Researching the Environmental Impacts of the MSC certification programme 2011

A report submitted to the MSC by:

MRAG Ltd
18 Queen Street London W1J 5PN
www.mrag.co.uk

Poseidon Aquatic Resource Management Ltd

www.consult-poseidon.com

Meridian Prime Ltd

www.meridianprime.co.uk

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Prepared by:	Tracy Cambridge; Sarah Martin; Fiona Nimmo; Chris Grieve; Suzannah Walmsley; Tim Huntington; Rod Cappell; David Agnew
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ACRONYMS

AR	Assessment report (MSC)
B	Biomass
BPA	Benthic protection Area
BSAI	Bering Sea and Aleutian Islands
CAR	Corrective Action Request
CB	Certification Bodies
COP	Code of Practice
CoC	Chain of Custody
DoC	Department of Conservation (NZ)
DFO	Department of Fisheries and Oceans (Canada)
DWG	Deep Water Group (NZ)
EEZ	Exclusive Economic Zone
ETP (TEP)	Endangered, Threatened, Protected (Threatened, endangered & protected)
EU	European Union
FAM	Fisheries Assessment Methodology (MSC)
HFMC	Hoki Fishery Management Company
ITQ	Individual Transferable Quota
IUCN	International Union for Conservation of Nature
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NEA	North east arctic
NGO	Non-government organisation
NPFMC	North Pacific Fishery Management Council (USA)
NRA	Near, Rat, and Andreanof Islands
NS	North Sea
NZ	New Zealand
OMP	Operational Management Plan
P	Principle (MSC)
PI(s)	Performance indicator(s)
RAR	Re-Assessment Report (MSC)
SA / SR	Surveillance audit/Surveillance report (MSC)
SFA	Shrimp Fishing Areas
SH(s)	Stakeholder(s)
SLED	Sea lion excluder device
SSB	Spawning Stock Biomass
SSL(CH)	Steller sea Lion (Critical Habitat)
TA(C)C	Total Allowable (Commercial) Catch (NZ)
TOR	Terms of reference
VMP(s)	Vessel Management Plan(s)

1. EXECUTIVE SUMMARY

1.1. Introduction

1. In 2010 the MSC commissioned MRAG Ltd, in collaboration with Poseidon Ltd and Meridian Ltd Prime, to examine the evidence for environmental impacts related to the MSC certification programme. The terms of reference (TOR) required the contractors to build on previous work examining the environmental benefits of certification, develop scientifically robust tools and replicable methodologies to measure environmental/ecological impacts of certification to the MSC standard, use these tools to assess current evidence about the environmental impact of the MSC programme, and investigate evidence for the wider impacts of certification on environmental sustainability.

1.2. Methodology

2. The consultants developed a **methodology based on the MSC assessment flow**, with monitoring of the pre-assessments, full assessments and surveillance/reassessments (Figure 1). The results provide information on the changes occurring within fisheries pre-certification (between pre-assessment and certification) and post-certification (between certification and the final audit report).

