

SERIOLA AND COBIA AQUACULTURE DIALOGUE STEERING COMMITTEE

Seriola and Cobia Draft Standards, Public Comment Period 2

Seriola and Cobia Aquaculture Dialogue Steering Committee

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These draft standards are released by the Steering Committee (SC) of the Seriola and Cobia Aquaculture Dialogue (SCAD) for additional public comments. The Steering Committee is composed of a representative from each of the following organizations:

Cuna del Mar

Kampachi Farms

New England Aquarium

Nutreco

The Nature Conservancy

University of Miami

Virginia Cobia Farms

Worldwide Fund for Nature (World Wildlife Fund)

(Note: The Ocean Conservancy previously participated in the Steering Committee)

These draft standards seek to harness the power of the marketplace to promote meaningful, positive change in the way *Seriola* and cobia is farmed. The standards have been debated and revised since the first public comment period, based on public feedback and the deliberations of the Seriola and Cobia Aquaculture Dialogue Steering Committee. On any given standard, individual Steering Committee members have a range of views, and sometimes disagree. Individual parties on the SC did not necessarily possess the expertise to evaluate and approve each criterion. As a package, the Steering Committee believes the standards represent an important step forward in defining environmentally and socially responsible production of farmed *Seriola* and cobia. These standards are intended to be implemented as a package to reduce key impacts from the status quo while also being economically viable and within the range of achievability for the industry.

Collectively, the standards seek to minimize or eliminate the key negative environmental and social impacts of *Seriola* and cobia farming, while permitting the industry to remain economically viable. In order to improve the industry's overall performance, the standards focus on today's best performers and are intended to be at a level where enough producers strive to achieve them, bringing about actual change on the ground.

The standards are intended to be a starting point for continuous improvement and to be periodically updated to reflect the best available scientific knowledge, management practices and technologies, and the data collected during the certification of farms to the standards. The standards call for greater transparency around farm-level data and monitoring to assist in these future revisions.

The standards are intended to be one tool to improve the sustainability of the industry. The Steering Committee recognizes that farm-level standards must be complemented by effective governmental regulations and coastal zone planning. Governments play a particularly important role in managing potential cumulative impacts from multiple farms. The SCAD SC would like to explore ways to further integrate cumulative impacts in later iterations of the *Seriola* and cobia production standards.

INTRODUCTION

Seafood is one of the most popular sources of protein worldwide. By volume, approximately half of the seafood we eat is wild caught. But the other half is from aquaculture, the fastest-growing food production system in the world.

As with many rapidly growing industries, the growth in aquaculture production has raised concerns about negative social and environmental impacts related to farming, such as impacts on water quality, fish health and labor practices at farms. Although there are some businesses addressing these issues well, others are not doing so at all or are doing so poorly.

One tool to help encourage more responsible aquaculture is global standards—performance levels that must be reached to help minimize or eliminate a set of key impacts. Standards can serve as the basis for a certification program. They also can be used to benchmark other standards, be incorporated into existing certification programs, be adopted for government programs and be the foundation for buyer and investment screens.

Through the *Seriola* and Cobia Aquaculture Dialogue (SCAD) roundtable, global, farm-level performance-based standards are being created for *Seriola* and cobia farming.

PURPOSE AND SCOPE OF THE SERIOLA AND COBIA AQUACULTURE DIALOGUE STANDARDS

The goal of the Dialogue is to credibly develop measurable, performance-based standards that minimize or eliminate the key negative environmental and social impacts of *Seriola* and cobia farming, while permitting the industry to remain economically viable.

More than 130 stakeholders, including producers, non-governmental organizations (NGOs), seafood buyers, feed companies, scientists and government representatives have participated in the Dialogue. An eight-person Steering Committee (SC) has been responsible for managing the SCAD process and making all final decisions related to the *Seriola* and cobia standards document. This group of volunteers includes representatives from *Seriola* and cobia producer companies, feed manufacturers, academia and environmental NGOs.

Definition of Standards

The Dialogue is an iterative, participatory process that began with identifying the key negative environmental and social impacts of *Seriola* and cobia production. Using a step-wise process, the Dialogue is building agreement on principles, criteria, indicators and standards that address the impacts. The SCAD was the last of the species-specific aquaculture dialogues commissioned and was therefore able to build off of the structure, research and discussions of earlier dialogues. The SCAD Steering Committee is grateful to these earlier dialogues and recognizes their work and its contribution to the SCAD standards and documents.

Issue Areas of Seriola and Cobia Aquaculture to Which the Standards Apply

The SCAD establishes principles, criteria, indicators and measurable performance levels for responsible *Seriola* and cobia aquaculture with regard to social and environmental issues. The areas of key potential negative impact that were identified within the Dialogue are: impacts on biodiversity, feed use, escapes, nutrient loading and carrying capacity, benthic impacts and siting, disease and parasite transfer, chemical inputs and social impacts (i.e., labor and community impacts). It is recognized that there is overlap within the impact areas and the principles. The full suite of standards is intended to address the range of potential negative impacts, focusing on key potential impacts of the grow-out stages of production.

Range of Activities within Aquaculture to Which the Standards Apply

Aquaculture is the production of aquatic organisms. It involves the planning, development and operation of facilities, which in turn affect the inputs, production, processing and chain-of-custody components. The SCAD standards apply to the planning, development and operation of *Seriola* and cobia aquaculture grow-out systems. The focus of the standards is on production and the immediate inputs to production. The SCAD SC recognizes the value of Life Cycle Analysis (LCA) types of assessment for identifying and addressing broader impacts associated with farmed *Seriola* and cobia products. However, the aim of these standards is impacting change and better performance at the farm level.

Biological and Geographic Scope to Which the Standards Apply

The *Seriola* and cobia standards are applicable to species *S. quinqueradiata*, *S. dumerili*, *S. rivoliana*, *S. lalandi* and cobia (*Rachycentron canadum*) can be applied to all locations and scales of *Seriola* and cobia aquaculture production systems.

Unit of Certification to Which the Standards Apply

The unit of certification is a farming site, which in practice means a cluster of cages located together in an operational unit or a land based system using a common facility. A farm must comply with all the standards in this document to be certified, including providing required documentation from their feed and fingerling suppliers. The standard does not focus on other areas of the value chain, for instance transport, processing or distribution.

Implementation of the Standards

When finalized, the SCAD standards will be handed off to the Aquaculture Stewardship Council (ASC), which will be responsible for working with independent, accredited, third-party entities to certify farms that are in compliance with the standards. Farms will be certified on an annual basis, though some data will be submitted on a production cycle basis. The ASC will also offer a Chain of Custody (CoC) assurance that tracks fish from a certified farm to the consumer. More information on the ASC and their certification and accreditation processes is available on their website, www.ascworldwide.org.

In addition to their use by the ASC, the standards could potentially be incorporated into existing certification programs, government regulations, and buyer and investment screens.

PROCESS FOR CREATING THE STANDARDS

General Considerations

The process of setting standards is critical, as it significantly affects the credibility, viability, practicality and acceptance of the standards. The process of creating the SCAD standards has aimed to be multi-stakeholder, open to anybody to participate, and transparent. This is in line with the International Social and Environmental Accreditation and Labeling (ISEAL) Alliance's "Code of Good Practice for Setting Social and Environmental Standards." A goal of the SCAD is to follow the ISEAL code.

Standards Setting Process

In 2009, under the leadership of WWF, the inaugural meeting of the SCAD was held in Seattle, Washington, USA (February 19-20, 2009). Draft principles were presented and discussed at the first SCAD meeting, then edited based on feedback from that meeting and further SC discussion.

There were significant challenges with funding for the SCAD but the financial support of the US Soybean Export Council, the Turner Foundation, the Ocean Stewards Institute and organizations of the SC members is greatly acknowledged.

Additional dialogues were held in Veracruz, Mexico (September 24-25, 2009) and Tokyo, Japan (February 12-13, 2013). Through 2011-2012, the SC met regularly via phone and in person, and in order to develop draft indicators and standards.

On February 15, 2013, a first draft of standards was posted for 60 day comment period. Feedback received during the comment period was used by the SC to revise and finalize the standards document.

On August 19, 2013, an overview of comments received during the first public comment period, as well as the SC's overarching responses to the feedback, were posted on the SCAD portion of the WWF US website. Comments and responses were sorted according to key issues raised by principle. This represents the start of public comment period two.

The Aquaculture Stewardship Council (ASC) will be responsible for working with independent, third-party entities to certify farms that are in compliance with the standards being created by participants of the Aquaculture Dialogues. The ASC will also lead the development of an auditing manual for the SCAD standards with input and guidance from SC members.

Continuous Improvement of the Seriola and Cobia Aquaculture Dialogue Standards

As stated in the ISEAL "Code of Good Practices for Setting Social and Environmental Standards," "... standards shall be reviewed on a periodic basis for continued relevance and effectiveness in meeting their stated objectives and, if necessary, revised in a timely manner." It is implicit in the development of

the SCAD standards that the numerical values, or performance levels, will be raised or lowered over time to reflect new data, improved practices and new technology.

INFORMATION FOR THE READER

In the following pages, tables with indicators and their corresponding standards are included. Within each criterion, standards tables are followed by a rationale section that provides a brief overview of why the issues are important and how the proposed standards address them.

Definitions are provided in footnotes.

PREAMBLE

The principles serve as a platform to minimize or eliminate the social and environmental impacts of *Seriola* and cobia aquaculture while permitting the industry to remain economically viable. These principles—along with the corresponding criteria, indicators and standards—are applicable at the farm level. Farms must meet 100 percent of the standards in this document to achieve certification.

Although the SCAD is creating farm-level standards, they are intended to help protect and maintain ecosystem function and ecosystem services in *Seriola* and cobia producing areas, with the recognition that aquaculture operations are not solely responsible for total ecosystem health. The standards are intended to be revisited and updated periodically (e.g., every three to five years) to ensure that the standards are based on the best available scientific knowledge and management practices and to encourage continuous improvement.

PRINCIPLE 1: COMPLY WITH ALL APPLICABLE INTERNATIONAL, NATIONAL, AND LOCAL LAWS AND REGULATIONS

Principle 1 is intended to ensure that all farms aiming to be certified against the Seriola and Cobia Aquaculture Dialogue standards meet their legal obligations as a baseline requirement. Adhering to the law will help ensure basic environmental and social requirements are met as well as the minimal structures, such as legitimate land and water tenure rights, on which the effectiveness of the standards will stand.

