

Cleaner Fish Health and Welfare

Tentative indicators

This is a proposal for a set of indicators to cover the health and welfare of cleaner fish cohabitating with salmonids in marine grow-out cages. The indicators also cover requirements for cleaner fish supply (both of hatchery and wild caught origin). These indicators have been developed by a [Technical Working Group](#) (TWG) of experts. The goal is to incorporate these indicators into the ASC Farm Standard v1.0.

Indicators that are already part of the ASC Farm Standard and whose scope should be broadened to cover cleaner fish are listed. New indicators and modifications to existing indicators are highlighted in bold.

The document is structured following the same order as the TWG discussions. These have followed the chronological flow of cleaner fish life at a salmon farm. This might not necessarily coincide with the ordering of criteria in the ASC Farm Standard.

The order followed is:

1. Requirements for cleaner fish from hatchery origin
2. Requirements for cleaner fish from wild caught origin
3. Requirements for cleaner fish reared in salmonid cages
 - a) Routine health and welfare
 - b) Veterinary therapeutants
 - c) Handling operations
 - d) Slaughter and reuse

New indicators covering cleaner fish origin

Scope: Cleaner fish sourced from hatchery origin

Indicator	Requirement
1.	The cleaner fish supplier shall ensure that all cleaner fish supplier employees are informed and aware of the importance of fish health and welfare, according to Appendix xyz.
2.	The cleaner fish supplier shall ensure that all people involved in fish husbandry and handling operations are trained on fish health and welfare, according to Appendix xyz.
3.	The cleaner fish supplier shall monitor ¹ production daily for mortality.
4.	The cleaner fish supplier shall remove ² mortality at least every second day.
5.	The cleaner fish supplier shall collect moribund finfish daily ³ and stun and kill ⁴ them.
6.	The UoC (in coordination with the cleaner fish supplier) shall test ⁵ every batch ⁶ of animals for diseases of regional concern prior to stocking the grow-out phase on farm.
7.	The cleaner fish supplier shall, if an OIE-notifiable disease is confirmed, report to the authorities and apply the measures required as per the national regulations.
8.	The cleaner fish supplier shall have a designated veterinarian or a fish health manager, who performs regular site visits, at least annually for all species and quarterly for salmon and cleaner fish, as well as in cases of fish health or welfare concerns.
9.	<p>The cleaner fish supplier shall assess site-specific characteristics and develop a Fish Health and Welfare Management System (FHWMS) accordingly. The cleaner fish supplier implements and monitors the FHWMS for its effectiveness, with the objective of preventing disease outbreaks and ensuring good health and welfare of farmed animals. The cleaner fish supplier includes at least the following in the FHWMS:</p> <ul style="list-style-type: none"> a) a site-specific disease and welfare monitoring programme, response mechanisms and reporting requirements (including reporting OIE-notifiable disease to authorities). b) a site-specific biosecurity procedure to identify and minimise spreading of disease, including risk pathways into/out of and within the farm. c) a list of potential predators and any predator control measures needed, to avoid compromising the integrity of the containment system and the health and welfare of the fish.

¹ The UoC shall keep a record of the situation when daily monitoring was not possible. Possible causes that would justify no daily monitoring of mortality are severe bad weather or a major equipment failure that does not respond to poor maintenance or poor contingency plans.

² The UoC shall keep a record of the situation when daily removal was not possible. Possible causes that would justify no daily removal of mortality are severe bad weather or a major equipment failure that does not respond to poor maintenance or poor contingency plans. All mortality shall be disposed responsibly as per indicators 2.12.22 and 2.12.23.

³ The UoC shall keep a record of the situation when daily removal was not possible. Possible causes that would justify no daily removal of moribund are severe bad weather or a major equipment failure that does not respond to poor maintenance or poor contingency plans.

⁴ Using permitted methods.

⁵ Testing is understood as the application of diagnostic techniques scientifically recognised as valid to diagnose the disease of interest. Such techniques might include histopathology, microbiology, molecular technology or veterinary inspection (only in the case of patognomonic diseases).

⁶ Organisms in homogeneous developmental stages coming from the same breeder.

	<p>d) FHWMS overseen and signed-off by a veterinarian.</p> <p>e) a review and where needed a revision of the FHWMS when changes in farming activities or changes in external factors occur, following each production cycle⁷, or upon the direction of the veterinarian.</p> <p>x) a risk-based vaccination plan.</p> <p>y) an information feedback mechanism between UoC and cleaner fish supplier, so health information is shared and integrated.</p>
10.	The cleaner fish supplier treatment records shall be available.
11.	The cleaner fish supplier shall not apply prophylactic treatments, including pre-deployment. The need of these shall be based upon evidence from the pre-transfer health check.
12.	The cleaner fish supplier shall develop and implement a mortality reduction program.
13.	The cleaner fish supplier shall develop and implement a deformity reduction program.
14.	The cleaner fish supplier shall apply a pre-deployment acclimation period that lasts at least 2 weeks. These shall consider temperature, photoperiod, diet and feeding systems and regimes.
15.	<p>The cleaner fish supplier shall assess site-specific characteristics and develop a Fish Handling Management System (FHMS) accordingly. The cleaner fish supplier implements and monitors the FHMS for its effectiveness with the objective of ensuring good health and welfare of farmed animals. The cleaner fish supplier includes at least the following in the FHMS:</p> <p>a) separate processes for each type of handling that may occur on the site i.e., live fish transport (including loading, transfer and unloading), vaccination, treatments, and other procedures that may result in crowding.</p> <p>b) contingency plans for processes described in b), including at least the following;</p> <ul style="list-style-type: none"> - Immediate emergency response back up for system failure. - Immediate emergency culling response measure following responsible stunning and killing according to 2.14c. <p>c) description of the system⁸ to be used e.g., live fish transport system.</p> <p>d) suitable conditions needed to go ahead with the handling; for example external circumstances such as weather or tidal conditions.</p> <p>e) anaesthesia of fish during handling operations that can inflict pain or injury as required by the veterinarian,</p> <p>h) maximum time fish can be out of water⁹ (as per table, for cleaner fish 15 seconds),</p> <p>i) minimum/maximum fasting duration specific to the species being handled, the life stage or size of fish being handled, and the type of handling; this shall be signed off by a veterinarian,</p>

