Monterey Bay Aquarium
Seafood Watch®

Developing Seafood Watch Recommendations

Contents

Introduction

The mission of the nonprofit Monterey Bay Aquarium is to inspire conservation of the ocean. Seafood Watch® is a program of the Aquarium and works to engage and empower consumers and businesses to purchase seafood that is fished or farmed in ways that minimize their impact on the environment. The program was launched in 1999 and continues to research and evaluate the sustainability of fisheries and aquaculture operations worldwide. We share the resulting seafood recommendations with the public, businesses and other interested parties in several forms including pocket guides, smartphone apps and online at seafoodwatch.org.

Scope of the Seafood Watch program

The Seafood Watch program currently fills a critical role in the North American marketplace. The assessments identify the environmental performance of the fishery or aquaculture operation in question providing producers with areas for improvement. The resulting fishery and aquaculture ratings inform the seafood purchasing decisions of concerned consumers and businesses. Elements of the Seafood Watch standards and program that distinguish us from existing eco-certification schemes and ratings programs include the following:

1. Provide a critical information source on global seafood sustainability performance;
2. We assess most of the seafood on the US and Canadian markets. Initial estimates are that our current recommendations cover some 80-85% of the total seafood on the US market and a similar amount on the Canadian market, by volume;
3. We use a three-tiered system approach with the intention of recognizing better and best performers;
4. We publish all assessment results, regardless of score and rating outcome, on our website, thus calling out poor performers;
5. Our fisheries and aquaculture standards press for improvement beyond current best practice;
6. Our assessments are non-voluntary;
7. Our standards are structured to assess the impacts from farms and fisheries not only in isolation, but also in the context of the cumulative effects of multiple fisheries and aquaculture farms in the region;
8. Ratings program can benchmark each other and eco-certification, identify strengths and weaknesses in other standards, and ultimately recognize fisheries and farms certified to the better performers as options that consumers and businesses should consider;
9. We can and do work directly with governments and producers to improve fisheries and aquaculture operations.

Environmental, Social, Welfare impacts

Seafood Watch assesses the ecological impacts on marine and freshwater ecosystems of fisheries and aquaculture operations up to the dock or farm gate. Seafood Watch assessments do not consider all ecological impacts (e.g. land use, air pollution), post-harvest impacts such as processing or transportation, or non-ecological impacts such as social issues, human health or animal welfare. We do recognize the importance of these, however, and so we are part of collaborative partnerships that have published a Seafood Slavery Risk Tool and a Seafood Carbon Emissions Tool. We are also part of the Conservation Alliance for Seafood Solutions, a group of organizations that share a common vision that includes social issues, traceability and transparency and progress in fishery and aquaculture projects.

Ensuring Program Credibility

The credibility of the Seafood Watch program is dependent on ensuring the robustness of our recommendations to consumers and businesses and by monitoring and reporting on the program's and its audience's impacts on the environmental sustainability of the seafood industry. Key to maintaining this credibility and increasing efficiency are four elements:

1. Setting the sustainability bar.
    - Our standards for fisheries, aquaculture, and salmonid fisheries set the sustainability bar for seafood. They undergo regular review and revision to ensure the latest science and best management practices are incorporated when conducting Seafood Watch assessments. Input into the standards revision process is made through public consultation, Expert Working Groups for specific issues, Technical Advisory Committees for general scientific advice, and through the final approval body, the Multi-Stakeholder Group. The standards, process and composition of these groups are available on our website here.
2. Assessing and rating fisheries and aquaculture operations.
    - We follow a process that ensures assessments against our standards are rigorous, impartial, transparent and accessible. This is particularly important as we expand our engagement into other regions around the world, especially where other organizations play roles in our process or use our standards and assessments for their own needs.
3. Providing additional advice to our audiences.
    - Recognizing eco-certifications. We support the concept of independent eco-certification programs for seafood, and follow a process (laid out on our website here) to allow for identification of eco-certification standards that are equivalent to at least a "Good Alternative." We recommend consumers and businesses buy from most of the sources certified to these standards.
    - Recognizing other ratings organizations. We also recognize that Seafood Watch ratings and eco-certifications alone cover less than half of total global production of seafood, and that our information could be supplemented by information by ratings organizations in other parts of the world. We are working within the Global Seafood Ratings Alliance to determine a process for providing this additional information to consumers and business partners.
    - Supporting and driving improvements in fisheries and aquaculture. We support and drive continuous improvement of fisheries and aquaculture operations, with a focus on those that rate red or yellow. For an example of an improvement initiative that we are directly involved in, see the Asian Seafood Improvement Collaborative. Our position on credible fishery improvement projects is presented here, and a list of them can be found at FisheryProgress.org.
    - Collecting carbon emissions in fisheries and aquaculture operations. We partnered with Dalhousie University to develop the Seafood Carbon Emissions Tool, which allows for the collection and visualization of data on carbon emissions and helps us better understand how these data could be used by our audiences to incentivize a reduction in fuel use in seafood production.
    - Partnering to combat slavery in fisheries. We developed the Seafood Slavery Risk Tool with partners to inform businesses about the risks of forced labor, human trafficking, and hazardous child labor in fisheries.

4. Evaluating our impact.
    - As a program, it is vital to look critically at the work we are doing, assess our effectiveness, and identify areas for improvement. The Monitoring and Evaluation System Report contains our theory of change, results chains, indicators and associated monitoring questions which articulate how program strategies lead to desired impacts, and demonstrate the program's contribution toward improving the sustainability of fisheries and aquaculture operations. This document provides an overview of each of these elements. Further detail on each is linked to in each section.

Setting the Sustainability Bar

Our standards for fisheries, aquaculture, and salmonid fisheries set the environmental sustainability bar for seafood. They undergo regular review and revision to ensure the latest science and best management practices are incorporated when conducting Seafood Watch assessments. The standards and process are available on our website here.

The Seafood Watch standards consist of:

1. Defined guiding principles or objectives
2. Science-based performance criteria that are regularly revised based on the input from fishery and aquaculture experts
3. A robust and objective scoring methodology that results in a transparent assessment of a fishery or aquaculture operation against the respective criteria

Seafood Watch revisits the performance criteria every four years to reflect the most current science and thinking in sustainable fisheries and aquaculture. The current standards (version 4) were published in March 2020 and have been used for all assessments beginning April 2020. The revision process, along with historical and foreign language versions of the standards, is documented here. The next standard review cycle is scheduled to begin in 2023.

Guiding Principles

Seafood Watch defines sustainable seafood as seafood from sources, whether fished or farmed, that can maintain or increase production without jeopardizing the structure and function of affected ecosystems. In keeping with this definition, Seafood Watch refers to the following guiding principles to illustrate the qualities that fisheries and aquaculture operations must possess to be considered sustainable. These objectives inform the performance criteria and scoring methodology used to assess fisheries and aquaculture operations. A description of each principle can be found in the standards documents.

Fisheries Guiding Principles

Sustainable wild capture fisheries:

1. Follow the principles of ecosystem-based fisheries management;
2. Ensure all affected stocks[1] are healthy and abundant;
3. Fish all affected stocks at sustainable levels;
4. Minimize bycatch[2];
5. Have no more than a negligible impact on any threatened, endangered or protected species;
6. Are managed to sustain long-term productivity of all affected species;
7. Avoid negative impacts on the structure, function or associated biota of aquatic habitats where fishing occurs;
8. Maintain the trophic role of all marine life;
9. Do not result in harmful ecological changes such as reduction of dependent predator populations, trophic cascades, or phase shifts;
10. Ensure that any enhancement activities and fishing activities on enhanced stocks do not negatively affect the diversity, abundance or genetic integrity of wild stocks;

Aquaculture Guiding Principles

Sustainable aquaculture farms and collective industries, by design, management and/or regulation, address the impacts of individual farms and the cumulative impacts of multiple farms at the local or regional scale by:

1. Having robust and up-to-date information on production practices and their impacts available for analysis;
2. Not allowing effluent discharges to exceed, or contributing to exceeding, the carrying capacity of receiving waters at the local or regional level;
3. Being located at sites, scales and intensities that maintain the functionality of ecologically valuable habitats;
4. Limiting the type, frequency of use, total use, or discharge of chemicals to levels representing a low risk of impact to non-target organisms;
5. Sourcing sustainable feed ingredients and converting them efficiently with net edible nutrition gains;
6. Preventing population-level impacts to wild species or other ecosystem-level impacts from farm escapes;
7. Preventing population-level impacts to wild species through the amplification and retransmission, or increased virulence of pathogens or parasites;
8. Using eggs, larvae, or juvenile fish produced from farm-raised broodstocks thereby avoiding the need for wild capture;
9. Preventing population-level impacts to predators or other species of wildlife attracted to farm sites;
10. Avoiding the potential for the accidental introduction of secondary species or pathogens resulting from the shipment of animals.

