GLOBAL AQUACULTURE PERFORMANCE INDEX

HOW GREEN IS YOUR ECO-LABEL?

Comparing the Environmental Benefits of Marine Aquaculture Standards

Executive Summary

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EXECUTIVE SUMMARY

Product standards and eco-labels have proliferated in the seafood market as a kind of shorthand — a seal of approval — buyers can rely on to make environmentally sustainable decisions. But what do these standards and eco-labels actually mean? Is fish produced according to a particular standard better than conventionally produced fish? And how do these different standards stack up?

This study — *How Green is Your Eco-label? A Comparison of the Environmental Benefits of Marine Aquaculture Standards* — uses a well-established methodology, refined by the 2010 Global Aquaculture Performance Index (GAPI), to determine numerical scores of environmental performance for 20 marine finfish aquaculture standards. While a number of previous assessments have offered important insight on the sustainability of standards, this is the first to quantitatively assess their ecological impact. GAPI does not delineate "good" versus "bad" performance. Instead, it is meant to be a tool to compare eco-labels and evaluate where they lie on the continuum of environmental performance. This study acts as a kind of *Michelin* guide for standards: distilling a large amount of disparate information into simple scores that highlight the strengths and weaknesses of different standards. The long-term objective is to help stakeholders — seafood buyers, fish farmers, standard setters, and policy makers — understand how standards as a whole are contributing to the ultimate goal of a more sustainable marine aquaculture industry.

20 Standards

Third party/Industry:
- AquaGAP
- A Code of Good Practice for Scottish Finfish Aquaculture (CoGP)
- Debio
- Federation of European Aquaculture Producers (FEAP)
- Friend of the Sea
- Global Aquaculture Alliance
- GLOBALG.A.P.
- Label Rouge
- Salmon Aquaculture Dialogue (Draft)
- SIGES (SalmonChile)

Organic:
- Australia Certified Organic
- BioGro
- BioSuisse
- Canadian Organic Standard (Draft)
- Naturland
- Organic Food Federation
- Soil Association
- U.S. National Organic Standard (Proposed)

Retailer:
- Marks & Spencer
- Whole Foods Market

Focus on Marine Finfish

Although marine finfish farming accounts for just 7 percent of global aquaculture production, its commercial value coupled with disproportionate environmental impacts and the controversy surrounding these impacts make it a focal point for standard-setting and certification. This study focuses on 11 marine finfish species, selected either because of commercial importance or because they are the focus of an assessed standard.

Evaluated Standards

The study evaluates voluntary standards that aim to reduce or eliminate the environmental impacts of marine finfish farming. It is limited to those standards for which there are publicly available criteria (including draft standards) and assesses performance as it relates to environmental impacts only. The standards fall into three basic categories: organic standards, retailer standards, and industry and other third-party standards.

The report is based on standards as they existed in August 2011 and does not incorporate changes after that date. Three of the standards assessed—the Salmon Aquaculture Dialogue, Canadian Organic Standard, and U.S. National Organic Standard—were in draft form at the time of this assessment. Final changes to these standards could affect their GAPI performance scores.

Impacts Considered

Each standard is evaluated according to its performance in 10 environmental impact categories. These categories have been selected based on a survey of the environmental impacts addressed in current aquaculture assessment initiatives. While there are no universal criteria for measuring performance in these areas, the formulas are designed to be scientifically sound and populated with publicly available data. For more information on how performance in each impact category is measured, see the 2010 GAPI report at www.gapi.ca.

11 Marine Finfish Species

Atlantic cod
Atlantic salmon
Barramundi
Chinook salmon
Cobia
Coho salmon
European seabass
Gilthead seabream
Grouper
Milkfish
Turbot

10 Impact Categories

ANTI: Antibiotics
BOD: Biochemical Oxygen Demand
CAP: Capture-Based Aquaculture
COP: Copper-Based Antifoulants
ECOE: Ecological Energy
ESC: Escapes
FEED: Sustainability of Feed
INDE: Industrial Energy
PARA: Parasiticides
PATH: Pathogens

For the formulas used in scoring impact categories, see www.gapi.ca.

Scoring Environmental Performance

The study yields two critical pieces of information:

Absolute Performance Score

How each standard scores on an overall zero to 100 scale, where zero is the worst performance of all standards assessed and 100 is perfect performance or zero-impact. The higher the score, the better the performance.

