

BENEATH THE SURFACE

WHAT NORWAY'S OWN DATA REVEALS ABOUT COMMERCIAL WHALING

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EXECUTIVE SUMMARY

Norway currently sets the world's largest commercial whaling quota and has the highest annual commercial catches of baleen whales. It continues to hunt whales under a formal objection to the commercial whaling moratorium established by the International Whaling Commission. Norwegian authorities maintain that the hunt is sustainable, and humane. This report assesses those claims using Norway's own data, regulatory framework, and official reporting.

The findings raise serious concerns regarding both animal welfare and sustainability. Norwegian data show that non-instantaneous deaths remain a persistent feature of commercial whaling, including documented cases where whales took 20–25 minutes to die following the initial harpoon strike. Analysis of Electronic Reporting System (ERS) data from 2021–2025 also identified hundreds of failed shots and multiple whales struck and lost at sea, demonstrating that accuracy failure is not exceptional, but structurally linked to the hunting method itself. The report further identifies major weaknesses in oversight. Norwegian whaling operates without independent observers and relies largely on self-reported data submitted by whalers themselves. At the same time, monitoring and reporting requirements have been progressively weakened, reducing transparency and limiting meaningful international scrutiny.

On sustainability, the report finds that Norway's quota system is increasingly disconnected from actual catch levels, market demand, and precautionary ecosystem management. Quotas continue to rise despite declining utilisation and collapsing domestic demand for whale meat. The regular killing of pregnant females, combined with the failure to account for calves within quota calculations, further undermines claims of precautionary management. The report also highlights growing scientific evidence that whales play important ecological roles in nutrient cycling, carbon sequestration, and marine productivity. Current Norwegian management approaches do not adequately incorporate these ecosystem-level functions or broader cumulative environmental pressures affecting whale populations.

Public opinion within Norway increasingly diverges from government policy. Consumption of whale meat has declined to negligible levels, particularly among younger generations, while majorities of Norwegians consider prolonged deaths and the killing of pregnant whales unacceptable. Taken together, the evidence presented in this report suggests that Norwegian commercial whaling cannot credibly be characterised as either consistently humane or precautionary.

INTRODUCTION

Norway currently records the highest annual commercial catches of whales and sets the world’s largest commercial whaling quota. It continues to hunt whales under a self-issued objection to the 1986 International Whaling Commission (IWC) moratorium on commercial whaling, maintaining that its operations are both sustainable and conducted to high animal welfare standards.¹

Norwegian authorities consistently present the hunt as tightly regulated, scientifically justified, and ethically managed. In 2026, the Minister of Fisheries, Marianne Sivertsen Næss, stated:

“To achieve the UN Sustainable Development Goals, we must also eat more seafood, and whaling provides healthy, locally sourced food. Norwegian whaling is sustainable, strictly regulated, and the minke whale population is in very good health. Norway uses efficient and animal-welfare-friendly hunting methods. Furthermore, the whale’s high consumption of fish affects the ecosystem”.²

However, Norway’s whaling has received comparatively limited international scrutiny relative to both the scale of its hunt and the attention directed at Iceland. In recent years, Iceland’s whaling activities have drawn sustained global media coverage, political pressure, and public debate over animal welfare, sustainability, and economic viability. Findings by Iceland’s Food and Veterinary Authority (MAST) concluded that killing of whales during the 2022 whaling operations took too long based on the Animal Welfare Act due to prolonged time to death (TTD)³. These findings led the Icelandic government to suspend the 2023 hunting season and undertake a comprehensive review of welfare outcomes. Subsequent monitoring found that welfare concerns persisted despite efforts to improve hunting practices, leading MAST to conclude that humane killing cannot be guaranteed during commercial whaling operations at sea.⁴ Norway, despite using the same killing methods (hvalgranat-99) and killing significantly more whales annually than Japan and Iceland, has largely escaped equivalent public and diplomatic scrutiny in recent years. This asymmetry is striking and, as this report argues, unjustified.

This report examines Norwegian commercial whaling through two central lenses: animal welfare and sustainability. Drawing primarily on Norway’s own reported data (from Electronic Reporting Systems (ERS) and submissions to the North Atlantic Marine Mammal Commission (NAMMCO), it assesses whether the country’s claims withstand scrutiny.

On animal welfare, this report evaluates whether whales are killed in a manner consistent with widely accepted standards for humane slaughter. By looking at available ERS data from Norway, it assesses aim accuracy and complications inherent in killing pregnant mammals. It considers the inherent challenges of killing large, marine mammals at sea, and whether regulatory compliance can meaningfully mitigate those constraints.

On sustainability, this report examines the logic and outcomes of Norway’s quota system, including the mechanisms that allow quotas to increase independently of actual catch levels or demonstrated demand. It also considers the ecological implications of continued whale killing, and whether current practices align with precautionary approaches to marine ecosystem management.

Together, these two pillars provide a comprehensive framework for assessing Norwegian commercial whaling as it is practiced today. The evidence presented raises serious questions about both the welfare outcomes for individual animals and the broader justification for the hunt itself. Across both dimensions in Norwegian whaling, a consistent pattern emerges in which precautionary safeguards are secondary to maintaining the continuity of the hunt, even in the absence of clear ecological, economic, or societal justification.

SECTION 1: NORWEGIAN COMMERCIAL WHALING IN RECENT YEARS

The IWC was established under the International Convention for the Regulation of Whaling (ICRW) as the recognised international body responsible for the conservation and management of whale populations worldwide. The IWC provides the primary forum through which member states agree on catch limits, develop welfare standards, and apply the precautionary principle to whaling activities. Central to its mandate is the global moratorium on commercial whaling, adopted in 1982, which reflects the IWC's precautionary approach to the management and conservation of whale populations and remains the principal regulatory measure governing commercial whaling internationally. In addition to its conservation mandate, the IWC has increasingly expanded its work on animal welfare, including the development of humane killing standards and the assessment of welfare outcomes in whaling operations.

While Norway remains a member of the IWC, it continues to hunt whales under a formal objection to the moratorium and sets its own quotas unilaterally, rather than through internationally agreed processes. This approach allows Norway to bypass both the precautionary mechanisms and the oversight structures established under the ICRW.

Norwegian commercial whaling is regulated domestically by the Norwegian government, which sets annual catch quotas for minke whales in the Northeast Atlantic. The legal foundation rests primarily on the Norwegian Marine Resources Act (Havressursloven)⁵, under which whales are classified as “marine resources,” and the Participation Act (Deltakerloven)⁶, which regulates access to fisheries and hunting activities. Together, these laws frame whaling as a form of resource extraction rather than wildlife protection.

Operational rules are set out in the 2022 regulation: *Forskrift om utøvelse av fangst av vågehval (FOR-2022-04-01-511)*. This regulation explicitly states that its purpose is to ensure the “animal welfare—sound killing” of minke whales, while simultaneously permitting their commercial exploitation.⁷

Under this framework:

- Whaling is prohibited by default but made legal through annual quota regulations issued by the Ministry of Trade, Industry and Fisheries. Quotas are calculated by the Norwegian Marine Research Institute (Havforskningsinstituttet).
- Quotas are set unilaterally by Norway, outside the authority of IWC, under Norway's objection to the global moratorium on commercial whaling.
- The Directorate of Fisheries (Fiskeridirektoratet) administers the system, issuing licences and overseeing compliance.⁸

A defining feature of this system is the carry-forward mechanism. Any unused quota from a given year may be rolled over into the following year's allocation. In practice, this means that quotas are not strictly annual limits, but cumulative allowances that can increase over time regardless of actual hunting activity.

