



# **South Pacific Regional Fisheries Management Organisation**

**Commission of the South Pacific Regional Fisheries Management Organisation  
2<sup>nd</sup> Meeting of the Commission, Manta, Ecuador: 27 - 31 January 2014**

**COMM-02-OBS-01**

## **Alternative Proposal for the Management of Deepwater Fisheries of the South Pacific.**

*New Zealand High Seas Fisheries Group*

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## High Seas Fisheries Group Incorporated

7<sup>th</sup> January 2014

Attention            Robin Allen  
Per Email:

Re        HSFG Alternative Proposal for the Management of Deepwater Fisheries of the South Pacific.

Dear Robin and SPRFMO members

1. Please find enclosed a draft CMM for bottom fishing in the SPRFMO Area prepared by HSFG, together with a supporting document entitled "A new approach for Management of the deepwater fisheries of the South Pacific" authored by Ross Shotton. We request that the attached documents (including this introduction letter) be posted onto the SPRFMO web and members be made aware of our submissions.
2. These documents have been submitted to NZ Officials on 23 December 2013, however have not been adopted by NZ or incorporated in the NZ Draft CMM submitted to the secretariat.
3. We wish to make it clear we are disappointed with the Draft CMM (<https://www.southpacificrfmo.org/assets/Commission-Meeting-2nd/Comm-02-Papers/COMM-02-07-Proposed-CMM-for-the-Management-of-Bottom-Fishing-in-the-SPRFMO-Convention-Area-AU-NZ.pdf>) that has been submitted to the Secretariat as a joint proposal from Australia and New Zealand and wish to note that NZ industry does not support it.
4. We have attempted to engage with NZ Officials on the text of our draft CMM, however as far as we are concerned, NZ officials have not taken into consideration substantive concerns raised by the New Zealand fishing industry.
5. You will see that our draft CMM differs fundamentally from the Australian/New Zealand text both in content and style. In drafting it we have kept it simple, without burdening it with unnecessary text to maximize its clarity and cogency. The preambular provisions do not add to the measure as they are assumed in the Convention and related texts, and merely serve to obfuscate the intent of the measure with confusing and disputed terminology.
6. We believe that the preambular provisions, while necessary and in need of making, need not be in the same document that is intended to provide 'sailing orders' to fishing vessel operators and their vessel officers. We are strongly committed to the conservation and management methods we propose in the CMM and the CMM has been drafted with the international instruments for the conservation and management of deep water fisheries in the forefront of our thinking. We firmly believe the measures proposed to be more effective and efficient than those proposed in the Australian/NZ draft, a document we find to be scientifically and operationally flawed and reflecting a restricted awareness of the realities of operating high-seas deepwater fisheries.
7. HSFG is acutely aware that New Zealand officials want to agree to a CMM with their Australian counterparts.

8. The HSG have made officials aware of our strong dissatisfaction with the Australian proposal. Not only did we find the draft to be hastily prepared and, in parts, it failed to show that those preparing the draft had reflected carefully on the many issues at stake. Rather, the draft appeared to be an attempt to push acceptance of a structure that drew heavily on existing practice and terminology used in some other RFMOs, no matter the differences in the fisheries situations to be addressed and the widely recognized weaknesses, if not failures, evident in the CMM texts that appear to have either provided a template or guided thinking
9. The differences in our views on the application of UNGA Resolution 61/105 is one we think has its root in the original draft of the resolution which led to deliberate ambiguity that allowed bottom trawling to be described as 'destructive fishing' method. We recognize the difficult-to-avoid ambiguities and drafting weaknesses that occur in articulating international resolutions where the pressure of time precludes a more considered evaluation of how commonly-held objectives might be achieved. We stress that we believe that our objectives reflected in the draft CMM proposed are entirely consistent with those expressed in this UN Resolution, i.e.:
  - a. Management of deepwater demersal fishery resources and their fisheries so as to obtain a maximum of sustainable social benefits and
  - b. Protection/conservation of fragile benthic communities/populations and associated and dependent species.
10. These objectives HSFG unstintingly endorses, our differences appear to have arisen from attempts to include tactical technical guidance into texts what were clearly intended to provide strategic direction. It seems that if technical advisors were available at the time, their advice had little effect in achieving scientifically rational and operationally practical and feasible resolutions. HSFG remains uncertain whether officials are aware of the scientific/technical and logical deficiencies of the various guidelines and conservation measures that were subsequently developed to guide implementation of the UNGA's Resolution 61/105.
11. We assert that there is a much preferred and effective alternative to protect fragile benthos that has been noted in circles as well as our own, e.g. by NIWA – that of (seafloor) feature-based management. The method requires acknowledging the obvious, accept that bottom trawling does affect fragile benthos that is in its path, though the extent of the effects will depend on the nature of the benthos in the areas in which fishing happens. Only a few areas of seafloor are characterized by dense coral stands or large numbers of sponges and it is often the case that we know about them. And, frequently the sea bed where fishing occurs is bare basaltic rock. Further, it is becoming apparent that rarely are the benthic species of concern restricted to the depth range in which fishing occurs. In fact evidence shows quite the contrary and many of the things we seek to protect live below the depth trawls can reach.
12. HSG welcomes the assessment (SC 01-20) put forward to the first scientific committee meeting which noted that by using fine scale commercial footprint data from New Zealand and Australian vessels for the analysis of impact showed that less than 4% of the South Pacific habitat between 0 and 1600m had been impacted by bottom trawling. However, as noted by New Zealand at the meeting, the actual distribution of coral species is much deeper than this, and very little of the habitat is less than 400m in the region. Hence the overall impact is much lower than even this.
13. We also welcome the biodiversity reports from the NORFANZ survey and Geosciences Australia provided to the SPRFMO science meeting which provide valuable scientific data on the distribution of potential vulnerable species. It is with continuing concern that we see eNGO advocates and many 'scientific' advocates ignoring data which do not fit their case that continued fishing activities are likely to have a major impact on vulnerable habitats.



14. We also welcome the conclusion in SC 01-20 which noted that spatial management as originally and consistently promoted by HSG is probably required in SPRFMO.
15. Our deepwater bottom trawling in the SPRFMO area is exclusively aimed-trawling on seafloor features. We are able to now operate to minimize impacts because of our use of the most recent technologies, something that not all vessels were able to do in the past. Hence the actual footprint of our fishing activities are now less than they were in the past, especially in areas such as on Louisville Ridge. Our proposal is that seafloor features over which commercial fish aggregations do not occur could be closed to fishing. Attempts to undertake future fishing in these areas would be treated as 'new fisheries'. Where fishing on seafloor features does occur, it is almost always restricted to limited parts of the seafloor features and the geographical location data exists to map these areas carefully. As little as 2% of a particular seafloor feature may be habitually fished. There is no reason to think that any of the benthos vulnerable to impact by a trawl is restricted to that 2% - in fact the opposite. And clearly, enforcing a regime of open and closed areas is far more practical than ensuring that no piece of coral has escaped detection under the net on the deck of a heaving deepwater fishing trawler.
16. With such a management method, all other conservation measures in support of responsible fishing, however defined, remain the same. Fishery resources must be assessed no matter what; appropriate decisions taken on harvesting levels and compliance with regulations enforced through necessary actions.
17. Given the late-January 2014 date for the Manta meeting, it would seem that adoption of a new approach, as we propose, would be delayed until 2015, but need not be delayed further. This would provide ample time to undertake measured reflection of the principles involved; their data demands; and operational and implementation details.
18. We see no reason for SPRFMO Members to continue to champion flawed and ineffective management and conservation measures anchored in confusing international measures, when a potentially powerful alternative exists that industry internationally will be more likely to accept as a more practical solution.
19. We would be grateful if you and your colleagues were to give our proposal careful consideration.

Andy Smith



FOR: NEW ZEALAND HIGH SEAS FISHERY GROUP



*Commission of the South Pacific Regional Fisheries Management Organisation*

Proposed

Conservation and Management Measures for the Management of  
Bottom Fishing in the SPRFMO Convention Area

CMM Y.YY

The Commission Adopts the following CMM in Accordance with Articles 8 and 20 of the Convention.

