

Western Rock Lobster Fishery

Addendum 1

Surveillance Report No. 5 (May 2003)

Client: Western Australian Fishing Industry Council

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Addendum 1

WRL Surveillance Report No. 5

Structure of this Report

This report is Addendum No. 1 to the Western Rock Lobster (WRL) Surveillance Report No. 5 submitted by the Scientific Certification Systems Inc. (SCS) Surveillance Team (hereinafter referred to as the SCS Team) in April 2003. This addendum report, the first in a series addressing the non-conformances raised in the original surveillance report, addresses the non-conformance issues raised specific with regard to the WRL Environmental Management Strategy (EMS) and its implementation.

This report is presented in three parts:

Part A — Background to the report

Part B — presents the results, discussion and findings of the SCS Team in relation to the final EMS and the EMS implementation strategy;

Part C — provides the SCS Team recommendations for actions to be taken as a result of the findings in Part B of this report.

Part A - Background

Objectives

Addendum No. 1 to WRL Surveillance Report No. 5 has been prepared to evaluate the corrective actions taken to meet the two major non-conformances identified in April 2003, both of which required a corrective action by WAFIC (Western Australia Fishing Industry Council) and a response by the SCS Team within 45 days of the issuance of the surveillance report. An additional 2-week extension on the Team review was put into effect by SCS as it became clear that additional time was required to complete the review process. An additional week extension was subsequently put in place by SCS to allow proper time for the draft report to be completed and reviewed by WAFIC and its assignees.

The two major non-conformances identified in the original WRL Surveillance Report No. 5 are:

1. At the time of the on-site meetings, WAFIC (hereinafter referred to as the client) was advised that the draft EMS provided to SCS was insufficient because the EMS was not an adequate response to weaknesses identified in the ERA, it failed to meet the specific ecosystem impacts requirement

from the assessment, and did not deal effectively with issues about monitoring and assessment of the impacts of the fishery on icon species, and therefore represents a major non-conformance with certification requirements.

2. The lack of a final EMS with an implementation strategy along with the lack of direct implementation of the EMS in the fishery at the time of the 2003 surveillance is a major non-conformance with the 'Requirements for Continued Certification'.

The major non-conformances were based on the SCS Team's review of submitted materials and the Team finding that the submitted materials did not completely meet the 'Requirements for Continued Certification' set forth during the initial assessment and certification report of the fishery (dated March 2000). The original requirements set the baseline for evaluating the EMS due to the fact that WAFIC and the Department of Fisheries agreed in a signed Memorandum of Understanding (MOU) to take the necessary actions to bring the identified deficiencies under Principle 2, Criterion C up to the level of the 80 Scoring Guidepost. The identified requirements were, and still are:

Principle 2 Criterion C

Environmental Management Strategy - Within 24 months of certification, an Environmental Management Strategy for the fishery will be prepared and distributed for public comment and input. The EMS will address impacts of the fishery on the environment, and will include proposed objectives, strategies, indicators and performance measures. The EMS will specify an operational plan, including implementation actions and a supporting program of research. Future research should aim to provide information on the impacts of the fishery on the ecosystem that is at least as scientifically valid as that produced by studies of fished versus unfished areas.

Operation of the EMS - Within 36 months of certification, an Environmental Management Strategy will be effectively incorporated within the operational arrangements for the fishery.

These 'Requirements for Continued Certification' have not changed since the time of certification, although the timelines for completion have been extended. After submissions by the client to SCS regarding the various activities needed to complete work on the requirements, SCS determined that extensions for submissions on the two requirements noted above were warranted, and subsequently the time frames for submissions of a final EMS and EMS Implementation Strategy were adjusted to require completion prior to the February 2003 Surveillance visit.

Auditing Overview

The steps taken leading up to this review are set forth in Table 1. At each step along the way, the SCS Team has reviewed all information submitted by WAFIC and the Department of Fisheries and has provided comment on the quality and completeness of the information either in person, through written reports, or through email communications. In most instances, WAFIC and the Department of Fisheries have shown that the WRL fishery is continuing to meet or exceed the standards for a sustainably managed fishery in relation to many of the MSC requirements. However, the SCS Team continues to have significant concerns over the way in which the 'Requirements for Continued Certification' are being addressed, as these requirements were established to correct identified deficiencies in the ongoing management of ecological risks in the fishery.

Table 1. Surveillance Activities and Documents Through to April 2003

	Time Frame	Surveillance Activity	Documents/Information Submitted to SCS Team	Reports Written
1	May 2001 - April 2002	Surveillance Audit No. 1	Draft ERA, Draft EA Report, data on status of stocks, information on getting NGO participation in management committees, information on bycatch reporting revisions, information on changes to regulations, changes in fishery management personnel and budget, and information from stakeholders on fishery's compliance with MSC requirements.	Surveillance Report No. 1, which includes changes in timelines to 'Requirements for Continued Certification', and agreed timelines for additional future surveillance requirements through March 2003. SCS Team notes that most aspects of the fishery have maintained compliance with the certification requirements and MSC standards. However, the SCS Team also states concerns over progress on certification requirements.
2	May - June 2002	Surveillance Audit No. 2	Data on status of stocks, information on management changes (actual and proposed), information on changes to fishery management personnel, and information on progress made toward completing certification requirements. Information obtained from stakeholders on continued compliance of fishery with MSC requirements.	Surveillance Report No. 2, June 2002, including revised timelines for submission of data on ERA and EMS. SCS finds that most aspects of the fishery continue to be in compliance with MSC standards, however, once again the SCS Team states concerns with progress made on meeting certification requirements.
3	June - July 2002	Surveillance Audit No. 3	Stakeholder and public comments on ERA submitted along with revised Draft ERA.	Surveillance Report No. 3, July 2002. SCS notes progress made on ERA.
4	Sept. - Nov. 2002	Surveillance Audit No. 4	International Peer Reviewer comments submitted along with revised ERA.	Surveillance Report Nov. 2002 shows peer reviews acceptable and appended to ERA. Review of ERA postponed until December 2002.
5	Dec. 2002			Report to WAFIC and Department of Fisheries outlining SCS Team review of ERA and detailing continuing concerns about the content of the ERA. SCS specifically states that it is in disagreement with the Department of Fisheries interpretation of the peer reviewer comments and is concerned that the Department and WAFIC have not incorporated the peer review comments appropriately.
6	Feb. - April 2003	Surveillance Audit No. 5, Yearly Surveillance required under MSC.	Information on status of stocks, data on management changes, Revised EMS, information on bycatch reporting programs, and information from stakeholders on continued compliance of the fishery	Surveillance Report No. 5, April 2003 reporting that the ERA has been accepted as meeting the certification requirement, with the understanding that any deficiencies noted by the peer reviewers and the SCS Team will be taken up and dealt with in the EMS. The SCS Team also notes major and minor non-conformances associated with meeting certification requirements on the EMS and the EMS implementation

			with MSC requirements.	strategy, as well as providing sufficient data on status of stocks and on bait handling code of practice.
7	Feb. 28, 2003		Revised EMS based on Surveillance Comments. EMS implementation statement from Department of Fisheries.	SCS notes that the submission of these documents meets the required timeframe and partially fulfils the corrective action request.