⁷ For farms with production cycles shorter than one-year or using continuous stocking/cropping methods – review annually. For farms with production cycles longer than one-year or using all-in-all-out stocking/cropping methods (e.g., salmon) – review following each production cycle.

⁸ System refers to any equipment, tools, or machinery being used during a particular handling operation. In requirement 2.15.1 d) The site shall describe the systems so a clear list of what is needed and of which specifications is available to anybody carrying out the procedure. In requirement 2.15.1 b) The site shall outline the process it will be carrying out.

⁹ Applies only to fish that are not anaesthetised.

	<p>j) biosecurity measures specific to the type of handling, following the parameters in 2.14a.16 b), to avoid the transfer of disease,</p> <p>k) predator control measures specific to the type of handling, following the parameters in 2.14a.16 c), to ensure the integrity of fish is maintained,</p> <p>l) escape prevention measures specific to the type of handling and following the parameters in criterion 2.5 escapes,</p> <p>m) water quality monitoring and corrective actions in line with 2.14a.16 f), j), k), m), n), and o), including at least the following:</p> <ul style="list-style-type: none"> - Description of monitoring equipment - Monitoring frequency: prior to, during, and post handling. In the case of live fish transport, this means monitoring at the point of departure/arrival and during live fish transport unless this could cause detrimental impact²² - Monitoring parameters; at a minimum temperature, pH, and oxygen level <p>n) visual inspection and corrective actions, in line with 2.14a.16, h), j), k), m), n), and o), including at least the following:</p> <ul style="list-style-type: none"> - Visual inspection frequency: during handling - Visual inspection parameters: abnormal behaviour specific to the type of handling, <p>o) an analysis and feedback mechanism following handling events, providing for a review of handling processes (2.14b.1 a)), based on the following information:</p> <ul style="list-style-type: none"> - Water quality monitoring during handling (m) <ul style="list-style-type: none"> - Visual inspections during handling(n) - Post-handling monitoring of fish for: <ul style="list-style-type: none"> a. abnormal behaviour related to the handling event 2.14a.16 h), j), k), m), n), and o); b. compromised morphological scores related to the handling event 2.14a.16 g), j), k), m), n), and o); c. moribund fish related to the handling event (2.14a.5) d. mortalities related to the handling event (2.14a.4, 2.14a.6 and 2.14a.16 i), j), k), l), m), n), and o), <p>p) a handling log, in the form of a recording template, which captures a)-o) for each handling event.</p>
<p>16.</p>	<p>The cleaner fish supplier shall, in the case of transportation of hatchery reared cleaner fish, allow for a minimum transport time of 4 hours. If the transport is shorter than this, then allow for the cleaner fish to rest in the boat/lorry until this time is reached. Then discharge.</p>

Scope: Cleaner fish from wild caught origin

Indicator	Requirement
<p>17.</p>	<p>The cleaner fish supplier shall comply with local regulations and legislation.</p>
<p>18.</p>	<p>The cleaner fish supplier shall source cleaner fish from the shortest possible supply chain.</p>
<p>19.</p>	<p>The cleaner fish supplier shall use fishing gear that includes wildlife exclusion devices and discourages bycatch.</p>
<p>20.</p>	<p>The cleaner fish supplier shall only use fishing gear that ensures cleaner fish welfare. By this it is understood as gear that avoids injuries and unnecessary stress, and that is suitable for the size and species of fish being captured.</p>

21.	The cleaner fish supplier shall lift fishing gear at a speed that does not compromise cleaner fish welfare. This is no faster than 6m/min.
22.	The cleaner fish supplier shall limit soaking time gear to no longer than 24 hours ¹⁰ .
23.	The cleaner fish supplier shall immediately cull, using accepted methods, fish damaged during the fishing process.
24.	The cleaner fish supplier shall release bycatch at the point of capture.
25.	The cleaner fish supplier shall undergo training on fish health and welfare.
26.	The cleaner fish supplier shall capture cleaner fish not closer than 5Km or two tidal excursions (whichever is bigger) away from stocked fish farms, unless the cleaner fish are destined to that fish farm.

Sub-criterion 2.14a - Fish Health and Welfare

Scope: Cleaner fish reared in grow-out cages with salmonids

Indicator	Requirement
2.14a.0	The UoC shall only use cleaner fish species that are native to the salmon farming area.
2.14a.1	The UoC shall ensure that all UoC employees are informed and aware of the importance of fish health and welfare, according to Appendix xyz. Training to include cleaner fish.
2.14a.1.1	The UoC shall ensure that all people involved in fish husbandry and handling operations are trained on fish health and welfare, according to Appendix xyz. Training to include cleaner fish.
2.14a.4	The UoC shall monitor ¹¹ production daily for mortality.
2.14a.4.1	Mortality shall be removed ¹² when spotted for shrimp and abalone, and at least every second day for finfish.

