

NAMMCO



NORTH ATLANTIC MARINE MAMMAL COMMISSION



Instruction manual on Pilot whaling

North Atlantic Marine Mammal Commission

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The North Atlantic Marine Mammal Commission – NAMMCO – is pleased to present this manual on pilot whale hunting in the Faroe Islands. NAMMCO would like to especially acknowledge the work of Justines Olsen in the development of this manual. His dedication to improve the hunting techniques and equipment deployed in the pilot whaling has been instrumental in the work with the manual.

NAMMCO would also like to acknowledge the Grindamannafelagið (the Pilot Whalers Association) in the Faroe Islands for their input during the process.

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Cover photo: B Mikkelsen

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PREFACE

Coastal people's right to hunt and utilise marine mammals has always been a firmly established principle in the North Atlantic Marine Mammal Commission – NAMMCO. Embedded in this right is also the obligation for hunters and the competent authorities, to conduct the hunt in a sustainable way and in such a manner that it minimises animal suffering associated with the hunting and killing methods, and take into account hunters' safety.

The Committee on Hunting Methods, formally established in 1994, facilitates NAMMCO's work in this field and to give advice on hunting methods to the Council and the member countries.

Advice given should be based on the best available scientific findings, technological developments and users' knowledge, and with due consideration to safety requirements / hunters safety and the efficient use of the resources. The Committee has organised much of its work through the convening of international workshops and expert group meetings on specific topics. A recurrent recommendation has been to enhance hunters' training.

NAMMCO's Committee on Hunting Methods has produced this instruction manual on pilot whaling in the Faroe Island. The target group is primarily the whalers, but also includes inspectors, observers and others engaged in whaling. The whalers and weaponry producers have been consulted in connection with this task, but the instruction manual is the direct responsibility of the Committee on Hunting Methods.

Hunters have been consulted during the work; however this manual is the responsibility of the Committee on Hunting Methods.

Tromsø, February 2014

NAMMCO Committee on Hunting Methods

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IMPORTANT INFORMATION

WHEN A SCHOOL OF WHALES HAS BEEN OBSERVED MAKE SURE THAT IT IS PERMITTED TO HUNT THIS PARTICULAR SPECIES.

THE RELEVANT AUTHORITIES MUST BE INFORMED OF ALL DRIVES.

DRIVING AND KILLING WHALES IS ONLY PERMITTED WHEN AUTHORISED BY AND UNDER THE AUSPICES OF THE DISTRICT ADMINISTRATOR (SYSSELMAN) AND THE FOREMEN.

THE AUTHORITY OF THE DISTRICT ADMINISTRATOR AND THE FOREMEN MUST BE RESPECTED.

AUTHORISED DRIVING AND HUNTING EQUIPMENT INCLUDES: LOOSE STONES, STONES FASTENED IN ROPE LINES, THE BLOWHOLE HOOK WITH ROPE OF SISAL OR MANILA, THE SPINAL LANCE AND THE WHALING KNIFE.

IT IS FORBIDDEN TO USE THE TRADITIONAL WHALING HOOK, UNLESS AUTHORISED BY THE DISTRICT ADMINISTRATOR OR THE FOREMEN.

THE HUNTER SECURING THE WHALE WITH THE BLOWHOLE HOOK MUST STAY WITH THE WHALE AS IT IS HAULED UP AND UNTIL IT HAS BEEN KILLED.

THE HUNTER OPERATING THE SPINAL LANCE MUST POSITION HIMSELF ON THE SIDE OF THE HEAD OR IN FRONT OF THE HEAD.

ALL PARTICIPANTS IN THE HUNT SHOULD BE AWARE OF THE DANGER OF SUDDEN TAIL MOVEMENTS OF THE WHALES IN THEIR VICINITY.

POSITION THE SPINAL LANCE IN THE MIDLINE BETWEEN THE BLOWHOLE AND THE DORSAL FIN AT ONE HAND'S BREADTH BEHIND THE BLOWHOLE AND STAB IT INTO THE SPINAL CORD.

WHEN THE SPINAL CORD HAS BEEN CUT, THE SPINAL LANCE SHALL BE MOVED FROM SIDE TO SIDE TO CUT THE BLOOD VESSELS IN THE SPINAL CANAL.

THOSE USING THE SPINAL LANCE MUST ENSURE THAT THE WHALE IS DEAD BY OBSERVING THAT IT IS LYING STRAIGHT AND THAT EYE MOVEMENTS CANNOT BE SEEN OR FELT.

