

Better than the Rest?

# A Resource Guide to Farmed Salmon Certifications







## Executive Summary

Certification programs are playing an increasing role in helping consumers and businesses identify which products support improvements in environmental and/or social practices. In recent years, the seafood sector has seen a large range of eco-labels and certification schemes appear in the market. Salmon aquaculture alone has several certifications in the market and more on the way.

Unfortunately, not all certifications have the same degree of credibility, offer valid assurances of sustainability, or require the same rigour for standards development and implementation. To communicate effectively to businesses and consumers that sustainability concerns are being addressed, a standard's logo—and the standards themselves—need to be trusted.

Both businesses and consumers face the challenging task of discerning which certifications reflect true improvements to environmental performance and which may be certifying products to weak standards, eco-certifying to an unrelated standard such as food-quality, or just making empty sustainability claims.

This resource guide helps you with that task by assessing the five major eco-certification schemes for farmed salmon now on the market, two others that will be appearing soon, and the organic labels in use and in development for farmed salmon. This guide also includes brief environmental assessments of three aquaculture production systems currently being explored: integrated multi-trophic aquaculture (IMTA), offshore aquaculture, and closed containment aquaculture.



Healthy Oceans. Healthy Communities.

CAAR members include the David Suzuki Foundation, Georgia Strait Alliance, Living Oceans Society, T. Buck Suzuki Environmental Foundation, and Watershed Watch Salmon Society.

Living Oceans Society is Canada's largest organization focusing exclusively on marine conservation issues. We are based in Sointula, a small fishing village on the Central Coast of British Columbia.

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Suite 1405 - 207 West Hastings Street  
Vancouver, B.C. Canada V6B 1H7  
T: 604 696 5044 F: 604 696 5045

[www.bettersalmon.org](http://www.bettersalmon.org)

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Aside from feeling good about 'being green,' why are sustainable production practices important for business? Unsustainable products that are linked to severe environmental problems can jeopardize company brands and reputational capital, and leave your supply vulnerable. Case in point: the collapse of the Chilean salmon farming industry due to a massive disease outbreak was not just an environmental and social crisis, but a major problem for buyers and brand image.

## Consumers are trusting your judgement

Certification is the procedure by which an official judgement is given in accordance to established requirements or standards. Third-party certification of accepted environmental standards can take the onus off of retailers and food service companies to trace or prove that products they sell meet sustainability requirements. Unfortunately, not all certifications have the same degree of credibility, offer valid assurances of sustainability, or require the same rigour for standards development and implementation.

The recent increase of certification schemes reflects the ever-growing marketplace support for sustainable practices.

- ▶ Polling shows 89% of American consumers are interested in eco-friendly products (Information Resources, Inc. 2007).
- ▶ Canadian consumers consider sustainability in their purchasing decisions right after the 'givens' of price and quality (McAllister Opinion Research, 2007).
- ▶ Leaders in the foodservice and retail sectors are sending a clear message to their seafood suppliers: move to sustainable production.

A recently published United Nations Food and Agriculture Organization (FAO) report on seafood eco-labels discusses the importance of retailers in reducing the complexity of consumers' buying decisions (Washington and Ababouch, FAO, Private Standards and Certification in Fisheries and Aquaculture, 2011). The authors note that consumers are increasingly looking to retailers to sift through the various certification schemes to carry the credible ones, rather than making purchases based on specific labels.

If consumers are relying on store brand and reputation, retailers who are choosing to carry only sustainable products gain market advantage. If an eco-label is discredited as greenwash, the retailer will share in the loss of trust and consumer confidence.



Photo: Whole Foods Market

Credible certifications can be a driving force for positive change, differentiating the unsustainable products from those leading the way towards sustainable production. However, if certification labels are merely an empty marketing ploy, or greenwash, the products associated with them become a source of vulnerability for your business and for environmental security. Credibility and brand trust for an eco-label are built by a transparent development process, support from conservation groups and stakeholders, and rigorous environmental standards.

## What is and isn't an eco-certification

This guide focuses on eco-certifications for farmed salmon. We've assessed the five major eco-certification schemes for farmed salmon now on the market, two others that will be appearing soon, and the organic labels in use and in development for farmed salmon. We have also included brief environmental assessments of three aquaculture production systems currently being explored: integrated multi-trophic aquaculture (IMTA), offshore aquaculture, and closed containment aquaculture.

Seafood certification schemes that have not been included are outside the scope, namely, Marine Stewardship Council, because it does not have certification standards for farmed salmon or any aquaculture product.

There are many *eco-labels* that are not actual certifications and are therefore not included. Commonly recognized recommendations given by the Vancouver Aquarium's Ocean Wise program or by SeaChoice in Canada are based on organizational ranking systems and are not official certification schemes. SeaChoice, for example, does science-based assessments of the environmental sustainability of fisheries and aquaculture. There are numerous such organizations that offer a sticker, label or other sort of stamp of endorsement, but these are not certifications and therefore will not be included in this report.

