

Aquaculture Code of Practice

Containment of and Prevention of Escape of Fish on Fish Farms in relation to Marine Mammal Interactions

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Section 1: Introduction

Using this Code

1. Section 7 of the Aquaculture and Fisheries (Scotland) Act 2007 (“2007 Act”) empowers the Scottish Ministers to approve a code of practice, in whole or in part, in order to give practical guidance to fish farmers, promoting desirable practices with respect to the containment of fish on fish farms and the prevention of escapes by farmed fish. Once approved, such a code of practice is subject to the monitoring and enforcement powers as provided in the 2007 Act.
2. This Code of Practice (the “Code”) sets out standards expected from Aquaculture Production Businesses in Scotland (“APBs”) in order to provide for the containment of fish on fish farms and to prevent their escape. This Code focusses upon addressing the risks concerning containment and escape of farmed fish arising from marine mammal interactions at fish farms (where the term “marine mammals” includes both seals and cetaceans). Appropriate measures to ensure containment and prevent escape of farmed fish are also referred to within this Code as “non-lethal measures”.
3. This Code provides a combination of guidance for APBs, together with mandatory standards with which APBs must comply. Section 2 of the Code addresses containment measures, while Section 3 focusses upon reporting requirements. Each of these sections has a sub-section that provides guidance on these matters, and a separate sub-section containing the mandatory standards for APBs.
4. In this Code, the term “you” means an APB authorised to operate under the Aquatic Animal Health (Scotland) Regulations 2009.
5. If you have any questions concerning this Code please contact Marine Scotland at email: marinemammalreporting@gov.scot; post: Marine Scotland, Mailpoint 11, 1B South, Victoria Quay, Edinburgh EH6 6QQ; telephone: 0300 244 4000.

Background to the Code

6. The aquaculture sector is an essential component of the Scottish economy, contributing to sustainable economic growth in rural and coastal communities. In 2018, Scottish aquaculture and its wider supply chain contributed £880 million GVA to the Scottish economy and supported over 11,700 jobs.¹
7. In addition, the seas around Scotland are internationally important as a source of marine biodiversity, supporting a wealth of wildlife including twenty-two species of marine mammals, comprising cetaceans (whales, dolphins and porpoises) and two species of pinnipeds (grey seals and harbour seals).
8. Both grey seals and harbour seals (also known as common seals) are amongst the most widely found marine mammals in Scottish waters. Seals may be attracted to fish farms, especially in circumstances where they learn to associate the farmed fish as a potential source of food. This can result in damage to nets and other aquaculture equipment which can in turn jeopardise the containment of farmed fish and risk their escape. Seals may be one of the causes of mortality as well as stress and welfare issues in farmed fish.
9. The aim of this Code is to address the impact of marine mammal interactions upon containment and escape of fish at fish farms. The practical measures identified within this Code are focussed upon addressing the risks concerning containment and escape of farmed fish arising from marine mammal interactions, particularly those involving seals. The potential impact of marine mammals upon fish farms should be mitigated through the adoption of appropriate containment measures, while ensuring that these measures are not harmful to marine mammals. Appropriate containment measures are likely to vary between fish farms due to a range of factors including the presence of marine mammals and the behaviour of individual animals. APBs should adopt those measures that they identify as appropriate for their particular circumstances and that are in accordance with the mandatory standards contained in this Code. Appropriate containment measures include non-lethal measures that deter seals without causing harm to seals or other marine mammals.
10. The measures contained within this Code reflect existing good practice in the aquaculture industry,² including the use of tensioned or false-bottomed nets.

