Toward Credible Claims

The growing importance of aquaculture certification makes it imperative that these systems equally protect the public's interests by accurately and transparently representing the benefits they provide

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The rapid expansion of aquaculture in recent decades has given rise to increased concerns about the environmental and social implications of the industry. Aquaculture has averaged a seven percent annual growth rate since 1970 (FAO 2009) and now supplies half of all seafood consumed by humans globally each year (Naylor, et al., 2009). Although modern techniques have improved the economic efficiency and profitability of the industry, aquaculture production still causes impacts such as localized nutrient enrichment or depletion, release of antibiotics and pesticides, disruption of local environments, conflicts with other land and water uses, introduction of nonnative species, disease transmission to native species, and depletion of wild fish stocks due to the dependence on wild capture as a food source (Marine Aquaculture Task Force 2007). To date, global regulation of aquaculture production has rarely addressed these issues in a consistent or effective manner.

Voluntary third-party certification has the potential to fill this gap by encouraging producers to voluntarily reduce the social and environmental impacts of production (Marine Aquaculture Task Force 2007). These systems operate by establishing certification standards to measure performance; a separate secretariat sometimes holds the standards and manages the certification process. In most systems, accredited independent, third-party certification bodies audit producers to determine whether they are in compliance with these standards. Companies found to be in compliance may sell their goods as certified (ELI 2008).

Effective and credible certification systems improve performance by protecting the interests of both industry and the public. Certified producers benefit by obtaining exclusive access to markets or price premiums, while buyers — whether wholesalers, retailers, or consumers — obtain assurance that the environmental and social impacts of certified products are less than competing, non-certified products (Lee 2008).

Certification appears to be a successful model from an industry perspective, as seafood retailers from Aldi to Walmart have committed to source only certified seafood. The growing importance of certification makes it imperative that these systems equally protect the public's interests by accurately and transparently representing the benefits they provide. However, certification systems have not provided clear, consistent, and measurable state-

ments of claims that allow purchasers and the public to easily understand what level of performance is required for products to become certified, and little independent data are available to support claims of general superiority of certified products (Tlusty 2011). Inadequate claims may limit the ability of the public to understand the particular benefits claimed for certified products, and, fairly or not, expose certification systems to claims of greenwashing, undermine their credibility, and upset the incentive systems upon which they are built. Improvements to claims therefore are imperative for the continued health and development of aquaculture certification.

The larger certification industry has begun to recognize the importance of improving goal-setting. The International Social and Environmental Labelling Alliance recently finalized a code of good practice for assessing the impacts of certification systems (ISEAL 2010). The code explains, "The concept of assessing impacts refers to an overall evaluation of the success of a standards system's attempts to achieve its goals" (ISEAL 2010). This explanation of impacts assessment thus includes the concept of establishing goals and of evaluating success in meeting those goals. In practice, the code requires its members to "document their understanding of how change is intended to occur as a result of their activities" and to monitor and evaluate performance to evaluate progress toward those goals (ISEAL 2010).

Unfortunately, commitments to re-examine goals and impacts have had little traction in aquaculture certification. Of the aquaculture certification systems, only the Aquaculture Dialogues and the Fairtrade Labelling Organizations are members of ISEAL. And while advocacy groups have criticized seafood ecolabels as vague or misleading (e.g. ClientEarth 2011; Food and Water Watch 2010), they have not provoked substantial improvement to aquaculture certification system claims. This article examines how aquaculture certification claims can be improved and, crucially, provides steps to implementation of credible claims.

Certification system claims have two roles: to communicate the meaning of certification to purchasers and to establish the level of performance that the certification standards are intended to produce. A credible claim will accomplish both of these tasks, while claims that fail either element may result in loss of credibility. For example, a system claiming to provide "sustainable seafood" but defining that outcome by a commitment to "reduce impacts" may not meet public expectations. Similarly, if a claim is not adequately defined to provide a clear outline for the stringency of certification standards, it may result in certification of producers that perform at a lesser level than advertised. To satisfy both elements for credibility, claims must be both clear and measurable. Consideration of leading aquaculture certification system claims suggests that while impacts are often delineated, goals are rarely stated in a measurable way.