WHEN IT HAS BEEN CONFIRMED THAT THE WHALE IS DEAD, THE BLOOD VESSELS IN THE VENTRAL PART OF THE NECK MUST BE CUT TO BLEED THE WHALE.

IF WHALES ARE DRIVEN OUT OR ESCAPE TO OPEN SEA ONE MUST INVESTIGATE WHETHER ANY WHALE IS WOUNDED. IF SO, THIS MUST BE COMMUNICATED TO THE DISTRICT ADMINISTRATOR WHO WILL TAKE ACTION TO HAVE THE WHALE(S) KILLED IF THIS IS CONSIDERED NECESSARY FOR ANIMAL WELFARE REASONS.

INTRODUCTION

The whale drive hunt in the Faroe Islands includes the following species: Long-finned pilot whale (*Globicephala melas*), Bottlenose dolphin (*Tursiops truncatus*), White-beaked dolphin (*Lagenorhynchus albirostris*) and White-sided dolphin (*Lagenorhynchus acutus*).

For all the above mentioned species the anatomical features with respect to blowhole and spinal cord are comparable and therefore the hunting and killing method is the same. The utilisation of pilot whales is by far the most common and thus this species will be the focus of this manual.

Pilot whales have been hunted in the Faroes for more than 1100 years. The hunting method – driving and killing – has in general been carried out in the same way for centuries. However during the last 30 years developmental work has taken place with respect to improving the techniques used, as well as the organisation of the drive and authorisation of whaling bays.

The Faroe Islands is divided into six districts with 23 authorised whaling bays. The most important criteria for a whaling bay is that the sea bed slopes gradually up to the shore line, and that the bay has enough space for the killing to take place. Whaling bays which do not fulfil these criteria are either not authorised or improved.

When a school of pilot whales is sighted (either from land, sea or air), the district administrator, the foremen or both have to decide into which whaling bay the school shall be driven. Once the decision on location is made, the boats form in a semi-circle behind the whales under the direction of the foremen. Stones are thrown into the water to make air bubbles, which help herd the whales in the desired direction. Upon approaching the whaling bay the boats are arranged by size, the smallest boats which can get closest to the beach, are in the front row, while the larger boats are kept behind. In this manner the school is beached or driven so close to the beach that people are able to wade out to the whales to secure them for the killing.

The whale is secured with the blowhole hook, after which the whale is killed by stabbing the spinal lance at one hand's breadth behind the blowhole. This severs both the main blood supply to the brain as well as the spinal cord. Once the spinal cord has been severed in this way, the whale lies completely paralyzed and unconscious. The whaling knife – (in Faroese *grindaknívur*), is used to bleed the whale.

Legislation on whaling has been continually adapted in line with social and technological changes, and the latest Executive Order No 100 from July 5th 2013 on

pilot whale hunting describes in detail how the hunt should be carried out and organised, both before, during and after a catch.

The focus of this manual is the hunting equipment and its proper use.

PILOT WHALE ANATOMY IN RELATION TO THE SECURING AND KILLING

The overriding principle pertaining to any killing is that it is carried out as quickly and painlessly as possible with due respect to the safety, as well as taking into account the purpose of the slaughter, such as if the animal is intended for human consumption.

Given the anatomical features of the pilot whale, the most efficient killing method is to make a spinal cut while the whale is secured. The securing is done by inserting a blowhole hook in one of the air sacs of the blowhole.

THE BLOWHOLE

The blowhole of the pilot whale can be compared to other mammalian nostrils with the difference that the blowhole embodies a single opening for both nostrils. The nostrils themselves are inside the blowhole and lead downward to the pharynx, see Figs. 1 and 2.

The blowhole hook is not inserted into the nostrils but in one of the two pocket-like formations, vestibular air sacs, which are located on either side of the blowhole between the skull and the skin, see Fig. 5. Although the surrounding tissue is solid and will withstand considerable strain, the use of the blowhole hook should be kept to a minimum.