Salmon farming companies may make large investments in marketing their label as sustainable, but their claims are not necessarily backed by official certification standards. For example, Loch Duart farmed salmon from Scotland carries an 'RSPCA Freedom Food' label (which is not a certification) and is heavily marketed in North America by the private seafood

supply company CleanFish, but their claims of sustainability are not backed by standards. Indeed, there are many sustainability concerns about Loch Duart, as the company cannot adequately control escapes, uses toxic chemicals to control diseases and parasites, and still allows its farmed fish waste to flow freely into the surrounding marine ecosystem.

## What makes for a credible eco-certification?

To help inform our assessments of current and upcoming salmon aquaculture certifications, we drew on two widely-recognized guidelines for standard development and certification schemes: those of the International Social and Environmental Accreditation and Labelling alliance (ISEAL) and United Nations Food and Agriculture Organization (FAO).

ISEAL's *Code of Good Practice* provides guidelines for social and environmental standards creation, stressing the importance of input that is multi-stakeholder, public, balanced, and transparent (Setting Social and Environmental Standards v5.0: ISEAL Code of Good Practice, 2010). The FAO's *Draft Guidelines for Certifications in Aquaculture* provides a set of principles for certifications, which also includes principles like transparency, but also stipulates a reliance on the "best scientific evidence available."

Using this criteria—e.g. transparency about who is involved in designing the standard and the process, a multi-stakeholder and independent development team, and standards based on the latest peer-reviewed science—we assessed each certification scheme based on information and documents that were available on its website and requested more information when required. For example, we judged transparency by how available the companies made information about the standard, the standards development and revision process, the decision-making protocols, etc. This report relies heavily on information supplied by the companies and, as in most cases, the information could not be independently verified.

Compliance with the international guidelines of ISEAL or FAO does not necessarily mean a high *standard* has been set for the certification, but does assure purchasers that the eco-labelling scheme was not just born in a marketing meeting.

In addition to the credibility of the standard development process, we examined the environmental rigour of each standard. We examined how each addresses salmon farming's major environmental impacts—namely, disease and parasites (e.g. sea lice), benthic degradation, feed, predator interactions, escapes, and the use of chemicals and antibiotics.

## Who's behind the five eco-certifications on the market?

With one exception, the companies behind the farmed salmon certifications currently on the market are based in food quality or agricultural certification. They have added aquaculture eco-labels to their rosters of products in response to increased consumer and business demand for 'sustainable seafood.'

The most powerful of the certification companies is Global Good Agricultural Practice (GLOBALG.A.P.), a retailer-led private sector body that now provides the most widely implemented farm certification scheme worldwide. The other companies that provide eco-standard services to salmon aquaculture companies are the Food Marketing Institute (see esqu section), Global Trust (see Cooke Aquaculture's Seafood Trust Eco-Salmon and Irish Quality Eco-Salmon sections), and Friend of the Sea.

Two options for salmon aquaculture certification are still under development by the Salmon Aquaculture Dialogue (SAD) and the Global Aquaculture Alliance (GAA). The SAD standards are being developed in a stakeholder process initiated by World Wildlife Fund (WWF) and if ratified by the full steering committee, will eventually be implemented by the Aquaculture Stewardship Council (ASC). The GAA is an industry trade association currently drafting 'Best Aquaculture Practices' (BAP) for salmon with the help of a multi-stakeholder oversight committee.

Organic aquaculture standards are under development by the respective national bodies in the U.S. and Canada. In the U.S., the National Organic Standards Board (NOSB) wrote the draft standards and they now await approval from the U.S. Department of Agriculture. In Canada, Fisheries and Oceans Canada (DFO) initiated the development of a Canadian organic standard by first working behind closed doors with members of the salmon farming industry. DFO is still funding the process, now being coordinated by the Canadian General Standards Board (CGSB).

The only existing organic farmed salmon standards are in Europe, certified by bodies such as Naturland and the United Kingdom's Soil Association.

## Who are we?

The Coastal Alliance for Aquaculture Reform (CAAR) is a coalition of non-governmental organizations in British Columbia who have been working together since 2001 to protect wild salmon, coastal ecosystems, coastal communities and human health from destructive salmon farming practices and to transition the industry to more responsible practices. Members include the David Suzuki Foundation, Georgia Strait Alliance, Living Oceans Society, T. Buck Suzuki Environmental Foundation, and Watershed Watch Salmon Society.

Living Oceans Society is Canada's largest organization focusing exclusively on marine conservation issues.

### A credible eco-certification:

- › Is transparent about who is involved in the certification process and what process will be used from start to finish. Provides updates on progress and challenges
- › Is multi-stakeholder, including a diverse and balanced group of representatives from the seafood industry, science, non-governmental sectors, and the local community
- › Is based on scientific evidence and is independent
- › Has a process for on-going improvement, with periodic reviews to address new scientific findings
- › Is verified by a third-party, avoiding the potential conflict of interest of having the standards owner also certify the standards
- › Monitors and evaluates progress to determine eligibility for re-certification
- › Addresses key environmental impacts: disease and parasites (e.g. sea lice), benthic degradation, feed, predator interactions, escapes, and the use of chemicals and antibiotics




 esqu  
Eco-Label

Although the esqu website blends food safety claims with the language of environmental sustainability, all available evidence indicates the esqu label is only certified to food safety and quality standards and simply cannot be considered an eco-certification since it does not meet any recognized environmental standards.