Criterion 1.1: Compliance with all applicable local, national and international legal and regulatory requirements

INDICATOR	STANDARD
1.1.1 Documents demonstrating compliance with all relevant local and national laws and regulations.	Yes.
1.1.2 Documents demonstrating compliance with all tax laws.	Yes.
1.1.3 Documents demonstrating compliance with all labor laws and regulations.	Yes.
1.1.4 Documents demonstrating compliance with regulations and permits concerning water quality impacts.	Yes.

Rationale

The standards under Principle 1 are a means to reinforce and complement the legal framework.

Aquaculture operations must, at a minimum, adhere to the national and local laws and regulations of the regions where production is taking place. Farm operations that, intentionally or unintentionally, break the law violate a fundamental benchmark of performance for certified farms. It is important that aquaculture operations demonstrate a pattern of legal and responsible behavior, including the implementation of corrective actions for any legal violations. The standards go beyond those required by law in many circumstances, yet are not intended to contradict them. Laws that compel a farmer to take certain action take precedence over voluntary standards.

Additional information

The primary focus of this principle is national and local laws and regulations. Although international legal requirements are agreed to be important, the practicality of including international conventions in these standards is limited because of ratification by countries and other issues. Some specific international

legal issues are addressed in other sections of the standard, such as the reference to International Labor Organization (ILO) conventions under Principle 6.

Despite concerns about equivalent status being granted to products grown in countries with varying levels of legal requirements, it is outside the scope of the SCAD to address differences in national legislation, providing that legislation is complied with.

Implementation Guidance

In order to ensure compliance with these standards, auditors will need to review a range of documentation and relevant correspondence related to farm siting and operation. It is probable that some of the information will need to be generated by the headquarters of the company owning the operation, while other will relate specifically to the site. The final standards document and associated auditing guidelines should include a list of the required documentation.

The documentation and auditing activities include but are not restricted to:

- For 1.1.1: Original lease agreements or land titles; permits from government agencies; where applicable, reports from inspections for compliance with national and local laws and regulations; documents outlining allowable activities in or near conservation areas (e.g., parks, limited use protected areas).
- For 1.1.2: Proof of compliance with tax reporting and payments to appropriate authorities.
- For 1.1.3: Where applicable, reports from inspections of facility for compliance with labor codes and laws.
- For 1.1.4: Discharge laws and applicable permits for operation; records of monitoring and compliance with discharge regulations.

PRINCIPLE 2: CONSERVE NATURAL HABITAT, LOCAL BIODIVERSITY AND ECOSYSTEM STRUCTURE AND FUNCTION

Principle 2 is intended to address potential impacts from Seriola and cobia farms on natural habitat, local biodiversity and ecosystem function. Specifically, the key impact areas of benthic impacts, siting, effects of chemical inputs and effects of nutrient loading are addressed within this principle.

Criterion 2.1 Benthic biodiversity and benthic effects

INDICATOR	STANDARD
2.1.1 Total Organic Carbon (TOC) or sulphide or redox levels in sediment inside and outside of the Allowable Zone of Effect (AZE) ¹ .	No statistically significant change in TOC or sulphide or redox levels in sediment at the edge of the AZE in comparison to the control site.
2.1.2 Community composition of macrofauna or meiofauna in the AZE.	No statistically significant change in species taxa within the AZE in comparison to the control site.
2.1.3 Presence of pollution indicator benthic species.	None if not present in control site.

General Introduction

One fundamental question is whether a farm is having an impact on benthic biodiversity or not. This can be measured by comparing to appropriate control sites and determining whether there are statistically significant differences as measured scientifically.

The SCAD Steering Committee defines biological diversity—or biodiversity—as the term given to the variety of life on Earth and the natural patterns it forms. The SCAD considers the maintenance of biodiversity of critical importance, as it is a key to the preservation of healthy ecosystems. It has borrowed heavily from previous Dialogue processes, particularly from our colleagues in the Salmon Aquaculture Dialogues (SAD) where considered relevant. The SCAD Steering Committee recognizes and attributes the value that this previous comprehensive work added to the SCAD process.

Rationale

A majority of the Steering Committee believes that absolute measures are not appropriate metrics of impact. Natural systems are highly variable and these members felt that comparative sampling using null controls (removed from the farm, but subject to the same natural influences) and replicated statistical designs are needed to confirm or deny the presence and scale of any impact resulting from a

¹ Allowable Zone of Effect (AZE) is defined under this standard as either: (a) an area around the outside of the net pen with a radius equal to the depth of the water; (b) some other area defined by a reputable model of effluent dispersal and assimilation; or (c) if a single-point mooring is used, then the area scribed by the arc of the mooring.

particular activity in the face of the inherent natural background variability. However, some on the Steering Committee felt that it was more the overall environmental quality, rather than the impact of the farm itself, that was the most critical concern, and that absolute metrics of environmental health by themselves were most important.

Similarly, a majority of the Steering Committee felt that it was more appropriate to use a few, simple indicators of benthic health, rather than a full suite of abundance or biodiversity measurements that may or may not be germane, given the status of the local ecosystem that was present prior to the farm's establishment. Technical experts suggest the chemical proxy of TOC and sulphide levels are the best available chemical indicators for benthic health. Given that both methods are valid, audited farms can choose their preference for one or the other. These parameters should not be statistically significantly different from a control site.

When considering benthic effects, experts recommended measuring effects below the cages and away from the cages, within and outside of the AZE. Though an AZE is difficult to identify as a constant, experts discuss this in terms of the dispersion of solid material from the cage, which can be dependent on water depth as well as current speed. In an effort to take a broadly applicable approach to permissible zone of benthic impact, the SCAD standards takes a precautionary approach in defining the radius of the AZE as being a function of the depth of water at the farm. For sites where a site-specific AZE has been determined using a valid modeling (e.g., SEPA AUTODEPOMOD) and video surveillance system, farms will use the site-specific AZE and sampling stations based on actual depositional patterns. Within three years of the publication of the SCAD standards, all certified farms must have undertaken the appropriate analysis to determine the site-specific AZE and depositional patterns. This will help ensure that sampling is taking place in areas most appropriate to protect benthic health around farms.

For water depths of up to 250m, a yearly sample should be collected at the time of maximum cage biomass. For water depths > 250m, samples will be collected tri-annually at the point of maximum cage biomass. Samples will not be required for cages systems that are not moored (continually in motion) or those that are in excessively deep water (> 1,000 m).

The Steering Committee felt that annual analysis using a benthic faunal index was unnecessarily complex, and could dissuade many smaller farmers from seeking certification. Also, as the majority felt that the primary concern was to assure no impact from the farm operation on the benthos, an absolute metric of biodiversity was felt to be inappropriate.

Auditing Guidance

- For 2.1.1: If there is a violation of the standard based on the result of a single sample, then the farm can be required to undertake a more rigorous sampling process.
- For 2.2.2: The farmer will use a measure of benthic community composition that is most appropriate to the site. Over time ASC will build lists and knowledge of appropriate species by regions and site characteristics that can inform further iterations of the standards.

2.1 Items to consider in Public Comment period 2:

The SC would like to ask for guidance on known benthic indicator species in key regions of *Seriola* and cobia production around the world. This will be used to begin building guidance lists for future auditing.

Criterion 2.2 Water quality in and near the site of operation

INDICATOR	STANDARD
2.2.1 Turbidity levels in the water column inside and outside AZE.	No significant change in turbidity levels in the water column at the edge of the AZE in comparison to the control site.
2.2.2 Ammonia levels in the water column inside and outside AZE.	No significant change in ammonia levels in the water column at the edge of the AZE in comparison to the control site.

Rationale

Turbidity rationale

Turbidity is the most obvious and readily measured metric of water quality and the most likely form of impact from a farm on surrounding water quality.

Ammonia rationale

Ammonia is the best indicator of metabolic waste loading and excessive ammonia loading can be toxic to marine organisms.

Note: The SC debated the inclusion of dissolved oxygen (DO) as an indicator in Principle 2 but ultimately decided to include the indicator under Principle 5 as the most significant impact of DO in *Seriola* and cobia farm production systems is on fish health rather than directly on the environment. DO is a valuable indicator of responsible production management.

Guidance

Turbidity

Monitoring should be undertaken monthly. If after 12 months there is no significant difference between sample sites and control sites, sampling should be undertaken on an annual basis.

Ammonia

Monitoring should be undertaken monthly. If after 12 months there is no significant difference between sample sites and control sites, sampling should be undertaken on an annual basis.

Turbidity and Ammonia sampling sites:

- Shall be measured at mid-cage or pond depth.
- The reference site shall be at least 500 m from the edge of the net pen array, in a location that is understood to follow similar patterns in upwelling to the farm site and is not influenced by nutrient inputs from anthropogenic causes including aquaculture, agricultural runoff, or nutrient releases from coastal communities.

Criterion 2.3 Interaction with critical or sensitive habitats and species

INDICATOR	STANDARD
<p>2.3.1 Evidence of an assessment of the farm’s potential impacts on biodiversity and nearby ecosystems that contains at a minimum: a) identification of proximity to critical, sensitive or protected habitats and species, b) description of the potential impacts the farm might have on biodiversity, with a focus on affected habitats or species, and c) a description of strategies and current and future programs underway to eliminate or minimize any identified impacts the farm might have.</p>	<p>Yes.</p>
<p>2.3.2 Allowance for the farm to be sited in a legally designated protected area².</p>	<p>None³.</p>

Rationale

The intent of the standard(s) under criterion 2.3 is to minimize the effects of a *Seriola* and cobia farm on critical or sensitive habitats and species. The habitats and species to consider include marine protected

² Protected area: “a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.” Source: Dudley, N. (Editor) (2008), Guidelines for Applying Protected Area Management Categories, Gland, Switzerland: IUCN. x + 86pp.

³ The following exceptions shall be made for Standard 2.3.2:

- For protected areas classified by the International Union for the Conservation of Nature (IUCN) as Category V or VI.
- For designated protected areas if the farm can demonstrate that its environmental impacts are compatible with the objectives of the protected area designation. The burden of proof would be placed on the farm to demonstrate that it is not negatively impacting the core reason an area has been identified as a protected area.
- For farms that pre-date the designation of a MPA.

areas or national parks, established migratory routes for marine mammals, threatened or endangered species, the habitat needed for endangered and threatened species to recover, eelgrass beds and High Conservation Value Areas (HCVAs) (as defined by a credible, multi-stakeholder internationally recognized process). These standards are consistent with normal environmental assessment requirements in most jurisdictions.

The standards under Criteria 2.3 ensure a farm is aware of any nearby critical, sensitive or protected areas, understands the impacts it might have on those areas, and has a functioning plan in place to mitigate those potential impacts. They also ensure that extra care is taken in areas that are recognized for ecological importance through designation as a protected area. It would not allow production in these areas to be eligible for certification, unless compatible with the conservation goals of the area. Legally operating farms that pre-date a designated MPA would be able to be certified.