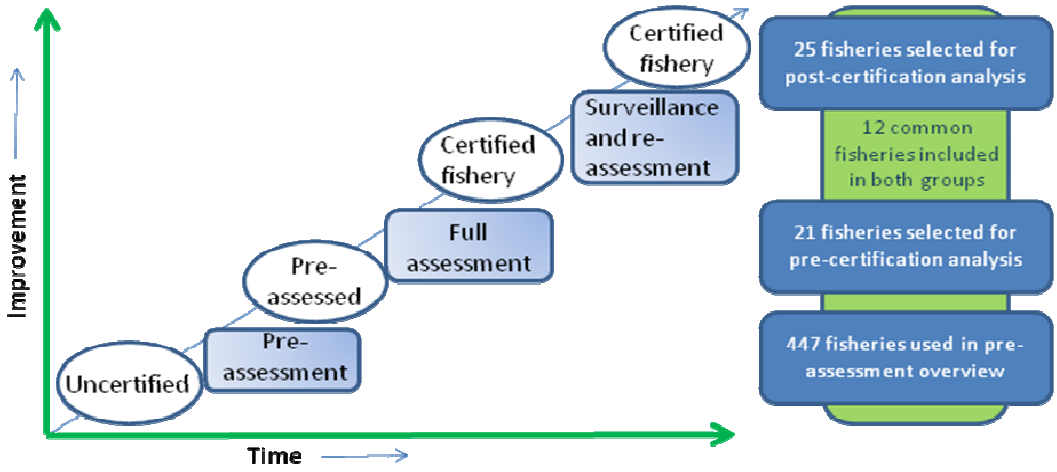

Figure 1. Summary schematic of the MSC assessment flow and study sample

3. **The population of fisheries** available for analysis differs at each of these stages. It is largest for the pre-certification analysis, and smallest for the post certification analysis. Three different samples of fisheries were therefore chosen for the study as follows:

   a) **Pre-certification overview:** Summary information on the types of pre-assessment that have been completed were supplied by certification bodies, contributing to a dataset of 447 pre-assessments;

   b) **Pre-certification sample analysis:** Pre-assessment reports from 21 fisheries were analysed from a sample of 40 that were requested from certification bodies, from fisheries that were subsequently certified and where the fisheries client had agreed

to its use in this study. The pre-certification fisheries were selected to ensure coverage of the following variables of pre-assessment: year of certification; scale of fishery; gear type; species type; geographical region and certification body. The selection overlaps with the fisheries analysed in the post-certification sample.

c) **Post-certification sample:** In the post-certification sample assessment reports, surveillance reports and re-assessment reports were examined from 25 of the 27 certified fisheries that at the time of starting the analysis had undergone 2 surveillance audits. This sample size is reflective of the "young" age of the MSC programme. The Bering Sea and Aleutian Islands Alaska (Pacific) cod freezer longline and Alaska salmon fisheries were not included because of the re-organisation of these fisheries at re-assessment. 11 fisheries were common between the pre-certification and post-certification samples.

Table 1. Fishery samples for pre-certification and post-certification analysis

Certified fisheries with ≥2 surveillance audits	*Included in pre-certification analysis*	*Included in post-certification analysis*
1. American Albacore Fishing Association Pacific (North)		✓
2. American Albacore Fishing Association Pacific (South Pacific)		✓
3. Astrid Fiske North Sea Herring Fishery (formerly the NS Herring Swedish Pelagic Fishery)	✓	✓
4. Australian Mackerel Icefish	✓	✓
5. Bering Sea and Aleutian Islands (BS/AI) Pollock Fishery		✓
6. Burry Inlet Cockles	✓	✓
7. Canadian Northern Prawn Trawl Fishery		✓
8. Gulf of Alaska Pollock		✓
9. Hastings fleet Dover sole (trammel net)	✓	✓
10. Hastings Fleet Pelagic Fishery	✓	✓
11. Lake Hjälmaren pikeperch fish-trap & gillnet		✓
12. Lakes and Coorong Fisheries Southern Australia	✓	✓
13. Loch Torridon nephrops creel fishery		✓
14. New Zealand hoki		✓
15. Norway North Sea saithe	✓	✓
16. Oregon Pink Shrimp	✓	✓
17. Patagonian scallop		✓
18. Pelagic Freezer-Trawler Association North Sea herring	✓	✓
19. Scottish Pelagic Sustainability Group Ltd (SPSG) North Sea herring		✓
20. South Africa hake trawl		✓
21. South Georgia Patagonian toothfish longline	✓	✓
22. South-west handline mackerel	✓	✓
23. US North Pacific halibut		✓
24. US North Pacific sablefish		✓
25. Western Australia rock lobster		✓
26. Aker Biomarine Antarctic krill	✓	
27. Atlantic deep sea red crab	✓	
28. Cornish sardine	✓	
29. Denmark blue shell mussel	✓	
30. Euronor North Sea saithe	✓	
31. Oregon Dungeness crab	✓	
32. Portugal sardine purse seine	✓	
33. Tosakatsuo Suisan pole and line skipjack tuna	✓	
34. Vietnam Ben Tre clam hand gathered	✓	

4. In order to explore the effect of the MSC programme on actual observed environmental change (rather than process-related changes which are expected to lead to environmental impacts), we specifically looked only at the **8 'outcome' performance indicators (PIs) or 'on the water' environmental impacts**. In Principle 1, 'Target species', these are stock status, reference points and stock recovery. In Principle 2, 'Ecosystem', these are retained species, bycatch species, endangered, threatened and protected (ETP) species, habitats and ecosystems. The third, Principle 3, 'Management system', does not have any PIs that relate

to actual environmental outcomes. However, since the current Fisheries Assessment Methodology (FAM) was only introduced in 2009, it was necessary to map earlier assessment tree PIs to the outcome PIs in the current FAM.

