

## Overview of ACTIVE hunting method-related recommendations to NAMMCO members and responses by member countries

Ref.	Recommendations	FO	GL	IS	NO	Council /CHM
<p>The document provides an overview of ACTICE recommendations to NAMMCO members and responses by member countries and NAMMCO deriving from WS + WGM organised by CHM.</p> <p>Some responses will appear both under country and CHM/Council like the manuals as these represent responses by both.</p>						
<p><b>WORKSHOP 1999 - on Hunting Methods</b></p>						
4.	<p><b>Baleen whale hunting</b></p> <p>4b. Concern that Greenland hunts minke whales using rifles and handheld harpoons as the only weapons. An in-depth discussion revealed significant disagreement. (WS- 1999, page 12). The Workshop recommends that this hunting method be subject to a critical analysis and an objective description of methods and equipment, with the goal of determining necessary adjustments.</p>		<p>Analysis of TTD and S/L rates for the different hunting methods have been presented to the IWC. Detailed analyses of S/L rates have been presented to the WS 2006, and TTD to the EGMs (2010 and 2015). Improvements in data reporting and hunting efficiency in both TTD and S/L rates were shown together with updated relevant legislation (EO No 12 of 16. July 2010 on Reporting from Hunting of Large Whales) based on the EGM recommendations. The legislation EO No. 10 of 13 April 2005 on Hunting of Large Whales with later amendments limits the collective hunt of minke whale to areas where boats with harpoon cannon cannot cover the local need of whale meat. The Riffle hunt is limited to minke whales and is the only available hunting method in East Greenland and North Greenland.</p>			<p>EGMs on TTD for large whales (2010 and 2015).</p>
<p><b>WORKSHOP-2001 no remaining active recommendations.</b></p>						
<p><b>WORKSHOP 2004 - on Seals and Walrus</b></p>						
<p><b>Struck and Lost Estimates</b></p>						
	<p>Workshop presentations and discussions demonstrated a lack of accurate and reliable estimates of "struck and lost" (S/L) for seal and walrus hunts. The Workshop recognised that reliable estimates of S/L are urgently required to allow better conservation and management and enable us to target hunts where S/L can be reduced. It was also recognised that reducing S/L benefits hunters because of potential higher catches, less unnecessary suffering to animals and a better public image. Struck and loss estimates are a priority for open water seal and walrus hunts.</p>		<p>EO No.20 of 27 October 2006 on the Protection and Hunting of Walrus and EO No. 3 of 27 January 2017 on Beluga and Narwhal requires reporting of S/L animals. Pending regarding Seals Generally noted that struck and lost is an ongoing challenge for all species</p>	<p>Lisences for sealhunting will include a requirement to report S/L</p>	<p>Prohibited to shoot seals in the water during sealing operations. <b>CLOSED</b></p>	<p>NAMMCO AR 2015, item 8.2, p. 18-20: to reduce S/L Council tasked CHM to look at underlying reasons for S/L. CHM 02.2016 began the work, and it is ongoing (2018). Elements investigated are: known rates in different hunts, description of different hunts to identify reasons for S/L, how to collect S/L data, how to calculate S/L rates, which hunts to priorities etc. CHM 01-2017: information sheet for web on factors reducing S/L finalised. Agreed that collection of S/L data for large whales was controlled and that the challenge was small whales and seals. CHM 01-2018: agreed to develop table with overview of S/L rates in the different regions and hunts as working tool. Agreed on the following prioritising for collecting of S&amp;L endorsed by the member countries (NAMMCO AR 2017, item 5.1, p 10): •For Greenland, to collect S&amp;L data on narwhal and beluga •For Iceland, to collect S&amp;L data on harbour and grey seal •For Norway, to collect S&amp;L data on harp seal</p>
	<ul style="list-style-type: none"> <li>The Workshop recommended that studies of S/L should be done in cooperation between researchers and hunters. <b>CLOSED FOR GL</b></li> </ul>		<p>An estimate of S/L on harp seals, based on questionnaire surveys was made for WS-2006. <b>CLOSED</b></p>		<p>Not done (2022)</p>	

## WORKSHOP 2006 - on Struck and Lost

NAMMCO AR 2004, item 5. p. 31 Council agreed to recommendation from CHM to hold WS on struck and lost WS-2006. NAMMCO AR 2006, item 6.1, p. 21-2 Council endorsed all recommendations from WS-2006.