Additional information

For Standard 2.3.2, an exception is made for protected areas that are classified by IUCN or the International Union for Conservation of Nature, as Category V or VI. These are areas preserved primarily for their landscapes, or areas that include sustainable resource management. Details can be found here: http://www.iucn.org/about/work/programmes/pa/pa_products/wcpa_categories/.

In developing these standards, the SC recognized that there is an important role for governments in identifying appropriate areas for protection of biodiversity along with appropriate areas for aquaculture and other economic activities. Additionally, the SC believes that *Seriola* and cobia farming companies should be active participants in encouraging adaptive and effective coastal zone and ocean area management that protects areas of high conservation value with a long-term vision of a coastal and ocean areas that are both ecologically and economically productive.

Auditing guidance

- Farms cannot be located in any protected area that does not allow economic activities that are incompatible with the management and conservation goals of the protected areas—this falls under the concepts of Principle 1 related to obeying the law.
- Compatibility with the goals of a protected area shall be guided by the outcomes of the assessment conducted for 2.3.1

Criterion 2.4 Interaction with wildlife, including predators

INDICATOR	STANDARD
2.4.1 Acoustic deterrent devices allowed.	None.
2.4.2 Number of mortalities ⁴ of endangered or red-listed ⁵ animals in the farm lease area and adjacent areas due to farm operations or personnel or associates.	0
2.4.3 Evidence that the following steps were taken prior to lethal action ⁶ against a (non- endangered or non-red-listed) predator: 1. All other avenues were pursued prior to using lethal action. 2. Approval was given from a senior manager above the farm manager.	Yes, unless human safety is immediately threatened.
2.4.4 Evidence that information about any lethal incident on the farm has been : 1. Reported to the appropriate government oversight agency. 2. Made easily publicly accessible.	Yes.
2.4.5 Maximum number of lethal incidents ⁷ on farm over the prior two years.	For birds: 4 lethal incidents. For sharks: 2 lethal incidents. For marine mammals: 1 lethal incident.
2.4.6 In the event of any lethal incident, evidence that an assessment of the probability of lethal incident(s) has been undertaken and demonstration of concrete steps taken by the farm to reduce the risk of future incidences.	Yes.

Rationale

⁴ Mortalities: includes animals intentionally killed through lethal action as well as accidental deaths through entanglement or other means.

⁵ Species listed as endangered or critically endangered by the IUCN or on a national endangered species list

⁶ Lethal action: Action taken to deliberately kill an animal, including marine mammals and birds. No lethal action is allowed for endangered or red-listed animals as covered in 2.4.2.

⁷ Lethal incident: includes all intentional and unintentional, farm-related and non-farm-related (i.e., recreational) lethal actions, to include but not be limited to, entanglements and other accidental mortalities, excluding farm stock.

Scientific literature⁸ about the use of acoustic deterrent devices (ADDs), also known as acoustic harassment devices, to deter predators from marine aquaculture facilities show three main conclusions. First, ADDs have been demonstrated to damage the hearing capability of marine mammals (target and non-target species). Second, they have been demonstrated to force a change in the natural feeding or breeding behavior of some marine mammals. And, third, over time and with regular use, ADDs begin to act as an incentive that actually attracts rather than deters the target species (e.g., seals) from the aquaculture facilities. Therefore, ADD use is not allowed under these standards.

While every effort should be made to avoid lethal action and to take appropriate measures prior to any lethal action, the safety of workers should not be compromised. In an instance where worker safety is at immediate risk, lethal actions are allowed under this standard. However, 2.4.6 mandates that adaptive management fully investigate the reasons for lethal incident, and therefore the farm should fully analyze the reasons why human safety was compromised, and put in place measures to prevent such risks recurring.

⁸ Fjalling, A, Wahlberg, M and Westerberg H, 2006 Acoustic harassment devices reduce seal interaction in the Baltic Salmon-trap, net fishery, ICES Journal of Marine Science: Volume 63, Number 9 pp. 1751-1758.
B.C. Government, 1997, The environmental risks of salmon aquaculture, pp. 35-37 and Cox, TM, Read A.J., Solow, A, Tregenza, N, 2001, Will harbor porpoises (*Phocoena phocoena*) habituate to pingers, J. Cetacean Res. Manage 3(1) 81-86

PRINCIPLE 3: PROTECT THE HEALTH AND GENETIC INTEGRITY OF WILD POPULATIONS

Criterion 3.1: Introduction of non-native species

INDICATOR	STANDARD
3.1.1 Culture of a non-native species.	None, unless commercial ⁹ farming of the species already occurs in the area, or a completely closed land-based production system is used.

Rationale

Accidental or intentional introductions of non-native species are significant global environmental problems. Aquaculture is considered one of the major pathways for introducing non-native aquatic plants and animals that may become harmful invasive species. The SCAD believes these standards are in line with FAO guidelines that permit the culture of non-native species only when they pose an acceptable level of risk to biodiversity. This standard does not permit introductions of non-native species, unless farming of the species already occurs in the area at the time of the adoption of the SCAD Standards by the ASC, or a completely closed production system is used.

The use of alternatives to chemical treatments for farm management, such as the use of cleaner fish, is permitted and encouraged under the SCAD standards. However, any wrasse, cleaner fish or other species used for management during production must be native species in order to prevent introduction of new species to an area.

3.1 Items to consider in Public Comment period 2:

The SC requests information on places where *Seriola* and cobia farming is legally occurring but may still be of significant concern or actively discouraged by regulatory authorities.

Criterion 3.2: Introduction of transgenic species

INDICATOR	STANDARD
3.2.1 Use of transgenic fish by the farm.	None.

Rationale

⁹ Commercial: If a species is cultured as a part of a permitted research trial, it will not be considered an existing commercial operation. Generally research trials will contain no more than one pen of an experimental species.

Transgenic fish are not permitted under this standard because of concerns about their unknown impact on wild populations. The culture of triploid or all female fish, as long as those fish are not transgenic, is allowed.

Criterion 3.3: Escapes

INDICATOR	STANDARD
<p>3.3.1 For selectively bred stock¹⁰ and non-selectively bred stock¹¹, the operation must have an established plan related to escape management, and adhere to rigorous maintenance procedures and frequent net inspections.</p>	<p>Yes.</p>
<p>3.3.2 Operations will undertake and maintain detailed records on fish escapes and counting. This will include records of breaches in nets, estimates on escapes and stocked vs. recovered fish counts. Note: farms will also include technology and methodology for undertaking fish counts.</p>	<p>Yes</p>
<p>3.3.4 Estimated unexplained loss of farmed <i>Seriola</i> or cobia is made available to the pertinent regulatory agency.</p>	<p>Yes.</p>

¹⁰ Provide definition for “selectively bred stock”:

¹¹ Definition for “non-selectively bred stock” is fish where either (a) the parents are from the local wild-stock gene pool, or (b) where F1s and subsequent generations of broodstock have not been subject to any conscious selection process.

INDICATOR	STANDARD
3.3.1 For selectively bred stock ¹² and non-selectively bred stock ¹³ , the operation must have an established plan related to escape management, and adhere to rigorous maintenance procedures and frequent net inspections.	Yes.
3.3.2 Operations will undertake and maintain detailed records on fish escapes and counting. This will include records of breaches in nets, estimates on escapes and stocked vs. recovered fish counts. Note: farms will also include technology and methodology for undertaking fish counts.	Yes
3.3.4 Estimated unexplained loss of farmed <i>Seriola</i> or cobia is made available to the pertinent regulatory agency.	Yes.

Rationale

The SC aimed to generate different standards around escapes for selectively bred or non-selectively bred fish are intended to create a more rigorous standard for fish that may have some genetic difference to wild stocks. Escapes of selectively bred *Seriola* and cobia do have some potential to alter the overall pool of genetic diversity through interbreeding with local wild stocks of the same population. However, the risks for genetic distortions or other environmental impacts from escapes of marine fish are notably less than that for anadromous fish. Additionally current selective breeding programs for *Seriola* and cobia remain in their infancy and the SC believes it is unlikely there will be significant advances in this for the coming 5 years. *Seriola* and cobia are broadcast spawners, and there is less potential for genetic blurring between populations from escapes. There is therefore far less chance of any measureable or significant impact on wild stock genes from escapes of farmed fish. F1 *Seriola* and cobia are very poor spawners (possibly related to the high-fat diet of the cultured fish, which appears to permanently disrupt the fish reproductive endocrinology¹⁴), in addition F1 *Seriola* escapes in Hawaii have been shown to be very poorly equipped for survival in the wild, remaining in the vicinity of the net pens, and highly vulnerable to fishing and predation pressures.

Still, a conservative approach demands that conscientious fish farmers will strive to minimize the number of escapes of farmed *Seriola* or cobia. Escapes can occur in large events that are immediately noticeable at a farm, smaller events that are still noticeable, and through slower, lower levels of losses of fish that might go unnoticed. The SC would like to set metrics based standards for escapes however

¹² “selectively bred stock” is a fish which has been subject to a conscious selection process in breeding and whose attributes differ from wild counterparts.

¹³ Definition for “non-selectively bred stock” is fish where either (a) the parents are from the local wild-stock gene pool, or (b) where F1s and subsequent generations of broodstock have not been subject to any conscious selection process.

¹⁴ Neil Anthony Sims, Kampachi Farms, Pers. Comm.

current counting technology, established cannibalism rates and their impact on counting error margins currently render such a standard irrelevant. Therefore, the SC is choosing to require strict standards for net pen maintenance and escape procedures while also requiring farms to collect data on stocking and recovery that will enable future iterations of the SCAD to set meaningful escape targets.

The standards require transparency about unexplained loss of *Seriola* or cobia to help the farm and the regulators understand trends related to the cumulative numbers of losses of fish that go unnoticed during production.

3.3 Items to consider in Public Comment period 2:

The SC would like feedback on several points in section 3.3 including:

- Assumption that it will be at least 5 years before selectively bred *Seriola* and cobia stock differ drastically from non-selectively bred counterparts.
- Specific recommendations for guidance on the components of a rigorous escape prevention, maintenance and net inspection program.
- Existing data on counting methodology including studies on recovery and cannibalism rates.

Criterion 3.4: Collection of wild fingerlings

INDICATOR	STANDARD
3.4.1 Evidence that purchased or collected wild fingerlings are harvested from a sustainable fishery as defined by an ISEAL compliant fisheries certification scheme within 5 years of publication of the standards.	Yes.
3.4.2 Evidence of traceability of wild fingerlings collected or purchased.	Yes.