¹⁰ A deviation from indicated maximum soaking time is justified on the following grounds (reason for exemption must be documented):

o During specific environmental events that prevent sampling.

¹¹ The UoC shall keep a record of the situation when daily monitoring was not possible. Possible causes that would justify no daily monitoring of mortality are severe bad weather or a major equipment failure that does not respond to poor maintenance or poor contingency plans.

¹² The UoC shall keep a record of the situation when daily removal was not possible. Possible causes that would justify no daily removal of mortality are severe bad weather or a major equipment failure that does not respond to poor maintenance or poor contingency plans. All mortality shall be disposed responsibly as per indicators 2.12.22 and 2.12.23.

2.14a.5	The UoC shall collect moribund finfish daily ¹³ and stun and kill ¹⁴ . Moribund shrimp shall be removed when spotted.
2.14a.8	The UoC shall, if an OIE-notifiable disease is confirmed, immediately report to the authorities and apply the measures required by the national regulations.
2.14a.9	The UoC shall have a designated veterinarian or a fish health manager, who performs regular site visits, at least annually for all species and quarterly for salmon and cleaner fish, as well as in cases of fish health or welfare concerns.
2.14a.12	The UoC shall feed animals a diet that is formulated in accordance with species and life-stage specific nutritional requirements, based on feed manufacturer specification, unless such diets are not available. If not available, the UoC shall feed a diet suitable for animals with similar nutritional needs, and actively collaborate with feed manufacturers to work towards the development of a species/life-stage-specific diet.
2.14a.13	The UoC shall not use feed which has expired or is spoiled. In the case of cleaner fish, where feed blocks might be used, these shall be checked daily for any signs of spoilage or excessive leakage or at the frequency recommended by the feed producer.
2.14a.14	The UoC shall develop and implement a feeding plan, including at least the following parameters: <ul style="list-style-type: none"> - time and frequency of feeding - feed rations - feeding adaptation to fit different life stages - feeding adaptation to fit different ambient conditions
2.14a.15	The UoC shall use feeding methods that ensure feed is accessible to all fish and well distributed in the production unit, in order to minimise competition
2.14a.15.1	The UoC must carry out a pre-deployment risk assessment for all cleaner fish batches. This shall include considerations to the cleaner fish origin, disease history both of the cleaner fish and at the salmon farm, environmental characteristics of the destination site such as currents and temperature, current lice situation, planned delousing treatments, net mesh size, and salmon size, amongst others.
2.14a.15.2	The UoC must carry out a cleaner fish quality check upon arrival at the salmon farm. This shall include monitoring for physical damage, compromised welfare, deformities and size.
2.14a.15.3	The UoC must ensure that all cleaner fish equipment is ready, clean, and in good working order upon cleaner fish transfer to the salmon farm.
2.14a.15.4	The UoC shall transfer cleaner fish into salmon cages following at least the practices listed in this indicator: transfer during day-light, below the water-line, close to hides and refugees, in calm weather, after salmon have been fed, and avoiding forced removal in the case of lumpsuckers.
2.14a.15.5	The UoC must provide hides and refugees for the cleaner fish. These shall be designed bearing in mind the needs of the cleaner fish species being reared and in sufficient numbers for the amounts of animals being stocked.
2.14a.15.6	The UoC shall not locate hides and refugees in close contact with the cages' sides and in a location that facilitates salmon and cleaner fish interaction.
2.14a.15.7	The UoC shall make sure that cleaner fish have daily access to feed and that this is not withdrawn with the purpose of sea lice control.

¹³ The UoC shall keep a record of the situation when daily removal was not possible. Possible causes that would justify no daily removal of moribund are severe bad weather or a major equipment failure that does not respond to poor maintenance or poor contingency plans.

¹⁴ Using permitted methods.

2.13.1	The UoC shall only feed ASC compliant product to ASC certified production, unless for abalone fed on wild seaweed. The requirement to feed ASC compliant product applies as of September 2024, giving producers two years of transition from the effective date of the ASC Feed Standard.
2.13.5	The UoC shall not feed product containing ingredients derived from the same species as the species being farmed.
2.13.6	The UoC shall not feed wet feedstuffs or moist pellets, nor uncooked or unprocessed fish to ASC certified production.
2.14a.16	<p>The UoC shall assess site-specific characteristics and develop a Fish Health and Welfare Management System (FHWMS) accordingly. The UoC implements and monitors the FHWMS for its effectiveness, with the objective of preventing disease outbreaks and ensuring good health and welfare of farmed animals. The UoC includes at least the following in the FHWMS:</p> <ul style="list-style-type: none"> a) a site-specific disease monitoring, response mechanisms and reporting requirements (including reporting OIE-notifiable disease to authorities). b) a site-specific biosecurity procedure to identify and minimise spreading of disease, including risk pathways into/out of and within the farm. c) a list of potential predators and any predator control measures needed, to avoid compromising the integrity of the containment system and the health and welfare of the fish. d) FHWMS overseen and signed-off by a veterinarian. e) a review and where needed a revision of the FHWMS when changes in farming activities or changes in external factors occur, following each production cycle¹⁵, or upon the direction of the veterinarian. f) a monitoring process of water quality, including at least the following: <ul style="list-style-type: none"> o Monitoring frequency¹⁶ (including minimum frequencies as per Table 1) o Monitoring parameters (including parameters as per Table 1) o Species-specific limits and monitoring requirements for water quality parameters (Appendix 1). g) a monitoring process for morphological scoring on live fish unless the species does not cope with or allow being sampled, including at least the following: <ul style="list-style-type: none"> o Monitoring frequency: site-appropriate frequency, being at least once a month¹⁷. o Morphological scoring parameters (interpretation manual for reference): <ul style="list-style-type: none"> ▪ Eye damage ▪ Operculum damage ▪ Skin damage ▪ Fin damage ▪ Deformities ▪ Change of colouration ▪ Emaciation h) a monitoring process for behavioural scoring (interpretation manual for reference) on live fish, including at least the following:

¹⁵ For farms with production cycles shorter than one-year or using continuous stocking/cropping methods – review annually. For farms with production cycles longer than one-year or using all-in-all-out stocking/cropping methods (e.g., salmon) – review following each production cycle.

¹⁶ A deviation from indicated frequency of monitoring is justified on the following grounds (reason for exemption must be documented):

- o During specific environmental events that prevent sampling.

¹⁷ A deviation from monthly monitoring is justified on the following grounds (reason for exemption must be documented):

- o Immediately after smolting and stocking.

- o Fish health – undergoing a disease event and/or being treated (including treatment for sea lice). In case the reason for the exemption is related to fish treatment, the maximum duration for the exception shall be 2 weeks.

- o During specific environmental events – water temperature, low oxygen, algal bloom.

	<ul style="list-style-type: none"> o Monitoring frequency: daily¹⁸ o Behavioural scoring parameters: site-appropriate types of abnormal behaviour to look out for. i) a monitoring process for mortality: <ul style="list-style-type: none"> o Monitoring frequency: daily o Monitoring parameters: <ul style="list-style-type: none"> ▪ Classify all recovered mortalities ▪ Carry out a post-mortem analysis for each mortality event.¹⁹ ▪ Investigate mortality events which remain unexplained or unattributed to fish health j) a traffic light system for water quality, morphological scoring, behavioural scoring, and mortality, identifying ranges of acceptable levels (green), warning levels (amber), and unacceptable levels (red) of health and/or welfare. k) increased monitoring for the event of transgressing into the amber and red ranges for water quality, morphological scoring, behavioural scoring and mortality. l) mortality reporting requirements: <ul style="list-style-type: none"> o Report to the veterinarian or fish health manager all mortality events ²⁰ o Report to the veterinarian or fish health manager if a welfare problem is suspected during mortality classification e.g., observation of physical damage on the fish o If an OIE-notifiable disease is confirmed: <ul style="list-style-type: none"> a. increase disease-testing/monitoring in other batches of animals b. coordinate oversight by the veterinarian or animal health specialist c. report to authorities m) corrective measures for the event of transgressing into the amber and red ranges for water quality, morphological scoring, behavioural scoring and mortality. n) a mechanism for trend analysis to determine declining and improving health or welfare over time, including drivers of such trends, based on the following data: <ul style="list-style-type: none"> o water quality monitoring outcome (2.14a.16 f)), o morphological scoring of live fish (2.14a.16 g)), o behavioural scoring of live fish (2.14a.16 h)), o mortality classification, post-mortem analysis result for mortality events, outcome of investigations carried out to clarify unexplained mortality events/events unattributed to fish health (2.14a.16 i)), o feedback from the processing plant o) A mortality reduction program, long-term fish health and welfare improvement measures²¹ as well as short-term mitigation measures to react to situations of declining health or welfare identified in 2.14a.16 j) and k). This program shall outline measures to reduce annual/production cycle mortality and include defined annual targets for reductions in both total and unexplained mortality.
<p>2.14a.17</p>	<p>The UoC shall, when an OIE-notifiable disease is confirmed on the farm, immediately notify farms within the ABM.</p>
<p>2.14a.18</p>	<p>The UoC shall report to ASC the ranges of stocking densities during production, according to Appendix 2 and using the template provided on the ASC website. For cleaner fish the UoC shall report to ASC stocking rates as percentage of cleaner fish versus salmon.</p>

¹⁸ A deviation from daily monitoring is justified on the following grounds (reason for exemption must be documented):

o During specific weather events that prevent access to the site.

¹⁹ If on-site diagnosis is inconclusive, this Standard requires off-site laboratory diagnosis. A veterinarian, a biologist, or a professional with equivalent qualifications must conduct all diagnosis. One hundred percent of mortality events shall receive a post-mortem analysis, not necessarily every fish. A statistically relevant number of fish from the mortality event shall be analysed.

²⁰ A mortality event is marked by a significant increase in daily mortality which can be sudden or occur and prolong over a period of time.

²¹ This shall include considering the adjustment of stocking densities, modification of the feeding system, improvement of water quality, improvement of handling, modification of enclosure characteristics, providing environmental enrichment, amongst others. A table including recommendations for density can be found in the Interpretation Manual.