**Objective**

1. These bottom fishing conservation and management measures (CMMs) apply to bottom fishing to ensure that the maximum sustainable benefits are derived from fish stocks and to protect associated and dependent species and affected benthic fauna and benthic communities to ensure continued viable populations, communities and species. This CMM supersedes and replaces the Interim Measures and recognises that member states have granted access to vessels within the SPRFMO under the Interim Measures and seeks to preserve existing access by these vessels.

**General Provisions**

2. These CMMs apply to all fishing vessels flagged by a Member or Cooperating Non-Contracting Party (CNCP) to the South Pacific Regional Fisheries Management Organisation (SPRFMO) that engage in bottom fishing for non-highly migratory fish in the Convention Area.
3. For the purpose of these CMMs, the term 'bottom fishing' means the use of fishing gear that is designed to contact the seafloor during the normal course of fishing operations.
4. For the purpose of these CMMs, the term 'bottom fishing footprint' means the spatial area of bottom fishing for the specific class of fishing gear that was used in the Convention Area for all vessels flagged to a Member or CNCP from 1 January 1990 to 31 December 2010.
5. Classes of fishing gear are bottom trawls and any type of bottom line gear designed to be anchored to or fished on the bottom and fish pots or traps.

**Management and Conservation Measures**

6. In respect of bottom fisheries, Members and CNCPs: agree to:
  - i. Submit to the Commission a description of their bottom fishing footprint, in accordance with paragraph 5, and a bottom fishing impact assessment in accordance with paragraphs 10 and 11.
  - ii. Prohibit their flag vessels from participating in bottom fishing in the Convention Area, except in accordance with the provisions of these CMMs and CMM 1.02.
  - iii. Limit their main target species fish catch in the Convention Area to an amount that does not exceed the annual average amount over the period 1 January 1990 to 31 December 2010 for their respective class of fishing gear.
  - iv. Restrict bottom fishing to within their respective bottom fishing open area footprint established in accordance with paragraph 5 and as approved by the Commission.



- v. Only permit the use of trawls used to target non-highly migratory fishes that have a stretched mesh size of not less than 100 mm.
- vi. Appoint observers at a minimum level of 10% to each of their flagged vessels that undertake bottom fishing in the Convention Area.
- vii. Restrict bottom fishing by their flag vessels to areas defined by the aggregate bottom footprint as referred to in 4(iv).
- viii. Where there are substantial indications of important populations and/or communities of benthic fauna declare these areas to be Benthic Protected Areas in which no bottom fishing will be further permitted until reviewed .
- ix. Nothing in paragraph 7 shall diminish the rights of Members and CNCPs to apply additional or more stringent compatible measures to their flagged vessels conducting bottom fishing.

#### **New and/or Exploratory Bottom Fishing**

- 7. The Commission shall ensure that levels of bottom fishing effort and the associated catches do not reduce the sustainable benefits to be obtained from the targeted fish stocks based on a reasonable assessment undertaken either by the Member or CNCP wishing to conduct bottom fishing, or the Scientific Committee: this assessment shall be prepared according to the SPRFMO Bottom Fishing Impact Assessment Standard (in Annex II). This assessment shall be made public.
- 8. The Commission, on the basis of the Scientific Committee's assessments, advice and recommendations will determine the region of the Convention Area for which the assessment was conducted where bottom fishing is permitted.

#### **Fragile Emergent Benthic Fauna**

- 9. In undertaking the assessments described in paragraphs 7 and 8, Members, CNCPs and the Scientific Committee shall take into account relevant international guidelines regarding standards, criteria or specifications for identifying fragile benthic fauna and the impacts of fishing on such benthic populations and/or communities.
- 10. Where fragile benthic fauna are known to occur or scientific information indicates that they are likely to occur, the Commission shall close such areas to bottom fishing unless, based on an assessment undertaken in accordance with paragraph 7 and 8, the Commission is satisfied that bottom fishing will have neither significant adverse impacts on fragile benthic populations and/or communities nor reduce the level of the sustainable harvests of the targeted fish stocks.

Members and CNCPs shall assist the Scientific Committee to identify and to map where fragile benthic fauna are located by providing such data and information to the SPRFMO Secretariat who shall circulate this information.

#### **Monitoring, Control and Surveillance of Bottom Fishing**

- 11. All Members and CNCPs whose vessels participate in bottom fishing shall:



- i. equip and configure their vessels so that they can comply with all relevant CMMs and shall only authorize their vessels to fish in the Convention Area where they are able to exercise their responsibilities under the Convention and the CMMs.
  - ii. ensure that each their vessels maintain the level of observer coverage specified in paragraph 6(v) of this CMM and in accordance with other applicable CMMs.
  - iii. prohibit their vessels from bottom fishing if the required submissions have not been provided in accordance with the requirements of CMM 1.03 - *Conservation and Management Measure on Standards for the Collection, Reporting, Verification and Exchange of Data* (SPRFMO Data Standards).
  - iv. Monitor the compliance with management and conservation measures of their fishing vessels in the Convention Area.
  - v. Ensure that all CMM requirements regulating transshipments are observed if a transshipment is undertaken in the Convention Area.
  - vi. Ensure that their vessels undertaking bottom fishing in the Convention Area operate a vessel monitoring system (VMS) when in the Convention Area and transmit the VMS data in real time to their respective Fisheries Monitoring Centre in accordance with the requirements of the SPRFMO data standards.
12. The SPRFMO Secretariat shall annually compile a list of vessels authorized to undertake bottom fishing in the Convention Area and shall make this list publically available on the SPRFMO website.

#### **Data Collection and Reporting**

13. Members and CNCP shall report, in electronic format, the three-monthly catches of their vessels to the Secretariat within 10 days of the end of the quarter, in accordance with the SPRFMO Data Standards.
14. The Executive Secretary shall circulate quarterly catch reports, aggregated by flag State, to all Members and Cooperating Non-Contracting Parties as soon as possible, once collated.

#### **Closure of Existing Fisheries and Re-Opening of Closed and Past Fisheries**

15. A Contracting Party or the Scientific Committee can propose that a particular bottom fishery or a defined area within the SPRFMO Convention Area should be closed or opened under the guidelines in 7 and 8 .
16. The Commission may task the Scientific Committee to assess the status of a stock and determine if current fishing effort endangers the conservation and provision of maximum sustainable benefits from the relevant stock.
17. The Commission, taking into account the advice of the Scientific Committee, shall decide whether to close a particular area or areas to bottom fishing as required by SPRFMO's obligations to ensure the conservation and provision of maximum sustainable benefits of fishery resources in the Convention area.
18. A review period may be specified for each closed bottom fishery during which the Scientific Committee shall consider any additional evidence that may bear on the status of the relevant stock and the continued closure of the bottom fishery.



19. The Commission, taking into account the advice of the Scientific Committee, shall decide whether to re-open a defined area closed to bottom fishing as is consistent with SPRFMO's obligations to ensure conservation and provision of maximum sustainable benefits of fishery resources in the Convention area.

#### **New Exploratory Fisheries in the SPRFMO Convention Area**

20. For the purposes of these CMMs a new bottom fishery is one that has not previously been subject to bottom fishing or has not been subject to bottom fishing for at least twenty years.

21. A fishery shall continue to be classified as new until sufficient information is available:

- i. to determine the distribution, abundance and demography of the target species and provide an estimate of the fishery's potential yield;
- ii. To review the potential impacts of the bottom fishery on dependent and related species;
- iii. To allow the Scientific Committee to formulate and provide advice to the Commission on appropriate catch amounts, appropriate levels of bottom fishing effort levels and fishing gear design, where appropriate.

22. Flag states intending to establish a new bottom fishery shall:

- i. Notify the Commission of their proposed bottom fishing intentions;
- ii. Provide the Commission with a description of their intended operations;
- iii. Describe mitigation measures they shall undertake to prevent potential adverse impacts on marine fauna,
- iv. Describe the specifications of the bottom fishing gear that will be used,
- v. Describe the details of the observer programme including the number of observers that are to be used;
- vi. Document the procedures that will be used for the collection of data, and
- vii. Describe any research or resource assessment fishing that shall be undertaken as consistent with the conservation and management objectives of the Convention;
- viii. Ensure that the new fishery resource is exploited on a precautionary basis until sufficient information is acquired to enable the Commission to adopt appropriately detailed conservation and management measures.

23. The Scientific Committee shall consider fishing operations plans and related information for new bottom fisheries and recommend to the Commission catch and effort limits.