5. **Environmental change** was explored in three ways:
    a) Changes in the assessment or pre-assessment **scores** achieved by the fishery for each outcome PI were monitored throughout the fishery's engagement with the MSC. Where scores were not provided explicitly, they were inferred from the comments of Certification Bodies (CBs), at pre-assessment, or from the presence/absence of conditions, at certification and subsequent assessments. Three categories of score were recognised: <60; ≥60 and <80; and ≥80;
    b) Changes in the trends of **indicators**, derived from the literature such as stock status or bycatch, over the time period of engagement with the MSC; and
    c) Changes identified by **stakeholders** through interviews.

6. A key **challenge** of the analysis was mapping the PIs, the indicators and the conditions triggered in the pre-FAM assessments. All of the fisheries considered in the post-certification analysis which had very different assessment trees to that provided in the FAM required this mapping to do done, as their pre-assessment and certification assessment trees differed from the 2009 FAM assessment tree.

7. **Causality** of change was explored through interviews, supported by inferential analysis of the quantitative data. For the interviews three respondents were identified for each of the 25 post-certification analysis fisheries (one client, one NGO and one management) and two respondents for each of the non-overlapping 9 pre-certification sample fisheries. Interviews were secured with 54 organisations across 36 different fisheries. Respondents were asked to identify whether there had been any trends in the outcome indicators, and if so whether these were attributable to the MSC. The interviews contained a combination of open and closed-ended questions for both quantitative and qualitative analysis.

8. **The wider impacts of the MSC certification programme** were explored by interviewing stakeholders about changes observed in certified fisheries, and their opinions about the impact of certification on other, non-certified fisheries, from both fisheries management and ocean sustainability perspectives. Through discussion with MSC staff and stories that had emerged from previous work commissioned by the MSC (Net Benefits, 2009), four hypotheses were developed to investigate the feasibility of deeper analysis of scenarios that may lead to wider impacts from MSC certification.

1.3. Results

1.3.1. Pre-assessment overview

9. Out of the 447 fisheries that have gone through pre-assessments to date (2010), 48% were recommended by CBs to be suitable to proceed to full assessment with caution, with a suggestion that some issues need to be fixed before approaching the assessment. 35% were recommended to proceed without needing any additional work. Nevertheless, significant numbers of fisheries receiving cautionary recommendations, and some 6% of those receiving negative recommendations proceeded to full assessment. Overall, 35% of pre-assessed fisheries have moved through to full assessment.

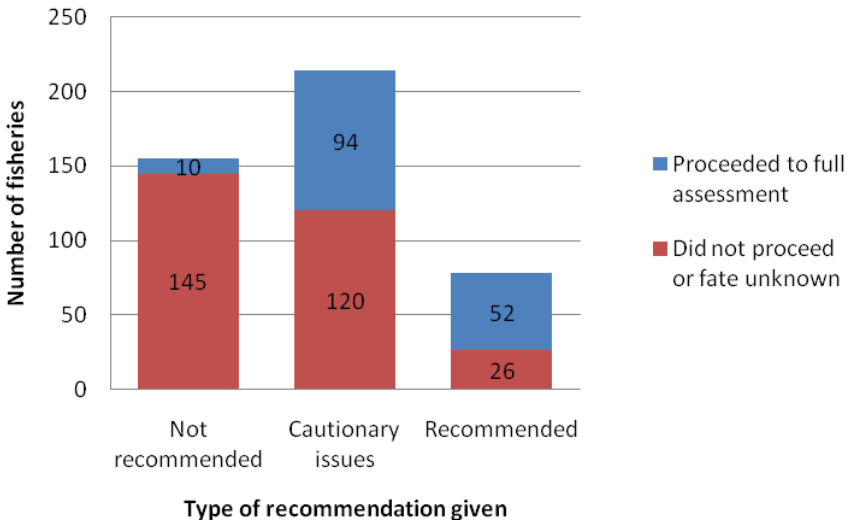

Figure 2. Numbers of fisheries that proceeded, or not, to full assessment and the recommendation that was provided in the pre-assessment (n=447)

10. A very high proportion of the fisheries being pre-assessed (55%) and moving through to full assessment (54%) derive from the North Atlantic. Shellfish fisheries are more likely to be recommended to proceed to full assessment than other types of fisheries.