Rationale

The use of wild fingerlings for culture is acceptable, however they need to be from a well-managed sustainable source. Currently there is only one ISEAL compliant credible fisheries certification scheme (MSC) however in the future there may be others. Because some of these source fisheries may not have all the data available immediately and because the certification process could take several years, there will be a 5 year window for wild caught fingerlings to be certified from a credible fisheries sustainability certification scheme.

Farmers also need to be able to prove the traceability of their wild caught fingerlings from the source fishery.

3.4 Items to consider in Public Comment period 2:

The SC would welcome more data/information on the management structure and current sustainability status of wild caught fingerling sources of *Seriola* and cobia, of particular interest are fingerling sources for Japanese *Seriola* producers and timeframe/ key issues necessary for those source fisheries to reach ISEAL compliant fisheries certification.

PRINCIPLE 4: USE RESOURCES IN AN ENVIRONMENTALLY EFFICIENT AND RESPONSIBLE MANNER

Impact: The culture of marine fish such as Seriola and cobia requires the use of resources including feed inputs (e.g., wild-forage fisheries, terrestrial plant and animal protein), non-therapeutic chemical inputs and consumables (e.g., building supplies and fuel), etc. Extraction, production and/or consumption of these resources have the potential to negatively impact marine and terrestrial ecosystems. Other Dialogues have used this rationale to include a broad array of criteria, with the intention of moving towards ‘global’ sustainability of resources in the relevant production system. However, the SCAD SC believes that it is important to address the primary issue that will encourage producers to focus their improvement efforts in ways that have the largest benefit to ocean ecosystems. For marine fish, that parameter is unquestionably the use of fish meal and fish oil, and the impacts that such use has on forage fish resources and marine food webs.

Additional information for reviewing the second draft of Principle 4

The SCAD SC—in a divergence from other Dialogues—is focusing on the efficient use of forage fish resources. This is not to dismiss or otherwise diminish the other Dialogues’ efforts to address a broader array of criteria that include balancing the formulation of feeds (and hence the associated use of all feed resources) and the responsible (i.e., precautionary and socially acceptable) use of finite global resources. However, recognizing the potential global growth in marine fish culture systems the SC concludes that it is critical to provide a single, comprehensible, easily measureable metric that is broadly applicable, and—if these standards were widely adopted—would ensure the sustainable scaling of marine finfish production. This is the area where we believe that there is the most pressing need for improvement, and the most potential for improvement, and this is therefore the area on which we wish to encourage producers to focus.

We also do not want to dictate how marine fish producers innovate around the challenge of minimizing use of forage fish resources. In the SC’s assessment, there is no other feedstuff resource that is as demonstrably limited—or as heavily pressured—as forage fish stocks. We therefore do not believe that “precautionary and socially responsible use of (other global) resources, to promote human wellbeing” is an appropriate broader goal for the SCAD at this time. We desire to focus on that which most needs to be improved, and that on which aquaculture certification can have the largest impact.

Criterion 4.1 Traceability and transparency of marine raw materials in feed

INDICATOR	STANDARD
4.1.1 Evidence of traceability, demonstrated by the feed producer, of fishmeal and fish oil ingredients ¹⁵ .	Yes.

Rationale

Traceability of forage fish resources and edible seafood processing by-products is required to ensure their authentic origin. Traceability is a necessary prerequisite to comply with the primary feed standard under this principle. The farmer must have full knowledge of the source of the fish meal and fish oil (FMFO) ingredients used in the feed.

Additional Information for reviewing the second draft

Assuring traceability of FMFO feed inputs requires transparency at the feed manufacturer and producer level. The SCAD recognizes that there are costs and systems required to demonstrate traceability, and welcomes ideas about how feed manufacturers can minimize these costs. The SCAD recommends that the traceability information provided by the feed manufacturer does not normally need to be further verified by the auditor unless there are compelling reasons to believe otherwise.

Criterion 4.2 Efficient and optimized diets

INDICATOR	STANDARD
4.2 (a) FFDR <i>Seriola</i> (calculated using formulae in Appendix IV -1). Kampachi (<i>S. rivoliana</i> , <i>S. dumerili</i>) Hamachi (<i>S. quinqueradiata</i>) Under 3 Kg Hamachi (<i>S. quinqueradiata</i>) over 3 Kg (At publication/ 2years/ 5 years)	\leq FM/FO: 3.0 ¹⁶ \leq FM/FO: 3.0 \leq FM:5/FO: 7.5 (now) \leq FM: 4.5/FO: 7 (2 years after publication) \leq FM: 4/FO: 6.5 (5 years after publication)
(b) FFDR Cobia (calculated using formulae in Appendix IV -1)	\leq 3.0 ¹⁷

¹⁵ Traceability should be at a level of detail that permits the feed producer to demonstrate compliance with the standards in this document. This standard also assumes that the feed producer will make available to the farm a list of the FMFO ingredients, the inclusion rates of FMFO, and the sources of each component of the FMFO.

¹⁶ 2.43 would be FFDR for 30% fishmeal inclusion with an eFCR of 1.8, what has historically been the eFCR for better cohorts in Hawaii.

¹⁷ FFDR for Cobia is based on Dr. Dan Benetti’s comprehensive review of available global data.

Rationale

The use of FFDR encourages producers to strive for reduced reliance on forage fish resources by reducing the inclusion rate of FM and FO from such sources in their feed, and optimizing their feed conversion ratio on the farm. FFDR is the primary metric for assessing the use of limited natural resources in the most straightforward manner. It is designed to optimize the transfer of resources from wild forage fish to feed constituents (FM and FO), and then into the cultured fish that is eaten by the consumer. The SC recognizes that the quality and marketability of forage fish (such as anchoveta and menhaden) is considerably less than that of the cultured end products, but does not seek to make any value judgments in end use of these resources. Our goal here is to establish criteria that reward the better-performing *Seriola* and cobia producers for their efforts, and to encourage the rest of the industry to improve their FFDR performance.

The SC supports the regular review of this metric, so that over time, as science improves and producers find additional innovative solutions, the FFDR is lowered towards a value that reflects an ecological ideal (i.e., 1:1). The SC has specifically suggested a timeline for increasingly strict standards around larger Japanese Hamachi over the period of 5 years from the publication of the standards.

The SCAD SC also diverges from several other Dialogues in not requiring measurement of efficiency of transfer for individual elements (such as nitrogen or phosphorus) by individual producers. While we considered this path, we believe that the more complex metrics and costs of audit involved are not justified. Again, our primary focus is to encourage the most efficient use of forage fish stocks, and to encourage the innovative incorporation of sustainable alternatives into *Seriola* and cobia diets.

The recommendation for this metric is based on the best available data. Japanese *Seriola* diets can include wet fish (which is essentially an inclusion rate of 100%, with usually very poor FCRs), but are increasingly formulated pellets (including powdery feed mixtures) with fishmeal inclusion rates of over 50% (e.g., <http://www.allaboutfeed.net/news/how-low-can-you-go-with-fishmeal%3F-id4559.html>). At a 60% fishmeal inclusion rate, and a 2:1 eFCR, the FFDR is 5.4. Japanese *Seriola* culture is presently around 150,000 metric tons annually. *Seriola rivoliana* culture in Hawaii operates at a FFDR of between 1.8 and 3.6, but has produced—at most—500 metric tons in a year. In Australia, production is reported to be around 4,000 metric tons p.a. Capturing the better-performing of the producers for *Seriola*, then, would require a FFDR of around 3.

In order to push better practices but remain achievable, the SC has proposed 3 different levels for FFDR of *Seriola* species which are sold at different sizes in the market-place. The levels here would represent very ambitious standards for larger sized (3+ kg) Japanese Hamachi (*S. quinqueradiata*) production but would be on a sliding scale that would tighten over a short period of time. Although the SC recognizes the 7.5 initial FFDR level may seem high, the SC felt that engaging the best performing Japanese Hamachi producers and encouraging their improvement over a 3-5 year time frame would result in more change globally than setting an initial and unachievable FFDR for all *Seriola* at lower level. The ASC TAG will review these levels every 2 years and reset the levels to ensure continuous improvement. The

SC would also like to note that while efficiency of fishmeal/fish oil use in aquaculture is an important goal, global consumption will vary based on which species and which size of fish consumers prefer to eat. Furthermore, the sustainability of wild caught fish used in fishmeal and fish oil is driven largely by the management of those source fisheries rather than the demand for those products in different agriculture or aquaculture products. Therefore, the SC seeks to increase the efficiency of FM/FO in *Seriola* and cobia culture in a stepwise and continuous manner and also to set important metrics around the source of fishmeal and fish oil used in ASC certified products. The SC also recognizes that the ASC has begun a process of looking at feed across all species and will seek ASC's input on SCAD P4 during public comment period 2.

The cobia industry is harder to track and is less developed than the *Seriola* industry. Presently, the largest production of farm-raised cobia is in China and Taiwan, and a majority of these producers utilize wet fish during some or all of the production cycle. The latest information indicates an annual cobia production rate out of Asia (mainly China) of approximately 30,000 metric tons with high fish meal inclusion diets as well as wet fish and FCRs of 1.5-2.0, yielding a FFDR of anywhere from 4-10. An additional 1000 metric tons of cobia is produced in Vietnam, with similar diets, but not as much wet fish, yielding FIFDR of approximately 3.5-4.0. Production of cobia in the Americas totals less than 1000 metric tons, and net pen production in the Caribbean utilizing extruded diets with 35-40% fish meal and 10% fish oil for FFDR ranging from 2.6-3.2. Cobia grown in recirculating aquaculture systems, with much lower production numbers (< 50 metric tons), are being fed low fish meal, low fish oil diets which are returning FFDR numbers of 0.9-1.33 (H. William Harris, Virginia Cobia Farms, pers. comm.)

Additionally, the SCAD SC believes that seeking to balance parameters such as digestibility and retention creates complexities that might be lost on the general observer, discourage producer participation in SCAD, and impose hurdles to the use of vegetable sources of protein and oils, or use of fish trimmings. There is a balance between increasing the amounts of healthy omega-3 fatty acids (EPA/DHA) in farmed fish, while limiting the pressure that *Seriola* or cobia farming might exert on wild forage fisheries through feed.

Auditing guidance

The feed supplier must document inclusion rates for fishmeal and fish oil for the actual diet. The producer must show records of feed purchases and fish sales. See Appendix 1 for detailed information on FFDR calculation methodology.

4.2 Items to consider in Public Comment period 2:

- The SC would appreciate feedback on proposed FFDR from Japanese (and other) kampachi (*S. rivoliana*, *S. dumerili*) producers
- The SC seeks feedback from the ASC and other stakeholders currently revisiting cross-species feed standards.