1.5 Cooperative management					
The Workshop recommended that the hunters should be involved in the marine mammal management process, including the development of regulations pertaining to hunting. The Workshop furthermore recommended that the design, development and testing of new weapons and hunting equipment should be done in cooperation with hunters.		As part of the democratic hearing process all citizens in Greenland including the hunter's organisation KNAPK will have access to and be included in new drafting of legislation and can submit comments or suggestions of revisions.		Continuous recommendation that can never be closed	
2.2 Large whales					
2.2.2 Techniques and equipment					
<ul style="list-style-type: none"> <li>To develop a gun to deploy harpoons attached to floats. This would shorten the time needed to secure whales that may sink when hunting from boats without a harpoon cannon.</li> </ul>	NA	A person from Sisimiut has an idea to develop a harpoon rifle based on a weapon used before. He has acquired authorisation from the Ministry of Justice in DK as well as the police departement in Nuuk to develop this special harpoon rifle with a line attached. However due to lack of fundig among other things the idea has not been realised yet. The Ministry will continue the dialogue with him.			
2.2.4 Monitoring					
<ul style="list-style-type: none"> <li>Reporting of the causes of struck and lost is needed to provide feedback to whalers.</li> </ul>		EGMs in 2010 and 2015	Rate and cause of S/L is reported to the Directorate.	Information on the causes of S/L has been provided from whale hunters to the CHM. No following up has been done. For the seal hunts, the causes of S/L is emphasized in the annual courses.	CHM 03-2016: CHM agreed to advice Iceland and Norway to address their hunters with the aim of finding out why the harpoon line breaks. CHM02-2018: line in propel caused by direction of boat and whale. Occurs rarely and no obvious actions to prevent it.
2.3 Small whales			NA	NA	
<ul style="list-style-type: none"> <li>Develop a weapon that could improve the range of strike, e.g. an air gun that could be modified to incorporate firing of a harpoon head. This could improve the firing / strike range and the securing of the whale.</li> </ul>		A person from Sisimiut has an idea to develop a harpoon rifle based on a weapon used before. He has acquired authorisation from the Ministry of Justice in DK as well as the police departement in Nuuk to develop this special harpoon rifle with a line attached. However due to lack of fundig among other things the idea has not been realised yet. The Ministry will continue the dialogue with him.			
<ul style="list-style-type: none"> <li>The users (hunters) should be involved in decision-making processes concerning the hunt such as the planning of hunting quotas and in the areas of operation. User knowledge should be used in management in conjunction with science.</li> </ul>		See comment under 1.5 above.			
<ul style="list-style-type: none"> <li>Establishing formal meetings with local government officials on all aspects of hunting - equipment, safety, training, etc. where reduction of struck and lost can also be discussed. These meetings could establish local hunting rules and regulations, the required equipment, etc. that would help to mitigate struck and lost.</li> </ul>		Discussed during community consultations that takes place not on an annual rotation. Next round of meetings planned during 2021 in North Greenland. Previous meetings took place in different parts of Greenland, approximate every second to third year.			
<ul style="list-style-type: none"> <li>All parties (hunters, administrators, managers, biologists) have to get together to find a way forward on the matter of recording and reporting stuck and lost. One route could be to establish local sub-committees to work out an acceptable and appropriate monitoring system in hunting areas.</li> </ul>					See WS-2004 - struck and lost estimates, WS-2006, recommendation 1.2.