The Global Aquaculture Alliance is a trade association that has developed a suit of Best Aquaculture Practice standards. The GAA explains its claims in its Standards Development Process Document, which dictates that "BAP's broad goal is to drive continued industry-wide improvements by setting high standards that deliver significant benefits while representing realistic objectives for the majority of aquaculture operators" (GAA, undated). This document also indicates the issues that the BAP program is intended to address, including "environmental and social responsibility, animal welfare, food safety, and traceability" (GAA, undated). These impacts are not associated with specific performance baselines. GAA's website also indicates that the BAP mark on packaging for seafood "means that BAP-certified hatcheries, farms, processing plants and feed mills apply practices that minimize environmental impacts, respect workers' rights and produce wholesome products" (GAA, www.gaalliance. org/bap/retailmark.php).

The Aquaculture Dialogues are the foundation for a nascent aquaculture certification system, the

Aquaculture Stewardship Council, which launched this year. The Dialogues were convened as multi-stakeholder standard-setting initiatives to create science-based, measurable standards for leading aquaculture species. (One author participated in the Tilapia Aquaculture Dialogue.) As described in the Dialogues' process guidance document, the goal of each Dialogue is "to develop performance-based standards that minimize the key environmental and social impacts associated with aquaculture production." The standards are intended to be "the most robust standards available, in part because they will be geared toward the best performers in the industry. . . . Setting the bar at the 'best performer' level will give more credibility to the standards and motivate others in the industry to adopt the standards" (WWF 2008).

Standards have been finalized to date for tilapia, Pangasius, bivalves (oysters, clams, mussels, and scallops), and abalone. Each of the standards includes a statement of purpose that establishes the intent of the particular standard, impacts to be addressed, principles for addressing each impact, criteria for how the impact is to be addressed, and indicators that can be measured to determine performance directly. The purpose statements differ slightly, with the abalone and bivalve standards seeking to provide a means for producers to measurably demonstrate sustainability, while the other two focus on measurable improvement without a performance target. In addition, the Tilapia and Bivalve standards include declarations of goals and objectives (WWF 2006, WWF 2010b). The goals are worded differently in each case, although each includes common elements, including balancing economic viability with measurable improvement.

Friend of the Sea is a certification system that is available to products sourced from wild capture fisheries and aquaculture. The purpose of FoS is "conserving the marine habitat and its resources by incentivizing a sustainable market and specific protection and conservation projects" (FoS 2010). The organization has not published more specific or other claims or goals that would indicate with more specificity what is required. FoS certifies products from both fisheries and "sustainable aquaculture" (FoS 2010). As defined, sustainable aquaculture includes 12 impact areas ranging from "management of a sustainable aquaculture installation" to the use of GMOs and hormones to traceability.

In addition to the stand-alone certification systems, some retailers, including Whole Foods and Wegman's, have developed and advertised their own purchasing standards for aquaculture products. For example, Whole Foods Market has established quality standards for farmed salmon (WFM 2008a) and finfish and shrimp (WFM 2008b). Whole Foods advertises that its aquaculture products are "responsibly farmed" and "3rd party verified" (WFM www.wholefoodsmarket.com/products/aquaculture.php). It also lists several more specific claims, including a prohibition on the use of antibiotics, added growth hormones and poultry and mammalian by-products in feed; a ban on genetically modified or cloned seafood; a partnership with farmers who work hard to be the leaders in sustainable aquaculture; a requirement that producers minimize the impacts of fish farming on the environment by protecting sensitive habitats such as mangrove forests and wetlands, monitoring water quality to prevent pollution and sourcing feed ingredients responsibly; and certifying that its seafood is free from added preservatives (WFM 2011). Some of these claims are measurable and clear — for example, they bar antibiotic use. However, they also include non-measurable elements, such as the commitment to "minimize" certain impacts.

This comparison of aquaculture certification systems reveals that no system has established claims that link measurable outcomes with performance goals. A few individual claims, such as the Whole Foods "no antibiotics" claim, do achieve this standard. However, most claims omit measurable outcomes and/or performance goals. For example, GAA identifies core impacts that are addressed in its standards, but its performance goals for those impacts are not addressed — instead, it indicates that it seeks only "significant benefits while representing realistic objectives." Similarly, the Aquaculture Dialogues purpose statements focus on measurable improvement, but only two existing standards associate measurable improvement with a performance goal — and that performance goal is "sustainability," a notoriously undefinable goal. Similarly vague terms such as "minimize" or "responsible," whose meaning depends on a value judgment, are commonly used to replace measurable performance baselines — perhaps the least specific are those offered by Friend of the Sea. Unless carefully defined, these claims prevent outside observers from determining what level of performance is demanded of certified producers in practice.

