

# Grey Whales in the East Sea Area of Korea

BY  
KAZUHIRO MIZUE

## Introduction

Rhachianebtes goaucus is classified into a Suborder Mysticoceti but it is quite a different species from Balaenidae or Balaenopterynae. Apart from them, it forms a family Rhachianectes by itself. Due to its resemblance to the fossil whales of the Pleisiocetus group in the shape of the skull it is often called a "living fossil".

Whales of this species were captured so abundantly off the coast of California once that they are still called Californian grey whales. But the catch there began to decrease rapidly towards the middle of the 19th century. It is reported, however, they are on the increase in the recent years. Besides California, a considerable catch of grey whales

was made in the East sea area of Korea, but their stock has completely been exhausted at present. Roy C. Andrews made a detailed study of grey whales at Urusan, the landstation in the East sea area of Korea during the season 1909-1910, which will be found in the Memoirs of the American Museum of Natural History-V. We shall here make some study of the same subject statistically based on the data after 1910.

### Number of the Catch

Fig. 2 shows a number curve of the catches of grey whales in our adjacent waters according to the years. It is based on the data from 1910 up to the present. In spite of the lack of the data of some years, the curve gives a clear idea of the rapid decrease of

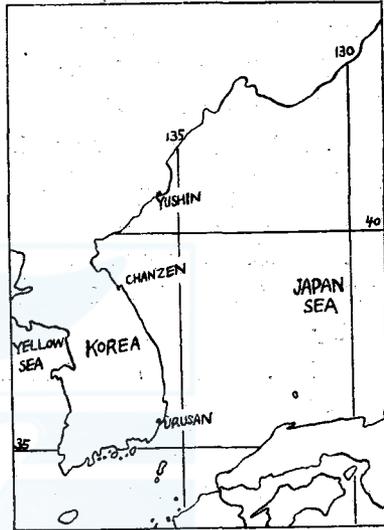


Fig. 1.

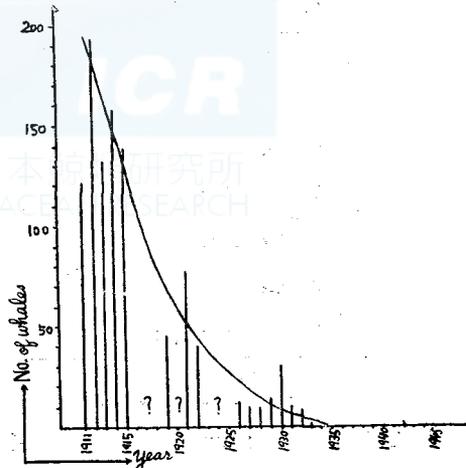


Fig. 2.

the catch. It is not before 1903 that Norwegian Whaling was adopted in the East sea area of Korea for the first time, and in thirty years, almost the last grey whale was hunted up there. The fact will indicate that the stock of grey whales in our adjacent waters was but a small one existing, as it were, independently, having no intercourse with the stocks of other waters.

At the middle of the 19th century when grey whales along the coast of California were feared to have gone to exhaustion, in the East sea area of Korea the stock was still kept intact, which began to decrease after 1903; during the fifteen years from 1934 up to the present not a single grey whale was captured there. Meanwhile, along the Californian coast, it is reported, grey whales are on the increase. It apparently proves the fact that there is no intercourse between the two stocks of grey whales on the east and the west sides of the Pacific.

No catch of Grey Whales has been made off the eastern coast of Korea since 1933. Of the thirty years' whaling history there, the records of the seven years, —1911, 1914, 1919, 1921, 1922, 1926, and 1932— are completely preserved in the monthly reports of the various whaling companies forwarded to the Japanese Whaling Society. Based on the data we shall here make some reports of the grey whales in this place.

Table 1.

