

NAMMCO WORKSHOP ON HUNTING METHODS: 9 – 11 FEBRUARY 1999, NUUK, GREENLAND

Recommendation:	Follow-up in member counties and CHM:
<p>1. Faroe Islands: hunting of long-finned pilot whale The Workshop noted with satisfaction that Faroe Islands has accomplished a number of improvements in the pilot whale hunt. These include a gentler driving of the whales, prohibition against the use of the spear, and the use of a new blunt hook for securing the animals. In addition, other efforts such as educational programs in the schools on how to hunt whales are under way. The Workshop notes, however, that the pointed hook is still in use and recommends that further effort be made to replace this with the new blunt hook for securing the animals.</p>	<p>The Ministry of Fisheries produced and distributed 620 blunt hooks to the different whaling bays. In addition, whalers can buy it various places. See NAMMCO Annual Report 2001, p. 62."</p>
<p>2. Faroe Islands: killing of stranded northern bottlenose whale Stranded bottlenose whales are killed in the same way as pilot whales. Questions were raised over whether this is an adequate method of killing such a large animal, and it was recommended that rifles with adequate ammunition be used for killing stranded whales of this species.</p>	<p>The rifle, calibre .458 with corresponding round nose full metal jacket ammunition is placed at the sheriff's office in Suđuroy, where stranding of bottle nose whale happens most frequently. See NAMMCO Annual report 2001, p. 62</p>
<p>3. Greenland: hunting of small cetaceans 3a. In Greenland hunters use full metal jacket, pointed bullets to kill harpooned small whales (beluga and narwhal). Investigations have shown that when a pointed bullet meets bone (such as cranium), it tends to tip or ricochet, while a full metal jacket, blunt-nosed bullet penetrates bone better. The Workshop therefore, recommends that Greenland initiates studies in co-operation with the hunters, testing both pointed and blunt bullets on whale carcasses to determine the best ammunition for use in the hunt.</p>	<p>No systematic study has been carried out to date in Greenland. However, a number of Canadian blunt-nosed bullets were distributed among hunters. At least one hunter tested the bullets and reported that they were too effective, causing animals to sink after the first shot, increasing the risk of struck and lost. See also rec. 3 from workshop on marine mammals, weapons and ballistics.</p> <p>CHM 01.2007 noted that the guidelines developed by Olsen and Øen in 2006 may function as a model on how to perform the shooting tests in a standardised way. A prerequisite would be to have enough heads of small cetaceans for the trials</p>
<p>3b. It was further recommended that Greenland develop objective descriptions of hunting methods, equipment and how efficient these are in small cetacean hunting, considering regional variations.</p>	<p>CHM 01.2007 noted that this would encompass an extensive study and therefore might be more suitable as a topic for a Master's thesis, and encouraged NAMMCO to work towards finding the necessary funding.</p>
<p>3c. Greenlandic hunters informed the Workshop that work had been started on the development of a new handheld harpoon that can improve the efficiency of beluga,</p>	<p>In 2003 the new handheld harpoon (the steel lance) had been developed and could be ordered for production at the shipyards in Greenland.</p>

<p>narwhal, walrus and seal hunting. The Workshop views this as a positive initiative and recommends that Greenland continue to support this project.</p>	
<p>4. Baleen whale hunting 4a. A Norwegian hunter has taken the initiative to develop a new whale harpoon that can be adjusted for each individual harpoon canon. This is a notable initiative that can contribute to better marksmanship and thereby to more efficient killing. The Workshop recommends that Norway continues to support this project.</p>	<p>The harpoon was qualified through shooting trials set up by ballistic experts and approved for hunting in 1999.</p>
<p>4b. During the Workshop there were several expressions of concern that Greenland hunts minke whales using rifles and handheld harpoons as the only weapons. An in-depth discussion revealed that there is significant disagreement in this area, and it was agreed to note the discord.</p> <p>Some delegates felt that animals should always be killed as quickly and painlessly as possible, and doubted if this was achievable using only rifles and handheld harpoons. It was also asserted that this hunting method is relatively new (introduced in the 1950s), and if it was to continue, there was a need for adjustments and improvements based on accumulated experience. Also the Greenlandic Home Rule Government wishes to limit the rifle hunt as much as possible.</p> <p>The Greenlandic rifle hunt of minke whales has several times received significant criticism. The Workshop finds that this type of hunting can negatively influence the attitudes towards all Greenlandic hunting. 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 2006 NAMMCO workshop on struck and lost.</p> <p>The Greenland Home Rule Executive order No. 10 of 13 April 2005 on Hunting of Large Whales limits the collective hunt of minke whale only to the areas where boats with harpoon canon can not cover the local need of whale meat.</p> <p>Quotas for collective hunt have been gradually reduced.</p>
<p>4c. The Workshop recommends that Greenland continue to work towards the goal of using the harpoon grenade in all hunts for baleen whales. It is, however, a source of concern that the penthrite harpoon grenade is so costly in Greenland that many hunters cannot afford to use it. The Workshop recommends that Greenland initiate an enquiry into the reasons for the price policies and work towards a price change.</p>	<p>From 2005 the price to the distributors in Greenland and Norway is the same in both countries.</p> <p>The Greenland Home Rule supports hunters with a 50% subsidy in the purchase of harpoon grenades.</p>
<p>4d. Greenland has carried out a number of improvements on weapons and equipment used in whale hunting with the harpoon canon. In addition, the hunting regulations for large whales have been developed and improved. The Workshop notes with approval that Greenland has made these improvements and recommends the work to be continued in the future.</p>	<p>The last Executive Order that was approved was No. 10 of 13 April 2005 on hunting of large whales.</p> <p>Courses on the handling and use of harpoon grenades are given regularly. A new course on the mounting and maintenance of harpoon cannons was held in Nuuk in November 2006.</p>
<p>4e. Hunters were not able to buy the ammunition determined by experts to be the most efficient for killing whales, because it was not available in Greenland. The Workshop finds it questionable that market considerations have higher priority than professional</p>	<p>It is difficult to know which market considerations need to be investigated because it has not been established which ammunition is ideal in terms of efficiency; cost and associated rates of struck and lost</p>

