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Seafood Watch Aquaculture Standard: 2019 Review

Public Consultation 1: Collation of Comments

This document contains a collection of each comment received during the first Public Comment Period of 2019 (March 4-May 3, 2019). Each comment received is copied directly from the original comment submission.

Broad Topics: Polyculture, Modified Habitats, Scale of an Industry, Cleanerfish, General Comments

BROAD TOPICS AND GENERAL COMMENTS	
<p>General Question 1 – Polyculture <i>How should Seafood Watch incorporate more specific guidelines and measures to evaluate the ecological impacts of polyculture operations? Please consider all potential impact areas, such as nutrient discharge and allocation, escape risk and potential implications of escape, pathogen dynamics, etc.</i></p>	
COMMENT	RESPONSE
<p>In order to consider in one assessment, the overall impact needs to be assessed. If some aspects of production are offsetting impacts in other areas, the net impact can be assessed. In circumstances where potential offsets are suspected but data is not available, precautionary principal must be used. If scoring varies in certain criteria, default should be to the lowest score (i.e. if source of stock comes from both wild fisheries and internal smolt production, score should be based on the worst performer- the wild stock).</p>	<p>We'll consider this option as we work to update our standard with regard to inclusivity for sustainability aspects of production utilizing polyculture systems.</p>
<p>polyculture: It is recommended to contact experts on aquaculture microbial management (example University of</p>	<p>We're currently researching how best to ensure our standards accurately address any costs or benefits associated with polyculture.</p>



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<p>Gent, Belgium), polyculture might have benefits which are currently overlooked</p>	
<p>Impact allocation and system expansion are a major part of Life Cycle Assessments and there may be useful applications here for SFW. There is a lot of information available on this topic, but the bottom line is that there will never be a "perfect" way to do it, so you just have to make the best informed decision you can and stick with it. While it is common in LCA to use economic allocation to divide impacts between co-products, it makes more sense here to use physical allocation based on weight of the final products. In this way, the system is assessed as a whole, and impacts are allocated on final weight regardless of their applicability to one or other co-products. In a system that produces 3 mt of tilapia plus 1 mt of shrimp, the total feed input will be allocated on a 3:1 basis. If (for example) antibiotics are used to treat a disease in the tilapia, the shrimp take one quarter (on the same 3:1 allocation) of the scoring penalty in C4.</p> <p>Obviously this is easier said than done in a SFW assessment, but is perhaps the most robust foundation from which to base a polyculture assessment.</p> <p>Initially, it seems criteria 1,2,3,4,5, maybe 7, 9X can be scored on this basis (i.e. physical allocation on production weight of each species).</p> <p>For the others (6, maybe 7,8X,10X) it probably makes sense to assess them on a species-specific basis.</p> <p>The SFW standard is already complex and polyculture is likely to apply to a small number of assessments. Rather than increasing</p>	<p>We'll consider this option as we work to update our standard with regard to inclusivity for sustainability aspects of production utilizing polyculture systems.</p>



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<p>the complexity of the standard, I suggest adding separate clear guidance doc for analysts on how to assess each criterion.</p>	
<p>General Question 2 – Natural vs. Modified Habitats <i>When it comes to reservoirs and other human-made/modified habitats, how should Seafood Watch be considering the impacts of aquaculture? Should they be treated differently than ‘natural’ habitats? Please consider all potential impact areas, including the physicochemical impacts (e.g. dissolved and particulate waste discharge, physical alteration of habitat by farm siting or presence) and biological impacts (e.g. risk of post-escape competition or pathogen transmission to actively-stocked ‘wild’ fish).</i></p>	
<p>COMMENT</p>	<p>RESPONSE</p>
<p>Negative impacts may still be seen in human-made/modified habitats, and impacts may extend outside of these areas into natural habitat areas. Assessment should consider any negative impacts on broader ecosystem, regardless of what this system is. Impacts should be weighed based on the type of environment they occur in, allowing that a more significant footprint may be acceptable in an already modified environment when a smaller footprint may be significantly impacting a more sensitive area.</p>	<p>We’ll consider this option as we continue to refine the interpretation of this topic.</p>
<p>Depending on the use of the modified habitat, yes. When the reservoir is made as a source for drinking water, farming practices should not have any negative impact on the quality of the water. And, a more extensive/organic practice should only be allowed, to minimize any food safety risks. When the modified habitat is used for powergeneration, water quality is less an issue, however power generation should in no way be endangered, by for example lost nets.</p>	<p>We’ll consider this option as we continue to refine the interpretation of this topic.</p>
<p>Human made habitats become habitats that provide essential ecosystem services. Therefore, SFW should treat impacts in these systems the same as for "natural" systems.</p>	<p>We’ll consider this option as we continue to refine the interpretation of this topic.</p>



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<p>This should only affect the habitat value score for criterion C3. All other environmental risks/impacts outlined in other criteria could be still valid and should be assessed as currently defined (e.g. feed, chemical use, disease, escapes, etc).</p>	<p>We'll consider this option as we continue to refine the interpretation of this topic.</p>
<p>They should be treated as natural habitats from the perspective of the ecosystem services that exist in the reservoir prior/post aquaculture. I.e. once a river is dammed, the ecosystem services of the river are lost, and the ecosystem services of a lake begin. The SFW assessment should assess the impacts to the lake's ecosystem services.</p> <ul style="list-style-type: none">C2 - assess with regard to carrying capacity of a lakeC3 - assess as a natural lake; e.g. for net pens, assess the loss of the functionality of the lake bed due to particulate settlement (probably little impact as there are probably not major ecosystem services of lake beds)C4 - assess as natural lake - i.e. does chemical use affect non-target speciesC5 - normalC6 - consider impacts to fish populations existing prior to (or independent of) aquaculture. I.e. are the ecosystem services of the lake's fish populations (e.g. a fishery) affected by aquaculture escapes. Also consider the potential for impacts beyond the lake on the assumption that non-native cultured species could enter them.C7 - same as C6C8X - normal	<p>We'll consider this option as we continue to refine the interpretation of this topic.</p>



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<p>C9X - consider impacts to wildlife populations existing prior to (or independent of) aquaculture C10X - assess potential for non-natives to impact ecosystem services of the lake and to enter environments outside the manmade lake</p>	
<p>General Question 3 – Cleanerfish <i>How should Seafood Watch consider including an assessment of the sustainability of cleanerfish use in aquaculture? With regards to cleanerfish populations themselves and to the resources they require or potentially impact, in which criteria are the risks of ecological impact most relevant?</i></p>	
COMMENT	RESPONSE
<p>If cleaner fish are to be included in the assessment, all areas of their production should be assessed: source of stock, escapes, feed, chemical use, disease transfer etc. This would be a substantial change to the standard and would require significant additional resources in the assessment procedure, but should be a long-term consideration.</p>	<p>We'll consider this option as we work to update our standard with regard to inclusivity for sustainability aspects of cleanerfish use in aquaculture production.</p>
<p>Cleaner fish should be seen as a farmed species. I do not see any difference in respect to farmed salmon. They have impact on the environment as well, fx. feeding. In Norway there are many pilot projects to ensure fish do not get infected in the first place with sealice, which will make cleaner fish, less of a topic in the future.</p>	<p>We'll consider this option as we work to update our standard with regard to inclusivity for sustainability aspects of cleanerfish use in aquaculture production.</p>
<p>If considered at all, this should be addressed as an exceptional 'X' factor given it's limited applicability.</p>	<p>We'll consider this option as we work to update our standard with regard to inclusivity for sustainability aspects of cleanerfish use in aquaculture production.</p>
<p>Any component or input of the farming cycle that could have an environmental impact should be considered. Given the use of cleaner fish has steadily increased in the last decade and that literature suggests there are sustainability concerns (see</p>	<p>We'll consider this option as we work to update our standard with regard to inclusivity for sustainability aspects of cleanerfish use in aquaculture production.</p>



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<p>below), SeaChoice agrees that cleaner fish should be included in aquaculture assessments, as applicable. Criteria most relevant: Sustainability of wild stock source. Powell et al. (2017) refer to lumpfish stocks as IUCN red list near threatened, some Icelandic and Canadian stocks likely overexploited. Disease transfer and impacts on wild stocks including, but not limited to, wild salmonids. A Norwegian risk assessment found the risk of transmission for VHSV from lumpfish and wrasse to Atlantic salmon or rainbow trout to be "high"(VKM 2017). Transmission of Paramoeba perurans (causing AGD) from wrasse to salmonoids was also found to be "high" risk. Escape impacts on wild populations. A study found wrasse hybridization as the result of farmed escapees (Faust et al. 2017). Conversely, there may be some environmental benefits under the chemicals criterion.</p>	
<p>This will affect a small number of assessments - I think salmon only. While cleanerfish are an alternative to chemical use which is good, there are negative impacts from the fishery for non-hatchery sources, from movements, to animal welfare during production, and a waste of a resource if they are killed at the end of each cycle. Their use might improve the C4 score, but the negative impacts should also be assessed. The fishery should be included in the source of stock (C8X) criterion and scored in the same way as a fishery for ongrowing or broodstock (i.e. if the farmed salmon production is dependent on the use of wild fish from an unsustainable fishery, then it should be penalized in the scoring with a deduction in C8X). Also if there is transwaterbody movements and evidence of a concern regarding the potential moveemnt of pathogens (e.g.</p>	<p>We'll consider this option as we work to update our standard with regard to inclusivity for sustainability aspects of cleanerfish use in aquaculture production.</p>



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Norway) they should be assessed in C10X. As culled cleanerfish are hopefully processed into meal etc along with byproducts, it is not recommended to include the waste of cleanerfish (e.g. FIFO and protein) in C5. With the rapidly increasing development of hatchery sources, this situation should improve, and it is not recommended to change the standard in any way (due to the small number of salmon-only recommendations it affects); instead the guidance documents should cover it.