23. The Commission shall take into account the advice of the Scientific Committee in deciding whether to approve a proposal for a new bottom fishery.

24. The Commission may take such management actions as it deems necessary including setting catch and effort limits.

25. Recommendations of the Scientific Committee and decisions of the Commission shall be reviewed on an annual basis.

#### **Obligation of Existing and New/Exploratory Fisheries to Undertake Stock Assessment Activities**

26. Any vessel undertaking bottom fishing in the SPRFMO zone is required to undertake stock assessment surveys.



27. In the case of bottom trawlers this will consist of acoustic surveys undertaken in accordance with a design provided by, or endorsed by, the Scientific Committee and which complements commercial fishing activity.

28. Such fishing vessels will be equipped with an acoustic system equivalent in capacity to acoustic systems currently used for acoustic stock assessment activities.

**Review**

29. These CMMs shall be subject to annual review to enable relevant advice to be incorporated into the various measures.

DRAFT

# **A New Approach for Management of the Deepwater Fisheries of the Southwest Pacific Ocean**

**The High Seas Fisheries Group Incorporated**

**New Zealand**

January 2013

**HSFG**

PO Box 3830 Richmond  
Nelson 7050  
New Zealand



**HSFG - A New Approach for Management of the Deepwater Fisheries  
of the Southwest Pacific Ocean**

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**NOT TO BE RELEASED**

*This document is not to be released without the prior written consent of the HSFG.*



## 1. PURPOSE OF THIS DOCUMENT

- 1.1 The fisheries of the Southwestern Pacific Ocean will soon come under the competence of the South Pacific Regional Fisheries Management Organisation (SPRFMO). As such, the High Seas Fisheries Group Incorporated (HSFG)<sup>1</sup> believes that it is now timely to examine some of the assumptions that provided the basis for the interim management measures that regulated the operations of the deepwater fisheries of the Southwest Pacific Ocean. An evolution of management methods that have been used should produce positive outcomes for all stakeholders. The HSFG is open to a review that is constructive and results-orientated and examines all assumptions and methods.
- 1.2 As such, this document presents proposals by the HSFG as to how the deepwater fisheries in the South-western Pacific Ocean may be better managed. The context in which these proposals are made and HSFG's concerns are necessarily outlined.
- 1.3 We have provided an overview of the matters addressed in this paper in our letter dated 14 December 2012 entitled "Feature Based Management: NZHSG Update" and that document remains a useful précis of the issues (document annexed at Appendix A).

## 2. EXECUTIVE SUMMARY

- 2.1 There have been significant technological advancements in the fishing industry over the past decade, which the operators in the HSFG have embraced. HSFG's vessels have adopted these technological advancements during the period they have been fishing the high seas of the Southwest Pacific Ocean. Sea-bed mapping and navigational technologies now allow our skippers to deploy their gear with a precision never envisaged before. In conjunction with state of the art fishing gear, the advanced technology adopted by our operators allows the gear to target fish with short, aimed tows, wherein the time the gear spends on the bottom can be measured in minutes rather than hours as with traditional bottom trawling methods. This combination of new methods and gear design has far less impact on the sea floor than the outmoded (but still used) bottom trawl gear that characterises demersal trawling on other areas.
- 2.2 This technology can be used to identify areas of sea-floor containing vulnerable sessile animals, which can then be plotted to ensure they are then avoided. While such avoidance is desirable from the perspective of conservation, it is also important to operators as many sessile organisms, such as corals, can damage the catch and nets: skippers therefore will avoid fishing in areas where they occur.
- 2.3 From this perspective, the interests of various stakeholders and interested parties should be more in alignment than is previously believed. Lack of awareness of the precision with which fishing effort is now targeted may obscure this reality.

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<sup>1</sup> The High Seas Fisheries Group Inc. represents all New Zealand operators in the deepwater fisheries of the Southwest Pacific whose management is to come under the competence of SPRFMO. Group members are: Talley's Group Limited, Sealord Group Ltd, Richardson Fishing Limited, Endurance Fishing Limited, Pescatore Fishing Limited and Anton's Trawling Limited.

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- 2.4 This capacity to accurately maneuver fishing vessels when on the high seas and place the gear with great precision when fishing allows fisheries, and the ecosystems of which they are a part, to be managed in a way that has not before been possible.
- 2.5 The current management measures in the SPRFMO deepwater species were implemented at a time when bottom-trawling was perceived as a blunt instrument and the management measures considered necessary were correspondingly blunt. Fisheries management principles have moved from being premised on managing fish stocks in isolation to managing them in the context of the ecosystem<sup>2</sup> in which they exist. Management areas predicated on rectangles and “move on” rules do not align with these new principles and in our view no longer represent the best possible management regime.
- 2.6 For reasons outlined in this paper, the HSFG argues that the best way to give effect to the principle of ecosystem management is to use the available technology to identify and define areas where vulnerable marine ecosystems exist and - in light of that knowledge - set in place management measures defining specific areas that may and may not be fished. These areas can be determined, and then fished (or avoided, as the case may be) with a high degree of precision. This would form one fundamental component of “feature-based” management.
- 2.7 A rich and crucial source of information to the sea-floor features in regions of the SPRFMO area, and their ecosystems, are the HSFG operators who have operated in this fishery for many years. The HSFG is willing not only to share the information it has collected over the years to facilitate the development of a feature-based management regime, but is willing to continue to gather and provide this information to refine such a management method.
- 2.8 The remainder of this paper documents the HSFG’s views as to why the current interim measures will not provide an optimal manner for the management regime to move forward and outlines, in general, HSFG’s concept of feature-based management.

### **3. POLICY ISSUES - OVERVIEW**

This paper canvases a number of key policy issues for SPRFMO’s management of the South-Pacific deepwater fishery. These are outlined below and expanded further in the paper.

#### **3.1 Secure and exclusive fishing entitlements**

- 3.1.1 All fisheries management experience, not least that of the Government in New Zealand, shows that exclusivity and security of access results in the best fishery-resource management results and creation of maximum social welfare benefits. We urge the New Zealand Government to promote policies at SPRFMO that contribute to/result in strong rights to fishing entitlements based on historic participation and contribution to management of the respective resource.

#### **3.2 Obligation to use all relevant data**

- 3.2.1 Implicit in both the Precautionary Approach and the Ecosystem Approach to Fisheries [Management] is that resource management and conservation decisions should be based on ‘the best available scientific information/evidence’. To ignore available information is

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<sup>2</sup> We are leaving the definition of “eco-system” in this context for another day.



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contrary to New Zealand Government policy and will militate against good decision making. Thus, it is incomprehensible (and contrary to purported policy) that decisions regarding TACs have been based on a time period that is only part of the past fishery's time frame. We urge that this decision be re-visited and be revised based on a full and realistic time period. The HSFG believes that an appropriate base period for evaluating resource management decisions should be the years 1990 – 2010. During this period much of the fishery was developed in the SPRFMO areas and many seamounts and exploratory trips were undertaken. A New Zealand vessel fished seafloor features from New Zealand to Australia in the west and from New Zealand to Chile to the east fishing on every ridge and feature shown on available bathymetric charts. During the same time Chile, for example, undertook research fishing outside their EEZ (with a New Zealand Fishing master).

### **3.3 Areas of fishing**

- 3.3.1 There is anecdotal evidence to suggest that the locations of many areas in which there was at times fishing activity were either misreported or unreported, particularly in the early stages of this fishery. Consistent with using the best available information, this aspect of the fishery should be researched to accurately identify where deepwater trawl fishing has (and has not) actually occurred. VMS data may be available to confirm accounts of vessel fishing activity, e.g. on almost every feature from Easter Island the south-eastward across to the Chilean EEZ and up to the Nazca and Gomez ridges.

### **3.4 Who has the best information?**

- 3.4.1 The best available data and information on this fishery are held by the operators themselves. This information includes that recorded by the skippers as well as anecdotal knowledge of their operations and those of others in the area. Such information and experience is a synthesis of technical and environmental variables that provide a deep understanding of the fishery. Management that fails to use such knowledge risks suboptimal, if not erroneous, decisions. It is axiomatic to us that effective management must include a formal mechanism to use the knowledge held by the HSFG members.

