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INTERNATIONAL WHALING COMMISSION

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ABSTRACT

A right whale calf was found in a large-scale set net (ogata teichi) in Izu on February 18, 2018. The animal was found dead on the following day. The authors investigate this carcass at the fishery port of Ito, Shizuoka prefecture. Basic biological data and specimens were collected. Preliminary findings are summarized here. In Japan, right whales were captured by the traditional whaling but because the depletion of the species was serious the species was failrly rare and very few specimens are kept in museums.

KEYWORDS: Pacfic right whale, *Eubalaena japonica,* entanglement

INTRODUCTION

Recently, serious threats to the North Atlantic right whale has been seriously argued (Taylor et al, 2017). Most of the threats are entanglement, ship strike and others, mostof which are anthropogenic. Considering recent situation in the seas around Japan, fishing activities mainly set nets are serious problem for the right whale populations. The present case is one of the typical examples of entanglement of a yearling calf and proper management of the set nets would be a serious matter to be considered.

WHEN AND WHERE

The net in question is a large-scale set net located about 600m off to the north from the Kawanazaki light house (34°57’20”N, 139°08’41”E) in Kawana area of Ito city (Fig. 1), and is called Kawana Teichi (Licenced as Tei No.7.). The dimention of the netted area

is 434m by 110m. The depth of at the entrance to the net is 61m. The net is owned by Ito Fisheries cooperative. The net can be seen in Google Earth and Google Map (Fig. 2A, 2B).

On February 18th, around 14:00 hours a fishing boat of ItoFishheries Cooperative found a whale, which appeared weakened, in the net. On the following day (Feb. 19), at 06:00 hours an operation boat went into the net to release the animal but the animal was not confirmed. After the search the whale was found dead and sunk at the bottom of the net. Within the day the whale carcass was secured and towed to the Ito fishing port. At the port the whale was examined by the people of the cooperative and identified as a young male right whale, about 9m in length and weighed about 9t. The news is reported to the National Museum of Nature and Science asking if themuseum would investigate the whale.

On Feb. 22, two days after the whale was found dead, researchers from the National Museum of Nature and Science, Nagasaki Univeristy, Utsunomiya University, the University of Tokyo and Shimoda Aquarium made an investigation of this carcass. We were allowed to make investigation in Ito fish market, by the Ito fishing port.

EXTERNAL OBSERVATIONS

Carcass condition was code 3 (moderately decomposed). We started necropsy a little longer than 48 hours after the animal died. The animal looked relatively skinny. Some photos in a news paper made us suspect some deformation in the posterior belly but at the actual examination we could not confirm what it was. External measurements are listed in Tab1. Body length is 881 cm and the weight given by the tension-meter of the crane was about 9 ton (Fig 3A, 3B). The animal is a male. He had many cookie-cutter shark bites of various healing state, most of them were filled up by cyamids. Numerous cyamids were found on various part of the body surface. The lice were sampled from several part of the body. There seemed to be more than two species of cyamid. The detailed identification will be conducted later. Epizoit such as cirripedia and copepoda was not found. Liver and lungs were macroscopically observed but no helminth were found.

We took more than 300 images of this animal from sufficiently scattered points by iPhone SE and the images were synthesized into orthometric image by Agisoft PhotoScan®. Numerous images taken from numerous points not necessarily from above

shall make a precise image (Fig 3A, 3B).

There were five callosities on the both side of the lower jaw. On the upper jaw, there were two larger callosities on the mid saggital line, a 20 cm by 20cm bump in the anterior end and another 20cm by 9.5 cm elevation just in front of the blow hole. Six callosities each on either side in a two raws. No callosity was found behind the blow hole. Most of the callosities had sinus hairs in the centers, sinus hairs were also found on the anterior tip of bith jaws. There were about 10 sinus hairs behind the blow hole on the both sides. Almost in the center at the back, about 20 cm by 10 cm cut of the blubber and skin, probably for the DNA registration. We could not confirm who did it. During the dissection skeletons of the plevics and lower limbs were secured. Pelvics composed of bony substance and cartilage, whereas femur and tibia were all cartilaginous. All the baleen plates were collected although baleen plates of the anterior 50 to 60 cm were cul and teken away, except for the basal portions. The baleenplate count will be made later. Whole skeleton was collected but it is under preparation. Osteological details will also be examined and reported later.

PATHOLOGICAL EXAMINATION

As the existence of faint trace of the fringes (marginal papillae) of the tongue, body length and the size and weight of the testes (Left: weight 430g, length 27cm, width 8cm, thickness 3cm, Right: weight 400g, length 22.5cm, width 9cm, thickness 5.5cm) were confirmed, we suspected this animal could be a weaning or suckling calf. However, we checked stomach contents later in the museum, we found some debris of small crustaceans and 37.75l fluid in the stomach which was not milk at all. Which means this individual was weaning or almost weaned. We are planning to make further investigations on the stomach contents to identify the prey species.