11. The most significant feature of this analysis is that although roughly equal proportions of large, medium and small-scale fisheries have gone through pre-assessment, small-scale fisheries are significantly the least likely to be recommended to proceed to full assessment, and are least likely to proceed if in receipt of such a recommendation. This may reflect the difficulty of acquiring data from small-scale fisheries, and problems associated with the cost of certification and management systems.

1.3.2. Pre-certification analysis

12. The majority of outcome PIs assessed at pre-assessment remained within the same score category by the time of certification. 59% of the PIs remained ≥80, signifying that performance against the PI was already considered sustainable before entering the MSC certification process. Improvements were evident in 18% of the PIs across the 21 fisheries. Five PIs increased from a fail (<60) to an unconditional pass (≥80) and four PIs increased from a fail to conditional pass (>60 to ≤80). The remaining 22 PIs (13%) improved from a conditional to an unconditional pass.

13. Eight percent of the PIs appeared to decrease in score between pre-assessment and the final assessment (either re-assessment or a surveillance report). This was primarily due to an issue not being fully understood at time of pre-assessment which then triggered a condition for the PI at final assessment. In most cases either better understanding of the MSC methodology by assessment team members or provision of further information during the main assessment process were the cause for the decrease in score.

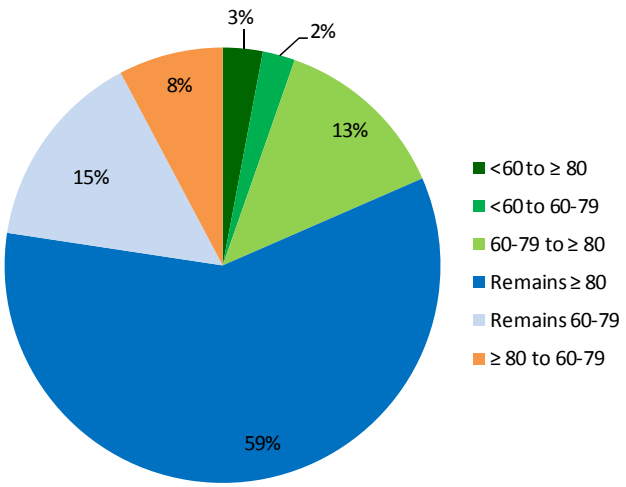

Figure 3. Change between pre-assessment and certification score, amalgamated for all outcome performance indicators across the sample of 21 fisheries

14. The majority of improvements in PI score between pre-assessment and point of certification were evident in the fisheries certified between 2006 and 2010, compared with those certified between 2001 and 2005, but this was not statistically significant (X^2= 4.89, n=168, p = 0.087). Trends were identified in the types of recommendation given at pre-assessment. For those fisheries that received a recommendation to proceed to full assessment, the proportion of outcome PIs scoring ≥80 remained constant between pre-assessment and full assessment. For the fisheries that received a cautionary recommendation to proceed to full assessment, the proportion of PIs scoring ≥80 increased from 41% at pre-assessment to 76% at full assessment. This difference was highly significant; the five fisheries that received a cautionary recommendation increased in PI score significantly more than the remainder 16 fisheries. This demonstrates that there were greater improvements between pre-assessment and full assessment for fisheries that required improvement.

1.3.3. Post-certification analysis

15. In the post-certification analysis, changes over the period from full assessment to final surveillance or re-assessment were assessed (depending on which was later). For stock status there was a significant relationship between the trends of PI scores and indicator trends. There was also significant probability that closure of an 'outcome' condition (i.e. one directly linked to an on-the-water impact) related to stock biomass would be associated with an increase in stock biomass. For the post-certification fisheries, therefore, changes in PI score can be assumed to reflect real changes in environmental performance

16. Under Principle 1, the PI score for stock status increased from <80 to ≥80 in 9% of fisheries and increased within the ≥80 score category for 12% of fisheries. 9% for fisheries experienced a decline from ≥80 to <80, with a further 9% decreasing within the ≥80 score category. Many of these declines were attributable to the fisheries that entered the MSC programme earlier which encountered significant problems on re-certification because later assessments were conducted using more up to date revisions of the assessment methodology.