¹ Biggar Economics, 'Estimation of the Wider Economic Impacts of the Aquaculture Sector in Scotland – A Report to Marine Scotland prepared by Biggar Economics' (June 2020) available at <https://www.gov.scot/binaries/content/documents/govscot/publications/research-and-analysis/2020/09/estimation-wider-economic-impacts-aquaculture-sector-scotland/documents/estimation-wider-economic-impacts-aquaculture-sector-scotland/estimation-wider-economic-impacts-aquaculture-sector-scotland/govscot%3Adocument/estimation-wider-economic-impacts-aquaculture-sector-scotland.pdf>

² The Code of Good Practice for Scottish Finfish Aquaculture, Chapter 4: Seawater Lochs (February 2015) available at <http://thecodeofgoodpractice.co.uk/wp-content/uploads/2015/02/cogp-chapter-4-seawater-lochs2.pdf>

Certain new materials such as stainless-steel core high-density polyethylene (“HDPE”) also provide mitigation against marine mammal interactions. Additional well-established containment measures in relation to marine mammal interactions include daily removal of fish mortalities (e.g., by daily emptying of any dead fish baskets) and use of seal blinds to deter access to fish mortalities settled within the fish farm pen. Any proposal to use acoustic deterrent devices (“ADDs”) must be in compliance with an APB’s relevant legal obligations, including those under the Conservation (Natural Habitats, &c.) Regulations 1994, to ensure that any impacts on the marine environment are properly managed and safeguarded for future generations.

11. The Code also introduces a system of monitoring and reporting in order to document the use of these containment measures in a systematic way throughout Scotland’s aquaculture industry and to log any killing or injury of marine mammals (known as “bycatch”) associated with fish farms.

To whom does the Code apply?

12. The Code applies to every APB operating a fish farm in Scotland’s marine environment. Whilst likely to be an extremely rare event, the Code would also apply to any interactions with marine mammals occurring at freshwater fish farms (note that the reporting requirement in relation to nil returns specified in Section 3.2 does not apply to freshwater fish farms).

What are the standards of practice provided by the Code?

13. This Code provides a combination of guidance and mandatory standards for APBs. Section 2 of the Code addresses containment measures, while Section 3 focusses upon reporting requirements. These sections provide guidance on these matters (in Sections 2.1 and 3.1), together with mandatory standards for APBs (in Sections 2.2 and 3.2).
14. Adherence to the Code requires APBs to comply with the mandatory standards which are set out within Sections 2.2 and 3.2 in relation to:
 - The use of appropriate containment measures at fish farms (as described in Section 2.2);
 - The reporting of the use of containment measures at fish farms on an annual basis, including nil returns (as described in Section 3.2);
 - The reporting of any killing or injury of marine mammals in the form of bycatch at fish farms within 48 hours of the APB becoming aware of the incident (as described in Section 3.2).

What are the consequences of an APB’s non-compliance with the Code?

15. The mandatory standards specified within Sections 2.2 and 3.2 of the Code are subject to monitoring and enforcement processes as provided in the 2007 Act:

- Monitoring: the 2007 Act requires the Scottish Ministers to monitor compliance with the Code (once it is approved by them) (*section 8(1)*).
- Service of notice: if an APB is not complying with the Code (or is likely not to comply with the Code) in a material regard, the Scottish Ministers may serve a notice on that APB requiring (a) the execution of such works, and (b) the taking of such other steps, as the Scottish Ministers consider necessary for securing compliance with the Code (*section 8(2)-(4)*).
- Contravention of notice: a person who contravenes a notice, without reasonable excuse, is guilty of a criminal offence and is liable on summary conviction to a fine not exceeding level 4 on the standard scale, which currently equates to a maximum fine of £2,500 (*section 6(9)-(10) as applied by section 8(5)*).
- Appeal of notice: there is a right of appeal against a notice by summary application to the sheriff (*section 6(7)-(8) as applied by section 8(5)*).

How does other legislation relate to the Code?

