

PROGRESS ON CONVERSION FACTORS FOR THE GREENLANDIC HUNT

By

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INTRODUCTION

Following the report from the Commission's Small Working Group on Conversion Factors for the Greenlandic hunts (IWC/62/9) that was endorsed by the Scientific Committee, Greenland was requested to provide information on its sampling scheme and data validation protocols at the IWC SC meetings in 2011 and 2012. While the progress reports submitted by Greenland were welcomed by the Committee, some concerns were expressed over the need for more information and for the relatively slow rate of progress on data collection (IWC/63 & 64/SC-reports). Greenland recognises this and thanks the Committee for constructive comments.

IWC/62/9 had considered the information for common minke whales to be sufficient given the large sample size available and had recommended that work focus on collecting new data on edible products taken from other species. The species concerned are the fin, humpback and bowhead whales, for which provisional conversion factors had been proposed as shown in Table 1 taken from the IWC/62/9.

Since then, the Greenland Institute of Natural Resources (GINR) has initiated an intensified collaboration with baleen whale hunters, wildlife officers and municipal offices with the aim of collecting data for the conversion factors for fin, bowhead and humpback whales and measurements of curved and standard lengths for all species, including minke whales. Besides the data on weight presented in the previous report, we here present the improved sampling schemes, new data from 2012 and beginning of 2013, future plans and progress on the work.

Table 1. Summarised recommended conversion factors per strike (RCFPA) with the equivalent conversion factors per animal (RCPFS) from IWC/62/9. If the allowance for not reaching the strike limits is not incorporated into the correction factor per strike then the factors would be 1.84 for common minke whales, 9.2 for fin whales and 10.4 for humpbacks.

Species	RCFPA	RCPFS
Common minke whale	1.88	1.82
Fin whale (interim)	10.91	6.8
Bowhead whale (interim)	11.00	11.0
Humpback whale (interim)	11.59	9.5

The specific recommendations for further work from IWC/62/9 and IWC/64/Rep.1 were:

- (1) We **recommend**, therefore, that a focused attempt to collect new data on edible products taken from species other than common minke whales be undertaken, at least until the end of the next block quota when the interim conversion factors should be reviewed. These data should be collected as a collaborative effort between scientists, wildlife officers and hunters. The small working group is happy to assist in terms of design and analyses.
- (2) In addition, we **recommend** that data on both 'curved' and 'standard' measurements are obtained during the coming season for all species taken. These data should be collected as a collaborative effort between scientists, wildlife officers and hunters. The small working group is happy to assist in terms of design and analyses.
- (3) Finally, we **recommend** that the conversion factors are re-evaluated at the end of each five-year block to take into account the new information on struck-and-lost animals, quota fulfilment and yield.

- (4) The provision of a full scientific paper to the next annual meeting that details inter alia at least a full description of the field protocols and sampling strategy (taking into account previous suggestions by the Committee); analytical methods; and a presentation of the results thus far, including information on the sex and length of each of the animals for which weight data are available.
- (5) The collection and provision of data on Recommendation No. 2 of IWC/62/9 comparing standard vs curvilinear whale lengths. This should be done for all three species on as many whales as possible. Guidelines and protocols are suggested in IWC/62/9.

METHODS

Field protocols and sampling strategy.

Due to the difficulties in obtaining the weight data from the hunts and the logistics involved in a baleen whale hunt in Greenland, we took a dual approach to improve the data collection for the conversion factor for baleen whales; 1. Improved communication and 2. Combining weighing with existing research projects already sampling from the hunts.

1. Improved communication:

To understand why most hunters have not provided the weight measurements they were asked to do, we set up local information meetings in the larger cities; Sisimiut, Maniitsoq and Nuuk (meetings are also planned for Aasiaat and Ilulissat). One scientist and a bilingual project coordinator from GINR organized the meetings inviting the local hunters' organization (KNAPP), all local baleen whale hunters and the official hunting license coordinator of the municipality and with participation from the Ministry where possible.