WS S&L 2006	2.4 Walrus	NA	EO No 20 of 27 October 2006 on protection and hunting of walrus.	NA	NA	
	<ul style="list-style-type: none"> <li>Technological innovation could reduce the incidence of struck and lost in some hunts. A harpoon gun that would be effective at a range of 10-15 m would be particularly effective in walrus hunting.</li> </ul>					
	<ul style="list-style-type: none"> <li>The importance of monitoring must be explained to hunters so that they can "buy in" to a monitoring programme.</li> </ul>		The self-reporting system Piniarqeq has since 2013 had the possibility of reporting S/L for any species when reporting online.			
	<ul style="list-style-type: none"> <li>A monitoring system should provide feedback to hunters so that they can improve their hunting techniques.</li> </ul>		Further improvement for validating the data reporting is constantly developed. (See under 1.2 for further information on catch reporting systems)			
	<ul style="list-style-type: none"> <li>Community-based monitoring, based on a combination of hunt observation and post-hunt interviews, has been effective in Chukotka and could be adapted to other areas.</li> </ul>					
<ul style="list-style-type: none"> <li>A system based on "index hunters" may be effective in some areas.</li> </ul>						
<b>EXPERT GROUP MEETING 2009 - on Best Practices in Hunting and Killing of Seals</b>						Organised on request from Council (NAMMCO AR 2007-2008, page 20). NAMMCO AR 2009, item 7.2, p. 20 Council endorsed all recommendations EGM 2009.
	Firearms and ammunition used should have the capacity to achieve the intended effect. Noting that new types of ammunition have been developed for hunting, the EGM recommends further studies on the use of ammunition for hunting seals of different species and age groups in order to determine their capacity to achieve the intended effect		EO No 16 of 12 November 2010 on protection and hunting of seals covers all recommendations from the EGM-2009. Interviews with hunters from different areas has been undertaken and used in the legislation.		Studies on ammunition for hunting seals in the Norwegian harp seal hunt published (2021)	
	Different types of <b>hakapiks and clubs</b> are used and known to be effective tools to stun young seals. Factual information is required to explain the effectiveness of hakapiks and clubs as stunning tools, through evaluation of the force delivered in relation to the damage produced and the relative solidity of the skull, which may vary among species.				Not done yet (May 2022)	
	The EGM recognises the value of determining the duration (average and range) of <b>bleeding in seals</b> when axillary (brachial) blood vessels on both sides are cut, which represents the bleeding method currently and commonly used. This information should be available for different species as differences may exist. Other bleeding methods (e.g. carotid arteries and jugular veins) could also be investigated				Studies on ammunition for hunting seals in the Norwegian harp seal hunt published (2021)	
<b>EXPERT GROUP MEETING 2010 - 1st Assessment of TTD in large whales</b>						The 1st TTS EGM-2010 was in response to a proposal from CHM to Council (NAMMCO AR 2009, p. 20).
	<b>Greenland:</b> It was furthermore recommended that hunters be trained to measure and report on strike location, detonation location and distance between the two.		Difficult to get the information from hunters and wildlife officers—training started but data feedback minimal. Implemented in EO with anatomical drawings. - will also be done for small cetaceans			
	<b>Assessment and comparison of different hunts</b>					
	<b>Minke Whale:</b> The EGM recommended collecting TTD for whales that do not die instantaneously. The purpose is to analyse the reasons for differences among different hunts in order to improve efficiency.		TTD data is part of the self-reporting mandatory information all whalers are required to report.  It is collected in the same standardised way with reference to the body position where the whale is hit in relation to TTD both for the rifle and the harpoon.  Data analysis work in progress not finalised, is resource depending.	Measurements on TTD have been made for the minke whale hunt in Iceland by inspection during the hunt and post-mortem examination for the 2014, 2015, 2017 and 2018 seasons. In total 24 measurements have been collected. Results have not yet been reported, due to few samples, but preliminary results are available.	This is already included in studies on minke whale killing efficiency. <b>CLOSED</b>	