judgement and justification, and recommends that Greenland investigate the situation.	(see recommendation 3a above).
5. The Workshop notes with approval that the Greenlandic Parliament has decided to formulate an animal protection law, and in this manner create an authoritative body that can introduce the element of animal protection in hunting regulations.	Both the Home Rule Act No. 25 of 18 December 2003 on Animal Welfare, and the Home Rule Act No. 29 of 18 December 2003 on Nature Protection have been approved.
6. In conclusion the Workshop agreed that the meeting had been valuable, in professional terms, and that it was desirable to plan a similar meeting in the future, but with a focus on particular hunting methods.	The NAMMCO Council endorsed the recommendation and as of 2007 three related Workshops have been organised by the Committee on Hunting Methods.

**NAMMCO WORKSHOP ON MARINE MAMMALS: WEAPONS, AMMUNITIONS AND BALLISTICS:
13–15 NOVEMBER 2001, SANDEFJORD, NORWAY**

1. The target groups for the Workshop were hunters, administrators and scientists. The Workshop strongly emphasised the usefulness the hunters' knowledge and experience for the conclusions drawn at the meeting. The Workshop recommends that the hunters' knowledge and experience are utilised in future workshops.	This recommendation has been followed-up in all Workshop organised under the Committee on Hunting Methods.
2. The Workshop acknowledged the work on upgrading, maintenance and standardisation of the harpoon canons and other whale hunting equipment in Greenland in the past years, and of the continued follow-up efforts, including the establishment of a permanent control system. This work has resulted in considerable improvements in personnel safety and has also increased the efficiency in the killing of fin- and minke whales. The Workshop acknowledged the major economic costs that are associated with this work.	A new course on the mounting and maintenance of harpoon cannons was held in Nuuk in November 2006. Personnel from the main boat yards of West Greenland were trained.
3. The Workshop referred to the follow-up work of the Faroe Islands with respect to shooting tests of different weapons and ammunition types on dead pilot whales. This information was very useful and can be utilised in standardising methods for similar studies on other species. The Workshop recommended that NAMMCO encourage the member countries to undertake more controlled and standardised studies on other species, and if necessary during ordinary hunting activities. The Workshop advised the NAMMCO Committee on Hunting Methods to develop guidelines for such studies and to make recommendations for target species.	Implemented. “ Shooting trials on heads of dead pilot whales – Guidelines to test the efficiency of rifle ammunition used for hunting and euthanasia of small whales” by Olsen and Øen was presented to the NAMMCO Council at its annual meeting in March 2007.
4. The presentations and discussions under the weapons and ammunitions theme indicated a great variation, between the member countries, with respect to the requirements for weapons and ammunitions used in hunting adult seals. The Workshop regarded it as beneficial to investigate the possibilities for harmonising the weapons and ammunition types for each species, with due considerations to the variations in hunting conditions in the NAMMCO member countries. In this regard it would be	The Workshop on Hunting Methods for Seals and Walrus in Copenhagen 2004 was organised as a follow-up of this recommendation.

<p>important to utilise the experience held by the hunters, and the Workshop urged that necessary studies be undertaken in order to support the harmonisation scientifically.</p>	
<p>5. At the previous workshop on hunting methods in Nuuk in 1999, it was noted that the ammunition determined by experts to be the most efficient, was not always available in the stores. This remains a problem in several of the NAMMCO member countries. The Workshop repeated that it is questionable that market considerations still have higher priority than scientific and professional judgement and considerations.</p>	<p>See comment in the section related to the Workshop on Hunting Methods in Nuuk in 1999 above.</p>
<p>6. Results from Norwegian studies on rifles used as secondary weapons in the minke whale hunt were presented at the Workshop. These results showed that full metal jacket, round nosed ammunition from calibre 9.3 mm and larger, was very efficient for killing minke whales with a shot to the brain. The Workshop recommended that when weapons are replaced this is taken into consideration.</p>	<p>In Norway calibre 9.3 mm has been set as the minimum calibre in the minke whale hunt from 1993.</p>
<p>7. The Workshop referred to the "Report of the NAMMCO Workshop on Hunting Methods, February 1999" and recommended that the recommendations from that Workshop not yet considered must be followed-up.</p>	<p>Done</p>
<p>8. The Workshop acknowledged that the introduction of the new whale grenade has resulted in greater security for the hunters and has also increased the whale killing efficiency. The Workshop further emphasised the importance of including both the hunters' safety and the animal welfare aspects in official hunting regulations, including those pertaining to hunting methods.</p>	<p>These aspects have been incorporated in the Greenland Home Rule Executive order No. 10 of 13 April 2005 on Hunting of Large Whales. In Norway it is incorporated in the mandatory seminars given to hunters.</p>