2.14a.19 The UoC shall report to ASC mortality figures at the end of each production cycle, according to Appendix 2 and using the template provided on the ASC website. **For cleaner fish cohabitating with salmonids, survival rates²² at the end of the cycle should be reported.**

PARAMETERS	TYPE OF CULTURE SYSTEM							
	FRESHWATER				SEAWATER			
	Ponds	RAS	Net pens	Flow-through	Ponds/Lagoons	RAS	Net pens	Flow-through
Temperature	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily
Dissolved oxygen	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily
Turbidity	Daily (for intensive systems) Need based ¹⁶⁷ (for semi-intensive and extensive systems)	Daily	Daily	Daily	Daily (for intensive systems) Risk assessed (for semi-intensive and extensive systems)	Daily	Daily	Daily
Carbon dioxide	Biweekly (for intensive systems) Risk assessed (for semi-intensive and extensive systems)	Daily		Biweekly	Biweekly (for intensive systems) Risk assessed (for semi-intensive and extensive systems)	Daily		Biweekly
pH	Daily	Daily	Daily	Daily	Biweekly (for intensive systems) Risk assessed (for extensive systems)	Daily	Risk assessed	Biweekly
Salinity		Daily ¹⁶⁸			Risk assessed	Daily	Risk assessed	Risk assessed
Ammonia/nitrite/nitrate	Biweekly	Daily		Biweekly	Biweekly	Daily		Biweekly
Metals	Risk assessed	Risk assessed		Risk assessed	Risk assessed	Risk assessed		Risk assessed
Water flow/velocity			Risk assessed				Risk assessed	
Hydrogen sulphide	Risk assessed	Risk assessed			Risk assessed	Risk assessed		

Table 1: Water quality parameters.

²² Survival rates includes fish that survive until the end of the salmon production cycle, plus culled fish.

Criterion 2.16 - Veterinary therapeutants

Scope: Cleaner fish reared in grow-out cages with salmonids

Indicator	Requirement
2.16.1	The UoC shall only use therapeutants ²³ as prescribed and directed by a registered veterinarian.
2.16.2	The UoC shall not use hormones or antibiotics stimulating growth.
2.16.3	The UoC shall only use hormones (e.g. methyltestosterone or ethyl testosterone) for sex-reversal, to induce and coordinate spawning, or to produce single-sex stock. Each hormonal treatment shall be recorded.
2.16.4	The UoC shall not use antibiotics prophylactically ²⁴ .
2.16.5	The UoC shall retain prescriptions for each application of therapeutants – including the following minimum information: <ul style="list-style-type: none"> - the name, address and telephone number of the person prescribing the product; - the qualifications enabling the person to prescribe the product (e.g. relevant tittle or number of affiliation to a relevant veterinary college); - the name and address of the owner or keeper of the animals. - the identification (including the species) of the group of animals to be treated; - the premises at which the animals are kept if this is different from the address of the owner or keeper; - the date of the prescription; - the signature or other authentication of the person prescribing the product; - the name and amount of the product prescribed; - the reason to treat; - the dosage and administration instructions; - any necessary warnings; - the withdrawal period.
2.16.6	Indicator scope: every UoC using antibiotic treatments. The UoC shall monitor for antibiotic resistance; this shall be done carrying out antibiotic sensitivity testing before or during each antibiotic treatment, or through regular monitoring of in-house strains ²⁵ .
2.16.7	Indicator scope: every UoC using antibiotic treatments. The UoC shall monitor antibiotic treatment efficacy and investigate the causes behind any treatment failure ²⁶ .
2.16.8	Scope: every UoC using antiparasitic treatments except for salmonids in grow-out cages. The UoC shall monitor for antiparasitic resistance; this shall be done carrying out bioassays before or during each antiparasitic treatment, or through regular monitoring of in-house parasites ²⁷ . If no methods exist to determine resistance, then monitoring of treatment efficacy is sufficient.

²³ In the context of this criterion, therapeutants include antibiotics, antiparasitics, antifungals, antivirals, hormones, anesthetics, and vaccines.

²⁴ The metaphylactic use of antibiotics is allowed.

²⁵ In the case of bacterial infections that are reoccurring, the site might show evidence that work has been carried out to isolate the problematic bacterial strains, characterise them, and periodically (at least on a cycle basis) test them for antibiotic sensitivity.

²⁶ For this purpose, treatment failure is defined as persistent symptoms or signs of diseases, or continued detection of the infectious agent causing the diseases being treated. In many cases, this will be in the form of sustained mortality that does not decrease in response to treatment.

²⁷ In the case of parasitic infections that are reoccurring, the site might show evidence that work has been carried out to identify the problematic parasites, characterise them, and periodically (at least on a cycle basis) test them for antiparasitic resistance.