[1] "Affected" stocks include all stocks affected by the fishery, no matter whether target or bycatch, or whether they are ultimately retained or discarded.

[2] Seafood Watch defines bycatch as all fisheries-related mortality or injury other than the retained catch. Examples include discards, endangered or threatened species catch, pre-catch mortality and ghost fishing. All discards, including those released alive, are considered bycatch unless there is valid scientific evidence of high post-release survival and there is no documented evidence of negative impacts at the population level.

Performance Criteria

The goal of our sustainability criteria is to allow for the assessment of the sustainability of fisheries or aquaculture operations according to our guiding principles and conservation ethic.

Fisheries Criteria

Through four criteria we assess fisheries to determine whether the abundance of both targeted and incidentally caught species is maintained in the long term at levels that allow the species to fulfill its ecological role while the structure, productivity, function and diversity of the habitat and ecosystem are all maintained. Furthermore, we determine whether a management system is in place that enforces all local, national and international laws to ensure long-term productivity of the resource and integrity of the ecosystem by adhering to the precautionary approach and responding to changing circumstances.

Salmonid Fishery Criteria

Salmonids are a unique group of fish with life-history characteristics and behaviors that present unique challenges to management of fisheries for salmonid species. Thus, salmonid fisheries are significantly different than typical wild-capture fisheries and have some unique characteristics. To ensure that Seafood Watch assessments consider these unique characteristics and the conservation concerns associated with these fisheries, we have developed a modified set of criteria for assessing salmon fisheries. One of the major considerations within these criteria is the impact of supplementation from artificial production, which is widely used throughout salmonid fisheries across the globe.

Figure 1a: The four criteria and thirteen associated factors in the Standard for Fisheries.

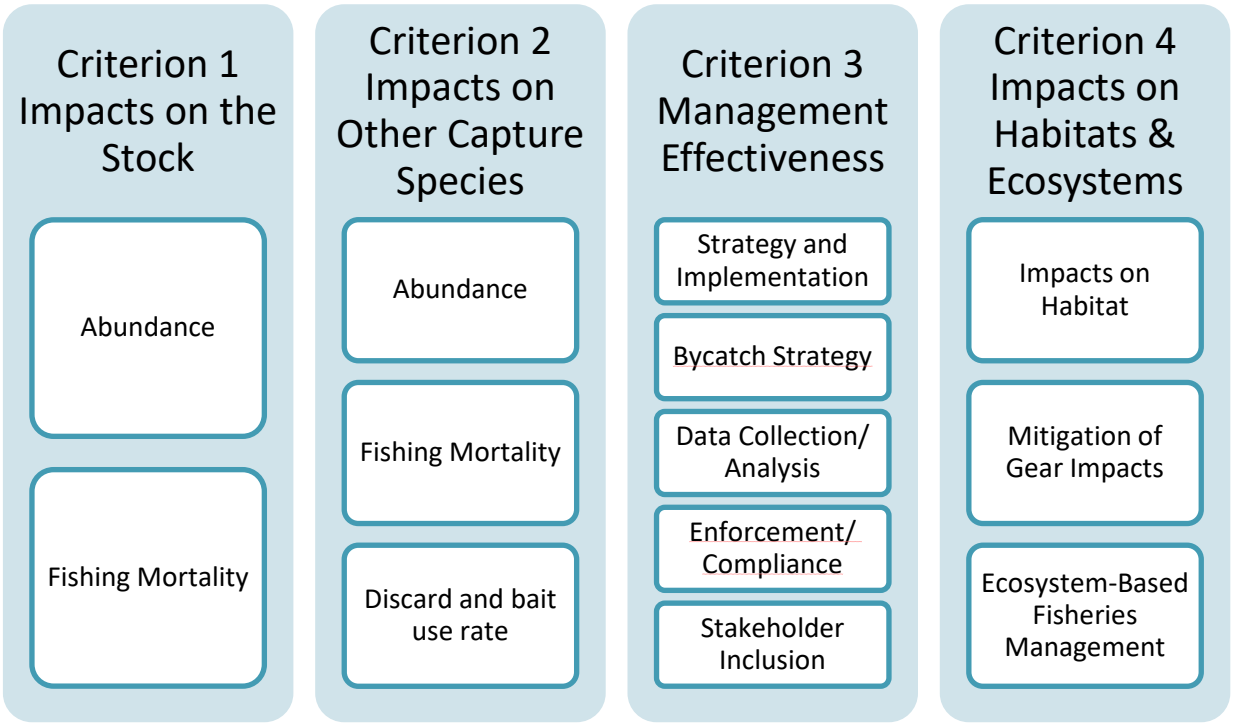
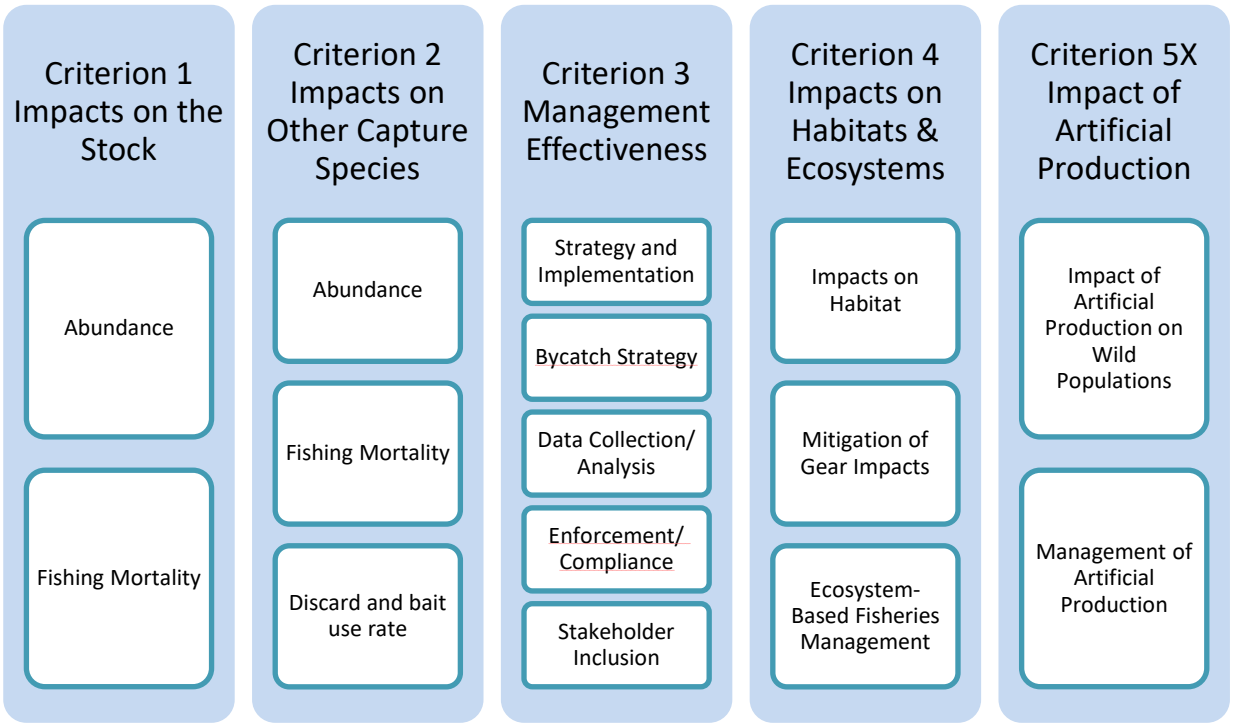