NAMMCO WORKSHOP ON HUNTING METHODS SEALS AND WALRUS, 7–9 SEPTEMBER 2004, COPENHAGEN

Recommendations:	Follow-up by member countries and CHM:
<p>Hunter training The Workshop recognised the continuing importance of hunter training for the improvement of hunter safety, reducing unnecessary suffering to animals, minimising struck and lost animals, maximising utilisation of the harvest, and equipment selection, manufacture and maintenance. Hunter training should be a priority for all hunts.</p> <ul style="list-style-type: none"> • The Workshop recommended training for inexperienced hunters in particular and that such training should be a continuous process for all hunters in general. • The Workshop recommended that information is provided to hunters on new and improved equipment that is presently available. 	<p>Norway: Sealers must participate in a biannual mandatory course which includes written tests. Captain and inspectors have an obligation to participate annually in these courses.</p> <p>The shooters must take a shooting test</p>
<p>Struck and Lost Estimates 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> <ul style="list-style-type: none"> • The Workshop recommended that studies of S/L should be done in cooperation between researchers and hunters. • The Workshop recommended the methods, techniques and equipment to reduce S/L should be developed and applied at the local level to ensure that these are appropriate to local conditions. 	<p>Greenland: An estimate of S/L on harp seals, based on questionnaire surveys was made for the 2006 workshop.</p> <p>In order to reduce S/L, The Executive Order no.20 of 27 October 2006 on the Protection and Hunting of Walrus requires that the animals should be harpooned before firing the final lethal shot.</p> <p>Norway: Monitoring of causes for S&L was undertaken as long as research data was collected.</p>
<p>Minimise Animal Suffering</p> <ul style="list-style-type: none"> • The Workshop recommended that the hunters should make every effort to reduce unnecessary suffering by hunted animals, by minimising killing times and avoiding letting injured animals escape. Such efforts should have priority for all hunts. 	<p>Norway: All regulations pertaining to sealing and whaling have incorporated the principles of human killing from the Act of 20 December 1974 on animal welfare.</p> <p>In addition, regulations exist on technical requirements (winch, harpoon, use of back—up rifle etc.)</p>

<p>Calibre and Bullets</p> <p>The Workshop recognised that there is a need to establish minimum requirements for firearms and ammunition for seal and walrus hunts. It was further recognised that specific recommendations on selection of calibre and bullet types for different species and hunts are difficult to make because little information is available. These observations and recommendations apply to all hunts.</p> <ul style="list-style-type: none"> • The Workshop therefore recommended that objective studies on terminal ballistics of various calibre and bullet types in seal and walrus hunting are carried out. • It was recommended that these studies be done in cooperation with the hunters. There is a need to consider what types of firearms and ammunition are presently available in remote communities and the Workshop urged the stores to make available the ammunition determined to be appropriate for the various hunts 	<p>Norway:</p> <p>Minimum requirement for ammunition when going sealing is regulated by law.</p> <p>Greenland:</p> <p>Executive order No 16 of 12 November 2010 on protection and hunting of seals</p>
<p>Full Utilisation</p> <p>The Workshop agreed that the fullest possible utilisation benefits hunters because of more returns from the harvest, preservation of traditional skills and a better public image. This applies to all hunts. The Workshop recommended the following:</p> <ul style="list-style-type: none"> • That all hunting should occur within safe conservation limits. • That all hunts should work towards the fullest possible utilisation of harvested animals. <p>That new uses and markets for seal and walrus products should be pursued</p>	<p>Greenland:</p> <p>The Executive Order no.20 of 27 October 2006 on the Protection and Hunting of Walrus limits the hunt to adult males, and establishes quotas, hunting areas and hunting seasons. A management plan based on the gradual reduction of quotas for the period 2007 – 2010 has been approved. These are steps necessary to achieve a hunt within safe conservation limits.</p> <p>The Executive order requires that all meat, skin, blubber and other usable parts are brought from the hunting place or destroyed.</p> <p>Norway:</p> <ul style="list-style-type: none"> • The quotas are set within safe conservation limits. • It is not an optimal utilisation of harvested animals in Norway. • With respect to the sealing industry attempts are made to develop the marked possibilities.
<p>Hunter Safety</p> <p>The Workshop recognised that the safety of the hunters should be a priority in all hunts.</p> <ul style="list-style-type: none"> • The Workshop recommended that the safety of the hunters must be considered in any regulatory measures or technical innovations to equipment and techniques. <p>In particular the Workshop recommended special attention to: hearing loss due to noise and the need for ear protection, bullet ricochet endangering people and property and protective gear for extreme cold and harsh conditions.</p>	<p>Norway:</p> <ul style="list-style-type: none"> • The incorporation of hunters safety is mandatory when considering new regulations and in the implementation of regulations regarding equipment and techniques. <p>This is not regulated legally but optional for the hunters. However the use of this kind of protection gear is increased among the hunters.</p>