17. In Principle 2, improvements were seen in 12% of PI scores. Between 75 and 92% of fisheries either improved score or remained within the ≥80 score category for each PI. More improvements were seen in bycatch, habitats and ecosystem categories than in retained and ETP categories.

18. Examination of the reasons for closure of conditions revealed that whereas most closure of stock status (Principle 1) conditions required an increase in stock status, most Principle 2 conditions were closed based on a decrease in the uncertainty over environmental performance. This was generated by improvements in knowledge or management actions.

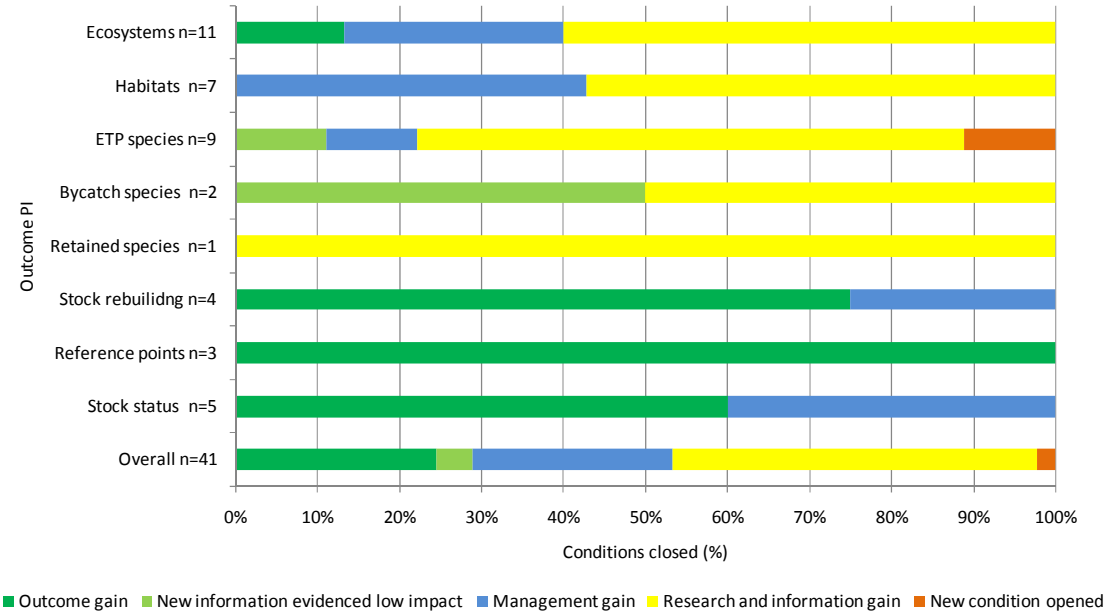

Figure 4. Reasons for closure of conditions related to outcome PIs

1.3.4. Causality: Stakeholder consultation

19. Across all outcome PIs, **35% of respondents suggested that the situation of the fishery had improved**, compared to only 7% of responses that the situation had deteriorated. The three outcomes that were identified most often as having improved were **bycatch, reference points and ETP species**.

20. In situations where stakeholders identified improvement, **49% of respondents attributed the improvement to the MSC certification**, primarily due to there being **new research or information, or changes in management, although in respect of stock status changes in fishing effort were equally important**. Where stakeholders attributed the improvement to activities not linked to the MSC certification, the most important changes identified were changes in fishing practice/effort, new management, and new research. Most improvement was attributed to the post-certification period rather than the pre-certification period. The MSC was judged to have had some influence on the fishery by 44% of respondents. Stakeholders reported that the MSC had raised awareness about Principle 2 impacts in particular