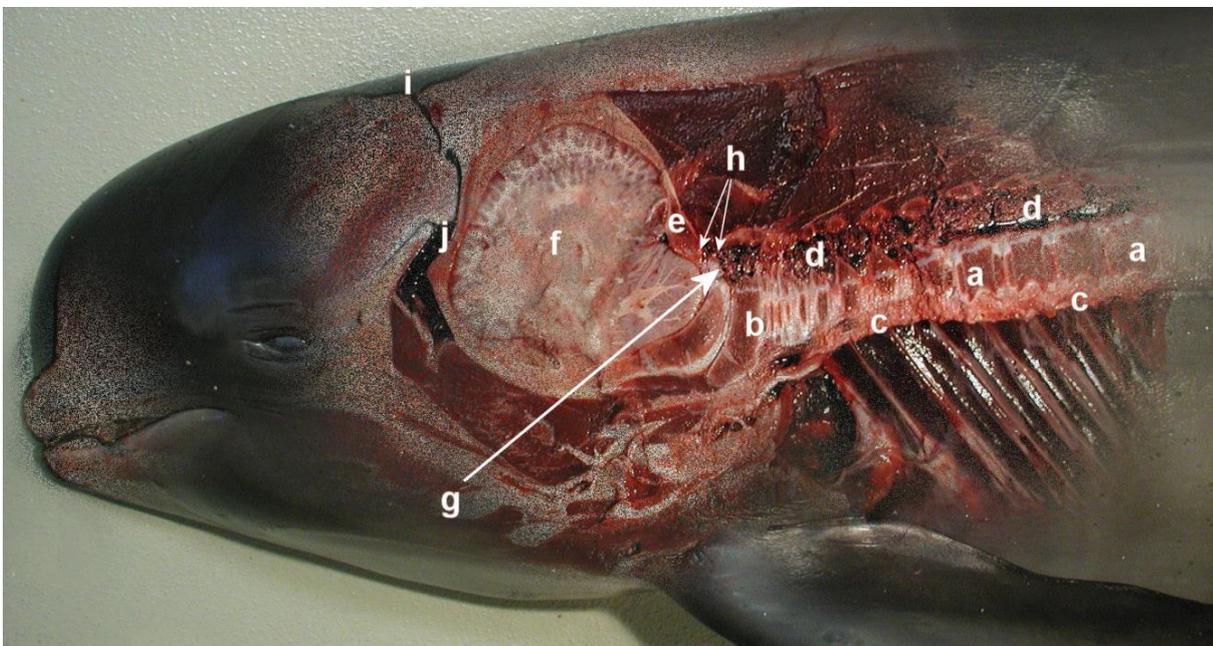


Fig. 1. Adapted photo showing longitudinal section of a pilot whale. Thoracic vertebrae (a) and cervical vertebrae (b). Vascular rete below thoracic- and cervical vertebrae (c). Spinal canal with vascular rete within thoracic- and cervical vertebrae (d). Occipital bone (e), the brain (f) and foramen magnum (g). The space between first cervical vertebra and occipital bone (h). The blowhole (i) and the nasal cavity (j).