Part B Results, Discussion and Findings

Evidence Presented to the SCS Surveillance Team

As part of the surveillance audit conducted from February through April 2003, the SCS Team was provided with a draft of the Environmental Management Strategy dated 23 October 2002. From this document, in December 2002 the SCS Team provided comments to WAFIC and DOF regarding concerns over the EMS. The SCS Team then met with WAFIC and DOF during February 2003 to further discuss its concerns and provide direct feedback as to revisions that the Team believed needed to be made to the document to be in full compliance with the 'Requirements for Continued Certification'. Agreement was reached that WAFIC and DOF would revise the EMS and submit a final document by 28 February 2003. WAFIC and DOF met this agreed deadline by submitting a revised EMS and an EMS Implementation Strategy by email to SCS, which partially fulfils the required corrective action request.

The SCS Team was also provided additional material by the client in response to the matters originally set out for Surveillance Report No. 5:

- A. DOF responses to public comments received on the draft WRL EMS – February 2003,
- B. MSC Audit Progress Report 3: 2002/03; Final 14 February 2003 sent to Audit Team,
- C. The written reports of the three independent international reviewers of the ERA (Burgman, Hilborn and Thrush).

Subsequently, the SCS Team advised WAFIC and DOF of its interest in contacting the three internationally recognized scientific peer reviewers (Burgman, Thrush, and Hilborn) that reviewed the ERA to ask for further clarification on comments made in their peer review reports. The reason for this action was the ongoing difficulties for the SCS Team and WAFIC/DOF to unambiguously interpret the comments provided by the reviewers.

SCS asked WAFIC and DOF to review the questions to be put to the peer reviewers to ensure accuracy of reporting on past events and organizational concerns. WAFIC and DOF reviewed the SCS letter and provided clarifying comments prior to it being sent. The letter was sent to all three reviewers and responses were received by SCS, which provided clarifying statements by each peer reviewer regarding their original comments (see clarifying statements attached as Appendix 1). The SCS Team used the clarifying comments in reviewing the EMS.

Analysis

The 2003 Surveillance report contained two major non-conformances: one non-conformance for a Draft EMS (October 2002) seen as deficient, and a second non-conformance for the lack of an EMS Implementation Strategy. The Client was advised that the draft EMS provided to SCS was insufficient because the EMS was not an adequate response to weaknesses identified in the ERA, it failed to meet the specific ecosystem impacts requirement from the original assessment; did not deal effectively with issues about monitoring and assessment of the impacts of the fishery on icon species; and did not provide sufficient information on implementation of the EMS process, particularly

personnel and budgets for carrying out recommended actions under each of the identified risks. In addition, the timelines presented need further specificity to fully understand how tasks are going to be accomplished and then further implementation actions taken based on the results of the proposed actions. The following paragraphs outline the SCS Team's concerns about these deficiencies.

EMS

The April 2003 Surveillance report acknowledged that the EMS is consistent with the earlier agreement SCS had with WAFIC regarding the draft structure. However, there are several areas where the SCS Evaluation Team still believes the EMS does not adequately deal with measures for fully handling issues raised from the ERA and associated comments from stakeholder groups and the SCS team.

The SCS Team's general concerns revolve around the fact that the EMS does not provide an overall strategy for identifying and managing environmental risks. Instead, it identifies a series of research initiatives to look into specific concerns, without tying them together within an overall strategy for managing risk. The general and readily available literature on the topic of Environmental Management Strategy provides good advice on how an EMS should be constructed and what it should contain. The main themes for an Environmental Management Strategy include development of a set of procedures that are enduring and allow for continuous improvement in the system, are based on adequate processes for obtaining feedback from the system being managed, and provide for efficient and effective continuous improvement.

An efficient and effective Environmental Management System* will enable an organization to:

- Identify critical issues relevant to the organization's activities that are of concern to the community,
- Identify and evaluate specific hazards and risks that may impact on the environment,
- Establish the necessary sub-systems and controls for preventing or minimising harm to the environment,
- Provide the means to ensure legal compliance of activities, and
- Measure continuous improvement,

(* Adapted from the Environmental Management Systems Guidebook, Centre for Professional Development, 2001).

Many of these things were accomplished in part by the ERA, but in the view of the SCS team these have not been fully incorporated into the EMS. As suggested in the literature, as part of an EMS a fishery should ensure that environmental issues related to fishing are identified. In addition, where the impacts are determined to be unacceptable and a change to fishery practices required, such changes should be introduced into the *fishery management system* in an efficient, effective and accountable manner. In addition, the EMS should also ensure that there is a watch maintained on environmental issues that may be of concern, or could become of concern under certain circumstances. A fishery EMS should also ensure that objectives and targets in relation to environmental issues are explored, determined and agreed amongst key stakeholders, are based on best available information, and corrective action is implemented in a timely and cost-effective

manner. Where information or data are lacking, the EMS should identify the nature of the gaps and the data/knowledge needed to resolve the issue.

A fishery EMS would normally aim to deliver outcomes in respect of the following objectives:

- Identification of key environmental issues
- Development of objectives, targets and achievable actions in relation to each ecological/environmental issue, to be agreed amongst all major stakeholders as implementable projects
- Identify and promote approaches to enable these to be integrated fully within the fishery management system in an incremental manner
- Monitoring and review of outcomes against each issue, based on achievement of outcome-based objectives and targets.

A commonly used framework found in the EMS literature is the 'Plan-Do-Check-Act' Model that is repeated in suitable time frames to provide for updates and continuous improvement. Taking this type of framework into consideration, an EMS for the WRL fishery should at the very least reflect the objectives identified above.

Many of the points identified above were addressed in part by the combination of the ERA and EMS documents. However, the EMS as the final document that will be used to implement plans for continuing assessment and risk mitigation must provide a complete strategy for taking all of this information and determining how to address issues, get valid answers, and implement fishery management strategies in an ongoing manner. In the case of the WRL EMS, only selected risks are included, and while there are individual plans for addressing the moderate to high risks, there is not a sufficient overall strategy for systematically updating and implementing information in all other risk categories.

In addition, the EMS should also:

1. Address how and when actions recommended in the EMS will begin to be implemented and completed, how they will be funded, and what organization and personnel will be responsible for ensuring the actions are carried out. As stated in the original condition, the SCS Team requires "*The EMS will specify an operational plan, including implementation actions and a supporting program of research.*"

2. Have a formal plan for how the information base associated with all of the risk categories identified in the ERA will be updated. In most environmental management plans there is at least an annual update of information. The EMS mentions updating the general information in the ERA after 5 years; however, it provides insufficient rationale for the 5 year time period. The EMS does provide a description of how information will be updated on an annual basis for the higher risk categories. For example, the EMS states, "*Results from research undertaken as part of the EMS will be reported annually by February outlining the studies undertaken to satisfy the milestones in the EMS for the previous year and a summary will be provided in the State of the Fisheries Report to Parliament. The research report also will recommend changes in objectives, performance indicators, research methods, milestones, etc. of the EMS where information collected this and other studies suggests revision is necessary. These changes will be made in full consultation with stakeholders. Reports also will be provided annually to the fishing industry and the Rock Lobster Industry Advisory*

Committee (RLIAC), which includes a CCWA representative as an observer. The process will be audited annually by the MSC certification team assigned to the western rock lobster fishery. The formal revision of the ERA is planned for 2006 by which time there will be additional information available from the EMS research to re-assess some of the risks. In 2006, following the second ERA, the subsequent EMS will be released for stakeholder comment prior to its adoption by WAFIC, Western Rock Lobster Council (WRLC) and the Department of Fisheries”.

While this presents a good start, it still does not fully address the concerns of the SCS Evaluation Team. What is still lacking is an explanation of how this information will be used to develop specific risk mitigation measures, what acceptable process will be used for the involvement of stakeholders (comment, input, or decision making), if external expertise will be used in the analysis of the risks and consequent actions, and how the information will be used in an overall risk reduction strategy.