From the meetings it was clear that the largest obstacle to weigh the whale products was logistics. Even the hunters in the biggest cities of Greenland (Sisimiut and Nuuk) simply did not have a suitable weight available onboard or when reaching the harbour. In addition, hunters worried that if they spend too long time on the weighing, it will affect the quality of the meat. This would indeed be an issue if the hunters had to drive meat to a factory or harbour to weigh the meat before it could be sold. As the logistics varies from harbour to harbour and from vessel to vessel we needed to make a system that accommodated the concerns and logistic problems the hunters were facing. In collaboration with the hunters we came up with the following plan:

Each large city would be equipped with two crane weights that the hunters would bring when taking off for a hunt. For a start the weights have been distributed in Sisimiut, Maniitsoq and Nuuk. We would like to distribute crane weights to all larger cities but have been limited by the expenses of the weights. Therefore, we decided to start in the three larger cities and after an evaluation, expand to other cities.

The crane weights are placed on the crane that lifts the boxes off the vessel. In this way the meat is weighed without taking more time than it takes for the hunter to note down the weight of the box.

The boxes vary between vessels. The hunters have therefore been asked to note the volume of the boxes, the type of the box and provide a digital picture if possible.

The hunters should weigh up to 10 boxes of mattak¹, meat and qipoqag² pr vessel. In some cases very large boxes are used, and fewer boxes will be weighed for that whale.

Finally, an information folder was produced (in Greenlandic and Danish) and distributed to baleen whale hunters (See Appendix 1 for the Danish version of the folder). The folder informed the hunters, wildlife officers and other relevant people of the background for the data collection, how to measure the whale and how to weight the edible parts of the whale. The folder includes forms for reporting the weight and length measurements and the number and types of boxes used.

¹ Mattak is the skin including 1-2 cm of the blubber layer.

² Qipoqag is the tissue forming the buccal pouch/ventral grooves

2. Joining effort with existing research projects

The second part of the new approach was to make use of the existing research projects, already communicating with baleen whale hunters and collecting samples from the hunts.

GINR has since 2010 collected data from humpback whales caught in Greenland. This has been done in collaboration with the hunters. Sampling was divided into a small sample set collected by the hunters alone and a large sample set collected by scientists. For the small sample set, hunters received a sampling kit that they filled in and sent to the GINR on frost. For this, the hunters received a financial reward. For the large sample set, hunters living within a relatively short travel distance to Nuuk; Western Sermersooq municipality and southern villages of Qeqqata municipality, were encouraged to call a GINR scientists in advance to a humpback hunt, so the scientists could travel to the flensing site in time for the beginning of the flensing. These hunters received a larger financial reward if they successfully could inform and collaborate in such a way that scientists could be on the flensing site and collect an expanded set of samples and measurements from the hunted whale. The samples and measurements collected from the two sampling efforts are listed in Table 2.

Table 2. Samples and measurements required for a small and a large sample set.

Sample/Measurement	Small sample set	Large sample set
Standard and curved lengths	X	X
An array of body metrics		X
Right and left eyes	X	X
Eyes from foster	X	X
Baleen	X	X
Stomach samples	X	X
Muscle	X	X
Blubber	X	X
Skin	X	X
Liver		X
Kidney		X
Picture of fluke pattern	X	X
Pictures of scars		X
Picture of dorsal fin		X

Despite an intensive effort to stay in communication with hunters and wildlife officers to send scientists to collect the samples, we have, due to the extreme logistics only managed to take 5 sample sets from humpback whale hunts since 2010. Besides, we have three times tried to get to a flensing place in time for a flensing. But due to different logistic challenges, we did not succeed. In October/November 2012 we were notified that the whale hunters planned to go hunting a humpback whale. We travelled to Sisimiut and waited for them to leave for the hunt. They then tried to catch a whale for several days before they had to give up and postpone the hunt for a later date. It becomes a very expensive and inefficient sampling method and has made it clear that sending scientists to the hunt in the hope of gathering a reasonable sample size for the conversion factor would not only take many years, but also be extremely expensive and time consuming.