Photo and adaptation: B. Hanusson

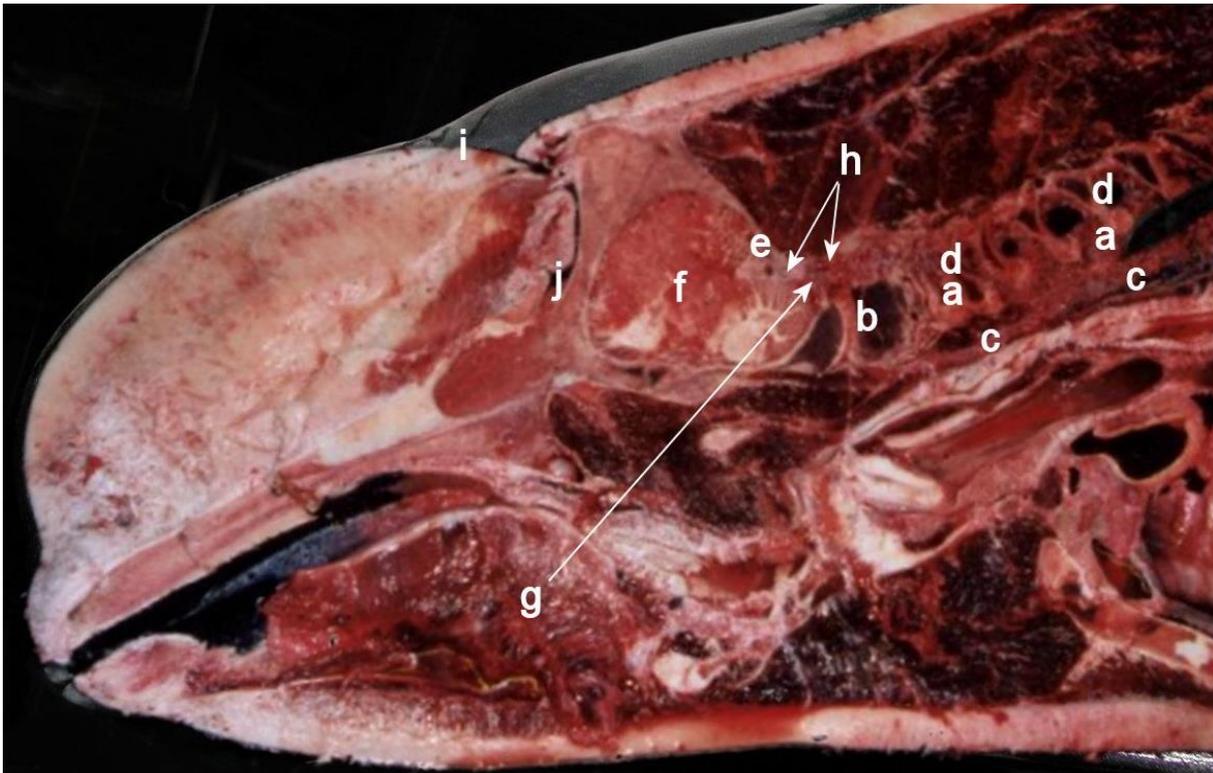


Fig. 2. Sagittal view of a pilot whale torso. Thoracic vertebrae (a) and cervical vertebrae (b). Vascular rete below thoracic – and cervical vertebrae (c). Spinal canal with vascular rete within thoracic- and cervical vertebrae (d). Occipital bone (e), the brain (f) and foramen magnum (g). The space between first cervical vertebra and occipital bone (h). The blowhole (i) and the nasal cavity (j).

Photo: K. Lindenskov

THE BLOWHOLE HOOK WITH LINE

In order to kill a pilot whale it is essential that the whale is secured, i.e. that it is laying sufficiently still so that it can be killed in one swift movement.

The blowhole hook causes no damage to the whale, compared to the now abolished traditional whale hook, which could cause serious lesions and wounds. The traditional whale hook also often necessitated repeated hooking of the same whale and it made it more difficult to steer and tow the whale onto the sand. In addition the whale hook was often stabbed in the same area of whale's neck and head where the crucial cut should be made to sever the spinal cord.

The blowhole hook is made of stainless steel, see Figs. 3 and 4. It has an eye for attachment of the line, a rod (stem) and a curvature which ends in a ball. The curvature is formed in such a manner that the hook can be used for different sized cetaceans. Most hooks have an individual number, and they are available at all whaling bays.

The line of the blowhole hook must be made of sisal- or manila rope and not synthetic fibres. Synthetic lines can be dangerous due to their elasticity, causing injury if the hook is released from the blowhole during the towing.

The blowhole hook must be inserted sideways into one of the vestibular air sacs of the blowhole and not be pushed into it (Fig. 5). The hunter applying the blowhole hook must hold onto the hook during the towing of the whale. The hook must remain in the blowhole and the air sacs during the killing and should not be pulled out before it has been confirmed that the whale is dead.



