108 animals (southern form of 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 185 animals (Melon-headed whales and bottlenose and Risso's dolphins) taken by drive fishery at Taiji, for studies on sexual maturity.

Maeda conducted analysis of the life history for small cetaceans around Japan using age and maturity information.

5. STATISTICS FOR SMALL CETACEANS

5.1 For the calendar year 2023

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 3 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 2023/2023 season was 4,137 animals for *dalli*-type Dall's porpoises, 4,398 for *truei*-type Dall's porpoises, 398 for Risso's dolphins, 320 for bottlenose dolphins, 329 for pantropical spotted dolphins, 521 for striped dolphins, 127 for southern form of 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 2023 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 3. Direct catch of small cetacean in 2022.

Species	Type of fishery	Prefecture ¹⁾	Total landed ²⁾
Baird's beaked whale	Coastal base type whaling	Aomori	10
		Miyagi	10
		Chiba	8
<i>Dalli</i> -type of Dall' porpoise	Hand harpoon	Iwate	109
Striped dolphin	Drive	Wakayama	237
Bottlenose dolphin	Drive	Wakayama	41
Risso's dolphin	Drive	Wakayama	121
Melon-headed whale	Drive	Wakayama	93
Southern form of short-finned pilot whale (<i>Magondo</i>)	Hand harpoon	Okinawa	11
Bottlenose dolphin	Hand harpoon	Okinawa	1
Melon-headed whale	Hand harpoon	Okinawa	1

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 2023

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 2023, are shown in Table 4. Species and figures are based on the reports of prefecture governments to the FAJ, which are reports from individual fishermen or fishermen cooperatives.

Table 4. Fishery bycatch of small cetaceans in 2023.

Species	No. of animals	Location ¹⁾	Fate ²⁾	Gear ³⁾	Target fish species ⁴⁾	Source or contact
Pacific white-sided dolphin	1	Hokkaido	K	FPN	NA	FAJ
Melon-headed whale	4	Wakayama	R	FPN		
Short-beaked common dolphin	1	Oita	K	FPN		
Finless porpoise	1	Chiba	D	FPN		
	2	Osaka	K	GNS		
	1	Okayama	K	MIS		
	2	Hiroshima	D	GNS		
	1	Oita	K	GNS		

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 2023, are shown in Table 5. 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 5 indicate the numbers of dead animals when they stranded.

Table 5. Strandings of small cetaceans in 2023.

Species	No. strandings	No. postmortems	Contact person(s)/ Institute(s)
Pygmy sperm whales	7	7	FAJ
Dwarf sperm whales	1	1	
Baird's beaked whale	1	1	
Stejneger's Beaked Whale	1	1	
Blainville's Beaked Whale	1	1	
Hubbs' Beaked Whale	2	2	
False killer whale	1	1	
Shortbeaked common dolphin	1	1	
Bottlenose dolphin	8	8	
Risso's dolphin	11	11	
Striped dolphin	25	25	
Long-beaked common dolphin	2	2	

Pacific white-sided dolphin	41	38
Rough-toothed dolphin	3	2
Pygmy killer whale	1	1
Melon-headed whale	36	36
Harbor porpoise	7	7
<i>Dalli</i> -type of Dall's porpoise	9	9
<i>Truei</i> -type of Dall's porpoise	1	1
Finless porpoise	178	178

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.

7. LITERATURE CITED

None.

8. PUBLICATION ON SMALL CETACEANS

8.1 Published or In Press' papers only

- Kanaji, Y. 2024. Killer whale. The Current status of international fishery stocks. Fisheries Agency and Japan Fisheries Research and Education Agency. https://kokushi.fra.go.jp/R05/R05_57_KIW.pdf. 3pp. (in Japanese)
- Kanaji, Y. 2024. Dall's porpoise. The Current status of international fishery stocks. Fisheries Agency and Japan Fisheries Research and Education Agency. https://kokushi.fra.go.jp/R05/R05_49_PDA. 5pp. (in Japanese)
- Kanaji, Y., Sasaki, H., Hakamada, T., Okamura, H. 2023. Hierarchical modelling approach to estimate the abundance of data-limited cetacean species and its application to fishery-targeted and rarely seen delphinid species off Japan. *ICES Journal of Marine Science*, 80: 1643-1657
- Maeda, H. 2024. Baird's beaked whale, *Berardius bairdii*, Sea of Japan, Sea of Okhotsk and Pacific Ocean. The Current status of international fishery stocks. Fisheries Agency and Fisheries Research Agency. https://kokushi.fra.go.jp/R05/R05_50_BEW.pdf. 7pp. (in Japanese)
- Minamikawa, S. 2024. Fisheries and research on small cetaceans (review). The Current status of international fishery stocks. Fisheries Agency and Japan Fisheries Research and Education Agency. https://kokushi.fra.go.jp/R05/R05_48_whalesS-R.pdf. 4pp. (in Japanese)
- Minamikawa, S. 2024. Narrow-ridged finless porpoise. The Current status of international fishery stocks. Fisheries Agency and Japan Fisheries Research and Education Agency. https://kokushi.fra.go.jp/R05/R05_56_PFI.pdf. 6pp. (in Japanese)
- Sasaki, H., Kanaji, Y., Hakamada, T., Matsuoka, K., Miyashita, T., Minamikawa, S. 2023. Estimating the abundance of Baird's beaked whales in waters off the Pacific coast of Japan using line transect data (2008–2017). *Fisheries Science* 89: 439-447

8.2 Unpublished literature

- Kanaji, Y., Kobayashi, N., Kobayashi, H., Hattori, K., Maeda, H. 2023. Conservation and management of cetaceans: inspired from local, small scale, but long-term observations. 2023 Annual Meeting of the Mammal Society of Japan. Program and abstract book. p. 49. (in Japanese)
- Kanaji, Y., Maeda, H., Sasaki, H. 2023. Abundance estimates and those recent trends of northern form of short-finned pilot whales (*Tappanaga*). 2023 Annual Meeting of Japanese Society of Fisheries Oceanography. Program and abstract book. p. 83.
- Kanaji, Y. 2023. (7) Cetacean distribution in relation to Kuroshio path patterns. Symposium “interaction among marine mammals, fisheries, and marine ecosystems”. Abstract book. (in Japanese)
- Kanaji, Y., Maeda, H., Sasaki, H., Okamura, H. 2023. Challenges to monitor cetacean abundances in changing ocean environment. PICES-2023 Annual Meeting. Book of abstract. p. 218.
- Maeda, H., Kanaji, Y., Okamura, H. 2023. Improving population dynamics modellings for small cetaceans in the western North Pacific with biological information. PICES-2023 Annual Meeting. Book of abstract. p. 219.
- Sasaki, H., 2023. The long-term monitoring for the abundance of whale: Case study of Baird’s beaked whales. Symposium “interaction among marine mammals, fisheries, and marine ecosystems”. Abstract book. (in Japanese).