General Question 3 – Scale

How should the scale of an industry contribute to the overall consideration and assessment of its sustainability? How should Seafood Watch assess the scale of an industry, especially as it relates to similar impacts from a related industry? Should the Seafood Watch Standard incorporate a mechanism to factor in this scale within the scoring?

COMMENT	RESPONSE
<p>An individual assessment should not cover two different species produced in the same area, therefore the impacts should be weighed separately. In areas where a high level of production/impact occurs, efforts should be made to consider overall impact (i.e. nutrient input from all sources, including terrestrial) in order to provide a relative impact of each species/farm/industry.</p>	<p>In some cases individual Seafood Watch assessments are representative of more than one species or production system in a given region, due to similarities of production practices. In such cases, differences in practices are identified and if necessary it is possible for a given assessment to result in several ratings on a per-species or per-production system basis. Regarding relative impact, we've noted this for our further discussions.</p>
<p>The main impact is due to feeding. (potential) impact of the production can be linked to the weight of the feed which was fed. Digestibility per species/per feed can also be determined. Example for scoring an industry: feeding volume and digestibility, facility (open/semi/closed), endemic/indigenous species.</p>	<p>Several of these topics are currently covered by the following criteria: C5 (feed), C6 (escapes). The openness of the production factors into each criterion in the standard, with the exception of C1 (Data).</p>



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<p>Simply assessing impact based on per ton of production provides limited information to your specific audiences (consumers, seafood buyers) who are trying to understand if industries are operating within environmentally sustainable limits. Per ton of production impact assessments allow for relative comparison of farming efficiencies, but a fulsome consideration of cumulative impacts and how cumulative impacts are managed (i.e. within scientifically established limits, or not) is critical to provide an accurate assessment of whether an industry is operating within ecologically sustainable limits. It would be a stretch to expect that SFW would (or could) set standards for what are "sustainable" level impacts for the diversity of species, production systems, and environments that are assessed through the SFW standard. Furthermore, incorporating a mechanism to factor in industry scale within the scoring would be very difficult to do -- a large industry isn't inherently more likely to exceed ecological limits than a small industry -- because the sustainability of scale is so context/management dependent. However, greater focus within the SFW standard on the requirements and effectiveness of the regulatory system in place to manage an industry (and its cumulative impacts) within scientifically established ecological limits would help to address whether industries are operating at scales that are ecologically sustainable.</p>	<p>We'll consider this option as we work to update our standard with regard to improving clarity around the importance of scope and scale in the assessments.</p>
<p>In theory, Factors 2.1/2.2 of the risk based assessment should address the scenario provided (i.e. nitrogen efficiency of two different species and scale of industry). However, when the evidence based assessment is utilized, literature may demonstrate impacts occurring (or not) but this table fails to</p>	<p>We'll consider this option as we work to update our standard with regard to improving clarity around the importance of scope and scale in the assessments.</p>



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address nitrogen efficiencies or management - particularly in relation to cumulative impacts. Integrating factor 2.2 (and potentially 2.1) into the evidence based assessment could help address this issue. In addition, we recommend SFW addresses the following cumulative impact deficiencies of the standard:

1. The scale of assessments for cumulative impacts can sometimes be too broad (e.g. country/region level) so that cumulative impacts within a particular waterbody/fjord/bay, etc are not assessed. Likewise, farm-level assessment can miss broader cumulative industry impacts to which the farm contributes.

2. The cumulative impact of all aquaculture operations within a given area - not just the species being assessed - should be addressed through management/regulatory criteria

3. Effective area-based management can help avoid or mitigate a number of cumulative impacts (e.g. disease, parasites, chemicals, etc). Assessing the presence and effectiveness of an ABM scheme within the criteria would aid in assessing overall cumulative impacts.

There is currently no easy answer for this. As noted in a previous comment, it is important to recognize that the SFW aquaculture standard is taking on an enormous challenge to try to define sustainable production at an industry level (i.e. for regional recommendations). This has not yet been achieved for agriculture; for example, even leading programs like the Sustainable Agriculture Initiative platform (<https://saiplatform.org/>) and their Farm Sustainability Assessment (<http://fsatool.com/>) focus only on farm-level management and do not assess cumulative impacts of multiple

We'll consider this option as we work to update our standard with regard to improving clarity around the importance of scope and scale in the assessments.



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farms. As such, while we might have a general perception that (for example) "chicken is more sustainable than beef", this is probably mostly based on a per ton of production basis, and variations within that (e.g. comparing pasture-raised beef to feedlot beef) are likely to be the same. Even LCAs which take on global impacts, are typically based on a unit of production. The SFW standard makes a valiant effort to assess cumulative impacts in many criteria, and should continue to do so, but with the recognition that it is not easy. It is recommended that the concepts of Limit Reference Points (Bridson et al. 2019, in prep) be used to more-robustly define what the acceptable or "sustainable" impacts are for SFW (and perhaps MBA more broadly) and consider the concepts of "strong" and "weak" sustainability (e.g. "strong" defined by Rossberg et al. 2017 as use of the environment that does not constrain usage choices and capabilities of future generations, verse "weak sustainability" defined by Rossberg et al. as use of the environment that simply can be continued indefinitely in its current form.) (Rossberg et al., 2017. *Quantitative criteria for choosing targets and indicators for sustainable use of ecosystems. Ecological indicators, 72, pp.215-224.*)

Two practical aspects might help:

- 1 - adjust the C1 language to emphasize the "confidence" aspect in order to improve the relevance of the evidence-based assessments.
- 2 - Increase the focus of the scoring of cumulative impacts on evidence (or appropriately justifiable risk), that a cumulative impact is actually occurring (or highly likely to occur). For example there is little (or no) evidence that even intensive



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salmon farming impacts water quality enough to exceed the carrying capacity of receiving waters (i.e. the appropriate Limit Reference Point for sustainable production), yet many salmon assessments have scores of 4 out of 10 based on "contributions to cumulative or regional impacts". As such, in the example in the yellow box here, both assessments would have similar good scores because there is no evidence that either is having a significant (or unsustainable) impact. The efficiency aspect on a per ton of production basis would also probably be captured in a lower C5 score anyway. As such, I think SFW can continue to use per ton of production indicators as needed, but continue to push the boundaries of assessing the cumulative impacts of a food system (even if it is really challenging). Improve the guidance documents where possible to improve the assessments and review. I know these points don't fully address the problem, but they could be developed and used to reduce the problem substantially

GENERAL COMMENTS

COMMENT

There must be recognition in your rankings that U.S. farm siting, construction, operation, habitat conversion, effluent treatment, escape prevention, protection of native and at-risk native species, and sourcing of wild stock are regulated by state and federal agencies.

RESPONSE

The Seafood Watch Ratings database currently contains ratings for more than 20 species farmed in the US. Each of these assessments contain information on construction, operation, habitat conversion, effluent treatment, escape prevention, protection of native and at-risk native species, and sourcing of wild stock pertaining to state and federal regulations, per the requirements of the Seafood Watch Standards.

there are no opportunities to rank concerns as "low" for antibiotic use or escape or certain other production practices, because they are prohibited. Essentially, there is no data for the

We recognize there are limitations to "proving a negative" that can be inherent in some aspects of the assessment. Wherever possible, we rely on a practical application of the precautionary



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<p>United States to prove such practices do not occur because they do not occur.</p>	<p>principle to ensure situations like this are not penalized in an undue fashion. In every assessment, we seek out multiple sources to confirm information regarding production practices and evidence of precautionary and preventive measures can help confirm practices such as those outlined in your comment.</p>
<p>From our perspective the Seafood Watch ranking process does not recognize and account for societal investment, in this instance U.S. private, state and federal government investment, in research, education, extension and regulation. The ranking is a simple broad-brush approach that fails to recognize that the majority of U.S. aquaculture farmers are experienced professionals having undergraduate or advanced graduate degrees in aquaculture, fisheries, or ecological sciences. U.S. farm designs, animal or plant selection, production systems, site selection, chemical availability and terms of use, escape, and other operational practices have been developed and are constantly being assessed and managed to eliminate or reduce environmental or human health risks. We request a review of your rankings in terms of whether they are yielding appropriate sustainability measures, informed consumer guidance or supporting these invaluable investments. Assigning rankings without considering these factors discounts public and private investment of money, time and effort and damages U.S. farmer capacity to compete against imported products that may not be similarly supported.</p>	<p>We would like to highlight that many of the Seafood Watch ratings for US aquaculture meet the ‘green’ or ‘yellow’ rating thanks to many of the investments outlined in this comment.</p> <p>Our monitoring and evaluation program is currently working to understand the impacts of our ratings. We hope to share those outcomes as soon as they’re available.</p>
<p>How do you rate the quality of the data/information you are getting? In the case of BC farmed salmon, some of the information coming from DFO, according to reliable resources, is very questionable. Does someone spend significant time</p>	<p>In the Seafood Watch standard, Criterion 1: Data outlines the requisite quality for the data that contributes to an assessment. In the course of writing a report, both the analyst and reviewer spend significant time reviewing the information that informs</p>



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researching comments regarding the efficacy of officials/scientists providing the data.

the assessment, as well as communicating with a variety of relevant stakeholders and experts to gather a robust dataset. Prior to publication, our reports are also reviewed by relevant stakeholders and experts in order to ensure a holistic representation of the data available for that industry. Seafood Watch is happy to accept new information whenever it becomes available; the most streamlined way to do this is to submit a comment through [our website](#).