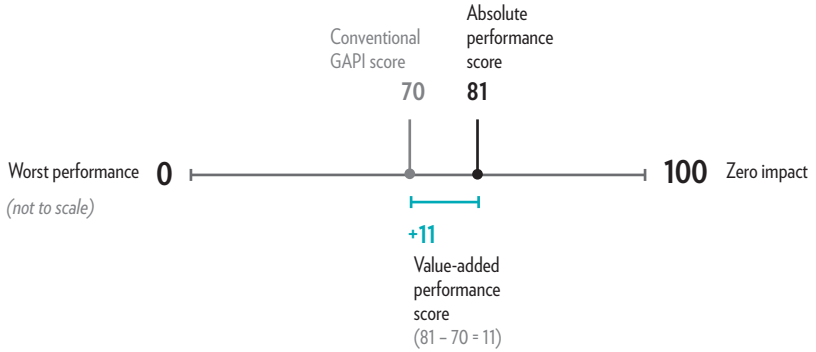
Value-Added Performance Score

How much better or worse a standard scores compared to average industry practice (as defined in the 2010 GAPI). The absolute performance score ranks standards based on which is "greener," but the value-added score determines which standards are driving the most change in their industry or region.

Within the report, absolute and value-added scores for each standard are also broken down by impact category and species to provide a more nuanced view of performance.

This study assesses the performance of each standard as written, translating each standard into the GAPI scoring system. It does not assess the performance of a specific certified farm, but simply asks how poorly a farm could perform and still meet the written standards relevant to each impact category.

Figure I: Environmental Performance Scores
A detailed explanation is online at www.gapi.ca



RESULTS

Absolute Performance: Who Is the Greenest of Them All?

Figure II lists the absolute performance scores for all assessed standards.

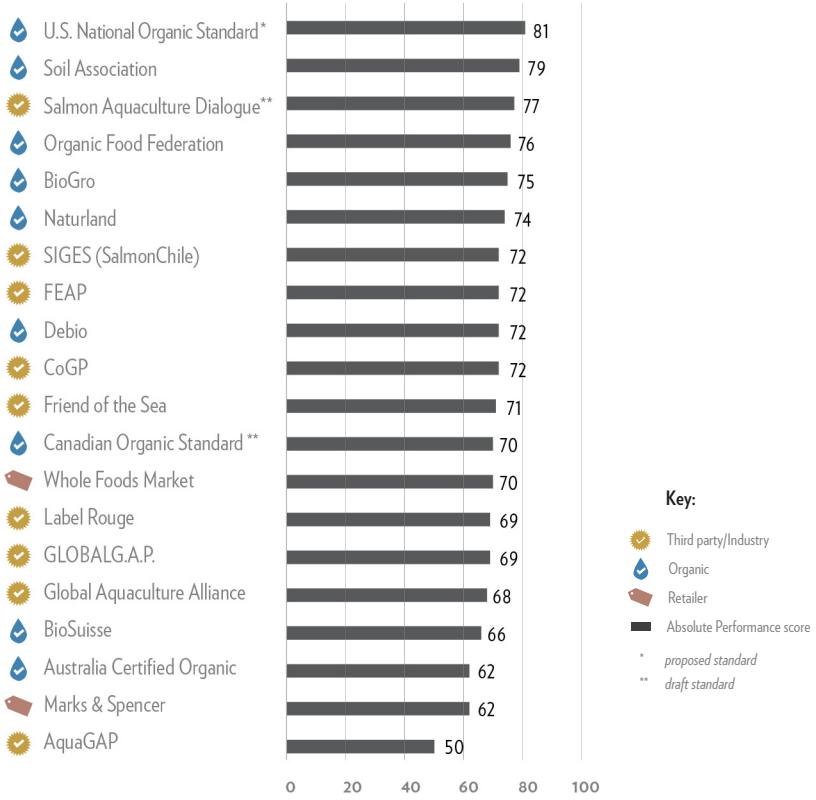
Organics Lead the Pack

In terms of absolute performance, four of the five top-performing standards are organic standards. Organic standards for marine aquaculture are generally meant to align with broader organic food production standards that place strong restrictions on waste management and the use and discharge of chemicals. The organic standards that score well receive relatively high scores in these categories.