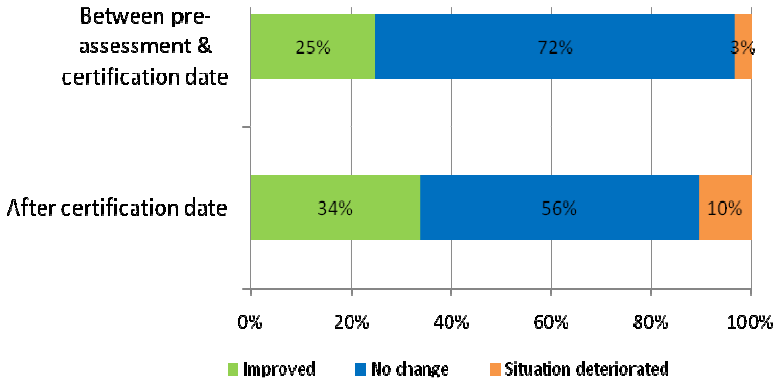

Figure 5. Consultation answers to the question "between pre-assessment, certification date and after certification, have changes taken place in the fishery (stock/environmental)?" (n=53 number of interviews)

1.3.5. Wider impacts

21. In relation to the wider impacts of the MSC programme on non-certified fisheries and on the marine environment, the majority of the stakeholders interviewed believed that the MSC programme had either directly led to, contributed to, or influenced some form of change in non-certified fisheries or the wider environment. Some respondents believed the MSC programme had led to no significant changes. Of those that did make a connection between the MSC programme and wider impacts, many expressed the view that MSC certification was not the sole reason for, or instigator of change. Indeed, for many, those changes that emerged did so in parallel with other initiatives or changes in management philosophy happening at the same time.

22. The majority of respondents did believe that the MSC process leads to actions or outcomes outside the strict boundaries of a certified fishery. Five main areas of change (in non-certified fisheries or potential wider impact upon the environment) emerged:
    a) **Research** – acceleration, focus or expansion of scope in certified and non-certified fisheries;
    b) **Fisheries management** – changes in management of non-certified fisheries;
    c) **Attitudes, mindsets, awareness** – changes leading to higher management or voluntary standards in certified and non-certified fisheries;
    d) **Holistic approaches** – management becoming or staying focused on wider environmental concerns in certified and non-certified fisheries;
    e) **Stakeholder engagement** – improved working relationships leading to positive outcomes in non-certified fisheries.

23. To explore the wider impact of certification, three hypotheses of change were identified and examined:
    a) **Bycatch or habitat impact is reduced in a certified fishery due to new management regulations which are applied equally to other fisheries**. This was investigated through the South African Hake (MSC certified) licensing regulations, which apply also to non-certified fisheries, but no direct correlation with the MSC certification were detected, and through the implementation of protected habitat areas in New Zealand;

b) **Certification of a fishery targeting a particular stock encourages certification of other fishery units for that stock, with a decreasing number of unsustainable practices being detected**. Data from the North Sea herring fishery assessments suggest that there is some evidence to support this theory of change.

c) **Economic incentives emerging from certified fisheries catalyse improvements in non-certified fisheries as they prepare for certification**. The cod fishery certifications may be candidates for this approach, which could involve deriving changing market prices, although this was not shown to be effective in the present study.

1.4. Conclusions

24. Taken as a whole, the results of the study indicate that significant numbers of fisheries are finishing the pre-assessment process with recommendation to proceed, but with caution. These fisheries are making the largest improvements prior to certification, whereas those receiving simple recommendations to proceed have not made similar improvements as they appear to have little incentive to make any changes prior to full assessment.

25. The greatest quantified outcome changes are being made in stock status, which is the PI which has been most closely monitored and for which more information is available. The most significant improvements in fisheries are being made post-certification and are linked to specific conditions. In Principle 2 outcomes, there are some examples of 'on the water' improvements, such as reduction of bird bycatch in South Africa hake, reduction of bycatch of Chinook salmon in the Gulf of Alaska pollock fishery, reduction of effort in the Bering Sea and Aleutian Islands pollock fishery, reduced bird mortality in Patagonian toothfish in addition to the elimination of the discarding of hooks and implementation of protected areas. However, the majority of low scores are associated with uncertainty about impacts, and improvements in scores are a result of increased certainty that impacts are low (through improved research as well as implementation of management measures).