Norwegian whaling has repeatedly undermined the IWC. Following the 1986 moratorium, a Revised Management Procedure (RMP) was devised by the IWC's Scientific Committee to advise the Commission on quotas should commercial whaling ever resume. A key part of quota calculations under the RMP is the tuning level, which is the fraction of the pre-exploited population that would be left after 100 years of operating the RMP.⁹ The lower the tuning level used, the higher the whaling quota. The tuning level that was suggested by the IWC in 1991, was the most conservative level at 0.72, meaning populations will stabilise at around 72% of their pre-exploitation level.¹⁰ From 1996 until 2000, the Norwegian government used the IWC-agreed-upon tuning level of 0.72. However, in 2001, when that tuning level would have led to a lower quota due to a higher proportion of female whales having been killed in past hunts, Norwegian officials dropped to a 0.66 tuning level. In 2003, when a new, lower minke

whale population estimate would again have led to a reduced quota, Norway responded with another drop in the tuning level to 0.62.¹¹ When calculating catch quotas for Norwegian minke whale hunting today, an even lower tuning level of 0.60 is used, which corresponds to the theoretical maximum long-term yield.¹² The IWC decided that the RMP could not be implemented without an agreed Revised Management Scheme (RMS), which would provide oversight measures such as monitoring and record-keeping. As agreement on the RMS was never reached, the commercial whaling moratorium remains in place.

Quotas are issued annually and apply to licensed vessels operating during the designated whaling season, typically running from April to early September. The hunt is conducted without independent observers, relying instead on self-reported data submitted through Norway's ERS. This is discussed further in section 2 and 3.

Quota and Catch: 2021–2025

Across the five most recent whaling seasons, a consistent pattern emerges. Norway has harvested only a fraction of its self-set quota, while the quota itself has continued to rise. Over this period, Norway caught approximately 45% of the whales it authorised itself to kill. Despite this persistent underutilisation, annual quotas have not been reduced. On the contrary, they have increased, driven in part by the carry-forward of unused allocations.

Quotas continue to rise despite declining catches and demand, creating a widening gap between authorised and actual removals. This suggests that the system prioritises preserving hunting opportunities rather than reflecting demonstrated need or precautionary management.

Year	Quota Set	Actual Catch	Percentage
2016	880	591	67%
2017	999	432	43%
2018	1,278	454	36%
2019	1,278	429	34%
2020	1,278	503	39%
2021	1,278	577	45%
2022	917	581	63%
2023	1,000	507	51%
2024	1,157	415	36%
2025	1,406	429	31%

Table 1. Quota vs actual catch, 2016–2025.

The Killing Method

Norwegian whaling vessels primarily use the Hvalgranat-99, an explosive harpoon designed both to deliver the grenade into the whale and to remain attached after impact, allowing the whale to be secured and hauled alongside the vessel for retrieval.¹³ The device is intended to cause rapid death through a combination of mechanical trauma and explosive force. The Hvalgranat-99 consists of a penthrite-based explosive charge (PETN), fitted with a detonation mechanism that is triggered after penetration of the whale's body. The grenade is attached to a harpoon shaft and fired from a cannon of at least 50 mm calibre, as required under Norwegian regulation.

The intended sequence is as follows¹⁴

1. The harpoon penetrates the whale's thoracic region.
2. The grenade travels into the body cavity.
3. A delay mechanism triggers detonation inside the animal.

The explosion is designed to cause massive internal trauma, including destruction of vital organs, severe haemorrhaging, and disruption of the central nervous system. If the first grenade is not successful in killing the animal instantaneously, a rifle shall be used by shooting at the animal's brain area, which is located on the central line of the head, at a distance behind the eye equal to that of the nostril in front of the eye.¹⁵

In practice, the effectiveness of this method depends on a range of variables, including weather, shot placement, angle, distance, and the movement of both vessel and whale at the moment of firing. While it is classified as a "primary killing method," it does not guarantee instantaneous death in all cases. The extent to which these limitations affect real-world outcomes is reflected in Norway's own reported data, which provide a more detailed picture of killing accuracy and efficiency.

SECTION 2: WHAT NORWAY'S OWN DATA SHOWS: ACCURACY

Norwegian commercial whaling depends on a single technically demanding act: a hunter on a moving vessel firing an explosive harpoon at a moving whale, with the stated objective of instantaneous death. Norway's mandatory reporting system records details about every hunt that provide a picture of how accurate commercial whaling actually is, including missed shots and lost whales.¹⁶

Across five consecutive whaling seasons from 2021 to 2025, those records show a minimum shot-to-kill ratio of 1.23 to 1, indicating at least 23% more harpoon shots fired than whales killed. A minimum of 491 shots failed. 28 whales were struck by harpoons and not recovered.

Year	Whales killed	Failed shots	Lost whales	Min. total shots	Shot-to-kill ratio	Excess
2021	523	59	7	589	1.13 : 1	+12.6%
2022	517	245	3	765	1.48 : 1	+48.0%
2023	455	72	6	533	1.17 : 1	+17.1%
2024	379	60	5	444	1.17 : 1	+17.2%
2025	403	55	7	465	1.15 : 1	+15.4%
Total	2,277	491	28	2,796	1.23 : 1	+22.8%

Table 2. Minimum shot-to-kill ratio, Norwegian commercial whaling 2021 to 2025. Source: Norwegian Electronic Reporting System (ERS). All counts are conservative minimum figures. *Note: Catch numbers presented in this table are based on the number of whales recorded in the Electronic Reporting System (ERS) dataset analysed for this report and therefore do not represent the official annual catch totals.*

Categories of Failure

A 1:1 ratio of harpoon shots fired to whales killed is the implicit standard against which any commercial whaling operation must be assessed if instantaneous death is the regulatory objective. Any ratio above 1:1 indicates that, in some proportion of hunts, the first shot did not kill. Norway's records exceed this ratio in every season analysed. The 2022 ratio of 1.48, at least 48% more shots fired than whales killed, is the highest in the dataset. Excluding 2022, the four remaining seasons show a combined excess of approximately 15% above the 1:1 baseline.

Failures can occur at three points during a harpoon strike:

First, the harpoon misses the whale entirely.

Second, the harpoon strikes the whale but the explosive grenade fails to detonate or detonates without producing immediate death.

Third, the whale is struck but escapes before being secured. The whale is lost, and the outcome cannot be confirmed.

These failures have important welfare consequences, including prolonged time to death, the need for multiple shots, and the potential for extended pain and distress. These consequences are examined in Section 3.

Norway's records permit identification of failures at the second and third stages, captured by the categories of failed shot and lost whale.

Failed shots (*bomskudd hval*). Events in which the harpoon or grenade did not function as intended after firing: the harpoon missed, the grenade did not detonate, or the strike did not kill. The records show 491 such events across five seasons. Excluding the 2022 figure, the average across the three subsequent years was 15 failed shots per 100 whales killed.

Lost whales (*tapt hval*). Whales harpooned but not subsequently recovered. 28 were recorded across the five-season period, with at least one recorded every year. The fate of each animal is undetermined and cannot be assessed against any welfare standard.

Limitations

Three factors limit what can be concluded from these records. In each case, the effect is likely to be an underestimation rather than an overestimation of hunting failures and their associated welfare impacts.

First, there is no independent monitoring of routine Norwegian whaling operations. The data are self-reported by the same operators whose performance they describe, preventing independent verification of reported outcomes. Second, the records do not include time-to-death data. While the dataset captures failed shots and struck-and-lost whales, it cannot determine how long animals remained conscious or experienced suffering after the initial strike.

Third, the dataset records only those events observed and reported by the crew. The figures presented should therefore be regarded as minimum documented levels of failure rather than a complete account of welfare outcomes.