16. As well as complying with this Code, APBs must also ensure that they comply with all other legal obligations which apply to them, including in relation to marine mammal protection and farmed fish welfare.
17. For example, when adopting appropriate measures in relation to marine mammals under this Code, in order to contain and prevent the escape of fish on fish farms, APBs must adhere to all the other duties placed upon them under the 2007 Act and all applicable regulations. Moreover, further responsibilities are placed upon APBs under the Animal Health and Welfare (Scotland) Act 2006 to provide for the welfare of fish on fish farms. The content of this Code does not change these responsibilities.
18. In addition, APBs must continue to comply with all site-based and species-based protection measures applicable to marine mammals (cetaceans and seals). For example, the Conservation (Natural Habitats, &c.) Regulations 1994 (the “Habitats Regulations”) afford a high level of strict protection for all cetaceans by prohibiting their deliberate or reckless capture, injury, disturbance and killing,³ while seals are protected through Part 6 of the Marine (Scotland) Act 2010 from intentional or reckless injury, taking and killing. There are only limited exceptions to these offences including for the purpose of alleviating suffering and under strict licensing provisions,⁴ and there are significant penalties associated with non-compliance in line with the most serious wildlife offences. The content of this Code does not change these responsibilities.

³ For guidance on this, please see Marine Scotland, ‘The Protection of Marine European Protected Species from Injury and Disturbance – Guidance for Scottish Inshore Water’ (July 2020) available at www.gov.scot/publications/marine-european-protected-species-protection-from-injury-and-disturbance/

⁴ For guidance, please see Marine Scotland’s web-based guidance on seal licensing available at <https://www.gov.scot/collections/marine-licensing-seal-licensing/#aboutseallicensingandthesealmanagementsystem>

19. For fuller details on the legal responsibilities of APBs, you should refer to the current legislation. You are advised to obtain independent legal advice in relation to your rights and responsibilities under the existing legal and regulatory framework for APBs.

Will there be updates and changes to the Code?

20. Best practice is likely to change as both technology and knowledge improve. Any new measures or other changes to best practice should be reflected in the requirements of the Code. Any future updates and changes to the Code would be subject to the processes within section 7 of the 2007 Act, which provides that the Scottish Ministers may approve a modification of an approved code of practice (*section 7(3)*). Any such modifications would be subject to the same process of public consultation that informed the development of the Code (*section 7(4)*).

Section 2: Containment measures

Section 2.1: Guidance on containment measures

Introduction

21. Section 2.1 provides information and guidance concerning the use of appropriate containment measures by APBs. All of these containment measures are non-lethal and include deterrent measures that are continually in place and do not seek to directly alter the behaviour of seals such as tensioned nets and deterrent measures that can be actively deployed in order to directly alter the behaviour of seals such as ADDs. Thereafter, the following Section 2.2 provides a list of mandatory standards concerning containment measures to which APBs must adhere under this Code.

Containment measure – for the purposes of this Code, a containment measure is any measure used to prevent or mitigate against interactions between farmed fish and marine mammals. Examples include anti-predator nets, and measures that actively deter seals such as ADDs.

The importance of containment measures at fish farms

22. Successful containment at fish farms is essential for minimising the risk of escape of farmed fish. Marine mammals (in particular, seals) may damage nets leading to the escape of farmed fish. In addition to the risk of escape, the failure of containment measures may lead to other detrimental consequences, including, but not limited to, physical damage to nets; entry of seals into fish pens;⁵ seal depredation of farmed fish; and stress and welfare consequences for farmed fish.
23. Seals are opportunistic hunters and will exploit weaknesses in containment. The key to ensuring appropriate containment at fish farms for the purpose of addressing marine mammal interactions is maintaining proper net tensioning and repairing weak points as soon as they arise. As seals are capable of moving on land, care should be taken to ensure that walkways and pen sides do not provide a route for seals to enter nets.
24. It is important to minimise opportunities for seals to associate fish pens as a food source. Thompson *et al* (2021)⁶ suggests that most seal attacks at fish

⁵ Any references to pens within this Code applies to any holding unit that contains fish, including cages.