More information regarding our process for writing/reviewing reports and submission of comments through peer review can be found [here](#).

Fisheries and aquaculture industries are main contributors to ocean-based plastic marine debris (IUCN 2019) and are considered responsible for around 28% of the global plastic marine debris (Lebreton et al. 2018). Sustainable seafood is defined by Seafood Watch as "seafood from sources, whether fished or farmed, that can maintain or increase production without jeopardizing the structure and function of affected ecosystems". Given the negative affect plastic litter is increasingly having on marine ecosystems, SeaChoice recommends considering the inclusion of plastic pollution, attributed to aquaculture and fisheries, to the respective SFW standards.

Studies have begun to quantify the amount of plastic debris from particular fishing and aquaculture industries, for example:

- Longline aquaculture spacers from Asian oyster farms was found to be one of the most common debris items

This is an issue that we do consider of global importance and should be addressed. We are happy to consider the most effective way to incorporate this information into assessments where relevant. Additionally, the policy team at the Monterey Bay Aquarium works to address this issue; there are also some reports where the issue has been addressed, as well.



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<p>found on Hawaiian beaches and the North Pacific Gyre (Moore 2014)</p> <ul style="list-style-type: none">- Mussel and salmon farming are likely responsible for the majority of floating marine debris in southern Chilean fjords, gulfs and channels (Hinojosa and Thiel 2009).- An estimated 47,000 to 105,000 FADS are let loose every year (Baske et al. 2012) <p>In addition, debris can lead to dispersal of non-native species. One study recorded invasive species' dispersed by marine debris that were attributed to European aquaculture facilities (Rech et al. 2018).</p>	
<p>Industry has begun to react to the problem through best practice plans (UNEP 2015) and corporate reporting of debris. Governments have also begun to act on enforcing penalties for marine debris (Tasmania Government 2017). Such management actions could be incorporated into the criterion.</p>	<p>This is an issue that we do consider of global importance and should be addressed. We are happy to consider the most effective way to incorporate this information into assessments where relevant. Additionally, the policy team at the Monterey Bay Aquarium works to address this issue; there are also some reports where the issue has been addressed, as well.</p>
<p>With regard to assessment simplification, the science, justification and supporting/background information for each criterion and assessment methodology needs to be built into the standard and supporting documents and not into each report. Authors and reviewers spend large amounts of time on every report doing background research for introductory and supporting text and then reviewing and correcting it etc. As such, I suggest SFW develops a robust supporting document that closely accompanies the Standard and the reports, which contains all the relevant scientific support and is updated regularly with current information and references. Then the</p>	<p>We'll consider this option when we're looking into further process improvements, as they would relate to the standard.</p>



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<p>"background and rationale" content that is in the current version of the standard document could be removed (simply refer to the "guidance" document), and each criterion in a SFW reports would also refer to the guidance document for the relevant information. The SFW reports can then become much more concise, dealing only with the specifics of the assessment, and the reader is referred frequently to the guidance doc for the background information. The analyst also has all the background information immediately at hand and (hopefully) writes a better assessment which in turn needs less review time. The document list becomes:</p> <ul style="list-style-type: none">○ 1 SFW Aquaculture Standard - public○ 2 SFW Aquaculture Principles, Background and Rationale document - public○ 3 Report Template - private○ 4 Analyst Guidance and checklist - private○ 5 Reviewer Guidance and checklist – private	
<p>The principles in the preamble have served SFW well for several years, but with an increasing awareness of the challenges of defining sustainable aquaculture, it would be beneficial to consider tweaks to them which can then be used in related criteria to clarify some scoring options. With regard to the MBA/SFW definition of "conservation" - what level of impact is accepted under this definition? There are no available robust definitions of sustainable aquaculture as a whole, or for any of the specific impacts, and there are no limit reference points to define acceptable impacts. This is reflected in several places in the principles with references to any level of impact, or even a contribution (of an undefined scale) as being a reason for</p>	<p>We'll consider updating these changes throughout the standard.</p>



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concern and a score less than 10 out of 10. This is in contrast to the SFW fisheries standard that pragmatically accepts that quite a large impact to a fish stock can be sustainable. Critics of SFW aquaculture assessments have implied aquaculture should have no impact on wild salmon populations while simultaneously supporting (sustainable) fisheries for them.

Suggestion - consider the fisheries principle language; e.g. "Abundance of the main species affected by the fishery should be at, above, or fluctuating around levels that allow for the long-term production of maximum sustainable yield". In this context, consider the concept of limit reference points elaborated in the Certifications and Ratings Collaboration to help refine the scales of impacts and the 0-10 scoring categories in the standard.

In this context it is important to recognize that the SFW aquaculture standard is taking on an enormous challenge to define sustainable production at an industry level (i.e. for regional recommendations). This has not yet been achieved for agriculture; for example, even leading programs like the Sustainable Agriculture Initiative platform (<https://saipatform.org/>) and their Farm Sustainability Assessment (<http://fsatool.com/>) focus only on farm-level management and do not assess cumulative impacts of multiple farms.

Some comments on the principles that support some other comments in different criteria:

- In Principle 2 - suggest changing "exceed, or contribute to exceeding" to "exceed, or substantially contribute to exceeding". This supports other suggestions provided



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below for C2 and concepts in the SFW Fisheries Standard. Further, the principle of "contributing to exceeding" (or substantially contributing) implies that the carrying capacity has been exceeded before we see a problem, but C2 doesn't honor this concept. It seems important that either the local or the waterbody carrying capacity should be exceeded before scoring is penalized (i.e. unless the carrying capacity has been exceeded, the impact is probably sustainable). This language is in the text immediately above the C2 Evidence scoring table, but is not typically taken into account.

- Principle 4 - "low risk of impact" is not sufficiently clear. An impact is okay as long as it is "sustainable". Does this mean at the site-level or cumulatively across lots of sites? It would be sustainable to eliminate non-target organisms in a small area around the farms if the broader environment was unaffected. It is very challenging to robustly define what the concern is here.
- Principle 6 - what are "population-level impacts"? Affecting the genetic profile of wild fish in a population may be okay if it doesn't affect the fitness of the fish or their survival, and affecting their survival is okay if it is sustainable. Affecting a population size is also okay if it is sustainable. Consider what
- Principle 9 - suggestion to consider the fisheries principle: "The fishery avoids catch of any threatened, endangered or protected (ETP) species. If any ETP species are inadvertently caught, the fishery ensures and



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can demonstrate that it has no more than a negligible impact on these populations."	
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Getting Specific: Feedback by Criterion

CRITERION 1: DATA	
GENERAL COMMENTS	
COMMENT	RESPONSE
No proposed amendments to this section, but a note to say that we have tried, where feasible, to align the "information" sub-score requirements in the FishSource Aquaculture Scoring methodology with the data requirements in table 1. If any changes are made to the descriptions of data availability/quality in table 1, please let us know.	No response needed
Other standards, such as the ASC, have established minimum public reporting requirements within their criteria. We strongly urge the SFW to follow similar practice by establishing public disclosure requirements for the data criterion.	All Seafood Watch reports are based on publicly available information, or private information with permission to publish in the report. Where there is minimal publicly available information, this results in a lower score for the Data Criterion.
SeaChoice agrees with the intention that the data criterion should "reward the concept of PUBLICLY available high quality information" [emphasis added]. Transparency and corporate disclosure are becoming increasingly integral to healthy markets, including the seafood supply chain. However, government regulation of disclosure requirements is ultimately necessary in order to force greater levels of transparency (GRI 2016). Open disclosure can aid in building public trust and	All Seafood Watch reports are based on publicly available information, or private information with permission to publish in the report. Where there is minimal publicly available information, this results in a lower score for the Data Criterion.



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<p>potentially, social licence to operate. Equally, open disclosure can hold industry to account and thereby enables changes in practices to be identified and implemented.</p> <p>Other standards, such as the ASC, have established minimum public reporting requirements within their criteria. We strongly urge the SFW to follow similar practice by establishing public disclosure requirements for the data criterion.</p> <p>SeaChoice recommends the inclusion of 'publicly available' in the Table 1 descriptors for 'High' (score 10) and Moderately-high (score 7.5). This would reward best practices in open disclosure, which in turn, provides increased confidence in data provided for the subsequent criteria and will encourage less transparent producers and regulators to move towards public disclosure.</p>	
<p>There is also an inherently higher risk that a SFW ranking could be unknowingly incorrect when based on non-public data (vs public) as the data are typically unverifiable. Therefore, we also recommend where non-public data is used that it be scored as 2.5 or 5 (depending on the quality) which is aligned with Table 1 descriptors "data may not be verified/data probably not verified". This would also ensure that unverifiable data is assessed by risk-based assessments within the subsequent criteria as needed.</p>	<p>All Seafood Watch reports are based on publicly available information, or private information with permission to publish in the report. Where there is minimal publicly available information, this results in a lower score for the Data Criterion.</p>
<p>No assessment with a 'red' data score should result in a 'buy' recommendation. Where data availability is very low (score 2.5 or lower), we recommend this red data score should trigger an overall red ranking recommendation. As data informs the rest of the assessment, very low data results in many 'unknowns' by default (e.g. chemical use, disease impacts, escapes, etc).</p>	<p>Currently, if any criteria are ranked "red", an assessment cannot be considered overall "green" regardless of the associated score. The suggested change would result in an additional scoring rule (outlined on page2-3 of the Seafood Watch Standard).</p>