Why this Recurs

The figures are consistent with structural constraints on the method itself: vessel and whale movement, brief firing windows, and the small anatomical area in which a strike will produce instantaneous death. These are not deficiencies of training, equipment or operator competence, rather, they are the properties of the activity. Accuracy failure recorded in the data is therefore not an exceptional breach of operational standards but a foreseeable consequence of the method itself.

The question for licensing authorities is whether the welfare consequences, examined in Section 3, are consistent with the standard of humane killing on which authorisation is predicated.

Section 3: Animal Welfare Concerns

Conditions for a Humane Outcome

Modern animal welfare frameworks, including those applied across the European Economic Area (EEA), are based on the principle that animals must be protected from avoidable pain, suffering, and distress. This principle is present in Norwegian domestic law governing terrestrial slaughter, where animals must be rendered unconscious prior to killing through mandatory pre-slaughter stunning.¹⁷

These principles are also reflected in international standards developed under the IWC, which provides the primary framework for assessing humane killing in whaling. The IWC defines humane killing as death brought about “without pain, stress, or distress perceptible to the animal,” recognising that the objective of any killing method is to render the animal insensitive to pain as rapidly as technically possible. At the same time, the Commission acknowledges that the efficiency of killing methods is influenced by a range of operational variables, including weapon type, shot placement, angle, sea conditions, and animal behaviour.

No equivalent safeguard exists in Norwegian commercial whaling. Instead, whales are killed in an open marine environment using explosive harpoons, where neither the conditions of the kill nor the physiological outcome can be reliably controlled. Unlike slaughterhouse systems, where variables such as positioning, restraint, and operator precision are standardised, whaling is conducted under conditions characterised by uncertainty: both the vessel and the animal are in motion, visibility is variable, and the opportunity to strike is limited to brief surfacing intervals.

This distinction between the techniques used in modern whaling and those in slaughterhouse conditions is critical. To expand, the requirement for pre-slaughter stunning in terrestrial systems reflects a recognition that certainty of rapid unconsciousness is a minimum condition for humane killing. In whaling, this certainty cannot be guaranteed. As such, the relevant policy question is not whether procedures are followed, but whether the method itself can meet the threshold of humane slaughter recognised in other sectors.

Animal Welfare Issues in Norwegian Whaling

Norwegian authorities maintain that their whaling practices achieve high standards of animal welfare. However, the latest available analyses, from 2011/2012 (15 years ago), based on Norwegian government data and reviewed through the NAMMCO and the IWC, demonstrate that non-instantaneous death remains a significant and persistent outcome.

An expert group convened under NAMMCO to evaluate Norwegian TTD data from 2011 and 2012, found that approximately 18% of whales (49 whales) did not die instantaneously following the initial harpoon strike. Among these animals, the median time to death was six minutes, with documented cases extending to 20–25 minutes.¹⁸

These findings are derived from routine commercial hunts conducted in compliance with Norwegian regulations and using the standardised Hvalgranat-99 explosive harpoon.¹⁹ They therefore represent baseline system performance, rather than exceptional or irregular events.

From a welfare perspective, these outcomes raise fundamental concerns. TTD is used as a proxy for animal suffering, yet even within this framework, the classification of “instantaneous death” is subject to methodological limitations. As acknowledged in IWC discussions on humane killing, the determination of unconsciousness in large whales is indirect and based on observable indicators rather than direct neurological measurement.²⁰

A median time to death of six minutes indicates that a substantial proportion of whales remain alive for extended periods following the initial strike. During this time, animals may experience:

- severe internal trauma caused by explosive detonation and destruction of vital organs.²¹
- extensive haemorrhage, circulatory collapse, and physiological shock associated with the intended mechanism of the Hvalgranat-99.²²
- continued mobility and delayed incapacitation where immediate immobilisation is not achieved following the initial strike.²³

The documented upper range, where death occurred after 20–25 minutes, demonstrates that failure of the primary killing method can result in prolonged, multi-stage killing events. In regulated terrestrial slaughter systems, such outcomes would constitute a serious welfare breach. The significance of these outcomes is heightened by the well-established evidence that cetaceans possess advanced cognitive and emotional capacities, including complex social behaviour, self-awareness, and the neurological substrates associated with the experience of pain and suffering.²⁴

Contemporary Welfare Concerns (2021–2025)

Norway has not published data demonstrating improvement in time-to-death outcomes since 2011–2012, despite having this data available to them in 2023.²⁵ The available ERS data from 2021–2025 shows missed shots, and struck and lost whales, consistent with accuracy failure. Norwegian commercial whaling continues to rely on self-reported operational data submitted through national systems (ERS data) and summarised in annual reports to the IWC.²⁶

The available ERS data from and evidence from the 2021–2025 seasons indicate continued evidence of lost whales (“tapt hval”) and missed shots (“bomskudd”), relying on secondary methods of killing.

These patterns are consistent with the inherent constraints of the hunting method. The effectiveness of the Hvalgranat-99 is contingent on precise shot placement into the thoracic cavity, correct detonation timing, and optimal penetration depth, conditions that are difficult to achieve consistently in an open-sea environment.

Moreover, the welfare implications of failed killing attempts are compounded by catch composition. Across the five seasons examined, females accounted for between 68% and 79% of the catch each year. Of those females, between 41% and 62% were pregnant. Where a pregnant female is subjected to a prolonged or ineffective killing event, the welfare consequences may extend beyond the adult animal to include the developing foetus. The biological data and its sustainability implications are examined in Section 5.



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Concerns from Visual Documentation

Visual documentation from the 2022²⁷ and 2025²⁸ seasons further illustrate these limitations, showing whales remaining mobile after initial impact and requiring additional shots. While such material is qualitative, it is consistent with the failure modes identified in Norwegian-reported data.

On 26 May 2022, the Endangered Species Protection Agency (ESPA) conducted a field operation to document minke whale hunts off the coast of Norway, capturing rare high-definition drone and video footage of an almost complete hunt, from initial sighting to death, carried out by the vessel KATO, northeast of Storstappen Island. Shared with WDC, the footage provides a rare visual record of a Norwegian minke whale hunt and illustrates welfare risks that are otherwise difficult to assess due to the absence of independent monitoring.

As a single documented case within a season in which 581 whales were killed, the footage cannot be considered isolated evidence but instead points to broader welfare risks, particularly in a system lacking independent oversight and comprehensive reporting of time to death data to the IWC.

Case study: 2022 ESPA footage and independent veterinary review

To ensure impartial analysis, the footage was reviewed by Alick Simmons, former UK Deputy Chief Veterinary Officer (2007-2016), and the UK Food Standards Agency's former Veterinary Director (2004-2007). His key observations include:

1. Harpooning and injury: The whale was harpooned midway along its body, and the harpoon was embedded in the whale's thorax, but it appears that the grenade (if attached) failed to explode. As a result, the whale did not suffer the catastrophic internal damage intended by this method. This led to prolonged suffering.
2. Prolonged struggle: The whale continued to swim and thrash about for at least 20 minutes and 28 seconds after being harpooned, with a visible plume of blood indicating significant but non-lethal internal injury. The whale was eventually declared dead, but there is strong evidence suggesting it remained conscious for most of this period.
3. Welfare concerns: The likely failure of the grenade to detonate meant that the whale experienced a slower and more painful death than the IWC intends, as the blood loss and drop in blood pressure were insufficient to induce rapid unconsciousness.

Alick Simmons' analysis concludes that the whale's welfare was severely compromised, and it likely suffered significantly before dying.

Conflict of Interest in Welfare Assessment

The credibility of Norway's welfare assessments is further undermined by structural conflicts of interest in the production of scientific evidence.

Much of the research underpinning Norway's claims of humane killing has been conducted by Egil Ole Øen, who has played a central role in both the development and evaluation of whale killing methods.²⁹ Dr Øen is closely associated with the design of the Hvalgranat-99 and holds intellectual property rights related to its development.³⁰ This patent (patent number: PT20000118 (310796)) expired in 2020.