Salmon-Specific Standards Have an Advantage

While Atlantic salmon continues to receive much of the attention regarding the negative environmental impacts of aquaculture, the 2010 GAPI demonstrated that the per-unit environmental impact of conventional salmon farming is lower than most marine finfish species in production. Those standards that focus solely on Atlantic salmon — such as Soil Association and Salmon Aquaculture Dialogue — have the advantage of a stronger starting position than those focused on less-developed industries, such as barramundi or gilthead seabream.

Figure II: Absolute Performance Scores *(for all species evaluated)*



Value-Added Performance: Who Is Driving the Most Change?

Figure III lists the value-added performance scores for all assessed standards.

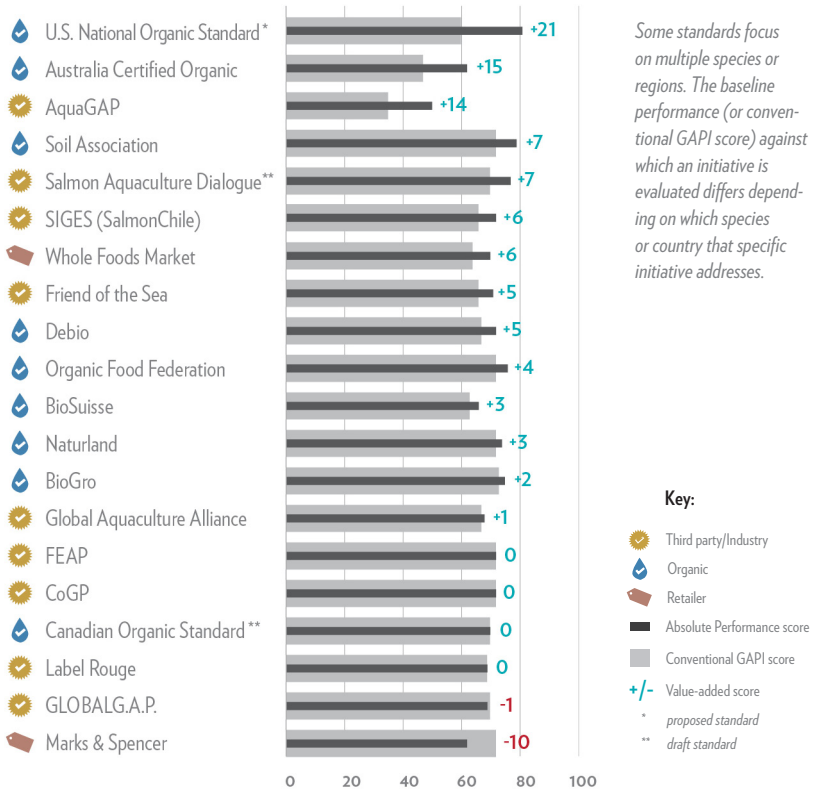
Some Flip-Flopping in Performance

Value-added performance and absolute performance provide two different pictures. A standard may score poorly on the absolute performance scale while being one of the highest-ranking standards for value-added performance, and vice versa. For example, the two barramundi-specific standards — AquaGAP and Australia Certified Organic — are at the bottom of the barrel for absolute performance. However, both have high value-added scores since their performance is substantially better than average barramundi production, demonstrating a potential to drive improvement within that sector.

Organics Lead the Pack Again

Three of the five top value-added performance scores are for organic standards. Since organic principles have been shaped and applied across many different types of food systems, these standards seem to be less influenced by concerns regarding feasibility and industry adoption than multi-stakeholder aquaculture standards are. Thus, organic standards have the potential to be set well above average industry practice, even if those standards can only be achieved by a small (or perhaps zero) percent of the industry at the time of adoption.

Figure III: Value-Added Scores *(for all species evaluated)*



Some standards focus on multiple species or regions. The baseline performance (or conventional GAPI score) against which an initiative is evaluated differs depending on which species or country that specific initiative addresses.

Distance to Green

The absolute and value-added performance scores are useful for comparing the environmental performance of existing standards. But are these scores good enough?

Instead of establishing yet another benchmark for what "green" is, this study relies on two well-established seafood guides—the Monterey Bay Aquarium's Seafood Watch guide (MBA) and the Blue Ocean Institute's seafood guide (BOI). To the extent seafood buyers feel comfortable with the seafood guides, this section provides a look at how well standards perform relative to these rankings.

These leading buyers' guides are translated into the GAPI scoring system in the same way the 20 standards are translated. This allows the standards to be expressed in the red-yellow-green language of buyers' guides, showing where each standard ranks along the color spectrum and the magnitude of improvement needed to move to the next color.