26. After certification, fisheries continue to improve (Figure 6) encouraged by the use of conditions. The trend in improvement can be tracked through changes in FAM PI scores. This suggests that fisheries receiving a conditional pre-assessment recommendation will improve from 50% of their outcome PIs scoring ≥80 at pre-assessment to 70% of outcome PIs scoring ≥80 at certification, and will make further improvements over the subsequent 5-10 years until some 91% of outcome PIs score ≥80.

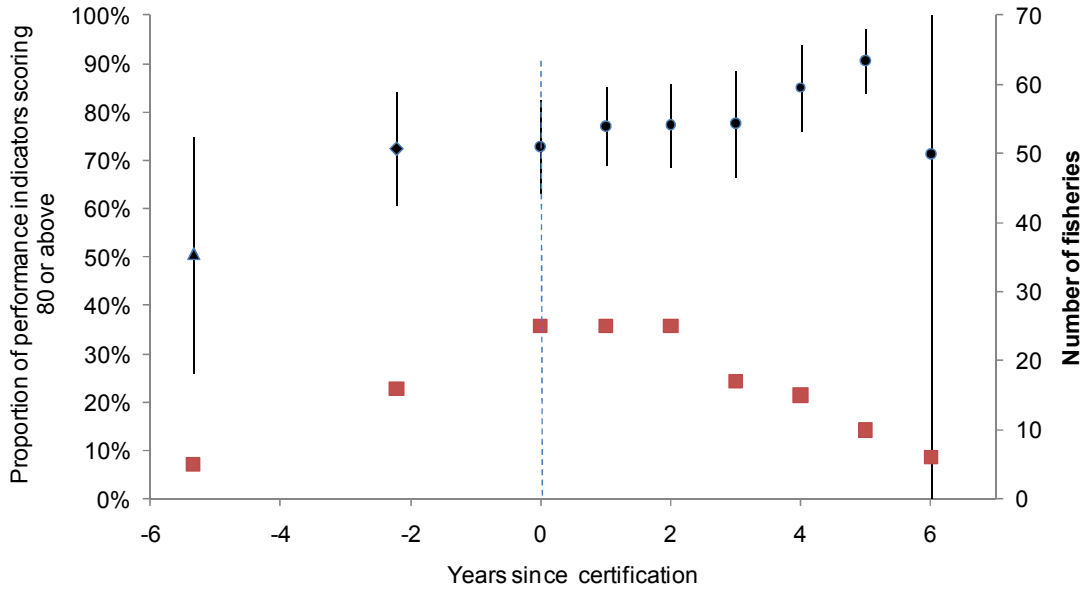

Figure 6. Percentage of total FAM PIs scoring ≥80 using full data set of fisheries
Stock rebuilding was not included to avoid duplication of stock status scores. 95% binomial CIs on proportions are shown (Zar, 1999). Red squares = number of sample fisheries at each point in time; triangle = fisheries receiving recommendations at pre-assessment; diamond = fisheries receiving no recommendations at pre-assessment; blue circles =fisheries in post-certification sample. Points before zero are from the pre-assessment sample. Note: The decline in performance in year 6 is predominantly due to the presence of the earliest certified fisheries, and although it may be expected that some fisheries will continue to attract new conditions after re-assessment, this situation may improve as these older fisheries are joined by the newer assessments.

27. There is wide acceptance that ecolabel certification schemes such as the MSC increase major buyer and consumer awareness and provide tools to turn awareness into action, improve dialogue between stakeholders, and foster significant change in attitude in the management of natural resources, particularly in raising awareness of ecosystem impacts of fisheries (Ozinga, 2004). Many stakeholders coming from different interest groups cited engagement in the MSC programme as useful for advancing their interests and in improving the management of the fishery. The fact that about half of the interventions leading to improvements in fisheries were attributed to the activity of certification suggests that stakeholders perceive the programme to generate positive benefits.

28. In summary, analysis of the evidence and stakeholder views confirms that 'on the water' environmental improvements have occurred in MSC-certified fisheries and these improvements are incremental throughout a fishery's involvement with the programme. These changes are closely linked to the closure of conditions that are raised during certification and subsequent surveillance, as well as through the requirements identified during the pre-assessment stage.