Fig. 3 Blowhole hook with sisal rope. Photo: B. Hanusson

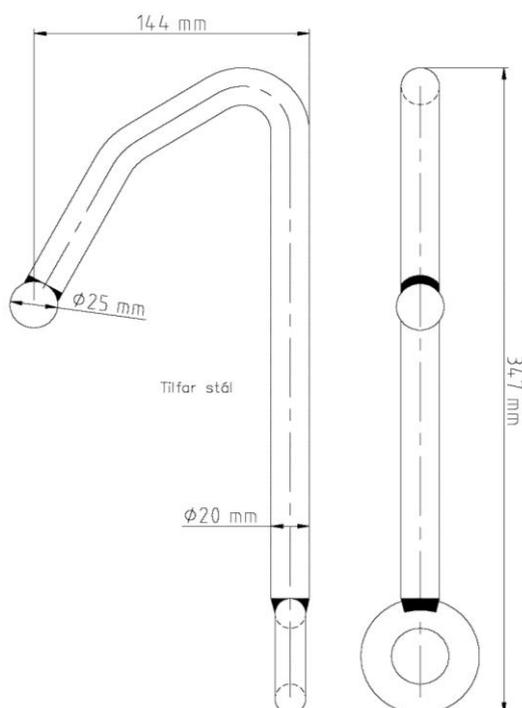


Fig. 4. Blowhole hook. Drawing by H. Durhuus, MEST P/F

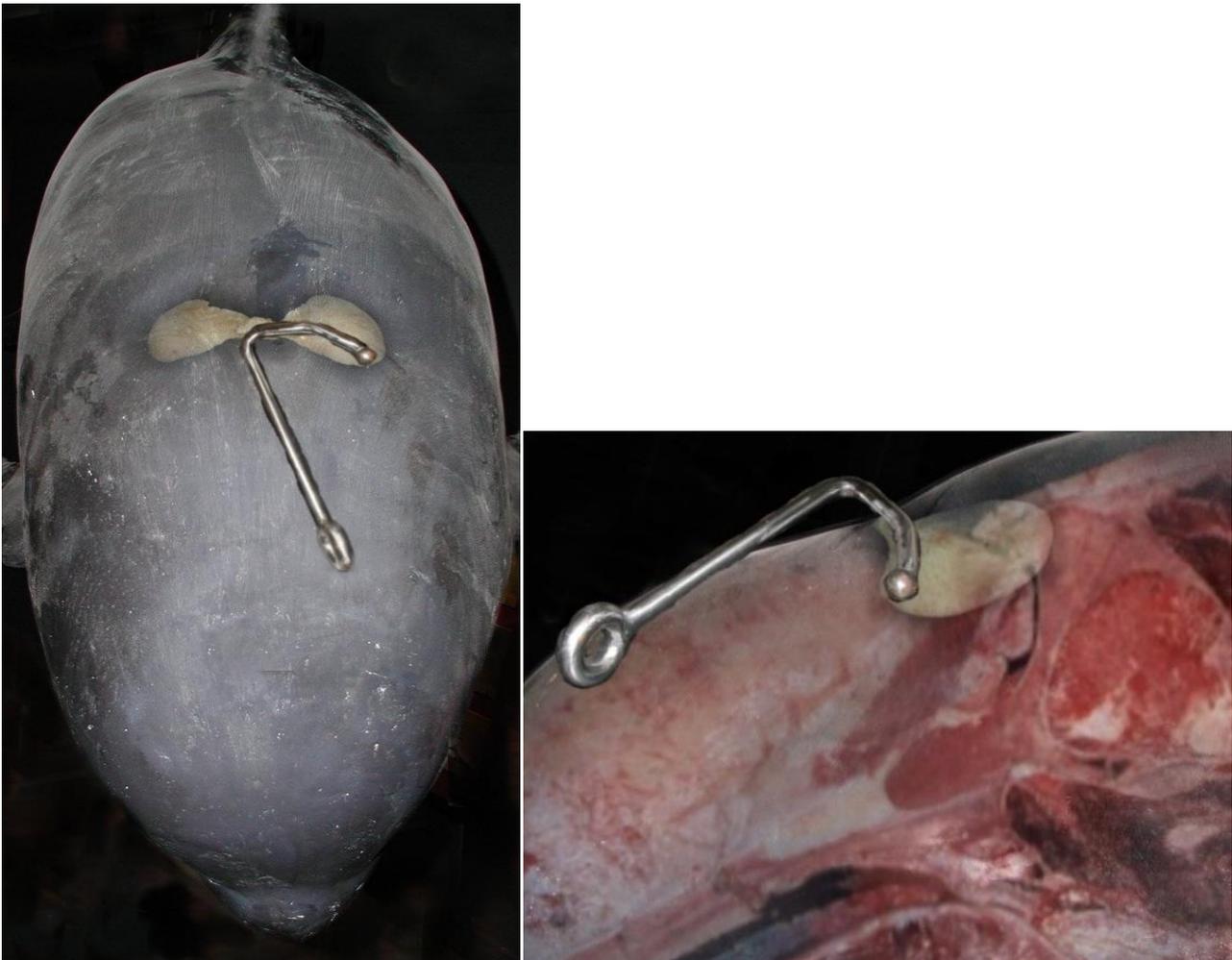


Fig. 5. Adapted photos of a pilot whale. Blowhole hook inserted into left vestibular air sac. Left photo: photo and adaption B. Hanusson, Right photo: photo K. Lindenskov, adaption B. Hanusson

BLOOD SUPPLY TO THE BRAIN

The blood supply to the whale brain is through the vascular rete in the spinal canal and not, as is the case with terrestrial mammals, through the blood vessels on the ventral side of neck. This aspect makes it possible to kill a whale by stabbing the spinal lance into the spinal canal, thereby cutting the spinal cord and simultaneously severing the blood vessels supplying blood to the brain.

A whale only has rudiments of the ventral cervical arteries which in terrestrial mammals supply the brain with blood. The whale has a special blood reservoir or rete system under the thoracic and the *cervical vertebrae*. This tissue structure continues into the spinal canal where it spreads out like a sponge-like tissue around the spinal cord up to the brain. Blood to and from the brain flows through this rete system, which also acts as a blood reservoir from which the brain is supplied with blood during diving, see Figs. 1 and 2.