Sea-area.	%	Whaling season
Kunile-Islands	0.2	August
Hokkaido-Okhotsk	0.2	May
Hokkaido-Pacific	0.2	July
Sanriku	0.7	October
Kinan	0.0	
Bonin-Islands	0.0	
Goto-Tsushima	4.2	December
West of Korea	0.4	May
East of Korea	94.2	November-May
Japan-Sea	0.0	
Formosa-Ryukyu	0.0	

*Sea-Area is divided by location of the land-station*

In Table 1 are shown percentages of the yearly catches in the seven years according to the sea areas; the division of the sea areas is based on the sites of

the landstations. The whaling ground of gray whales in the Goto-Tsushima sea area actually belong to the east sea area of Korea. So 98% of the catch of grey whales are made off the eastern coast of Korea. Grey whales in our adjacent waters are different from other baleen whales in point of the distribution; they have seldom been captured in the ground belonging to the Pacific. Besides the East sea area of Korea, three were caught at Ayukawa of the Sanriku sea area and one off Nemuro, Hokkaido in 1914, two in the northern part of the Yellow Sea in 1922, one off Sakhalin in 1826 and one off Otomae, the North Kurile Islands in 1942. The number is so small compared with that of the catch made in the East sea area of Korea that they may be regarded as exceptional. However, these eight grey whales were all caught in the waters north of 38°N.

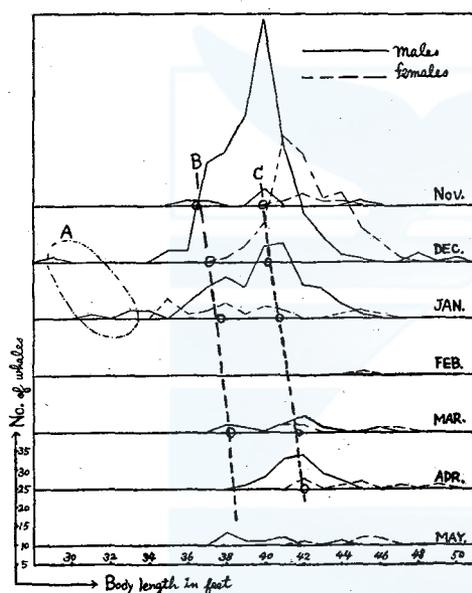


Fig. 3

is composed of one-year-old male animals, B-and C-groups of two-years-old and three-years-old ones respectively. According to R. C. Andrews the period of delivery of grey whales lasts from the end of December to the beginning of January next year, and their body-length at birth is 14 feet, which gains no less than 18 feet during the first year after the birth. Seeing the growth speed of grey whales, like any other species, is extremely high in the first year, it is quite assumable that the young whale born during the previous winter, is some 30 feet long when it appears in the Korean waters the next season. The body-length of grey whales at birth, as it is calculated from my data is 15 to 16 feet.

In spite of the yearly decrease of the number, body-length frequency curves of the grey whales according to the years follow the same pattern every year rising into peaks in almost the similar months. Fig. 3 shows body-length frequency curves of the whale catch according to the months. Here monthly variations in number are noticeable, and in the case of male grey whales, the peaks in the curves apparently move from the left to the right according to the months, showing the process of their growth. (As for the females, due to the scantiness of the number, the phenomenon is hardly discernible) A-group in Fig. 3

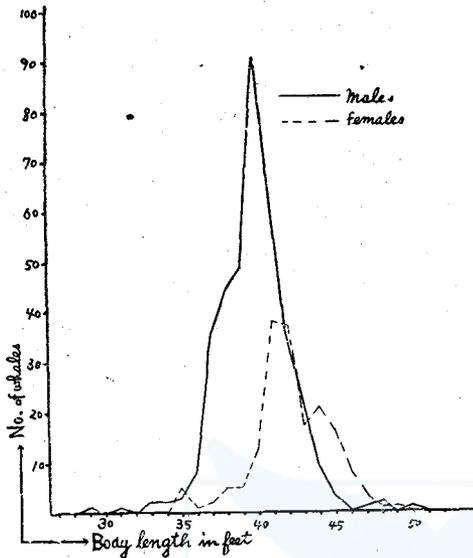


Fig. 4

Fig. 4 presents body length frequency curves of the whale catch according to the sexes. In the case of male grey whales the curve rises into a peak at 40 feet while in females a peak forms at 41 to 42 feet and again at 44 feet. According to Figs. 3 and 4 female grey whales, like any other species of baleen whales, are larger in size than males.