However, the communication with hunters and the set up of the sampling project develops with time and is steadily improving. Therefore, we decided to use the already developed logistics and hunters contacts from this project to increase the effectiveness in collecting weight and length measurements for the conversion factors on fin, humpback and minke whales. This was initiated in the end of 2012 and we have just received the first sample set; the minke whale reported in table 5 and we joined a flensing of a humpback whale reported in tables 3,-5.

There has not been any hunt of bowhead whales in 2012-13 due to logistics. If there is a hunt again we plan to send a team of scientists to take samples and measure and weigh the meat for the conversion factor.

Greenland recognises that there is a need for validation of the length measurements and the weights. We will train and encourage wildlife officers to perform the validation of the length measurements at the flensing site and of the weight in the harbour. In the cases where a scientist reaches the flensing site in time, they will perform the validation of the length and weight measurements.

In addition to the expanded sampling project the weight and length measurements were included as a legal requirement and part of the licensed reporting scheme implemented in summer of 2010 in the executive order on the regulation of the hunt.

In addition to this general approach for hunters, instructions on how to collect relevant field data and supervise the sampling were given to the wildlife officers monitoring the harvest of bowhead and humpback whales (see IWC64-ASW10).

PRELIMINARY RESULTS.

We have received data on the weight of edible products from 5 fin whales, 10 humpback whales in 2012 and 1 humpback whale in 2013. The weight of edible products for two of these was based on weighing bins of meat and for one humpback whale *all* edible products were weighed. Besides we have received standard and curved length measurements of two whales in 2013: 1 minke whale and 1 humpback whale.

Since the introduction of the sampling protocol in 2009-10, catch reports have been obtained for a total of 48 whales caught in Greenland (Table 3). These included: 28 humpback whales (9 in 2010, 8 in 2011, 10 in 2012 and 1 in 2013), 16 fin whales (6 in 2010, 5 in 2011 and 5 in 2012) and 7 bowhead whales (3 in 2009, 3 in 2010 and 1 in 2011). However, the return of information following the protocol was lower than expected; in the absence of better knowledge of how the additional reported weights were obtained, then at present the analysis is restricted to those following the agreed protocols. The sampling protocol or other control weighing was followed for 6 bowhead whales, 6 humpback whales and 3 fin whales as shown in Table 4. The lengths of each of these individuals are provided. Wildlife officers were able to follow the hunt of six bowhead whales and three humpback whales. The GINR research team participated in the flensing, measuring and weighing of a humpback whale in 2013. It should be noted that the data for 2013 is incomplete as the hunting season is not over. We decided to report the one hunt from 2013 because it represents the sort of data we are able to get if all conditions become favourable.

Table 3. Hunter reported weight data for 2009-May 2013 with numbers of vessels following the sampling protocol.

Year	Species	Catch (weight with the use of bins)	Comment
2009	Bowhead	3 (2)	2 reports of total weight. All products were weighed and shipped by plane/ship around Greenland as part of the Self-governance celebration of 21/6 2009.
2010	Bowhead	3 (3)	3 reports where the hunt/flensing situation was followed by wildlife officers who were in control of the sampling and weighing with the use of bins.
2010	Fin	6 (0)	3 had no weight reported. 3 had weight of all edible parts but without the use of bins.
2010	Humpback	9 (2)	2 had no weight reported. 5 had weight of all edible parts but without the use of bins.
2011	Bowhead	1 (1)	# 1 report of total weight, the whale was landed to a distributor weighing all products.
2011	Fin	5 (2)	1 had no weight reported. 2 had weight of all edible parts but without the use of bins.
2011	Humpback	8 (2)	4 had no weight reported. 1 had weight of all edible parts but without the use of bins. 1 had report of total weight but without the use of bins.
2012	Fin	5 (1)	1 struck and lost whale was without weight report, 2 had weight of all edible parts but without the use of bins, 1 had weight of total weight but without the use of bins.
2012	Humpback	10 (1)	4 had no weight reported, 6 had weight of all edible parts (including 1 permitted euthanized) but without the use of bins.
2013	Humpback	1 (1)	1 had all edible parts weight by scientists. Hunting season for 2013 is not over yet

Table 4. Weight (all in kilograms) and length of whales caught in 2009 to May 2013. #1: 1,686 kg of unspecified edible products; #2: 1,717 kg unspecified; 3#: Measured weights are available in a hard copy at the Ministry of Fisheries, Hunting and Agriculture.