Given this particular arrangement of blood vessels and nerve system in the cervical region, one can conclude that one incision will disconnect the two systems. When the

spinal cut is performed either with a knife or with the spinal lance, the spinal cord is cut and the whale is paralyzed and lies completely still. At the same time the blood supply to the brain is disconnected and the whale becomes unconscious and dies instantly.

ANATOMY OF THE CERVICAL AND OCCIPITAL REGION IN PILOT WHALES

A pilot whale is killed by severing the spinal cord and the arteries supplying the brain with blood. The spinal cut is made at one hand's breadth behind the blowhole.

In the space between the cranial cervical vertebra (atlas) and the neck, there is an opening into the spinal canal on the dorsal side which for a medium sized whale is c. 5 cm. Through this opening it is possible to reach the spinal cord and cut it, see Figs. 1 and 2. The whale's cervical vertebrae are fused and as such represent a single unit. The front of the atlas meets the neck in a joint surface. The spinal canal is located inside the cervical vertebrae and continues up to the neck hole, the foramen magnum, where the spinal cord with its network of blood vessels continues into the brain case, see Fig. 6.

The size of the opening of the foramen magnum is related to the whale's size. A small whale has an opening of c. 5 cm in width while the largest whales will have an opening of 8-10 cm, see Fig. 7. Thus, because the blade of the spinal lance measures 47 mm, it is essential to move the spinal lance to both sides after having stabbed it in order to cut all the blood vessels in the spinal canal.

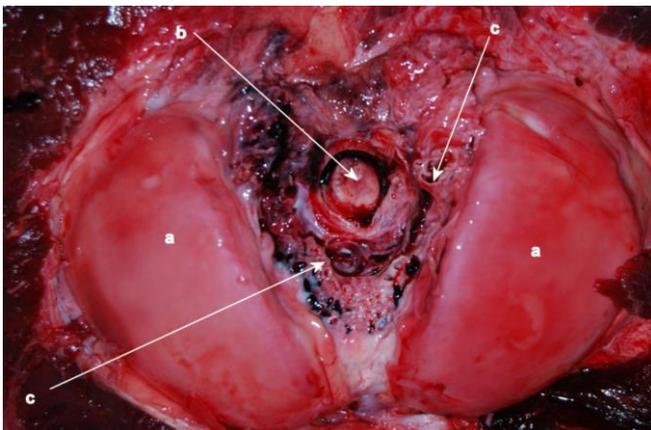


Fig. 6.



Fig. 7.

Fig. 6. Head of a pilot whale seen from behind: Articular surface of occipital bone (a) with foramen magnum and within foramen magnum the spinal cord (b) and vascular rete (c) leading to and from the brain.

Photo: B. Hanusson

Fig. 7. Foramen magnum in a small pilot whale.

Photo: B. Hanusson

THE SPINAL LANCE

The spinal lance, Figs. 8, 9, 10 and 11, consists of five parts:

- a stainless steel rod,
- a fixed upper handle made of nylon
- a loose sliding lower handle/ sheath made of nylon, Fig. 9,
- a double-edged, oval blade that is attached to the lower part of the rod, Fig. 10,
- a locking mechanism for the blade on the sliding handle/sheath, Fig. 9.

The rod measures 74 cm from the fixed upper handle to the tip of the double-edged blade. The rod diameter is 14 mm. The lower 12 cm of the rod has a diameter of 12 mm with an 11 cm long cleavage at the end. In this cleavage the double-edged blade is mounted with a hexagonal socket screw making it possible to remove the blade in order to clean and sharpen it. The blade is oval, 100 mm long and 47 mm wide. The loose sliding handle has the shape of a sheath. On the sliding handle is a locking mechanism that secures the blade in the sheath when the spinal lance is not being used. When this mechanism is unlocked, the handle slides along the rod. The purpose of this device is to position the lance exactly where the stabbing takes place while the blade is still in the sheath. This sliding handle can also be fixed in the top position just below the fixed handle. The sliding handle is tracked on the rod and can be locked in position on the upper handle by turning the sliding handle. With this mechanism, it is possible to use both hands if it is not possible to carry out the stabbing with one hand.

Another aspect of the spinal lance that makes it easy to operate is that the rod extends almost to the tip of the blade and ends with a rounded shape c. 1 cm from the tip, see Fig. 10. This reduces the risk of hitting the occipital bone because the rounded end of the rod will direct the lance into the space between the atlas and the occipital bone.