### **3.5 The use of effort controls or catch controls (or both) during the initial stage of management of deepwater fisheries by SPRFMO**

- 3.5.1 The HSFG believes that the analyses and considerations needed have not yet been undertaken to identify the best form of fishery control during the start-up of SPRFMO proper. For this reason we urge that the control used in the first instance consist of a limit on fishing effort that reflects that undertaken during the last 4 -5 years of the fishery and recognises the contribution of those who undertook the fishery during this period.

### **3.6 Feature-based management or rectangles?**

- 3.6.1 The proposals the HSFG make in this position paper imply that management of the fishery must move from regulations based on rectangles to sea-floor feature-based management. Highly accurate, precise navigation technology now makes it feasible (if not easy) to custom manage even relatively small parts of individual seafloor features. The MPI should build on the world-leading skills of the New Zealand industry, and indeed its own world-leading methods of fishery management, to propose to SPRFMO Parties the adoption of such innovative and effective fisheries resource management for this fishery.

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### 3.7 Obligations of participating in the fishery

- 3.7.1 The 'boutique' nature of the fishery means that obtaining the information needed for effective resource management will require the coordinated participation of the industry in stock assessment activities. The HSFG operators are prepared to equip their vessels in this fishery so that they can undertake quantitative acoustic stock-assessment surveys and support or lead actions needed for the collection of other information required for resource management. The HSFG believes such involvement should be an ongoing obligation for all participants in the fishery and new entrants, should there be any.

## 4. IMPLEMENTATIONAL/TACTICAL ISSUES - OVERVIEW

In addition to the broad policy issues outlined above, there are matters pertaining to the way in which management measures should be approached and implemented to be considered. The HSFG has identified the factors outlined below as being important considerations.

### 4.1 Complexity of management procedures

- 4.1.1 To be effective, conservation regulations should be as simple as possible and be rigorously enforced. It is general fisheries management experience that complex, convoluted conservation regulations are usually self-defeating, difficult to implement, ineffective and costly. As such, they fail to gain the confidence of those who are to be regulated, which discourages compliance.

### 4.2 Implementation of the Precautionary Approach

- 4.2.1 The HSFG finds the application of the Precautionary Approach to be imprecise and generally unhelpful. A credible effort is required to document the risk to biodiversity by the fishery in the areas in which it operates. Further, appeals to the Precautionary Approach as a basis for management action should balance the costs and benefits of fishing and management actions. The HSFG is available to participate in any such endeavors.

### 4.3 Bureaucratic convenience of the basis of interim management measures

- 4.3.1 Current interim management measures imposed by the Ministry for Primary Industries (MPI) on New Zealand vessels operating in the SPRFMO Southwest Pacific Ocean deepwater fishery have evolved from arbitrary assumptions and statistical conveniences. They further depend on assumptions, such as subjective decisions as to what is an appropriate trigger level bycatch of sessile benthic invertebrates to constitute "evidence of a vulnerable marine ecosystem" (EVME<sup>3</sup>). MPI regulations assign trigger levels to different sessile taxa in the bycatch from a single tow: e.g. 29.5 kg of particular sessile taxa in the bycatch may not be deemed EVME while 30.5 kg of the same taxa is. The length of a tow, at least the time the ground rope of the trawl is in contact with the sea floor, is not considered in these decisions though clearly a tow that is on the bottom for twice as long as another will have twice the expected amount of bycatch.
- 4.3.2 The technology now used by HSFG operators, and the willingness of the HSFG to work with MPI in developing new measures, allows us to move beyond such blunt and imprecise instruments.

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<sup>3</sup> We introduce the acronym 'EVME' for 'evidence of a vulnerable marine ecosystem' with reluctance.

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### 4.4 Flaws in the 'move-on' concept as a conservation procedure

4.4.1 The management response required when there is EVME is for the offending vessel is to move an arbitrary distance before attempting any further fishing. Because the Southwest Pacific deepwater fishery is done by aimed trawling on fish aggregations on specific seamounts, this results in the vessel having to restart searching for another viable fish aggregation. Because of the limited size of many sea floor features this often requires the vessel to steam elsewhere. Such interruptions prevent viable fishing operations and thus HSFG skippers avoid areas where this may occur.

4.4.2 Further, this application of the move-on regulation means that no further information is obtained and the compulsory review of the incident that is required will be unable to come to any informed conclusion. As other vessels may continue to fish the area, if there are threatened benthic animals on the tow line, the move-on rule will not protect them. Our understanding is that most of the area fished by the HSFG's vessels is of basaltic bottom with sparse irregular benthic fauna, a view supported by available video recordings and recent scientific publications.

### 4.5 Protection of biodiversity

4.5.1 The HSFG's members are committed to the protection of 'biodiversity' but we believe that the current regulations represent a regulatory cul de sac and a more effective and flexible alternative exists. The HSFG supports the full closure to fishing of areas where there is satisfactory evidence that major populations of fragile sessile animals exist or there is good reason to believe that they exist beyond the fact that the depth or aragonite concentration or temperature or some other oceanographic variable may be 'right'. We believe that fishing should be permitted in other areas where fishing is feasible or has customarily been done.

### 4.6 Minimizing fishing effort required

4.6.1 Minimizing the fishing effort to that required to take the TAC will contribute to protection of all non-targeted species - fish and invertebrates whether sessile or not - by minimizing unwanted/unnecessary gear effects. This will also create maximum social welfare benefits. Management of these fisheries should always be directed towards this objective, an objective, which in our view, is implicit in the Ecosystem Approach to Fisheries.

## 5. REPORT CONTEXT

5.1 The New Zealand High Seas Fisheries Group, operators of exclusively New Zealand-flagged vessels, fully understand and appreciate the international obligations placed on New Zealand as a consequence of its ratification of the Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean. We expect that fulfilling these obligations will be a high-order policy objective for the Ministry for Primary Industries. As such, HSFG is cognisant of the text of the opening preambular paragraphs of the Convention:

*"The Contracting Parties:*

*Committed to ensuring the long-term conservation and sustainable use of fishery resources in the South Pacific Ocean and in so doing safeguarding the marine ecosystems in which the resources occur*

*Conscious of the need to avoid adverse impacts on the marine environment, preserve biodiversity, maintain the integrity of marine ecosystems and minimise the risk of long-term or irreversible effects of fishing;"*



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- 5.2 The above text elegantly expresses two primary policy objectives of the HSFG, namely:
- i. ensure the long-term conservation and sustainable use of fishery resources in the South Pacific Ocean, and
  - ii. safeguard the marine ecosystems in which the resources occur.
- 5.3 These two objectives determine the structure of this report whose purpose is to convey to the New Zealand Government, the views of the HSFG as to how these objectives can be best achieved.

## **6. CONSERVATION AND SUSTAINABLE USE OF FISHERY RESOURCES - SPRFMO CONVENTION**

### **6.1 Relevant text of the SPRFMO Convention**

- 6.1.1 The requirements of the Parties to the SPRFMO Convention in relation to management of fishery resources under its competency are described in the following relevant articles.

**Article 2: OBJECTIVE**

The objective of this Convention is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur.

**Article 3: CONSERVATION AND MANAGEMENT PRINCIPLES AND APPROACHES**

[...] (ii) fishing shall be commensurate with the sustainable use of fishery resources taking into account the impacts on non-target and associated or dependent species and the general obligation to protect and preserve the marine environment;  
 (iii) overfishing and excess fishing capacity shall be prevented or eliminated;  
 (v) decisions shall be based on the best scientific and technical information available and the advice of all relevant subsidiary bodies;  
 (vii) marine ecosystems shall be protected, in particular those ecosystems which have long recovery times following disturbance; [...]

(b) apply the precautionary approach and an ecosystem approach in accordance with paragraph 2.

2 (a) The precautionary approach as described in the 1995 Agreement and the Code of Conduct shall be applied widely to the conservation and management of fishery resources in order to protect those resources and to preserve the marine ecosystems in which they occur, and in particular the Contracting Parties, the Commission and subsidiary bodies shall:

- (i) be more cautious when information is uncertain, unreliable, or inadequate;
- (ii) not use the absence of adequate scientific information as a reason for postponing or failing to take conservation and management measures; and
- (iii) take account of best international practices regarding the application of the precautionary approach, including Annex II of the 1995 Agreement and the Code of Conduct.