**NAMMCO WORKSHOP ON STUCK AND LOST IN SEAL, WALRUS AND WHALE HUNTS:
14-16 NOVEMBER 2006, COPENHAGEN, DENMARK**

<p>1.1 GENERAL</p>	
<p>1.1 Minimise animal suffering The Workshop recommended that the hunters should make every effort to reduce unnecessary suffering by hunted animals, by minimizing killing times to the extent that is feasible. However this must be balanced by consideration of the safety of the hunter, and the risk of losing the animal.</p>	
<p>1.2 Monitoring The Workshop noted that the present information on struck and lost is outdated or inadequate for several species and areas, and that accurate estimation of struck and lost is important for effective management and essential to improve hunting practices. The Workshop recommended that new monitoring programmes that are appropriate for local conditions should be developed that could produce accurate information that will be accepted by hunters and managers. Such monitoring programmes should be developed in full cooperation among hunters, managers and researchers.</p>	
<p>1.3 Proper training of hunters The Workshop recommended that hunters should be trained in both the theoretical and practical aspects of hunting, and that training materials and programmes should be appropriate to local conditions.</p>	<p>NAMMCO manuals on maintenance and use of weapons.</p>
<p>1.4 Hunting equipment The Workshop recommended that hunters should always carry weapons and equipment appropriate to the target species and local hunting conditions, and that the equipment should be properly maintained and renewed when necessary.</p>	

<p>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.</p> <p>The Workshop furthermore recommended that the design, development and testing of new weapons and hunting equipment should be done in cooperation with hunters.</p>	
<p>1.6 Sharing of technology and knowledge The Workshop recommended that there should be open exchange and sharing of information about new weapons, equipment and hunting techniques, and that this should be done on both the national and international levels.</p>	
<p>Hunter Safety The Workshop recognised that the safety of the hunters should be a priority in all hunts.</p> <ul style="list-style-type: none"> • The Workshop recommended that the safety of the hunters must be considered in any regulatory measures or technical innovations to equipment and techniques. • In particular the Workshop recommended special attention to: hearing loss due to noise and the need for ear protection, bullet ricochet endangering people and property and protective gear for extreme cold and harsh conditions. 	<p>Norway:</p> <ul style="list-style-type: none"> • The incorporation of hunters safety is mandatory when considering new regulations and in the implementation of regulations regarding equipment and techniques. • This is not regulated legally but optional for the hunters. However the use of this kind of protection gear is increased among the hunters.
<p>2.1 SEALS</p>	
<p>2.1.1 Hunter training</p> <ul style="list-style-type: none"> • Develop suitable training materials for each area and hunt. These could use various media, <i>e.g.</i> audiovisual presentations on DVD or broadcast locally; written materials, and internet sites. • In areas where hunting is practiced, courses in hunting should be available in the school curriculum. This is already the practice in some areas, <i>e.g.</i> Finland. A comprehensive and advanced hunting education programme is under development in Greenland. In Norway it is mandatory to undertake a training course set up by the authorities before going hunting. 	

<p>2.1.2 Techniques and equipment</p> <ul style="list-style-type: none"> • The type of equipment that is suitable depends on the area, species, season and local environment. Descriptions of suitable equipment for each situation should be developed by local authorities, and made available to hunters and educational institutions. • Hunters should always have suitable equipment, in good working order, readily available when hunting. • In situations when seals usually sink after death, it may be advisable to use small-calibre weapons and shoot to injure, not to kill. The injured seal can then be secured using a hook or harpoon, and then killed. This technique is effective in reducing struck and lost, but does likely result in greater animal suffering. 	<p>GL: Executive order No 16 of 12 November 2010 on protection and hunting of seals</p>
<p>2.1.3 Regulatory measures</p> <ul style="list-style-type: none"> • In some areas it may be advisable to stipulate the minimum equipment that must be at hand when hunting. This is already done in most areas. • In some areas, seasonal closures could be used to forbid hunting in seasons when seals usually sink after death. Such closures are used in Norway and Finland, but may not be suitable in areas where hunters must take seals year-round. 	<p>GL: Executive order No 16 of 12 November 2010 on protection and hunting of seals</p>
<p>2.1.4 Monitoring</p> <p>Independent observers and governmental inspectors have been effective in monitoring hunts for harp and hooded seals in Canada and Norway. However, it is not possible to use independent observers to monitor all seal hunts. The following alternatives were recommended:</p> <ul style="list-style-type: none"> • Self-reporting systems such as <i>Pinniarneq</i> in Greenland could possibly be modified to provide information on struck and lost; • In other areas, community-based monitoring using post-hunt interviews, as used in Chukotka, may be effective; • A programme using “index” hunters, trained and contracted to provide information on their hunting activities, which is later extrapolated to the entire hunt, may be effective in some situations. 	
<p>2.2 LARGE WHALES</p>	

<p>2.2.1 Hunters training</p> <ul style="list-style-type: none"> • To encourage training, in practice and in theory with: experienced hunters, experts on weapons and experts on anatomy; • To produce educational material, including anatomical charts designed for whaling; • In order to learn and improve, feedback to whalers should be improved, including feedback on: successful kills, problematic kills, cases of struck and lost and their causes. 	<p>NAMMCO manuals on maintenance and use of weapons in baleen whales</p>
<p>2.2.2 Techniques and equipment</p> <ul style="list-style-type: none"> • To ensure that adequate equipment for securing and killing is well maintained, functioning and at hand; • Time to death should be as short as possible, once the whale has been effectively secured; • In order to prevent whales sinking when using harpoon cannon, it is recommended to: <ol style="list-style-type: none"> 1) Cause instantaneous death 2) Keep the back-up rifle at hand 3) Keep harpoon and attachment points well maintained 4) Use forerunners of adequate strength 5) Replace forerunners at regular intervals 6) Keep a back-up forerunner ready 7) Use the air pump to inflate the whale where legally feasible 8) Use grappling irons to secure the carcass. • To improve the Norwegian penthrite grenade used for hunting fin whales in Iceland and in Greenland, in order to increase the rates of instantaneous death or unconsciousness. • To facilitate access to good weather forecasting for whalers working from small boats; • To avoid killing the whale before it has been secured sufficiently. This is especially true when using small boats to hunt whales that may sink. • 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. 	<p>Improvement of penthrite grenade for use on finwhales in Iceland and Greenland has been done.</p> <p>Greenland No 12 of 16 July 2010 on reporting from hunting and strike of large whales No 12 of 22. December 2014 on protection and hunting of large whales</p>