2.16.9	Scope: every UoC using antiparasitic treatments except for salmonids in grow-out cages. The UoC shall monitor antiparasitic treatment efficacy and investigate the causes behind any treatment failure.
2.16.10	Scope: every UoC using antibiotic and antiparasitic treatments, except for salmonids in grow-out cages in the case of antiparasitic treatments. The UoC shall apply treatment rotation ²⁸ , if resistance has been determined in 2.16.6/8, or resistance is suspected as a cause of treatment failure in 2.16.7/9, and there is more than one effective antibiotic or antiparasitic available.
2.16.11	The UoC shall not use ²⁹ antimicrobials listed as Critically Important Antimicrobials for Human Medicine by the World Health Organisation (WHO), unless the following criteria are fulfilled: <ul style="list-style-type: none"> – the veterinarian or aquatic animal health professional has provided reasoning why the Critically Important Antibiotic is the only possibility³⁰ for treatment – previous monitoring has not determined resistance to the active ingredient
2.16.12	The UoC shall adhere to species-specific limits on antibiotic ³¹ treatments (Annex 1).
2.16.13	The UoC shall adhere to species-specific limits on parasiticide treatments (Annex 1).
2.16.14	The UoC shall reduce ³² the antibiotic load ³³ per year or per production cycle ³⁴ . In the event of not meeting this indicator, the UoC shall demonstrate actions or measures taken to reduce antibiotic usage.
2.16.15	The UoC shall ensure that at the time of harvest, residue levels of therapeutants used are below the Maximum Residue Limits (MRL) as defined by all countries where the product is going to be sold or the limits set by the European Union.
2.16.16	The UoC shall comply with the withdrawal period of the country where the products are being sold.
2.16.17	The UoC shall have a risk-based residue testing plan in place to corroborate products are below MRL if needed.
2.16.18	The UoC shall, when resistance has been determined, disclose the finding to the ABM.
2.16.19	The site shall annually or within a month of concluding a production cycle publicly disclose: <ul style="list-style-type: none"> – the antibiotic load per production cycle or year.

²⁸ In the context of this criterion, treatment rotation means using an active ingredient belonging to a different family of antibiotics or antiparasitics.

²⁹ Batches treated with antimicrobials listed as Critically Important Antimicrobials for Human Medicine are not eligible for ASC certification.

³⁰ The only two accepted justifications are the following: resistance to all other available antibiotics, or no availability of other antibiotics than CIA.

³¹ Shrimp treated with antibiotics are no longer eligible for ASC certification.

³² This applies to UoCs dependent on the use of antibiotics i.e. where there is systematic use. The requirement to reduce antibiotic load or the number of treatments does not apply to UoCs with on-off use of antibiotics i.e. treatment after several years or production cycles without treatment.

³³ Antibiotic load is calculated as the sum of the antibiotic active ingredient (mg) divided by the sum of the harvested biomass (Kg). Where: mg of active ingredient is the sum of all the antibiotic treatments that have taken place in a farm during a production cycle or a year; Kg of harvested biomass is the total biomass harvested at the end of the production cycle or year. Reduction in antibiotic load shall be looked at by assessing the 6 years previous to the audit or the 6 previous cycles. For the first 6 audits comparison should only be done against one, two, three, four, or five years or production cycles previous to the audit. The target would be to decrease usage until a situation is reached where treatments are only sporadic (by sporadic ASC understands not happening every year or cycle).

³⁴ For farms with production cycles shorter than one-year or using continuous stocking/cropping methods - calculate per year. For farms with production cycles longer than one-year or using all-in-all-out stocking/cropping methods (e.g. salmon) - calculate per production cycle.

	<ul style="list-style-type: none"> - use of antimicrobials listed as Critically Important Antimicrobials for Human Medicine by the WHO and the justification to use them.
2.16.20	<p>The site shall annually report to ASC, according to Appendix 2 and using the template provided on the ASC website, the following:</p> <ul style="list-style-type: none"> - the antibiotic load per production cycle or year, - use of antimicrobials listed as Critically Important Antimicrobials for Human Medicine by the WHO. - Full treatment records.
2.16.21	The UoC shall guarantee that in the case of a diseases outbreak, sick animals receive treatment or are humanely killed in the extend possible.

Sub-criterion 2.14b – Fish Health and Welfare: Handling

Scope: Cleaner fish reared in grow-out cages with salmonids

Indicator	Requirement
2.14b.1	<p>The site shall assess site-specific characteristics and develop a Fish Handling Management System (FHMS) accordingly. The site shall implement and monitor the FHMS for its effectiveness with the objective of ensuring good health and welfare of farmed animals. The FHMS shall include at least the following:</p> <ul style="list-style-type: none"> a) Separate processes for each type of handling that may occur on the site i.e., live fish transport (including loading, transfer and unloading), vaccination, treatments, crowding, etc. b) Contingency plans for processes described in 2.14b.1 a) in case of system failure, including at least the following: <ul style="list-style-type: none"> o Immediate emergency response. o Immediate emergency culling response measure following responsible stunning and killing according to 2.14c. o Mass mortality event response. c) Description and verification of the system³⁵ used e.g., live fish transport system. d) Suitable conditions necessary for handling; e.g., weather or tidal conditions. e) Anaesthesia of fish as required by the veterinarian. f) A fitness assessment³⁶ of the animals approved by a veterinarian or a fish health manager within a two-week period prior to handling in the case of treatment³⁷ or transport; in the case of serial, repeated treatments, the fitness assessment should be carried out at least once a month. <p>A revision of the health status³⁸ of the animals within a two-week period prior to handling in the case of other handling events (e.g., net change, passive grade).</p>

³⁵ System refers to any equipment, tools, or machinery being used during a particular handling operation. In requirement 2.15.1 d) The site shall describe the systems so a clear list of what is needed and of which specifications is available to anybody carrying out the procedure. In requirement 2.15.1 b) The site shall outline the process it will be carrying out.

³⁶ A fitness assessment shall include at least the revision of production data (e.g. mortality, feeding rates), the examination of random healthy fish, and the examination of moribund and dead fish if present.

³⁷ Oral treatments are excluded.

³⁸ A revision of the health status of the animals shall include at least the following: review of the production data (e.g. mortality, feeding rates), as well as the results of the daily monitoring of behaviour and mortality, water quality, and monthly morphological scoring.