Criterion 4.3 Responsible origin of marine raw materials

INDICATOR	STANDARD
4.3.1 Timeframe for at least 90% fishmeal or fish oil used in feed to come from fisheries ¹⁸ certified under an ISEAL member’s accredited certification whose primary goal is to promote ecological sustainability.	Within 5 years following the date of the publication of the SCAD standards.
4.3.2 Prior to achieving 4.3.1 the fishmeal or fish oil used in feed must have a Fishsource score of 6.0 or higher.	At least 80% of the fish meal and fish oil used in feed must have a Fishsource score of 6.0 or higher.
4.3.3 Feed containing fishmeal and/or fish oil originating from by-products ¹⁹ or trimmings from fish species which are categorized as vulnerable, endangered or critically endangered, according to the IUCN Red List of Threatened Species. ²⁰	None.
4.3.4 Feed ingredients which come from other fish from the same genus.	None.

Rationale

These indicators strive to ensure that marine-based feed ingredients come from responsible sources. A main concept of the proposed standards is to align industry incentives to support processes that will lead to improved fisheries management, and then certification, of forage fisheries.

Ultimately, the standards will use marine ingredients certified by a widely recognized authority, such as the Marine Stewardship Council (MSC) or other standard, as the best option available to promote responsible catch. In addition to MSC standards, other standards accredited by the ISEAL Alliance that promotes the ecological sustainability of pelagic fisheries as a primary focus could qualify.

Given the current lack of MSC certified sources of fish meal and fish oil, the SCAD proposes to restrict fisheries currently known to have the poorest status from being used for fish meal and oil used in the feed. This will be achieved by requiring the vast majority of marine ingredients to come from a fishery

¹⁸ This standard applies to fishmeal and oil from forage fisheries and not to by-products or trimmings used in feed.

¹⁹ Trimmings are defined as by-products when fish are processed for human consumption or if whole fish is rejected for use of human consumption because the quality at the time of landing do not meet official regulations with regard to fish suitable for human consumption.

²⁰ International Union for the Conservation of Nature reference at <http://www.iucnredlist.org/static/introduction>

that receives a minimum score using the Fishsource methodology. The standard requires 80% of the fishmeal and fish oil to meet the FishSource score because the products are sold as blends, where the origin of fisheries can come from multiple fisheries.

These standards support the use of marine trimmings and by-products, as long as they don't originate from fisheries targeting endangered or vulnerable species. The SCAD SC seeks to encourage the use of FMFO derived from by-products from phylogenetically distinct species. These represent sustainable, underutilized resources.

Additional Information for review of second draft

The SCAD SC is still considering a number of issues related to Criterion 4.3.

The SCAD is recommending requiring 90% of fishmeal and fish oil to come from certified sources, such as MSC, within 5 years, to allow for these certification schemes to become established for these fisheries. The SCAD is also recommending that during the 5 year interim phase, 80% of fishmeal and fish oil must come from sources that have a FishSource score of 6.0 or higher. The SC seeks public input on these recommendations.

The SC is also still considering what FishSource score to use for the next five years. The SC would generally be guided by the approach taken by other Dialogues in this matter. The FTAD discussion is included below (*in italics*) for information purposes, and to provide context for the SC's deliberations:

One option would be to require no individual score of less than 6.0, a maximum of one N/A, and no N/A in the biomass stock assessment category. This represents a very low sustainability and management bar, but is perhaps realistic given the current status of available information on forage fisheries used in aqua feeds, particularly in South East Asia. For reference, a fishery that receives a FishSource score of 6 on everything would be a fishery where:

Score 1: *The "precautionary" management approach is to hold harvest at the target reference point when biomass drops below the limit reference point*

Score 2: *Total Allowable Catch has been set 25% higher than under scientific advice*

Score 3: *The quota is being exceeded by 25%*

Score 4: *The spawning biomass is at half of its target for maximum sustainable yield*

Score 5: *Mortality is 50% higher than what is set for acceptable fishing mortality at maximum sustainable yield*

A second, more ambitious option would insist on progress towards information and management action for forage fisheries by accepting the above for the next three years (or some other time period) and require forage fisheries to score 8 on one or more FishSource scores within three years following initial farm certification. This would generate a strong market

incentive for farmers and feed companies to push for better fisheries monitoring and management.

FFDR standards are included because many stakeholders in the SCAD and other Dialogues see the need for additional safeguards for pelagic fisheries.

Even in the presence of an ISEAL-compliant certification of forage fisheries, many stakeholders believe that growth in marine fish production must be accompanied by reduced reliance on globally finite wild forage species. This reduction is already happening due to market realities of supply and demand for fishmeal and fish oil however the scale of growth is offsetting these per capita improvements, resulting in greater, not less, aggregate reliance on forage fish (Naylor et al. 2010).

Forage fisheries serve multiple purposes, being both ingredients for aqua feeds as well as direct food items for humans. Forage fisheries often are biologically resilient (i.e., rapid life cycles, early age at maturity, highly fecund and can be harvested by low impact gears) and important sources of EPA/DHA that are important for human health and cognitive development. Particularly in developing countries and within local economies, forage fish such as anchovies, sardines and mackerel can be important parts of a healthy diet including sources of protein and essential fatty acids. Conversion of wild fish, used for subsistence, into farmed fish represents a meaningful issue of equity and food security. By minimizing forage fish inclusion rates, these standards acknowledge this issue and will strive to optimize use of resources allocated to aquaculture.

Some stakeholders in other Dialogues have argued against including FFDR standards. For these stakeholders, once a feed source becomes a certified responsible fishery, farms should feel free to use it. Also, limiting aquaculture from using fishmeal and fish oil from responsible sources may be globally inefficient, given that other users (such as livestock farmers) who are less efficient than fish farmers at producing protein, would likely use it instead. Limiting amounts of marine ingredients also has implications for feed retention, digestibility and a farmed fish’s nutritional value.

Criterion 4.4 Responsible origin of non-marine raw materials in feed

INDICATOR	STANDARD
4.4.1. Presence and evidence of traceability and a responsible sourcing policy for the feed manufacturer for feed ingredients which comply with internationally recognized moratoriums and local laws. ²¹	Yes.

²¹ Specifically, the policy shall include that vegetable ingredients, or products derived from vegetable ingredients, must not come from the Amazon Biome as geographically defined by the Brazilian Soya Moratorium.

4.4.2. Documentation of the use of transgenic ²² plant raw material, or raw materials derived from genetically modified plants, in the feed.	Yes.
4.4.3. Percent of non-marine ingredients from sources certified by an ISEAL Member’s certification scheme that addresses environmental and social sustainability.	80% for soy and palm oil within 5 years from the date of the SCAD standard publication.

Rationale

The SCAD standards encourage the use of non-marine protein and lipid sources as a key method to reduce the dependence upon fish meals and fish oils in the culture of *Seriola* and cobia. However, the sourcing of non-marine raw materials must take into account their culture areas and production methods—these must be sustainably secure and respect the environment within which they are raised. Products from conservation and biodiversity hotspots (for example the Amazon rainforest) must not be allowed under the SCAD standards.

While the use of genetically modified organisms (GMOs) in feed is not disallowed, it must be acknowledged. Transgenic plants are commonly used in aquaculture and animal feeds throughout the world, yet some consumers and retailers want to be able to identify food products, including farmed fish, that are genetically modified or that have been fed genetically modified ingredients. Documentation of the use of GMOs (such as Roundup Ready soybeans), can be obtained from the feed manufacturer. This is not an onerous or unrealistic demand for a fish producer to make to their feed producer since the purchase, use and manufacture of a non-GMO sourced complete feed (i.e., an organically certified feed) would require much more stringent documentation and disclosure by the feed manufacturer to meet that particular certification.

The SCAD standards ensure transparency (above one percent volume) around any transgenic material used in the feed in order to support informed choices by retailers and consumers. The SCAD standards also require that the producer disclose to the first-order buyer of their *Seriola* and cobia the use of any genetically modified ingredients in feed, and publicly disclose whether transgenic ingredients are used.

The SCAD does not preclude the use of terrestrial protein byproducts in fish feed. Indeed, we would encourage the use of such products within normal standards of nutrition for the fish and human health for the consumer. These standards assume that feed producers are following local regulations around food safety when incorporating land-animal by-products into feed. Retailers or importing countries remain free to formulate their own standards in relation to use of land-animal byproducts in feeds. We believe that it is critical to focus these standards on encouraging reduced reliance on forage fish resources, and this goal can only be achieved through the judicious and conscientious use of

²² Transgenic: Containing genes altered by insertion of DNA from an unrelated species. Taking genes from one species and inserting them into another species to get that trait expressed in the offspring. The SC notes that there is currently no credible evidence of food safety or environmental detriment from GMO applications.

appropriately sourced, sustainably produced alternate protein and lipid sources. Other mechanisms are more appropriate for influencing standards for sustainable production of agricultural proteins and oils.

Feed ingredients sourced from areas where significant ecological damage has occurred was of concern to the SCAD. Therefore, the standard requires producers to source feed from feed producers who comply with any relevant, recognized crop moratoriums that, at the time of the writing of these standards, includes only the Brazilian Soy Moratorium, as far as the SCAD understands. Such moratoriums are temporary measures intended to protect defined geographic regions. Looking to the future, the SCAD incorporates a requirement for feed manufacturers to use soy certified by the Round Table Responsible Soy (RTRS), which the SCAD recognizes as the most environmentally meaningful soy certification process today. Because the scheme is recently starting up, the standards build in a five-year window for this requirement.

PRINCIPLE 5: PROACTIVELY MAINTAIN THE HEALTH AND WELFARE OF CULTURED FISH AND MINIMIZE THE RISK OF DISEASE TRANSMISSION

Impact: There are three primary mechanisms by which fish health management on marine fish farms may negatively impact the environment: proliferation of pests and parasites on the farm may create a vehicle for increased prevalence of diseases among wild fish; use of prophylactic antibiotics or improper use of other therapeutants may result in development of resistance to the treatment; and use of some therapeutants may lead to contamination of farm effluents. In keeping with the SCAD focus on those criteria which most need to be addressed, and which we can most impact, the principle of fish health therefore focuses on indicators for these three criteria. This is not to suggest that the SCAD is unconcerned with issues of fish welfare, or responsible overall approaches to farm biosecurity and fish health management. However, these are secondary concerns. We earnestly believe that the SCAD should focus on the most important issues for each principle.

These Standards do not seek to address all issues relating to fish welfare (for example, harvesting of fish using humane slaughter). These issues are not addressed here because the SC considered it to be outside the scope of social and environmental standards. Separate standards are available for certification of humane treatment.