## esqu Eco-Label

The esqu label is a marketing brand that uses Safe Quality Food (SQF) Certification standards. SQF is owned by the Food Marketing Institute (FMI) and they have a standard for primary producers (SQF 1000) and processors (SQF 2000), neither of which are aquaculture specific. The SQF standards deal with food safety and quality, not with environmental performance, but as such are recognized by the Global Safety Food Initiative as having met internationally accepted minimum food safety requirements.

The SQF standards are benchmarked with the Global Partnership for Good Agricultural Practice (see GLOBALG.A.P. section for more information.) However, only primary producers who are undergoing SQF 1000 and GLOBALG.A.P. certification need to meet GLOBALG.A.P.'s environmental standards, which are weak in any case. As of March 2011, GLOBALG.A.P. has a harmonized aquaculture standard available, but given the total lack of response to our inquiries, there is no determining whether or not the esqu label is, or will be, benchmarked with this new standard.

Our attempts to contact esqu were unsuccessful; emails bounced and our calls were not returned.



Photo: Catherine Stewart

## Strengths

**Semi-transparent.** The SQF technical committee that oversees the food quality standard and the list of certifiers is publicly available.

**Revision of standards.** SQF food safety standards are periodically reviewed and re-issued.

**Ongoing monitoring.** Each farm is audited every 6 months by a third-party certifier and re-certification audits are conducted annually. Audit frequency may be reduced after 3 years of good audit history.

**Third-party certification.** Compliance verified by third-party certifiers.

## Weaknesses

**Semi-transparent.** No updates on the progress of SQF standards, only issuance of new editions.

**Unbalanced and exclusive process.** SQF technical committee is not multi-stakeholder. It is made up solely of representatives from the global food industry (e.g., McDonald's, Walmart, Sara Lee, and SUPERVALU).

**Weak environmental standards.** SQF's stated purpose is as a food safety and food quality program and only "legal compliance with environmental legislation" is covered in the standard. Esqu does not claim to have met the optional environmental module of the SQF standard. Given the total lack of response to our inquiries, there is no determining whether or not esqu meets the environmental standards benchmarked with GLOBALG.A.P. However, even if that were the case, there would be no significant environmental benefit as the GLOBALG.A.P. environmental requirements are minimal, mostly based on local regulation, and many only recommended, not mandatory (see GLOBALG.A.P. section). There is a large body of research demonstrating that net pen salmon farms are negatively impacting wild fish and marine ecosystems even with existing regulatory requirements; an eco-label is expected to require more than the existing—and often inadequate—legal minimum.

**Lack of ongoing improvement.** Farms are not required to improve continuously, but only to meet a 3-level certification standard that is itself not sufficient to meet key environmental criteria.

**Reliance on science unclear.** There is no information available on what data are used in standards development. Because key environmental criteria, well documented by peer-reviewed science, are not included in this standard, it appears that the published science on the impacts of net-pen aquaculture has not been duly considered. Furthermore, given that the technical committee is made up of representatives in food safety, regulation, processing, distribution, retail and in agricultural production systems — and that the environmental module is not designed for aquaculture — we can conclude that the SQF technical committee did not fully consider science relevant to ocean ecosystems and the challenges specific to aquaculture.

GLOBALG.A.P.

The GLOBALG.A.P. standard may indicate a higher commitment to food safety, but does not offer assurance of environmental benefits.

## GLOBALG.A.P

Global Good Agricultural Practice (GLOBALG.A.P., formerly EUREPG.A.P.) describes itself as “a private sector body that sets voluntary standards for the certification of agricultural products around the globe.” Their goal is to establish one standard for ‘Good Agricultural Practice (G.A.P.) with different modules and standards for a wide variety of agricultural and aquacultural products.

The Aquaculture Base module (Version 4.0, January 2011) in the Integrated Farm Assurance standard was recently harmonized to include the standards for any aquaculture species—finfish, crustacean or mollusc.

The standard highlights food safety and quality, and includes measures for the health, safety and welfare of workers, the environment, and animal welfare as well. Because many retailers in Europe require GLOBALG.A.P. on all relevant products, the certification helps a producer’s access to markets. Unlike the other certifications schemes under review, the GLOBALG.A.P. standard is used internally by businesses as a purchasing requirement and is usually not directly visible to consumers.

In June 2009, GLOBALG.A.P. partnered with World Wildlife Fund (WWF) to offer aquaculture producers the option of certifying to additional environmental and social standards, standards developed by WWF’s Aquaculture Dialogues (see Salmon Aquaculture Dialogue section). The partnership was intended to allow for the certification of products in advance of the implementation of the Aquaculture Stewardship Council (ASC). As the Salmon Aquaculture Dialogue standards are still in draft form, this option is not yet available for farmed salmon.



Photo: Courtesy of Brown's Bay Packing Company

## Strengths

**Semi-inclusive process.** Although development of the standard is by committees that are comprised of 50% retailers and 50% producers/suppliers with little representation from conservation groups or scientists, representatives from a variety of interests offer comments for consideration in the revision process.