EXPERT GROUP MEETING 2011 - On small whale hunting						As a follow up from the EGM-2010 on a recommendation by CHM, Council endorsed to (NAMMCO AR 2010, p. 22): 1) Convene EGM-2011 on small whales, 2) Develop manuals for maintenance and use of weapons (finalised 2014).
	<p><b>Hunting of pilot whales, dolphins and porpoises - Greenland</b></p> <p>The EGM recommends that regulations on equipment and hunting methods are developed for harbour porpoises, white-sided and white-beaked dolphins, pilot whales and killer whales and that efficiency, struck and lost rate and TTD are documented for the involved species. It is recommended that data are gathered in a standardized manner making comparison between hunts and development over time possible.</p>	NA	<p>It is mandatory to report any catch and S/L of small cetacean.</p> <p>Drafting of regulation in the form of a species specific executive order is in progress.</p> <p>TTD will be collected in the same standardised way as for the large whales with reference to the body position where the whale is hit in relation to TTD both for the rifle and the harpoon.</p> <p>S/L animals are mandatory to report and possible to report the through an online self-reporting system since 2013 (data goes into the database Piniarqeq)</p>			
	<p><b>STRUCK AND LOST IN SMALL CETACEAN HUNTING</b></p> <p>The issue of struck and lost (S&amp;L) was not on the agenda for the meeting but was raised at the beginning of the meeting. It was agreed to discuss the issue if time permitted. However due to lack of time the Expert Group recommended that Greenland and Canada in cooperation discuss the issue. The following statement was submitted for inclusion in this report from Greenland and Canada:</p> <ul style="list-style-type: none"> <li>It was noted that Canada did not present new or recent information on rates of struck and loss of small cetaceans.</li> <li>It was noted that Greenland reports a loss rate of 0 on a reported catch of 179 narwhals and 86 belugas.</li> </ul> <p>Canada and Greenland delegates agree that an exchange of information and experience on the collection of struck and loss rates in the harvesting of marine mammals would be beneficial to both the resource harvesters and the management decision process.</p>	NA	<p>Some exchange of information is given through the joint JCNB meeting.</p> <p>Different trials have been undertaken on S&amp;L issues:</p> <p>Information from hunters on scars observed on narwhal and beluga as a way of trying to establish a survival rate and not set S&amp;L as a 100% death rate. Limited data has been received.</p> <p>Instead of all S/L animals being subtracted from the quota and the licence is considered used, a trial is planned for walrus, where S/L reports do not result in quota reducing, and the license can be used for a new animal, when the S/L has been reported to the municipality. This is an approach to get an estimate of S/L rates in different part of Greenland. CHM 02_2018: requires a change in current EO - expected to come into force in early 2019.</p>			
EXPERT GROUP MEETING 2015 - 2nd Assessment of TTD in large whales						Council (NAMMCO AR 2014, p. 15) tasked the CHM to 1) Convene EGM-2015 on large whale TTD, 2) Organise a seminar to focus on data collection, analysis and presentation.
	<p><b>Norway</b></p> <p>The EGM recommends that Norway repeat monitoring of the hunt with regard to TTD and IDR at 10-year intervals unless important issues arise that require more frequent monitoring.</p>	NA	NA		Next should be in 2022	

EGM 2nd TTD Large whales	<b>Iceland</b>					
	<b>Minke whale</b>					
	The EGM acknowledges the work that has been done since 2010. The EGM encourages Iceland to try again to gather data on TTD and IDR and increase the sample size in order to obtain more robust information. A sample size of 25-30 animals should be adequate to obtain statistically reliable data for some types of comparisons.			Collection of TTD undertaken in 2014, 2015, 2017 and 2018. TTD have been collected for 24 animals. The aim is to collect at least 25 as suggested by EGM-2015.		
	<b>Fin whale</b>					
	The EGM recommends that Iceland repeat monitoring of the hunt with regard to TTD and IDR at 10-year intervals unless important issues arise that require more frequent monitoring.			Next should be in 2024		
	<b>Greenland</b>					
	<b>Minke whale - harpoon gun hunt</b>					
	There has been an improvement of the grenade hunt of minke whales. The EGM acknowledges this, and also the low struck and lost rate. The IDR is lower, and the TTD greater than in Norway, and the aim should be to improve the hunt efficiency. The recommendations from 2010 to present the data and analysis in a statistically more informative way will be fulfilled in the near future. Analysis of strike location should be informative of why Greenlandic hunts have lower IDR than Norwegian hunts and the EGM recommends that the result of this analysis be presented to hunters in future trainings.	NA	Data analysis work in progress not finalised, is resource depending.		NA	
	It was furthermore recommended to organise a practical training course for gunners. There should, as stated by the hunters, be a debriefing at the end of the season in order to exchange information and experiences from the season.		No practical courses for gunners held. Hunters locally hold debriefing meetings that are not organised by the Ministry.			
	<b>Minke whale -rifle hunt</b>					
Data show that there is a longer TTD and higher struck and lost rate in the rifle hunt than in the harpoon hunt.		There is currently no update on the recommendation to study why TTD and S/L rate is higher in the rifle hunt than harpoon hunt.			Council 2015 endorsed CHM concern that (NAMMCO AR 2015, p. 20) :	
The EGM learned that the proportion of minke whales hunted in the collective hunt has been increasing in recent years as compared to the number of whales hunted with deck-mounted harpoon gun. Noting that rifle hunts are increasing, the EGM encourages Greenland to evaluate the current sequence of the use of rifle and harpoon to catch the animals and also the efficiency of the harpoon in this sequence. It also encourages review of other types of harpoons.		Resources economically and timewise have not been available given other priorities to collect data from the hunts in all of Greenland.			The rifle hunt in Greenland seems to be increasing, as a result of demand for meat that is not being met by the harpoon grenade hunt.	
The Greenlandic hunters stated that there is a clear difference in efficiency of killing between different geographical regions in Greenland. The EGM reiterates the recommendations that experienced hunters should meet with less experienced hunters to exchange information.		Meetings with hunters from different regions to exchange information and discuss the NAMMCO EG recommendations are under planning.				
The EGM acknowledges that Greenland has gathered data pertaining to the body position where the whale is hit and TTD, and looks forward to analysis and interpretation of these data to be made available.		The dataset awaits analysis depending on resources.				