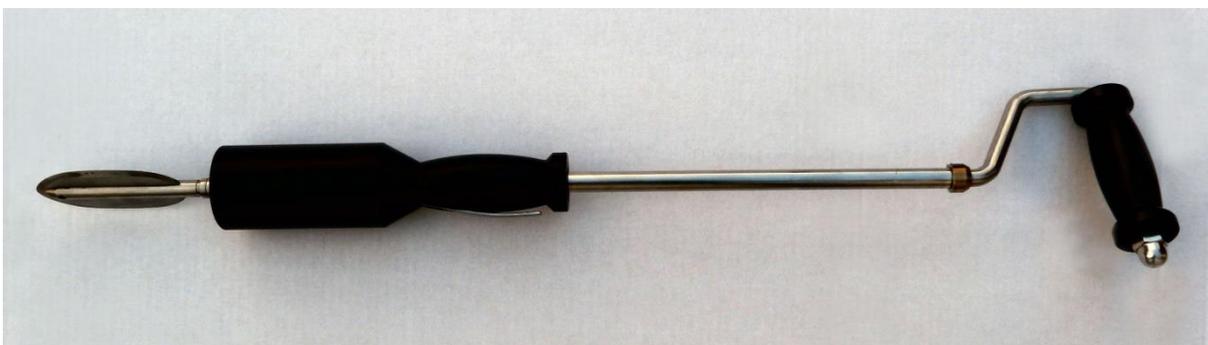


Fig. 8. Spinal lance.

Photo: B. Hanusson



Fig. 9. Distal section of spinal lance with blade and sliding handle.
Photo: B. Hanusson



Fig. 10. The oval blade of spinal lance showing stem ending near the tip of the blade.
Photo: B. Hanusson

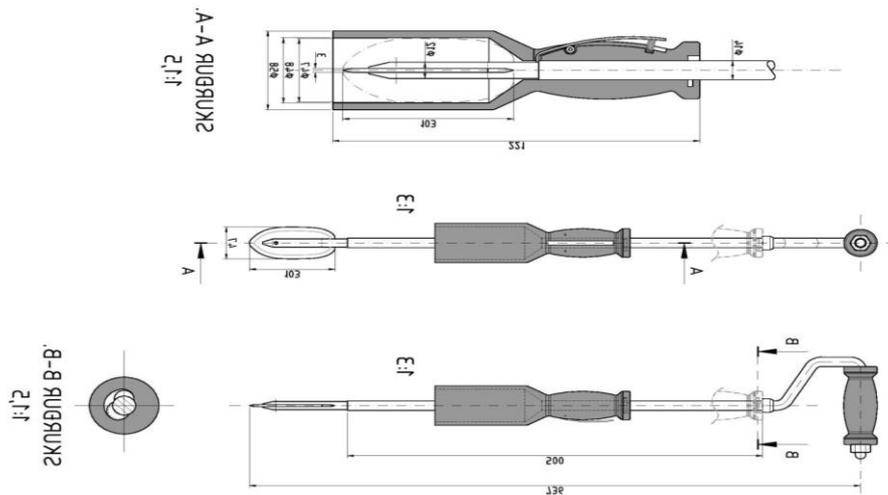


Fig. 11. Spinal lance, drawing by H. Durhuus, MEST P/F

KILLING WITH THE SPINAL LANCE

Before killing a whale the hunter is obliged to ensure that the circumstances are such that it is possible to carry out the stabbing with the spinal lance **in one swift movement**.

For safety reasons the hunter using the spinal lance must be positioned correctly, i. e. **either to the side of the head of the whale or in front of the whale**, Fig. 12. The moment the spinal cord is severed the situation is dangerous as the whale will make a violent movement with the tail. Reflex movements might also occur the first minutes in dead animals.

All participants in the hunt should be aware of the danger of sudden tail movements of the whales in their vicinity.



Fig. 12. Pilot whale stabbed with spinal lance. The spinal lance in the midline and one hands breadth behind the blowhole.

Photo: Á. C. Joensen

Killing with the spinal lance shall be performed by stabbing the lance in the midline between the blowhole and the dorsal fin at one hand's breadth behind the blowhole.

The blade of the spinal lance must be perpendicular to the line between the blowhole and dorsal fin. The stab must be made perpendicular relative to the surface or be directed at a backward angle of approximately 10 degrees, Fig. 13 and 14. Immediately after the severing of the spinal cord the lance must be moved to both sides in order to ensure that the surrounding blood vessels in the spinal canal are cut, Fig. 15, 16 and 17.



Fig. 13.

Fig. 13. A pilot whale seen with the spinal lance stabbed between the occipital bone and the first vertebra.