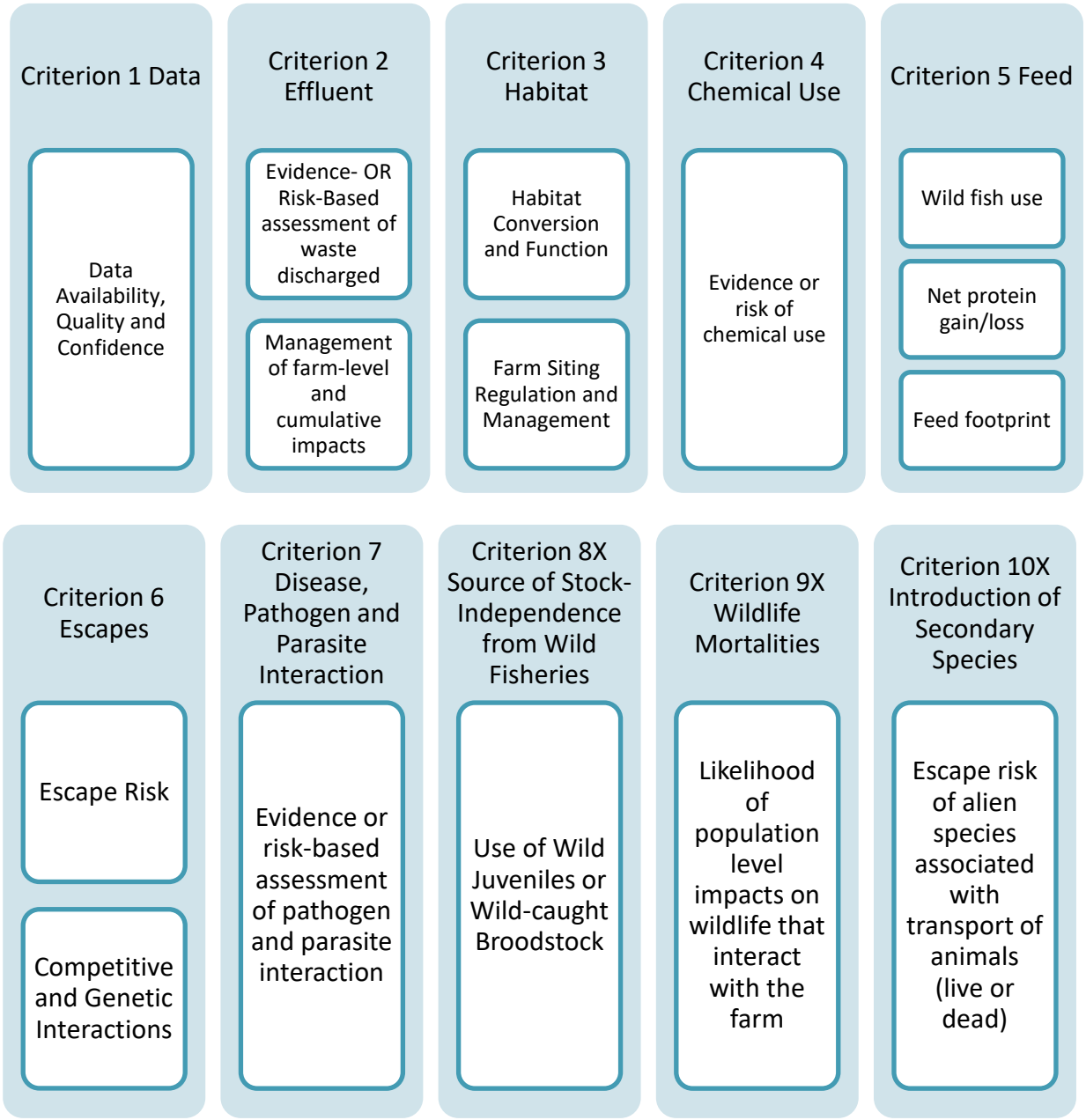
Figure 1b: The five criteria and fifteen associated factors in the Standard for Salmon Fisheries.



Aquaculture Criteria

Through ten criteria we can assess the ecological sustainability of all aquaculture species and production systems at all scales from individual farms to regional, national and international industries. Three criteria (8X, 9X, 10X) are exceptional in that may not be relevant to all aquaculture production, yet can be a significant concern for those production practices where relevant. Whereas all other factors score positively and contribute to the overall score total, the exceptional factors are given a negative score which is subtracted from the final total score for those aquaculture operations where it is a concern.

Figure 2: The ten criteria and fifteen associated factors in the Standard for Aquaculture.



Scoring Methodology and Rating System

Seafood Watch scores are based on robust scientific evidence where possible and reflect the conservation ethic of the Seafood Watch program. There are numerous calculations in different criteria and factors for both fisheries and aquaculture assessments, all of which are laid out in our standards and handled automatically by our Seafood Watch Assessment Tool (SWAT) or Excel-based scoring tools where SWAT is not being used. The final rating is a function of the final numeric score and a set of decision rules as detailed in our standards, and summarized in the table below.

Rating	Scoring/Decision Rules	Public Action	Explanation
Best Choice	Fisheries: Final Score >3.2, and either Criterion 1 or Criterion 3 (or both) is Green, **and** no Red Criteria, and no Critical scores Aquaculture: Final Score >6.6, **and** no Red Criteria, **and** no Critical scores.	Buy **Best Choice** seafood first. It's caught or farmed responsibly.	Wild-caught and farm-raised seafood on the "Best Choice" list are ecologically sustainable, well managed and caught or farmed in ways that cause little or no harm to habitats or other wildlife. These operations align with all of our guiding principles.
Good Alternative	Fisheries: Final score >2.2, **and** no more than one Red Criterion, **and** no Critical scores, **and** does not meet the criteria for Best Choice (above) Aquaculture: Final score >3.3 and <6.6, **and** no more than one Red Criterion, **and** no Critical scores.	Buy **Good Alternative** seafood. Be aware there are some concerns with how it is caught or farmed.	Wild-caught and farm-raised seafood on the "Good Alternative" list cannot be considered fully sustainable at this time. They align with most of our guiding principles, but there is either one conservation concern needing substantial improvement, or there is significant uncertainty and low to moderate risk associated with the impacts of these fishery or aquaculture operations.
Avoid	Fisheries: Final Score <=2.2, **or** two or more Red Criteria, **or** one or more Critical scores. Aquaculture: Final Score <3.3, **or** two or more Red Criteria, **or** one or more Critical scores.	Don't buy **Avoid** seafood. It's caught or farmed using harmful practices.	Wild-caught and farm-raised seafood on the "Avoid" list are caught or farmed in ways that have a high risk of causing significant harm to the environment. They do not align with our guiding principles, and are considered unsustainable due to either a critical conservation concern, multiple areas where improvement is needed, or significant uncertainty and high risk associated with the impacts of these fishery or aquaculture operations.

Assessing and Rating Fisheries and Aquaculture Operations

The Seafood Watch assessment process is aligned with ISEAL's Code of Good Practice in Assuring Compliance with Social and Environment Standards. The Code builds on a set of principles for effective assurance and describes how these principles are applied in practice: Rigor, Impartiality, Transparency, and Accessibility. Seafood Watch adheres to these principles as follows:

Rigor (including consistency and competence)

- All assessments are reviewed by internal Seafood Watch staff multiple times to ensure that the relevant Seafood Watch standard has been applied in a way that is consistent with the interpretation and intent of that standard, and is consistent with the way the standard has been applied to other assessments.
- All assessments are written by Seafood Watch staff or contracted analysts who have been trained on the application of the Seafood Watch Fisheries, Salmonid, and/or Aquaculture standards. All staff and contracted analysts must meet a set of required educational or professional qualifications.
- All Fisheries assessments and reviews are written using the Seafood Watch Assessment Tool, which provides a linear, guided way to conduct the assessment.
- All Aquaculture and Salmonid assessments and reviews are written using standardized custom Microsoft Word templates and Excel scoring tools.
- All assessments undergo external technical review by at least three experts in the fishery or aquaculture operation.
- All data and information used in the development and scoring of Seafood Watch assessments is made publicly available at the time of final publication of that assessment.
- Assessment reviewers conduct regular meetings to discuss situations that are difficult to score.
- The Science Team meets weekly, as well as quarterly.

Impartiality

- Core Seafood Watch assessments are non-voluntary and funding for our program is independent of the final outcome for any given Seafood Watch Assessment. Seafood Watch does not maintain a "client" relationship with any organization.
- All assessments are published regardless of outcome.
- All Seafood Watch standards are developed in alignment with the ISEAL Code on Standard Setting and consistent with the Seafood Watch Guiding Principles, with advice from multiple Expert Working Groups and Technical Advisory Committees, and approved by an independent Multi-Stakeholder Group. During standard revision periods public comment on the standards is solicited. More information on the standard setting process can be found on our website here.

Transparency

- All Seafood Watch ratings, assessments, standards, processes, and benchmarking reports for eco-certification standards equivalent to at least a yellow Good Alternative are published on our website.
- All sources of data or information driving a score must be publicly available or available by request and publishable (at least in aggregate) in our assessment.
- We welcome input on our assessments and standards at any time either through the Seafood Watch Assessment Tool or by email (to e.g. SFWresearch@mbayaq.org).
- While our capacity for additional assessments is limited (especially for sources that are not found in high volume in the US market), we do welcome requests for assessment at any time through our form. Once received, we will determine which options may be available for assessing the product.

Accessibility

- All documents relating to the development of Seafood Watch assessments are available on our website or upon request. Historical and current standards for Fisheries and Aquaculture are available on our website, with the current version available in multiple languages
- The cost of assessments is borne by the program rather than the fishery or aquaculture operation being assessed (i.e. not cost prohibitive to the fishery/aquaculture operation).
- Language in the Seafood Watch standards as well as the assessments balances scientific accuracy with easy comprehension.
- The standards have been translated into multiple languages.

