

Review of the Live-Capture of Small Cetaceans in Japan

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ABSTRACT

In 1982, 27 aquaria kept live toothed whales for public display in Japan. In the last 10 years, a total 1,135 individuals from 16 odontocete species were collected in Japanese waters for aquaria. These were mainly *Tursiops truncatus* (49%), *Lagenorhynchus obliquidens* (21%), *Neophocaena phocaenoides* (6%), *Stenella attenuata* (6%), *Globicephala macrorhynchus* (6%), *Tursiops cf. aduncus* (5%) and *Grampus griseus* (4%). The animals were obtained either by live-capture by aquaria, incidental catches, strandings, or drive fisheries.

INTRODUCTION

The exhibition of live dolphins in Japanese aquaria began in 1930 (Matsui, unpub.) and the number of such aquaria steadily increased, reaching 27 in 1982 (Table 1). The number and species of animals held in these aquaria are recorded independently by each of them and have been left unpublished. In this paper we summarise the available information.

Table 1

Number of Japanese aquaria with live cetaceans.

Year	No. aquaria	Year	No. aquaria
1960	2	1975	16
1965	5	1980	26
1970	13	1982	27

MATERIALS

The Japanese live-capture data were collected personally by the authors with the co-operation of Okinawa Aquarium, Himeji Municipal Aquarium, Matsushima Aquarium, Minamichita Beach Land, Miyajima Aquarium, Nagasaki Prefectural Government and Toba Aquarium. The data coverage varies by species and region. Data for the finless porpoise (*Neophocaena phocaenoides*) in Ise Bay are complete from 1963 and those for the Inland Sea are complete from 1966. Records of dolphins supplied from Taiji and adjacent areas have been kept since 1969, but for the remaining areas they have been kept only since 1973. Therefore the complete record for all species is only available for the most recent 10 years.

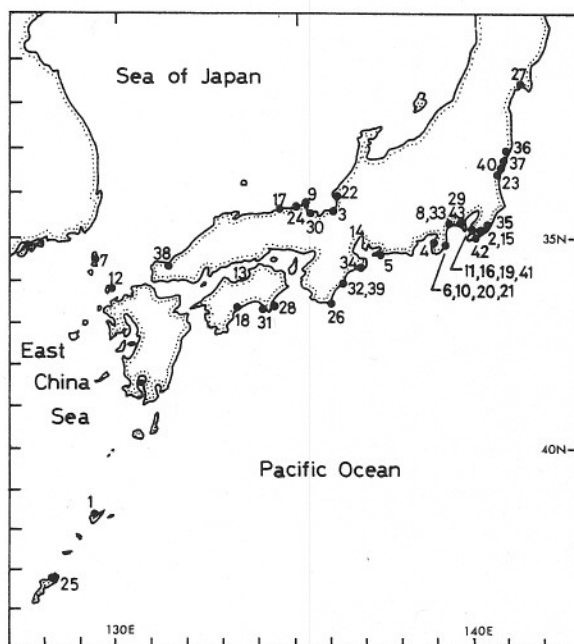


Fig. 1. Map showing the position of live capture of small cetaceans in Japan. 1: Amami. 2: Amatsu. 3: Amino. 4: Arari. 5: Atsumi. 6: Futo. 7: Goto. 8: Hiratsuka. 9: Hiyoriyama. 10: Hokkawa. 11: Hota. 12: Iki. 13: Inland Sea. 14: Ise Bay. 15: Kamogawa. 16: Kanaya. 17: Kasumi. 18: Katsurahama. 19: Katsuyama. 20: Kawana. 21: Kawazu. 22: Koshidori. 23: Kuji. 24: Kumihama. 25: Kunigami. 26: Kushimoto. 27: Matsushima. 28: Mitsu. 29: Miura (close to Nagai). 30: Miyazu. 31: Muroto. 32: Nachi. 33: Nagai. 34: Nanto. 35: Ohara. 36: Onahama. 37: Otsu. 38: Senzaki. 39: Taiji. 40: Takahagi. 41: Takeoka. 42: Wada. 43: Yokosuka.

Table 2

Sources of live dolphins for aquaria in Japan.