Criterion 5.1 Minimize the transfer of pests or parasites to wild stocks

INDICATOR	STANDARD
5.1.1 Prevalence of endemic parasites or pathogens in wild stocks.	No significant difference from baseline.

Rationale

Farming of fish can lead to an increased risk of aquatic diseases in the environment. While there is a plethora of possible indicators that can be used to evaluate whether a farm is practicing responsible fish health management, this singular criterion is that which is of greatest concern to the common interest and the ecological impact of the operation. Marine fish producers should naturally want to optimize fish health on the farm site, due to the dramatic impacts this has on economic viability. We do not want to restrict how marine fish producers innovate around the challenge of optimizing fish health on the farm site, so long as there is negligible risk to wild stocks.

5.1 Items to consider in Public Comment period 2:

The practical and statistical rigor of determining the baseline conditions in wild stocks needs to be considered and discussed.

Criterion 5.2 Chemicals and treatments

INDICATOR	STANDARD
5.2.1 Use of therapeutic treatments that are banned by law under the local jurisdiction or listed as critically important for human medicine by the World Health Organization (refer to http://www.who.int/foodborne_disease/resistance/antimicrobials_human.pdf)	Not permitted.
5.2.2 Prophylactic use of chemical antimicrobial treatments (excluding prebiotics).	Not permitted.
5.2.3 Farms have a comprehensive fish health management plan approved by the farm’s designated veterinarian that includes either a) vaccination against diseases that present a risk in the region and for which an effective and commercially viable vaccine exists, or b) veterinarian-approved alternative fish health management strategies.	Yes.
5.2.4 Allowable farm level anti-parasiticide treatment not including freshwater, formaldehyde ²³ or hydrogen peroxide.	None.

Rationale

The SC considered the comprehensive review undertaken by the Salmon Aquaculture Dialogue (Burridge, Weis, Cabello and Pizarro, 2008). Other Dialogues have not permitted the use of substances that are banned under EU law, but the SC felt this was neither germane nor appropriate.

The use of certain therapeutic treatments may impact upon human health or have a damaging effect on the aquatic environment, both in terms of water quality and direct impact on flora and fauna. It is appropriate that a comprehensive fish health management plan is in place that tracks and investigates mortalities and includes either vaccination procedures or alternative methods approved by the farm’s veterinarian. In the interest of environmental monitoring and product traceability, all chemical treatments must be recorded in a special file or treatment log made available to auditors.

This standard does not consider the broader impacts of therapeutants on the surrounding ecosystem, as these impacts should be more properly considered under the criteria for Principle 2.

Criterion 5.3 Environmental welfare

²³ In Japan, where formaldehyde is banned, its use would not be permitted under the standards as Principle 1, obey all laws takes precedence.

INDICATOR	STANDARD
<p>5.3.1 Option 1: Documented evidence that DO levels do not represent stress to cultured animals, as evidenced by DO levels being monitored with a DO meter regularly, with a frequency determined by the designated veterinarian²⁴, and remaining above the minimum level, as determined by the designated veterinarian.</p> <p>Or</p> <p>Option 2: Weekly average percent dissolved oxygen (DO) saturation on farm, calculated in the following methodology.</p>	<p>Yes.</p> <p>>70% saturation.</p>
<p>5.3.2 Maximum percentage of weekly samples from 5.3.1 that fall under 70% saturation.</p>	<p><5%</p>

Dissolved Oxygen Rationale

Water quality is essential for the health of farmed *Seriola* and cobia as well as wild species surrounding a farm. One component of water quality, DO, is particularly critical for the survival and good performance of farmed *Seriola* and cobia. As a result, most farms regularly measure DO. DO saturation²⁵ (%) naturally fluctuates in the environment. This is due to a range of factors, including temperature, time of day and upwelling of oxygen-poor waters from deep in the ocean. Low DO levels can also be a sign of excessive nutrient loading. DO provides a useful overall proxy for a water body’s ability to support healthy biodiversity and supplements the benthic indicators that will also pick up excessive nutrient loading.

Seriola and cobia ideally need a % saturation of dissolved oxygen over 70% to avoid any possible stress, although they are able to live under lower oxygen concentrations, particularly if only for short periods of time. Under routine production, the average minimum percent saturation of DO in the water column should be above 70%. Measuring DO as a percent saturation takes into account salinity and temperature at the farm site. Compliance with the SCAD standards will limit the number of low DO readings in the water column below 70% for open net pen systems and 70% for land-based systems, with less than 5% incidence rate, which will allow for periodic physical phenomena, such as upwelling.

Guidance

²⁴ Or accredited veterinary health professional

²⁵ Percent saturation: Percent saturation is the amount of oxygen dissolved in the water sample compared to the maximum amount that could be present at the same temperature and salinity

Methodology for sampling dissolved oxygen (standard 5.3.1 and 5.3.2). These standards require the sampling of dissolved oxygen on the farm site and the calculation of the percent saturation for those samples.

- DO shall be measured twice daily (proposed at 6 am and 3 pm—with recognition that this will vary depending on region and operational practices). Percent saturation shall be calculated for each sample from the data and a weekly average percent saturation shall result.
 - A minimal amount of missed samples due to extreme weather conditions will be considered acceptable.
 - Sampling once daily shall also be considered acceptable, though not preferred.
- DO shall be measured at a depth of 5 m at a location where the conditions of the water will be similar to those the fish experience. For example, measurements can be taken at the edge of the net-pen array, in the downstream direction of the current, or off of a feed shed or housing structure on the site. Measurements shall be taken at the same location at the same time to allow for comparison between days.
- Weekly averages shall be calculated and remain at or above 70% saturation.
- Should a farm fall below the 70% weekly average, demonstration of consistency of % saturation with a reference site.
- The reference site shall be at least 500 m from the edge of the net-pen array, in a location that is understood to follow similar patterns in upwelling to the farm site and is not influenced by nutrient inputs from anthropogenic causes including aquaculture, agricultural runoff, or nutrient releases from coastal communities.

PRINCIPLE 6: OPERATE FARMS WITH RESPONSIBLE LABOR PRACTICES

Impact: Aquaculture, as any agricultural production system, often requires intensive labor. The labor standards in this document are based on the core principles of the International Labor Organization (ILO) as well as other matters on which the UN has agreed, which are considered to be the fundamental rights of individuals. Particularly in developing countries, workers often live on or near the farm in a rural environment lacking good infrastructure and living conditions.²⁶ These standards apply to verbal or written contract employed workers. The criteria and indicators under this principle apply to all hired workers (temporary and/or permanent; with or without written contract). Conditions for so-called ‘family-workers’ must be comparable to those for the formally employed, but the SCAD standards recognize the more flexible arrangement between employer and worker in this case.

Criterion 6.1 Child labor and young workers²⁷

INDICATOR	STANDARD
6.1.1 Number of incidences of Child Labor.	None
6.1.2 Percentage of young workers that are protected (workers between 15 and 18 years of age will not be exposed to hazardous health and safety conditions, employment will not jeopardize the opportunity to attend school, and daily combined school, work and transportation time does not exceed 10 hours/day)	100%

Rationale

Adherence to the child labor codes and definitions included in this section indicates compliance with what the ILO and related international conventions generally recognize as the key areas for the protection of

²⁶ Please note that many countries have national laws that address labor issues rigorously and intensively, however this is not consistent in a global context. Addressing these key issues in aquaculture is critical, given the important human rights implications and proven societal benefits of labor standards related to poverty, sustainable economic growth, good governance and political stability. The labor standards in this document help ensure that all aquaculture operations certified against the SCAD standards have reduced or eliminated the potential impacts of key labor issues associated with production. Moreover, the SCAD labor standards are based on the core principles of the International Labor Organization (ILO): freedom of association, the right to collective bargaining, prohibition on forced labor, prohibition on child labor, and freedom from discrimination, as well as the other elements that are considered to be the fundamental rights at work: fair wages and working hours, decent health and safety conditions and non-abusive disciplinary practices. Social Accountability International (SAI), an international and renowned social standards/labor NGO, worked with the Dialogues to recommend ways to best align the standards with best practice labor standards, including ILO conventions.

²⁷ **Child Labor:** refers to any work by a child younger than the age specified in definition of a child, except for light work as provided for by ILO Convention 138, article 7. The conventions permit children between 15 and 17 to work on farms, provided that time for school and play is guaranteed and children are excluded from hazardous, abusive and physically hard work

children²⁸ and young workers²⁹. Children are particularly vulnerable to economic exploitation, due to their inherent age-related limitations in physical development, knowledge and experience. Children need adequate time for education, development and play and should never be exposed to work or working hours that are hazardous to their physical or mental well-being. To this end, the standards related to what constitutes child labor are intended to protect the interests of children and young workers in certified aquaculture operations.

Guidance for Implementation

6.1 Child labor and young workers

1. The minimum allowable age of permanent workers is 15 years old. If the legal minimum age allowed in the country is higher than 15, the legal minimum age of the country is followed. (Note: Employer is accountable for employee age documentation. In most countries, the law states that the general minimum age for employment is 15 years.)
2. Child workers above the age of 15 perform only light work.³⁰ According to the ILO convention 138, Article 7.1: light work is defined as work that is 1) not likely to be harmful to a child's health or development and 2) not likely to prejudice their attendance at school, participation in vocational orientation or training programs, or diminish their capacity to benefit from instruction received (as long as it does not exceed 2 hours per day on school days or holidays). Also, the total number of hours spent on light work and on school shall not exceed 7 hours per day. (Note: Per ILO Convention 138, Article 7.4: Some developing countries may apply for an exception to the minimum age, thereby defining 12 as the minimum age for light work by children and 14 for the minimum age for young workers; however, few, if any countries still invoke this clause.)
3. For employees aged 15-17 (young workers), work shall not conflict with schooling. The combined daily transportation time, school time and work time shall not exceed 10 hours. Hazardous work³¹ (e.g., heavy lifting disproportionate to a person's body size, operating heavy machinery, working night shifts, and exposure to any toxic chemicals) is not performed by those under the age of 18.