3. Provide a discussion of how information identifying potential new risks will be incorporated into the EMS. The EMS does point out, as noted above, how information will be assessed for the already identified higher risk categories. Unfortunately, the current EMS does not address the fact that new information may come to light in the interim that significantly alters the view of other existing risks in the fishery, or in identifying brand new risks, and waiting 5 years to review and respond to new information is inadequate. A recent example of this would be recent doctoral research on sea lions. While this research has yet to be peer reviewed and published at the time of this surveillance audit, it does provide a base of information that calls into question the ecology of the sea lion populations in the area of the fishery, and as a result gives rise to concern about the level of risk allowable and the type of monitoring program necessary to detect those risks. As pointed out in the EMS, this information could potentially be incorporated in the following yearly cycle, but only if there is an adequate process for recognising and analysing such new information. However, if the information suggests that the risks are even higher than first recognized by the fishery, there is no mechanism for addressing this in an even shorter time frame (such as might be needed if there were a series of unusual events in the fishery). There is also no mechanism for re-assigning risks based on new information should that be necessary. It would be important in an EMS to address the need to both understand and act on such information, and to do so in a timely fashion to make sure that higher risks are not inadvertently ignored or actions to mitigate these risks delayed until a full year cycle has passed.

4. Tie the entire system together with an overall strategy for managing risk that ensures that stakeholders had an appropriate level of involvement with all aspects of the process of risk identification, updating and management, and that risks identified were linked to consequent actions in research, in the fishery management, or in the fishery itself. The EMS does provide an explanation of how the information on the higher risk categories will be viewed yearly and discussed with stakeholders and industry bodies. Once again, what is lacking is how this will be done for all risk categories and how it is all tied together in a formal strategy for the fishery rather than for each individual risk.

With regard to areas of concern about the specific objectives included in the EMS, the SCS Team addresses each individually below.

Objective 9: Assess impact of fishery on ecosystem

No fishery can operate without having ecological impacts. The ecological impacts of fishing cover many types of interactions and include many types of effects. In addition to bycatch and direct gear effects, potential fisheries impacts on ecosystems include at least the effects on prey of removing predators, the effects on predators of removing prey, and the matter of species replacements (some species may benefit from removal of fished species, while others may be indirectly degraded) leading to potential trophic cascade effects. Other matters of potential importance are the impact of the fishery on the natural range of the species fished (limits on geographical distribution), on the age/size structure of the fished population throughout the natural range, and on the genetic structure of the fished population. There is a rich history in the scientific literature of speculation about the effects of fishing and of empirical studies to assess such impacts in specific fisheries (see for example Hall 1999, Jennings & Kaiser 1999).

Traps used for catching lobsters are a relatively selective fishing tool and are likely to have only limited direct gear impacts on habitats, except for highly sensitive structures such as hard coral or other similar reef habitats, or seagrass beds. Since such sensitive habitats are not usually targeted in the WRL fishery, the main types of ecological impacts are therefore likely to be in the area of removal of the target species from the ecosystems where it is fished, the reduction in biomass of the fished species compared to its unfished levels, and the consequent ecological interactions that this may be responsible for. Empirical studies in other lobster trap fisheries have demonstrated that there are ecological impacts that are measurable and potentially ecologically important. The most rigorous approach to determining the ecological impacts of such fisheries is by analysis of data derived from unfished areas compared to fished areas, provided that there is a robust survey design, appropriate statistical analysis, and the comparisons have been in place for long enough for ecological interactions to be properly expressed. Studies conducted using fished vs. unfished areas in Australia, New Zealand and South Africa indicate that lobster fisheries may have a range of ecological impacts expressed through removal of biomass (see for example studies of the ecological interactions of lobsters in New Zealand reserves by Shears & Babcock, 2002).

The various studies suggest that significant changes can occur in some fisheries, while in others change may be insignificant. Given that each fishery is different, the studies conducted elsewhere have only limited applicability in Western Australian waters; however, they establish the *potential* for the WRL fishery to cause a range of ecological impacts. The questions therefore are whether ecological change of any significance occurs in the WRL fishery, and if so, what is the extent to which it is of concern.

The nature and extent of specific ecological impacts must be determined for the WRL fishery to enable their acceptability to be assessed in the context of the MSC standard. Also, evidence about the nature of these impacts is required so that the spatial extent and reversibility of the impacts can be determined.

In considering the potential for broader ecological impacts from removal of rock lobster by the fishery, the ERA presented two main lines of evidence to argue that the impacts would be minor; first the lack of reduction in biomass, and second the broad dietary preferences of WRL. In the EMS, WAFIC and the Department of Fisheries (DOF) concluded from these and other lines of reasoning:

Given the large levels of lobster biomass remaining along the west coast of Western Australia, the weak interactions of the lobsters with both their prey species and their

predators, the overall impact of the rock lobster fishery on the wider ecosystem through trophic effects is assessed as being minimal. Therefore the management of the trophic interaction is covered by the maintenance of lobster biomass at their current high levels.

The biomass approach recommended in the ERA provides a useful start in terms of understanding the effects of removing lobster in large quantities. However, using biomass alone as an indicator of ecological health, or as an indicator of 'no effects' is too limited for the following reasons:

- The first argument, that there has been little reduction in biomass due to fishing, is based on estimates of total biomass of lobster including below legal size (where most of the biomass is found) derived from the present fishery data. This approach relies solely on a single gross parameter (biomass) that is only weakly related to ecological impacts. The analysis in the ERA suggests that fishing has caused less than a 10% decline in total biomass, and recognizes potential differences in shallow and deep water. The same analysis, together with evidence supplied to the SCS team in response to Principle 1 issues, shows that there has been a major effect of fishing on the abundance and biomass of older and larger lobster. For example the DOF estimates of spawning biomass or egg production suggest that this may be as low as 10 to 15% of unfished levels in Zone B. Moreover this impact is not only recent. Bowen and Chittleborough (1966) estimated that exploitable biomass had declined to 25% of unfished levels as early as 1963.
- The ERA does not adequately deal with the spatial structure of the fishery, of the ecosystems, of the potential interactions with other species, or the spatial distribution of the potential impacts. There is a clear size gradient of lobsters with depth, with larger lobsters found in deeper water, so that even accepting that total biomass may not have been greatly impacted by the fishery most of this biomass would naturally be found in shallow waters. The likely impact of the fishery on both abundance and biomass of lobsters in deeper waters could therefore be very much greater. The ERA and subsequent argument fail to recognize this risk by focusing on total biomass, and ignoring both the size based impacts and their spatial distribution.
- The modelling to account for biomass changes does not resolve the age/size structure in potential ecological interactions (different age classes of lobster are likely to have different ecological interactions, and their removal will therefore have different ecological consequences; failing to resolve the age/size structure in assessing interactions prevents any assessment of different impacts of the fishery expressed through changes in age/size classes).
- The approach is strongly biased because it is an internally relative approach and provides no absolute benchmark against which the model, or the predictions, can be validated (i.e. it does not use any form of unfished conditions to validate the biomass projections).

The peer reviewers found that these matters were of concern as well, pointing out some of the strengths and weaknesses of the arguments in their reviews of the ERA and in their subsequent submission of clarifications to the SCS Team:

Hilborn states while discussing the general nature of the argument,

“ The analysis presented is reasonably convincing and the comparison to other rock lobster systems quite useful. He also says when addressing data from other lobster fisheries, “I believe that most major structural changes have resulted from much higher rates of exploitation than found in WA”.