Failure to demarcate and communicate the desired outcomes of certification in a measurable manner that enables consistent and transparent performance evaluation and certification decisions will result in controversy. To avoid disagreements, claims must define the issues to be addressed, the outcomes used to measure performance on the issues, and the performance baselines that determine success on each outcome.

Performance baselines are not the same as quantifiable certification standards. The role of a claim is to establish a desired outcome. These outcomes must themselves be measurable and replicable. Certification standards, with their quantifiable elements, are the tools used to ensure certified producers meet the overall outcomes set forth in the claim. This distinction may best be described through an example from outside the aquaculture arena. San Francisco recently initiated a pilot project, "SFPark," to reduce congestion and air pollution by modifying the price of public parking (Weinberger et al. 2010; Shoup 2005). This program seeks to achieve an 85 percent parking spot occupancy rate, which corresponds to an average of one empty space per block. This goal will be achieved by modifying the price of parking meters pursuant to rate-setting policies. SFPark reviews performance and amends the price of parking as needed to meet the goal (SFPark 2011). This system can be seen as an analogue to certification: the city has established a clear, measurable policy goal (85 percent occupancy). To achieve that goal, it uses a performance standard that sets the cost of parking, providing consumers with economic cues that affect their consumption decisions. The city then reviews its performance relative to its goal on an ongoing basis and alters its implementation of the standard as necessary. While a relatively simple example, the SFPark approach can be generalized and applied to systems addressing multiple issues.

Certification systems can ensure meaningful claims by clearly limiting their scope to specific issues that are associated with measurable outcomes. Certification systems, including the aquaculture certification systems reviewed above, regularly include lists of issues in their claims. If these issues are associated with a measurable outcome defined with an accepted methodology and performance baseline, the resultant claims statements are likely to be understandable and clear. For example, the NOAA FishWatch program is a public education program that proposes to place labels on "sustainable" U.S. wild-capture fishery products. It defines "sustainable seafood" as any species subject to a fishery management plan that complies with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (NOAA 2011). Legal compliance requires a determination of fishery status, including overfishing and depletion, each of which has defined thresholds. The FishWatch program thus identifies a single issue (legal compliance) that is associated with an outcome (to manage fish stocks for sustainable yield) that is measured with accepted methodologies and performance baselines.

The Marine Stewardship Council also certifies "sustainable" fisheries. The MSC Principles and Criteria for Sustainable Fishing define "sustainable" to mean a fishery that meets outcomes in six issue areas (MSC 2010). Like FishWatch, these issues include overfishing of target stocks and legal compliance; issues not falling explicitly within the criteria, such as fuel usage, are excluded. However, the definition also includes issues that are not clearly associated with performance outcomes, including maximization of ecological health and maintenance of present and future economic and social options and benefits. These outcomes are not evaluated based on an accepted methodology and have contributed to disputes about the proper application of the MSC certification standards, particularly for species such as the Antarctic krill that serve an important, yet poorly understood role in marine ecosystems (e.g., Jacquet, et al., 2010).

Aquaculture certification systems can benefit by examining — or, in some cases, more clearly stating — the issues that they seek to address. However, in selecting these issues, systems must use caution and select only issues that are clearly associated with measurable outcomes. For example, FoS's impact areas include "management of a sustainable aquaculture installation" — an issue that is not phrased in terms of an outcome. This and other issues that cannot be associated with measurable outcomes should be excluded, even if important to stakeholders.

There are at least three approaches to establishment of performance baselines for aquaculture certification claims. One approach would simply set a baseline for performance that would apply equally to any production system, region, or species. For example, a certification system could claim zero reduction in water quality from input to effluent regardless of location or species being cultured. Alternatively, a system intending to assist small-scale, capital-poor producers could require low-income producers to demonstrate water quality improvement over time (e.g., 10 percent year-over-year improvement in performance) instead of or in addition to a performance baseline. Or outputs could be set relative to producers in the same region or operating at the same scale, such that certified producers represent the top performers for a particular group — for example, the top 10 percent of producers from a given country or the top 10 percent of salmon producers. These approaches can be tailored or combined to meet the needs of a particular claim or certification system.