<p>2.2.3 Regulatory measures</p> <ul style="list-style-type: none"> To strengthen international cooperation in order to facilitate: a) access to information and technology and b) purchase and transport of equipment, including weapons and explosives; Development and implementation of ways to reduce struck and lost should be done in close collaboration with the whalers. 	
<p>2.2.4 Monitoring</p> <ul style="list-style-type: none"> Reporting of the causes of struck and lost is needed to provide feedback to whalers. 	
<p>2.3 SMALL WHALES</p>	
<p>2.3.1 Hunter training</p> <ul style="list-style-type: none"> Training is paramount – it should be community based and species specific. Local experienced hunters who are familiar with local environment should be employed to train. Traditional knowledge should be taught in high schools. Ways have to be found to counteract the negative effects of diminishing quotas and hunting restrictions on the acquisition of hunter skills in future generations. 	<p>NAMMCO manuals on hunting of small whales and pilot whaling.</p>
<p>2.3.2 Techniques and equipment</p> <ul style="list-style-type: none"> Using more efficient equipment still does not necessarily diminish struck and lost. Thus a combination of suitable equipment and training is needed in the use of rifles and appropriate ammunition. Methods of improving access to long-range forecasting of weather conditions need to be found as weather is a very important factor in affecting struck and lost. 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. In hunting communities, suitable ammunition designed for marine mammals should be made more readily available. Use of high velocity rifles can result in hearing loss and steps should be taken to minimise this problem and disseminate technical information for user safety. 	

<p>2.3.3 Regulatory measures</p> <ul style="list-style-type: none"> • 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. • 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. 	
<p>2.3.4 Monitoring</p> <ul style="list-style-type: none"> • All parties (hunters, administrators, managers, biologists) have to get together to find a way forward on the matter of recording and reporting struck and lost. One route could be to establish local sub-committees to work out an acceptable and appropriate monitoring system in hunting areas. 	
<p>2.4 WALRUS</p>	<p>GL: Executive Order No 20 of 27 October 2006 on protection and hunting of walrus</p>
<p>2.4.1 Hunter training</p> <ul style="list-style-type: none"> • Walrus hunters should be properly trained and their training should be appropriate for the local environment. Such training can occur through traditional methods, formal schooling and other media such as video and the internet. It was specifically emphasized that inexperienced hunters should accompany experienced hunters on hunts. 	
<p>2.4.2 Hunting techniques</p> <ul style="list-style-type: none"> • When hunting walrus on ice floes, the hunter should approach as closely as possible before shooting. The hunter should shoot animals in the centre of the group first so that killed animals won't be pushed into the water by the others. • In open water hunts, it is best to harpoon before shooting, but this is not always feasible. It may be necessary to shoot the walrus in the body and lungs to disable it so that it can be harpooned, and then shoot it lethally. This will reduce the incidence of struck and lost and the chance of the walrus attacking the hunter. • Hunters should obtain the best available forecasts before setting out, only initiate hunting if the weather conditions are right, and abandon hunting if the weather deteriorates. 	

<p>2.4.3 Hunting equipment</p> <ul style="list-style-type: none"> • Hunting equipment is often specific to particular regions and seasons, and is adapted to local conditions. Local authorities should compile descriptions of equipment suitable for each area and make these available to hunters and teachers. • Hunters should ensure that proper equipment is available and well maintained. • 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. 	
<p>2.4.4 Monitoring</p> <ul style="list-style-type: none"> • The importance of monitoring must be explained to hunters so that they can “buy in” to a monitoring programme. • A monitoring system should provide feedback to hunters so that they can improve their hunting techniques. • 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. • A system based on “index hunters” may be effective in some areas. 	

**EXPERT GROUP MEETING ON BEST PRACTICES IN HUNTING AND KILLING OF SEALS:
24–26 FEBRUARY 2009, COPENHAGEN, DENMARK**

The convening of this Expert group was in response to a request from Council at its meeting in 2008.