This dual role as developer and evaluator raises significant concerns regarding the independence of welfare assessments. In comparable regulatory contexts, such as food safety and animal welfare oversight within the EU, a clear separation between technology developers, operators, and evaluators are considered essential.³¹

Concerns regarding methodology have also been raised in the scientific literature and within IWC discussions, particularly in relation to:

- the criteria used to classify “instantaneous death”
- the reliance on behavioural indicators to infer unconsciousness

These limitations are acknowledged within Norwegian submissions themselves, which recognise the challenges of assessing time to death and consciousness in large whales under field conditions.³²

Taken together, these findings suggest that the welfare challenges associated with Norwegian whaling are structural rather than incidental. The continued reliance on a method known to produce non-instantaneous deaths, without strengthening oversight or safeguards, reflects a broader pattern in which operational practicality is prioritised over the precautionary principle that underpins modern animal welfare standards. In this context, claims that Norwegian whaling meets internationally accepted standards of humane killing cannot be independently validated and would likely fall below the welfare thresholds applied in other regulated animal-use sectors within the European Economic Area.

Section 4: The Oversight Gap

A central requirement of credible animal welfare regulation is independent oversight. In terrestrial slaughter systems, this typically includes continuous monitoring, official veterinary presence, and third-party verification of compliance with welfare standards. These mechanisms are designed to not only detect failures, but to ensure transparency and accountability.

No equivalent system exists in Norwegian commercial whaling. There are no independent observers on whaling vessels, and no requirement for real-time or external verification of welfare outcomes at sea. Instead, the system relies almost entirely on self-reported data submitted by whalers themselves through Norway's ERS.

This structural absence of independent oversight has significant implications. Without third-party verification, there is no mechanism to confirm:

- whether recorded data accurately reflects events at sea
- whether all failed shots, or struck-and-lost whales or pregnant whales are reported
- whether regulatory requirements are consistently followed in practice

As a result, reported welfare failures must be understood not as a complete record, but as a minimum baseline. The true extent of non-instantaneous deaths and associated suffering is therefore likely to be higher than official figures suggest.

Self-Reporting and Data Limitations

Within the IWC framework, member states are encouraged, but not required, to report animal welfare data, including time-to-death and killing efficiency metrics.^{33,34} This voluntary approach means that the availability, consistency, and completeness of welfare data depend entirely on national discretion, limiting the ability of the IWC to independently assess and compare welfare outcomes across whaling operations.

The Norwegian whaling systems reporting is built on the ERS and data logs (for smaller vessels), through which vessel operators are required to log details of each hunt, including number of shots fired, and whether the whale was killed or lost. While this system provides a structured dataset, it is inherently limited by its reliance on self-reporting without independent verification, whilst entirely excluding any data on TTD or IDR. There is no onboard monitoring comparable to that required in regulated slaughterhouses, nor any systematic auditing of reported events.

The implications of this are significant. For example, where independent monitoring is absent, underreporting of failed shots, or lost whales cannot be ruled out. Furthermore, the classifications of what is “instantaneous death” remains unverified. Any discrepancies between reported and actual outcomes of the hunts cannot be independently assessed.

Limitations in monitoring and verification have been recognised in international discussions within the IWC framework, where the need for independent catch verification beyond national self-reporting has been explicitly acknowledged.³⁵ Taken together, these factors indicate that reported welfare failures are likely an underestimate of the true extent, with data capturing only part of the overall welfare impact.

Progressive Relaxation of Monitoring and Regulation

Concerns about oversight are further reinforced by evidence that monitoring requirements in Norwegian whaling have been progressively weakened over time, rather than strengthened in response to known welfare challenges. Historically, elements of independent observers or semi-independent oversight existed, as well as the so-called “blue box” system, which provided an additional layer of monitoring of hunting activities. The blue box recorded time and position of every whale shot and taken on board for flensing. It has been noted by experts that this may give an indication as to whether the whale died quickly or slowly.³⁶ Over time, however, these mechanisms have been reduced or removed, such as the removal of blue boxes in 2023 due to their costly upkeep, resulting in a system that is now almost entirely reliant on self-reporting.³⁷

At the same time, regulatory requirements governing both equipment use and hunter competence have been relaxed. Amendments to the regulation “*Forskrift om utøvelse av fangst av vågehval*” (Regulation on the conduct of minke whaling) have introduced greater flexibility in how whales may be targeted and killed. The regulation still requires the use of an approved explosive harpoon grenade (Hvalgranat-99) and specifies that shots should ideally be directed at the whale’s thoracic region from the side. However, it now explicitly permits alternative shot placement in less controlled situations, allowing shots to be fired from above toward the spine in the neck–thorax region when whales surface close to the vessel’s bow.³⁸

This adjustment reflects a shift away from a single, optimal shot placement toward a more permissive framework that accommodates operational constraints at sea. While this may increase the likelihood of a shot being taken, it also introduces greater variability in shot angle and impact location, both of which are critical factors in determining whether the explosive harpoon achieves rapid and effective killing. In practice, this change lowers the consistency of conditions under which humane outcomes can be expected.

In 2020, Norwegian authorities allowed some whalers to forego mandatory qualifying tests for rifle shooting,³⁹ despite the rifle serving as the critical secondary killing method when the initial harpoon strike does not result in immediate death. This change effectively lowered the formal standard of demonstrated proficiency at a key stage in the killing process.

At the international level, transparency has also declined. While Norway continues to participate in the IWC, it has not maintained consistent, comprehensive reporting of operational and welfare data through IWC channels, with 2007 widely cited as the last year of regular, detailed reporting. Since then, data provision has been partial and irregular, limiting the ability of the international community to assess welfare outcomes over time.

Taken together, these developments point to a trajectory: oversight has diminished, and transparency has declined. This trend runs counter to the expectations of modern animal welfare governance, where increased scrutiny and independent verification are considered essential to ensuring compliance.

Section 5: Sustainability - The Quota Problem and Catch Composition

Norway justifies its commercial whaling on the basis that minke whale populations in the Northeast Atlantic are “stable” and therefore able to sustain continued hunting.⁴⁰ This claim is rooted in population estimates produced by Norwegian scientific institutions and used to calculate catch limits under Norway’s unilateral management framework.

However, it is important to note that the absence of population decline does not equate to a healthy or resilient population. Minke whales, like other marine species, are today subject to a range of cumulative pressures, including climate change, shifts in prey availability, pollution and increasing industrial activity at sea. These stressors may not be immediately reflected in population estimates but can reduce resilience and increase vulnerability over time. In this context, continued hunting represents another pressure on a population already exposed to many risks.

A key feature of the Norwegian system is the widening gap between quota and actual catch. Across the most recent five hunting seasons, Norway has taken approximately 45% of its self-set quota, leaving the majority of authorised kills unused each year.⁴¹ Representatives of the whaling industry have themselves highlighted the decline in domestic demand for whale meat in Norway and lack of interest from the Norwegian public. Despite this persistent underutilisation, quotas have continued to increase.

This is driven by the carry-forward mechanism, under which unused quota from one year is added to the following year’s allocation. Norwegian authorities have confirmed that recent quota increases are the result of this administrative rollover. The result is a structural “ratchet” effect, whereby quotas rise over time regardless of actual catch levels, market demand, or demonstrated conservation need. By accumulating unused quota across years, the system also allows for a potential concentration of hunting in a single season if conditions permitted, which may exceed the annual management assumptions and weaken any precautionary basis of the quota system.



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From a policy perspective, this raises fundamental questions about the purpose of the quota system. Rather than functioning as a precautionary limit, the quota increasingly appears disconnected from both ecological and economic realities.