Scope of Assessments

Seafood Watch assesses the ecological impacts on marine and freshwater ecosystems of fisheries and aquaculture operations up to the dock or farm gate. Seafood Watch assessments do not consider all ecological impacts (e.g. land use, air pollution), post-harvest impacts such as processing or transportation, or non-ecological impacts such as social issues, human health or animal welfare.

Fisheries Unit of Assessment

Fisheries assessments generally focus on a single fishery, as defined by region and target species (which may include multiple target species, in the case of a multispecies fishery). A single assessment may contain multiple recommendations to address different gear types, biological stocks, or regional variations in ecological impacts and management, as needed.

For fisheries, ratings are defined by these basic parameters:

- Species, or stock level where stock information exists. A rating can be generated for any species caught in the fishery, regardless of whether it is considered a 'target' or 'bycatch' species.
- FAO major fishing area (e.g. Northeast Pacific, Mediterranean and Black Sea), but it can be more specific as needed (e.g. Bering Sea, Gulf of Alaska, Lake Erie, Gulf of Mexico).
- Country, or state, province and so on. In the case of tuna fisheries that are managed by Regional Fishery Management Organizations, ratings apply to all countries operating under the remit of that RFMO.
- Gear type (e.g. bottom trawl, jig, set gillnet)

Where data allow and there's reason to think that environmental performance may differ, we can provide ratings at a more granular level, such as permit, deep-set vs shallow-set longlines, or distinct management areas.

We will not conduct an assessment or provide separate ratings if one or more of the following is true:

- It is MSC certified. If the fishery is known to be performing at a level consistent with a wild capture standard that we have benchmarked and found to be equivalent to at least a yellow, it is already considered a buy option. More information can be found here. Currently, this applies only to the Marine Stewardship Council Fishery Assessment Methodology. However, we may still assess the fishery or parts of the fishery if the MSC unit of assessment does not cover the whole fishery, or if we have serious concerns about that assessment.
- If the only way to differentiate on the market is by company or brand. Our ratings are not the best tool to assess at this level as we do not conduct on site audits.

- It is not a programmatic priority (see next section)

We do recognize that this approach may not reflect the efforts of the best performing sectors of a fishery and are therefore developing tools to allow the best performers to be recognized. In the meantime, interested parties can inform us of their interest by filling out this form.

Aquaculture Unit of Assessment

The Standard for Aquaculture is designed to be utilized at any scale, from a single farm to an entire aquaculture sector. However, Seafood Watch focuses on providing assessments at the country/region level (see exceptions below). The benefit of such an approach is that we can better capture the cumulative impacts of aquaculture in a region.

For aquaculture, ratings are defined by these basic parameters:

- Species
- FAO major fishing area (e.g. Northeast Pacific, Mediterranean and Black Sea), but it can be more specific as needed (e.g. Bering Sea, Gulf of Alaska, Lake Erie, Gulf of Mexico). For aquaculture, this is only necessary if needed to differentiate between multiple farming regions (e.g. Atlantic Canada vs Pacific Canada).
- Country, or state, province and so on.
- Production method (e.g. marine net pen, extensive pond, recirculating system)

Where data allow and there's reason to think that environmental performance may differ, we can provide ratings at a more granular level, such as by type of effluent treatment or distinct management areas.

We will not conduct an assessment or provide separate ratings if one or more of the following is true:

- It is certified to a credible standard. If the aquaculture operation is known to be performing at a level consistent with an aquaculture standard that we have benchmarked and found to be equivalent to at least a yellow, it is already considered a buy option. More information can be found here.
- If the only way to differentiate on the market is by company or brand. Our ratings are not the best tool to assess at this level as we do not conduct on site audits.
- It is not a programmatic priority (see next section)

We do recognize that this approach may not reflect the efforts of the best performing farms and are therefore developing tools to allow the best performers to be recognized. In the meantime, interested parties can inform us of their interest by filling out this form.

Prioritizing Assessments

The goal of the annual prioritization exercise is to identify the highest priority sources of seafood on the US market and ensure assessments of these sources are kept up to date or are covered by an equivalent eco-certification. The highest priority sources are those that:

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- >1% of total seafood volume on the US market
- Are high priority to strategically important businesses and other partners

- Are strategically important for successful improvement work

The exercise begins at the end of the third quarter of the year with the intent of having the next year's assessments determined and analysts assigned by the end of the year. This process incorporates:

- Regular updates of our current assessments to ensure accuracy with the current practices (see monitoring and updating below),
- Commissioned national market research, as well as production and trade statistics to determine overall market importance,
- Internal regional market research to identify top sources in regional markets,
- Data on which sources are eco-certified to a standard equivalent to at least a good alternative (based on our eco-certification benchmarking work), feedback on priorities from our strategic business partners, conservation partners, chefs and the public.
- We also include a "wildcard" element to capture unforeseen and otherwise exceptional priorities.

Following selection of the priority Seafood Watch assessments, we establish expiration dates to determine the order in which individual assessments need to be updated. Most assessments have a five-year expiration date by default but can be changed according to the individual circumstances of each report. Each assessment is then subject to our monitoring program to determine if any significant changes have occurred since it was published/last updated. If we become aware of information through this program or otherwise that suggests our overall rating is no longer current (through public comment or our active review of stock assessment updates, for example), the affected assessment will be considered a high priority for update before the expiration date.

Recruiting and Training Analysts and Reviewers

Basic Educational Requirements

Seafood Watch currently works with approximately 20 contract analysts. The basic requirements for Seafood Watch analysts are as follows:

- Ideal candidates should have, or be working towards, a Masters or PhD in fisheries science, aquaculture, marine ecology, or have equivalent experience/ education in the field.
- Proficiency with Microsoft Word/ Excel and online scientific literature review is mandatory.
- Outstanding written and verbal communication skills in English are critical.

The full job description can be found in Appendix A.

Training Program

The training program for Seafood Watch analysts begins with an online training module on the assessment process and the standard they'll be using, and culminates with the completion of their first assessment.

All Seafood Watch assessments must be reviewed by a reviewer to ensure that the analyst has interpreted the standard correctly and applied it consistently with other Seafood Watch assessments. The number of reviewers, then, is also a limiting factor on the capacity of Seafood Watch to conduct assessments. Staff analysts are always employed with the intent to move them to reviewing as soon as possible. In addition, external analysts that have completed the analyst training and demonstrated competence reviewer potential through completion of several Seafood Watch assessments may also undergo the reviewer training.