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Therefore, the risk of undetected impacts is high where the data is low/very low.	
Improve the guidance in the standard (and the training of SFW assessors and reviewers) to increase the focus on the "confidence" aspect written in the first sentence of each scoring box in C1, and use the bullets as the "examples" they are labelled as and intended to be. This will reduce the problems occurring when an assessor is forced to use the risk-based assessment even though there is high confidence that there is no significant impact. For example, the literature on the species and examples from other regions indicate there is a very unlikely to be a significant effluent impact, even if the farm/industry being assessed doesn't conduct direct water quality monitoring.	<p>A data score of 5 or below will result in using the risk-based assessment for those criteria that contain this option. A data score above 7.5 will result in utilizing the evidence-based assessment where this option is available. When a score is between 5 and 7.5, either option may be used. This is assessed on a case-by-case basis and goes through multiple rounds of review, both internally and externally, to ensure consistency in interpretation.</p> <p>We're always looking for ways to improve training; we'll ensure this is noted.</p>
<p>Criterion 1 Question 1 –Removing “NA” from the data scoring table <i>Would there be a benefit to requiring each data subscore to have a numerical score (eliminating the option for ‘n/a’)? Or would this increase the risk of artificially inflating the score for data availability in impact areas that can be considered ‘not applicable’ to production, like feed for molluscan industries?</i></p>	
COMMENT	RESPONSE
Support n/a remaining in the scoring table only for specific instances of production that does not use feed, for example. The vast majority of species assessed should have data available for all categories. That said, some of the details under the data description may be treated as n/a, and this should not affect the overall score for that category (e.g. inclusion of area-based or cumulative impact measures- if farms are adequately remote, this data is irrelevant). / Very few examples other than non-fed production should qualify for an n/a under	We'll consider this option with regards to keeping the 'n/a' option in this criterion.



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<p>this criterion, but do support keeping the n/a option for shellfish/seaweed etc.</p>	
<p>We recommend the elimination of "N/A" and replacing it with minimum score to avoid misinterpretation of use of n/a. This would not create an artificially inflated score. Take the example of mollusk industries, which use no feed. They should receive the highest possible score for this exact reason as the ultimate intention of the rating system is to signal the "sustainability" of the product. The scoring system is a better representation of the actual production system.</p>	<p>We'll consider this option with regards to keeping the 'n/a' option in this criterion.</p>
<p>Do not remove "n/a" as a scoring option in Table 2. It is a valid 'score' in many circumstances and if you remove it, you risk either penalizing or artificially inflating the final score for that industry. (i.e. bivalve culture where there is no feed, then data score for feed should be n/a not '0' or '10'.)</p>	<p>We'll consider this option with regards to keeping the 'n/a' option in this criterion.</p>
<p>SeaChoice recommends scoring based on the relevance of the production species/method. Therefore, it does not make sense to provide a score for categories that are not relevant. Provided the assessor includes reasons in the assessment for assigning the "n/a" option, sufficient transparency is maintained.</p>	<p>We'll consider this option with regards to keeping the 'n/a' option in this criterion.</p>
<p>Fine to remove it, but perhaps also remove the "energy" row until it becomes part of the assessment. The "molluscan feed" examples are few and far between, they are somewhat justified for getting a high data score because you do have confidence in the feed situation, and it is unlikely to change any overall scores/recommendations. Always simplify wherever possible - so yes, remove the n/a. I have added other comments that C1 should focus more on the "confidence" aspect of understanding the assessed production system (rather than the bulleted</p>	<p>We'll consider this option with regards to keeping the 'n/a' option in this criterion.</p>



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examples in the scoring cells) and this approach is consistent - i.e. you have high confidence that you understand the feed situation of a mollusc assessment so it justifies a high data score.	
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CRITERION 2: EFFLUENT	
GENERAL COMMENTS	
COMMENT	RESPONSE
More robust description of area of assessment should be included- when is 30m used, when is AZE used? Suggest 30m default if site-specific AZE or other regulatory parameters are not available.	An AZE of 30m is considered the initial distance when other information is unavailable, as outlined on page 12 of the standard. Several examples of the 30m AZE are outlined on page 12-13 of the Seafood Watch Standard. Due to the varying scope of our assessments, a farm-level AZE may not always be appropriate, and this is assessed on a case-by-case basis. This definition and guidance could be expanded.
The preamble of this criterion notes that well sited farms may have lower effluent impact than poorly sited farms producing less volume of effluent, there is no metric to score the receiving environment.	The Effluent and Habitat criteria address this.
Seems like a robust criterion	No response needed
Our recommendation is to keep two options but maintain a system that limits the rating that can be achieved for risk based system. However, limiting risk based systems to achieving a maximum of "yellow rating" could have the unintended consequence of "penalizing" small scale producers as they are the most likely to lack readily available data.	We can consider this option with regards to how it will affect the scoring rules.



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<p>As previously submitted, SeaChoice recommends establishing standardized scores for management content and effectiveness (Factor 2.2) across a variety of countries/regions. This would allow for consistency across reports.</p>	<p>Wherever possible, the management and effectiveness previously researched for one country can be utilized across several farmed assessments for that country. In many cases, there are both management content and effectiveness that differ among species and production systems, which can be addressed in each individual report. Noted; we can consider more ways to ensure consistency among reports of the same country with regards to management and effectiveness for Factor 2.2.</p>
<p>For Factor 2.2a Content of effluent management measures, we recommend including qualifying language that defines minimum standard for effluent regulation (e.g. BOD, dissolved oxygen, redox, sulphides, nitrogen and/or phosphorus, etc monitoring and reporting).</p>	<p>We can consider incorporating more clarifying language and guidance into this criterion.</p>
<p>Suggest that the following concept in the background/rationale be reconsidered: " This criterion applies to effluent effects outside the farm boundary or beyond an allowable zone of effect. Effluent impacts within the farm's boundary, immediate area or allowable zone of effect are addressed in Criterion 3 – Habitat." Follow on comments under C3, but in short I suggest that C2 should focus entirely on the impacts of effluent (soluble and insoluble) both within and beyond the AZE. This would allow for better clarity that C3 is intended to assess the impact of farm(s) siting on habitat functionality.</p>	<p>We can consider this option as a modification to the current application for both Criterion 2: Effluent and Criterion 3: Habitat.</p>
<p>Change the emphasis in C1 to the "confidence" aspect to allow more flexible use of the evidence-based assessment here in C2. Then also change the language in the C2 Evidence assessment from the exclusivity of "data" to "data and/or other relevant information" (or something like that) to allow greater flexibility</p>	<p>We can consider incorporating more clarifying language and guidance into these criteria.</p>



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when there might not be specific water quality data (e.g. actual measurements of total nitrogen or chlorophyll etc) available. The "cause or contribute to" and "contributions to cumulative local or regional impacts" language in C2 Evidence assessment is challenging to interpret and would benefit from greater clarity or guidance. Every farm in theory contributes to regional impacts. My initial suggestion is to clarify that cumulative or regional impacts must be apparent (i.e. evidence of) for these scores to be applied, and that aquaculture is a "substantial contributor" to those impacts. This language is already partly in the text immediately above the C2-Evidence scoring table, but it is not typically taken into account in an assessment. The combination of factor 2.2a and 2.2b in the risk assessment often leads to very low management scores. This is often perhaps correct, but difficult to justify robustly (particularly when management is limited in response to a low perceived risk of impact). No specific suggestions at present, just flagging it.

Lastly, it is often the case that the C2 risk assessment produces results around a score of 4 without any real concern or without even limited data/evidence that there is actually an impact. It is important to note that this is often consistent with the same assessment being done with the evidence-based assessment and supports the need for greater scores in the absence of demonstrable impacts from the industry (and greater flexibility to use the evidence-based assessment to recognize this). Overall, reconsider the level of concern in this criterion (perhaps using the concept of limit reference points plus



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examples from well-studied industries) and reconsider the scoring thresholds.	
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CRITERION 3: HABITAT	
GENERAL COMMENTS	
COMMENT	RESPONSE
Assume 15 year timeline will be updated to 20 year to reflect time since RAMSAR?	Yes, we are considering an update to the timeline with regard to RAMSAR.
Criterion C2 should assess the impact of effluent (soluble and insoluble) on the farm site and beyond (if applicable). While C3 should focus on assessing the impact to habitat from the physical siting of farm(s) and cumulative impact to habitat functionality.	We can consider this option as a modification to the current application for both Criterion 2: Effluent and Criterion 3: Habitat.
In addition to our comment regarding the scope of habitat (see below), SeaChoice recommends the habitat criterion incorporates an assessment for identifying whether a farm/industry (or parts there of) are operating in High Conservation Value Areas (HCVA) and/or protected areas. If so, scoring should be reflective to demonstrate concern with the practice of aquaculture operations within such areas.	Wherever relevant, this assessment does occur in each report. This is considered in Factor 3.1 (habitat value) and would also be assessed with regards to the content and enforcement of any management related to the HCVA or protected area where relevant.
Regarding boundaries, for net pen farms, consider using the larger licensed area as the boundary; it may be more practical than the current emphasis on the AZE. This would make it easier to separate C2 and C3 for net pen assessments (i.e. C2 becomes water column impacts and C3 is just benthic). It would also be more adaptable to a greater variety of benthic impact regulations or management measures (and their monitoring data) that typically allow a substantial impact within the AZE,	We can consider this option with regard to default assumptions about the boundaries for net pen farms.