**Transparent process.** The standard, the members of the Sector Committee who oversee the aquaculture standard, and the list of approved certifiers are publicly available. Since 2008, GLOBALG.A.P. has attempted to make the standard-setting and revision process more open and transparent.

**Ongoing monitoring.** Certified producers undergo annual inspections. Ten percent of operations in any given year will receive a so-called “unannounced” inspection, with 48 hours notice.

**Revision of standards.** Standards are reviewed every three years to address technological developments. The aquaculture module is currently in its fourth edition.

**Third-party certification.** Compliance is verified by approved Certification Bodies.

## Weaknesses

**Semi-inclusive process.** Although development of the standard is by committees that are comprised of 50% retailers and 50% producers/suppliers with little representation from conservation groups or scientists, representatives from a variety of interests offer comments for consideration in the revision process.

**Weak environmental standards.** The standard fails to address the major environmental impacts from open net pen salmon farms such as waste, sea lice, lethal predator interactions, escapes, and the use of chemicals and antibiotics. All environmental requirements are minimal, most rely on local regulation, and many are only recommended, not mandatory. There is a large body of research demonstrating that net pen salmon farms are negatively impacting wild fish and marine ecosystems even with existing regulatory requirements; an eco-label is expected to require more than the existing—an often inadequate—legal minimum. The standard simply does not contain suitable measures to reduce the harmful impacts on ocean ecosystems; it does not stipulate measures to eliminate the risk to wild fish due to sea lice and disease transfer, allows chemical antifoulants, allows the use of parasiticides, and permits marine mammal deaths by lethal predator control. Regarding feed, the standard requires the use of a feed approved by GLOBALG.A.P., but it does not require reductions of or sustainable sources for all wild fish in feed.

**Reliance on science unclear.** It appears that the published science has not been duly considered, because major environmental impacts, well documented by peer-reviewed science, are not adequately addressed in the standard.



## Cooke Aquaculture's Seafood Trust Eco-Salmon

Cooke Aquaculture's certified products use an industry-led standard that lacks credibility due to its failure to comply with recognized guidelines for certifications and lacks sound environmental standards.

### Cooke Aquaculture's Seafood Trust Eco-Salmon

Cooke Aquaculture sells 'Seafood Trust Eco-Certified' salmon under the following brands: Heritage Salmon, True North Salmon and Jail Island Salmon.

The Seafood Trust Eco-Label is certified by Global Trust (formerly International Food Quality Certification). Global Trust acts as an auditor and certifier for food safety standards and also develops new standards to "meet client needs." Global Trust uses the Certified Quality Salmon (CQS) Standards, which are standards developed as a national standard by the Irish Sea Fisheries Board (BIM), Ireland's government agency responsible for developing its marine fishing and aquaculture industries (see Irish Quality Eco-Salmon section). The standards were later internationalized for use by Global Trust and its Fisheries and Aquaculture division, Seafood Trust.



### Strengths

**Revision of standards.** The standard's developing body, BIM Technical Advisory Committee, meets three or four times per year.

**Ongoing monitoring.** Audits of farm operations are conducted every 12 months.

### Weaknesses

**Lack of transparency.** Little beyond promotional literature is readily available on the Seafood Trust eco salmon standard or the certification process. Standards intentionally not readily available until late 2009, when the privacy policy changed somewhat to allow the standard owners to release a copy of the standard to interested parties. Copy of CQS standards version 5, revision 1, October 2009 obtained through personal communication. No information available about the process for improving and reissuing the standards.

**Unbalanced and exclusive process.** There is no mechanism for public or other stakeholder input into the standard. Was developed by Irish Sea Fisheries Board (BIM) Technical Standards Committee, which is made up of representatives from government agencies, the aquaculture industry, and Global Trust, the certification body.

**Weak environmental standards.** The standards overall are weak in addressing environmental impacts and cover mostly issues that are related to food quality (e.g. no harvesting fish exposed to oil spills) or make good business sense (e.g. don't waste feed). Many of the criteria require only an acknowledgement of or commitment to an issue, not measurable change in performance.

**Reliance on science unclear.** It appears that the published science has not been duly considered, because major environmental impacts, well documented by peer-reviewed science, are not adequately addressed in the standard.

**Potential conflict of interest.** Although Global Trust is an ISO 65 accredited certifier (compliant with ISO/IEC Guide 65 of the International Organization for Standardization), it is both certifier and a partner in the standards development.

## Irish Quality Eco-Salmon

An industry-led standard that lacks credibility due to its failure to comply with recognized guidelines for certifications and lacks sound environmental standards.

### Irish Quality Eco-Salmon

The Irish Quality Eco-Salmon is a national eco-label developed by the Irish Sea-Fisheries Board (BIM), Ireland's government agency responsible for developing its marine fishing and aquaculture industries, and by Global Trust. The label uses the same Certified Quality Salmon (CQS) Standards as Seafood Trust eco-salmon (see Cooke Aquaculture Seafood Trust eco-salmon section).

#### Strengths

**Revision of standards.** The standard's developing body, BIM's Technical Advisory Committee, meets three or four times per year. The standard is in its fifth iteration.