Year / id	Sex	Length, m	Meat	Skin / blubber	Ventral grooves	Total	Comment
Bowhead whales							
2009-1	Female	14.1	3,457	3,768	n/a	8,911 ^{#1}	Distributor weighing
2009-2	Female	14.8	4,538	1,856	n/a	8,111 ^{#2}	Distributor weighing
2010-1	Female	14.4			n/a	6,500	Weighing of bins.
2010-2	Female	15.9			n/a	6,500	Weighing of bins.
2010-3	Female	16.1			n/a	12,000.	Weighing of bins
2011-1	Female	16.0	5,950	2,687	n/a	8,637	Distributor weighing
Humpback whales							
2010-1	Female	13.2	9,000	4,800	3,000	16,800	Weighing of bins
2010-7	Female	12.8	4,480	2,160	2,880	9,520	Weighing of bins
2011-5	Female	12.9	4,010	2,100	2,800	8,910	Weighing of bins
2011-7	Female	10.1	1,800	3,500	2,000	7,300	Weighing of bins
2012-10	Na	12.0	1,680	1,500	1,020	4,260	Weighing of bins
2013-1	Male	11.9 ¹	3,976	1,347	1,970	7,293	All weighed by scientist and hunter
Fin whales							
2011-2	Female	16	2,400	1,120	600	4,120	Weighing of bins
2011-5	Female	17	3,750	2,875	1,875	7,500	Weighing of bins
2012-4	Female	16.0	5,250	2,100	150	8,280	Weighing of bins

¹Standard length

COMPARISON OF OBTAINED WEIGHT WITH THE INTERIM CONVERSION FACTORS

Analyses of the data provided in Table 4 is summarised below.

Humpback whales. The average values were meat - 4.158 kg (SE:531); skin and blubber - 2.568 kg of (SE:266); ventral grooves -2.278 kg (SE:153). This gives an average total weight of 9.014 kg (SE:846).

Fin whales. The average values were meat - 3.800 kg of meat (SE:1.426); skin and blubber - 2.032 kg (SE:880); ventral grooves - 875 kg (SE:895). This gives an average total weight of 6.967 kg (SE:2.468).

Bowhead whales. The average total weight is 8,443 kg (SE:406)..

CURVED VS. STANDARD LENGTH

As noted in IWC/62/9, prior to 2010, some hunters in Greenland have taken the curved-linear length of the whale, instead of the standard measurement, which is a straight-line measurement. All hunters joining the information meetings in 2012-13 report to use the curved length measurement.

Following the Executive Order from 2010, hunters are now instructed to report the standard length shown with an illustration. During information meetings we reminded the hunters that it is mandatory to report standard length measurements and we encouraged and instructed hunters in how to take the curved and standard measurements.

Until now we have obtained two measurements on both standard and curved length (see Table 5), but we expect that we will be able to present more measurements in 2014.

Table 5. Measurements of curved and standard lengths

Year	Species	Curved length, cm	Standard length, cm	Validated ¹
2013	Common minke whale	800	770	No
2013	Humpback whale	1.235	1.185	Yes

¹ Validation is done by a trained wildlife officer or a GINR scientist.

DISCUSSION

These initial values from the programme, although of limited sample size, fit reasonably well (within 1SD) to the provisional estimates from IWC/62/2 for humpback whale (see Fig. 1). Although the data from the fin whale is lower than the interim conversion factor, it has to be remembered that the conversion factor is an average from whales of many lengths. Figure 2 shows that the reported weights are in agreement with Greenlandic data on fin whales of this length. The values in SC/62/2 are based on ‘average’ whales for the reasons explained in that report – as discussed in detail in the report there will be individual variation in yield, related to a number of factors including time of the year, when the animal is caught and length.