This red-yellow-green grouping is not meant to reflect the internal categorization regime by the MBA or BOI. It only reflects the interpretation of their criteria within our framework.

Accurate translation from the red-yellow-green scoring system to GAPI requires an abundance of high-quality data to ensure accuracy. Since Atlantic salmon is the only species assessed by nearly all initiatives, it provides a level playing field to directly compare relative performance by each initiative in the red-yellow-green context. The scores and rankings in this part of the analysis have changed to reflect performance as it relates to Atlantic salmon standards only.

Figure IV: Distance to Green: MBA rating results *(Absolute Performance Scores for Atlantic salmon)*

No standard achieves a green rating. Only one standard – the proposed U.S. National Organic Standard – comes close to a green ranking. Most standards fall in the yellow category and two in the red category.

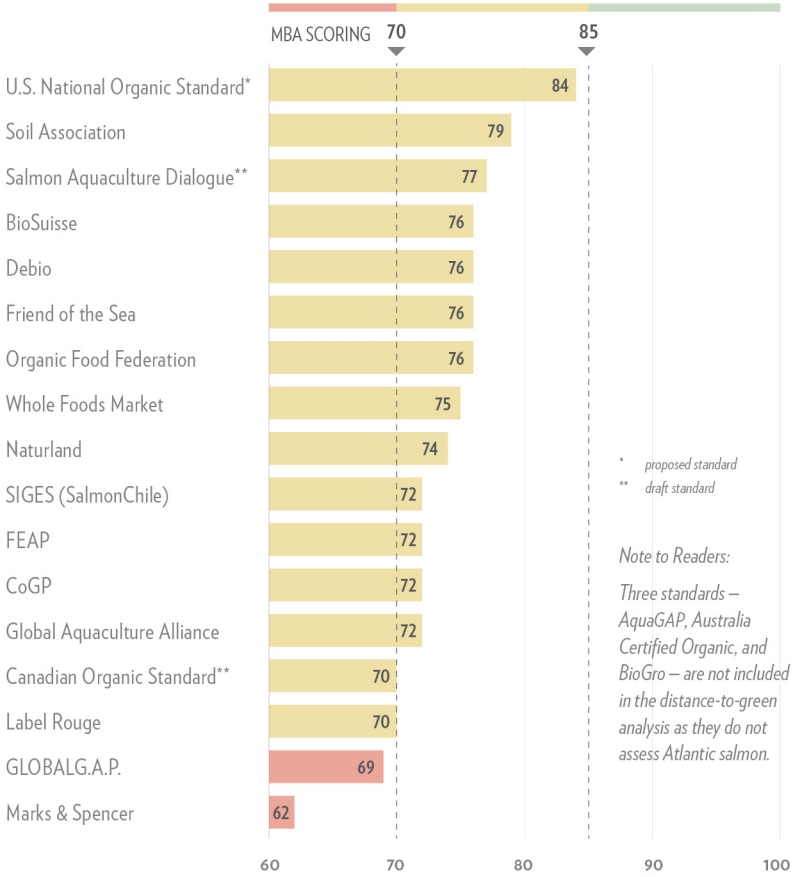
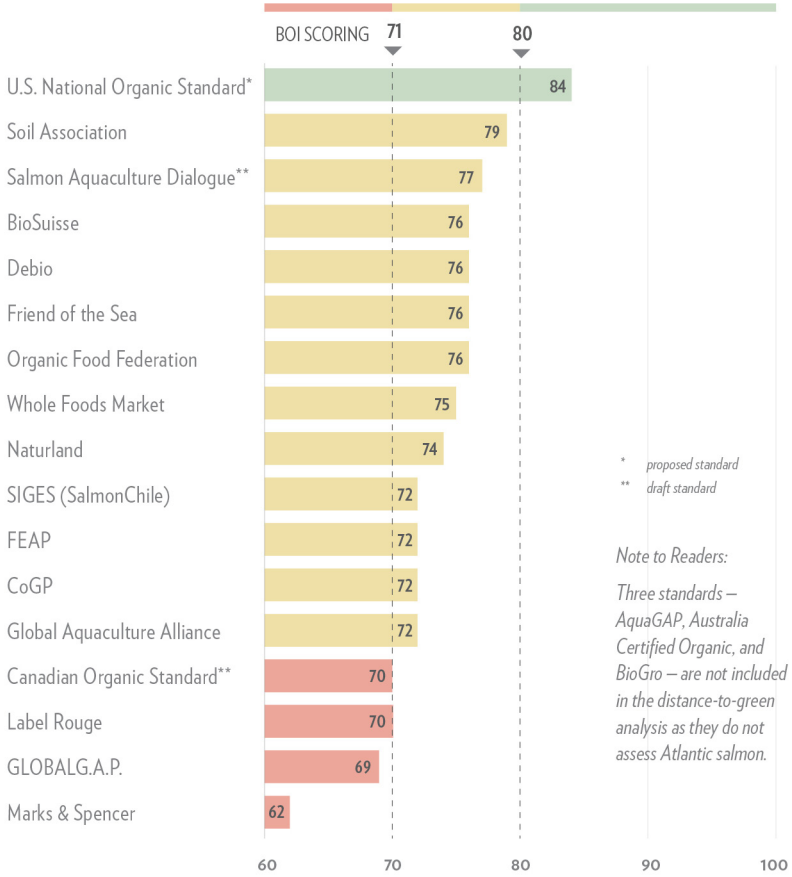