²⁸ **Child:** any person less than 15 years of age, unless local minimum age law stipulates a higher age for work or mandatory schooling, in which case the higher age would apply. If however, local minimum age law is set at 14 years of age in accordance with developing country exceptions under ILO Convention 138, the lower age will apply

²⁹ **Worker (Young worker):** Any worker or employee between the age of child as defined and under the age of 18

³⁰ **Light Work:** (ILO convention 138, article 7.1) Light work is work that is 1) not likely to be harmful to a child's health or development and 2) not likely to prejudice their attendance at school, participation in vocational orientation or training programs, or diminish their capacity to benefit from instruction received

³¹ **Hazardous work:** work which, by its nature or circumstances in which it is carried out, is likely to harm the health, safety or morals of workers

Criterion 6.2 Forced, bonded compulsory labor³²

INDICATOR	STANDARD
6.2.1 Number of Incidents where employers withhold any part of employee salary, property, or benefits upon termination of employment.	None.
6.2.2 Number of incidents where employees are required to surrender original identity documents upon commencing employment (except as required for processing of legal documentation)	None

Rationale

Forced labor³³—such as slavery, debt bondage and human trafficking—is a serious concern in many industries and regions of the world. Ensuring that contracts are clearly articulated and understood by employees³⁴ is critical to determining that labor is not forced. The inability of a worker to freely leave the workplace and/or an employer³⁵ withholding original identity documents of workers are indicators that employment may not be at-will. Employees shall always be permitted to leave the workplace and manage their own time. Employers are never permitted to withhold original worker identity documents. Adherence to these policies shall indicate an aquaculture operation is not using forced, bonded or compulsory labor forces.

Guidance for Implementation

6.2.1 Forced, bonded or compulsory labor

1. Contracts shall be clearly stated and understood by employees and never lead to an employee being indebted, such as employees paying for essential job training programs.
2. Employees shall be free to leave the workplace and manage their own time.
3. The employer shall never be permitted to withhold an employee’s original identity documents.

Criterion 6.3 Discrimination³⁶ in the work environment

³² **Bonded Labor:** when a person is forced by the employer or creditor to work to repay a financial debt to the crediting agency

³³ **Forced (Compulsory) Labor:** all work or service that is extracted from any person under the menace of any penalty for which a person has not offered him/ herself voluntarily or for which such work or service is demanded as a repayment of debt. “Penalty” can imply monetary sanctions, physical punishment, or the loss of rights and privileges or restriction of movement (withholding of identity documents)

³⁴ **Employee:** An employee is a person who enters an agreement, which may be formal or informal, with an enterprise to work for the enterprise in return for remuneration in cash or in kind.

³⁵ **Employer:** Employers are those workers who, working on their own account or with one or a few partners, hold the type of job defined as a self-employed job, and in this capacity, on a continuous basis (including the reference period) have engaged one or more persons to work for them in their business as employees.

³⁶ **Discrimination:** any distinction, exclusion, or preferences, which has the effect of nullifying or impairing equality of opportunity or treatment. Not all distinction, exclusion, or preference constitutes discrimination. For instance, a merit or performance based pay increase or bonus is not by itself discriminatory. Positive discrimination in favor of people from certain underrepresented groups may be legal in some countries.

INDICATOR	STANDARD
6.3.1 Evidence of comprehensive and pro-active anti-discrimination policies, procedures and practices including but not limited to discrimination in the workplace and equal access to all jobs in relation to gender, age, race, religion, creed, caste, or sexual orientation.	Yes.
6.3.2 Number of confirmed incidences of discrimination.	None.
6.3.3 Equality of pay, benefits and promotion opportunities for all employees independent of gender, age, race, religion, creed, caste or sexual orientation	Yes.
6.3.4 Number of incidents where employers dismiss an employee on the basis of marital status or pregnancy or deny employee legal rights to pregnancy or maternity leave	None.

Rationale

Unequal treatment of employees, based on certain characteristics (such as sex or race), is a violation of workers’ human rights. Additionally, widespread discrimination in the working environment can negatively affect overall poverty and economic development rates. Discrimination occurs in many work environments and takes many forms.

To ensure that discrimination does not occur at certified aquaculture farms, employers must prove their commitment to equality with an official antidiscrimination policy, a policy of equal pay for equal work and clearly outlined procedures to raise/file and respond to a discrimination complaint in an effective manner. Evidence, including worker testimony, of adherence to these policies and procedures will indicate a minimization of discrimination. Differences in quality of work between equal workers can be rewarded through discretionary bonus payments on top of regular salary.

Guidance for Implementation

6.3.1 Discrimination in the work environment

Evidence of proactive anti-discrimination policies/practices

1. Employers shall have written anti-discrimination policies stating the company does not engage or support discrimination in hiring, remuneration, access to training, promotion, termination or retirement based on race, caste, national origin, religion, disability, gender, sexual orientation, union membership, political affiliation, age, or any other condition that may give rise to discrimination.

2. Clear and transparent company procedures are outlined to raise/file and respond to discrimination complaints.
3. Employers shall respect the principle of equal pay for equal work.
4. Worker shall be able to support that the company is adhering to the above policies and practices.

Criterion 6.4 Work environment health and safety

INDICATOR	STANDARD
6.4.1 Percentage of employees trained in health and safety practices, procedures and policies relevant to the job.	100% in operations above five employees. ³⁷
6.4.2 Safety equipment (Personal Protective Equipment, PPE) provided and maintained and in use.	Yes.
6.4.3 All health and safety related accidents and violations are recorded and corrective actions taken when necessary.	Yes.
6.4.4 Evidence of employer responsibility and/or proof of insurance (accident or injury) for 100% of worker costs in a job-related accident or injury when not covered under national law	Yes

Rationale

A safe and healthy working environment is essential for protecting workers from harm. It is critical for a responsible aquaculture operation to minimize these risks. Some of the key risks to employees include workplace hazards³⁸ and accidents that can result in injury. Consistent and effective worker training in health and safety practices are an important preventative measure, as is providing workers proper equipment for the job. When an accident, injury or violation occurs, the company must record it and take corrective action to identify the root causes of the incident, remediate and take steps to prevent future occurrences of similar incidents. These standards address violations as well as the long-term health and safety risks. Finally, while many national laws require that employers assume responsibility for job-related accidents/injuries, not all countries require this and not all employees (e.g., migrant and other workers) will be covered under such laws. When not covered under national law, employers must prove they are insured to cover 100% of employee costs in a job-related accident or injury.

Guidance for Implementation

³⁷ Certificate of training issued by the relevant competent national or provincial authority or by such authority’s recognized training center, or evidence of adequate on the job training for health and safety practices. For any employee involved in diving work there must be evidence of adequate training from an appropriate national or commercial authority, e.g. NAUI, PADI.

³⁸ **Hazard:** The inherent potential to cause injury or damage to people’s health—for instance unequipped to handle heavy machinery safely/ unprotected exposure to harmful chemicals

6.4.1 Work environment health and safety

Workers trained in health and safety practices, procedures and policies

1. Minimization of hazards/risks in the working environment, including documented systemic procedures and policies to prevent workplace hazards and their risks, shall exist and the information shall be available to employees.
2. Emergency response procedures shall exist and be known by employees.
3. Offer regular health and safety training for employees, including training on potential hazards and risk minimization.
4. Consistent and effective employee training in health and safety practices are an important preventative measure, as is providing employees proper equipment for the job.
5. When an accident, injury or violation occurs, the company must record it and take corrective action to identify the root causes of the incident, remediate, and take steps to prevent future occurrences of similar incidents.
6. A proactive, preventative policy should identify potential hazardous situations, analyze the associated risk and define and implement corrective actions. It is important for employees and employers to collaborate in this process.

Determining occurrences of health and safety related accidents and incidents are documented and corrective actions taken

1. At a minimum, all job-related accidents that require professional medical attention shall be documented. Documentation shall be generated with regards to occupational health and safety violations.
2. A corrective action plan shall be implemented in response to job-related accidents and violations of safety practices that have occurred. This needs to analyze and address the root causes and prevent future risks or accidents of a similar nature.

6.4.2 Proof of accident insurance

The documents pertaining to worker insurance can be verified with the indicated insurance company

Criterion 6.5 Wages

INDICATOR	STANDARD
6.5.1 Percentage of workers whose basic wage ³⁹ (before overtime and bonuses) is below the minimum wage ⁴⁰ .	0%.
6.5.2 The percentage of workers whose basic wage (before overtime and bonuses) is below the basic needs wage ⁴¹ 5 years after adoption of the standard.	0%.
6.5.3 Evidence of transparency in wage-setting and rendering.	Yes.

Rationale

Wages and the process for setting wages are important components of the ILO core principles. For this reason, it is important to highlight under these standards the importance of workers’ basic wages meeting the legal minimum wage and being rendered to workers in a convenient manner. Unfortunately, minimum wage in many countries does not always cover the basic needs of workers.

Unfairly or insufficiently compensated workers can be subject to a life of sustained poverty. Therefore, it is important for socially responsible employers to pay or be working toward paying a basic needs wage. The calculation of a basic needs wage can be complex, and it is important for employers to consult with workers, their representatives and other credible sources when assessing what a basic needs wage would be.

Certified *Seriola* and *cobia* farms shall also demonstrate their commitment to fair and equitable wages by having and sharing a clear and transparent mechanism for wage-setting and a labor conflict resolution policy that tracks wage-related complaints and responses. Having these policies outlined in a clear and transparent manner will empower the workers to negotiate effectively for fair and equitable wages that shall, at a minimum, satisfy basic needs.

Criterion 6.6 Access to freedom of association and the right to collective bargaining

INDICATOR	STANDARD
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³⁹ Basic wage: the wages paid for a standard working week (no more than 48 hours)

⁴⁰ If there is no legal minimum wage in a country, basic wages must meet the industry-standard minimum wage.

⁴¹ Basic needs wage: a wage that covers the basic needs of an individual or family, including housing, food, and transport. This concept differs from a minimum wage, which is set by law and may or may not cover the basic needs of workers

6.6.1 Percentage of employees with access to trade unions, worker organizations, and/or the ability to self-organize as well as the ability to bargain collectively or access the representative(s) chosen by workers without management interference.	100%.
6.6.2 Incidences of members of unions or worker organizations being discriminated against.	None.

Rationale

Having the freedom to associate and bargain collectively⁴² is a critical right of workers because it allows workers to have a more balanced power relationship with employers when doing such things as negotiating fair compensation. Although this does not mean all workers of a certified aquaculture operation must be in a trade union or similar organization, no workers will be prohibited from accessing such organizations when they exist. If they do not exist or are illegal, companies must make it clear that they are willing to engage in a collective dialogue through a representative structure freely elected by the workers.

Guidance for Implementation

6.6.1 Freedom of association and collective bargaining

Determining the percentage of employees with access to trade unions, and the ability to bargain collectively, and or worker access to the appropriate representative(s) chosen by workers without management interference.

1. Companies shall ensure workers interested in collective bargaining or joining a union or worker organization of their choice are not subjected to discrimination. When rights are restricted, the company should make it clear to workers that they are willing to engage workers in collective dialogue through representative structure and that they will allow workers to freely elect their own representatives.
2. Workers have the freedom to form and join any trade union or worker organization, free of any form of interference from employers or competing organizations set up or backed by the employer. The ILO specifically prohibits “acts which are designated to promote the establishment of worker organizations or to support worker organizations by financial or other means, with the object of placing such organizations under the control of employers or employers’ organizations.”