Statement of claims in terms of a measurable performance level or baseline is likely to be the most acceptable to stakeholders, as it provides the most

transparency regarding the actual performance of certified producers. However, other approaches may also be acceptable to stakeholders if developed through a consensus-building process. For example, a certification system could claim that its standards are set to allow a certain percentage of the industry to meet them — an approach hinted at by the Aquaculture Dialogues. While some stakeholders are critical of this approach (Charnsnoh, et al., 2011), its explicit adoption could clarify the intent of certification to those stakeholders, resulting in reduced disagreement.

In addition to safeguarding the credibility of certification systems, measurable claims have the additional benefit of enabling performance evaluation in light of desired outcomes. As noted previously, the new ISEAL code will require impacts assessment by its members, which include the Aquaculture Dialogues. ISEAL's impact assessment requirement has not been tied to claims statements, however. Without a performance baseline to anchor assessment to the goals of a system, impact assessment may be of limited value. Measurable claims that are tied to performance evaluation can enable a feedback loop that allows certification standards to be amended as needed to ensure that the standards are appropriate to achieve the system's goals.

We close with practical recommendations for the development and implementation of measurable claims and performance evaluation process, influenced by our previous work on the institutional design of aquaculture certification systems (ELI 2008).

Scoping. Claim-setting is in essence a scoping process: it establishes what a certification will consider, what it will not, and how it will measure success. Claims thus must be stated in written scoping documents, and the first step in adopting measurable claims may be a revision of an existing scoping document or creation of a new scoping document to include both revised claims statements and the outcomes and performance baselines used to define those goals.

Aquaculture certification systems generally have not created stand-alone scoping documents, however, instead incorporating scoping information into process documents or standards — as in the GAA or Aquaculture Dialogues — or providing the information informally via outreach documents or websites, as the retail purchasing standards. Development of a new umbrella scoping document to house claims would be beneficial to clearly estab-

lish and communicate the intent and goals of the certification system. Such a statement is needed to ensure that species-specific standards share unifying goals. Reporting of claims in certification standards, process documents, websites, and through other avenues remains valuable both for communication with potential purchasers and reinforcement of the goals for which certification standards are written.

In addition to the form of the scoping document, it is important to consider the process for developing claims. As claims are foundational to the work of any certification system, they must reflect the interests of a broad stakeholder group — including both purchasers and producers. Once consensus has been reached on which issues should be addressed, the focus can shift to ensuring that the issues are expressed in scoping documents in terms of measurable outcomes, which will inherently require a combination of technical expertise and public input. Most aquaculture certification systems have already developed documented processes to guide standard-setting, and these processes can be adapted to claim setting. Existing processes for standard-setting often are based on stakeholder participation and consensus and combine input via both stakeholder participation and technical expertise. For example, the Aquaculture Dialogues process uses technical working groups and steering committees to develop specific measures in light of consensus expressed during broader stakeholder consultations (WWF 2008). By adapting existing processes and building on existing resources, scoping documents can be developed in a strong and credible manner.

Performance evaluation. Certification systems must require periodic performance evaluations to determine whether claims are being met and to guide periodic revisions to certification standards. New procedures will be needed to guide performance evaluation. These procedures should determine the data that need to be collected, how it will be collected, and establish the methodology for evaluation. The methodology should be open to peer review.

Existing certification standards will also need to be reviewed, and if necessary amended, following adoption of new claims statements and periodically thereafter in response to performance evaluation. Standard-setting processes are likely to need modification to require that standards be expected to achieve the system's claims. Periodic review is already required by international standards (e.g., ISEAL 2010) and most aquaculture certification systems, but specific reference to claims as a substantive guide for those revisions has not been required to date.

From a substantive perspective, adoption of measurable claims may require only minimal amendments to standards. Where claims are built around existing standards, the standards may be expected to result in outcomes that closely match the desired claims. In such cases, minor changes to category weights or scoring methodologies could suffice to ensure that claims are met. On the other hand, some systems may find that existing standards do not achieve the desired or advertised performance. In such cases, more extensive changes to standards would be justified, such as amendment of indicators or tightening of minimum performance requirements. In either case, the amendment of existing standards is likely to be primarily a technical matter and may not require extensive public consultation.