(b) An ecosystem approach shall be applied widely to the conservation and management of fishery resources through an integrated approach under which decisions in relation to the management of fishery resources are considered in the context of the functioning of the wider marine ecosystems in which they occur to ensure the long-term conservation and sustainable use of those resources and in so doing, safeguard those marine ecosystems.

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## **7. THE DEVELOPMENT OF OTHER INTERNATIONAL AGREEMENTS RELATIVE TO NEW ZEALAND - A COMMENT**

7.1 The HSFG understands that the SPRFMO convention has been framed within the context of several preceding international agreements. These include:

- 1982: (Entry into force, 1992): The Convention on the Law of the Sea
- 1992: The Rio Declaration on Environment and Development of the United Nations Conference on Environment and Development, Rio de Janeiro, 1992, in particular Principles 1, 3, 4, 5, 7, 8 15 and 17
- 1995: The United Nations Fish Stock Agreement<sup>4</sup> notwithstanding its focus on migratory and straddling, rather than discrete, high seas stocks
- 1995: The FAO Code of Conduct for Responsible Fisheries<sup>5</sup>
- 1996: The New Zealand Fisheries Act (1996)
- 2006: United Nations General Assembly Resolution A/RES/61/105
- 2008: United Nations General Assembly Resolution A/RES/63/112
- 2009: International Guidelines for the Management of Deep-sea Fisheries in the High Seas; and
- 2009: United Nations General Assembly Resolution A/RES/64/72.

7.2 In considering this train of declarations, resolutions and agreements, the HSFG has often struggled to understand the motives, dynamics and processes that have been involved and sometimes, the logic, at least from a fisheries perspective, of the conclusions that have been reached. It may be useful to comment on this process from our perspective.

7.3 Our experience was that by around 2005 there was growing awareness of the impact of newly developing deepwater fisheries on fragile emergent deepwater corals and related species when areas of fishing coincided with areas of fragile benthos.

7.4 In the North-east Atlantic, almost certainly one of the most heavily trawled areas in the world, studies were beginning to emerge on the existence of the extensive *Lophelia pertusa* ridges off Norway that extended for kilometres and similar bottom faunal communities on the Darwin mounds, to the north-west of the United Kingdom.

7.5 In the Southwest Tasman Sea, there were reports of massive amounts of cold water corals being taken as bycatch in the fishery for orange roughy that developed on the Cascade Plateau off Tasmania.

7.6 Despite errors in the methods used in certain cases (such as Koslow et al. (2001), who overestimated trawling effects on deepwater corals by a factor of around four) it was clear that the rapid development of at least the Southeast Tasman Sea deepwater fishery and the new management circumstances this entailed had caught the regulatory agencies unprepared. There was an urgent need to introduce protective measures for fragile sessile animals where there were impacts of heavy gear on the seafloor that were causing considerable damage. The understanding of the population dynamics involved in those deepwater species for which market demand was booming was weak if not wrong.

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<sup>4</sup> Full title: The Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

<sup>5</sup> Full title: Food and Agriculture Organization of the United Nations, Code of Conduct for Responsible Fisheries (Rome: 1995).

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- 7.7 During this period, for example, there was vigorous scientific debate as to how quickly (or slowly) orange roughy grew: eventually the case for the slow rate of growth of orange roughy was demonstrated and accepted. Prior to this, considerable scepticism among scientists existed that such a fish could grow for as long as it appeared to and take so long to mature. It turned out the oreos, a fish often taken as bycatch with orange roughy, and occasionally targeted, had similar population characteristics.
- 7.8 This period of the late 1990s and early 2000s coincided with a maturing of concerns about human impacts on the marine environment. The Rio Declaration of 1992, which resulted in Agenda 21 - a programme for the world's oceans - was followed by preparations for, and then the adoption of, the 1995 United Nations Fish Stocks Agreement (FSA). The Code of Conduct for Responsible Fishing was developed and adopted by the FAO during the same time frame as the FSA.
- 7.9 These developments stimulated an enormous concern and activity among environmental lobbyists and agencies promoting programmes to 'protect the world's oceans'. At a global level these included the United Nations Environmental Programme (UNEP), the International Union for the Conservation of Nature (IUCN) and then the Convention for Biological Diversity. Many non-governmental agencies entered the activity, e.g. the World Wildlife Life Fund (WWF), Greenpeace, the Deepsea Conservation Coalition, TRAFFIC International, the Nature Conservancy and an extended tail of smaller private initiatives. Older, well-respected, environmental organisations started marine programmes, albeit of evident low calibre, e.g. the Royal Forest and Bird Protection Society of New Zealand<sup>6</sup>. An exception here was the Pew Foundation, a private and thus publicly unaccountable, organization which, though late into the 'game', entered with enormous financial resources matched only by their zeal and dogma.
- 7.10 Many of the smaller environmental lobbyists are of unknown provenance: most are characterised by an apparent ongoing need to fund their programmes if not their existence. This competition for funding and media profile was evident among agencies of all sizes. What has also been evident has been the circulation of a small number of 'scientists' around the numerous programmes. Science<sup>7</sup> and advocacy were invariably mixed in these programmes to the cost of the former. The publications of these groups have been invariably characterised by their quality and extent of photographic images, and by the emphasis of their programmes on sophisticated media presentations.
- 7.11 Quite naturally, these agencies concentrated on the most extreme examples of bottom impacts and during this period some members of the fishing industry often acted as their own worst enemies (e.g. the F.V. *Waipori*-Greenpeace incident in the Tasman Sea). Globally, few<sup>8</sup> of the responsible, and otherwise, operators of the world's deepwater fishing industry were prepared for the skill and effectiveness of the NGOs in securing political support. This was most successful at the United Nations General Assembly where the issue of ocean related affairs became a reoccurring General Assembly agenda item responding to the 'United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea'.
- 7.12 The success of these UNGA motions in tangible conservation of fragile deepwater sessile

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<sup>6</sup> Of which one of the authors of this note is a long-standing member.

<sup>7</sup> A term commonly misused when 'technical' would be more appropriate.

<sup>8</sup> New Zealand may be one of the few exceptions.



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animals is debateable (and unassessed). However, by mixing the articulation of desirable strategic directions with flawed, if not technically incorrect, implementational or tactical directives, the General Assembly created confusion, which has been apparent in the business of RFMOs who have had to address these issues and in the operational costs at the level of the firm. The HSFG returns to these concerns in this document. The objective of providing sustainable high-quality food and concomitant social welfare benefits has usually been lost or ignored in the sometimes well-meaning, sometimes with hidden objectives, but usually naive, debate of how to define situations of concern and what to do about them when they occur.

- 7.13 In referring to these various instruments, we recognise that they represent the best endeavours of usually large international constituencies, all with their own, at times idiosyncratic, perceptions of the nature of the issues and the potential solutions and all bounded by their own sovereign views as to what is their national interest. Into this, lobbyists and advocates, often skilled in exerting disproportionate influence have strained to direct national policy in the way they see as fit. Added to this, in such deliberative processes, representatives and delegates must reach a time-constrained consensual agreement and in such circumstances, it has been inevitable that the necessary compromises have resulted in text drafts that may reflect the imminent departure of the interpreters.

## **8. RESOURCE MANAGEMENT POLICY OF THE HIGH SEAS FISHERIES GROUP**

### **8.1 Introduction**

- 8.1.1 The resource management objectives of the HSFG have been referred to in HSFG (2010) but we repeat them here as we believe it will confirm their congruence with our understanding of the objectives that the New Zealand Government seeks as a Party to the South Pacific Regional Fisheries Management Organisation.

### **8.2 Precaution**

#### *SPRFMO and the Precautionary Approach*

- 8.2.1 The SPRFMO convention makes frequent reference to the *Precautionary Approach*:
- In the preamble - “Mindful that effective conservation and management measures must be based on the best scientific information available and the application of the precautionary approach and an ecosystem approach to fisheries management;”
  - Article 2: Objective - The objective of this Convention is, through the application of the precautionary approach, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur;
  - Article 3: Conservation and Management Principles and Approaches – Para. 2. (b) “(a) The precautionary approach as described in the 1995 Agreement and the Code of Conduct shall be applied widely to the conservation and management of fishery resources in order to protect those resources and to preserve the marine ecosystems in which they occur, and in particular the Contracting Parties, the Commission and subsidiary bodies shall:

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- be more cautious when information is uncertain, unreliable, or inadequate;
- not use the absence of adequate scientific information as a reason for postponing or failing to take conservation and management measures; and
- **take account** of best international practices regarding the application of the precautionary approach, including Annex II of the 1995 Agreement and the Code of Conduct.