Year	1963-67			1968-72			1973-76			1977-80			1981-82			1973-82
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
<i>Neophocaena phocaenoides</i>	8	0	0	15	0	0	4	0	24	4	0	2	13	0	24	71
<i>Phocoena phocoena</i>	—	—	—	—	—	—	1	0	0	0	0	0	0	0	0	1
<i>Phocoenoides dalli</i>	—	—	—	—	—	—	0	0	0	0	0	0	0	0	8	8
<i>Tursiops truncatus</i>	—	—	—	4	77	14	14	181	4	3	264	1	3	87	0	557
<i>Tursiops cf. aduncus</i>	0	0	0	0	0	0	0	0	58	0	0	0	0	0	0	58
<i>Lagenorhynchus obliquidens</i>	—	—	—	—	—	—	29	10	8	27	9	9	40	84	22	238
<i>Stenella attenuata</i>	—	—	—	—	—	—	0	69	0	0	0	0	0	0	0	69
<i>Steno bredanensis</i>	—	—	—	—	—	—	0	5	0	0	0	0	0	0	0	5
<i>Peponocephala electra</i>	—	—	—	—	—	—	0	0	0	0	2	0	0	0	0	2
<i>Globicephala macrorhynchus</i>	0	0	0	0	83	0	0	24	0	0	34	0	0	16	0	64
<i>Grampus griseus</i>	—	—	—	0	6	0	6	19	0	3	13	0	0	3	0	44
<i>Orcinus orca</i>	—	—	—	—	—	—	0	0	0	0	6	0	0	3	0	9
<i>Pseudorca crassidens</i>	—	—	—	—	—	—	0	0	0	2	3	0	0	0	0	5
<i>Delphinapterus leucas</i>	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
<i>Kogia</i> spp.	—	—	—	—	—	—	1	0	0	1	0	0	0	0	0	2
<i>Mesoplodon ginkgodens</i>	—	—	—	—	—	—	0	0	0	0	0	0	1	0	0	1

Sources: A: from incidental catch; B: from catch by dolphin fishery; C: catch by aquarium or fishermen chartered by it.

Table 3

Removals of the bottlenose dolphin, *Tursiops truncatus*, Pacific coast of Japan and entire Okinawa.

Date	Number of animals				Location
	C	A	R	K	
1970					
May	3	3	0	0	Taiji
June	6	6	0	0	Taiji
July	8	8	0	0	Taiji
Sept.	106	74	7	25	Taiji
Total	124	91	7	25	
1972					
Mar.	4	4	0	0	Taiji
1973					
Jan.	3	3	0	0	Mitsu
Jan.	ca 80	22	—	—	Arari
Oct.	3	3	0	0	Muroto
Nov.	2	2	0	0	Muroto
Dec.	2	2	0	0	Muroto
Dec.	2	2	0	0	Katsurahama
Total	92	34	—	—	
1974					
Jan.	1	1	0	0	Muroto
Oct.	ca 70	54	—	—	Kawana
Dec.	1	1	0	0	Katsurahama
Total	72	56	—	—	
1975					
Feb.	14	11	0	3	Taiji
May	ca 300	63	ca 240	0	Taiji
Total	314	74	240	3	
1976					
Jan.	6	4	2	0	Kamogawa
Feb.	—	3	—	0	Taiji
Oct.	60	18+	—	—	Kawana
Total	66+	25+	2+	—	
1977					
Feb.	—	6	—	0	Taiji
Oct.	1	1	0	0	Katsurahama
Total	7+	7	—	0	

Data coverage: from May 1970 to Dec. 1982 for Taiji, and from Jan. 1973 to Dec. 1982 for other regions C = Captured, A = to Aquaria, R = Released, K = Killed.

Table 3 (continued).

Date	Number of animals			
	captured	sent to aquaria	released	killed
1978				
Jan.	10	1	—	—
Jan.	—	15	—	0
May	1	1	0	0
May	—	34	—	0
Oct.	25	10+	—	—
Nov.	—	32	—	0
Total	116+	93+	—	—
1979				
Mar.	—	11	—	0
Dec.	—	43	—	0
Total	54+	54	—	0
1980				
Jan.	61	18	43	0
Feb.	23+	14	19+	0
June	ca 40	11	ca 30	0
Nov.	1	1	0	0
Nov.	30	20	10	0
Total	155+	64	102	0
1981				
Feb.	ca 130	13	0	ca 115
Apr.	ca 30	4	0	ca 25
Oct.	42	12	0	30
Total	202	29	0	170
1982				
Jan.	ca 169	17	0	ca 157
Mar.	30	3	0	27
Apr.	ca 190	27	0	ca 164
Dec.	12	3	0	9
Total	401	50	0	357

RESULTS

Tursiops truncatus, Tables 2, 3 and 4.