**Ongoing monitoring.** Audits of farm operations are conducted every 12 months.

#### Weaknesses

**Lack of transparency.** Little beyond promotional literature is readily available on the eco-salmon standard or the certification process. Standards had been not readily available, but in late 2009, BIM's privacy policy changed somewhat which allows release of the standards to interested parties. Copy of CQS standards version 5, revision 1, October 2009 obtained through webform request after signing a copyright declaration. No information available about the process for improving and reissuing the standards.

**Unbalanced and exclusive process.** There is no mechanism for public or other stakeholder input into the standard. Was developed by Irish Sea Fisheries Board (BIM) Technical Advisory Committee, which is made up of representatives from government agencies, the aquaculture industry, and Global Trust, the certification body.

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**Reliance on science unclear.** It appears that the published science has not been duly considered, because major environmental impacts, well documented by peer-reviewed science, are not adequately addressed in the standard.

**Potential conflict of interest.** Although Global Trust is an ISO 65 accredited certifier (compliant with ISO/IEC Guide 65 of the International Organization for Standardization), it is both certifier and a partner in the standards development.



Photo: Stan Proboszcz

## Friend of the Sea

Friend of the Sea's standard development process is more open than others, but that alone does not make it a credible eco-label. Its environmental standards are simply inadequate to demonstrate improved environmental performance.

### Friend of the Sea

Friend of the Sea (FOS), originally a project of the Earth Island Institute, is a non-governmental organization with an office in Italy. It certifies both wild and farmed seafood with the same label, and declares its focus is on "traditional, artisanal and small scale fisheries and aquaculture."

#### Strengths

**Semi-transparent.** Standards and audit reports are available on FOS website, but information about the process, revisions, and Technical Committee is minimal.

**Semi-inclusive process.** A small Advisory Board (4 or 5 members; website is inconsistent as to the number) originally developed the standard. Since 2006, the criteria are modified by the Technical Committee of "over 30" representatives from industry, government, environmental groups and the scientific community, but there is still no open and transparent public comment process.

**Revision of standards.** The criteria are reviewed yearly and upon request by the Technical Committee.

**Third-party certification.** Compliance is verified by independent certification bodies.

#### Weaknesses

**Semi-transparent.** Standards development process is not readily available. A small (4 or 5 member) Advisory Board originally developed the standard and information about current revisions being considered or how stakeholder comments are addressed was not made available. Information on the Technical Committee members is minimal.

**Semi-inclusive process.** Only members of the Technical Committee have input into the standards, though application is open. Anyone interested in commenting on audits under consideration must request to be a recognized stakeholder by sending a CV or role description to FOS.

**Weak ongoing monitoring.** Operations are certified for three to five years, as compared to one year for the other eco-labels in this report. Annual traceability audits are mentioned.

**Weak environmental standards.** The FOS standards use a checklist of criteria—Essential, Important and Recommended. Meeting criteria in the first two categories is required for certification, however many environmental impacts are addressed only as recommended measures or are not addressed at all. For example, the sustainable feed requirement for farmed salmon is almost meaningless as it is only optional. Even though there are a few environmental requirements—e.g. specifies the use of non-toxic antifoulants, excludes Genetically Modified Organisms and excludes growth hormones—operations that have major negative impacts on the surrounding ecosystem and local species (e.g. use of parasiticides to combat sea lice) would qualify for FOS certification. Overall, the language of the standard is weak and sets a very low bar for producers to qualify for certification.

**Reliance on science unclear.** It appears that the published science has not been duly considered by FOS, because major environmental impacts, well documented by peer-reviewed science, are not adequately addressed in the standard.



## Salmon Aquaculture Dialogue [In Draft]

The Salmon Aquaculture Dialogue standard is fully compliant with the ISEAL guidelines for standard setting. It has more broad-based participation than existing salmon aquaculture certification schemes, and as such, has the potential to yield a rigorous standard and wide support for the final product. However, there are many unresolved issues in the draft standard; it remains to be seen whether a rigorous and credible standard can be agreed upon by all participants.

## Salmon Aquaculture Dialogue

(Draft in Circulation)

The Aquaculture Dialogues are being organized by the World Wildlife Fund (WWF) and current participants include the world's largest salmon farming company and conservation organizations from major producing regions. The process is designed to bring together key stakeholders "to credibly develop measurable, performance-based standards that minimize or eliminate the key environmental and social impacts of salmon farming, while permitting the industry to remain economically viable."

At the time of this report, aquaculture standards for Pangasius, abalone, tilapia, and bivalves have been finalized, and standards for shrimp, salmon, freshwater trout, *Seriola/cobia* are targeted for completion by mid-2011. The dialogue initiated for salmon, the Salmon Aquaculture Dialogue (SAD), has released draft standards and is working towards completion.

Disclosure: CAAR has been involved in SAD since its inception as a member of the Dialogue's Steering Committee. We continue to work towards strong environmental standards in that forum.



Photo: Andrew S. Wright

## Strengths

**Inclusive process.** The SAD standards are being developed by a 9-member Steering Committee with support from several Technical Working Groups. The Steering Committee is made up of representatives from industry and from conservation organizations of key producing regions. Some SAD meetings are open, and scientists and retailers participate frequently. The Steering Committee has the final say on the standards, requiring an 80% agreement from both the NGOs and the industry representatives before approval.