Development and modification of certification standards currently is a lengthy process often characterized by hot debate. In this respect, development of measurable, outcome-based claims likely would shift this debate to the claims-setting process, allowing standard-setting to proceed more rapidly and with less rancor. If so, certification systems may validly choose to streamline their standards development and revision processes insofar as changes are limited to those identified through performance evaluation.

Auditing and data collection. Measurable claims are useless without data. Baseline information will need to be collected for performance evaluation, particularly if claims are based on performance relative to the region or to peers. Baseline data may be available from government or industry sources, historical and ongoing data collection during pre-certification or pre-assessment evaluations, producer surveys, or targeted investigations. These data sources can support tracking progress of individual facilities and for setting a species-wide baseline for use in evaluating overall certification system performance relative to claims. Annual audits and reporting requirements could then be used to obtain trends in producer performance and performance of the certification system as a whole.

While substantial data already are collected during certification audits and reported by certified producers, additional or different data may be needed to enable meaningful performance evaluation. Changes to data collection practices may require updating auditing procedures or re-training or re-accrediting of certification bodies and auditors. Any adjustments to the auditing procedures must be incorporated into the written certification process guidance document and communicated to certification bodies.

Both globally and in the United States, governments have not undertaken comprehensive or effective regulatory programs to limit the negative impacts of aquaculture production. The rise of aquaculture certification reflects a need for a comprehensive approach to set standards for aquaculture production, and these systems have evolved into a form of private law, allowing certified products onto retail shelves and, increasingly, excluding those that cannot meet their standards. Because certification systems have adopted a quasi-governmental role, they have a corresponding responsibility to carry out that role in a meaningful and transparent way – in short, they cannot simply be marketing tools.

Many aquaculture certification systems take this responsibility seriously and have carefully weighed public input and crafted certification standards that are intended to drive meaningful improvement in the global aquaculture industry. However, certification standards serve a different purpose than and are not a replacement for robust claims. Certification systems have not communicated how their standards are intended to correspond to outcomes on the ground, nor have they evaluated the effectiveness of their standards in meeting those outcomes. As a result, it is impossible for the public to determine what the goals of certification are and whether certification is providing its intended benefits, whatever those might be. This situation runs counter to the purpose of developing certification and undermines the credibility of existing systems.

Certification systems can and must be improved by clearly identifying the outcomes that they wish to produce and by measuring performance against these goals. It is not sufficient to simply claim to minimize impacts without indicating by how much or how impacts are to be measured. Development of claims that provide clear and measurable statements of goals and desired outcomes can serve both as a framework for setting standards and as a clear statement to purchasers and other stakeholders as to exactly what certification means on the ground. In this way, effective claims allow certification systems to distinguish themselves and are likely to yield benefits in the market as well as in public opinion. •

References

Charnsnoh, Pisit et al. 2011. An open letter to the general steering committee of the WWF shrimp aquaculture dialogue. Available at https://underthebanyan.files.wordpress.com/2011/05/shad-openletter-may4-signed-doc.pdf.

Client Earth. 2011. Environmental claims on supermarket

seafood, improving product labeling and consumer protection. Available at http://www.clientearth.org/reports/environmental-claims-on-supermarket-seafood.pdf.

Environmental Law Institute (ELI). 2008. Gold standard for sustainable aquaculture ecolabel design: Summary report. Available at http://www.elistore.org/reports_detail.asp?ID=11297.

Food and Agriculture Organization of the United Nations (FAO). 2009. State of the World Fisheries and Aquaculture 2008. FAO Fisheries and Aquaculture Department, Rome. 176 pp. Available at http://www.fao.org/docrep/011/i0250e/i0250e00.HTM.

Food and Water Watch. 2010. De-coding seafood eco-labels: Why we need public standards. Available at http://www.foodandwaterwatch.org/reports/de-coding-seafood-eco-labels-why-we-need-public-standards/.

Friend of the Sea (FOS) 2010 Friend of the Sea Certification Criteria Checklist for Aquaculture Products. Available at http://www.friendofthesea.org/public/page/En%20-%20Checklist%20FoS%20Fish%20Farming%20inland%20-%20Fresh%20Water%20Species.pdf

GAA, undated. Best Aquaculture Practices Standards Development: Structure, Process. Available at http://www.gaalliance.org/cmsAdmin/uploads/BAP-Proc.pdf.

