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Killing methods and Time to death (TTD) in the Greenlandic large whale hunt in 2007-2014

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INTRODUCTION

There are three types of hunting of large whales in Greenland: hunting of fin whales, bowhead whales and humpback whales with harpoon cannon, hunting of minke whales with harpoon cannon and the collective rifle hunt for minke whales. Not all local communities have a vessel with harpoon cannon (in 2014 8 out of 16 communities in Greenland did not).

In recent years, of the approximately 60 fishing vessels originally equipped with harpoon cannon, some 30-40 are approved for hunting and active in whaling during the season. Gunners must be trained and formal approval of the harpoon cannon is mandatory and required every second year. Courses are provided in the use of the harpoon cannon and whale-grenade and are compulsory to obtain a licence for the hunting of large whales.

The size of the vessels varies (9-20 m) with 75 % < 15m. A 30 foot (9m) vessel is required for minke whale hunting and 36 foot (11m) vessel for fin whale, humpback whale and bowhead whale hunting. Crew size also varies from around 4 to up to 7. The vessels operate opportunistically and seasonally i.e. they are not full-time whaling vessels but are also fishing vessels and crew members may also have other seasonal employment. The monthly distribution of catches of minke whales by the harpoon hunt has a peak from June-October while for fin whale it is August to September. Bowhead whale is caught in April-May, and humpback from April-December.

Hunting generally occurs in good sea conditions only (<Beaufort 3) as the main method of hunting is stealth. Trips generally last less than 24 hours and once a vessel has caught a whale it tows it to the nearest suitable flensing site. Hunting usually occurs within 60n.miles of the home port of the vessel and depending on conditions up to 10n.miles offshore.

Improvement of the whale killing method has been made continuously, with a focus on hunter's safety and animal welfare. Data is collected at each hunt by the hunters and reported to the Ministry of Fisheries, Hunting and Agriculture.

WHALE KILLING METHODS

Fin whales, bowhead whales and humpback whales with harpoon cannon

Fin whales and humpback whales are caught in West Greenland, south of Uummannaq. Fin whales are caught either by two boats of a minimum length of 30 ft. working together, or by one boat of a minimum length of 36 ft. One boat with a minimum length of 36 ft. is required for the humpback whale. Bowhead whales are caught in West Greenland in the Disko Bay area. They are caught by three boats of a minimum length of 36 ft. working together. The majority of the minke whales are also taken by this method. The boat length is 30-70 ft.

Each boat should be equipped with one certified 50mm Kongsberg cannon, which is checked every second year.

The primary weapon is a harpoon with the Norwegian penthrite "Whale Grenade 99". This whale-grenade was originally produced for hunting minke whales, and it has been modified for the hunt of the larger whales by extending the length of the triggering cord (from 40 cm to 90 cm) and an increase in the amount of explosives (from 30 g to 45 g of penthrite). The secondary weapon is the same as the primary weapon. Gunners shoot in the heart and lungs region by aiming at an area close to the pectoral fins.

The secondary weapon for the minke whale is either a harpoon with the "Whale grenade 99", or rifles of a minimum calibre of 7.62 mm (30.06) and full mantled bullets. Some hunters use solid roundnosed bullets together with rifles with higher calibre (.375), due to their better penetration. Rifle shots are aimed at the neck, in the back of the animal's head.

Collective minke whale hunt

The collective minke whale hunt takes place in settlements where there are no boats with harpoon cannons or where there is not a food sufficient supply of products from large whales from vessels with mounted cannon. The collective minke whale hunt is the only hunt of large whales in areas with little infrastructure, such as East Greenland and West Greenland north of Disko Bay.

A minimum of 5 skiffs have to participate in the hunt, normally up to 8-10 small (usually around 6m and never more than 9m) vessels equipped with outboard motors. Each boat generally contains around 2-4 people. Boats of larger size without harpoon cannon can also take part, but not as the leading boat. These are usually small fishing boats. Each boat has to be equipped with at least one hand harpoon with line and buoys. This harpoon is attached to the whale at the first opportunity, to prevent the animal from sinking. During the course of the hunt, hunters attempt to herd the whale towards shallow and inshore waters.