The heart, both the lung, liver, both the kidney, pancreas, spleen, stomach, intestine, both the adrenal gland, urinary bladder and both the testes were examined pathologically. Most of the organs were photographed and measured (Tab. 2). As we found no significant pathological changes in all the organs examined, we concluded that this animal died by the entanglement in a set net.

DISCUSSIONS

Brownell, jr. *et al.* 2001 summarized right whale data in the North Pacific and 12

stranding and entanglement events in the Western North Pacific. Ishikawa continued similar efforts and compiled 19 stranding and entanglement data of right whales in the seas around Japan, 15of them are of the event occurred after the 2000, but he added another 4 events recorded before 2000 (Ishikawa *et al.* 2013, Ishikawa 2014, Ishikawa 2015, Ishikawa 2016, Ishikawa 2017). Amongthem, 3 events were from the Sea of japan, whereas the rest of 16 were from the Pacific side and Seto Inland sea. Eight of them were larger than 10 m, most of them 10 to 15m. Out of these 19 events 8 were entanglement. Present event was with 9m individual, who must be a yearling calf and possibly traveling with her mother.

If we solely consider these data, There would be less right whales in the Seaof Japan conpareed to the pacific. Set nets are serious problem to the right whales.

As for the weaning of the right whale, (Brown *et al.* 2001) described that the right whale calves wean when they leave the feeding ground at the age of about 1 year old. The present individual has just returned from the feeding ground to the breeding ground probably together with his mother, and started to forage of his own. The stomach contents was crustacean remains and with no discernible milk meets the above-mentioned description.

Further investigations on the stomach contents, Cyamid whale lice, skeleton, baleen plates, stable isotope and pollutants are planned to be made soon.

ACKNOWLEDGEMENT

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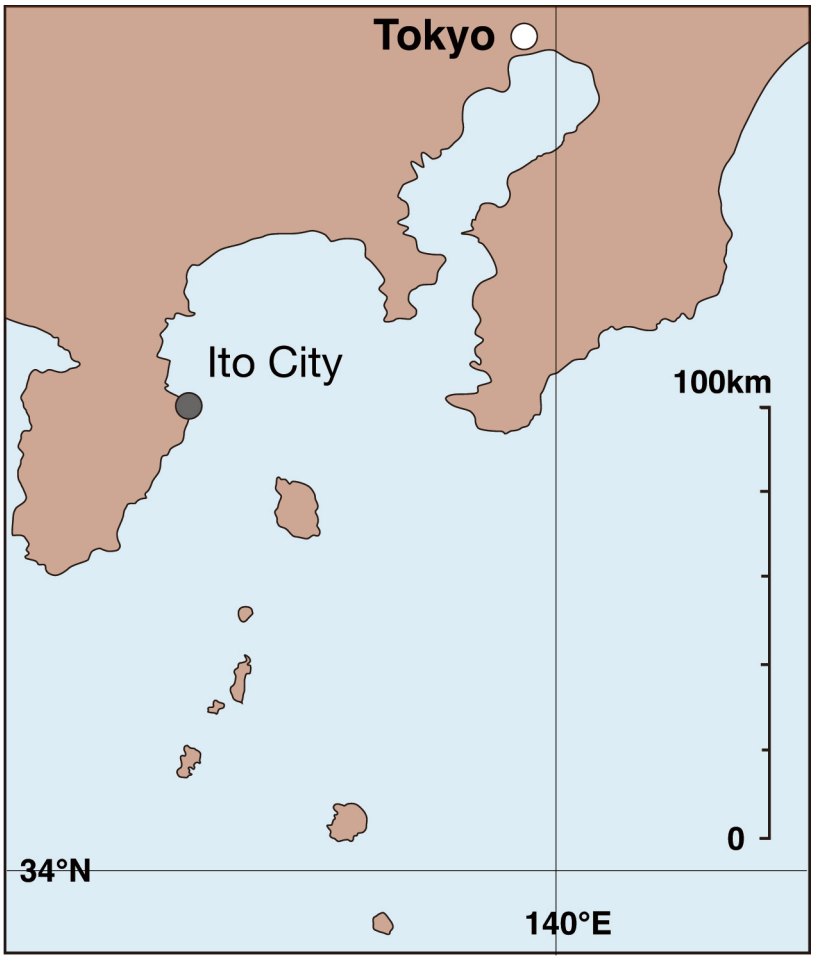

Fig. 1. The whale in question was entangled in a set net located off Ito City, which is about 100 km south west of Tokyo. A gray whale calf also stranded to the beach not far from this area in 2016.