Table 2

	November			December			January		
	♂	♀	to.	♂	♀	to.	♂	♀	to.
Number of Whales	7	6	13	220	125	345	97	22	119
Average length in feet	39.7	42.3	40.9	39.6	42.3	40.5	39.8	39.0	39.6
Sex-ratio	53.8	46.2		63.8	36.2		81.5	18.5	

		February			March			April			May			Total		
♂	♀	to.	♂	♀	to.	♂	♀	to.	♂	♀	to.	♂	♀	to.		
	1	1	11	6	17	29	8	37	8	8	13	37.2	173	545		
	45	45	41.4	43.5	42.1	41.8	44.8	42.6	39.8	44.8	41.7	39.9	42.1	40.6		
0.0	100.0		64.7	35.3		78.4	21.6		61.5	38.5		68.3	31.7			

In Table 2 are shown average body lengths and sex ratios of the whole catch according to the months. There is two feet's variation between the body lengths of the two sexes, and the maximum body length of the males is 50 feet and that of the females 49 feet, while the minimum body length is 29 feet for the males and 35 feet for the females. In Table 3 you will find these particulars of the body length of grey whales compared with the measuring values calculated by other writers in the past.

Table 3

	Average for all Specimens of both sex		Average for all females	
	No. of whale	length	No. of whale	length
Korea, by Andrew	23	38' 9½"	3	41' 4"
Korea, by Whalers	123	39' 10"	50	41' 2"
California, by Scammon	4	40' 8"		
Korea.	545	40' 7"	174	42' 1"

Average for all males		Max. of female	Max. of males	Min. of females
No. of Whale	length	length	length	length
20	38' 6"	43' 3"	41' 1"	38' 1"
73	39' 0"	45' 0"	43' 0"	32' 0"
3	40' 8"		48' 0"	
372	39'11"	49' 0"	50' 0"	35' 0"

Min. of males
length
33' 2"
35' 5"
32' 0"
29' 0"

Table 4

Month	%
November	2.4
December	63.1
January	21.8
February	0.8
March	3.1
April	6.8
May	2.4

Table 4 presents the percentages of the monthly catches shown in Table 2. According to it the catch of December forms the highest percentage of 63.1 and then comes the 21.8% of January. The catches of the other months cannot be compared with those of the above two months. When we divide the catches of both December and November into decades, it will be found that there is a small variation between the whaling seasons of the two sexes and that the best season for both males and females is from the middle of December towards the end, and the next best is either the beginning of January or that of December.

Table 5

Month	November		December			January			Feb.
	Middle	last	first	middle	last	first	middle	last	first
No. of male	0	6	28	81	111	74	23	1	0
No. of females	0	6	29	49	47	14	7	1	0
Total	0	12	57	130	158	88	30	2	0

#### *Localities of the Catch*

As has already been made clear by tables and figures, grey whales are quite regular in their appearance in the east sea area of Korea. According to Table 5, males begin to arrive there at the end of November, increase in number till they reach the greatest number at the end of December, which declines towards the middle of January. After that, male grey whales are no longer seen in this sea area. As for females, they begin to appear at the end of November, reach the greatest number at the middle of December towards the end and decrease in number till they leave the place for the north at the middle of January. Thus grey whales stay for only two months in this sea area; the place is also a good whaling ground for Fin Whales and many catcher-boats work during the season,—from September to March next year. They would have certainly caught grey whales if they had seen them in the months of October, November, February and March. The localities of the catch of grey whales, compared with those of fin whales, are quite near the coast. Their chief grounds are found within 10 sea-knots from the shore.