**Science-based.** Standards are intended to be rigorous science-based metrics of acceptable impact that allow the producer to innovate as necessary to achieve the environmental performance target. Many scientists are involved in the technical working groups.

**Ongoing improvement.** Standards mark a target for transition to better practices and will include mechanisms for continuous improvement. Reviews and upgrades of the standards will take place every three to five years.

**Transparent process.** SAD is transparent about who is involved and the process that will be employed from start to finish. Progress updates are issued continually and publicly. The comprehensive 'State of Information' reports are available on WWF's website.

**Ongoing monitoring.** The frequency of farm audits is pending final decision, but will either be scheduled every 12 months or every production cycle.

**Third-party certification.** Once finalized, it is anticipated that the standards will be administered by the Aquaculture Stewardship Council (ASC), a separate entity from the Aquaculture Dialogues. The shape it will take and how assessments will be done are in development, however, it will likely act in parallel to the Marine Stewardship Council's wild fisheries certification program. In June 2009, WWF partnered with GLOBALG.A.P. (see GLOBALG.A.P. section) to offer aquaculture producers the option of certifying to finalized Aquaculture Dialogue standards (e.g. the tilapia standard) in advance of the establishment of the ASC. As the SAD standards are still in draft form, this option is not yet available for farmed salmon.

## Weaknesses

**Environmental standards to be determined.** The SAD Steering Committee has identified seven areas of key potential negative impact: feed, escapes, nutrient loading and carrying capacity, benthic impacts and siting, disease and parasite transfer, chemical inputs, and social impacts (including labour and community impacts). The process seeks to develop performance-based standards and metrics for each. There are many unresolved issues in the draft standard and it remains to be seen whether a rigorous and credible standard will be agreed upon by all parties.

The revised 2<sup>nd</sup> draft is due out at the end of April 2011 on the WWF website: <http://www.worldwildlife.org/salmondialogue>. There will be a 30-day public comment period when the revised draft is released. CAAR has been working to resolve outstanding issues from the first draft and encourages public comment on the new version.

## Global Aquaculture Alliance [In Draft]

The released draft of the Global Aquaculture Alliance (GAA) salmon standard falls well short of its claim of environmental responsibility. The standards primarily rely on producers meeting minimum local regulations despite the existence of a large body of research demonstrating that net pen salmon farms are negatively impacting wild fish and marine ecosystems even with existing regulatory requirements.

## Global Aquaculture Alliance's Best Aquaculture Practices

(Draft in Circulation)

The Global Aquaculture Alliance (GAA) is an aquaculture trade association that develops what they are calling Best Aquaculture Practices (BAP) certification standards for aquaculture facilities. GAA also “works to improve production and marketing efficiencies, and promote effective, coordinated regulatory and trade policies.”

GAA standards first came into public prominence in 2006, when Walmart committed to move towards providing sustainable seafood. At the time, the GAA was the only certification option available for their consideration and only shrimp standards were available. Walmart made a commitment to move forward with GAA products as they became available. GAA now has completed standards for shrimp, tilapia, pangasius, channel catfish, feed mills, and processing plants. Salmon standards are under development.



Photo: L. Renehan/Living Oceans Society

## Strengths

**Semi-inclusive process.** In response to concerns that GAA standards lacked stakeholder input, a Standards Oversight Committee (SOC) was established to manage the development of new standards. SOC membership includes representatives from industry, NGOs, and regulatory and academic interests. Technical committees make recommendations to the SOC, which then makes recommendations to the GAA board. Final approval, however, remains with the board. None of the current standards have gone through this SOC recommendation process.

**Semi-transparent.** GAA draft standards, standard development protocol, and a list of the SOC members are available on the website. However, public comments are not addressed publicly and final approval of the standards rests with the GAA board.

**Ongoing monitoring.** Facilities would be recertified annually.

**Revision of standards.** The SOC will review the standards annually and intends to improve them at least every three years.

**Third-party certification.** The standards are developed by GAA and administered by the Aquaculture Certification Council (ACC).

## Weaknesses

**Semi-inclusive process.** Technical committees make recommendations to the SOC, which then makes recommendations to the GAA board. Final approval remains with the board. None of the current standards have gone through this SOC recommendation process.

**Semi-transparent.** There is no assurance that public comments will be addressed as there is only one public comment period and the committee's response to any comments received is not public. The final approval of the standards rests with the GAA board, not the multi-stakeholder SOC.

**Weak environmental standards.** There are many unresolved issues in the draft standard and it remains to be seen how rigorous and credible the final standard will be. For example, the standard does not reflect—much less encourage innovation in—the current best practices for feed, as it proposes a lower standard than is already being attained by some companies. While the narrative sections of the standard at times discuss broader goals and improvements in practices, the standards primarily rely on producers meeting minimum local regulations. There is a large body of research demonstrating that net pen salmon farms are negatively impacting wild fish and marine ecosystems even with existing regulatory requirements. The environmental requirements outlined in the standard at this time are simply inadequate to demonstrate significant improvements in environmental performance.