⁶ Thompson, D., Coram, A.J., Harris, R.N. and Sparling, C.E. (2020). Review of non-lethal seal control options to limit seal predation on salmonids in rivers and fish farms. Scottish Marine and Freshwater Science Vol 12 No 6; available at <https://data.marine.gov.scot/sites/default/files//Scottish%20Marine%20and%20Freshwater%20Science%20%28SMFS%29%20Vol%2012%20No%206%20-%20Review%20of%20non->

farms occur at the base of nets, and evidence that most fish are bitten through the mesh of the net and that this occurs largely from underneath the net. They also note that dead fish lying at the bottom of the fish pen may attract seals that then learn to take fish through nets in this manner.

25. Seals may also gain access to pens by ripping holes in the net wall. New materials such as HDPE, particularly stainless-steel core HDPE type netting materials, may serve to mitigate against this, although long-term evidence regarding the efficacy of HDPE nets at reducing seal depredation is still to be obtained (Thompson *et al*, 2021).

Appropriate containment measures

26. Chapter 4 of the Code of Good Practice for Scottish Finfish Aquaculture⁷ recommends adoption of the following containment measures:
 - The use of tensioned or false-bottomed nets;
 - The use of predator nets;
 - The use of seal blinds to cover the dead fish basket;
 - The daily removal of any dead fish (subject to weather and the ability of farmers to access their facilities).
27. As recommended in Marine Scotland's Technical Standard for Scottish Finfish Aquaculture,⁸ sufficient tensioning of nets may deter predators, as insufficient tension may lead to the distortion of nets, allowing seals to push further into a fish pen, and forming folds to trap fish.
28. The use of predator nets should be handled carefully to address certain risks. For example, the use of such nets has the potential to impede water flow to farmed fish, which may cause welfare issues. In addition, installation of predator nets should be done in a manner that ensures that they do not pose a risk of entanglement of marine mammals or birds.. For example, the risk of entanglement can be reduced by following the manufacturer's guidelines (e.g., increasing the tension on the predator net, for example with an additional weighting system). Reducing the mesh size of the predator net may also decrease the entanglement risk, although this should be considered against the

[lethal%20seal%20control%20options%20to%20limit%20seal%20predation%20on%20salmonids%20in%20rivers%20and%20at%20finfish%20farms.pdf](#)

⁷ The Code of Good Practice for Scottish Finfish Aquaculture, Chapter 4: Seawater Lochs published by the Finfish Aquaculture Sector's Code of Good Practice Management Group (February 2015) available at <http://thecodeofgoodpractice.co.uk/wp-content/uploads/2015/02/cogp-chapter-4-seawater-lochs2.pdf>

⁸ Marine Scotland, 'A Technical Standard for Scottish Finfish Aquaculture, developed by the Ministerial Group for Sustainable Aquaculture's Scottish Technical Standard Steering Group' (June 2014) available at <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2015/06/technical-standard-scottish-fish-aquaculture/documents/00479005-pdf/00479005-pdf/govscot%3Adocument/00479005.pdf>

increased drag created and the reduced flow of water. Before installing predator nets, an important factor to consider is the vicinity of the fish farm to any protected areas (e.g., Special Areas of Conservation for marine mammals and Special Protection Areas for birds), including by consulting with NatureScot, if appropriate.

The use of acoustic deterrent devices (ADDs)

Acoustic deterrent device (ADD) – ADDs operate by introducing loud, low to mid frequency sound (usually 1 to 20 kHz) into the marine environment to deter seals from fish farms. The Code considers all types of device that emit sounds for the purpose of keeping an animal away from an area, including startle devices, to be a form of ADD.