However, when addressing some of the specifics of the argument, Hilborn notes, *“the key impact of the intensive fishery is a change in the size distribution of lobsters. While WWF and FWA exchange comments on the % change in biomass (Attachment 9 page 22), it is certainly possible that the removal of the larger lobsters will have an impact on ecosystem structure. This concern could be addressed by comparison of existing length frequency distributions to model estimates of the distributions in the absence of fishing, or ideally by some protected areas offshore where the larger lobsters live. FWA in their response (page 23) seem to ignore the potential for offshore reserves.”*

Thrush states,

“Most importantly, while the current level of lobster biomass is 80-90% of unfished levels, fishing has removed the older and larger individuals. Thus an important question to address is, what is the impact of larger lobsters? In marine ecosystems most trophic relationships are size structured and thus the impact of large lobsters on prey populations and community structure may be masked by simple comparisons based on total biomass.”

Burgman notes in the section of the ERA dealing with lobster biomass removal that, "The full justification here is one of the strongest elements of the report." In his clarification to the SCS team, he reiterated his support for the work that had been accomplished by the WA Department of Fisheries, but went on to point out that additional work was still needed to address the issue. In specific, Burgman identified concerns about the nature of participants in the ERA, and particularly about the knowledge base available to develop and assign risks. He also identified major concerns about the level of risks identified because of the failure to adequately benchmark these risks against actual fisheries impacts, either in the WRL or elsewhere, which has important consequences for the content of the EMS. Burgman's supplementary report clarifies the issue of relative vs. absolute risks in stating:

“I noted that the ranks for the hazards that were adopted seemed right, as far as they went, but the classification into two sets did not allow much differentiation, and the absolute values of the ranks were not tied to anything. This is an important facet of the ERA and it was not explained or justified. I could not, therefore, critically evaluate it. This point was especially important as the absolute value of the risks determines how they are seen and how the management group responds.” (Full supplementary report is in Appendix 1).

Gaps in knowledge were acknowledged in the ERA in the area of ecological interactions and impacts. Specifically, the ERA pointed out that gaps in knowledge included:

- a. Lack of data on spatial/temporal change in invertebrates
- b. Lack of data on spatial/temporal change of predators, and
- c. Lack of fishery independent data to validate conclusions.

Any assertions that the fishery has no significant ecological impacts from removal of lobster biomass must be properly supported, especially in light of the data gaps elucidated in the ERA. Any arguments made for risk ranking in any direction must also be provided and supported in such a way that the evidence meets the original certification requirements (March 2000), which state the ERA is to be developed in the following manner:

“Requirements for Continued Certification

1. - Within 14 months of certification, a comprehensive and scientifically defensible assessment of the risks of the fishery and fishing operations to the ecosystem (ecological risk assessment) must be completed, based on existing knowledge, and taking into account points 2 to 5 in criterion 2C. The assessment should consider risks of all aspects of fishing (see intent in criterion 2B) on species (including protected and ecologically related species), habitats, and biotic communities (see criterion 2A). The risk assessment will identify and prioritise gaps in knowledge. The risk assessment will produce a set of prioritised risks, and strategies to address those risks, including research strategies that will result in data of comparable value to those obtained from comparative studies between fished and unfished areas. The risk assessment will be reviewed by independent and external expert reviewers, and be available for public comment.”

The conditional pass originally awarded to the fishery requires the management of the fishery to be improved to the extent that it would attain a pass level (score of 80) against Criterion 2C, which is:

“A scientifically defensible ecological risk assessment has been conducted to determine the potential impacts of the fishery on the environment”.

The pass level on Criterion 2C (the 80 Scoring Guidepost) is specified as:

- *“ There has been a comprehensive and peer-reviewed evaluation of the risks posed by the fishery to the environment (ecological risk analysis), based on existing information.*
- *Such an evaluation is based, at least in part, on information from fished versus unfished areas.*
- *There have been studies to address specific identified impact issues, and these have evaluated ecological risks using scientifically robust methods.”*

The approaches described in the EMS, including Appendix 4, do not convincingly provide evidence that the requirement (scoring 80 on Indicator 2C) has been met. There is no explanation or evidence put forth in the EMS that the quality of data required (the quality of evidence that would be provided by the comparison of fished with unfished areas, as specified in the original certification) can be achieved with the approaches recommended. The EMS does point out that there will be an annual assessment of any new information obtained from the proposed activities and that a new ERA will be conducted in 2006; however, the statement is quite general and does not address specific gaps in knowledge from the ERA or provide a plan for addressing them in the short-term including a possible re-evaluation of the risk ratings should the evidence suggest the need. Waiting for 5 years before reviewing risks in the fishery may or may not be appropriate, so a more thorough explanation and justification is needed.

The EMS proposes to have the department staff prepare a scientific paper, an objective, which falls short of implementing a management strategy to deal with this issue. The proposed studies of diets of lobsters in deep waters also only provide a limited contribution to determining the impact of the fishery.

The importance of empirical data either from fished vs. unfished areas or from studies that can be shown to be as robust as those using fished vs. unfished data to assist in determining the ecological impacts of the fishery is supported in the letter from Thrush to SCS clarifying his original peer review:

“The aim here is to address the question “what ecological function do the lobsters perform?” These effects are likely to depend on size and location, but well designed field studies should provide information on the magnitude of effect these animals have on benthic communities. In the long-term, monitoring of protected areas is likely to be necessary to identify subtle and complex interactions because these are not easy to unravel in short-term studies. This information must be interpreted relative to fishing mortality – considering the size and sex as well as numbers of lobsters removed from the population by fishing. Without knowledge of these ecological interactions the risks cannot adequately be judged. A series of comparative studies between fished and unfished areas is the most likely way of robustly establishing the ecological impacts of the fishery, and should be commenced as a matter of priority to clarify the risk assignments in due course.” (the full letter is in Appendix 1).

During the 2003 surveillance visit, the SCS Team identified the need for WAFIC and DOF to address these concerns in the EMS. SCS advised that the EMS made only a minor contribution to addressing these issues, and therefore failed to adequately acknowledge the major gaps in knowledge in this area as identified by the SCS Team, stakeholders, peer reviewers, and the ERA itself. The EMS needs to have a more thorough program to address this matter.

The SCS Team recognises that this area of work requires specialist expertise, and a process of securing specialist input to this area will be required in one form or another. Also, where there is the likelihood that stakeholders may perceive a biased approach to any critical and sensitive aspects of research, it is important that such research is coordinated and implemented in a manner that can alleviate these concerns. For example, the research could be fully implemented and supervised under the direction of a competent research advisory committee comprising a range of experts and stakeholders, and it may involve independent research providers to ensure that outcomes are rigorous and acceptable.

Objective 2: Minimize sea lion interaction

Two primary activities are proposed in the EMS to deal with the moderate risk identified in relation to fishery interactions with sea lions; (1) improvement and review of the monitoring data, and (2) development and trials of deterrents to limit entry of juvenile sea lions into pots. The efforts identified in the EMS relating to improving the nature and effectiveness of the existing monitoring program have several aspects, but they are all voluntary and none are fishery independent. In respect of icon species and critical interactions, monitoring data derived from programs based on voluntary reporting of data by fishers are not likely to provide acceptably independent data. As the Department of Fisheries staff noted during the RLIAC meeting on 4 February 2003, the more fishers see reporting

as creating data that can harm their fishing efforts, the less likely adequate and accurate reporting will occur. Also, the department states in the ERA that it believes the interactions to be few, and that the current monitoring program may be insufficient to accurately identify these interactions. Since the departmental monitoring program is not fishery independent and is not designed for sampling of sea lion interactions, the SCS Team requires evidence that the program has the appropriate capacity to detect interactions if they are occurring. The EMS does not provide the evidence that the program is capable of meeting this goal, and does not provide a strategy for changing the program to properly detect these interactions.