<p>Firearms Firearms and ammunitions used should have the capacity to achieve the intended effect.</p> <p>Noting that new types of ammunition have been developed for hunting, the Expert Group 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.</p>	<p>NO: studies on the use of ammunition and hakapik in the Norwegian seal hunt was initiated in 2012 and results are underway GL: No 16 of 12 November 2010 on protection and hunting of seals covers all recommendations from the EGM</p>
<p>Hakapik and club When using the blunt projection of the hakapik the hunter's relative position to the animal is less important than a stable platform.</p> <p>When using the spike of the hakapik it is recommended that the hunter is positioned behind the seal in order to achieve maximum effect. The intended effect of the curved spike is to penetrate and damage the deep parts of the brain (including</p>	

<p>the brainstem) in order to achieve irreversible damage to these vital areas.</p> <p>The use of the hakapik and clubs on seals in water should only occur when the primary tool has not rendered the animal unconscious.</p> <p>Different types of hakapiks and clubs 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.</p>	
<p>Bleeding out</p> <ul style="list-style-type: none"> • The Expert Group discussed different processes of bleeding out seals, and its significance in relation to the criteria for death. • Legislation pertaining to some large scale seal hunts requires bleeding as soon as possible after stunning/killing. • The Expert Group recognises that bleeding is a precautionary measure to ensure death in all animals. <p>Recommendation</p> <p>The Expert Group recognizes the value of determining the duration (average and range) of bleeding in seals 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.</p>	
<p>Combination of methods used for stunning and killing of seals</p> <p>Canadian and Norwegian legislations both prescribe a three-step process for killing in their large scale hunts of seals.</p> <p>In both countries firearms are the main primary tool to stun/kill seals in the large scale hunt. In both hunts the hakapik/club used as primary tool can only be used to stun/kill young seals (less than 1 year) and shooting in the brain/neck with firearms is the mandatory primary method for all seals older than 1 year (1+ year).</p> <p>In the Norwegian large scale hunt when using the hakapik as primary tool, the young seal shall first be struck with the blunt part of the hakapik (step 1), then immediately after be struck with the spike of the hakapik (step 2) so that it penetrates deeply into the brain before the seal is bled (step 3). When the firearm is used as primary tool the seal is shot (step 1) and immediately reshot if necessary, then struck in the brain with the spike of the hakapik as soon as possible (step 2) and then bled (step 3).</p> <p>In the Canadian large scale hunt Step 1 is the same as in the Norwegian hunt when the hakapik/club is used as primary tool. However, step 2 differs as it requires that the sealer immediately checks by palpation the cranium of the animal (step 2) to confirm that it is completely crushed by the primary tool before bleeding out for a period of one minute (step 3) as soon as possible after step 2. When the seal is shot (step 1) the sealer must observe the seal for directed movements and shoot the seal again if necessary, check by palpation the cranium of the animal (step 2) as soon as possible after step 1, and then bleed out for a period of one minute (step 3) as soon as possible after step 2.</p> <p>Conclusion</p>	

<p>The Expert Group recognises the value of a three-step killing process in large scale seal hunts.</p> <p>Training and education The Expert Group wishes to emphasis the fundamental importance of information, education and training for seal hunters and inspectors in order to carry out the hunt in an appropriate manner with respect to animal welfare. Important elements of such education could include: animal behaviour, anatomy, physiology, ballistics, ethics, legislation, handling of carcass, etc.</p>	
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1ST EXPERT GROUP MEETING ON TTD IN LARGE WHALES, 17-18 FEBRUARY 2010, COPENHAGEN, DENMARK

The convening of this 1st Expert group was in response to a request from Council in 2009. Council (2010) as a follow up from the 1st Expert group requested CHM to:

- Convene an Expert group on hunting of small whales – executed in 2011
- Develop manuals for maintenance and use of weapons – executed in
- Arrange a workshop on processing and presentation of TTD data in a standardised form so that one may compare across hunts and regions – executed in 2015 and 2016

<p>Norway Data have not been sampled in the last 8 years.</p> <p>The Expert Group (EG) recommended a sampling of Time to Death (TTD) in the same way as was done in previous years so that the data are comparable – either on all boats or in a random sample of boats</p>	<p>TTD data collection carried out 2011 and 2012, results assessed at the 2nd EG meeting in 2015.</p>
<p>Iceland Minke whale The EG recommended that in the future, Iceland reports for minke whales whether the whales are killed instantaneously and if not, the TTD.</p> <p>Fin whale The EG recommended that in the coming season, data of killing efficiency - TTD and Instantaneous Death Rate (IDR) should be collected and analyzed with covariates (estimated distance and angle of harpoon cannon shot, hit region and detonation area) for the sake of improving hunting methods.</p> <p>It was noted that a development programme for the fin whale hunt has started in Iceland. In 2010 the second prototype of a new penthrite grenade designed for the fin whale hunt with 90 mm harpoon guns will be tested. The EG acknowledged the work and encouraged continuation and completion of this work.</p> <p>The EG furthermore encouraged the specialist examination of organs and tissues to better understand how the whales die.</p>	<p>Minke whale Implementation of reporting followed up.</p> <p>TTD collection carried out 2014 and 2015, results assessed at the 2nd EG meeting in 2015.</p> <p>Fin whale TTD collection carried out in 2014, results assessed in 2nd EG 2015.</p> <p>Acoustic monitoring of grenade detonation installed on all active hunting vessels.</p>