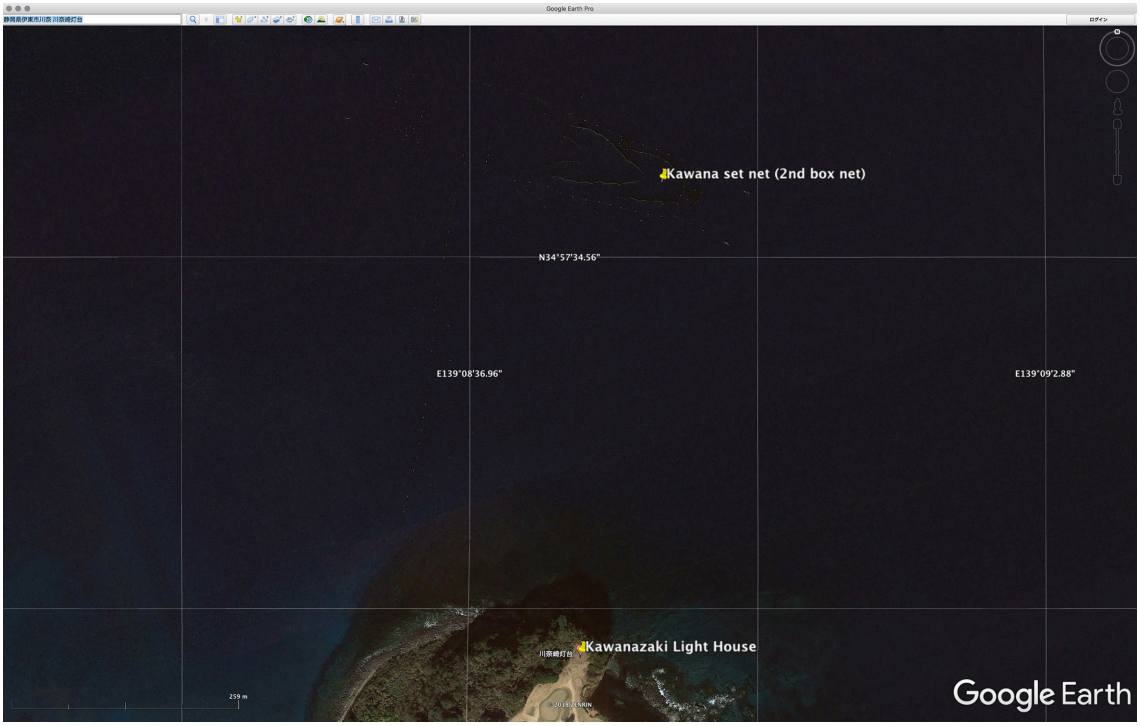

Fig. 2A. The set net is seen in Goole Earth. Note Kawanazaki light house at the bottom of the map.