Grey whales come to the east sea area of Korea for the purpose of delivery as was already pointed out by R. C. Andrews. Female animals captured before the middle of December, are, with almost no exception, with big foetuses immediately before birth. It is quite assumable that delivery is made among the islands at the southern extremity of the Korean Peninsula. Pregnant whales hasten to the place of delivery by themselves, and a little later, herds of grey whales

appear in this sea area. In the case of sperm ahales, many females led by one strong male, from so-called "Harem". The contrary is true of grey whales; in their case, the leader is a female and many males follow her. The fact will be made clear by a survey of the sex ratio of the catch. Mr. Andrews writes in his book, "One or two females lead ten to fifteen males." By this he must have meant the pairing migration, for the waters at the southern extremity of the Korean Peninsula present a place of pairing for grey whale as well.

After delivery, female animals accompanied by cubs and apart from the herd, go up north on their nursing migration.

According to Cap. H. G. Melson, the two female Grey Whales captured off Chanzen (39° N.) at the middle of March, 1912 are found with foetuses of seven and ten inches respectively,—both are two months and half after fecundation.

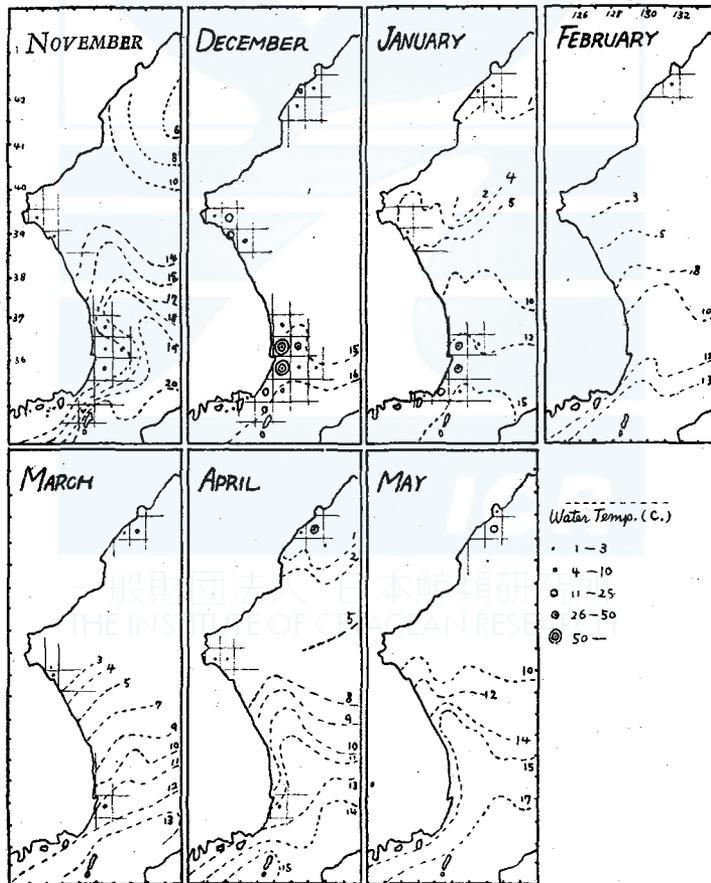


Fig. 5

From this and other data the pairing season of grey whales is assumed to be at the beginning of January. According to Mr. Scammon, the five female whales with small foetuses captured along the coast of California ( $31^{\circ}$ - $37^{\circ}$  N) in up-season, had thick blubber contrary to the animals nursing cubs. It is not supposable that female grey whales copulate while nursing. So their delivery may happen, in the most favorable condition, every other year.

Grey whales in down-season do not seem to hunt for food, for the animals captured then have no food in their stomach but green colored gastic juice. In up-season, after delivery or pairing, they begin to search for food. Grey whales caught off Yushin, North Korea in up-season-from March to May, are sure to be found with Crustacea in their stomach. According to Mr. Tago, *Nephrops thomsonii*, small sized Crustacea, was found in the stomach contents of the two grey whales caught in the northern waters of the Yellow-Sea in May, 1922.