Figure 3: Screenshots of the online training modules

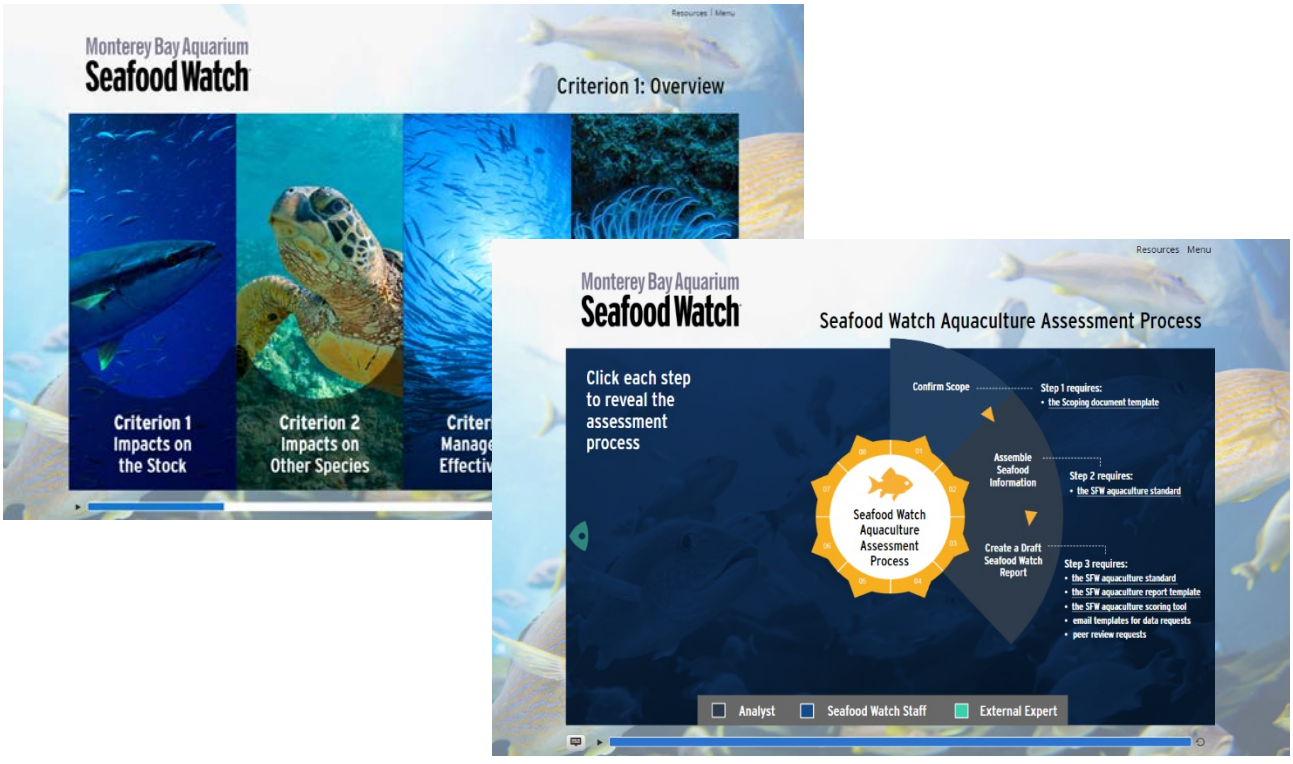


Figure 4: Overview of the Seafood Watch analyst training program

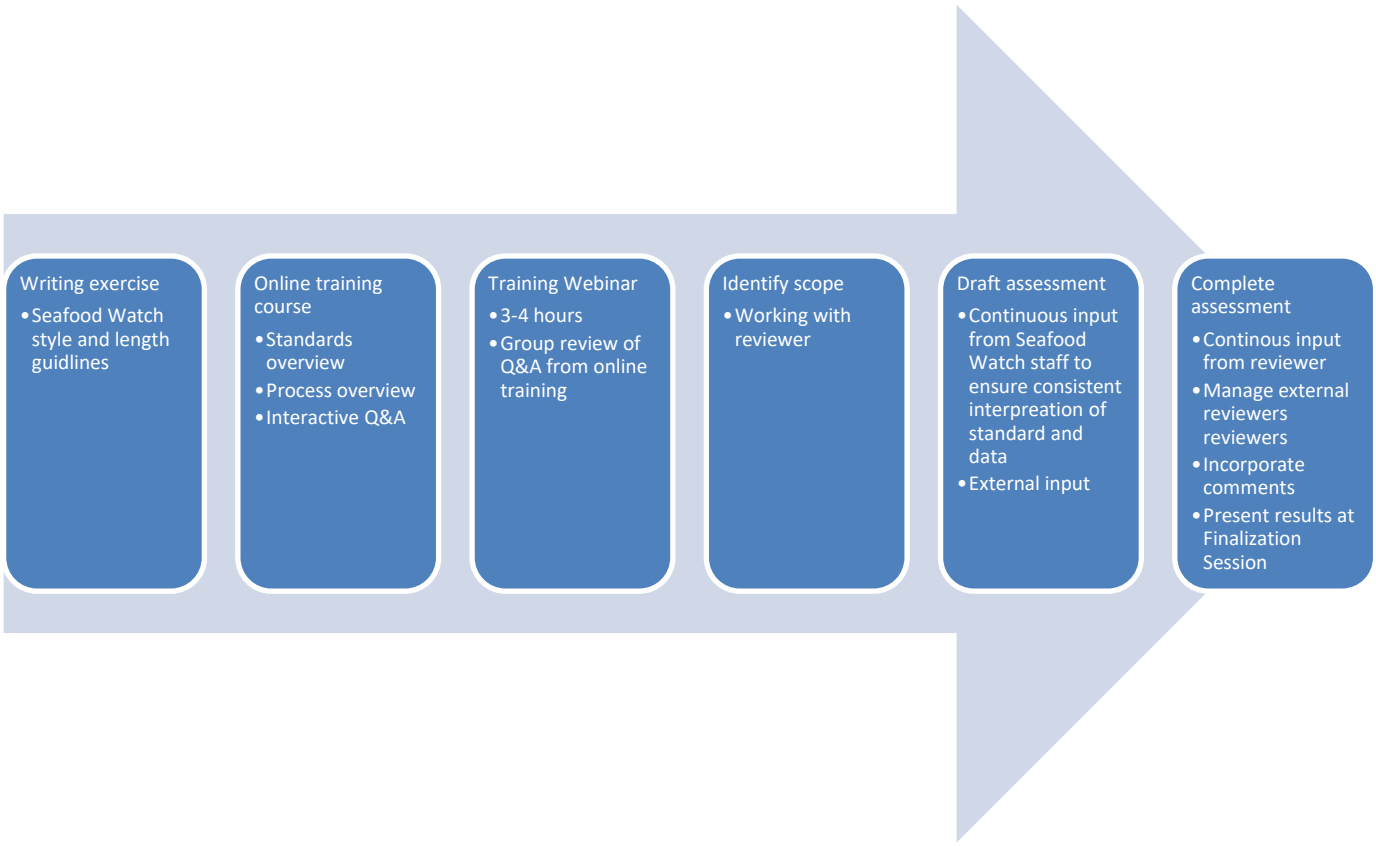
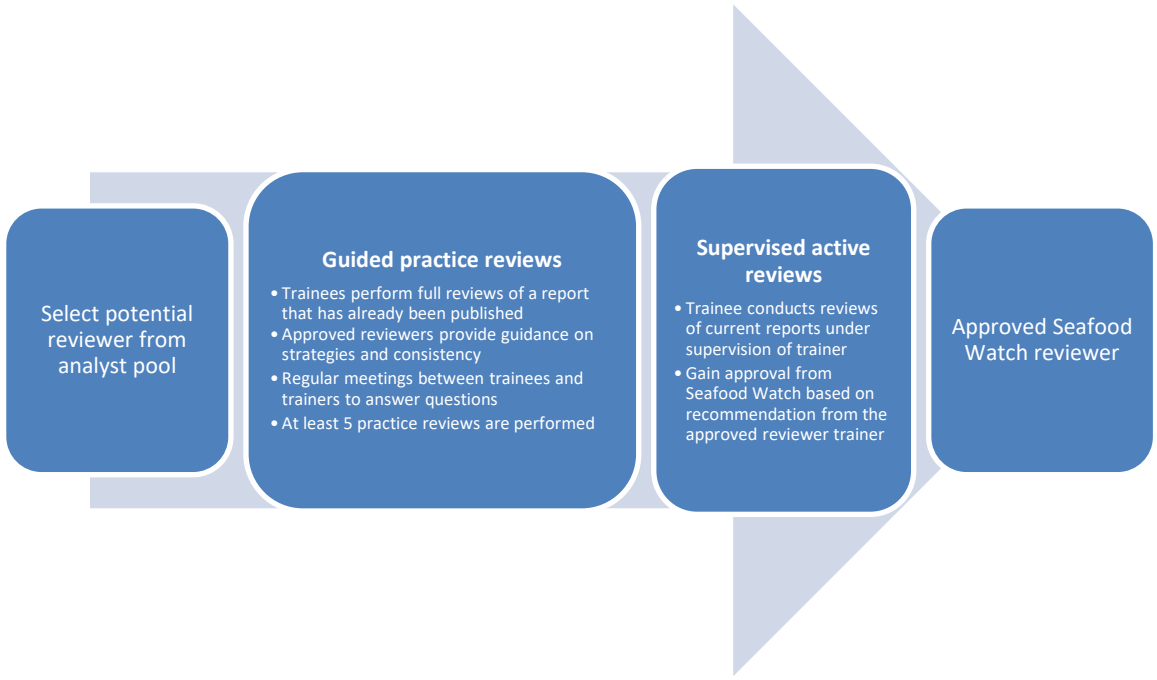