<b>2015</b>	<b>Fin whale</b>	NA				
	The EG acknowledges Greenland for the change in the charge of the grenade that has resulted in a higher IDR for the fin whale hunt. The IDR is lower and the TTD greater than in the Icelandic fin whale hunt and the aim should be to improve the efficiency bearing in mind the differences in equipment used.		The dataset awaits analysis depending on resources.			
	Data are needed with reference to the body position where the whale is hit in relation to TTD, and the EGM looks forward to analysis and interpretation of these data to be made available.					
	<b>Bowhead</b>					
	Data are needed with reference to the body position where the whale is hit in relation to TTD, and the EGM looks forward to analysis and interpretation of these data to be made available.					
	<b>Fin, humpback and bowhead</b>					
	The EGM recommends that hunters be trained to measure and report on strike location, detonation location and distance between the two in order to evaluate the efficiency of the hunts.		Difficult to get the information from hunters and wildlife officers— training started but data feedback minimal.			
	<b>GENERAL</b>					NAMMCO AR 2015, p. 20: Council endorsed CHM recommendations and tasked CHM to advice on how to best deal with:
	Accepting that struck and lost is an inevitable part of all whaling operations the EGM recommends that there be a review of the underlying reasons for struck and lost with the aim of decreasing it.				Discussed with hunters, not taken further	The need to review the underlying reasons for struck and lost, with the aim of decreasing rates. Work ongoing in CHM.
	The EGM recommends that the data be analysed by the statistical methods recommended in 2010. These analyses should include analysis of the efficiency of the backup (secondary) killing methods.		The dataset awaits analysis depending on resources.			Organised a seminar in 2016 on statistical analyses- Greenland and Iceland participated.
<b>Monitoring</b>				Developed a protocol for collection of TTD data in whale hunts with deck mounted harpoon gun. 2015		
	The EGM recommends that all hunts be monitored with regard to TTD and IDR at 10-year intervals unless other important issues arises that require more frequent monitoring.			Next should be in 2024.	Next should be in 2022.	NAMMCO AR 2015, page 20: Council meeting 2015 endorsed CHM recommendation to monitor TTD and IDR at 10-years intervals unless other important issues arise requiring more frequent monitoring.