Fig. 5 shows the localities of catch according to the months based on the data of the seven years. At the end of November a small number of grey whales appear both off Urusan and Chanzen. In December, catches are made in three places, the best ground being off Urusan. The animals start on their northwards migration in January and the catch off Urusan decreases. It is interesting to notice that no grey whale is caught in the month of February, except one at Yushin in the north. The fact may indicate that grey whales go up north through the distant

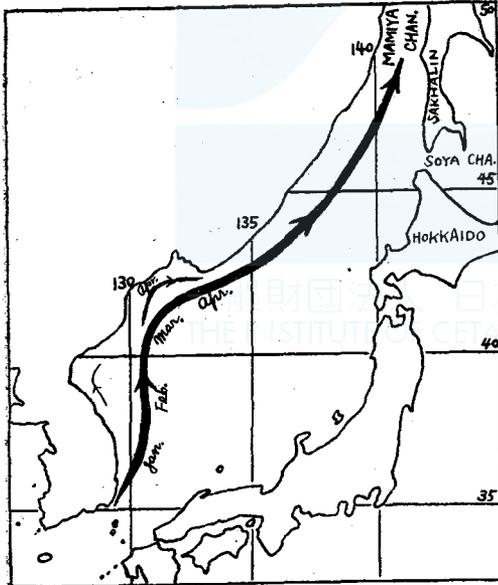


Fig. 6

offing during that month. In March catches begin to be made in the northern part of this sea area. Either in April or May the catch there forms a comparatively large percentage of the whole catch. These grey whales captured in the northern part, are assumably stray or belated animals from the main herd. Generally speaking, grey whales on their southwards migration get up speed, but slacken it when they go up north.

The general routes of the migration of grey whales off the eastern coast of Korea, based on the various data at our disposal, is shown in Figs. 6 and 7.

From the above two figures, we

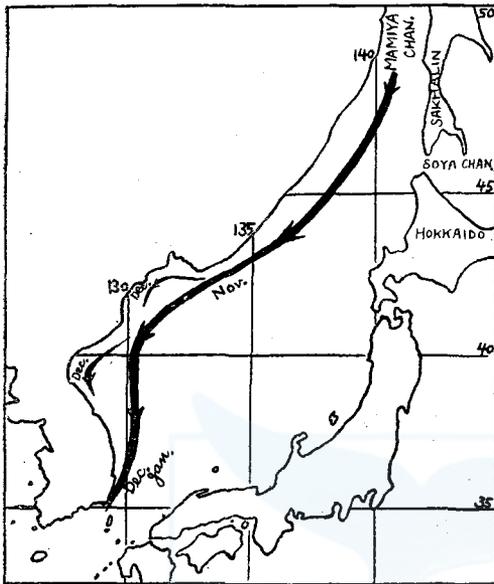


Fig. 7

they go between the Kurile Islands to the North Pacific and further to the Bering Sea, for the North Kurile Islands have many landstations from where both male sperm whales and fin whales were caught abundantly but no grey whale has ever been captured since 1919. (Though one was captured off Otomae, a landstation of the North Kurile Islands, in August, 1942, it ought to be regarded as exceptional.)

According to Mr. Scammon (1874), grey whales in the American side of the Pacific go down as far as  $20^{\circ}$  N. but in the Asian side they go no farther than  $34^{\circ}$  N. Nor will they go to the water whose temperature rises higher than  $20^{\circ}\text{C}$ . The right temperature of water for both delivery and pairing of grey whales is assumed to be  $15^{\circ}$ — $20^{\circ}\text{C}$ . In Fig. 5 the dotted lines show the distribution of the annual mean temperature of the surface water in the East sea area of Korea.

can assume the movement of grey whales in the east sea area of Korea. As for there where about after then, it is reported by Mr. Tago that they reach Hokkaido or the western coast of Sakhalin in May or June and then through the Mamiya Channal go to the northern part of the sea of Okhotsk, where they seem to spend their summer. On their southwards migration they seem to take the same course as they come up north. It is not probable that grey whales pass through the Soya Channal to the farther north, for fin and hump-back whales are captured there from the landstation in Hokkaido but not grey whales. Nor is it assumable that