Catch Composition: Pregnancy Data

Analysis of Norwegian catch data reveals a consistent pattern in the composition of whales taken. A substantial proportion of whales killed are female, and a significant share of these are pregnant. Across the 2021-2025 seasons, pregnancy rates among females have ranged between approximately 42% and 62%, based on the number of fetuses reported in the ERS data.

Year	Female whales killed	Confirmed pregnant females	Pregnancy rate (%)
2021	387	174	45.0%
2022	369	153	41.5%
2023	310	193	62.3%
2024	301	170	56.5%
2025	287	171	59.6%
Total (2021–2025)	1,654	861	52.1%*

Table 3. Female whales killed, confirmed pregnant, pregnancy rate by year (21-25)

This has direct implications for both sustainability and welfare. Under the current system, quotas are calculated and reported on a per-animal basis, with no distinction made for reproductive status. The killing of a pregnant female is therefore recorded as a single removal from the population, despite the loss of both the adult and her developing calf.

The Revised Management Procedure (RMP) incorporates a correction factor that reduces catch limits when a higher proportion of females is taken, reflecting the greater demographic importance of female removals. However, the management framework does not distinguish between pregnant and non-pregnant females. Consequently, the additional demographic consequences associated with the loss of developing calves are not explicitly represented within quota calculations or catch statistics.

Nevertheless, the removal of pregnant females has implications that extend beyond the loss of a single reproductive individual. Each pregnant female represents both a current member of the population and a future recruit. The consistent inclusion of pregnant animals within the catch therefore raises questions about whether current management approaches fully capture the biological consequences of removals. While female-biased catches are incorporated into quota calculations through the RMP correction factor, the demographic implications of foetal loss are not explicitly considered. In this respect, the management framework remains focused on population abundance rather than the broader reproductive impacts of the hunt.

The welfare implications are equally significant. Where killing is not instantaneous, both the female and the foetus may be exposed to prolonged suffering. International standards developed by the World Organisation for Animal Health recognise that pregnant animals require specific safeguards at slaughter, including measures to minimise distress and prevent avoidable suffering of both the dam and the foetus.⁴² No equivalent safeguards can be applied in an open marine hunting context.

Emerging research on baleen whale culture also suggests that the impacts of removing reproductive females may extend beyond simple population counts. Recent scientific assessments have identified evidence of social learning in minke whales, particularly in relation to migration behaviour, which expert review concluded is likely

transmitted maternally in common minke whales.⁴³ Calves are believed to learn migratory routes and habitat use during extended periods of maternal dependency. The removal of pregnant females, or females accompanied by calves, therefore has the potential not only to reduce future recruitment, but also to disrupt the intergenerational transfer of ecological knowledge relating to feeding and breeding habitats.

Taken together, the system not only fails to account for the full biological impact of removals, but also permits outcomes that would be considered unacceptable under established animal welfare standards and inhibits intergenerational knowledge transfer. This reinforces the broader conclusion that the current framework prioritises operational continuity over precautionary and welfare-based considerations.

The Ecological Dimension

Assessments of sustainability in Norwegian whaling are primarily based on single-species population models, which treat the North Atlantic minke whale as an isolated biological unit. While such models may indicate population stability, they do not account for the broader ecological role of whales within marine ecosystems. This omission is increasingly at odds with current scientific understanding.

Large whales, including minke whales, are now widely recognised as ecosystem engineers,⁴⁴ playing important roles in nutrient cycling, ocean productivity, and carbon storage. Through feeding at depth and defecating near the surface, whales redistribute nutrients such as nitrogen and iron into the upper ocean in a process often referred to as the “whale pump.”⁴⁵ In addition, whales transport nutrients horizontally across ocean basins through migration, sometimes described as the “whale conveyor belt”. These processes stimulate phytoplankton growth, support marine food webs, and contribute to overall ocean productivity. Whales also contribute to carbon sequestration both through the storage of carbon in their biomass and through their indirect support of biological carbon capture in marine ecosystems.⁴⁶ Before industrial whaling disrupted these natural processes, populations of whales were estimated to have transported an annual carbon load of 190,000 to 1.9 million tonnes to the deep ocean, which equates to removing 40,000 to 410,000 cars from the road each year.⁴⁷

Within Norwegian public and policy discourse, whaling is at times justified as a form of ecosystem management, based on the assumption that whales consume commercially valuable fish stocks and therefore compete with fisheries. However, this argument is not supported by the broader scientific evidence. Marine ecosystems are complex, dynamic systems in which predator–prey relationships are shaped by multiple interacting variables, including climate, oceanographic conditions, prey distribution, and industrial fishing pressure. There is no robust scientific consensus that reducing whale populations leads to increased fish availability or improved fisheries outcomes. On the contrary, the ecological functions performed by whales may contribute positively to marine productivity and ecosystem resilience.⁴⁸

Crucially, Norway's quota-setting framework does not appear to incorporate independent ecosystem-level assessment of whale removals. Instead, it relies predominantly on national population estimates and management models focused on abundance rather than ecosystem function. This creates a gap between the scientific basis of management and the increasingly ecosystem-based approach expected in contemporary marine governance.

From a policy perspective, this engages the precautionary principle, which is embedded within international environmental governance and widely applied across the European Economic Area. Where uncertainty exists regarding ecosystem impacts, and where scientific understanding remains incomplete, precaution requires that exploitation should not proceed in the absence of robust and independent evidence demonstrating that removals will not cause ecological harm. In the case of Norwegian whaling, such evidence has not been established.

In this context, the continued extraction of whales cannot be justified solely based on population stability. Without incorporating ecosystem-level considerations and independent assessment, the current management framework

risks underestimating the broader ecological consequences of whaling and falls short of the precautionary standards increasingly needed in modern marine policy.