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<p>and a lesser impact beyond it in a transition area to the edge of the licensed area where there should typically be no detectable impact.</p>	
<p>Appendices: Habitat examples Add some guidance on the use of sulphides, redox or other common parameters in benthic assessments.</p>	<p>We can consider incorporating more clarifying language and guidance into the appendices for this criterion.</p>
<p>Criterion 3 Question 1 – Definition/Scope of Habitat Impact <i>When considering the habitat effects of a farm, what are the bounds/definition for the “habitat”? Should Seafood Watch consider the impact to the area directly within the perimeter of a/the farm, or to the broader habitat in which the farm(s) are sited?</i></p>	
<p>COMMENT</p>	<p>RESPONSE</p>
<p>Modeling of site-specific zone of effect should be encouraged. Proper modeling should identify habitat effects outside of 30m boundaries. In the absence of models, 30m is a good starting point, but any more distant effect should also be considered. Modeling could be considered as one aspect of "comprehensive" habitat management measures.</p>	<p>Our Standard currently considers effluent (C2) effects to be >30 m from the farm boundary, while habitat effects are typically considered within 30m of the farm boundary (or other specified AZE). We are considering expanding the scope of habitat impacts to encompass a broader area.</p>
<p>Should consider broader habitat.</p>	<p>No response needed</p>
<p>SeaChoice suggests both the immediate (within the farm boundary or an AZE) and the regionally impacted habitat should be assessed. For the latter, cumulative impacts can be more suitably assessed - currently a deficiency of the criteria. We recommend the cumulative habitat impact of all aquaculture operations within a given area/zone - not just the species being assessed - should be addressed through management/regulatory criteria.</p>	<p>We are considering the addition of a Management criterion, as well as expanding the scope of our definition of “impacted habitat.”</p>
<p>Both this criterion and C2 (Effluent) have long been challenged by the fluid definition of "scale" used in the SFW methodology. Without a clearly defined unit of assessment, it is difficult to accurately assess impact because it is so tightly tied to the scale</p>	<p>We are considering incorporating scoring elements by which to assess the scale of an impact in an assessment. We are also considering better defining the unit of assessment.</p>



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of the industry. One very poorly sited farm is unlikely to impact the functionality of an ecosystem (so a farm-level assessment is likely to score well on this criterion no matter what). On the other hand, defining 'habitat' to within the farm boundary or an AZE fails to account for the cumulative impacts of multiple farms in one area.

The current delineation of within the boundary of the farm vs beyond an AZE was largely driven by a debate during the last Standard Revision process about the impact of soluble and insoluble effluent from net pens. Although the resulting differentiation between C2 and C3 (within vs beyond the AZE) is valid, it definitely reduces the standards ability to effectively assess the physical impact of siting farms on habitat functionality in C3.

For C3 we would suggest that it is critical for this criterion to consider the broader habitat in which the farm(s) are sited. Criterion C2 should assess the impact of effluent (soluble and insoluble) on the farm site and beyond (if applicable). While C3 should focus on assessing the impact to habitat from the physical siting of farm(s) and cumulative impact to habitat functionality. SeaChoice suggests both the immediate (within the farm boundary or an AZE) and the regionally impacted habitat should be assessed. For the latter, cumulative impacts can be more suitably assessed - currently a deficiency of the criteria. We recommend the cumulative habitat impact of all aquaculture operations within a given area/zone - not just the species being assessed - should be addressed through management/regulatory criteria.



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The original intent of this criterion was to assess the habitat type directly occupied or impacted within the boundary or immediate area of the "typical" farm, and the direct impact on it (Factor 3.1). The second aspect was to consider the wider habitat impact of the size of the farm or particularly the more complex impacts of multiple farms across one habitat type (i.e. fragmentation, cumulative loss etc), and given the enormous complexity of these issues, this is assessed by the apparent effectiveness of the management system in place in terms of acknowledging and addressing these concerns.

In reality we still know very little about the cumulative impacts of multiple pond farms in a mangrove area, or of multiple net pen sites on the benthic habitats of a fjord, or of multiple vegetable fields/farms in Salinas valley etc. Aquaculture impacts are almost always integrated with a variety of other habitat uses and users.

If there is evidence of broader habitat impacts (e.g. cumulative habitat loss, fragmentation, loss of buffers or corridors or other ecosystem services, demonstrable impacts to key species etc etc), then the management is not effective and C3.2 should get a low score in response. In keeping with comments here on C2, perhaps it is good to clarify that there should be evidence of an impact, or a sufficiently high risk of an impact, to penalize the scoring in C3.2.

Given the ongoing pressure on habitats for development, it is likely that a small number of farms that do not affect the functionality of a larger habitat area are likely to be present as such due to strong management rather than a lack of interest in expansion, however the management effectiveness must still

The idea to add an "evidence-based" habitat impact factor for 3.2, where cumulative or broader fragmentation impacts (or lack thereof) are known, is interesting and one we will be considering.



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<p>be scored for its effectiveness in preventing expansion beyond carrying capacity in the same way that the management of a sustainable fish stock must ensure that fishing does not increase if there is suddenly a greater commercial desire for the product and incentive increase the catch.</p> <p>One idea to think about - consider splitting C3.2 into an evidence-based assessment (i.e. evidence of fragmentation impacts, cumulative loss etc), and a risk-based assessment using something like the current management content and enforcement?</p>	
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CRITERION 4: CHEMICAL USE	
GENERAL COMMENTS	
COMMENT	RESPONSE
<p>Scope of the standard review clearly states that human health impacts are not covered by the SFW assessments, which is in contrast to the statement the impact of chemical use may have effects on human health. The stated concern around chemical use is the impact on non-target organisms, development of resistance, etc. but all scoring is based on total number of treatments. There should be allowance under this criterion to use more treatments if evidence shows that non-target organisms are not affected and resistance is not developing. Further, some differentiation based on the chemical used (i.e. florfenicol is used at a much lower dose and absorbed at a significantly higher rate than oxytetracycline) should be built into the scoring table. The preamble specifies that H2O2 do not present the same concern, but it is unclear in the scoring table how H2O2 treatments should be scored- suggest that</p>	<p>Noted; we will consider these suggestions as we work to make the scoring and justification within the Chemicals criterion clearer. We are considering the addition of a guidance table to better enable risk-based impact assessment for different chemical products in different systems. In addition, if evidence shows a lack of impact despite multiple treatments, that evidence is factored into the final scoring and justification in the current application of the Standard.</p>



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<p>treatments do not affect scores as breakdown components are benign.</p>	
<p>a criteria that focused on a reduction in the use of FDA approved antibiotics (medicines whose effectiveness and environmental safety is assessed to a standard of diligence that is the same for human use) increases the likelihood of sick fish entering the human food marketplace, reduces the tools needed to improve aquatic animal welfare, and encourages the illegal, unreported use therapeutants and chemicals that may have greater adverse environmental impacts. We recommend eliminating quantitative reduction requirements and, instead, focusing on the judicious use of antibiotics reviewed and approved by a governmental agency. As an example, use of antibiotics in the United States can only occur through a Veterinarian Feed Directive or state licensed veterinarian prescription.</p>	<p>The number of treatments is an important consideration for Seafood Watch when assessing the risk of environmental impact(s) that may result from therapeutant use, whether those treatments were legally approved or not.</p>
<p>Prevention of the use of chemicals should have the preference. Important are appropriate training of staff handling chemicals, recognizing early signs of disease, animal welfare, etc. and evidence of training. Promote the use of vaccines when available and proven to be effective o the targeted species.</p>	<p>The primary concern for Seafood Watch is the environmental impact(s) that may result from therapeutant use, and the factors listed are not directly related to the scoring of this criterion (disease management would fall under the scope of Criterion 7 – Disease, for example).</p>
<p>Reconsider some of the scoring definitions in light of current thinking on targets and Limit Reference Points. For example currently in a score of 6 is: "Evidence of only minor impacts on non-target species within the allowable zone of effect (i.e. no population-level impacts). With consideration of limit reference points and sustainable impacts, this appears to be a very minor impact that justifies a higher score than 6.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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Criterion 4 Question 1 – Risk- and Evidence -Based Assessments

Should there be an option for a risk-based and an evidence-based assessment method for this criterion? Which factors, metrics, and outside research or literature sources should be included?