This species is the most common in Japanese aquaria. The display animals have mainly been taken off the middle and southern part of the Pacific coast of Japan. A smaller number were obtained from the Iki Island area in the

southern Sea of Japan. Most of the animals were supplied by drive fisheries and, particularly in recent years, catches by the aquaria themselves have been rare. The annual numbers of live dolphins sent to aquaria have ranged between 24 and 100 (mean 56) in the last 10 years.

Before 1976, removals of this species by drive fisheries were small, since the remaining animals were usually released after aquarium specimens had been selected. In recent years, however, the fishermen have started to take the species, either for meat (at Taiji since 1981) or as the result of a dolphin-fishery conflict (Iki, since 1977). Therefore the current removals of this species for aquaria are only a limited fraction of the total removals in Japan, which have exceeded 300 per year in the last five years (Japanese Progress Reports to the IWC¹; Miyazaki, 1983; Kasuya, in press). Some live specimens have been exported to Hong Kong and Belgium.

Table 4

Removals of the bottlenose dolphin, *Tursiops truncatus*, in Japan, coast of East China Sea and Sea of Japan.

Date	Number of animals				Location
	C	A	R	K	
1976					
Dec.	240	10	0	230	Goto I.
1977					
—	908	24	0	884	Katsumoto
1978					
—	949	6	0	943	Katsumoto
1979					
—	541	10	0	531	Katsumoto
1980					
—	1,855	9	0	1,846	Katsumoto
Dec.	1	1	0	0	Kumihama
Total	1,856	10	0	1,846	
1982					
—	157	8	0	149	Katsumoto
Apr.	3	3	0	0	Kumihama
Total	160	11	0	149	

C = Captured, A = To Aquaria, R = Released, K = Killed.

***Tursiops cf. aduncus*, Tables 2 and 5**

At Amami Island (28°30'N, 129°30'E) in southern Japan, the Okinawa Aquarium carried out a total of eight drives in 1974 and 1975, taking 58 individuals of this species. No live-captures have been recorded since then.

***Lagenorhynchus obliquidens*, Tables 2, 6 and 7**

This species has been caught off the central part of the Pacific coast of Japan and the southern coast of the Sea of Japan. The behaviour of this species renders attempts at capture by drive fisheries unsuccessful, although small numbers have been obtained by this method. Most of the live specimens were obtained by the aquaria themselves using hoop nets, or from incidental catches of other

¹ These are published each year in *Rep. int. Whal. Commn* and have included catch statistics on small cetaceans since the 31st volume published in 1981.

Table 5

Live-capture of *Tursiops cf. aduncus* in Japan for the Okinawa Aquarium.

Date	Number of animals				Location
	C	A	R	K	
1974					
Mar.	20	20	0	0	Amami
June	13	13	0	0	Amami
Total	22	33	0	0	
1975					
May	25	25	0	0	Amami

C = Captured, A = To Aquaria,
R = Released, K = Killed.

Table 6

Live-capture of the Pacific white-sided dolphin, *Lagenorhynchus obliquidens*, Pacific coast of Japan and entire Okinawa.

Date	Number of animals				Location
	C	A	R	K	
1973					
May	3	3	0	0	Ise Bay
June	5	5	0	0	Onahama
June	5	5	0	0	Otsu
Total	13	13	0	0	
1974					
Mar.	2	2	0	0	Nachi
1975					
Feb.	1	1	0	0	Kanaya
Apr.	1	1	0	0	Wada
May	4	1	—	—	Hota
Total	6	3	—	—	
1976					
Mar.	1	1	0	0	Taiji
Mar.	1	1	0	0	Nagai
Mar.	2	2	0	0	Yokosuka
Apr.	4	4	0	0	Wada
June	3	1	—	—	Kamogawa
Total	11	9	—	—	
1977					
Mar.	6	1	—	—	Ohara
1978					
Feb.	4	4	0	0	Kawana
Mar.	1	1	0	0	Taiji
Mar.	19	9	—	—	Amatsu
Total	24	14	—	—	
1979					
Mar.	4	4	0	0	Kamogawa
Feb.	6	6	0	0	Taiji
1980					
May	—	4	—	—	Takahagi
Total	10+	10	—	—	
1981					
Feb.	2	2	0	0	Taiji
Mar.	ca 15	12	—	—	Taiji
Mar.	10	10	0	0	Kuji
Apr.	17	17	0	0	Takahagi
Oct.	20	1	0	0	Taiji
Nov.	ca 50	5	0	ca 45	Taiji
Nov.	1	1	0	0	Kawana
Dec.	11	6	—	—	Taiji
Total	126	54	—	—	
1982					
Feb.	—	1	—	—	Nanto

C = Captured, A = To Aquaria,
R = Released, K = Killed.