The Whale Pump

Nutrient recycling by whales enhances ocean productivity

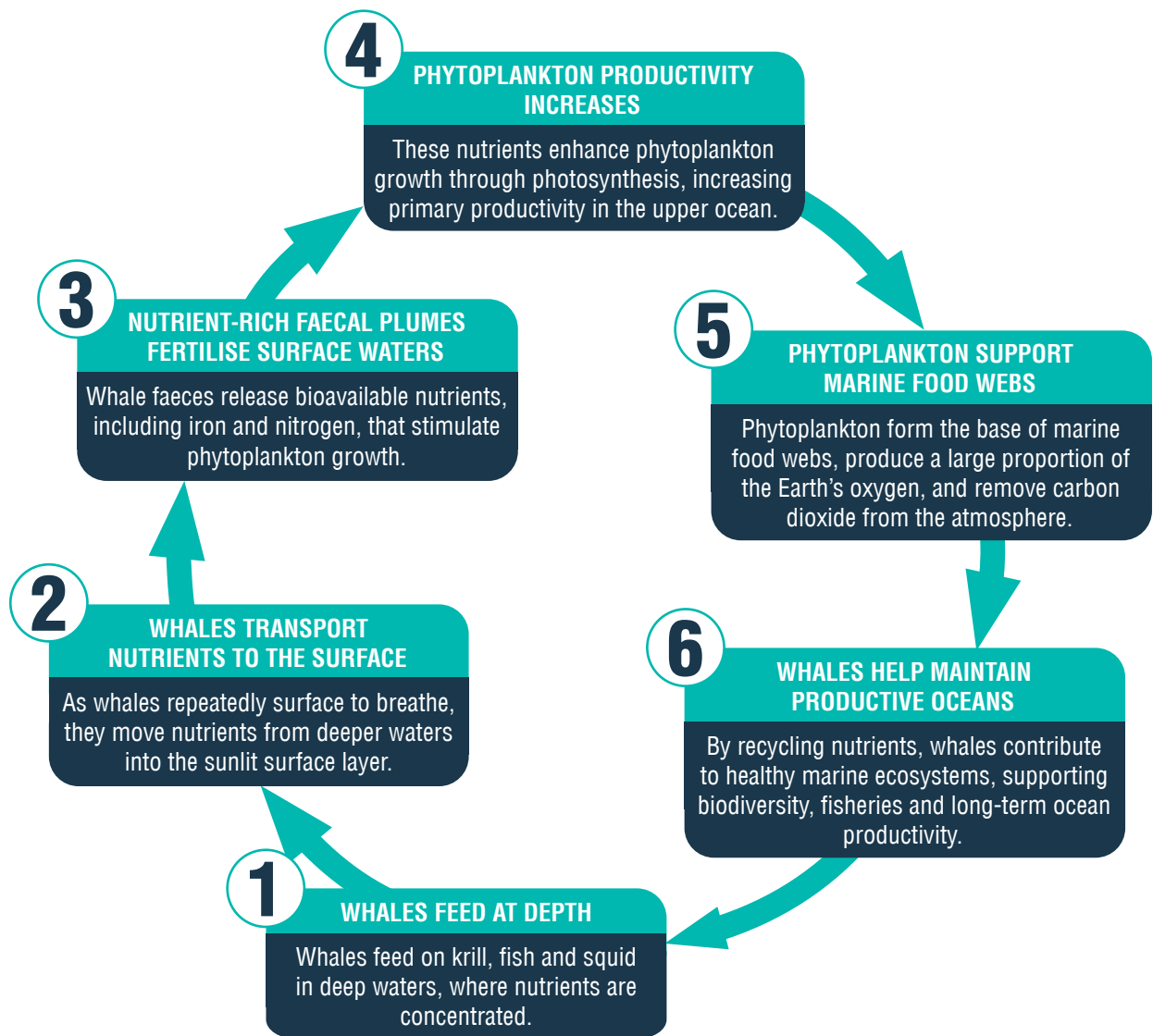


Figure 1. The “whale pump”: by feeding at depth and defecating near the surface, whales recycle essential nutrients such as nitrogen and iron into the upper ocean, stimulating phytoplankton growth and supporting marine productivity.

Section 6 - Demand and Opinion within Norwegian Society

Official Justifications and Declining Demand

Norwegian authorities frequently justify the continuation of commercial whaling on economic, and environmental grounds. Whaling is often framed as part of Norway's coastal food culture, linked to the broader importance of seafood in the national diet. It is also presented in public discourse as a form of resource management, and that regulated hunting contributes to Norway's sustainability goals by eating more food from the sea.

However, available data on domestic consumption and public opinion suggest that these justifications are increasingly misaligned with social reality. Demand for whale meat within Norway is low and declining, particularly among younger generations, and there is limited evidence of a stable or growing domestic market. To push for consumption, it is marketed as a “local delicacy” towards tourists who visit Norway.

Recent national polling data shows that only around 1% of Norwegians are regular consumers of whale meat, with no measurable demand among those under the age of 35.⁴⁹ This trend has been consistent across multiple surveys and points to a structural decline rather than short-term fluctuation. The disconnect between policy justification and public behaviour raises fundamental questions about the continued rationale for the hunt. It suggests that the continuation of whaling is not driven by domestic demand, but by the maintenance of an established industry, despite declining societal relevance.

The Collapse in Regular Consumption

Longitudinal survey data demonstrate a clear and sustained decline in whale meat consumption in Norway. The proportion of regular consumers has fallen from 5% in 2010⁵⁰, 4% in 2019⁵¹ to 2% in 2021⁵², and to approximately 1% in 2024⁵³, indicating a steady contraction in demand.

Year	Regular consumers of whale meat
2010	5%
2019	4%
2021	2%
2024	1%

Table 4. Trend in regular consumption, 2019–2024^{50–53}

This decline is particularly pronounced among younger generations. In both the 2021 and 2024 surveys, no respondents under the age of 35 reported eating whale meat regularly. Among those aged 18–24, 73% reported that they had never eaten whale meat, a sharp increase from 41% in 2019. These figures point to a generational shift away from consumption, suggesting that demand is unlikely to recover over time.

Regional variation further reinforces this trend. Even in areas traditionally associated with whaling, such as Northern Norway, only 3.7% of respondents reported regular consumption, while in parts of the west coast, regular consumption was effectively non-existent. Taken together, these data indicate that whale meat no longer plays a meaningful role in the Norwegian diet.

Welfare Concerns Command Majority Support

Public attitudes towards animal welfare in the context of whaling show a high degree of consistency across survey years. A clear majority of respondents consider key welfare outcomes associated with whaling to be unacceptable.



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In 2021, 65% of respondents stated that non-instantaneous death was unacceptable, a figure that remained unchanged in 2024 at 65%. Similarly, 64% of respondents in 2024 found the killing of pregnant females unacceptable. These findings indicate stable and sustained public concern regarding the welfare implications of whaling practices.

In addition, 55% of respondents in 2024 agreed that scientific research on marine ecosystems should lead to reduced whaling activity, suggesting growing support for precautionary and evidence-based management approaches. These attitudes align closely with the welfare and sustainability concerns identified in earlier sections of this report, indicating that Norwegian public opinion is broadly consistent with the scientific evidence regarding non-instantaneous death and catch composition.

Recognition of Reputational Impact

Norwegian public opinion also reflects an awareness of the international reputational consequences of whaling. As early as 2010, 49% of Norwegians agreed that whaling gives the country a negative reputation internationally. More recent data indicate a shift towards greater support for change. In 2024 36% of respondents supported Norway joining international conservation agreements and ending whaling, compared to 33% who opposed such a move. Support is notably higher among younger age groups, with 49% of those aged 18-24 and 46% of those aged 25-34 supporting an end to whaling.

These figures suggest that public opinion is not only shifting away from consumption, but also increasingly recognising the broader diplomatic and reputational implications of continued whaling.

The International Context

The Norwegian case must also be understood within a broader international context. While Iceland has faced sustained international scrutiny for its whaling activities, Norway has received comparatively limited attention despite consistently hunting larger numbers of whales. This asymmetry is not reflected in the scale of activity, but rather in the level of international visibility and pressure.

At the same time, awareness within Norway itself appears limited. The remote nature of whaling operations, combined with the lack of independent oversight and limited media coverage, means that many Norwegians have little direct exposure to how the hunts are conducted in practice.

While Norway continues to participate in the IWC, it maintains whaling operations under its objection to the commercial whaling moratorium. Norway's reporting on welfare outcomes also remains incomplete, limiting international scrutiny.

If the standards applied to terrestrial slaughter within Norway or the wider European Economic Area (EEA) were applied to the available data on whaling, the evidence presented in this report suggests that the system would fail to meet required welfare thresholds. Under EEA slaughter regulations, animals must be rendered rapidly unconscious through effective stunning, monitored to ensure insensibility, and immediately re-stunned where the initial method fails.⁵⁴ Prolonged consciousness following the first killing attempt would constitute a serious welfare breach. This raises broader questions about regulatory consistency and accountability.

Given Norway's position within the EEA, these issues carry reputational implications beyond national borders. The continuation of commercial whaling under conditions that diverge from widely accepted welfare standards creates tension within a regulatory framework that otherwise emphasises high levels of animal protection.

Section 7 - Conclusions and Recommendations

Conclusions

The evidence presented in this report is drawn primarily from Norway's own data, regulatory framework, and official reporting. It does not rely on external assumptions or isolated incidents. Across multiple lines of analysis, a consistent picture emerges: the challenges identified are not incidental, but systemic. In particular, the findings point to a pattern in which economic and operational considerations are prioritised over precautionary and welfare-based safeguards. This is reflected in rising quotas despite declining demand, the retention of a carry-forward mechanism that inflates future allocations, and the progressive weakening of oversight and competency requirements. Taken together, these trends suggest a management framework that is increasingly shaped by continuity and industry accommodation, rather than by precaution, independent verification, or evolving standards of animal welfare.