Figure V: Distance to Green: BOI rating results *(Absolute Performance Scores for Atlantic salmon)*

The proposed U.S. National Organic Standard is also the only standard to achieve BOI's green rating. Similar to the MBA results, 12 of 17 standards fall into BOI's yellow category and four into its red category.



WHAT THE STUDY SHOWS

A Lack of Strong and Measurable Performance-Based Standards

While many eco-labels have won consumer confidence, an alarming number of the standards ignore major environmental impacts or fail to set measurable limits. Given that standard-setting initiatives and certification bodies do not yet share monitoring data, measurable, performance-based standards are the only assurance consumers have that these products are better. In the absence of quantitative standards, there is no evidence that these certified products are actually environmentally-preferable. Those standard-setting initiatives that establish largely quantitative, performance-based standards — such as the proposed U.S. National Organic Standard, draft Salmon Aquaculture Dialogue standard, and Whole Foods Market standard — are leaders in this regard.

A Questionable Return on Investment

A substantial investment of financial and human capital has gone into establishing production standards for marine aquaculture that are likely to achieve only modest environmental benefit. While the best-performing standard — the proposed U.S. National Organic Standard — could lead to 33 percent improvement over conventional performance if adopted, most standards offer no more than 10 percent improvement over status quo. In fact, a third of the standards assessed perform at or even below average industry performance. Of all the Atlantic salmon standards assessed, only one meets the green threshold of a seafood guide.

The Challenges of Scale

Earlier GAPI research identified that most of the best-performing marine finfish farming sectors (e.g., Atlantic salmon in Norway) have the largest cumulative ecosystem impacts. As these sectors have expanded, they have benefited from economies of scale and become more efficient with much of their resource use. In turn, the increasing efficiency of these farms — and the associated profitability — has stimulated additional growth, until the level of production often exceeds the local carrying capacity.

Strong farm-level standards alone are not sufficient to constrain the ecological footprint of the entire industry, and may in some cases amplify the problem by stimulating net growth rather than compelling existing producers to decrease their total ecological impacts. The environment cannot recognize incremental improvements per unit of production—it can only reflect the cumulative impacts. It is of no ecological consequence if a particular cumulative impact is generated by 100 efficient farms, or just one inefficient farm.

Another limitation to voluntary standards is the trade-off between the strength of standards and their rate of adoption. For any standard, the overall environmental improvement generated is essentially a function of the value added of the standard multiplied by the size of the industry and the standard's adoption rate. As marine finfish production increases, the combination of very strong standards with very high adoption rates is unlikely to be feasible.

These observations beg the question: how can aquaculture production continue in a way that contributes to global food supplies while protecting the marine environment? Part of the answer lies in applying strong standards to individual operations, and encouraging public policy that incentivizes increased adoption of these standards by the market. Governments of major aquaculture-producing countries must also make farm-level environmental impact data publicly available so that standards can be set at levels that actually drive improvement.

But even the best eco-labels are not a cure-all, especially when cumulative impacts are considered. As an effective complement to voluntary standards and eco-labels, regulatory and legislative processes must address the cumulative impacts of the industry, scaling production to the carrying capacity of marine ecosystems.

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