In the Final Certification Report (page 64-65; repeated on page 85) the EMS is required as follows:

“2. - Within 24 months of certification, an Environmental Management Strategy for the fishery will be prepared and distributed for public comment and input. The EMS will address impacts of the fishery on the environment, and will include proposed objectives, strategies, indicators and performance measures. The EMS will specify an operational plan, including implementation actions and a supporting program of research. Future research should aim to provide information on the impacts of the fishery on the ecosystem that is at least as scientifically valid as that produced by studies of fished versus unfished areas.

3. - Within 36 months of certification, the EMS will be effectively incorporated within the operational arrangements for the fishery.”

This requires the fishery to address issues within the EMS in a comprehensive manner, and to have completed the planning stages so that any consequent actions required, such as changes in the fishery or research programs would be operational, and would be established and operating within 36 months of the original certification. However, we expect that some elements of the EMS may not require actions in the fishery in the short term, because they may be dependent on research programs, or detailed analysis of data.

The potential impacts of the fishery on the sea lion population was accorded a medium risk in the ERA and therefore included as an action item in the EMS. This potential impact is also considered a key concern of the SCS Team. Establishing the level of interactions, and fishing induced mortality, through an appropriately designed monitoring program is an important step. The SCS Team acknowledges that determining what priority should be placed on responses to fishery interactions with sea lions will then depend on an assessment of population level impacts. However, the EMS indicates that there will be no modelling to determine potential impacts, at least until sufficient data are obtained from the department's revised bycatch program or from other efforts. The EMS also states that in lieu of data collection and modelling, mitigation strategies involving deterrent measures on traps will be investigated for implementation to reduce the risk level. However, it is unclear how or when implementation in the fishery will happen as the EMS simply refers to investigations and not an implementation strategy. The EMS lacks any discussion of the personnel that will handle the investigation and implementation, and the time frames suggested for completing the work are too general.

The SCS Team is concerned that the approach provided in the EMS could take so long that the fishery will have been certified for its full 5-year term before this matter is fully addressed in any real way.

The SCS Team agrees with the need, raised by both stakeholders and peer reviewers alike, to investigate in a short period of time the significance of the potential fishery-induced seal mortalities, using population models and appropriate temporal and spatially-resolved assessments. At the very least, modelling efforts would indicate just what timelines would need to be followed in designing and implementing mitigation strategies.

The peer reviewers identify the issues in relation to sea lion populations in the following terms:

Ray Hilborn

“quantitative estimates of impacts would be the most valuable tool for future ERAs. WWF’s point that current levels of pup mortality may be unacceptable is valid...”

Simon Thrush

“Sea lion pup mortality. It is important that this information is collected and assessed in an appropriate model”

Mark Burgman

“Mortalities to sea lion pups and turtles are credible hazards with subjectively estimated consequences. The ecology and population dynamics of these species, or species very like them, are well known and there is sufficient information for a detailed risk assessment of the population consequences of increased mortality. This would translate observed mortality events into a currency of probability of population decline that could be assessed in its own right. The various agencies in Western Australia, particularly the fishery managers, have substantial reputations for developing just these kinds of models for target stocks. There seems to be sufficient reason, data, and expertise to conduct these analyses.”

To meet the pass level specified for Indicator 2C, the EMS cannot be considered to be of an acceptable standard if it does not implement procedures to robustly assess the level of interactions with the fishery, develop models or adopt other appropriate procedures to determine the possible impacts (temporal and spatial) of the fishery (interactions and mortality) on the sea lion population, and identify clear and effective pathways for subsequently devising and implementing appropriate corrective actions in the fishery if such corrective actions are warranted by the impact assessment. The implementation of such projects, modelling, field data collection etc, may well be conducted jointly as collaborative ventures with other agencies, or even wholly by other agencies (but see the comments about independence of critical research projects below). However, the responsibility to make sure these evaluations take place, and where necessary mitigation measures implemented, rests with WAFIC and the Department of Fisheries as co-signatories to the Memorandum of Understanding that states the organizations will work together to meet the 'Requirements for Continued Certification'; not with other entities as suggested both directly and indirectly by the EMS.

This responsibility is not mitigated or lessened because other agencies may have the primary legislative responsibility for such matters within the Western Australian jurisdiction. Should actions that need to be taken to achieve such mitigation be outside the legal scope or physical capacity of WAFIC (or DOF as requested by WAFIC), such matters may need to be contracted to the private sector, be the subject of MOU arrangements with other agencies, or be subject to a specific strategy designed to achieve required outcomes through other collaborative means (such as an agreement to secure ecosystem science capabilities from a university or other competent research organization).

Where there is likelihood that stakeholders may perceive a biased approach to any critical and sensitive aspects of research, it is important that such research is coordinated and implemented in a manner that can alleviate these concerns (as described in the discussion on Objective 9 above). This may apply to the collection of sea lion interaction data, to modelling studies of the sea lion populations, and to projects designed to assess the impact of the fishery on sea lion populations.

Other Aspects of the EMS

Objective 1: Maintaining spawning stocks

This objective, while relevant for the fishery in general, is approached in a manner that is inconsistent with all other aspects of the EMS. The EMS is about the environmental, and primarily the ecological, impacts of the fishery. The SCS Team fully appreciates that maintaining the stock is the key requirement of the fishery management system as a whole, and therefore believes that having a section on its importance and its maintenance is welcome. However, this issue already features prominently in other fishery related documents and in management measures. While the SCS team realizes its importance, it would like to see some justification as to why it should be included in the EMS. In the manner it is presented, it appears to detract from the focus of the EMS, which is to identify, prioritise and resolve key *environmental* issues in the fishery. For example, to place maintenance of spawning stocks in an appropriate framework for the EMS, it might be useful to focus on the maintenance of spawning stocks at levels that are relevant to ecosystem objectives. In such a programme, the *ecological* impact of removal of more than 70% of the spawning biomass might be the major focus.

Objective 3: Leatherback turtles

We consider this objective to be appropriate. However, it needs to provide a more detailed explanation of measures to be implemented to better understand, and where appropriate, mitigate the risks.

We understand why WAFIC and DOF do not believe that WRL fishery-induced mortality in this turtle species is a critical population threat. However, since this species has special status the fishery has a mandatory MSC responsibility to continue to look at this issue, and where appropriate, perform additional analyses to validate the assertion that fishery-induced mortality is of no consequence, or establish measures to minimise fishery-related impacts on these animals. For example, the establishment of a monitoring program that has a defined resolving capacity would appear to be very useful. Additionally, supplementing the proposed monitoring work with a focused research study that conducted detailed monitoring at times/places of highest risk of entanglement, thus providing an

independent validation of the logbook data, could also be useful. By validating data on interactions to identify specific space/time characteristics, the information could then be used to inform fishers and ultimately reduce interactions.

Since the CALM turtle expertise has already offered to be of assistance in this effort, it would appear that WAFIC and DOF have a ready-made opportunity for collaboration with CALM, and should take advantage of it in addressing this issue more fully.

Objective 4: Assess physical impacts of pots on coral

This objective is limited but broadly acceptable. However, we note that the impacts of the fishery in such locations are not restricted to physical coral damage, and that the ERA should properly address this issue by discussing the ecological impacts of pot fishing adjacent to coral reefs.