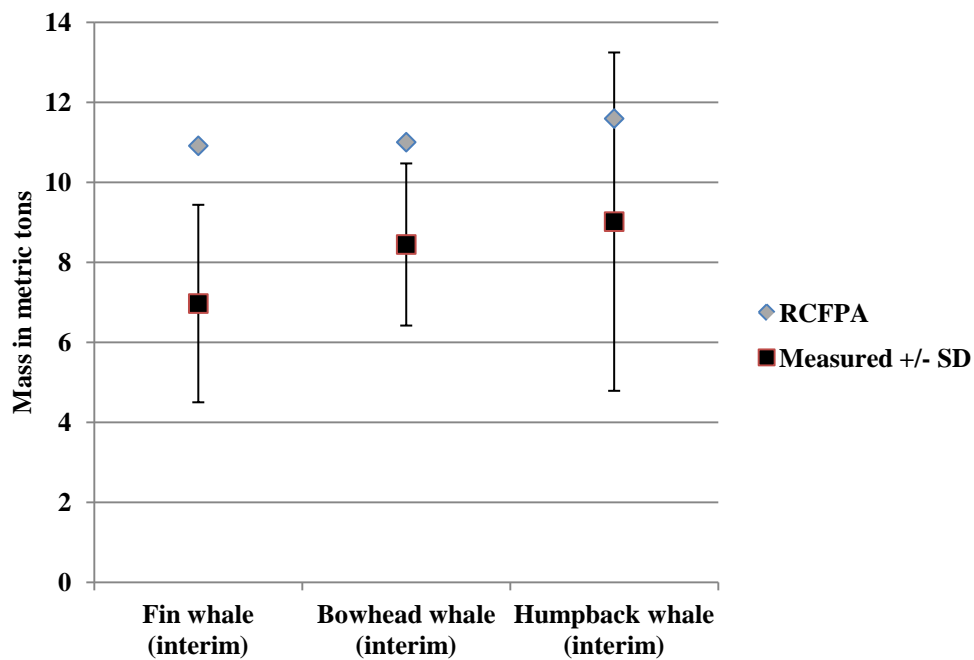


Figure 1. Comparison of measured and recommended conversion factors per animal (RCPFA). Measured mass is shown +/- 1 SD.

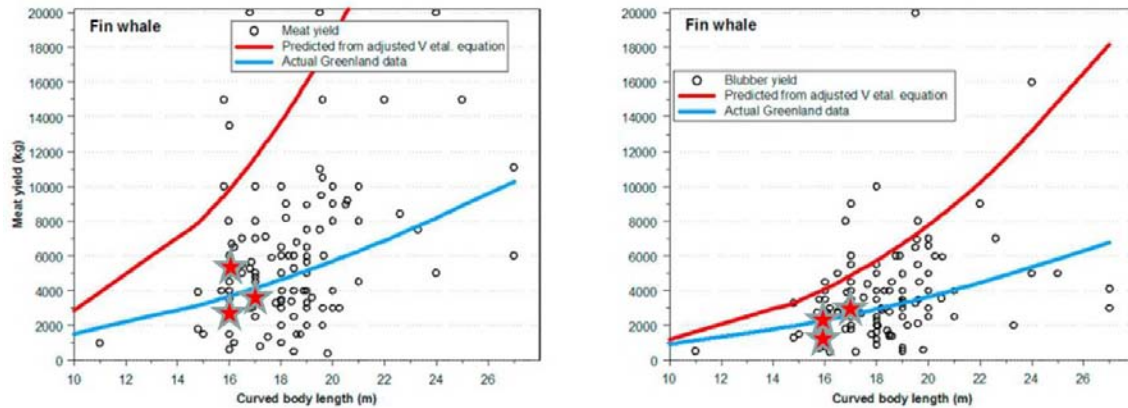


Figure 2. The figure here from the 2010 small working report shows data on weight from the 3 fin whales with reported weight data.