COMMENT	RESPONSE
<p>Risk based framework is good in theory, but "impacts" needs to be clearly defined. This option will reward farms for using the most appropriate and effective treatments (as stated in the previous comment)- e.g. antibiotics that are better absorbed compared to those that are lost to the environment, rather than simply penalizing the number. Environmental monitoring (sea bed sampling for residues, for example) and other robust data needed to ensure that environmental impacts are not occurring.</p>	<p>We will consider this in reviewing the scoring structure for this criterion.</p>
<p>SeaChoice supports a risk-based assessment option given that chemical/antibiotic usage data are largely unavailable for many producer countries (particularly for shrimp). The lack of data is the reason why we believe including 'PUBLICLY available' data in the descriptor requirements for Criterion 1 (Data) would help to leverage greater transparency.</p>	<p>. We will consider this in reviewing the scoring structure for this criterion.</p>
<p>Factors that should be included are:</p> <ul style="list-style-type: none">- Whether producing countries have chemical regulations- Whether these regulations are stringent, effective and are monitored and enforced- Whether chemical/antibiotic use is required to be reported (i.e. date of use, type and amount)- Whether illegal use has occurred- Whether resistance (antibiotic, parasiticide, bacteria, etc) has been documented	<p>We will consider this in reviewing the scoring structure for this criterion. Currently, all of the listed factors are, if data are publicly available, considered in the scoring for this criterion.</p>



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<ul style="list-style-type: none">- Whether WHO critically or highly important antibiotic use is used- Whether used as prophylactic or for growth- Whether used with veterinarian oversight and prescription only <p>Given the limited data available, evidence can be obtained from US FDA import tests (or equivalent importing country regimes) and scientific regional farm studies.</p>	
<p>It seems easy to split the content into the current table into two separate assessments, but I'm not sure what would be gained. Maybe additional aspects could be added to each. This is another area where there is an almost complete lack of widely accepted reference points for sustainable or acceptable impacts. The terminology in this criterion is challenging. "Evidence of no impacts" for a score of 8 seems to deserve a score of 10. "No population-level impacts" in a score of 6 is also too vague. What is a "population-level" impact, and surely some substantial population-level impacts to non-target species can still be considered fully sustainable in a "fisheries - MSY" target-reference-point concept. By all means split the criterion into two. Consider adding indirect evidence of impacts into the evidence-based assessment as suggested for C2 on the basis of a suitable level of confidence in the likely impacts, even in the absence of direct "data" from the assessed sites (i.e. as we do now for the use of hydrogen peroxide - we have no data about specific impacts, but we have sufficient confidence that it doesn't cause a major problem.</p>	<p>We will consider this in reviewing the scoring structure for this criterion.</p>
Criterion 4 Question 2 – Additional Factors for Chemical Use Scoring	



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In the table below, are there any key factors of chemical use or the ecological impact (or lack thereof) of chemical use that are currently missing? Are there any factors that can be expanded upon?

COMMENT	RESPONSE
<p>Current production may fall into a number of categories, and current scoring does not accurately reflect the decisions made around which chemicals to use and what times. Clarification around treatment type should also be made- for example, does one antibiotic treatment and one parasiticide treatment in a cycle constitute "multiple occasions"? With other appropriate controls in place, this situation is extremely unlikely to result in development of resistance or other environmental concerns. Also, as mentioned above, use of H2O2 should be clarified to not penalizing the score. In instances where development of resistance to H2O2 has been found, this should be accounted for in the evidence based scoring, rather than in total treatment number.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>Any illegal use should result in a critical score. Otherwise there is the possibility that aquaculture operations with illegal activities are able to receive an overall 'buy' recommendation. Include ineffective/no regulations as a score of '0'.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>As noted in the previous comments, terminology is a challenge here. Use the work from the Certifications and Ratings project to define your own Targets and Limit Reference Points and use them to build a 0-10 scale that is more robustly justified with your concept of sustainability and clearer for the analysts using it. It is likely that by doing so, some of the scoring in the current table will change substantially.</p>	<p>We will consider this in reviewing the scoring for this criterion. Seafood Watch does not wholesale “accept any impact within an AZE”, the degree of impact and its scope is assessed and scored.</p>



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In score 8, "Evidence of no impacts on non-target organisms" should score 10.

In score 8, provide guidance or clarify if treatment frequency is per type of chemical, or all chemicals combined.

in score 6 is: "Evidence of only minor impacts on non-target species within the allowable zone of effect (i.e. no population-level impacts)" appears to be a very minor impact within an AZE, and justifies a higher score than 6.

In score 0, replace "chemicals" in second bullet with "antibiotics".

In score 0, "Negative impacts of chemical use seen on non-target organisms beyond an allowable zone of effect" seems like a minor impact. It is common to manage benthic impacts such that there can be quite substantial impacts at the edge/boundary of the AZE that reduce through a transition zone to demonstrably "zero impact" some distance from the AZE. Reconsider the scoring or the definition here?

As a general concept, does SFW accept any impact within an AZE?

Resistance is challenging to assess in practice - presence of resistant bacteria, some loss of efficacy in lab MIC tests, or failed treatments are all "evidence of resistance". Perhaps consider the concept of "maintaining effectiveness" as a way to simplify and clarify what we mean by resistance (and avoid the term).

CRITERION 5: FEED

GENERAL COMMENTS



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COMMENT	RESPONSE
Any substantial changes to the scoring criterion could have significant effect on the ASC benchmark. This should be a consideration during the review process.	Seafood Watch is aware that any changes to its Standard may result in changes to the eco-certification benchmarks.
We recommend that the nutrition-centric direction proposed by the authors [Turchini et al. 2019] be adopted in your rankings to recognize the on-farm utilization of feed formulations that strive to achieve appropriate nutrition rather than focusing on fish meal or fish oil as an indicator for sustainability. Farms should be recognized for utilizing compounded feeds appropriate for their aquatic animal and production system.	We will consider this in reviewing the scoring for this criterion.
Because of its urgency and widespread impact, we recommend that MBAYAQ weight feed sustainability and within that FM/FO reduction, more highly.	We will consider this in reviewing the scoring for this criterion.
We propose that assessments of 'green', 'yellow' and 'red' occur by aquacultured species since different species have differing needs for FM/FO in aquaculture. A feed's sustainability makes most sense in relation to industry averages for inclusion by species. <ul data-bbox="233 1079 1031 1382" style="list-style-type: none">○ If FM/FO inclusion rates are above average FM/FO inclusion rates, then the feed should be rated red, and the aquacultured species could then not be higher than yellow.○ If FM/FO inclusion rates are within 7% above the industry average, then the feed would be rated yellow.○ If FM/FO inclusion rates are less than the industry average 7%, then the feed would be rated green.	We will consider this in reviewing the scoring for this criterion.



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<p>Since forage fish are at the base of the food chain, and the health of this fishery affects the health of many sectors of the ocean, we recommend that if feed sustainability in terms of FM/FO usage for a company is red, then we propose that aquacultured species produced with red feed cannot be green.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>We also recommend that the goalposts for 'green', 'yellow' and 'red' be reduced by 7% each year to encourage greater FM/FO reductions in time to avert a 'business as usual' deadline of 2037. If this is done, by 2037 when the fishery is expected to collapse, FM/FO inclusion is reduced by 74%. A 7% reduction each year may restore current levels of forage fish to sustain other species in the environment and also to avoid decline (See Appendix B). We recommend notifying the aquafeed industry, that sustainability ratings will change annually on a schedule so that they can include sustainable ingredients in feed in their planning processes, and implement these as goals for R&D, supply chain and production.</p>	<p>We will consider this in reviewing the scoring for this criterion..</p>
<p>all feed criteria should be checked at feed manufacturers.</p>	<p>Seafood Watch attempts to verify all data utilized in an assessment and frequently communicates with feed manufacturers in the assessment process.</p>
<p>We recommend and suggest that krill substitution and replacement should also follow a schedule similar to the above. Staving off overfishing of forage fish will go a long way towards addressing overfishing since an estimated 50%+ of all wild fish mortality is the result of aquafeed production http://tinyurl.com/yxqrxbsl</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>This is another enormously complex subject. Expert opinion is highly polarized on many aspects and debates are often circular - almost always returning to a point of "we just don't know".</p>	<p>No response needed</p>