⁴² **Bargain collectively:** voluntary negotiation between employers and organizations of workers in order to establish the terms and conditions of employment by means of collective (written) agreements.

3. Evidence provided will be cross-checked with the indicated union or by the organization chosen by the worker.

Criterion 6.7 Harassment and disciplinary practices in the working environment causing temporary or permanent physical and/or mental harm

INDICATOR	STANDARD
6.7.1 Incidences of excessive or abusive ⁴³ disciplinary actions.	None.
6.7.2 Evidence of clear, fair and transparent disciplinary procedures documented and communicated to employees	Yes.
6.7.3 Evidence that incidences of harassment are recorded and addressed with corrective actions.	100%.

Rationale

The rationale for discipline in the workplace is to correct improper actions and maintain effective levels of employee conduct and performance. However, abusive disciplinary actions can violate workers’ human rights. The focus of disciplinary practices shall always be on the improvement of the worker. A certified aquaculture operation shall never employ threatening, humiliating or punishing disciplinary practices that negatively impact a worker’s physical and/or mental health or dignity. Employers that support non-abusive disciplinary practices as described in the accompanying guidance, accompanied by evidence from worker testimony, shall indicate that a certified aquaculture operation is not employing abusive disciplinary practices.

Guidance for Implementation

6.7.1 Disciplinary actions in the work environment

Determining incidences of abusive disciplinary actions

There shall be absolutely no engagement in or support of corporal punishment, mental or physical coercion, or verbal abuse. Fines or wage deductions shall not be acceptable as a method for disciplining workers, as indicated by policy statements and evidence from worker testimony. If there has been an exceptional, isolated incidence of abuse, there must be evidence that the company has responded appropriately and such incidents do not re-occur.

Evidence of non-abusive disciplinary policies and procedures

⁴³ Physically or mentally. Mental Abuse: characterized by the intentional use of power, including verbal abuse, isolation, sexual or racial harassment, intimidation, or threat of physical force.

If disciplinary action is required, progressive verbal and written warnings shall be used. Aim should always be on improving the worker before letting him/her go, as indicated by policy statements, personnel records and evidence from worker testimony.

Criterion 6.8 Working hours and overtime

INDICATOR	STANDARD
6.8.1 Incidences, violations or abuse of working hours or overtime laws.	None.
6.8.2 Overtime is limited, voluntary, paid at a premium rate and restricted to exceptional circumstances.	Yes.

Rationale

Abuse of overtime working hours is a widespread issue in many industries and regions. Workers subject to extensive overtime can suffer consequences in their work-life balance and are subject to higher fatigue-related accident rates. In accordance with better practices, workers in certified *Seriola* and *cobia* farms are permitted to work— within defined guidelines—beyond normal work week hours but must be compensated at premium rates. Requirements for time off, working hours and compensation rates as described should reduce the impacts of overtime.

Criterion 6.9 Contracts or other written employment agreements

INDICATOR	STANDARD
6.9.1 Percentage of workers who have contracts or other written employment agreements.	100%.
6.9.2 Evidence of a policy to ensure social compliance of its suppliers and contractors when operating on the farm site.	Yes.

Rationale

Fair contracting is important to ensure transparency between the employer and employee and fairness in the employment relation. Short-term and temporary contracts are acceptable but cannot be used to avoid paying benefits or to deny other rights. The company shall also have policies and mechanisms to ensure that workers contracted from other companies for specific services (e.g., divers, cleaning or maintenance) and the companies providing them with primary inputs or supplies have socially responsible practices and policies.

Criterion 6.10: Conflict resolution

INDICATOR	STANDARD
6.10.1 Evidence of worker access to effective, fair and confidential grievance procedures.	Yes.
6.10.2 Percentage of grievances handled that are addressed ⁴⁴ within a 90-day timeframe	100%

Rationale

Companies must have a clear labor conflict resolution policy in place for the presentation, treatment and resolution of worker grievances in a confidential manner. Workers shall be familiar with the policy and its effective use. Such a policy is necessary to track conflicts and complaints raised, and responses to conflicts and complaints.

Criterion 6.11: Living conditions for employees accommodated on the farm

INDICATOR	STANDARD
6.11.1 Farm employees have access to clean, sanitary, safe and suitable living conditions.	Yes
6.11.2 Existence of separate sanitary and toilet facilities for men and women; with the exception of work sites with fewer than 10 employees or where married couples working and accommodated together	Yes

Rationale

The protection of the workers that reside or live on the farm’s property is an integral part of the employer’s responsibility. To maintain the health and performance of workers, farms will provide clean, sanitary and safe living quarters with access to clean water and nutritious meals. Accommodation facilities must provide for the needs of those (presumably, but not exclusively, women) that can be considered at risk of sexual or privacy harassments.

Guidance for implementation 6.11

The SCAD SC is interested in how sanitary, safe, and suitable for habitation is defined in different countries. It is difficult to identify objective specific criteria for evaluating these aspects because they are heavily dependent on cultural factors. The SCAD SC would welcome suggestions based on country-specific criteria.

⁴⁴ Addressed: Acknowledged and received, moving through the company’s process for grievances, corrective actions taken when necessary.

PRINCIPLE 7: BE A GOOD NEIGHBOR AND CONSCIENTIOUS CITIZEN

Principle 7 aims to address any broader off-site potential social impacts associated with Seriola and cobia production, including interactions with local communities.

Criterion 7.1: Community engagement

INDICATOR	STANDARD
7.1.1 Evidence of regular and meaningful ⁴⁵ consultation and engagement with community representatives and organizations	Yes.
7.1.2 Presence and evidence of an effective ⁴⁶ policy and mechanism for the presentation, treatment and resolution of complaints by community stakeholders and organizations	Yes.

Rationale

A *Seriola* and cobia farm must respond to human concerns that arise in communities located near the farm and to concerns related to the farm’s overall operations. In particular, appropriate consultation must be undertaken within local communities so that risks, impacts and potential conflicts are properly identified, avoided, minimized and/or mitigated through open and transparent negotiations. Communities shall have the opportunity to be part of the assessment process (e.g., by including them in the discussion of any social investments and contributions by companies to neighboring communities).

Channels of communication with community stakeholders are important. Regular consultation with community representatives and a transparent procedure for handling complaints are key components of this communication. Negative impacts may not always be avoidable. However, the process for addressing them must be open, fair and transparent and demonstrate due diligence. A company shall share with neighboring communities information about any potential health and safety risks or changes to access to resources.

Companies should make a maximum effort to not affect the surrounding community’s access to vital resources as a result of its presence and activities. Some change in access is expected. What is to be prevented is an unacceptable degree of change.

⁴⁵ Regular and meaningful: Meetings shall be held at least bi-annually with elected representatives of affected communities. The agenda for the meetings should in part be set by the community representatives. Participatory Social Impact Assessment methods may be one option to consider here.

⁴⁶ Effective: In order to demonstrate that the mechanism is effective, evidence of resolutions of complaints can be given.

Appendix I: Feed Resource Calculations and Methodologies

IV.1 Forage Fish Dependency Ratio calculation

Feed Fish Dependency Ratio (FFDR) is the quantity of wild fish used per quantity of cultured fish produced. This measure can be calculated based on fishmeal (FM) and/or fish oil (FO). The dependency on wild forage fish resources shall be calculated for both FM and FO using the formulas noted below, and then the higher of the two values shall be applied to the Standard. This formula calculates the dependency of a single site on wild forage fish resources, independent of any other farm.

$$\text{FFD FM} = \frac{\% \text{ fish meal in feed from forage fisheries (e FCR)}}{24}$$

$$\text{FFD FO} = \frac{\% \text{ fish meal in feed from forage fisheries (e FCR)}}{5.0 \text{ or } 7.0 \text{ depending on source of fish}}$$

Where:

1. Economic Feed Conversion Ratio (eFCR) is the quantity of feed used to produce the quantity of fish harvested.

$$\text{eFCR} = \frac{\text{Feed, kg or mt}}{\text{Net aquaculture production, kg or mt (wet weight)}}$$

2. The percentage of fishmeal and fish oil excludes fishmeal and fish oil derived from fisheries' by-products.⁴⁷ Only fishmeal and fish oil that is derived directly from a pelagic fishery (e.g., anchoveta) or fisheries where the catch is directly reduced (such as krill or blue whiting) is to be included in the calculation of FFDR. Fishmeal and fish oil derived from fisheries' by-products (e.g., trimmings and offal) should not be included because the FFDR is intended to be a calculation of direct dependency on wild fisheries.

3. The amount of fishmeal in the diet is calculated back to live fish weight by using a yield of 24%.⁴⁸ This is an assumed average yield.
4. The amount of fish oil in the diet is calculated back to live fish weight by using an average yield in accordance with this procedure:
 - a. Group A: Fish oil originating from Peru and Chile and Gulf of Mexico, five percent yield of fish oil.
 - b. Group –B: Fish oil originating from the North Atlantic (Denmark, Norway, Iceland and the UK) seven percent yield of fish oil.
 - c. If fish oil is used from other areas than mentioned above, they should be classified as belonging to group A if documentation shows a yield less than six percent, and into group B if documentation shows a yield more than six percent.
5. FFDR is calculated for the grow-out period in the sea as long as the smolt phase does not go past 200 grams per smolt. If the smolt phase goes past 200g then FFDR is calculated based on all feed used from 200 grams and onwards. If needed, the grow-out site shall collect this data from the smolt supplier.

I.2 Explanation of FishSource scoring

FishSource scores provide a rough guide to how a fishery stacks up against existing definitions and measures of sustainability. The FishSource scores currently only cover five criteria of sustainability, whereas a full assessment—such as that by the Marine Stewardship Council (MSC)—will typically cover more than 60. As such, the FishSource scores are not a firm guide to how a fishery will perform overall. Nonetheless, the FishSource scores do capture the main outcome-based measures of sustainability.

⁴⁷ Trimmings are defined as by-products when fish are processed for human consumption or if whole fish is rejected for use of human consumption because the quality at the time of landing do not meet official regulations with regard to fish suitable for human consumption. Restrictions on what trimmings are allowed for use under the standard are under 4.3.4.

⁴⁸ Reference for FM and FO yields: Péron, G., et al. 2010. Where do fishmeal and fish oil products come from? An analysis of the conversion ratios in the global fishmeal industry. Marine Policy, doi:10.1016/j.marpol.2010.01.027.