Objective 5 Waste management at the Abrolhos

This objective is broadly acceptable. We note however that the actions in relation to nutrient enrichment are not comprehensive, and that the capacity to detect impacts is probably better described as low, not medium to high. This is because determining the distribution of nutrients in such waters is notoriously difficult, as a result of the difficulty of matching space/time sampling scales to outfall and distribution scales, and the consequent interpretations of such data for detecting impacts and taking appropriate management responses.

Additionally, the actions proposed appear to indicate that at least 2 years will pass before any real actions would be taken. The research by DOF to survey the Abrohlos waste dumping grounds is not scheduled to be completed and presented to AIMAC until October 2004. It then appears that only after the research is completed will AIMAC develop a waste management strategy and DOF prepare policies, standards, and guidelines for all marine structures to avoid environmental damage.

This objective could be improved by re-examining the timelines for the initial research on waste dumps and by stating clearly the information that supports the proposed timeframes. This objective would also be greatly improved by the clear and accurate statement of timelines and objectives for the development and implementation of the AIMAC waste management strategy and the DOF policies, standards, and guidelines on marine structures.

Objective 6: Minimize whale and dolphin interaction

The objective is broadly acceptable. The SCS Team notes that improved logbook data, along with improved strategies to collect data on sea lions, may significantly aid the effort to get better data on whales and dolphins as well. The timeline here is more appropriate in that it states that the data will be reviewed and reported annually. This will make it easier for stakeholders to see if fishery-related interactions are really occurring at levels that pose risks above the level already assigned to this objective.

Objective 7: Minimize risk of overfishing of octopus

The objective is broadly acceptable. The SCS Team notes that continued monitoring will take place and the results analysed and reported annually, thus allowing stakeholders to see if fishery-related interactions are really occurring at levels that pose risks above the level already assigned to this objective. The EMS could be improved in relation to this objective by stating what level and type of monitoring will have to be implemented if either a dedicated fishery were to start, or the level of interactions change according to the EMS performance measure. This would help put in place a strategy that can respond to a broader set of contingencies and help to more accurately and appropriately understand the risks the lobster fishery poses to octopus.

Objective 8 Level of bycatch

This objective is broadly acceptable. However, there are a few things to consider in relation to specific species complexes.

Scalefish and Sharks

The wetline bycatch of the WRL is not within the scope of this MSC assessment, unless the fish are taken by the lobster pots. All other species taken by the vessels in this fishery, during the time the WRL fishery is operating, but not by pots, are not within the ambit of the assessment (as bycatch). While it may be only a small proportion of the total catch, or population, of any fish species, the WRL fishery should still nonetheless show that these catches (bycatch associated with the certified fishery) are within appropriate limits for the species. This assessment may be conducted as part of other fishery sustainability assessment processes on the scalefish fisheries and simply provided as part of the MSC assessments where appropriate.

The fact that the data are analysed and reported annually should allow stakeholders to determine if the fishery-related mortality of these species warrants changing the risk rankings in the EMS, and subsequently implementing a risk reduction strategy.

Deep Sea Crabs

The crabs taken as bycatch in the WRL need to be assessed for sustainability, specifically considering the time and space characteristics of the catch and effort in the WRL, and that the WRL bycatch remains within acceptable limits.

Again, the fact that the data are analysed and reported annually should allow stakeholders to determine if the fishery-related mortality of these species warrants changing the risk rankings in the EMS, and subsequently implementing a risk reduction strategy.

EMS Implementation Strategy

The client has provided, within the EMS, some information on the intended implementation plans under each of the various headings: extension of results, summary of objectives and milestones (Appendix 5), and updating of the ERA/EMS, together with information within each objective. In addition, the Department of Fisheries has provided SCS with a letter stating that the department is fully committed to the EMS implementation.

The 5-year cycle for substantive updating of the ERA and EMS appears sensible; however, there needs to be a specific discussion of how the timeline was chosen, why it is appropriate, and how it may need to be adjusted in the light of new information. More importantly, the processes for adjustments and finer scale updates to specific risks and issues need improvement. In particular, the processes for engaging with stakeholders and outside expertise to assist with the resolution of specific matters that were highlighted as weak areas in the ERA (such as the ecosystem impacts of the fishery, and the impacts of the fishery on the sea lion population) is inadequate.

In relation to the requirement for a comprehensive EMS that provides the details of the implementation strategy, we note that the resources committed to the EMS are primarily one senior scientist who will devote 20% of his time to the work, supported by 2 half-time technical officers. It is not clear what other resources will be committed to ensure the EMS is implemented properly and successfully, or how these resources will be distributed within the specific tasks. Work programs for each specific task and project are not provided, and although the milestones are a useful reference for each project, there are no details provided for how these will be achieved. There is little detail of the funding base, staff allocations, and other resources that are needed to implement the EMS. For example, what levels of funds have been allocated to meet the EMS objectives for 2003, 2004, and 2005?

We note also that there are no resources allocated or planned for the purposes of updating the EMS. Consultation appears to be intended via the RLIAC process, but there appears to be no process envisaged for engagement with stakeholders or research expertise outside that arena. For example, there is no process envisaged for providing expert input to any of the sensitive project areas of the EMS, no process envisaged to assist with guidance and updating of issues for any material aspects of the ERA or the EMS, and no process for planning for updating on issues identified in the current ERA that have been widely identified by stakeholders, reviewers and the SCS team.

Commitment to Implementation

The SCS Surveillance Team has pointed to a number of aspects of the ERA that it considers weak, and requires follow up action in the EMS. Perhaps Mark Burgman made the most concise statement of the link that should exist between the ERA and EMS when he wrote:

“It is important to note that I made the assumption that the fishery would develop an Environmental Management Strategy (EMS) based on the findings of the ERA, and that the

things I noted in my report would be taken up in the EMS.” (*Burgman’s full additional report is in Appendix 1*).

We note the letter from the Executive Director committing the Department of Fisheries to implementing the EMS is a start in this direction. Moreover, the SCS Team notes that actions have commenced in 2002/2003 to implement some aspects of specific objectives in the EMS. This includes modifications to monitoring of interactions with icon species, and preliminary evaluations of the effects of biomass removals. However, the Department's letter does not contain sufficient details of the implementation process to meet the requirements of the non-conformance. The Department’s letter falls short because the actual commitment to implement the EMS is unclear as there is an inadequate description of the resource availability and processes of implementation. This should include details of how resources will be distributed to effect the implementation plans, how intended activities will derive useable outcomes in some of the critical issues, or what the overall strategy and process for implementation will be embedded in the fishery management system to legitimise risk identification and reduction. SCS would like to know what specific management practices will be adopted in the fishery in terms of risk reduction strategies, and for what period of time. As a result, the implementation strategy falls short of meeting the required standard for a fully specified and operational EMS that would meet the MSC requirements.

Part C Actions

This SCS Team's review of the EMS and the EMS Implementation plans details a number of continuing deficiencies. As a result, it is SCS's view that the EMS and the EMS Implementation plans still fail to meet the 'Requirements for Continued Certification'. The current corrective actions taken therefore have not overcome the two major non-conformances identified in the April 2003 Surveillance Report.

WAFIC is hereby advised that the two non-conformances identified in the April 2003 Surveillance Report are still in effect and increased in importance from Major to Critical. This increased urgency does not negate the valuable work that has been accomplished to date. However, most of the issues raised in this report have been discussed and reviewed over the past 2 years, yet they have not been resolved, prompting SCS to further emphasize the importance of addressing the deficiencies in the short-term.

