OPINION

Seafood stewardship in crisis

The main consumer-targeted certification scheme for sustainable fisheries is failing to protect the environment and needs radical reform, say **Jennifer Jacquet**, **Daniel Pauly** and colleagues.

A growing number of consumers want to eat seafood without feeling guilty. Enter the Marine Stewardship Council (MSC), which purports to certify sustainable fisheries and provides a label for sustainable products to "promote the best environmental choice in seafood". The MSC is growing rapidly; the organization is also rapidly failing on its promise.

The MSC has become the world's most established fisheries certifier: 94 fisheries are currently MSC-certified, accounting for about 7% of global catch, and about 118 more are under assessment. MSC-certified seafood products, identified with a blue check-mark label, pack the shelves of stores such as Wal-Mart, Whole Foods Market and Waitrose. Although other certification schemes exist, such as Friend of the Sea based in Milan, Italy, the MSC is taken most seriously by scientists. The MSC is praised in Jared Diamond's book *Collapse: How Societies Choose to Fail or Succeed* (2005), and is featured as a solution to declining fish stocks in the 2009 film *The End of the Line*.

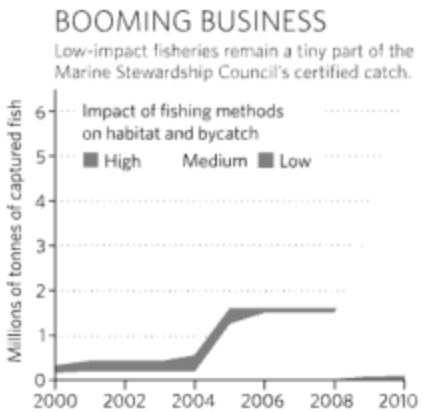
However, objections to MSC certifications are growing. Scores of scientists (including ourselves) and many conservation groups, including Greenpeace, the Pew Environment Group and some national branches of the WWF, have protested over various MSC procedures or certifications. We believe that, as the MSC increasingly risks its credibility, the planet risks losing more wild fish and healthy marine ecosystems.

This can be turned around only if the MSC creates more stringent standards, cracks down on arguably loose interpretation of its rules, and alters its process to avoid a potential financial incentive to certify large fisheries.

From boat to plate

The MSC, based in London, was founded in 1997 by the WWF and Unilever, one of the world's largest seafood retailers. The MSC designed a set of ecological criteria[1] that had the support of many scientists, including authors D.P. and S.H., who advised the MSC as it was starting up. It abides by three main principles. Fisheries must operate so that: fishing can continue indefinitely without overexploiting the resources; the productivity of the ecosystem is preserved; and all local, national and international laws are upheld. In addition, for a product to carry an MSC label, every company in the chain from "boat to plate" must be certified for traceability. The MSC became an independent, non-profit organization in 1999.

From 2000 to 2004, the MSC certified six fisheries, which together produced about half a million tonnes of seafood annually. The certification rate has since boomed as commercial interest in the scheme rose. In 2006, Wal-Mart pledged to sell only MSC-certified wild-capture fish in its North American market by 2010. Today, MSC certifications cover 6.3 million tonnes of seafood per year (see graph).



Adapted from ref. 5. Two fishing methods were reclassified from low to medium impact because of problems with bycatch.

The MSC had a budget in 2008–09 of £8 million (US$13 million), mostly from charitable donations. To seek certification, a self-defined fishery (represented by companies or government bodies) chooses an accredited for-profit consultancy to perform an assessment. Media reports show that the fees are about $15,000–150,000 per fishery, and about $75,000 for annual audits. Accreditation Services International, a company in Bonn, Germany, oversees the assessors, who use an open-to-the-public system involving independent scientists, input from stakeholders and external peer review. The process takes months or years and hundreds of documented pages to complete.

Nevertheless, we have concerns about the process. In our view, the certification system creates a potential financial conflict of interest, because certifiers that leniently interpret existing criteria might expect to receive more work and profit from ongoing annual audits.

Objecting to an assessment comes at a cost: up to £15,000 until August 2010, when the MSC lowered the maximum fee to £5,000. When a formal objection is filed, an independent adjudicator — a lawyer, rather than a scientist — steps in. The MSC states: "It is not the purpose of the Objections Procedure to review the subject fishery against the MSC Principles and Criteria for Sustainable Fisheries, but to determine whether the certification body made an error." We feel that this is a mistake. Of the four adjudicators appointed by the MSC, only two have experience in fisheries management mentioned in their MSC biographies. In our view, more should be done to ensure that the objection process gets to the heart of biological issues, rather than bureaucratic ones.