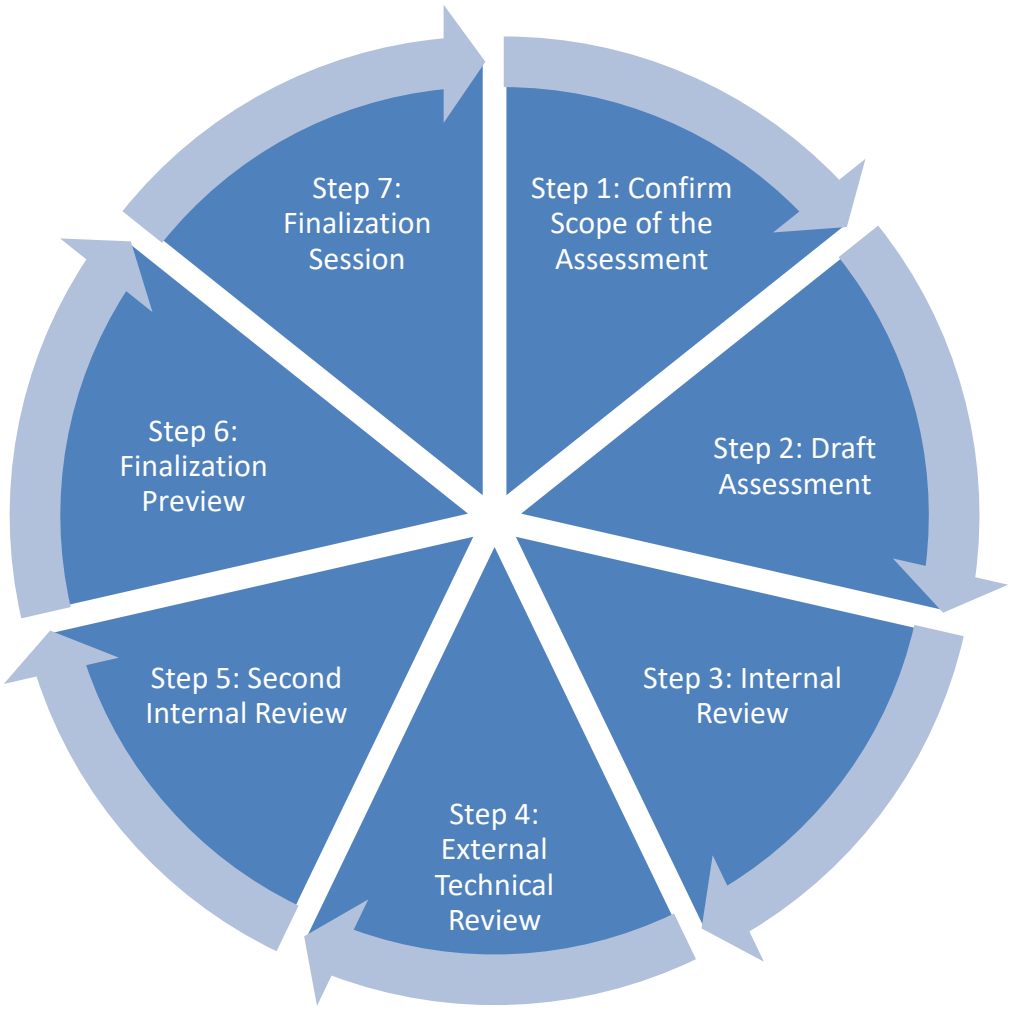
Figure 5: Overview of the Seafood Watch reviewer training program



Assessment Process for Fisheries and Aquaculture Operations

The process by which we draft Seafood Watch assessments and generate seafood recommendations is summarized in the flowchart below. Most of the work is conducted by the analyst, but all assessments are reviewed by staff or a trained reviewer, and all undergo considerable external review from experts in the fishery or aquaculture operation prior to publication.

Figure 6: Overview of the Seafood Watch assessment process



Step 1: Confirm scope of the assessment

Each Seafood Watch assessment has a profile created on the Seafood Watch Assessment Tool reflecting the initial outline of fisheries or aquaculture operations to be assessed, generally including the species or stock of interest, the harvest method or production system and region. The researcher confirms the scope of work based on what is actually available on the US/North American market (or likely will be, if forecasts are available). For fishery assessments, it may also be appropriate to include other species if they are caught in the same fishery(s) and are also available on the US/North American market.

Step 2: Drafting the assessment

A robust Seafood Watch assessment requires the analyst to obtain the most up-to-date and relevant information available from literature and experts. All information must be publicly available or available by request and publishable (at least in aggregate) in our assessment.

Literature we use includes: peer-reviewed published scientific papers, national and regional management agency publications and scientific committee reports, the United Nations Food and Agriculture Organization reports, independent certification organizations and other relevant government documents or websites. Seafood Watch also uses data and information from industry and conservation groups. However, all claims by these latter sources are substantiated by independent, third party verification where possible, and used with an appropriate level of caution when not.

To supplement the existing literature we also work with experts to ensure we're incorporating the most up to date information. These experts include academic and government scientists, resource managers, members of the fishing, aquaculture, and seafood industries and non-governmental organizations.

The entire process for drafting, reviewing and peer reviewing fisheries assessments is conducted via our online Seafood Watch Assessment Tool (SWAT). The tool streamlines the assessment process by integrating the Seafood Watch assessment criteria, data input, scoring calculations and review into a web-based interface. Data are entered into SWAT using a linear process that is assisted by detailed guidance on our standard.

Our goal is to have all assessments conducted using our online SWAT. The tool allows us to generate, update and deliver Seafood Watch assessments more efficiently and with greater transparency. SWAT puts the process of generating Seafood Watch reports, including gathering expert input, and conducting internal and external peer reviews into an online platform. Within SWAT an online report template standardizes data collection and synthesis, allows for more efficient reviews and automates report scoring. The benefits of SWAT include increased stakeholder engagement, streamlining of the report process, increased data and scoring consistency between reports, better data management through automatic notification of events (i.e. updates, expiry dates etc.), and increased ease in updating existing reports. For our NGO colleagues, access to in-progress reports provides an expanded comment period. SWAT is now accessible to various stakeholders, internal and external, at different times in the process via a web interface swat.seafoodwatch.org. Anyone can enter information about any fishery at any time, and that information will be reviewed by internal staff (see monitoring and updating below).

Step 3: Internal Review

Seafood Watch science team members or trained external reviewers log in to SWAT to conduct an internal review of the first draft to ensure all relevant sections are completed, all information is referenced, all scores and final recommendations agree with the data, and the appropriate information has been utilized. We also review for scientific rigor, consistent interpretation of the criteria and consistency with existing Seafood Watch assessments to ensure it meets Seafood Watch criteria. The researcher makes any revisions as necessary and the review cycle continues until Seafood Watch approves the draft for external technical review.

Step 4: External Technical Review

External technical review is essential to ensure scientifically robust assessments based on appropriate interpretation of the most up-to-date data and information available for the species/region/capture or culture system in question. Seafood Watch assessments must be peer reviewed by at least three independent experts with expertise specific to the scope of the assessment. These experts are drawn from government, academia, the conservation community, and the seafood industry. Peer review is conducted via SWAT so that Seafood Watch can monitor the process and ensure that the researcher addresses the comments and makes revisions if warranted.

Step 5: Second Internal Review

Internal staff or a trained reviewer reads through the expert comments and provides guidance to the analyst in how to address them, as appropriate. The analyst works to incorporate any comments or new information into the draft. The reviewer also ensures relevant expert comments are incorporated into the final draft and approves the draft for finalization.

Step 6: Finalization Preview

Two weeks before the Finalization Session (Step 7), the assessment is sent out to the Finalization Session invitees, and the original peer reviewers for any final comments. It is accompanied by a summary of the rating(s) in the assessment and a paragraph describing the justification for each. Recipients are given one week to provide comments.

Step 7: Finalization Session

Reviewed Seafood Watch assessments and the ensuing ratings are formally presented (typically via webinar) to Seafood Watch staff and partner environmental organizations[3]. This step provides our outreach staff and partners with the opportunity to interact with the analyst and more fully understand the driving factors for the proposed ratings. If any significant issues, questions, or comments arise that cannot be adequately addressed, a subsequent session will be held to address this feedback. Otherwise, the assessment is considered finalized and ready for publication on seafoodwatch.org.

Monitoring and Updating Assessments and Ratings

Seafood Watch assessments are a snapshot of current performance of fisheries and aquaculture operations relative to our standards. Fisheries and aquaculture operations are not static, so there is a need for continuous monitoring of sources we have assessed to ensure our ratings remain accurate. We accomplish this through various measures, including:

- Allowing input into our assessments at any time through SWAT.
- Quarterly to annual scan: Review of major stock status update compendia such as FSSI reports.
- Three-year update: Full update to determine if there have been any major changes that would likely affect the overall rating. The update is generally conducted in the standard used for the original report.

[3] These organizations are those that use Seafood Watch recommendations in their outreach to consumers and business partners. Attendees from these organizations observe to become better acquainted with the recommendations as they will utilize the information to inform their work.

- Five-year reassessment: Final date at which an update must be completed, or the rating archived (some assessments change too often to wait for the full five years, including tunas and other large pelagics, and multispecies groundfish fisheries). The current standard will be used for these reassessments.

Any time data or other information is received that suggests an overall rating is no longer correct, the pertinent assessment will be considered a high priority for update.