	<p>Any handling related to carrying out a health examination (e.g., health assessment, parasite counting, etc) is exempt from meeting this indicator.</p> <ul style="list-style-type: none"> g) Crowding shall be carried out in steps (partial crowding) and for a maximum crowding time of 2 hours. This shall not be exceeded unless the veterinary surgeon or health manager demonstrates that this does not negatively impact fish welfare. h) Follow species-specific limits on maximum time out of water³⁹ (see interpretation manual); Specification for cleaner fish to be 15 seconds. i) Minimum/maximum fasting duration specific to the species being handled, the life stage or size of fish being handled, and the type of handling (species-specific specifications as per interpretation manual); Specification for cleaner fish max 48h. j) Biosecurity measures specific to the type of handling, following the parameters in 2.14a.16 b), to avoid the transfer of disease, k) Predator control measures specific to the type of handling, following the parameters in 2.14a.16 c), to ensure the integrity of fish is maintained, l) Escape prevention measures specific to the type of handling and following the parameters in criterion 2.5 escapes, m) Water quality monitoring and corrective actions in line with 2.14a.16 f), j), k), m), n), and o), including at least the following: <ul style="list-style-type: none"> o Description of monitoring equipment o Monitoring frequency: prior to, during, and post handling. In the case of live fish transport, this means monitoring at the point of departure/arrival and during live fish transport unless this could cause detrimental impact. o Monitoring parameters; at least the temperature, pH, and oxygen level n) Visual inspection and corrective actions, in line with 2.14a.16 h), j), k), m), n), and o), including at least the following: <ul style="list-style-type: none"> o Visual inspection frequency: during handling o Visual inspection parameters: abnormal behaviour specific to the type of handling, o) Post-handling monitoring of fish and mitigation measures if necessary for: <ul style="list-style-type: none"> o Abnormal behaviour related to the handling event 2.14a.16 h), j), k), m), n), and o); o Compromised morphological scores related to the handling event 2.14a.16 g), j), k), m), n), and o); o Moribund fish related to the handling event (2.14a.5) o Mortalities related to the handling event (2.14a.4, 2.14a.6 and 2.14a.16 i), j), k), l), m), n), and o), p) A handling log, in the form of a recording template, which captures a)-o) for each handling event.
<p>2.14b.2</p>	<p>The UoC shall segregate⁴⁰ cleaner fish in advance of any salmonid handlings that require the removal of fish from the pens, and for which the cleaner fish do not have a treatment need.</p>
<p>2.14b.3</p>	<p>The UoC shall inspect the nets for folds during handling operations to avoid cleaner fish getting trapped.</p>

³⁹ Applies only to fish that are not anaesthetised.

⁴⁰ Segregation might be carried out through various mechanisms (e.g. hand-net removal, fishing pots, active grading, crowding techniques, etc). It is acknowledged that none of the currently existing methods will efficiently segregate the totality of the animals. For some of these methods to be most effective, it is recommended that segregation starts at the same time salmon are put onto starvation.

2.14b.4	The UoC shall make sure that at the point of segregation, cleaner fish are retained in an enclosure that meets their needs (e.g., feed, hides).
----------------	--

Sub-criterion 2.14c – Fish Health and Welfare: Slaughter

Scope: Cleaner fish reared grow-out cages with salmonids

Indicator	Requirement
2.14c.1	The UoC shall ensure all fish are stunned ⁴¹ prior to killing ⁴² , using permitted methods only, as indicated in the species-specific transition periods (Table 2). Cleaner fish to follow same timing as salmon.
2.14c.2	The UoC shall ensure fish stunned lose consciousness immediately ⁴³ , and that unconsciousness persists until death sets in, as indicated in the species-specific transition periods (Table 2).
2.14c.3	The UoC shall ensure that fish are stunned effectively ⁴⁴ as of the date that the ASC Farm Standard becomes effective (including species-specific transition periods as outlined in Table 2), assessing stunned fish for the absence of all the following: opercular (gill) movements, eye movements, body movements ⁴⁵ , reaction to a painful stimulus (e.g., tail-prick or eye corner tap).
2.14c.4	The UoC shall not use the following methods to kill fish: <ul style="list-style-type: none"> - asphyxia in air, - CO₂, - salt baths, - ammonia baths, or - evisceration.
2.14c.5	The UoC shall ensure fish are killed effectively ⁴⁶ by monitoring fish for the absence of all the following: opercular (gill) movements, eye movements, body movements ⁴⁷ , reaction to a painful stimulus (i.e., tail-prick, eye corner tap).

⁴¹ Stunning methods can be irreversible or reversible. If irreversible, the stunning acts as the killing method at the same time.

⁴² In other words, pre-slaughter handling must not lead to the death of fish, defeating the intention of using permitted killing methods; only live fish stunned are eligible for ASC certification.

⁴³ Stunning methods are required to induce immediate or rapid (less than 1 second) unconsciousness. **When using an overdose of anesthetic this might take longer than 1 second.** Ice-slurry is not an approved stunning method but can be used as a killing method after immediate or rapid (less than 1 second) unconsciousness (Species-specific welfare aspects of the main systems of stunning and killing of farmed fish, Scientific Opinion of the Panel on Animal Health and Welfare, 2009, EFSA).

⁴⁴ For this version of the standard, ASC considers a stunning efficiency of 95% (i.e., at least 95% of the fish stunned immediately lose consciousness) to be effective. Checks shall be carried out on a minimum of 100 individuals per harvest. 50 fish as startup checks and one extra point as a minimum to perform 100 individuals.