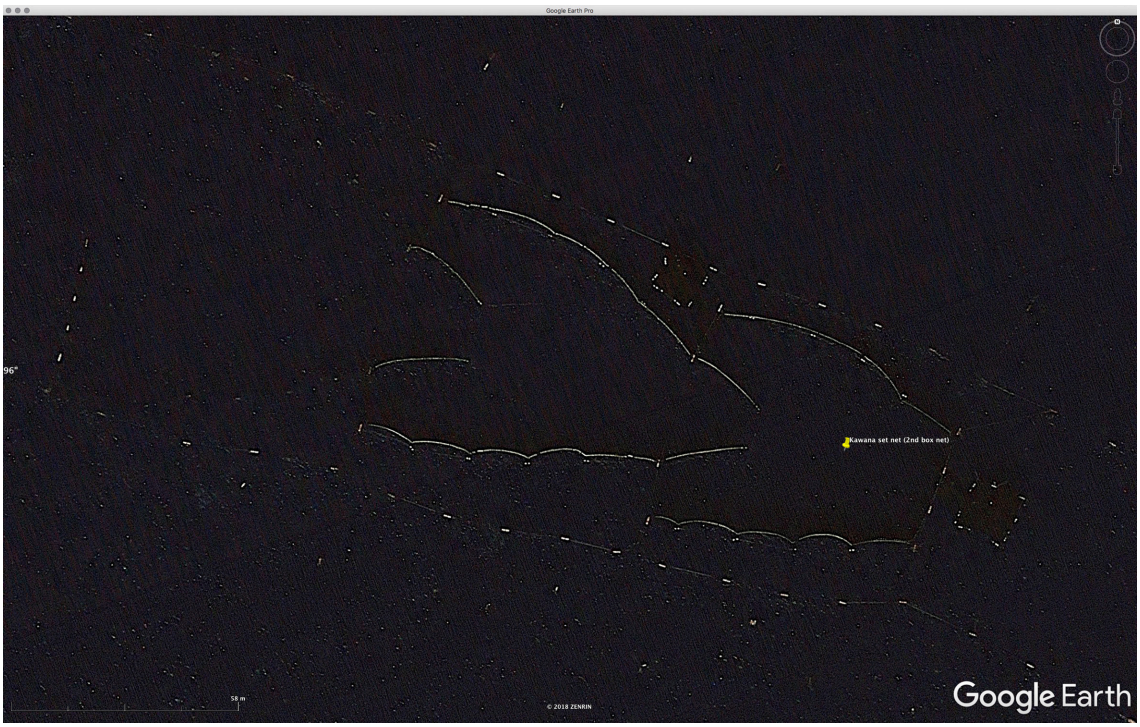

Fig. 2B. Close-up view of the set net in Goole Earth. The whale wasfound dead in the 2nd box net indicated by the yellow mark.

Fig. 3A. An orthometric photo showing the right whale calf entangled and died in the set net off Ito City. The photo was synthesized 303 images taken by iPhone SE by Agisoft PhotoScan®. In our computer the image was made so that one pixel represents 0.5 mm square. Even propotion measurements can be made from this image.

Fig. 3B. Another orthometric photo showing the left lateral view.

Fig. 4. Tongue of the right whale calf.the median groove for the sucking

Measurement items	Absolute value	Percentage
Body length from tip of snout to notch of flukes	881	100.0
Tip of snout to centre of eye	195	22.1
Tip of snout to angle of gape	214	24.3
Tip of snout to centre of ear	152	17.3
Centre of eye to centre of ear	18	2.0
Centre of eye to gape of mouth	20	2.3
Tip of snout to blow hole	151	17.1
Tip of snout to anterior insertion of flipper	230	26.1
Tip of snout to umbilicus	431	48.9
Tip of snout to centre of genital aperture	480	54.5
Tip of snout to anus	600	68.1
Projection of lower jaw beyond tip of snout	7.5	0.9
Girth at anterior insertion of flipper	239x2	54.3
Girth at axilla	240x2	54.5
Girth at umbilicus	217x2	49.3
Girth at anus	152x2	34.5
length of eye slit	9.8	1.1
length of blow hole	19	2.2
Length of flipper along leading edge	157	17.8
Length of flipper along trailing edge	131	14.9
Width of flipper	84.5	9.6
Fluke width from tip to tip	359	40.7
Depth of fluke	106	12.0
Depth of notch	54	6.1
Height at axilla	130	14.8
Height at umbilicus	147	16.7
Height at anus	105	11.9
Distance between blow holes (anterior)	6	0.7
Distance between blow holes (poterior)	14	1.6
Diameter of the head		0.0
Length of anal slit	3.5	0.4
Length between the centre of genital slit and centre of anal slit	124	14.1

Tab. 1. External measurements.

		weight (kg)	length (cm)	width (cm)	thickness (cm)
Esophagus		1.0			
Stomach	whole	33.8			
	fore	20.2			
	main	8.9			
	pyloric	1.6			
	Duodenum	2.5			
Intestine	whole	150.7	8212		
	small intestine	112.3			
	large intestine	38.4			
Liver		73.2			
Pancreas		5.4			
Spleen		2.5			
Kidney	L	24.0			
	R	15.5			
Urinary bladder		6.5			
Testis	L	0.43	27	8	3
	R	0.40	22.5	9	5.5
Epidydimis	L	0.22			
	R	0.30			

Tab. 2.

Weight and dimensions of the organs

Date	Latitude	Longitude	Prefecture	Sex	Remarks
19820600	38°14'	138°23'	Niigata	U	Drifting
19960501	34°		Chiba	U	Stranding
19970412	33°19'	134°12'	Kochi	U	Entanglement
19990609	38°05'	138°15'	Niigata	U	Entanglement
20000416	34°59'	139°47'	Chiba	U	Entanglement
20020512	34°46'	139°26'	Tokyo	U	Stranding
20030401	36°39'	140°42'	Ibaraki	M	Stranding
20030401			Wakayama	M	Entanglement
20050221	34°46'	139°21'	Tokyo	F	Stranding
20050224	34°46'	139°21'	Tokyo	U	Stranding
20070126	36°07'	136°03'	Fukui	U	Stranding
20090117	33°36'	135°58'	Wakayama	U	Entanglement
20090326	35°46'	140°49'	Ibaraki	U	Stranding
20110206	34°43'	138°59'	Shizuoka	F	Stranding
20110227	32°47'	131°05'	Oita	U	Entanglement
20130423	34°05'	139°54'	Chiba	U	Stranding
20130512			Chiba	U	Entanglement
20140624	43°08'	145°07'	Hokkaido	U	Stranding
20161016	42°07'	140°37'	Hokkaido	F	Entanglement

Tab. 3.

Stranding and entanglement events compiled by Ishikawa