ISEAL. 2010. P005 ISEAL Standard Setting Code v5.01 April 2010. Available at http://www.isealalliance.org/resources/p005-iseal-code-good-practice-setting-social-and-environmental-standards-v50.

Jacquet, J., D. Pauly, D. Ainley, S. Holt, P. Dayton, and J. Jackson. 2010. Seafood stewardship in crisis. Nature. Vol 467 (2 September 2010): 28-29.

Lee, D. 2008. Aquaculture Certification. In Seafood Ecolabeling, T. Ward and B. Phillips (Eds.) Wiley-Blackwell, 2008. pages 106-133.

Marine Aquaculture Task Force. 2007. Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks. Available at http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Protecting_ocean_life/Sustainable_Marine_Aquaculture_final_1_07.pdf.

MSC 2010. MSC Fishery Standard: Principles and Criteria for Sustainable Fishing, v.1.1. Available at http://www.msc.org/documents/scheme-documents/msc-standards/MSC_environmental_standard_for_sustainable_fishing.pdf

National Oceanic and Atmospheric Administration (NOAA). 2011. FishWatch – U.S. seafood facts, about FishWatch. Available at http://www.nmfs.noaa.gov/fishwatch/about_us.htm#sustainable

Naylor, R.L., R.W. Hardy, D.P. Bureau, A. Chiu, M. Elliott, A.P. Farrell, I. Forster, D.M. Gatlin, R.J. Goldburg, K. Hua, and P.D. Nichols. 2009 Feeding aquaculture in an era of finite resources. Proceedings of the National Academy of Sciences of the United States of America. 106(36): 15103–15110.

Schenck, R.C. 2010. A Roadmap to Environmental Product Declarations in the United States. American Center for Life Cycle Assessment/Institute for Environmental Research and Education, June 2010. Available at http://www.lcacenter.org/pdf/Roadmap-to-EPDs-in-the-USA.pdf

SFPark Pricing Policy: On-Street Parking (2011) http://sfpark.org/wp-content/uploads/2011/04/FINAL-On-Street-Pricing-Policy.pdf

Donald Shoup, The High Cost of Free Parking, Chicago: Planners Press, 2005.

Tlusty, M.F., 2011. Environmental improvement of seafood through certification and ecolabelling: theory and analysis. Fish and Fisheries. Early online version.

Rachel Weinberger, John Kaehny, Matthew Rufo, U.S. Parking Policies: An Overview of Management Strategies (Institute for Transportation and Development Policy 2010) http://www.kpvv.nl/files_content/kennisbank/nieuwsberichten/ITDP_US_Parking_Report.pdf

Whole Foods Market (WFM). 2008a. Whole Foods Market Seafood Quality Standards Farm Standards for Salmon. Version 2.0. July 1, 2008. Available at http://www.wholefoodsmarket.com/pdfs/WholeFoodsMarket_FarmedSalmonStandards.pdf.

Whole Foods Market (WFM). 2008b. Whole Foods Market Seafood Quality Standards Farm Standards for Finfish and Shrimp. Version 1.0. July 1, 2008. Available at http://www.wholefoodsmarket.com/pdfs/WholeFoodsMarket_FarmStandardsFinfishShrimp.pdf

Whole Foods Market (WFM). 2011. Aquaculture: Our Farm-Raised Seafood. At http://www.wholefoodsmarket.com/products/aquaculture.php.

World Wildlife Fund (WWF). 2008. Aquaculture Dialogues Process Guidance Document. Available at http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem9674.pdf

World Wildlife Fund (WWF). 2009. Tilapia Aquaculture Dialogue Standards. Available at http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem14693.pdf

World Wildlife Fund (WWF). 2010a. Pangasius Aquaculture Dialogue Standards. Available at http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem17873.pdf

World Wildlife Fund (WWF). 2010b. Bivalve Aquaculture Dialogue Standards. Available at http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem17872.pdf

World Wildlife Fund (WWF). 2010c. Abalone Aquaculture Dialogue Standards. Available at http://www.worldwildlife.org/what/globalmarkets/aquaculture/WWFBinaryitem18286.pdf