⁴⁵ The use of body movement as an indicator for the effectiveness of stunning or killing can be misleading as muscular spasms might occur in unconscious or dead fish. Body movements indicating struggling, a swimming activity or efforts to remain upright or regain equilibrium (adapted from FAWC) are relevant movements to watch out for and that indicates consciousness. Opinion on the Welfare of Farmed Fish at the Time of Killing, Farm Animal Welfare Committee (FAWC), DEFRA, London, May 2014.

⁴⁶ For this version of the standard, ASC considers a killing efficiency of 100% (i.e., at least 95% of the fish stunned and 100% killed) to be effective. Checks shall be carried out on a minimum of 100 individual fish per harvest. 50 fish as startup checks and one extra point as a minimum to perform 100 individual fish.

⁴⁷ The use of body movement as an indicator for the effectiveness of stunning or killing can be misleading as muscular spasms might occur in unconscious or dead fish. Body movements indicating struggling, a swimming activity or efforts to remain upright or regain equilibrium (adapted from FAWC) are relevant movements to watch out for, and that indicates consciousness. Opinion on the Welfare of Farmed Fish at the Time of Killing, Farm Animal Welfare Committee (FAWC), DEFRA, London, May 2014.

2.14c.6	The UoC shall have immediate mitigation measures in place to respond to ineffective stunning or killing, including the presence of a back-up system such as manual percussive stunning.
2.14c.7	The UoC may, for fish not destined for human consumption, use an overdose of anesthetic to stun and kill fish.
2.14c.8	The UoC shall ensure that all blood water produced during the slaughter process is contained and treated before being discharged. Treatment must ensure that the discharge presents no veterinary or environmental risks.
2.14c.9	The UoC shall appoint a staff member⁴⁸ who is responsible to look after fish welfare during slaughter activities.
2.14c.10	The UoC shall ensure cleaner fish are either slaughtered or reused at the end of the production cycle. Release to the wild is not allowed.
2.14c.11	The UoC shall reuse cleaner fish only once, either within the same farm or by moving them to another site⁴⁹.
2.14c.12	The UoC shall only reuse cleaner fish upon completion of a successful risk assessment that takes into account at least: a) Health status of the salmon and cleaner fish at the origin and destination sites. b) Health assessment of the cleaner fish by a veterinarian or a fish health manager, carried out no longer than two weeks before reuse. This shall include screening for diseases that are relevant to cleaner fish and salmonids in the corresponding farming region. c) Presence of cleaner fish at sites located in a radius of 5km or two tidal exclusions, whichever is bigger.
2.14c.13	The UoC shall segregate cleaner fish destined for reuse at the UoC.

Permitted methods of stunning ⁵⁰	Species										
	Salmon	Wrasse	Lumpsucker	Trout (FW & SW)	Seabass, seabream, meagre	Pangasius	Tilapia	Seriola	Cobia	Flatfish	Marine Tropical
Percussion	✓	✓		✓				✓	✓		✓
Electrical	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Overdose Anaesthetic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Transition period⁵¹	Immediate	Immediate	Immediate	1 year	3 years	3 years	3 years	3 years	3 years	3 years	3 years

Table 2: Transition periods.

⁴⁸ This person shall be able to demonstrate how acceptable welfare is achieved and maintained on a day-to-day basis and upon audit.

⁴⁹ This shall only be possible if the destination site is able to coordinate a synchronized fallow with neighboring sites upon completion of the production cycle.

⁵⁰ ASC will review available stunning methods on a yearly basis, to make sure that any new developments that are considered suitable are incorporated into this list.

⁵¹ The requirement to use permitted methods of stunning only, applies as of April 2025, giving producers a transition period of 1 or 3 years from the effective date of the ASC Farm Standard. For example, as of September 2025, trout shall only be stunned using percussive or electrical stunning.

Annex xyz

Destined to	Level	Refers to criteria	Frequency	Content	Format	Auditability
All staff working at the UoC	Basic	2.14, 2.15, 2.16	At least one-off at the time of employment	General fish health and welfare awareness: Employees need to be informed about the importance of fish health and welfare and understand these concepts.	Theory	Certificate of competency (employee understands the concepts and has been adequately informed). Revision of training resources/contents.
Site staff Staff handling live fish Production management	Advanced	2.14, 2.15, 2.16 + Parasites + Antibiotics	Annual (refresher shall incorporate advances/developments on the subject of training)	Basic anatomy and physiology of the species being farmed	Theory & Practice	Certificate of attendance. Revision of training resources/contents. Certificate of competency (signed off by a relevant person, certifying employee has acquired the knowledge, the skills and the abilities). Observation of real operations.
				Advanced fish health and welfare assessment: This shall include all welfare indicators in the standard (morphological, behavioural, water quality, feeding, stocking density, disease recognition, mortality classification and necropsy forms)		
				Handling		
				Slaughter (harvesting)		
				Biosecurity		
Processing staff Processing management	Advanced	2.16	Annual (refresher shall incorporate advances/developments on the subject of training)	Capacitation on slaughter process Assessment of stunning and killing effectiveness Data collection, logging and reporting systems	Theory & Practice	Certificate of attendance. Revision of training resources/contents. Certificate of competency (signed off by a relevant person, certifying employee has acquired the knowledge, the skills and the abilities). Observation of real operations.