**Repeated standing recommendations - grouped in categories. Note that some recommendations overlap between categories.**

<p><b>Training and education</b></p> <p>Training and education improve safety, efficiency and animal welfare. Theoretical and practical aspects of hunting and considerations of local conditions are essential elements (regional differences between killing efficiency). (EG-2015)</p> <p><b>Recommended topics to be included in training (also to fill data requirements):</b></p> <ul style="list-style-type: none"> <li>• Physical meetings (e.g. debriefing end of season) between hunters to exchange knowledge and experience (WS and EGs - GL)</li> <li>• Hunters be trained to measure and report on strike location, detonation location and distance between the two to see why NO has higher IDR than GL in minke harpoon hunt (EG-2010, 2015: GL)</li> <li>• For shooters/gunners harpoon gun hunts: ALL</li> </ul> <p>The significance of the angle of the shot relative to the animal's long axis; from 45 to 135 degrees relative to the animal's long axis and aiming the shot at the thorax.</p> <p><b>Reducing struck and lost (S&amp;L)</b></p> <p>Reviewing underlying reasons for S&amp;L (EG-2015) and reporting back to hunters. (WS-2006:2.2.4) - Cooperation (hunters, managers, scientists) to improve recording and reporting of S&amp;L, e.g., local sub-committees to develop monitoring system. WS-2006:2.3.4)</p> <p>To improve the minke whale rifle hunt in GL (harpoon hunt has shorter TTD and lower S&amp;L) To a describe and analyse methods and equipment to identify necessary adjustments. (WS-1999: 4b) (WS-1999: 4b, EG-2015)</p> <ul style="list-style-type: none"> <li>• Evaluate the sequence of the use of rifle and harpoon and the efficiency of the harpoon in this sequence, inc. accessing other types of harpoons.</li> </ul> <p><b>Cooperation hunters-managers-regulatory measures</b></p> <p>The safety of the hunters must be the number one priority and should be considered in any regulatory measures or technical innovations to equipment and techniques.</p> <ul style="list-style-type: none"> <li>• The hunters should be involved in the decision-making processes, including development of regulations and at all levels in development (design, testing) of new hunting gear (weapons and equipment) (WS-2004:S&amp;L, WS-2006: 1.5, 2.3.3)</li> <li>• Establishing formal meetings with local government officials (WS-2006: 2.3.3)</li> </ul> <p><b>Monitoring</b></p> <p>Monitoring large whale hunts at 10-year intervals unless other important issues arise that require more frequent. (EG-2015)</p> <p>(WS-2006:2.4.4)</p> <ul style="list-style-type: none"> <li>• The importance of monitoring must be explained to hunters so that they can "buy in" to a monitoring programme.</li> <li>• A monitoring system should provide feedback to hunters so that they can improve their hunting techniques.</li> <li>• Community-based monitoring, based on a combination of hunt observation and post-hunt interviews, has been effective in Chukotka and could be adapted to other areas.</li> <li>• A system based on "index hunters" may be effective in some areas.</li> </ul> <p>Data needed on where the whale is hit in relation to TTD. Data be analysed by the statistical methods recommended in 2010. These analyses should include analysis of the efficiency of the backup killing methods (EG-2015: GL)</p> <p>Collecting TTD for whales that do not die instantaneously. The purpose is to analyse the reasons for differences among different hunts to improve efficiency. (EG-2010) to ALL – but GL lacking due to resources</p> <p>To develop regulations and document efficiency, S&amp;L rate and TTD for small whales. Data to be gathered in a standardized manner making comparison between hunts and development over time possible. (EG-2011: GL)</p>					
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### References:

WS-1999	Workshop on hunting methods 9-11 February 1999
WS-2001	Workshop on Marine Mammals: Weapons, ammunition and ballistics, 13-15 November 2001
WS-2004	Workshop on Hunting methods for seals and walrus, 7-9 September 2004
WS-2006	Workshop on Struck and Lost in seal, walrus and whale hunts, 14-16 November
EGM-2009	Expert Group meeting on best practices in hunting and killing seals, 24-26 February 2009
EGM-2010	1 <sup>st</sup> Expert Group meeting on TTD in large whales, 17-18 February 2010
EGM-2011	Expert Group meeting on small whale hunting, 15-17 November 2011
EGM-2015	2 <sup>nd</sup> Expert Group meeting on TTD in large whales, 4-6 November 2015
NAMMCO AR	NAMMCO Annual Report year in question
CHM x.xx	Report of the Committee on Hunting Methods, meeting number, year in question
Manual LW	Manual on maintenance and use of weaponry and equipment deployed in hunting of baleen whales in NAMMCO member countries
Manual SW	Manual on small whale hunting in Greenland
Manual PW	Manual on Pilot whaling