**Reliance on science unclear.** GAA claims that its BAP standards are science-based, however the standards do not address key environmental impacts that have been well-documented by peer-reviewed science. It appears, therefore, that the published science has not been duly considered.



## Organic Aquaculture Standards

Any salmon farm in the world that uses open net-pen technology will have myriad environmental impacts. Major impacts include: waste polluting the marine environment, fish escapes, marine mammal entanglements, the spread of parasites and disease, and the use of antibiotics and chemical treatments.

Yet, there are organic standards for net-pen farmed salmon in Europe, and standards being developed in Canada and the U.S. Unfortunately, these labels mask numerous business-as-usual practices.

### EXISTING EUROPEAN STANDARDS

Organic certification of net-pen farmed salmon has been controversial internationally. Currently, the only existing organic farmed salmon standards are in Europe, certified by bodies such as Naturland and the United Kingdom's Soil Association. The Soil Association chose to permanently certify farmed salmon using standards that still allowed the problems of net-pens to persist. In response the chairman, Lawrence Woodward, resigned from his position stating:

“Salmon farming in cages has nothing at all to do with organic principles. It is very regrettable that the Soil Association has gone down this line of trying to certify something that is so distant from the principles.” (BBC, Concern over organic salmon farms, 2006)

Indeed, the European organic standards do not meet consumers' expectation of 'organic.' For example, synthetic parasiticides and antibiotics are permitted under European organic standards. At present, conscientious North American consumers who choose 'organic' farmed salmon are being misled, because the only farmed salmon in the North American market bearing an 'organic' label is imported from Europe under their weak standards.

### DRAFTED CANADIAN STANDARDS

Fisheries and Oceans Canada (DFO) initiated the development of a Canadian organic standard by first working behind closed doors with members of the salmon farming industry. DFO is still funding the process, now being coordinated by the Canadian General Standards Board (CGSB).

The current publicly available draft of the standard would allow net-pen farmed salmon to be granted organic certification and does not include adequate requirements around known environmental impacts of net-pen aquaculture—impacts such as the spread of disease and parasites lethal to wild fish, uncontrolled disposal of fish feces into the ocean, escapes of farmed fish, and lethal interactions with marine mammals. Producers would be able to sell a farmed product as 'organic' even though they may have treated it with synthetic parasiticides. These practices are inconsistent with current organic agricultural standards and not what consumers have come to expect when choosing organic.

From April through May 2011, the draft standard is undergoing its second public comment period. Sub-groups of stakeholders will then work on revisions, which will be voted on by the larger committee. It remains to be seen whether a Canadian standard will emerge that will certify the product as organic without requiring substantially improved practices.

### DRAFTED U.S. STANDARDS

The U.S. organic standard is also pending. The standard has been completed and was written and recommended by the National Organic Standards Board, but the necessary regulatory amendments are awaiting approval by the U.S. Department of Agriculture (USDA).

While the draft standard does permit the use of net-pens, thanks to outstanding support from the public, conservation organizations, and consumer advocacy groups, the U.S. standard being considered has much more stringent requirements than the current draft Canadian organic standard. The U.S. standard includes measures such as:

Net-pens will not be allowed where they could impact the reproduction or migratory routes of wild fish or other marine life.

The use of wild fish in feed will be limited to trimmings and waste from environmentally responsible fisheries. The ratio of fish in feed to farmed fish produced cannot be greater than 1:1 with continual reductions over time.

Only indigenous species of local genotype can be used in net-pen production due to the inability to eliminate the risk of escapes.

50% of waste nutrients (nitrogen & phosphorous) must be re-captured from net-pens.

No antibiotics or chemical parasiticides can be used.

However, Canada and the U.S. currently have an equivalency agreement for organic standards and there is concern that Canadian aquaculture standards that set a low bar will put downward pressure on U.S. standards as they go through the final approval process with the USDA.

Weak standards threaten the integrity of the organic label and negate others' efforts to produce truly organic products.



Photo: iStock / Ivan Tykhyy

## Emerging Aquaculture Production Systems

### INTEGRATED MULTI-TROPHIC AQUACULTURE (IMTA)

Integrated Multi-Trophic Aquaculture (IMTA) integrates raising plants and/or animals with the culture fish in an attempt to reduce organic waste. Waste is mostly fish feces, uneaten food pellets and the dust from food pellets that are released into the water from open net-pen salmon farms. In IMTA, species like seaweed, mussels and other invertebrates are used to recycle some of these organic wastes and therefore potentially reduce their accumulation.

IMTA is an interesting effort at lessening some waste-related impacts of salmon farming. However, IMTA fails to address some of the key environmental impacts like sea lice and disease that are causing so much trouble for wild salmon, nor does it stop escapes of farmed fish into the wild.

As such, IMTA farms do not automatically rank as more sustainable than other types of open net-pen salmon farming and do not qualify for preferential treatment by consumers or seafood companies. To date, there has been no formal and publicly transparent assessment of the overall sustainability of these farms or the actual level of waste reduction achieved.

The few efforts to award eco-labels to companies that have some IMTA farms have been industry-developed programs that do not have transparent criteria or participation from independent science or conservation stakeholders. Such endorsements simply do not qualify as credible.