#### FAO's Code of Conduct

### 8.2.2 The FAO Code of Conduct for Responsible Fisheries includes a section specific to the *Precautionary Approach*.

#### 7.5 *Precautionary approach*

7.5.1 States should apply the precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment. The absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.

7.5.2 In implementing the precautionary approach, States should take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality and the impact of fishing activities, including discards, on non-target and associated or dependent species as well as environmental and socio-economic conditions.

7.5.3 States and subregional or regional fisheries management organization and arrangements should, on the basis of the best scientific evidence available, inter alia, determine:

- a) stock specific target reference points, and, at the same time, the action to be taken if they are exceeded; and
- b) stock specific limit reference points and, at the same time, the action to be taken if they are exceeded; when a limit reference point is approached, measures should be taken to ensure that it will not be exceeded.

7.5.4 In the case of new or exploratory fisheries, States should adopt as soon as possible cautious conservation and management measures, including, inter alia, catch limits and effort limits. Such measures should remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment should be implemented. The latter measures should, if appropriate, allow for the gradual development of the fisheries.

8.2.3 Although the UNFSA text contains useful hints and direction, from the drafting that is used it appears that it expects the reader to know what the Precautionary Approach is. For example in Section 7.5.1, the text starts with the phrase "States should apply the precautionary approach ...". Section 7.5.2 starts with the phrase "In implementing the precautionary approach ...".

#### UN Fish Stocks Agreement

8.2.4 Annex II of the 1995 UN Fish Stocks Agreement notes as follows:

Article 5 - General principles

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[...](c) apply the *precautionary approach* in accordance with article 6;

Article 6 - Application of the precautionary approach

1. States shall apply the precautionary approach widely to conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment.

2. States shall be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.

3. In implementing the precautionary approach, States shall:

(a) improve decision-making for fishery resource conservation and management by obtaining and sharing the best scientific information available and implementing improved techniques for dealing with risk and uncertainty;

(b) apply the guidelines set out in Annex II and determine, on the basis of the best scientific information available, stock-specific reference points and the action to be taken if they are exceeded;

(c) take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality and the impact of fishing activities on non-target and associated or dependent species, as well as existing and predicted oceanic, environmental and socio-economic conditions; and

(d) develop data collection and research programmes to assess the impact of fishing on non-target and associated or dependent species and their environment, and adopt plans which are necessary to ensure the conservation of such species and to protect habitats of special concern.

4. States shall take measures to ensure that, when reference points are approached, they will not be exceeded. In the event that they are exceeded, States shall, without delay, take the action determined under paragraph 3 (b) to restore the stocks.

5. Where the status of target stocks or non-target or associated or dependent species is of concern, States shall subject such stocks and species to enhanced monitoring in order to review their status and the efficacy of conservation and management measures. They shall revise those measures regularly in the light of new information.

6. For new or exploratory fisheries, States shall adopt as soon as possible cautious conservation and management measures, including, inter alia, catch limits and effort limits. Such measures shall remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment shall be implemented. The latter measures shall, if appropriate, allow for the gradual development of the fisheries.

8.2.5 Certain points are of interest in this UNFSA text. Although it is the second paragraph of the Article, the definition of the Precautionary Approach intended by the drafters of this Convention appears to be expressed here, for example:

2. States shall be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.



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8.2.6 We refer to the references above as (a) the Risk-aversion Principle and (b) the Action Principle. For example, (a) do not take risks (but whose levels of acceptable risk and associated utility functions are to be used?<sup>9</sup>) and (b), do not wait until full scientific certainty is achieved before coming to a decision.

8.2.7 We do note that there is no such thing as ‘full scientific certainty’, the concept itself is inimical to current understandings of the nature of science. In our context there is no such thing as a perfect decision.

8.2.8 In paragraph 3, the UNFSA notes “States shall” obtain and share “the best scientific information available”. Although the HSFG continues to be puzzled as to when information is, or is not, scientific. We believe that SPRFMO’s reference to the UNFSA requires that this text should be interpreted to mean ‘use all relevant information that is not believed to be erroneous or contain significant errors’. Subsequent references in Article 6 to the Precautionary Approach are to the use of biological management reference points that we expect the Scientific Committee of SPRFMO to define and implement.

*The New Zealand Fisheries Act and the Precautionary Approach*

8.2.9 While the SPRFMO Convention makes no reference to national interpretations of the Precautionary Approach, it is useful to refer to its treatment by the New Zealand Government. The New Zealand Fisheries Act does not provide its own definition of the Precautionary Approach. Instead the Act refers, by quotation, to the UNFSA. However, most relevantly, in Part 1, Preliminary provisions, Interpretation section it provides the following definition:

**“best available information** means the best information that, in the particular circumstances, is available without unreasonable cost, effort, or time”.

8.2.10 We find this definition extremely helpful and it contains principles that the HSFG strongly endorse.

*So where does the Precautionary Approach Get Us?*

8.2.11 Sandin (1999) nicely summarizes the dimensions that one might consider in considering where management arrangements satisfy the Precautionary Approach. He identifies dimensions for consideration:

- i. Is there a threat?; and
- ii. Is there an element of uncertainty?; if so,
- iii. What form of action should be considered?; and with
- iv. What degree of compulsion?

8.2.12 In terms of resource use, the questions posed by (i) is, will the level of fishing effort that is envisaged reduce the productivity (in the sense of conventional fisheries biology) of the resource? In terms of (ii), as there is an inadequate information base to answer this question satisfactorily or confidently, it must be accepted that the outcome is problematic. The options that are available in terms of (iii) are controlling the level of fishing effort and/or catch that is taken. And, in terms of (iv) this would be done with no flexibility to pursue a different course of action. We return to this issue in Paragraph 10.4.

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<sup>9</sup> HSFG has no answer to this question.

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- 8.2.13 In terms of effects arising from fishing, a threat would exist if trawling and its cumulative effects were affecting the ability of a fragile sessile population (axiomatically part of a marine ecosystem) to maintain itself because -
- (a) all or most parts of the population were vulnerable to impact by a trawl, i.e. none, or no sustainable fraction, of the population existed in areas where fishing was not possible or did not occur; and
  - (b) recovery of affected populations was not expected to occur. In such cases a threat to the viability of the population would exist. Uncertainty would arise if there was no information on which a decision as to the impact of fishing on the benthic population could be based.
- 8.2.14 Item (iii) (above) raises the issue as to whether the action required would be the best possible option of the different options that were available, conditioned by the other objectives of the fishing action. It is anticipated that the response (iv) would be mandatory.
- 8.2.15 A major failure, if inevitably unmentioned, but universally present in other articulations as well, is that in SPRFMO's reference to the Precautionary Approach no mention is made to the creation of benefits in the taking of the risk. Almost all human interventions involve some risk to the environment, be it acidification of the oceans and its affect on the extremely important aragonite concentration or global warming.
- 8.2.16 It is bizarre to ignore the benefits created by an activity when considering its potential costs yet this is what is implied by most expressions of the Precautionary Approach.

### 8.3 The Ecosystem Approach

#### The SPRFMO convention

- 8.3.1 Reference to the Ecosystem Approach is made in SPRFMO Convention's preambular section:

"Mindful that effective conservation and management measures must be based on the best scientific information available and the application of the precautionary approach and **an ecosystem approach** to fisheries management;"

- 8.3.2 It is not clear why the indefinite article is used. The Convention then notes in:

#### Article 2 - OBJECTIVE

The objective of this Convention is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur.

And,

#### Article 3 - CONSERVATION AND MANAGEMENT PRINCIPLES AND APPROACHES

(b) "An *ecosystem approach* shall be applied widely to the conservation and management of fishery resources through an integrated approach under which decisions in relation to the management of fishery resources are considered in the context of the functioning of the wider marine ecosystems in which they occur to ensure the long-term conservation and sustainable use of those resources and in so doing, safeguard those marine ecosystems."