Improvements to the programme

With the exemption of bowhead whales, the sample sizes for weights obtained using the agreed protocols are considerably less than Greenlandic authorities expected. Therefore a new sampling scheme has been developed. It is too early to evaluate this new scheme, as we have not yet seen a full season with it.

Weight from one humpback whale was reported. GINR scientists participated in the hunt. This was a hunt that took place in the capital, Nuuk. Even so, to ensure that the hunter could notify about the hunt and the flensing site, GINR lent an iridium phone to him. From the hunter left the harbour, the GINR team was on stand by until they got a call that a humpback whale had been killed and the position of the flensing area. Flensing took 24 hours and weighing the edible products at the harbour took additional 2 hours. The research team was able to obtain data *in situ* because large effort and expenses were invested in the task. It should not be expected that this will be the possible for all future hunts of humpback and fin whales near Nuuk. However, the sampling from this hunt was a success. We learned that hunters use many different types of bins for transporting the meat. It was also clear that as soon as the hunters had the weight on the crane it was not a big effort to measure the weight of all edible products. To avoid future problems with different bins, we will change the sampling scheme and ask the hunters to note down all weight of the three types of edible products. In this way we will not get an estimate but a full measurement.

Due to the challenges of the logistics with large whale hunts in Greenland, some of which is explained in this report, it should be expected that this data collection will be a multiyear process before we have the required sample size.

CONCLUSION

The Greenland Government and GINR recognise the importance of obtaining further information on conversion factors. For this reason, scientists, managers, wildlife officers and hunters, backed by the Greenland Executive Orders have initiated a new sampling scheme. We expect that the new protocol and the newly distributed crane weights will improve the process of data collection. The recommendations of the IWC Scientific Committee have been helpful and Greenland will present the seasons sampled data report to next year's meeting. However, as noted in IWC/62/2, working in Greenlandic conditions over an enormous coastline can comprehend major logistical difficulties. Hence, several years and a large budget from Greenland are needed to collect sufficient data.

REFERENCES

Donovan, G., Palka, D., George, C., Levermann, N., Hammond, P. and Witting, L. 2010. Report of the Small Working Group on Conservation Factors (from Whales to Edible Products) for the Greenlandic Large Whale Hunt. IWC Document IWC/62/9 (IWC/M10/2 rev.)

Storhvaler

Indsamling af prøver fra fangsten

Har du spørgsmål?

Har du spørgsmål i forbindelse med hvalprøverne, kan du kontakte:

Programkoordinator Peter Hegelund
Telefon: 361244, e-mail: pehe@natur.gl



Hvorfor?

Kvotetildeling for storhval under IWC kræver at følgende oplyses fra fangsterne:

- Grønland skal påvise hvor meget kød, mattak og qiporaq en nedlagt hval giver i kilo (kun i perioden 2013-15)
- Der skal udtages en obligatorisk-prøve for hver nedlagt hval.
- Præcise længdemål for hver nedlagt hval skal foretages.

Hvordan?

Vægt af kød: Ti kasser med kød, ti kasser med mattak og ti kasser med qiporaq vejes med de udleverede vægte.

Vægten noteres i tabellerne på de næste sider sammen med information om den type kasse der er blevet anvendt.

Obligatorisk-prøve:

Et stykke hud med spæk skæres af ryggen (rødt felt på figur 1), og sendes i det vedlagte rør tilbage med særmeldingsskemaet.

Længde: Hvalens længde i meter måles som vist på figuren til højre: et mål, som følger hvalens ryg (rød) og et mål over hvalen (grøn). Det røde mål er længere end det grønne.

QIPORAQ

Hvor mange kasser er vejet?

Hvilken type kasse er brugt?

Qiporaq vægt, kg

Kasse 1

Kasse 2

Kasse 3

Kasse 4

Kasse 5

Kasse 6

Kasse 7

Kasse 8

Kasse 9

Kasse 10

Yderligere prøver

Pinngortitaleriffik opfordrer hvalfangerne til at tage yderligere prøver og for dem modtager du 500 kroner.