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<p>There are no broadly accepted reference points with which to build a robustly justified criterion that would not be vulnerable to criticism. As such, the current criterion (although complex to assess) is an impressive grasp on many complex aspects, addressed in a largely logical structure. A general comment would be to review any ongoing efforts (e.g. ASC feed dialogue, LCA studies, and others) to keep up to date with the latest efforts of others to grapple with the same gnarly problems.</p>	
<p>Criterion 5 Question 1 – Assessing Alternative Feeds <i>How should Seafood Watch incorporate alternative feed ingredients into the feed assessment, and by which metrics should they be assessed? Please consider all potential impact areas contained in the current criterion - sustainability of the source, protein efficiency, and feed footprint – and other impact areas that may be relevant</i></p>	
<p>COMMENT</p>	<p>RESPONSE</p>
<p>There is tremendous effort in reducing the inclusion of FM/FO in the feed, because it is expensive. Sourcing protein should be mainly responsible and/or via alternative means, algae/insects</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>yes, recognition of "alternative" feed ingredients</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>Use similar scoring system to fisheries criteria</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>It will be difficult to compare feeds against one another unless feed manufacturers are willing to make formulations publicly available.</p>	<p>Seafood Watch has found that feed manufacturers are indeed willing to make formulations publicly available, provided that the data is anonymized and/or aggregated.</p>
<p>For simplicity, all alternate ingredients should be scored in the same way as other non-marine ingredients based on their feed footprint. To the extent that they have specific beneficial functions or are more effective as substitutes for traditional marine ingredients, those benefits can be recognized via their impact on the FFER score, which they indirectly contribute to.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>As a first order principle, use of alternative ingredients should contribute to a reduction in the fish-in, fish-out (FIFO) ratio of</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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<p>the final farmed species. Ideally, the ingredient should help to achieve a net positive fish production system. The Aquaculture Standard should reduce the target FIFO ratio to 1:1 for all species and aim for a lower FIFO in subsequent standard revisions.</p>	
<p>Currently, the Seafood Watch standard considers the feed footprint for 3 sources of feed ingredients: aquatic, crop and land animals. The emergence of alternative feed ingredients offers new sources of nutrient dense ingredients often produced with lower environmental impact. The metrics to assess these ingredients should be similar to the metrics used to assess their land-based analogues.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>Currently, Seafood Watch assesses crop-based ingredients on a land use metric with assurances to protect high conservation value areas. If Seafood Watch adheres to this metric, then this should be applied to alternative ingredients. For microalgae and single cell proteins produced through fermentation, the land use metric would be applied to the production of feedstock (e.g., sugar). However, there are new sources of feedstock for alternative ingredients that are not dependent on land use, for example, food waste for insects and natural gas or waste gas as feedstock for some microorganisms.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>This prompts the question as to whether CO2e impact should be added as a metric. Assessing CO2e impact requires a great deal of scientific rigor and investment by Seafood Watch. An initial step to address the environmental impacts beyond land use could be to require transparency about the feedstock and source of energy used to produce these new ingredients. These</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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<p>two inputs provide important insight into the carbon, water and land use impacts of producing alternative ingredients.</p> <ul style="list-style-type: none">○ Feedstock – the feedstock source should be stated, region of origin, and if it is a crop, whether it is from a genetically engineered crop○ Energy use – state the type of energy used in the ingredient production facilities (e.g. natural gas, grid electricity, renewable energy, etc.)	
<p>All these ingredients (insect meals, single-cell, algal etc) are directly (or potentially) suitable for human consumption and are consumed at their current societal limits (i.e. we choose to eat them or not to eat them based on variables other than their availability). This is exactly the same as peruvian anchovy or many other "forage" fish. If a sustainable excess can be produced/harvested (i.e in excess of current direct human consumption requirements) then it makes sense to use them efficiently to produce fish. However, the definition of "sustainable", particularly for forage fish, is highly controversial from an ecosystem perspective. Arguably therefore, insect meals or fermented/industrial protein meals or oils is more "sustainable" (accepting that they also require feed inputs and substrates etc).</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>They should not be scored in Factor 5.1. If they are demonstrably edible, then they can be scored in Factor 5.2, otherwise consider as we already do for non-edible crops/land animals. They could in theory be scored in Factor 5.3 if an approximate crop input factor (or range of factors for different ingredients) could be calculated for the typical substrates used to culture the ingredients.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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Criterion 5 Question 2 - Role of the Sustainability of the Source of Wild Fish	
<i>Should sustainability in marine ingredients play a larger role in the Seafood Watch standard? Should the sustainability in sourcing outweigh the overall use of FM/FO?</i>	
COMMENT	RESPONSE
Yes, sustainability of products will vary depending on the source of the feed.	We will consider this in reviewing the scoring for this criterion.
yes, sustainability of marine ingredients should play a larger role in the weighting of the overall 5.1 score. Yes, the sustainability in sourcing should outweigh the overall use of FM/FO (i.e. even if you are using a small amount of fish from a critically endangered fishery that should result in a red score); however, if there is evidence of improvement efforts in that fishery then that should be credited. As such, we suggest that FIPs be included in the Fishery Sustainability table as follows: > FIP with progress rating D-E gets scored -8; > FIP with progress rating A-C gets scored -6	We will consider this in reviewing the scoring for this criterion.
The sustainability in marine ingredients (i.e. source fishery/ies) should play a larger role in so that the weighting reflects appropriately across colour rankings (e.g. in the example provided a score of -10 should result in a red).	We will consider this in reviewing the scoring for this criterion.
“The present methodology for calculating FFER (based on the higher of the FM or FO score) is illogical in that it fails to accord any value to a reduction in usage of one marine-derived ingredient if the other functions as the determining factor. The original assumption behind this was that they are co-products, but in reality FM and FO each participate in independent markets and are driven by distinct formulation considerations. The current methodology has the unanticipated effect of potentially deterring a decision to reduce or substitute one	We will consider this in reviewing the scoring for this criterion.



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<p>ingredient if the other is the determining factor and fails recognize that a real reduction in use of marine-derived ingredients has in fact occurred. A revised formula based on the 'weighted average' of FM + FO usage in proportion to the natural occurrence in the raw material from which they were derived would correct this problem. I can share an example formula, if requested.”</p>	
<p>While the sustainability of the fishery used to create FM and FO could be factored into the overall use of FM/FO, the overall picture is rather grim. Froehlich et al. (2018) describes that an estimated 63% of all wild-caught forage fish are used specifically for aquaculture feed and account for upwards of one trillion fish taken from the ocean annually. The intense extraction of fish from the ocean, for both consumptive and non-consumptive use, will likely lead to a shortage in supply of wild-caught fish by as early as 2037 and result in catastrophic social, economic and environmental impacts.</p>	<p>Froehlich et al. (2018) state that a “business-as-usual” projection scenario will result in forage fisheries being fished at their maximum sustainable limits in 2037, not a shortage in supply.</p>
<p>Given the dire state of the ocean and a rapidly declining supply of fisheries and the criticality of forage fish for the ecosystem, it is our opinion that use of any marine ingredients from forage fish or krill should be considered unsustainable and be implemented as we suggest in F3’s Response on MBAYAQ’s Editable .pdf, page 51/52, Criterion 5, Question 1. In our opinion, the sustainability of sourcing should not outweigh the overall use of FM/FO, and that if waste by-products are used, the sustainability of those by-products should also be factored. Furthermore, because of the significant ecological and financial burden of feed in a fed aquaculture system, we propose that feed should be weighted more than an equal share as outlined</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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<p>in our responses to MBAYAQ's Table of Contents, page 4 overall comments on the 10 criteria.</p>	
<p>It's important to remember that the sustainability adjustment $[(FFER \text{ value} \times [2 \times \text{Sustainability score}]) / 10]$ is already based on the FFER such that the scoring deduction is higher if the FFER is higher for the same sustainability score.</p> <p>It is interesting to experiment with reversing or flipping the FFER and sustainability score in the current Wild Fish Use Score equation such that Wild Fish Use Score = $SS - [(SS \times [2 \times FFER \text{ value}]) / 10]$ where SS runs from 0 (unsustainable) to 10 (fully sustainable) - i.e. not the current negative scores. The final scores from the example provided then become 5.9 if the SS is 8 (i.e. equivalent to -2) or 0 if the SS is 0 (i.e. equivalent to -10), For the same example (20% fishmeal, FCR 1.5, FFER = 1.33) the values become:</p> <ul style="list-style-type: none">○ If SS = 10 (equivalent to zero in current table), score = 7.3○ If SS = 8 (equivalent to -2), score = 5.9○ If SS = 6 (-4), score = 4.4○ If SS = 4 (-6), score = 2.9○ If SS = 2 (-8), score = 1.5○ If SS = 0 (-10), score = 0 <p>For info, if FFER = 1:</p> <ul style="list-style-type: none">○ If SS = 10 (equivalent to 0), score = 8 (compared to current 7.5)○ If SS = 8 (-2) score = 6.4 (7.1)○ If SS = 6 (-4), score = 4.8 (6.7)○ If SS = 4 (-6), score = 3.2 (6.3)	<p>We will consider this in reviewing the scoring for this criterion.</p>



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<ul style="list-style-type: none"> ○ If SS = 2 (-8), score = 1.6 (5.9) ○ If SS = 0 (-10), score = 0 (5.5) <p>So the score drops much more rapidly based on the SS instead of the FFER with heavy penalties for using unsustainable sources. Something to think about and play with in Excel, but important to keep in mind all the other complicated philosophical aspects in this factor.</p>	
<p>Criterion 5 Question 3 – Harvested byproducts utilization <i>Should Seafood Watch reconsider how to value the further utilization of byproducts of the harvested farmed fish? Should all other uses, for further protein or otherwise, be considered an appropriate recapture of protein? Should non-protein-provision uses be weighted differently than protein provision uses?</i></p>	
COMMENT	RESPONSE
SeaChoice supports the current calculation based on protein production capture.	We will consider this in reviewing the scoring for this criterion.
Yes, this would be desirable in encouraging full utilization for both food and non-food usages since non-food usage create offsets for other ingredients which also have an ecological footprint.	We will consider this in reviewing the scoring for this criterion.
This factor is (largely by necessity) an approximation. I think it's okay to include all other uses of byproducts (as long as it doesn't go to landfill). Trying to separate out other uses and byproduct types is an unnecessary complication which won't make much change to the scores and for which it will be hard to get data in most circumstances.	We will consider this in reviewing the scoring for this criterion.