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8.3.3 The definition of the Ecosystem Approach thus appears to be *an integrated approach under which decisions in relation to the management of fishery resources are considered in the context of the functioning of the wider marine ecosystems in which they occur to ensure the long-term conservation and sustainable use of those resources and in so doing, safeguard those marine ecosystems.* (Article 3, paragraph 2b of the SPRFMO Convention but also elsewhere in the text of the Convention.)

8.3.4 The HSFG notes that definitions of Ecosystem Approaches have become what can be described as a ‘growth industry’. For example, our sister organisation, the Southern Indian Ocean Deepsea Fishers Association (SIODFA) has developed one definition (SIODFA 2009) we believe that contains an important principle, that high seas fisheries should not be subsidised – a view we understand is strongly supported by the New Zealand Government.

*The Ecosystem Approach<sup>10</sup> and the HSFG*

8.3.5 The HSFG fully supports this principle<sup>11</sup>. We note that we know of no reason to believe that the HSFG fishery in the Southwest Pacific endangers this principle. More prosaically, reduction of orange roughy stocks will reduce mortality of animals they prey upon. We know of no reason why this should be detrimental. To the extent that orange roughy are the prey of other animals, reduction of orange roughy may reduce the availability of orange roughy as prey.

8.3.6 We believe that the Southwest Pacific deepwater fishery may have begun targeting what were senescent orange roughy populations, i.e. they had previously been subject only to minor predation. There is evidence that some deepwater sharks feed by biting chunks, especially from the dorsal margin, out of orange roughy though not all orange roughy may recover from such shark attacks. There is some evidence that whales prey on orange roughy.

8.3.6 Thus the slow recovery of global whale populations may result in an increase of their predation on orange roughy. If stocks of orange roughy are maintained at levels resulting in maximum sustainable yields ( $>B_{MSY}$ ), we believe that there are no reasons to have concerns about violating ‘The Ecosystem Approach’ as defined in the SPRFMO Convention.

## **9. THE REFERENCE TIME PERIOD AND THE USE OF BEST AVAILABLE INFORMATION**

### **9.1 What is the Best Available Information?**

#### *SPRFMO Convention*

9.1.1 This term occurs frequently in relevant documents. For example, in the preamble of the SPRFMO convention notes:

“Mindful that effective conservation and management measures must be based on the best scientific information available and the application of the precautionary approach and an ecosystem approach to fisheries management;”.

<sup>10</sup> Why the word ‘approach’, with its conventional meaning of coming closer or getting nearer, but not arriving or attaining, has been adopted by organisations involved in fisheries governance remains unknown to the HSFG. We understand that what is meant by the word is a ‘method’ or ‘protocol’

<sup>11</sup> HSFG is aware of the distinction drawn between the commonly understood meanings of the ‘precautionary approach’ and the ‘precautionary principle’.



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9.1.2 Subsequent text notes:

Article 3 - CONSERVATION AND MANAGEMENT PRINCIPLES AND APPROACHES

1. In giving effect to the objective of this Convention and carrying out decision making under this Convention, the Contracting Parties, the Commission and subsidiary bodies established under Article 6 paragraph 2 and Article 9 paragraph 1 shall: ...

(v) decisions shall be based on the best scientific and technical information available and the advice of all relevant subsidiary bodies;

Article 20 - CONSERVATION AND MANAGEMENT MEASURES

Para 5: (b) Measures taken on an emergency basis shall be based on the best scientific evidence available. ...

UN Fish Stocks Agreement

9.1.3 The UNFSA notes:

Article 5 - General principles

3. In implementing the precautionary approach, States shall:

(a) improve decision-making for fishery resource conservation and management *by obtaining and sharing the best scientific information available* ...

(b) apply the guidelines set out in Annex II and determine, *on the basis of the best scientific information available*, stock-specific reference points ...

Article 6 - Application of the precautionary approach ...

3. In implementing the precautionary approach, States shall:

(a) improve decision-making for fishery resource conservation and management *by obtaining and sharing the best scientific information available* ...

(b) apply the guidelines set out in Annex II and determine, *on the basis of the best scientific information available*, ...

7. Measures taken on an emergency basis shall be temporary and shall *be based on the best scientific evidence available*.

Article 10 - Functions of subregional and regional fisheries management organizations and arrangements...

(f) compile and disseminate accurate and complete statistical data, as described in Annex I, *to ensure that the best scientific evidence is available, while maintaining confidentiality where appropriate*;

Article 16 - Areas of high seas surrounded entirely by an area under the national jurisdiction of a single State ...

1. States fishing ... in an area of the high seas ... Measures taken in respect of the high seas shall ... *be based on the best scientific evidence available*.

9.1.4 The HSFG sees no particular issue to be resolved in this context though it is unclear why the UNFSA switches between the use of 'evidence' and 'information'.

The FAO Code of Conduct

9.1.5 Among the articles of the FAO Code of Conduct for Responsible Fisheries, 1995 are:

Article 6 - General Principles

6.4 Conservation and management decisions for fisheries should be based on ***the best scientific evidence available***, also taking into account traditional knowledge of the resources and their habitat, as well as relevant environmental, economic and social factors.

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**Article 7 – Fisheries Management**

**7.1 General**

7.1.1 States and all those engaged in fisheries management should, through an appropriate policy, legal and institutional framework, adopt measures for the long term conservation and sustainable use of fisheries resources. Conservation and management measures, whether at local, national, subregional or regional levels, should be based on ***the best scientific evidence available*** and be designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of their optimum utilization and maintain their availability for present and future generations; short-term considerations should not compromise these objectives.

**7.2 Management objectives**

7.2.1 Recognizing that long-term sustainable use of fisheries resources is the overriding objective of conservation and management, States and subregional or regional fisheries management organizations and arrangements should, inter alia, adopt appropriate measures, based on ***the best scientific evidence available***,

**7.3 Management framework and procedures**

7.3.1 To be effective, fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account previously agreed management measures established and applied in the same region, all removals and the biological unity and other biological characteristics of the stock. ***The best scientific evidence available*** should be used to determine, inter alia, the area of distribution of the resource and the area through which it migrates during its life cycle.

**7.4 Data gathering and management advice**

7.4.1 When considering the adoption of conservation and management measures, ***the best scientific evidence available*** should be taken into account in order to evaluate the current state of the fishery resources and the possible impact of the proposed measures on the resources.

- 9.1.6 We note that the FAO Code uses the term “scientific evidence” while the Fisheries Act uses the phrase “best available information”: we see no inconsistency here (though the HSGF remains puzzled as to the conundrum in the distinction between ‘scientific evidence’ and ‘evidence’.)

**The Fisheries Act (1996)**

- 9.1.7 The (New Zealand) Fisheries Act 1996 states in Section 10, Information Principles:

“All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:

(a) decisions should be based on *the best available information*:”.

- 9.1.8 As noted above, the relevant definition of what is the ‘best available information’ is given under Definitions in the Act as “best available information means the best information that, in the particular circumstances, is available without unreasonable cost, effort, or time.

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## **9.2 What should be the appropriate reference time period for establishing initial management regulations?**

- 9.2.1 Previous objections to SPRFMO interim management measures included the decision to use the period of 2002 – 2006 to establish a baseline negotiating period on which historic fishing practice in the convention area was defined. It has never been explained to the HSFG why this period was selected. However, we understand that political decisions related to establishing interim management measures for the large jackmackerel fishery were the dominant consideration. Then, for the appearance of political, or decision making, consistency, the subsequent decision was taken that this historic baseline should be used for the deepwater fishery in the southwest of the convention area. The HSFG group has always objected to the arbitrariness and irrationality of this decision as it appears that the only basis for the decision was at the best ‘political’ or at least, undefined.
- 9.2.2 HSFG (2010) is of the view that it is irrational to deliberately ignore information that will affect the result of a particular decision. Not only does the HSFG have this common sense objection but we find this choice for the baseline historic period to be contrary to the clear and often repeated international norms of decision making in regards to fisheries management that are clearly expressed in Paragraphs 9.1.2 – 9.1.4 above, for the SPRFMO Convention, the UNFSA, The FAO Code of Conduct and the New Zealand Fisheries Act (1996).
- 9.2.3 In this context, the HSFG emphasizes the critical importance of the requirement in section 10 of the Fisheries Act 1996 (set out above at Paragraph 9.1.4) that all persons exercising powers or performing functions under the Act should base their decisions on the best available information.
- 9.2.4 Thus, the HSFG asserts that the decision on the baseline period should use all relevant information relating to the history of the deepwater fishery in the Southwest Pacific Ocean in determining any management measure for this fishery. The HSFG repeats its view that the arbitrary restriction of the baseline data period to 2002 – 2006 for catch, effort and fishing data will result in distorted information and management practices.
- 9.2.5 New Zealand vessels have participated in this fishery from the 1980s and while all data may not be readily available, much data are. Ideally, the analyses should use all data that can be obtained. **Failing that, the HSFG proposes that the historic periods that should be used in the case of the SPRFMO deepwater fisheries should be for the years 1990 through to the end of 2010.** We note that informal discussions with some other Parties indicate that there would be good support for the use of such a baseline period, at least for the deepwater fishery.