Corrective Action Request

As a result of the two non-conformances not being cleared, SCS has raised them to 'Critical' status, requiring WAFIC to make immediate revisions to the EMS and the EMS Implementation Strategy within the next 60 days. The revised EMS in general must correct the deficiencies in relation to both ecosystem impacts of fishing and sea lions, be more comprehensive in content to correct deficiencies in the process of identifying and managing risks, and contain implementation plans that provide full detail of the organizations and personnel that will carry out any intended actions, the budget requirements for the actions, the plan for acquiring the necessary funds for implementing the EMS actions, and specific timelines for achieving both the required milestones and the final outcomes. The EMS should also provide plans for alternative actions depending on the outcomes of the identified projects, including specific research outcomes. The EMS should also provide a clear strategy for how the information base on ecological and environmental risks will be checked, updated, and acted upon in future years.

The SCS Surveillance Team must approve a fully revised EMS with an acceptable implementation plan within the next 60 days, or SCS will commence with the suspension of the MSC certificate for the fishery. SCS requires 14 days for review of the revised EMS and associated plans and documentation. This provides WAFIC with 46 days from the date of issuance of this report to complete the revisions and provide the information to SCS for final decision.

WAFIC is advised that SCS will provide formal notice of the procedures to be followed prior to beginning a certificate suspension process. Should the SCS Governing Body confirm suspension of a certificate, WAFIC would be required to remove all forms of advertising and any printed or other use of the MSC logo forthwith. This applies to all forms of industry packaging and promotional material. Within 30 days of the approval of the suspension by SCS, public advertisements will be placed in relevant media providing public notice that the MSC certificate has been suspended from the WRL fishery. Following suspension, a certificate will be permanently revoked if the identified non-

conformances are not fully corrected within 6 months. Should this occur, the fishery would be required to undergo a full assessment to regain use of the MSC program.

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Appendix 1

Supplementary Comments from the Reviewers of the ERA

A. Mark Burgman



School of Botany, Parkville, Victoria 3010, Australia.

May 12, 2003

Chet Chaffee
Scientific Certification Systems
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chaffe3@attglobal.net

Dear Chet

Re: peer review reports on the Ecological Risk Assessment of the Western Rock Lobster Fishery

Thanks for your letter of May 8. I can attempt to clarify my assessment.

When I reviewed the documents, I did so assuming that the ERA was not the end of the matter. I understand that it will form part of an ongoing process of assessment, monitoring, model development and revision. Clearly, the fishery could improve its understanding of 'potential and real ecological risks from fishing', as could all fisheries and other natural resource management industries. I reached my conclusion that the fishery had done enough (just) to earn accreditation by comparing it with my experience of international standards for ecological risk assessment in fisheries and other industries. It is important to note that I made the assumption

that the fishery would develop an Environmental Management Strategy (EMS) based on the findings of the ERA, and that the things I noted in my report would be taken up in the EMS.

Taking the two extremes of interpretation you outline in your letter (from ‘no need to revisit any information or decisions’, to ‘the need for a good deal of improvement’), I would characterise my opinion as saying that there is potential for substantial improvement, that the responsible management group has opportunity to innovate (that is, it has the experience and expertise to take the lead in this area and design and implement innovative approaches to fisheries ERA), and that given sufficient commitment, I would expect the ERA on the next round to be substantially better informed by monitoring data, ecological studies, and purpose-built models. I expect these initiatives will be part of the EMS. I have confidence that the management group will execute these responsibilities effectively, but I have not seen to EMS or the details of the plans that emerged in response to the ERA and the reviews of it.

Regarding your general questions;

1. *Do you have any specific concerns about the approach used to identify and assign risks? If so, please provide the specific concerns and any recommendations you may have to address each concern.*

I described in my review that the selection of participants may have limited the scope of hazards identified and affected their ranks. I gave recommendations regarding expert selection and the management of elicitation sessions, nominating several published approaches and recommending that the system adopted be carefully rationalised. I also had concerns about the lack of anchoring of the absolute risk ranks (see the next question).

2. *At least one reviewer alluded to concerns about relative risk rankings versus absolute risk assignments. Can you provide further clarification on this point? If there are concerns, what recommendations do you have to address them.*

I noted that the ranks for the hazards that were adopted seemed right, as far as they went, but the classification into two sets did not allow much differentiation, and the absolute values of the ranks were not tied to anything. This is an important facet of the ERA and it was not explained or justified. I could not, therefore, critically evaluate it. This point was especially important as the absolute value of the risks determines how they are seen and how the management group responds. One way to achieve ‘benchmarking’ (anchoring) is to compare the magnitude and extent of the risks with those of other fisheries and other circumstances (by comparative risk ranking). This approach has some technical and social problems but can be used effectively. It is ultimately a social decision, and the other approach is to use tools such as multi-criteria analysis (in a consensus-seeking group of representative stakeholders) to establish relative and absolute ranks.

3. *All the reviews mentioned aspects of the documentation or analyses used to support certain risk assignments. Do you agree that the literature reviews or analyses provided are sufficient to support each of the individual risk assignments in both a relative and absolute sense? If you have concerns, are they general or with specific risk factors or risk categories? If your concerns are with specific risks, please identify which ones are not adequately supported by literature or analysis and if possible explain your concerns. If possible, please also provide any recommendations you may have for addressing the concerns.*

I voiced both specific and general concerns. The level of mortality of marine mammals was noted but not explored. I believe it could and should be explored through the development of an appropriate population model. Sensitivity analysis would guide the identification of sensitive parameters and the collection of new information. It would also illuminate the potential importance (in an absolute sense) of plausible mortality scenarios. My assessment was based on the assumption that this work would form part of the monitoring and

impact assessment responsibilities taken up in the EMS. My expectations of this kind extended to all the 'medium' ranked hazards (and any others that are newly identified or that rise to the surface as the monitoring data accumulate). That's what I meant when I said, for instance, 'A subjective risk assessment, such as AS/NZS 4350, should be seen as the first stage of a more detailed risk assessment for important hazards.'

4. *At present, the general timeline being followed by the fishery to review all aspects of the ERA is 5 years. Can you comment on what you believe to be proper timelines for addressing any concerns you may have identified in relation to the previous questions.*

I agree that a complete review in 5 years time is a good idea. But the spirit of the ERA and the associated EMS is to stay on top of the management and monitoring data and to develop dynamic responses to contingencies. I mentioned in my report the need to stipulate contingency plans to respond to monitoring data and I assume that the development and implementation of measures that take into account potential outcomes would be in place well before 5 years are up. I was concerned particularly that the EMS consider and document the likelihood that it would detect ecologically important changes in the rock lobster population or other associated species (statistical power calculation and model-based effect size estimation are obvious tools for the job).

In your report you state, "the risk assessment barely achieves the required standard". You then proceed to list 7 weaknesses. Can you please explain just what you meant by all of this? Also, can you tell us whether any of the 7 weaknesses are specifically associated with any of the individual risk assignments?

I noted

- a lack of documentation of the hazard identification method,
- insufficient attention paid to unlikely, plausible events,
- a relatively narrow base of technical and other expertise,
- use of a consensus technique in which the breadth of opinion did not contribute to the risk assessment outcomes,
- a lack of benchmarking for the risk thresholds,
- a lack of a sensitivity analysis for the risk assessment outcomes, and
- no clear documentation of monitoring protocols that deal explicitly with statistical power and ecologically important changes.