On animal welfare, Norwegian data confirms that a significant proportion of whales do not die instantaneously, with documented cases of prolonged deaths lasting several minutes or longer. These outcomes occur under conditions of regulatory compliance and are therefore inherent to the method itself. The absence of independent monitoring and the reliance on self-reported data further limit transparency and undermine the credibility of official welfare claims.

On sustainability, the quota system is structurally disconnected from both precautionary ecosystem-based management and actual catch levels. The carry-forward mechanism ensures that quotas continue to rise despite consistently low catch levels and low demand, while the regular killing of pregnant females introduces additional demographic and welfare consequences that are only partially reflected in current management calculations. At the same time, the broader ecological role of whales is not reflected in current management approaches.



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Public opinion within Norway does not support the continuation of whaling under these conditions. Consumption has declined to negligible levels, particularly among younger generations, and a clear majority of Norwegians regard key welfare outcomes, including non-instantaneous death and the killing of pregnant animals, as unacceptable.

Taken together, these findings challenge the central justifications used to defend Norwegian commercial whaling. The practice can no longer credibly be framed as a necessary food tradition or as a model of humane and sustainable hunting. It is a system sustained by inertia, weak oversight, and declining public relevance.

Recommendations

To address the issues identified in this report, the following actions are recommended:

1. Reinstate independent monitoring on Norwegian whaling vessels

Introduce mandatory independent observers and/or Remote Electronic Monitoring (REM) systems to provide independent verification of welfare outcomes, hunting practices, and compliance with regulations.

2. Review the quota methodology

Review the quota-setting framework, including the carry-forward mechanism and the treatment of pregnant females, to ensure that quota calculations reflect both precautionary management principles and the full biological consequences of removals.

3. Establish an independent mechanism for investigating welfare breaches

Ensure that clear responsibilities, procedures, and authorities are in place to enable independent and official investigations whenever credible evidence of animal welfare breaches is reported during commercial whaling operations.

4. Strengthen international reporting and scrutiny

Regularly submit welfare, catch composition, and hunting performance data to the International Whaling Commission and place Norwegian welfare data before the IWC Humane Killing Working Group for independent review.

5. Address conflicts of interest in welfare assessment

Separate the development of killing technology, operational oversight, and welfare evaluation to ensure that assessments are conducted independently and transparently, in line with standards applied in other regulated animal-use sectors.

6. Take account of, and act upon, Norwegian public opinion

Recognise that majorities of Norwegians consistently regard prolonged deaths and the killing of pregnant whales as unacceptable and ensure that future policy reflects contemporary societal values rather than historical assumptions about demand or cultural support.

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References

- 1 Nærings- og fiskeridepartementet, (2026) Høgare vågekvalkvote I 2026, Regjeringa.no. Available at: <https://www.regjeringen.no/no/aktuelt/hogare-vagekvalkvote-i-2026/id3147611/> (Accessed: 27 April 2026).
- 2 Aftenposten/NTB (2026) Vågehval-kvoten økes: – Vi må spise mer sjømat. Aftenposten, 30 January. Available at: <https://www.aftenposten.no/verden/i/e7PyqR/vaagehval-kvoten-oekes-vi-maa-spise-mer-sjoemat> (Accessed: 27 April 2026).
- 3 Icelandic Food and Veterinary Authority (MAST) (2023) Veiðar á stórhvelum samræmast ekki markmiðum laga um velferð dýra. Available at: <https://www.mast.is/is/um-mast/frettir/frettir/veidar-a-storhvelum-samraemast-ekki-markmidum-laga-um-velferd-dyra> (Accessed: 27 May 2026).
- 4 Icelandic Food and Veterinary Authority (MAST) (2024) Monitoring of Whaling and Welfare Assessment of Fin Whales 2024; see also MAST's 2023 review of the 2022 season which formed the basis of the temporary suspension of whaling operations.
- 5 Lovdata (2008) Lov om forvaltning av viltlevande marine ressursar (havressurslova). LOV-2008-06-06-37. Available at: Lovdata – Havressurslova (Accessed: 27 May 2026).
- 6 Lovdata (1999) Lov om dyrevelferd. LOV-1999-03-26-15, Chapter 4. Available at: Lovdata – Dyrevelferdsloven kapittel 4 (Accessed: 27 May 2026).
- 7 Lovdata (2022) Forskrift om utøvelse av fangst av hval. FOR-2022-04-01-511. Available at: Lovdata – Forskrift om fangst av hval (Accessed: 27 May 2026).
- 8 Norwegian Directorate of Fisheries (2026) Hval. Available at: Fiskeridirektoratet – Hval (Accessed: 27 May 2026).
- 9 International Whaling Commission (2026) The Revised Management Procedure (RMP). Available at: IWC – Revised Management Procedure (Accessed: 27 May 2026).
- 10 International Whaling Commission (1991) Chair's Report of the Forty-Third Annual Meeting, Agenda Item 10. Cambridge: International Whaling Commission. Available at: <https://iwc.int/commission/meetings/historical-documents> (Accessed: 27 May 2026).
- 11 Papastavrou, V. and Cooke, J. (2006) 'Sustainable use of ocean wildlife: what lessons can be learned from commercial whaling?', in Lavigne, D.M. (ed.) *Gaining Ground: In Pursuit of Ecological Sustainability*. Guelph, Canada: Ampersand Printing, pp.
- 12 Biuw, M. and Øien, N.I. (2026) Råd for Nordatlantisk vågehval 2026— Nordøstatlantisk bestand – RMP Medium Area E, Sentralbestanden – RMP Small Area CM. Available at: NVA/Sikt repository (Accessed: 15 April 2026).
- 13 NAMMCO. (2014). *Manual on Baleen Whales: Grenade and Harpoon*. Tromsø: North Atlantic Marine Mammal Commission (NAMMCO). Available at: <https://nammco.no/wp-content/uploads/2017/02/manual-baleen-whales-grenade-and-harpoon.pdf> (Accessed: 29 June 2026)
- 14 NAMMCO (2019) Report on hunting methods in Norwegian minke whaling. Available at: NAMMCO report PDF (Accessed: 27 May 2026).
- 15 Lovdata (2022) Forskrift om utøvelse av fangst av hval. FOR-2022-04-01-511, as amended by FOR-2024-02-02-195. Available at: Lovdata – Forskrift om fangst av hval (Accessed: 27 May 2026).
- 16 Norwegian Directorate of Fisheries (2021–2025) Electronic Reporting System (ERS): fangstdagbok records for commercial minke whaling seasons 2021–2025. Norwegian Directorate of Fisheries.
- 17 Lovdata (2009) Lov om forvaltning av naturens mangfold (naturmangfoldloven). LOV-2009-06-19-100, § 36. Available at: Lovdata – Naturmangfoldloven §36 (Accessed: 27 May 2026).
- 18 North Atlantic Marine Mammal Commission (NAMMCO) (2016) Report of the Expert Group Meeting on Assessing Time to Death Data from Large Whale Hunts. Copenhagen, Denmark, 4–6 November 2015. Available at: <https://nammco.no/wp-content/uploads/2016/10/report-of-expert-group-meeting-on-ttd-data-for-large-whales.pdf> (Accessed: 27 May 2026).
- 19 Government of Norway (2019) Norwegian Minke Whaling: Research and Management. Submitted to the NAMMCO Expert Group on Assessing Large Whale Killing Data. Available at: <https://nammco.no/wp-content/uploads/2019/02/doc-8-report-norway.pdf> (Accessed: 3 June 2026).