The weapons of the collective minke whale hunt are rifles of a calibre of 7.62 mm. (30.06) or larger and full mantled bullets. As a rule, the whales are first wounded and then secured with the hand harpoons. When possible, the hand harpoon is used before wounding the animal. One hunter is designated the leader and it is his task to secure the animal with the hand harpoon. Once a whale has been secured, it is killed by shoots aimed at the neck. Round-nosed solid bullets together with rifles with higher calibre, such as .375, are often used to kill the whale.

TTD and IDR

The criteria used to indicate unconsciousness and death is when the whale does not move and the flippers are immovable. This includes when the whale has sunk and there is no movement in the harpoon line or floats. Number of whales killed instantly is whales reported killed within 1 minute.

The presented Greenlandic data on TTD is biased high because the TTD are estimated by the hunters and are not corrected by post-mortem examinations.

Table 1 shows the results of TTD and IDR for all four whale species.

Species	Year	Hunting method primary weapon	Secondary weapon	Average TTD minutes		IDR %	Sample size
				Mean	Median		
Minke whale	2007	grenade, 30 g pentrit	rifle	7	3	31%	123
Minke whale	2008	grenade, 30 g pentrit	rifle	6	5	27%	77
Minke whale	2009	grenade, 30 g pentrit	rifle	5	2	41%	68
Minke whale	2010	grenade, 30 g pentrit	rifle	5	2	44%	95
Minke whale	2011	grenade, 30 g pentrit	rifle	4	1	34%	108
Minke whale	2012	grenade, 30 g pentrit	rifle	4	2	48%	89
Minke whale	2013	grenade, 30 g pentrit	rifle	4	2	51%	79
Minke whale	2014	grenade, 30 g pentrit	rifle	4	1	53%	78
Minke whale	2007	rifle	rifle	24	20	3%	29
Minke whale	2008	rifle	rifle	23	20	8%	38
Minke whale	2009	rifle	rifle	29	20	0%	59
Minke whale	2010	rifle	rifle	25	25	0%	57
Minke whale	2011	rifle	rifle	26	21	0%	56
Minke whale	2012	rifle	rifle	27	20	0%	50
Minke whale	2013	rifle	rifle	34	20	0%	91
Minke whale	2014	rifle	rifle	27	20	3%	70
Fin whale	2007	grenade, 30 g pentrit	grenade, 30 g pentri	15	13	30%	10
Fin whale	2008	grenade, 30 g pentrit	grenade, 30 g pentri	11	10	20%	10
Fin whale	2009	grenade, 30 g pentrit	grenade, 30 g pentri	23	25	14%	7
Fin whale	2010	grenade, 30 g pentrit	grenade, 30 g pentri	22	4	33%	3
Fin whale	2011	grenade, 30 g pentrit	grenade, 30 g pentri	21	15	20%	5
Fin whale	2012	grenade, 30 g pentrit	grenade, 30 g pentri	8	8	25%	4
Fin whale	2013	grenade, 45 g pentrit	grenade, 45 g pentri	12	10	44%	9
Fin whale	2014	grenade, 45 g pentrit	grenade, 45 g pentri	22	10	36%	11
Humpback wha	2010	grenade, 30 g pentrit	grenade, 30 g pentri	23	7	17%	6
Humpback wha	2011	grenade, 30 g pentrit	grenade, 30 g pentri	9	3	50%	6
Humpback wha	2012	grenade, 45 g pentrit	grenade, 45 g pentri	12	13	25%	8
Humpback wha	2013	grenade, 45 g pentrit	grenade, 45 g pentri	30	15	17%	6
Humpback wha	2014	grenade, 45 g pentrit	grenade, 45 g pentri	21	10	17%	6