<p>The EG recommended an examination of the potential use of acoustic monitoring of grenade detonation in order to enhance human safety during flensing.</p>	
<p>Greenland <i>Minke whale</i> <u><i>Harpoon hunt</i></u> In Greenland and Iceland, TTD is estimated by the hunters but they have no necropsy reports to confirm TTD. In addition, the current IWC criteria used tend to overestimate TTD. The EG recommended Greenland to present the data and analyses in a statistically more informative way than is being done now.</p> <p>It was furthermore recommended the organization of 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.</p> <p><u><i>Rifle hunt</i></u> There is a risk of a longer TTD and higher “struck and lost” in the rifle hunt than in the grenade harpoon hunt.</p> <p>The Greenlandic hunters stated that there is a clear difference in efficiency of killing between different geographical regions in Greenland.</p> <p>The EG recommended that experienced hunters should meet with less experienced hunters to exchange information. It is especially important to focus on where to aim the first shot and the aiming of the shot that kills the whale after the floats have been attached.</p> <p>More data are needed with reference to the body position where the whale is hit and TTD. Norwegian anatomical figures of the position of the brain of minke whales can be used for training purposes and be handed out to the hunters.</p> <p><i>Fin whale</i> The EG acknowledged the improvement of TTD in recent years in Greenland. This improvement is probably the result of increased hunter experience.</p> <p><i>Bowhead</i> The EG recommended that shooting trials are set up to study the trajectory of the harpoon through the water and on this basis give advice on how to approach and where to aim at the whale.</p>	<p>NAMMCO organised a seminar on statistics and analysis in 2016. Greenland and Iceland participated.</p> <p>Recommended reporting has been implemented from 2015.</p> <p>Video of how to mount the harpoon cannon was developed in 2016.</p> <p>Greenland No 12 of 16 July 2010 on reporting from hunting and strike of large whales No 12 of 22. December 2014 on protection and hunting of large whales</p> <p>CHM meeting 2012 Meetings between hunters take place but not in an organised manner.</p> <p>Courses on the use and maintenance of the harpoon canon have been held. Organised practical training courses for gunners have not been held.</p>

<p>Fin whale and bowhead The EG agreed with Greenland's recommendation to increase the current penthrite charge for the fin and bowhead hunts and also to investigate a potential increase in the propellant charge.</p>	
<p>Fin, humpback and bowhead The EG recommended that the same modified penthrite grenade be used for the three large species – in fin, humpback and bowhead whale hunts.</p> <p>It was furthermore recommended that hunters be trained to measure and report on strike location, detonation location and distance between the two.</p>	<p>CHM meeting 2012 Shooting trials had been set up and that the hunters had been advised on how to approach the whales and where to aim at the whale.</p> <p>A new grenade with 45 g of penthrite was introduced for the hunt of fin, bowhead and humpback whales in Greenland. Simultaneously the trigger rope was reduced from 110 cm to 90 cm which detonate the grenade at a depth of 110 cm.</p>
<p>Assessment and comparison of different hunts</p> <p>Minke Whale Processing of data:</p> <p>The EG recommended collecting TTD for whales that do not die instantaneously. The purpose is to analyze the reasons for differences among different hunts in order to improve efficiency.</p> <p>Information on IDR for all hunts is probably biased low and TTD is biased high and these biases are probably greatest for the Greenlandic hunt. This especially concern hunts where the TTD are estimated by the hunters and are not corrected by <i>post-mortem</i> examinations.</p>	
<p>Education and training Regular training and exchanging of information is very important to achieve more efficient hunts and to improve animal welfare.</p> <p>The EG recommended that NAMMCO develop a handbook for hunters giving relevant information <i>inter alia</i> on weapons, killing techniques and animal welfare.</p> <p>The EG emphasized the importance of combining theoretical education with physical meetings in order to exchange information and experiences, including sampling and recording of data.</p>	<p>NAMMCO manuals on maintenance and use of weapons in whale hunts.</p> <p>FO: manual part of the training course</p>
<p>Monitoring Monitoring serves at least three important purposes:</p> <ul style="list-style-type: none"> - Ensures that the hunt is carried out according to laws and regulations; 	

<ul style="list-style-type: none"> - Provides information relevant for the management of the stocks; - Provides information on killing efficiency and animal welfare. <p>The EG recommended standardizing the TTD criteria used across hunts. It was acknowledged that the hunters are doing the monitoring in addition to many other responsibilities – therefore a balance will have to be achieved between hunting activities and monitoring /collecting information.</p> <p>The EG recommended that a small group be formed to prioritise the needed monitoring information.</p>	
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**EXPERT GROUP MEETING TO ASSESS SMALL WHALE HUNTING:
15-17 NOVEMBER 2011, COPENHAGEN; DENMARK**

<p>Drive hunt - Faroe Islands</p> <p>The Expert Group noted that the introduction of the spinal lance has entailed significant improvements in the TTD for the Faroese pilot whale hunt. The Expert Group also noted the extensive advances that had been made in the development of the lance.</p> <p>The Expert Group recommends:</p> <ul style="list-style-type: none"> • An illustrated manual is developed to document the technique, gear and bays certified for drive hunts. A manual could add credibility to the science behind the improvements, facilitate uniform practice among bays and also assist in exporting the knowledge to other hunting communities. • The spinal lance has proven efficient in reducing the TTD and reducing the number of cuts, and therefore the standardized lance should be made mandatory for use in the Faroese drive hunt. • Adopting this lance as a standard should not preclude further improvements of the lance. • Any damages from the use of the newly designed blunt tipped hook should be further explored. • TTD should be measured from the first use of the blunt hook. 	<p>NAMMCO manual on pilot whaling. Use of spinal lance included in new regulation.</p>
<p>Hunting of pilot whales, dolphins and porpoises - Greenland</p> <p>The Expert Group 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</p>	