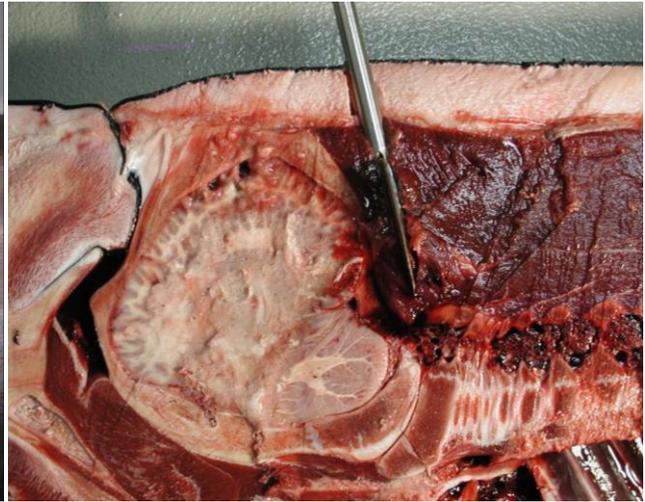


Fig. 14.

Fig. 14. A sagittal view of fig 13. Photos: B. Hanusson

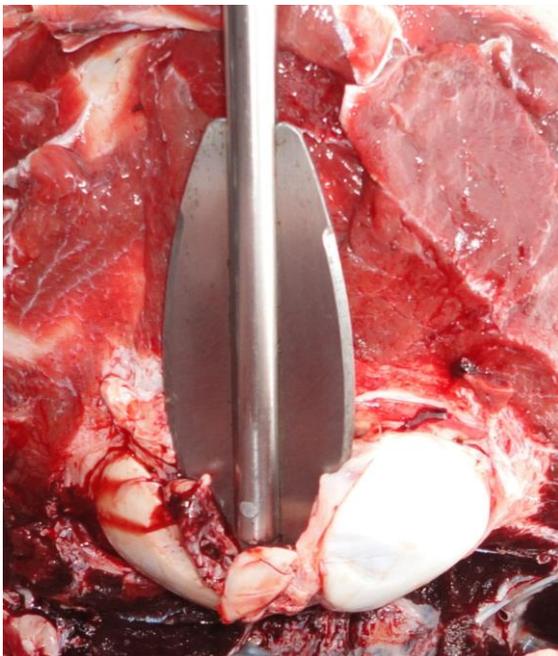


Fig. 15. Skull seen from behind. Spinal lance correctly positioned. Photo: J. Olsen



*Fig. 16. Skull of a large pilot whale seen from behind. Spinal lance correctly positioned. The arrows indicate how the spinal lance should be moved to sever all the blood vessels.
Photo: J. Olsen, Adaption: B. Hanusson*



*Fig. 17. Pilot whale secured in the blowhole with blowhole hook. The spinal lance in correct position.
Note the spurt of blood from severed arteries.
Photo: J. K. Vang*

CRITERIA OF UNCONSCIOUSNESS AND DEATH

After the movement associated with the cutting of the spinal cord and the severing of the spinal arteries, the whale will not move. The whale does not lose consciousness and die from the cutting of the spinal cord but by the successive cutting of the spinal arteries. The unconsciousness is confirmed by checking if the animal blinks (the corneal reflex) or the eye moves when touched. If there is no reaction the whale is unconscious or dead.

The hunter using the spinal lance is obliged to do this check. If the whale blinks or moves the eyes it is regarded as conscious and needs to be re-stabbed.

BLEEDING

The whale bleeds extensively and dies after the cutting of the spinal arteries, fig. 17. However in order to ensure good meat quality it is important to also cut the blood vessels at the throat after the whale is dead. This is best done by cutting deep into both sides of the neck and into the blood vessels with a whaling knife. The act of bleeding a whale must not commence before the hunter using the spinal lance has given his approval.

There are no specific requirements with respect to the whaling knife, but usually the length of the blade is between 16 cm and 19 cm.

WHEN IT IS NOT POSSIBLE TO USE THE BLOWHOLE HOOK AND/OR THE SPINAL LANCE

It is prohibited to use equipment for securing and killing other than the blowhole hook and the spinal lance. The district administrator and the foremen are authorised to waive this requirement if they find it necessary.

STRUCK AND LOST WHALES

Struck and lost whales are rare in the Faroese hunt. If for some reason a wounded whale is escaping, the district administrator must be alerted. He shall take steps to get the whale killed if this is considered necessary for animal welfare reasons.

AFTER THE HUNT

Following a whale drive – all hunting equipment must be made ready for use in future drives. The lines and the blowhole hook must be cleaned and dried. The spinal lance must be taken apart, checked, cleaned, dried and if necessary the blade must be sharpened. Then it should be reassembled so it is ready for the next whale drive.