CRITERION 6: ESCAPES
GENERAL COMMENTS



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COMMENT	RESPONSE
<p>The assumption that trickle losses occur should be reconsidered. Robust infrastructure and best management practices, along with lengthy datasets showing lack of presence in the natural environment should alleviate the concern around trickle losses. Counting error is a symptom of the technology available, and should in no way suggest that, where a 2% count difference exists, these fish were escapees. For example, British Columbia net pens are ranked as inherently high risk, though many years of monitoring show extremely few escaped fish. Monitoring of wild, outmigrating salmonids occurs each spring with high intensity, through industry-led, government, and academic research programs. Years of this monitoring has failed to capture any Atlantic salmon, providing evidence that the few fish that may escape are not reproducing in the environment. Further, the elimination of the recapture requirement in federal conditions of licenses shows that government in Canada does not see escapees as a concern that requires recapture effort. The evidence available in BC, or in other similar situations, should allow for a very high score under this criterion.</p>	<p>The current structure of the criterion allows for scoring an 8 in Factor 6.1 when “Robust data on fish counting and escape records indicate escapes (catastrophic or trickle) do not occur (e.g. in the last 5 years), or; Independent monitoring data show that escapees are not present in the wild.”</p>
<p>same as chemicals, preventive measures should be key factors of evaluation.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>Ongoing and comprehensive monitoring for escapees in all relevant ecosystems (e.g. wild salmon streams for farmed salmon) should be a requirement for demonstrating establishment risk (factor 6.1). Monitoring is often ad-hoc and in a limited number of potentially affected waterways. Where yearly comprehensive monitoring is not commonplace or adequate, then scoring should be lower.</p>	<p>Establishment risk is considered under Factor 6.2 – competitive and genetic interactions. The comprehensiveness of escape management measures is considered when assessing escape risk in Factor 6.1.</p>



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<p>In factor 6.2 endangered populations are only weighed in the scoring when there is evidence of population impacts (critical). SeaChoice recommends that where a genetically similar species is being farmed within the vicinity of an endangered wild population, the potential genetic impact risk to the endangered population should be weighed as high (0) to moderately-high (2). This ensures a precautionary approach is taken to ensure the genetic diversity of endangered populations.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>The genetic aspect of this criterion for native species is heavily focused on salmon. I'm not aware of any genetic concerns regarding escapes for other species (perhaps with the exception of mixed genetic pools of <i>P. monodon</i> across Asia and East Africa). Assessing 6.2 for native species is entirely based on genetic interactions and is challenging to assess for species other than salmon; that is, the scores are often suppressed due to theoretical genetic risk that have little or no justification for other species with less diverse population genetics. I don't have specific suggestions at present, but would be happy to develop some with further discussion. In general, the scoring here is highly precautionary. Large escape events typically occur in a very small number of farms. Present day impacts even from invasive species such as tilapia seem rare. An assessment can't use the recapture adjustment unless there has been an escape with which to assess the recaptures. I have no immediate suggestions, but this would be nice to change and allow assessments that have an obvious recapture capability (but no escapes) to increase the (quite tough) scoring in Factor 6.1.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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CRITERION 7: DISEASE, PATHOGEN AND PARASITE INTERACTIONS	
GENERAL COMMENTS	
COMMENT	RESPONSE
<p>The current criteria are general enough to allow assessors to use the information available to score reasonably, when evidence may fall into a number of categories. Suggest removing "risk" from moderate-high concern "where there is a known pathogen/parasite transfer risk"- risk may be present in may circumstances, but under the evidence based criterion more than a risk needs to be present- evidence of pathogen/parasite transfer may necessitate a moderate-high score."</p>	<p>We will consider this in reviewing the scoring for this criterion. Evidence of no impact is strong justification for a higher score, while risk of impact (e.g. pathogen transfer) with no corresponding information regarding any realized impacts (e.g. pathogen level amplification in wild species) scores low when applying the Precautionary Principle.</p>
<p>Endangered populations are only weighed in the scoring when there is evidence of population impacts (critical). SeaChoice recommends that where a pathogen and/or parasite transfer is known to occur but the population impacts are unknown (and perhaps more importantly not ruled out) for any 'at risk', 'threatened' or 'endangered' wild population, a precautionary approach should be taken with the disease risk score. We recommend adding a descriptor along the lines of 'Pathogen and/or parasite transfer occurs, with population impacts unknown - however, the wild population is listed as 'at risk', 'threatened' or 'endangered' where potential impacts would be severe. Weighing should be high (0) to moderately-high (2).</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
<p>The scoring options in the Evidence assessment would benefit from a review. For example, the difference between "not affected" in a score of 10 and "no physiological impact" is unclear. A score of 6 for "no mortality" and 4 for "no</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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<p>population-level impact" are challenging with regard to the concept of Limit Reference Points and demonstrably sustainable impacts. "No population impact" appears to be entirely sustainable? Should aquaculture be expected to have "no impact" (as some critics of SFW assessments appear to imply)?</p>	
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CRITERION 8X: SOURCE OF STOCK	
GENERAL COMMENTS	
COMMENT	RESPONSE
<p>Broodstock should be hatchery raised, thus limiting impact on wild stocks.</p>	<p>We agree with this principle, and it is stated in the Standard currently; the source of broodstock is a significant consideration when scoring this criterion.</p>
<p>Consider cleaner fish here if coming from an unsustainable fishery. Large numbers are used and killed at the end of the cycle. Alternatively ignore for now and hope hatchery production continues to increase rapidly to supply the demand.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>
Criterion 8X Question 1 – Scope of Source of Stock	
<i>Should Seafood Watch expand the scope of Criterion 8X to include broader impacts of fishing for farm stock beyond the stock status, such as bycatch and other considerations? Which impacts should be considered? What metrics should be used? Which other research efforts, organizations, ratings or certifications, etc., could be considered or used?</i>	
COMMENT	RESPONSE
<p>Independent verification of hatcheries should be the option. Wild juveniles for aquaculture should not be permitted. Catching individuals to allow enrichment of the Broodstock gene-pool should be allowed</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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SeaChoice supports broadening the scope to include other impacts such as bycatch, ecosystem/habitat impacts and management	We will consider this in reviewing the scoring for this criterion.
The guidance already refers to the fishery sustainability table in Factor 5.1b. I think this is sufficient (i.e. anything at less than -4 is directly penalized according to the proportion of production here in C8X).	We will consider this in reviewing the scoring for this criterion. Currently, the reference to the fishery sustainability table in Factor 5.1b only applies to wild-caught broodstock, not wild-caught juveniles and/or seed.

CRITERION 9X: PREDATOR AND WILDLIFE MORTALITIES	
GENERAL COMMENTS	
COMMENT	RESPONSE
<ul style="list-style-type: none"> <i>No general comments received</i> 	
Criterion 9X Question 1 – Evaluating Wildlife and Predator Mortalities	
<i>Given that most scores for the exceptional (i.e. scored deductively from 0 to -10) Criterion 9X reflect some level of impact, should it be exceptional?</i>	
COMMENT	RESPONSE
No preference for exceptional/standard	No response needed
The result of the criteria can be based on type of operation and presence of wildlife mortalities, which provide an estimate of interaction with wild-life. Depending on the control measures in place and likeliness of interaction a score can be deducted.	Currently, all of these considerations are incorporated into scoring when data on wildlife mortalities are lacking.
SeaChoice disagrees with making this a standard criterion.	No response needed
I would keep this as an exceptional criterion based on a more flexible definition of "exceptional" that is not based on "no impact", such that: "typical industry production practices do not have a LARGE impact". I would prefer every assessment to get a	We will consider this in reviewing the scoring for this criterion.



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<p>minor deduction of -2 rather than see them all get positive scores of 8 for not doing something.</p> <p>I appreciate that this is a slippery slope, and could arguably be applied to Escapes and perhaps other criteria (and maybe it should be one day), but as a simple fix in this standard update, I think it works fine.</p> <p>With consideration of targets and limit reference points, the definition of score 2 should be changed as follows and replace the current zero score: "Aquaculture operation may attract or interact with predators or other wildlife, but effective management prevents mortalities or limits them to exceptional cases".</p> <p>Other scores would need to adjust too - needs a bit more thought.....</p> <p>More complex is the need to consider impacts other than mortalities, e.g. the high boat and farm activity in Chile has driven some dolphins out of important habitats. This is non-lethal but is arguably a population effect. Ideally this would be taken into account, but also needs a bit more thought.</p>	
<p>Criterion 9X Question 1 – Evaluating Wildlife and Predator Mortalities <i>And, given that data on wildlife mortalities are typically poor, and ‘proving a negative’ (i.e. that mortalities are not occurring) is difficult, how can Seafood Watch best balance the precautionary principle while ensuring that industries are not penalized unfairly?</i></p>	
<p>COMMENT</p>	<p>RESPONSE</p>
<p>Support a risk-based/evidence-based scoring, with the understanding that more precaution must always be taken when using the risk-based methodology. If bycatch is to be considered in 8x, should it also be considered under this criterion? While there may be a potential to penalize producers</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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<p>who maintain thorough records of bycatch, compared to those who do not, consideration should be made. Current wording of the rationale, to consider the potential to affect the population status of the relevant species, should be used in this case.</p> <p>/Lack of evidence should be treated with precaution, and scores reflect the precautionary principal. Where thorough records do exist, and evidence of proper record keeping/reporting of mortalities when they occur, this data should be used. As above, thorough records should not penalize producers. Potential for interactions, anecdotal evidence could be used to guide scores for data-poor producers.</p>	
<p>As per [SeaChoice] data comments, where data is very poor or unknown (0 or 2.5) - this should result in a red score.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>

CRITERION 10X: ESCAPE OF SECONDARY SPECIES	
GENERAL COMMENTS	
COMMENT	RESPONSE
<p>"Trans-waterbody" is clearly defined in the standard, but not applied equally in all assessments. For example, moves from Washington to southern BC may be considered trans-waterbody, as they are across international borders, but there is no risk of introducing non-native species. Definition could be expanded or examples included to help score movements equally across assessments.</p>	<p>This example, movements from Washington (Puget Sound) to Southern BC, would not be considered a trans-waterbody movement per the Standard definition "source waterbody being ecologically distinct from the destination waterbody." This would also clearly be an international shipment (US to Canada), and Seafood Watch is considering how to best clarify the definitions and the intent of the Criterion.</p>
<p>Consider movements of cleaner fish here - e.g. long distance movement from Sweden to northern Norway. Minor edits to the existing criterion would suffice.</p>	<p>We will consider this in reviewing the scoring for this criterion.</p>



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