Du skal indsamle følgende:

- Barder (fjernes med vedlagte foldesav, som returneres med prøverne)
- Prøve af kød og mattak fra ryggen (ca.10x10cm) (se den røde plet, figur 1)
- Billede af halemønster (kan sendes digitalt til pukkelhval@natur.g)
- Maveindhold
- Øjne
- Øjne fra fostre



Figur 2

Hvis du har valgt at indsende ovenstående prøver bliver du fri for at sende den obligatoriske-prøve til Pinngortitaleriffik.

Den blå tønde med prøver sendes på frost til Grønlands Naturinstitut som modtager betaler.

KØD

Hvor mange kasser er vejret?

Hvilken type kasse er brugt?

Kød vægt, kg

Kasse 1

Kasse 2

Kasse 3

Kasse 4

Kasse 5

Kasse 6

Kasse 7

Kasse 8

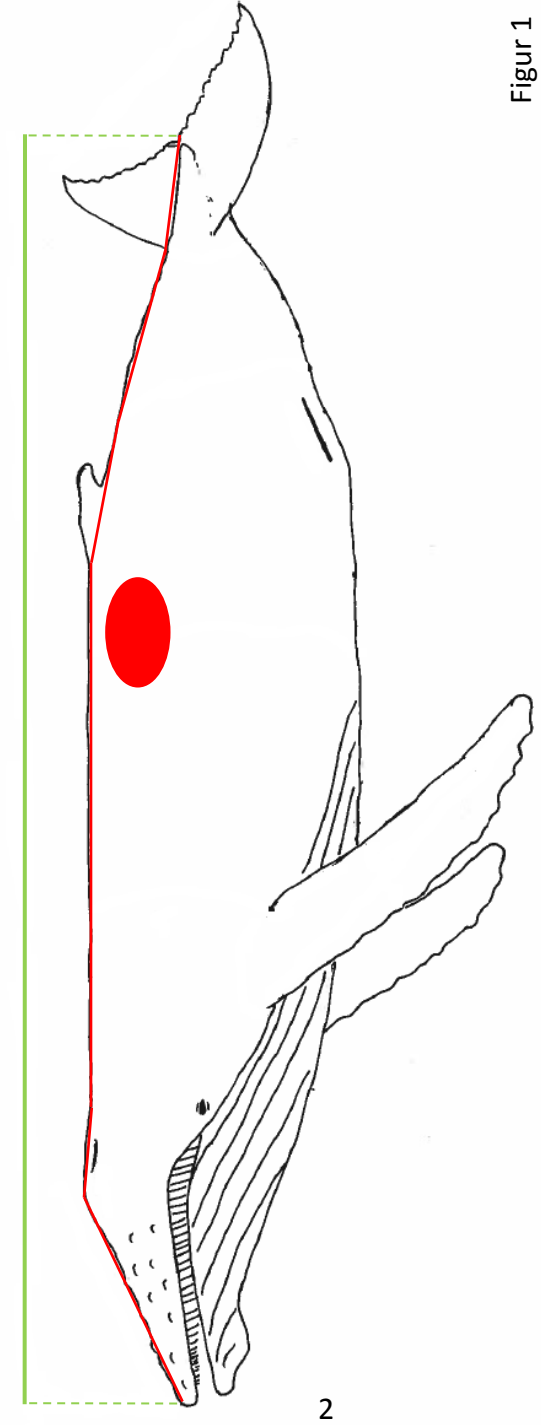
Kasse 9

Kasse 10

MATTAK	
Hvor mange kasser er vejet?	
Hvilken type kasse er brugt?	
	Mattak vægt, kg
Kasse 1	
Kasse 2	
Kasse 3	
Kasse 4	
Kasse 5	
Kasse 6	
Kasse 7	
Kasse 8	
Kasse 9	
Kasse 10	5

Dato: _____ Fangers navn: _____ Tlf. nr.: _____

Finhval:
 Pukkelhval:
 Grønlandshval:
 Vågehval:



Figur 1