Currently, the major user of IMTA for salmon in Canada is Cooke Aquaculture. They use this method on less than 1% of their total farmed salmon production.



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### OFFSHORE AQUACULTURE

Offshore aquaculture, or open-ocean aquaculture, refers to production systems in national open ocean (the 12 mile offshore zone) or in the 200-mile Exclusive Economic Zone (EEZ).

Offshore aquaculture operations are using effectively the same technology as nearshore farming: open net-pens. It's possible that offshore farms could reduce the impact of farm-origin sea lice on out-migrating wild juvenile salmon due to their distance from river mouths, but net-pen aquaculture, wherever it operates, provides no effective barrier between the farmed fish and the ocean ecosystem. Therefore, the major impacts such as waste and pollution, chemical use, disease and parasites, escapes, and feed remain serious ecological concerns.

### CLOSED CONTAINMENT AQUACULTURE

Closed containment aquaculture refers to a system of production that creates a controlled interface between the culture (fish) and the natural environment.

Closed containment is a proven, viable technology, and is currently used to raise species such as tilapia, catfish, char, sturgeon, trout and salmon in Canada, the U.S. and China. Whether sited on water or land, closed containment systems can address some of the major environmental impacts of salmon farming, including:

- eliminate solid waste dispersal into the marine environment and resulting contamination of the seabed under farms
- eliminate escapes from the rearing facility
- eliminate marine mammal deaths due to interactions with farmed fish and nets
- eliminate or greatly reduce the risk of disease and parasite transfer to wild salmon
- significantly reduce water column pollution, feed waste and the need for antibiotics and chemical treatments in raising fish

There are inevitably some sustainability issues with any farming of a carnivorous species like salmon. Reducing the dependence on wild fish in aquaculture feeds is critical for overall sustainability. There have been significant improvements over the last decade in the reliance on wild fish for farmed salmon feed. Monterey Bay Aquarium's Seafood Watch and Canada's SeaChoice programs rank the use of marine resources at a Washington-based closed containment salmon farm as "Moderate Concern" (Farmed U.S. Freshwater Coho Salmon, Seafood Watch Seafood Report, 26 October 2009).

Another concern has been the carbon footprint of closed systems. However, improved technology, alternative energy sources, aquaponics, and the use of bio-digesters, have the potential to greatly improve the energy performance of closed containment systems. The challenge of energy-efficiency and lowering the carbon footprint is solvable, however, compared to the fundamentally flawed technology of open net-pen salmon farming.



Photo: AgriMarine



## APPENDIX I

**Scientific Resources for the Environmental Impacts of Salmon Farming**

For a bibliography of the peer-reviewed science on the ecological and health impacts of open net-pen salmon farming, go to:

[http://www.farmedanddangerous.org/wp-content/uploads/2011/01/Science-Bibliography\\_Jan11.pdf](http://www.farmedanddangerous.org/wp-content/uploads/2011/01/Science-Bibliography_Jan11.pdf)

Comprehensive 'State of Information' Reports were commissioned by the Salmon Aquaculture Dialogues and completed by independent academic experts on the major impacts of salmon farming. Reports available at:

<http://wwf.worldwildlife.org/site/PageNavigator/SalmonSOIForm>

## APPENDIX II

**Glossary of Aquaculture Terms**

Benthic degradation – negatively impacting the sediment surface, sub-surface layers of an ocean or lake bottom or the biological community that resides there. Refers to the impacts of waste, nutrients, chemicals or litter from the open net farm facility on the condition or biota of the marine floor.

Closed containment - a system of aquaculture production that creates a controlled interface between the culture fish and the natural environment.

IMTA – Integrated Multi-Trophic Aquaculture. An aquaculture system that integrates raising plants and/or animals with the culture fish in an attempt to reduce organic waste.

Net-pen – a floating cage or net used for rearing culture fish in a body of water. Using this technology, a producer has little to no control of the spread of disease and sea lice, escapes, pollution, and other elements to the marine environment.

Offshore aquaculture – a production system in national open ocean (the 12 mile offshore zone) or in the 200-mile Exclusive Economic Zone (EEZ).

Parasiticide - a substance or agent used in an effort to control parasite numbers. A commonly used parasiticide in the salmon farming industry is SLICE, which is classified as “very toxic to marine organisms.”

Sea lice - marine ectoparasites (external parasites) that feed on the mucus, epidermal tissue, and blood of host fish. Sea lice naturally occur on a variety of wild fish, but fish farms are ideal and unnatural breeding grounds for the parasite. Infestations on farms significantly increase the number of lice in surrounding waters, far beyond what would occur naturally. Research in British Columbia shows that sea lice from fish farms threaten the survival of out-migrating wild juvenile salmon.

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Healthy Oceans. Healthy Communities.

CAAR works to protect wild salmon, coastal ecosystems, coastal communities and human health from destructive net pen salmon farming practices. Members include the David Suzuki Foundation, Georgia Strait Alliance, Living Oceans Society, T. Buck Suzuki Environmental Foundation and Watershed Watch Salmon Society.

Suite 1405 - 207 West Hastings Street Vancouver, B.C. Canada V6B 1H7 604 696 5044

[www.bettersalmon.org](http://www.bettersalmon.org)