Providing Additional Advice to our Audiences

Recognizing eco-certifications

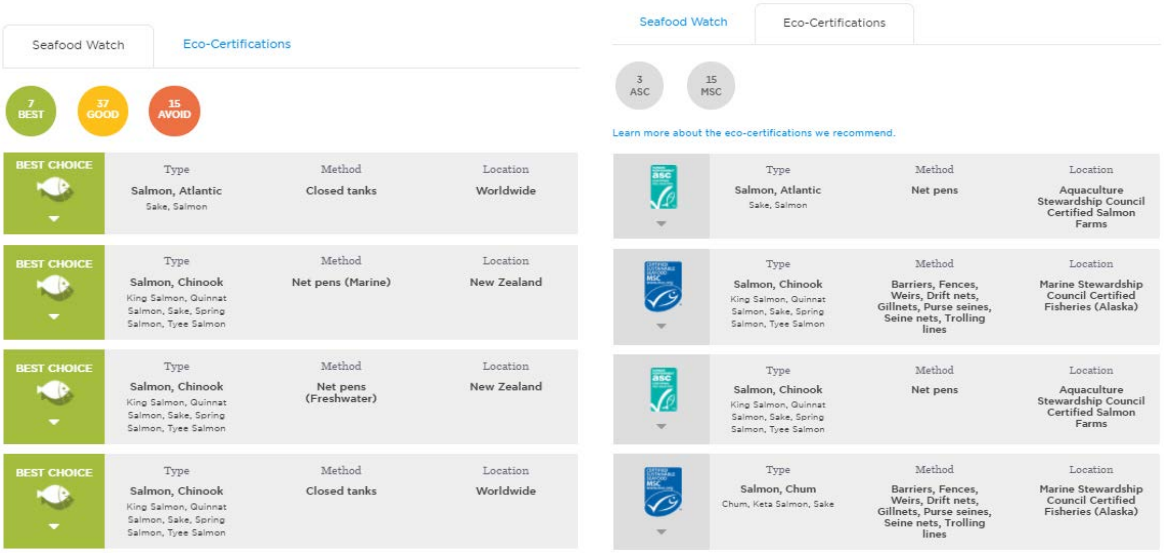
Seafood Watch supports the concept of independent eco-certification programs for seafood. In addition to choosing from our Best Choices and Good Alternatives, we recommend that seafood buyers look for the eco-certified products that have benchmarked to at least a Good Alternative according to our standards. The Seafood Watch Eco-Certification Benchmarking Project has determined that when you buy from these eco-certified sources, you're buying seafood that's equivalent to at least our yellow Good Alternative recommendation.

There are two phases to the process for performing these benchmarks: First, standards are mapped to the Seafood Watch criteria to ensure a true comparison could be made. It is important to note that this benchmark only includes eco-certification standard criteria for which there is a relevant Seafood Watch standard criteria. Thus, topics that are irrelevant to the Seafood Watch Standards are not included in the benchmark.

Once we've identified the pieces of the eco-certification standard that are relevant to the Seafood Watch standards, the 'realistic worst case' fishery or farm that could be certified to each standard is assessed via the Seafood Watch criteria. If the 'realistic worst case' fishery or farm qualifies for at least a Seafood Watch yellow Good Alternative rating, the standard is deemed 'equivalent' and we would be confident recommending their certified fisheries (or farms) as procurement options for our audiences.

Specific fisheries that we recommend as a buy option are listed under the 'Ecocertification' tab on our recommendations pages. A complete list of standards that we defer to can be found on our website. If there are any questions regarding the Seafood Watch criteria or the process of benchmarking, please contact us at SFWResearch@mbayaq.org.

Figure 7: View of Seafood Watch deferral to relevant certifications within the species-specific search on the Seafood Watch website



Supporting and driving improvement in fisheries and aquaculture

We support and drive continuous improvement of fisheries and aquaculture operations, with a focus on those that rate red or yellow. For an example of an improvement initiative that we are directly involved in, see the Asian Seafood Improvement Collaborative. You can also learn more about Seafood Watch's position on Fishery Improvement Projects and to view a list of them visit FisheryProgress.org.

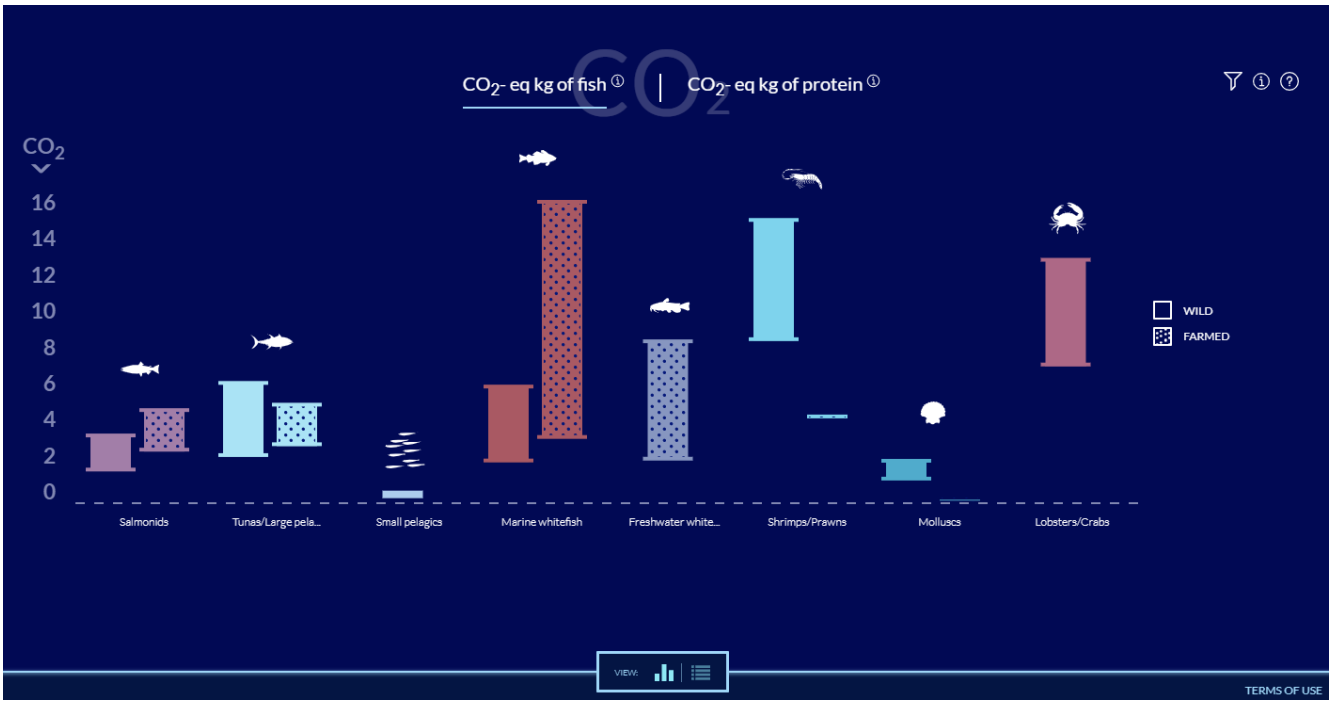
Recognizing other ratings organizations

We also recognize that Seafood Watch ratings and eco-certifications alone cover less than half of total global production of seafood, and that our information could be supplemented by information by ratings organizations in other parts of the world. We are working within the Global Seafood Ratings Alliance to determine a process for providing this additional information to consumers and business partners.

Carbon emissions in fisheries and aquaculture operations

We partnered with Dalhousie University to develop the Seafood Carbon Emissions Tool, which allows for the collection and visualization of data on carbon emissions and to better understand how these data could be used by our audiences to incentivize a reduction in fuel use in seafood production.

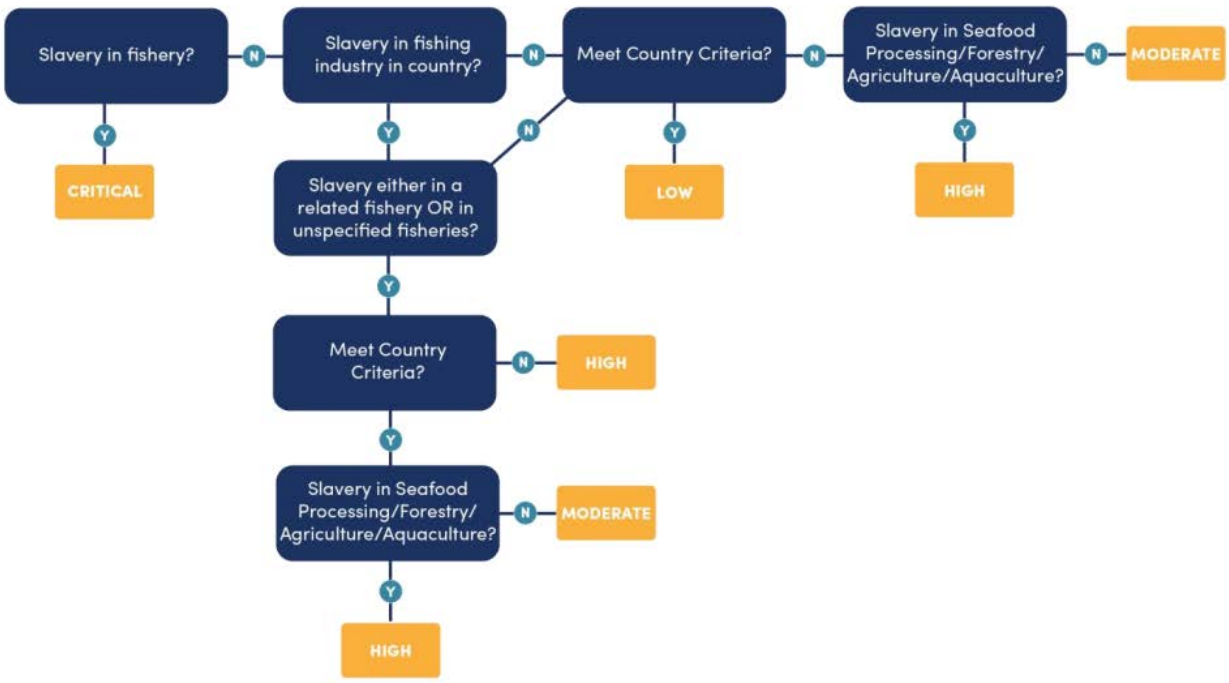
Figure 8: Screenshot of the Seafoo Carbon Emissions Tool