- 20 International Whaling Commission (IWC) (n.d.) IWC historical document archive. Available at: <https://archive.iwc.int> (Accessed: 27 May 2026).
- 21 Knudsen, S.K. (2003). A review of the criteria used to assess insensibility and death in hunted whales compared to other species. *Veterinary Journal* 165(1): 42–59.
<https://www.sciencedirect.com/science/article/abs/pii/S1090023302001274>
- 22 Norwegian NAMMCO submission describing the Hvalgranat-99:
<https://nammco.no/wp-content/uploads/2019/02/doc-8-report-norway.pdf>
- 23 Knowles, T.G. & Butterworth, A. (2006). Immediate immobilisation of a minke whale using a grenade harpoon requires striking a restricted target area. https://www.researchgate.net/publication/228507256_Immediate_immobilisation_of_a_Minke_whale_using_a_grenade_harpoon_requires_striking_a_restricted_target_area (Accessed: 27 May 2026).
- 24 Marino, L. et al. (2007) Cetaceans have complex brains for complex cognition, *PLoS Biology*, 5(5), p. e139. Available at: <https://doi.org/10.1371/journal.pbio.0050139> (Accessed: 27 May 2026).
- 25 International Whaling Commission (IWC) (n.d.) Progress reports. Available at: <https://archive.iwc.int/pages/download.php?direct=1&noattach=true&ref=22260&ext=pdf&k=> (Accessed: 27 May 2026).
- 26 Norwegian Directorate of Fisheries (n.d.) Open ERS data: electronic reporting data for commercial fisheries. Available at: <https://www.fiskeridir.no/statistikk-tall-og-analyse/data-og-statistikk-om-yrkesfiske/apne-data-elektronisk-rapportering-ers> (Accessed: 27 May 2026).
- 27 Endangered Species Protection Agency (ESPA) (2025) Death dealt on a Norwegian harpoon – a minke whale's agonising end [video]. YouTube. Available at: <https://www.youtube.com/watch?v=qRkCPfBkJY4&t=8s> (Accessed: 27 May 2026).
- 28 Endangered Species Protection Agency (ESPA) (2026) Whale still alive minutes after being harpooned by Norwegian whalers [video]. YouTube. Available at: <https://www.youtube.com/watch?v=-dpFD0jYt6M> (Accessed: 27 May 2026).
- 29 Øen, E.O. (2017) Behind NAMMCO: Egil Ole Øen. North Atlantic Marine Mammal Commission (NAMMCO), 13 October 2017. Available at: <https://nammco.no/topics/october-13-2017-behind-nammco-egil-ole-oen/> (Accessed: 3 June 2026)
- 30 Øen, E.O. (2000) Granat for fangst av hval og andre store dyr (Norwegian Patent No. 15528 B1). Norwegian Industrial Property Office (Patentstyret). Available at: https://search.patentstyret.no/PDF/2000/B1/20000118_15528.pdf (Accessed: 27 May 2026).
- 31 European Food Safety Authority (EFSA) (2024) Independence and Scientific Decision-Making. Available at: EFSA Independence Policy (Accessed: 3 June 2026).
- 32 International Whaling Commission (IWC) (n.d.) IWC submission [PDF]. Available at: <https://archive.iwc.int/pages/download.php?ref=7558> (Accessed: 27 May 2026).
- 33 International Whaling Commission (IWC) (2026) Animal welfare. Available at: IWC welfare page (Accessed: 27 May 2026).
- 34 International Whaling Commission (IWC) (n.d.) Progress reports [PDF]. Available at: <https://archive.iwc.int/pages/download.php?direct=1&noattach=true&ref=22260&ext=pdf&k=> (Accessed: 27 May 2026).
- 35 International Whaling Commission (IWC) (n.d.) Contribution to the United Nations on the Law of the Sea [PDF]. Available at: UN/IWC PDF (Accessed: 27 May 2026).
- 36 Norwegian Directorate of Fisheries (2017) Inviterer til kurs foran årets hvalfangst. Available at: Fiskeridirektoratet – kurs foran årets hvalfangst (Accessed: 27 May 2026).
- 37 Norwegian Directorate of Fisheries (2023) Høring – regulering av fangst av vågehval i 2023. Available at: Fiskeridirektoratet – regulering av fangst av vågehval i 2023 (Accessed: 27 May 2026).
- 38 Lovdata (2022) Forskrift om utøvelse av fangst av hval. FOR-2022-04-01-511. Available at: Lovdata – Forskrift om fangst av hval (Accessed: 27 May 2026).
- 39 Animal Welfare Institute (2021) Norway continues whale slaughter with 2021 hunting quota. Available at: Animal Welfare Institute – Norway Continues Whale Slaughter with 2021 Hunting Quota (Accessed: 27 May 2026).

- 40 Norwegian Ministry of Trade, Industry and Fisheries (2026) Høgare vågekvalkvote i 2026. Available at: Regjeringen – Høgare vågekvalkvote i 2026 (Accessed: 27 May 2026).
- 41 Norwegian Directorate of Fisheries (n.d.) Hval. Available at: Fiskeridirektoratet – Hval (Accessed: 27 May 2026).
- 42 World Organisation for Animal Health (WOAH) (2021) Terrestrial Animal Health Code, Chapter 7.5: Slaughter of Animals. Available at: WOAH Terrestrial Code Chapter 7.5 PDF (Accessed: 27 May 2026).
- 43 Whitehead, H. et al. (2025) Culture and conservation in baleen whales', *Philosophical Transactions of the Royal Society B*. Available at: DOI link (Accessed: 27 May 2026).
- 44 Roman, J. et al. (2014) 'Whales as marine ecosystem engineers', *Frontiers in Ecology and the Environment*, 12(7), pp. 377–385. Available at: ESA Journals article (Accessed: 27 May 2026).
- 45 Roman, J., Estes, J.A., Morissette, L., Smith, C., Costa, D., McCarthy, J., ... Smetacek, V. (2014) 'Sizing ocean giants: patterns of intraspecific size variation in marine megafauna', *PeerJ*, 1, p. e248.
- 46 NOAA (2023) One of the Planet's Most Important Carbon Sinks Is Revealing Its Secrets. Available at: NOAA article (Accessed: 27 May 2026).
- 47 Scales, K.L., Hazen, E.L., Jacox, M.G., Edwards, C.A., Boustany, A.M., Oliver, M.J., ... Bograd, S.J. (2022) 'Advancing marine conservation through machine learning and satellite data', *Frontiers in Marine Science*, 9, 872679.
- 48 Morissette, L., Christensen, V., & Pauly, D. (2012). Marine mammal impacts in exploited ecosystems: would large scale culling benefit fisheries? *PLoS ONE*, 7, e43966.
- 49 Survey conducted by Respons Analyse on behalf of NOAH (2024/2025)
- 50 Opinion AS (2010) Holdninger til hvalfangst. Omnibus gjennomført for Dyrebeskyttelsen.
- 51 Whale and Dolphin Conservation (WDC) (2019) Norway whaling and whale meat attitudes survey 2019. Available at: <https://uk.whales.org/wp-content/uploads/sites/2/2019/10/norway-whaling-whalemeat-attitudes-survey-2019.pdf> (Accessed: 27 May 2026).
- 52 Animal Welfare Institute (2021) Available at: Norwegian attitudes on whaling (Accessed 27 May 2026)
- 53 Survey conducted by Respons Analyse on behalf of NOAH (2024/2025)
- 54 European Union (2009) Council Regulation (EC) No 1099/2009 of 24 September 2009 on the protection of animals at the time of killing. *Official Journal of the European Union*, L303, pp. 1–30. Available at: EUR-Lex – Regulation (EC) No 1099/2009 (Accessed: 27 May 2026).

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