29. As addressed in Section 1 of this Code, as they undertake their business, APBs must comply with the existing legal and regulatory framework applicable to them, including in relation to marine mammal protection. For example, any proposal to use predator control measures, including ADDs, must be compatible with the Habitats Regulations, which afford protection to cetaceans by prohibiting their deliberate or reckless capture, injury, disturbance and killing. Such proposals must also be consistent with the protections for seals within Part 6 of the Marine (Scotland) Act 2010 from intentional or reckless injury, taking and killing.
30. In order to be compliant with the species-based protection measures applicable to cetaceans under the Habitats Regulations, the use of any ADD must be in accordance with Marine Scotland's Information Note and Frequently Asked Questions for the Operators of Finfish Farms on the use of Acoustic Deterrent Devices and the Requirement for a European Protected Species Licence.⁹ It is important to note that even in scenarios where it is concluded that an EPS Licence would not be required for the use of an ADD (for example, in circumstances where there are no cetaceans present at the location) harm to all marine mammals, including seals, must be avoided. If you are planning to use an ADD at your fish farm, you must consult Marine Scotland using the following contact details Marine Scotland - Licensing Operations Team ("MS-LOT") MS.MarineLicensing@gov.scot, to ensure that such planned use will avoid harm to marine mammals.

The use of novel forms of containment measures

31. As the aquaculture industry continues to evolve, novel forms of non-lethal containment measures may emerge. Examples may include deterrent measure that affect other senses of seals rather than hearing, such as taste, touch or

⁹ Marine Scotland, 'Information Note and Frequently Asked Questions for the Operators of Finfish Farms on the use of Acoustic Deterrent Devices and the Requirement for a European Protected Species Licence' (December 2020) available at https://marine.gov.scot/sites/default/files/faq_adds_and_eps_including_annex_1_-_version_4_-_december_2020.pdf

vision. Before any such novel measures are deployed, it will be necessary for APBs to consult with Marine Scotland to ensure the suitability of the intended measure. The mandatory standards contained within this Code apply to novel forms of containment measures, including novel methods that are being trialled

32. As in relation to all of their conduct, APBs must continue to comply with the existing legal and regulatory framework, including in relation to marine mammal protection and farmed fish welfare, and this must be taken into account in considering the suitability of any novel containment measures.

Section 2.2: Mandatory standards for APBs in relation to containment measures in relation to marine mammal interactions

1. If no containment measures in relation to marine mammal interactions are required in relation to marine mammal interactions this must be reported to Marine Scotland (see Section 3 for further details).
2. Where containment measures in relation to marine mammal interactions are necessary, you must deploy at least one of the following non-lethal measures to contain fish at your fish farm:

- The use of tensioned or false-bottomed nets, or alternatively the use of predator nets;
- The use of seal blinds to cover any dead fish baskets;
- Daily removal of any dead fish (subject to weather and the ability of farmers to access their facilities).

3. When using your equipment, you must do so only in accordance with the manufacturer's guidelines, where available, and any relevant consents.
4. When using your equipment, you must do so in such a manner as to reduce the likelihood of access to fish pens by marine mammals.
5. You must not take any deterrent action which is specifically targeted at a marine mammal calf or pup.
6. You must not feed or attempt to feed a marine mammal for any purpose, including for the purposes of deterrence (i.e., taste aversion).
7. You must not attempt to actively deter a marine mammal which is demonstrating signs of aggression (including charging, lunging, or vocalising), except when necessary to deter a marine mammal from endangering personal safety.
8. If you plan to deploy an ADD you must consult Marine Scotland and obtain any relevant consents or you must demonstrate to Marine Scotland that the planned use will not harm marine mammals.
9. Prior to using any novel measure of non-lethal deterrence, you must consult with Marine Scotland to ensure the measure will not harm marine mammals.