Table 7

Live-capture of the Pacific white-sided dolphin, *Lagenorhynchus obliquidens*, in Japan, coast of East China Sea and Sea of Japan.

Date	Number of animals				Location
	C	A	R	K	
1973					
Apr.	1	1	0	0	Koshidori
May	1	1	0	0	Koshidori
Total	2	1	0	0	
1974					
Feb.	10	10	0	0	Senzaki
1976					
Apr.	7	7	0	0	Miyazu*
May	1	1	0	0	Miyazu*
Total	8	8	0	0	
1977					
Apr.	3	3	0	0	Miyazu*
1979					
Feb.	9	7	—	—	Hiyoriyama
Feb.	333	3	0	330	Katsumoto
Feb.	—	1	—	—	Miyazu*
Mar.	—	2	—	—	Miyazu*
Total	—	13	—	—	
1980					
Apr.	2	2	0	0	Miyazu*
Total	2	2	0	0	
1981					
Feb.	—	5	—	—	Miyazu*
Mar.	—	14	—	—	Miyazu*
Apr.	—	2	—	—	Miyazu*
—	108	58	0	50	Iki
Total	108+	79	—	50+	
1982					
Mar.	—	1	—	—	Miyazu*
Apr.	10	10	0	0	Kasumi
June	—	1	—	—	Kumihama
Total	10+	12	—	—	

*: Operated by the Hiyoriyama Zoo. C = Captured, A = To Aquaria, R = Released, K = Killed.

fisheries (e.g. in set nets), with the exception of the Iki Island fishery which uses a large number of vessels and has recently caught considerable numbers (Kasuya, in press). In the last 10 years, 129 animals from the Pacific coast and 130 from the Sea of Japan and East China Sea coasts have been supplied to aquaria.

Phocoena phocoena, Tables 2 and 10

One animal (incidental catch) was used as an aquarium specimen.

Phocoenoides dalli, Tables 2 and 10

Eight live specimens were caught by a seine net operation.

Stenella attenuata, Tables 2 and 10

The drive fishery at Taiji supplied 69 live specimens for Japanese aquaria in 1973.

Steno bredanensis, Tables 2 and 10

Five live specimens from a school driven at Taiji were sent to an aquarium in 1974.

Peponocephala electra, Tables 2 and 10

Two live specimens from a school of about 200 animals driven at Taiji were sent to an aquarium in 1980.

Globicephala macrorhynchus, Tables 2 and 8

Live specimens of this species have been supplied by the drive fishery at Taiji. A few animals have been exported to Hong Kong. The fishery operated sporadically after 1969, until constant operations started in 1975 (Miyazaki, 1980). The annual mean number of live specimens taken for aquaria in the last 10 years is 6.3, only 2–3% of the mean annual catch of the species in the region (Japanese Progress Reports to the IWC).

Grampus griseus, Tables 2 and 10

In the last 10 years, 44 animals have been supplied to aquaria from live specimens obtained off the Pacific coast of central Japan and the southern Sea of Japan, either from incidental catches or drive fisheries.

Orcinus orca, Tables 2 and 10

Nine live specimens were caught by three drives at Taiji from 1979 to 1982.

Pseudorca crassidens, Tables 2 and 10

Three live specimens were obtained from incidental catches and drive fisheries off the Pacific coast and the southern Sea of Japan.

Table 8

Live-capture of the short-finned pilot whale, *Globicephala macrorhynchus*, at Taiji, Japan.