Generous interpretation

Some MSC-certified fisheries, such as the one for five species of Alaska salmon (*Oncorhynchus* spp.), do adhere to — or even exceed — the principles that underlie the MSC's certification scheme. It is our assessment that many others do not.

The largest MSC-certified fishery, with an annual catch of 1 million tonnes, is the US trawl fishery for pollock (*Theragra chalcogramma*) in the eastern Bering Sea. It was certified in 2005, and recommended for recertification this summer, despite the fact that the spawning biomass of those pollock fell by 64% between 2004 and 2009 (ref. 2). The MSC expects the stock to rebound. Similar declines in biomass can be found in other MSC fisheries, including the Pacific hake (*Merluccius productus*), which was certified in 2009 despite a population decline of 89% since a peak in the late 1980s (ref. 3). Part of the reason for this may lie in what we see as loose wording in the MSC criteria. The organization states: "for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery." We believe that this needs to change to prevent the potential for overly generous interpretations of a fishery's future sustainability. Certification should not be granted until a fishery is shown to be actually sustainable.

In 2009, the MSC-accredited assessor Moody Marine in Derby, UK, recommended certification of the Antarctic toothfish (*Dissostichus mawsoni*), marketed as Chilean sea bass. As always, this certification would be subject to ongoing monitoring and review. Yet almost

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Many scientists, and conservation groups including Greenpeace and national WWF branches, have objected to various MSC certifications.

nothing is known about this fish: no eggs or larvae have ever been collected. The Commission for the Conservation of Antarctic Marine Living Resources, which oversees fishing in the Southern Ocean, classifies the Antarctic toothfish fishery as "exploratory" because of the lack of knowledge. An objection was filed in December 2009 by the Antarctic and Southern Ocean Coalition; as these pages went to press, a ruling was expected soon.

In May 2010, again after an assessment by Moody Marine, the MSC certified the few boats operated by the company AkerBiomarine in its fishery of Antarctic krill (*Euphausia superba*). The MSC notes that less than 1% of krill are currently under pressure from fishing. But we feel that more important data come from a 2004 paper in *Nature*[4] showing a long-term decline in krill populations, as well as a link between the depletion of krill and declining sea ice in an area highly sensitive to climate change. Even more importantly in our view, much of the krill caught is destined not for consumer purchase but for fishmeal, to feed factory-farmed fish, pigs and chickens. We propose that any fishery undertaken for fishmeal should not be viewed as responsible or sustainable, and should not qualify for MSC certification. At present, the MSC assessment rules do not consider the end-use of a product.

> "Creating marine protected areas would do more to help the oceans."

Other amendments to the MSC rules would in our opinion strengthen its commitment to its own principles. The MSC already prohibits the certification of fisheries that use dynamite and poison. It should also ban other destructive practices, such as those types of bottom trawling that have a high impact on habitat and on fish other than the target species[5].

There are signs that retailers might support revised standards. In 2009, the European supermarket chain Waitrose refused to buy or sell MSC-certified New Zealand hoki (*Macruronus novaezelandiae*) because the fishery concerned uses bottom trawling. In May 2010, Whole Foods stopped selling fish-oil supplements made from krill, despite MSC certification, because of concerns about sustainability.

Slow drift

We believe that the incentives of the market have led the MSC certification scheme away from its original goal, towards promoting the certification of ever-larger capital-intensive operations. Small fisheries that use highly selective, low-impact techniques, such as hook-and-line fishing or hand picking, are often sustainable, but make up only a tiny fraction of MSC-certified fisheries (see graph). The MSC does do outreach in the developing world, provides grants and, in 2007, created a pilot programme to encourage the certification of small-scale and data-deficient fisheries. But we feel that this is too little too late. Although several fisheries are under assessment, only one small-scale operation in the developing world — a Vietnam Ben Tre clam (*Meretrix lyrata*) fishery — is currently MSC certified.

Different models of certification might help to redress this balance. For products such as coffee in the Fairtrade scheme, for example, certification is available only to cooperatives of small producers; large plantations are not eligible. This helps to correct for market advantages held by larger companies.

It might be easier to push for some of these changes if the MSC board had better representation from the developing world, where more than half of the seafood eaten in the United States and Europe is sourced, and where small fisheries are often based. The terrestrial analogue of the MSC, the Forest Stewardship Council, has five of its nine board members from developing countries. None of the MSC's 13 board members is from the developing world.

The MSC can still fulfil its promise to represent, as it claims, "the best environmental choice" — if it undergoes major reform. If it does not change, there are better, more effective ways to spend £8 million, such as lobbying to eliminate harmful fisheries subsidies, or creating marine protected areas. These steps would do more to help the oceans. ■

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