<p>making comparison between hunts and development over time possible.</p>	
<p>Hunting of beluga and narwhal - Greenland The Expert Group appreciates Greenland’s effort to improve the data collection on struck and lost and to initiate data collection on TTD. It is recommended that data are gathered in a standardized manner making comparison between hunts and development over time possible.</p>	
<p>Netting - Greenland The Expert Group noted that netting of beluga and narwhal is prohibited in most areas in Greenland, but is allowed in East Greenland and one location in North West Greenland. This method is used when there is no other available option. The Expert Group noted that netting is likely to cause stress for the animals associated with the capture and the prolonged time to death and recommends that every attempt should be made to develop alternative catching methods.</p>	
<p>Hunter training The Expert Group recommended that hunters should be trained in both the theoretical and practical aspects of hunting, and that training materials and programmes should be appropriate to local conditions.</p> <p>The Expert Group recommends the development of a training manual for hunters, to include such topics as hunters’ safety, anatomy of the relevant species with emphasis on target sites likely to minimise TTD and S/L, required equipment, such as weapons, ammunition and secondary equipment, approaches to efficient utilisation of carcasses, and other topics to be identified. The Expert Group recommends a small working group be identified to explore the feasibility of developing such a manual, fully identify its components and develop a plan of human and other resources needed to produce it.</p>	<p>NAMMCO manual on small whale hunting in Greenland.</p>
<p>STRUCK AND LOST IN SMALL CETACEAN HUNTING</p> <p>The issue of struck and lost (S&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"> • It was noted that Canada did not present new or recent information on rates of struck and loss of small cetaceans. 	

<ul style="list-style-type: none"> It was noted that Greenland reports a loss rate of 0 on a reported catch of 179 narwhals and 86 belugas. <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>	
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2ND EXPERT GROUP ON TTD FOR LARGE WHALES, 4-6 NOVEMBER 2015, COPENHAGEN, DENMARK

<p>Norway The EG acknowledges the completion of data gathering that has been done since 2010 and also the improvement in the quality of the hunt over the past few decades.</p> <p>The EG 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>	
<p>Iceland Minke whale The EG acknowledges the work that has been done since 2010.</p> <p>The EG 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.</p> <p>There has been no training course arranged since 2003. A new course for the hunters should be arranged.</p>	<p>Collection of TTD undertaken in 2016 and 2017.</p>
<p>Fin whale Recommendations from 2010 are fully completed and the EG acknowledges this.</p> <p>The EG 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.</p>	

<p>Greenland Minke whale <u>Harpoon cannon hunt</u> There has been an improvement of the grenade hunt of minke whales. The EG 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 EG recommends that the result of this analysis be presented to hunters in future trainings.</p> <p>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.</p>	
<p>Minke whale <u>Rifle hunt</u> Data show that there is a longer TTD and higher struck and lost rate in the rifle hunt than in the harpoon hunt.</p> <p>The EG 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 cannon. Noting that rifle hunts are increasing, the EG 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.</p> <p>The Greenlandic hunters stated that there is a clear difference in efficiency of killing between different geographical regions in Greenland. The EG reiterates the recommendations that experienced hunters should meet with less experienced hunters to exchange information.</p> <p>The EG 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.</p>	<p>Council meeting 2015 endorsed CHM recommendation to: The concern that 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.</p>
<p>Fin whale 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</p>	

<p>bearing in mind the differences in equipment used.</p> <p>Data are needed with reference to the body position where the whale is hit in relation to TTD, and the EG looks forward to analysis and interpretation of these data to be made available.</p>	
<p>Bowhead The EG acknowledges that shooting trials to study the trajectory of the harpoon through the water have been performed.</p> <p>Data are needed with reference to the body position where the whale is hit in relation to TTD, and the EG looks forward to analysis and interpretation of these data to be made available.</p>	
<p>Fin, humpback and bowhead The EG 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.</p>	
<p>GENERAL Accepting that struck and lost is an inevitable part of all whaling operations the EG recommends that there be a review of the underlying reasons for struck and lost with the aim of decreasing it.</p> <p>The EG 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.</p>	<p>Council meeting 2015 endorsed CHM recommendation and tasked CHM to advice on how to best deal with:</p> <p>The need to organise a workshop on alternative methods for collecting standardised TTD data that are less expensive, thus making it easier to compare TTD between countries.</p> <p>The need to review the underlying reasons for struck and lost, with the aim of decreasing rates.</p>
<p>Monitoring The EG 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.</p> <p>The EG recommends a workshop to look into alternative, and if possible, more economical methods for collecting standard TTD data that may also facilitate more frequent collection of data.</p> <p>Education and training The EG emphasizes the importance of the angle of the shot relative to the animal's long</p>	<p>Council meeting 2015 endorsed CHM recommendation to:</p> <p>Monitoring Recommend to monitor TTD at 10 years intervals</p> <p>Education and training The importance of increasing, through training, hunters' awareness of the influence of the shooting angle relative to the animal's body in order to</p>

<p>axis in the harpoon cannon hunts. The recommended angle, based on the Norwegian data, is from 45 to 135 degrees relative to the animal's long axis and aiming the shot at the thorax. This information should be considered in training programmes for gunners.</p> <p>Regular training and exchange of information is very important to achieve more efficient hunts and to improve animal welfare.</p> <p>The EG emphasizes the importance of combining theoretical information with actual meetings in order to exchange information and experiences, including sampling and recording of data.</p>	<p>reduce TTD.</p>
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