Slavery in fisheries

In partnership with Liberty Asia and Sustainable Fisheries Partnership, Seafood Watch developed the Seafood Slavery Risk Tool, which produces a rating that indicates the likelihood that human trafficking, forced labor and/or hazardous child labor are occurring on fishing boats in a specific fishery. The tool incorporates information from a variety of accurate, credible reports by authoritative institutions and civil society organizations that are available in the public domain.

Figure 9: Seafood Slavery Risk Tool decision tree


Slavery in fishery?
N
Slavery in fishing industry in country?
N
Meet Country Criteria?
N
Slavery in Seafood Processing/Forestry/ Agriculture/Aquaculture?
N
MODERATE
Y
CRITICAL
Y
Slavery either in a related fishery OR in unspecified fisheries?
N
Y
LOW
Y
HIGH
Y
Meet Country Criteria?
N
HIGH
Y
Slavery in Seafood Processing/Forestry/ Agriculture/Aquaculture?
N
MODERATE
Y
HIGH

Evaluating our Impact

The Monterey Bay Aquarium Seafood Watch program has established itself as a trusted authority on fisheries and aquaculture within the global sustainable seafood movement. Over the past 18 years, our standards have set high thresholds for the environmental performance of fisheries and aquaculture and have encouraged producers to improve practices as well as governments to improve regulations and management; our ratings have guided the seafood purchases of businesses and consumers towards sustainable products and informed fisheries and aquaculture improvements; our digital platforms and program engagement activities have sustained consumer demand and issue salience for sustainable seafood; and our large network of the nation's leading seafood buyers has provided a market incentive for producers to maintain or adopt more sustainable practices.

In 2017, a monitoring and evaluation system was launched to look critically at the work we are doing, assess our effectiveness, and identify areas for improvement. Seafood Watch's Monitoring & Evaluation system is comprised of two distinct efforts: performance monitoring and impact evaluation. Performance monitoring, as defined by the ISEAL Code of Good Practice for Assessing the Impacts of Social and Environmental Standard Systems, is the "systematic collection of data on specified indicators to provide indications of the extent to which outputs and short and medium-term results are being achieved." Impact evaluation, on the other hand, is the "systematic, objective, in depth, ex-post assessment of the medium or long-term effects of the implementation of a standards system… and enable users to understand the extent to which an observed change can be attributed to the standard system". In essence, the former is focused on tracking the progress towards achieving intended outcomes (activities) while the latter is focused on tracking the long-term effectiveness of the Seafood Watch program.

Program Leadership and Financials, Assessment of Risks, Document Update History, Appendices

Program Financials and Leadership

Seafood Watch is a program of the Monterey Bay Aquarium. Information on the Monterey Bay Aquarium's senior leadership team and Board can be found on the Aquarium website. Monterey bay Aquarium financial documents can also be found on the Aquarium website.

Assessment of Risks

The table below provides an assessment of risks in implementing the Seafood Watch standard, and measures we have taken to mitigate them. Note that these are not additional risks we have identified relative to the standards review process beginning in 2014; rather they are the main risks we have identified and mitigated for since the inception of the program in 1999.

Risk	Mitigation
Robustness of ratings	Continually improve the scientific rigor of our reports, including: 1. Process • Minimum educational/professional qualifications for analysts • Full training modules for new analysts • Updated training module for existing analysts when necessary • Internal review process to ensure consistency in interpretation of the standards • External peer-review of all reports to ensure the most up to date science and management measures have been used and interpreted correctly • Final review with colleagues that use Seafood Watch recommendations 2. Timeliness • Review relevant stock assessment summaries when they are released (e.g. quarterly in the case of US federal fisheries) • Review and update reports as necessary, but at least every three years • Ensure partners receive our new recommendations in a timely manner 3. Standards and guidance • Periodically review and update our standards through a multi-stakeholder input process • For the revisions cycle from 2014 onwards, organizing the process so that it follows ISEAL's Code of Good Practice for Standard Setting. This provides greater transparency and assurance around the robust nature of our process for rating wild and farmed seafood.
Maintain and increase North American market coverage	Conduct an annual prioritization exercise to identify gaps in the market coverage of our recommendations
Confusion over claims	• Publicly state that we are not an eco-certification, as we do not audit or have any control over individual companies' chain of custody. • Encourage consumers at point of sale to seek out traceability mechanisms • Follow the ISEAL "Making Claims about Sustainability Standards Systems Good Practice Guide"
Duplication of effort/ redundancy	Continue to identify equivalent eco-certs we can defer to based on benchmarking analysis of their standards. For information on our benchmarking work to date, please visit our website.

Document Update History

Version	Date	Notes
6	Mar 2020	• Updated scope of assessments and assessment prioritization criteria • General updating to reflect new standards, completion of the Seafood Carbon Emissions Tool and so on • Update of training section to reflect the new fisheries and aquaculture online training modules
5	Mar 2018	• Our expanded work regarding slavery in seafood supply chains, carbon emissions, and collaborations with other ratings organizations • Clarification on traceability advice offered to businesses • Deletion of the fee-based External Assessment Program, which has been replaced with tools allowing better performers to submit data proving they are better • How our assessment process follows ISEAL guidelines • Updates and additions to charts, graphics and tables • Explanations of what our ratings mean • Clarification on assessment process regarding inclusion of additonal stakeholder input • Addition of measuring impacts • An assessment of risks (per ISEAL) • Financials
4	Jan 2017	• Updated scope of fisheries assessments. • guiding principles regarding greenhouse gas emissions have been removed to be consistent with the revised Standard for Wild Fisheries and Standard for Aquaculture, and other documents. • Text added to state that fisheries reports have a default four-year expiration date.
1-3	Approx 2005-2016	Creation of document, subsequent minor updates to align with current procedures

Appendix A – Contract Analyst Job Description

Seafood Watch Contractual Research Analyst – Wild-Capture/Aquaculture

Position Summary

The Monterey Bay Aquarium Seafood Watch program analyzes the ecological sustainability of wild-caught and farmed seafood and makes this information available to consumers, businesses and other interested parties in the form of printed and online Seafood Watch Pocket Guides and other materials. Visit seafoodwatch.org for more information.

The Seafood Watch program seeks a number of qualified **Contractual Research Analysts** to prepare Seafood Reports on wild-caught and farmed species. The contractor is an off-site position who works on an as-needed, report by report, basis. The essential job functions include:

- Synthesize peer-reviewed primary literature, as well as government documents and other gray literature on the species/fishery/aquaculture operation in question.
- Contact scientists, conservationists and members of the industry to discuss the pertinent conservation issues related to these species and their fishing practices.
- Develop of sustainability recommendations utilizing the standards developed by the Seafood Watch program (available on our website).
- Summarize the findings in a Seafood Report according to the structure and format provided by the Seafood Watch program (find example on our website).
- Solicit scientific review from at least three external experts for scientific accuracy and completeness.
- Revise report based on feedback from these external experts and Seafood Watch staff.
- Submit final Seafood Report for publication on the web at seafoodwatch.org.

The Contractual Research Analyst will work closely with the Program Manager to develop a research strategy, obtain continual feedback and guidance, and establish a research and submission timeline.

Ideal candidates should have, or be working toward, a PhD or Master's degree in marine science, ecology or fishery science, or equivalent experience/education in the field of aquaculture. Knowledge of current trends and findings in marine conservation is important. Proficiency with Microsoft Word and Excel is mandatory. Outstanding written and verbal communication skills are critical. Monterey Bay Aquarium offers competitive compensation for comprehensive, high-quality contract work (generally on the order of $5000-$7000 per report, depending on complexity). This is not a benefited position.

If interested, please submit your resume to SFWResearch@mbayaq.org.