Date	Number of animals			
	Captured	Sent to aquaria	Released	Killed
July 1969	77	39	—	38
July 1970	18	18	0	0
Feb. 1971	—	10	—	—
May 1972	21	16	0	5
May 1973	31	6	0	25
June 1973	—	11	0	—
Total 1973	—	17	0	—
June 1974	—	3	—	—
May 1976	—	2	—	—
Aug. 1976	—	2	0	—
Total 1976	—	4	—	—
Sept. 1977	—	1	—	—
Jan. 1977	—	4	—	—
Feb. 1977	—	5	—	—
Total 1977	—	10	—	—
Jan. 1978	—	2	—	—
Mar. 1978	—	2	—	—
Dec. 1978	—	3	—	—
Total 1978	—	7	—	—
Jan. 1979	—	8	—	—
May 1979	—	3	—	—
Total 1979	—	11	—	—
Jan. 1980	14	3	0	11
Nov. 1980	25	3	0	22
Total 1980	39	6	0	33
Oct. 1981	ca 40	6	0	ca 34
June 1981	32	4	0	28
Total 1981	72	10	0	62
Jan. 1982	ca 30	4	0	26
Nov. 1982	28	2	0	26
Total 1982	58	6	0	52

***Delphinapterus leucas*, Tables 2 and 10**

One individual was caught alive incidentally in a set net off the southern coast of the Sea of Japan (35°N) and kept alive at the Hiyoriyama Aquarium for about one week.

***Kogia* spp., Tables 2 and 10**

Two stranded individuals were brought to aquaria.

***Neophocaena phocaenoides*, Tables 2 and 9**

Live specimens have usually come from Ise Bay and the Inland Sea of Japan, although a few have been from the Pacific coast of Japan south of Sendai Bay (38°20'N). Until 1972, live specimens were obtained from incidental catches. In 1973, the Toba aquarium began to collect its own specimens in Ise Bay using seine nets, and this method has been expanded to the Inland Sea.

Seventy-one animals (3–22 per year) have been taken in the last 10 years.

***Mesoplodon ginkgodens*, Tables 2 and 10**

One live specimen was taken from a stranding on the Pacific coast of Japan.

CONCLUSION

Of the 16 small cetacean species listed above, *T. truncatus* (557 individuals), *T. cf. aduncus* (58), *L. obliquidens* (238), *G. macrorhynchus* (63), *N. phocaenoides* (71) and *S. attenuata* (69) were the main species, with catches for each exceeding 50 over the last ten years. With the exception of *N. phocaenoides* and *T. cf. aduncus*, most of these live specimens were obtained from incidental catches or were from a very small portion of the drive fishery catches.

The species that are now most commonly taken intentionally for aquaria are *T. truncatus*, *N. phocaenoides* and *L. obliquidens*.

ACKNOWLEDGEMENTS

Toba Aquarium (Mr Furuta), Himeji Municipal Aquarium (Mr Kureha), Matsushima Aquarium (Mr Shinohara), Yashima Aquarium (Mr Manabe), Miyajima Aquarium

Table 9

Live-capture of the finless porpoise, *Neophocaena phocaenoides*, in Japan

Year	Number of animals				Location
	C	A	R	K	
1963	—	2	—	—	Ise Bay
1966	—	1	—	—	Ise Bay
1967	—	5	—	—	Ise Bay
1968	—	1	—	—	Inland Sea
1969	—	9	—	—	Ise Bay
1970	—	3	—	—	Ise Bay
1971	—	1	—	—	Inland Sea
1972	—	1	—	—	Ise Bay
1973	1	1	0	0	Ohara (Mar.)
1973	—	18	—	—	Ise Bay
1973, total	19+	19	—	—	
1974	6+	6	—	—	Ise Bay
1976	—	2	—	—	Inland Sea
1976	—	1	—	—	Ise Bay
1976, total	3+	3	—	—	
1977	—	1	—	—	Ise Bay
1978	1	1	0	0	Matsushima (Dec.)
1979	—	1	—	—	Inland Sea
1980	3+	3	—	—	Inland Sea
1981	—	8	—	—	Inland Sea
1981	—	14	6+	2+	Ise Bay
1981, total	31+	22	6+	2+	
1982	—	13	—	—	Inland Sea
1982	—	1	—	—	Kushimoto (Apr.)
1982	—	1	—	—	Atsumi (Dec.)
1982, total	15+	15	—	—	

C = Captured, A = To Aquaria, R = Released, K = Killed.

and Minamichita Beach Land (Mr Suzuki) offered their records of dolphins and porpoise for the present study. Dr S. Ohsumi and Dr N. Miyazaki critically read the manuscript. We would like to express our sincere thanks to all who helped us in the present study.

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[Table 10 is overleaf]