Section 3: Reporting requirements

Section 3.1: Guidance on reporting requirements

Introduction

33. Section 3.1 provides information and guidance in relation to reporting requirements for the killing or injury of marine mammals in the form of bycatch (“**bycatch**”) and reporting on the use of non-lethal measures. Thereafter, the following Section 3.2 provides a list of the mandatory standards in relation to reporting requirements to which APBs must adhere under this Code.
34. The monitoring and reporting of bycatch and the use of containment measures in relation to marine mammal interactions, including all forms of deterrents, are relevant to promoting desirable practices (s.7(1)(b)) in respect of the containment of fish on fish farms (s.7(2)(b)).
35. The reporting requirements described here are in addition to those contained in the Fish Farming Businesses (Record Keeping) (Scotland) Order 2008 (“2008 Order”). Article 3(b) of the 2008 Order requires APBs to keep records in relation to the containment, prevention of escape and recovery of fish from fish farms, and to compile the records that are specified in Schedule 2(8) regarding anti-predator measures undertaken by APBs at each location.

Reporting the killing or injury of marine mammals in the form of bycatch

36. The reporting of any bycatch that arises as a consequence of implementing containment measures promotes good husbandry at fish farms. Proper adherence to the Code, through implementation of measures to reduce bycatch, is likely to make any instances of killing or injury of marine mammals an extremely rare event.
37. Section 3.2 below sets out the mandatory standards that the Code requires of APBs to monitor and report any bycatch. These monitoring requirements should form part of routine working practices and, as such, should not impose a significant additional burden for staff working at fish farms. It is also subject to weather conditions and the ability of farmers to access their facilities. In addition to the requirement to report to Marine Scotland, APBs should also report any mortality to the Scottish Marine Mammal Stranding Scheme.¹⁰

Reporting on the use of containment measures to deter marine mammals

38. Section 3.2 below sets out the mandatory standards that the Code requires of APBs to report on the use of non-lethal containment measures deployed to deter marine mammals. Such reporting must provide sufficient detail to allow any measures that reduce the potential for bycatch to be recognised. For

¹⁰ Further information concerning the Scottish Marine Mammal Stranding Scheme, including information relating to reporting, is available at <https://www.strandings.org/>

example, if tensioned nets are used, the report must specify factors such as the materials the net is made of, the date installed, the monitoring regime for checking tensioning is sufficient, and the frequency and nature of maintenance to maintain sufficient tension.

39. The information provided by APBs as result of the mandatory standards contained in Section 3.2 will be subject to requests for information under both the Freedom of Information (Scotland) Act 2002 and the Environmental Information (Scotland) Regulations 2004 which enable the public to access information held by the Scottish Government and its agencies.

Section 3.2: Mandatory standards for APBs in relation to reporting requirements

Mandatory standards in relation to all reporting under the Code

1. You must provide information to Marine Scotland that is clear and comprehensive concerning the matter being reported.
2. You must not provide information that is deliberately or negligently misleading or false.

Mandatory standards in relation to the killing or injury of marine mammals in the form of bycatch

3. You must check for any killing or injury of marine mammals in the form of bycatch on a daily basis as part of routine working practices.
4. You must report any incident of killing or injury of marine mammals in the form of bycatch within 48 hours of becoming aware of the incident to Marine Scotland at email: marinemammalreporting@gov.scot; telephone: 0300 244 4000 using the reporting form¹¹.

Mandatory standards in relation to reporting use of containment measures to deter marine mammals

5. You must report all use of containment measures to deter marine mammals on an annual basis to Marine Scotland at email: marinemammalreporting@gov.scot; post: Marine Scotland, Mailpoint 11, 1B South, Victoria Quay, Edinburgh EH6 6QQ; telephone: 0300 244 4000 using the reporting form¹².
6. If no containment measures are required then a nil return must be reported to Marine Scotland on an annual basis. (The requirement to report nil returns does not apply to freshwater fish farms).

¹¹ Reporting Form (02 v1): Reporting of the Killing or Injury of Marine Mammals in the Form of Bycatch at Finfish Farms

¹² Reporting Form (MMR 01 v1): Use of Non-lethal Containment Measures at Finfish Farms to deter Marine Mammals including the use of Acoustic Deterrent Devices (“ADDs”)



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