I illustrated each of these things in my detailed comments that followed. I could simply reproduce those comments here. Many were also covered above. For instance, the lack of benchmarking relates to your question 2 above. The narrow technical base refers to your question 1 above. I will expand further separately if you would like additional specific clarification. I hope this paints a clear enough picture.

Yours sincerely

Mark Burgman
(sent by email, May 12, 2003)

B. Simon Thrush

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Dear Chet,

Re-Ecological Risk Assessment (ERA) conducted on the Western Rock Lobster Fishery.

Thanks for the opportunity to elaborate on my review. I was surprised to see that anyone could reach a conclusion that *“none of the peer reviewers think there is any need for revisiting any of the information and decisions related to the risk assignments, that all risk assignments are acceptable, and as a result there is no need for further follow up related to those risk factors identified in the low to moderate risk categories.”* I fail to understand how my text could be so badly misconstrued and I agree with your interpretation that my comments at least are somewhere between the two extremes you reported.

Before addressing the specific questions you raise, I think it would be worthwhile to add a note on my perspective of the MSC processes. Having researched the environmental effect of fishing for a number of years now, it seems to me that the MSC offers one of the few positive options to the fishing industry to improve their environmental sustainability. The provision of positive feedback means that as a reviewer, while I need to be rigorous, I also need to be reasonable and to encourage industry and resource managers to improve - rather present them some unachievable goal. I see the process as iterative and progressive and wrote my review with this in mind.

I am not sure about your criteria for the ERA to be a fully supportable scientific/technical document of the caliber that could be published in a leading journal. I cannot see it making the cut for the journals I review for, but I think this is document is more about a sociological process than a definitive scientific statement. For a journal, I think the risk assessment process would have to be more explicitly based on the space and time scales of fishing activity and explicit concepts/models of effect (these would not necessarily have to be complex). I do not mean to criticize the “expert opinion” approach, other than the statements I made in my review, I simply wish to illustrate a disparity between the report and a journal publication – as I see it.

Now to your specific questions:

- 1. Do you have any specific concerns about the approach used to identify and assign risks?, If so, please provide the specific concerns and any recommendations you may have to address each concern.*

Yes – there is high level of subjectivity for some issues, mostly ecological effects. Factors at the threshold of the criteria (i.e., introducing pathogens and disease, lobster prey changes in abundance and density, potential changes to limestone reef habitat and plastic ingestion/entanglement by marine spp) should be considered more carefully and highlighted as areas on which to improve the knowledge base. Factors that are effectively focused only in specific locations (e.g., impacts of sea lion pups) should only be considered within the area utilized, not the whole fishery.

2. *At least one reviewer alluded to concerns about relative risk rankings versus absolute risk assignments. Can you provide further clarification on this point? If there are concerns, what recommendations do you have to address them.*

Relative risk is probably all that is possible in this situation, with the knowledge available. But an explicit statement should be made defining whether the risks are assessed against the current situation or some “pre-fishery” situation. For the risks (above) assigned in mostly a subjective manner, it is important to ensure that the ongoing processes (the EMS) has in place the appropriate research and analysis to determine the absolute level of risk.

3. *All the reviews mentioned aspects of the documentation or analyses used to support certain risk assignments. Do you agree that the literature reviews or analyses provided are sufficient to support each of the individual risk assignments in both a relative and absolute sense? If you have concerns, are they general or with specific risk factors or risk categories? If your concerns are with specific risks, please identify which ones are not adequately supported by literature or analysis and if possible explain your concerns. If possible, please also provide any recommendations you may have for addressing the concerns.*

I think the review is adequate based on the local, available information. The relevance of some of the general literature cited is probably not great and I recommended some other sources. I recognised a number of issues where I felt information was currently insufficient and recommended that future targeted studies address these issues. In the list I included: pot damage to habitats both sensitive reefs and chronic impacts to sandflats, changes in trophic relationships due to lobster exploitation (particularly size dependent effects).

4. *At present, the general timeline being followed by the fishery to review all aspects of the ERA is 5 years. Can you comment on what you believe to be proper timelines for addressing any concerns you may have identified in relation to the previous questions.*

This is an iterative process and some of the ecological questions are difficult to address, but I would like to see some substantive advance in the information available on trophic effects, and habitat damage as well as greater knowledge of the deeper water habits within the 5 year time frame. In this timeframe sufficient new information should be gathered to better quantify threats and if appropriate suggest mitigation measures.

You specifically asked me to address the following question:

In your report you state, "the critical studies assessing the ecological role of lobsters have not been performed". Can you briefly indicate what sort of studies you believe are critical to assessing the ecological role of lobsters in terms of the impact of the fishery? Can you also provide specific explanation of what implications this has for the risk assignment in this category?

The aim here is to address the question "what ecological function do the lobsters perform?". These effects are likely to depend on size and location, but well designed field studies should provide information on the magnitude of effect these animals have on benthic communities. In the long-term, monitoring of protected areas is likely to be necessary to identify subtle and complex interactions because these are not easy to unravel in short-term studies. This information must be interpreted relative to fishing mortality – considering the size and sex as well as numbers of lobsters removed from the population by fishing. Without knowledge of these ecological interactions the risks cannot adequately be judged. A series of comparative studies between fished and unfished areas is the most likely way of robustly establishing the ecological impacts of the fishery, and should be commenced as a matter of priority to clarify the risk assignments in due course.

I hope my quick response is helpful.

Best wishes
Simon

C. Ray Hilborn

Hilborn response to questions

General Questions for all Peer Reviewers

1. Do you have any specific concerns about the approach used to identify and assign risks?, If so, please provide the specific concerns and any recommendations you may have to address each concern.

I have no specific concerns. Ecological risk assessment is a new field and I was happy that the approach used met current standards. No doubt the “bar will be raised” as time goes by.

2. At least one reviewer alluded to concerns about relative risk rankings versus absolute risk assignments. Can you provide further clarification on this point? If there are concerns, what recommendations do you have to address them.

I don't find that I made this comment.

3. All the reviews mentioned aspects of the documentation or analyses used to support certain risk assignments. Do you agree that the literature reviews or analyses provided are sufficient to support each of the individual risk assignments in both a relative and absolute sense? If you have concerns, are they general or with specific risk factors or risk categories? If your concerns are with specific risks, please identify which ones are not adequately supported by literature or analysis and if possible explain your concerns. If possible, please also provide any recommendations you may have for addressing the concerns.

I don't see any specific reference to this in my review except perhaps with reference to protected species. Since the methods are generally qualitative and expert opinion rather than formal analytic computation I recognize that the risk assessments are based on professional judgment more than formal analysis. As time goes by I would expect some of the risks could be quantified, specifically estimates of pup mortality and I do not believe that there were any estimates of turtle entanglement rates.

4. At present, the general timeline being followed by the fishery to review all aspects of the ERA is 5 years. Can you comment on what you believe to be proper timelines for addressing any concerns you may have identified in relation to the previous questions.

5 years seems an appropriate interval to me, that would allow for time to accumulate new data and for ERA methods to advance.

Questions Specific to Individual Peer Reviewers

Ray Hilborn

In your report you mention that there could be a role for protected areas in resolving some of the uncertainty; can you briefly describe what you specifically meant by this comment and what affects, if any, you believe this has on the risk assignments in the ERA?

The ideal situation would be to have a large “control” area with no lobster removals to see what would happen to the lobster population and the associated other species. I believe that an area protected from lobster fishing could be part of a long term ERA for this fishery, but do not have specific recommendations to make about the size of the protected area.

Ray Hilborn