## **10. ESTABLISHING INITIAL FISHING CONTROLS AND CONDITIONS**

### **10.1 SPRFMO Interim Management measures**

#### **Introduction**

- 10.1.1 The HSFG seeks a fishery that maximises the long-term, and thus sustainable (social welfare) benefits, to be derived from the participation in this fishery. The HSFG interprets the term ‘benefit’ primarily in an economic sense – the fishery should be managed to maximise its profitability.

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- 10.1.2 Conventional, and what HSFG agrees is appropriate, resource management requires ensuring that fishing mortality is such that there is no 'overfishing' - fish, on average, are not caught before they reach an appropriate size (growth overfishing) and that sufficient spawning biomass should be maintained to ensure recruitment is not appreciably less than what it might otherwise be. (We note that determining the level of spawning biomass that will maximize recruitment is highly complicated and implicitly a stochastic process so there is never, a priori, certainty as to the correctness of related management measures.)
- 10.1.3 The HSFG agrees that current information indicates that orange roughy are slow growing and late maturing fish. In any event, harvest rates should be matched to the productivity of the resource – the same as for any other fishery. Having said that, we note that determining the biomass of orange roughy stocks is not simple and knowledge continues to be accumulated on this process.
- 10.1.4 Because of the aimed-trawl nature of the HSFG fishery, simple-minded CPUE analysis will not produce the useful results it can in other fisheries, e.g. North Sea plaice fisheries. That said, at a general level, catch per day fishing should provide insights into what is happening in the resource, however, such assumptions are complicated by the known response of orange roughy to fishing vessels and their ability to move off the grounds in response to vessel presence, perhaps to return in subsequent years.
- 10.1.5 A further complication that may becoming apparent is that the past fisheries in the Southwest Pacific region, as new fisheries, must have targeted mature populations of fish many of which may have been senescent. As mature age classes of the populations have been fished down, population growth rates may be increasing as average age of fish decreases, density dependent and growth affects come into play and, as a consequence, age at maturity would be expected to decline. If this is the case (and conventional fisheries biology would predict such effects), then a reassessment may be appropriate of the more extreme doom-and-gloom predictions surrounding these fisheries.
- 10.1.6 Careful thought is now required as to the relative merits of managing the fishery primarily, or exclusively, through output controls (i.e. a TAC), input controls (i.e. a limit on fishing effort, or better, fleet capacity because this would better achieve a management objective of maximizing social welfare benefits to be derived from the fishery) or some combination. We return to these considerations in Paragraph 10.4 but the HSFG remains cognizant of Section (iii) of Article 3 of the SPRFMO Convention: "overfishing and excess fishing capacity shall be prevented or eliminated".

*The SPRFMO Interim Management Measures*

- 10.1.7 Relevant text in the Interim Measures Adopted by Participants in Negotiations to Establish South Pacific Regional Fisheries Management Organisation is as follows:<sup>12</sup>

Bottom fisheries - *Management of bottom fishing*. In respect of bottom fisheries, Participants resolve to:

1. Limit bottom fishing effort or catch in the Area to existing levels<sup>13</sup> in terms of the number of fishing vessels and other parameters that reflect the level of catch, fishing effort, and fishing capacity.

<sup>12</sup> The full text can be found at Appendix B.

<sup>13</sup> Existing levels of fishing effort or catch means the average annual levels over the period 1 January 2002 to 31 December 2006.



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2. Not expand bottom fishing activities into new regions of the Area where such fishing is not currently occurring.
3. Starting in 2010, before opening new regions of the Area or expanding fishing effort or catch beyond existing levels, establish conservation and management measures to prevent significant adverse impacts on ... the long-term sustainability of deep sea fish stocks ... or determine that such activities will not have adverse impacts, based on an assessment undertaken in accordance with paragraphs 11 and 12 below.
8. Notwithstanding paragraph 2, in regions of the Area where bottom fishing is not currently occurring, undertake, as appropriate, scientific research activities for stock assessment purposes in identified parts of such regions and only in accordance with a research plan that has been provided to the interim Secretariat for forwarding to the interim Science Working Group and all Participants, preferably 60 days prior to the commencement of that activity. Participants will provide promptly a report of the results of such scientific research activities to the interim Secretariat for circulation to all Participants.

*Assessment of bottom fishing*

13. In undertaking the assessments as described in paragraphs 11 and 12 above, take into account any international technical guidelines regarding standards, criteria or specifications for identifying vulnerable marine ecosystems and the impacts of fishing activities on such ecosystems that may have been developed.
- 10.1.8 We note that of the 13 paragraphs and 16 sections of the SPRFMO Convention, only five make reference to resource management. Of the text cited above, the only relevant material to resource management is in paragraph 1: "Limit bottom fishing effort or catch in the Area to existing levels in terms of the number of fishing vessels and other parameters that reflect the level of catch, fishing effort, and fishing capacity." While limiting the number of fishing vessels and/or limiting that amount of catch (in theory<sup>14</sup>) is doable, the other requirements are, in practice, highly problematic.
- 10.1.9 The HSFG is also perplexed regarding the distinction that will arise between 'exploratory fishing' and 'scientific research activities'. From time-to-time HSFG vessels will undertake exploratory fishing activities. However, during such endeavours, the crew will undertake tasks that are identical to those performed on a conventional research vessel in addition to ordinary commercial fishing tasks. We do believe that our operators have ample experience to undertake these tasks of gathering research data, and probably have more experience than some members of SPRFMO's Scientific Committee.
- 10.1.10 But, our major concern is that the action of exploratory fishing is part of our process of commercial research and development and as such the creation of our members' Intellectual Property. The HSFG finds itself somewhat astounded by the admonition "Participants will provide promptly a report of the results of such scientific research activities to the interim Secretariat for circulation to all Participants" (Paragraph 8 of the Interim Measures Adopted by Participants in Negotiations to Establish South Pacific Regional Fisheries Management Organisation.)
- 10.1.11 We strongly believe that this is contrary to acceptable practice and we urge the New Zealand Government to ensure that appropriate safeguards are in place to ensure the confidentiality – to the extent possible and consistent with relevant New Zealand legislation regarding maintenance of confidentiality - of the results of exploratory fishing activities.

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<sup>14</sup> Changes in processing methods make confident conversion into green-weights highly problematic.

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## **10.2 HSFG proposals for interim resource management measures**

- 10.2.1 The HSFG believes that insufficient information exists to calculate TACs or TAEs based on existing knowledge of the orange roughy populations in the area of concern: this will require undertaking stock assessments. We believe that interim measures must rely on limiting fishing effort and we propose that the appropriate time period to use is the average of the last four years. We also believe that participants should be limited to those who have been active in the fishery during this period. Clearly, the choice of any period is subjective and we acknowledge that some Parties may propose other time periods, e.g. three or five years. We ask that HSFG participate in any such discussions concerning time periods to be applied should they happen.
- 10.2.2 The HSFG believes that we understand the thinking behind efforts to establish overall catch limits, despite our concerns over the inappropriate choice of a time period on which it has been based. We note that the fishery for orange roughy can be extensive, spread over many seafloor features. Thus we propose that industry knowledge be used to establish management regions consisting of seafloor features that we believe provide habitat to individual orange roughy populations. Harvesting in these areas should be limited to an agreed limit that reflects past catches. To enable operational planning this limit should be set for a period of three years, exclusively allocated to particular participants.

## **10.3 Ongoing Measures for Resource Management**

- 10.3.1 HSFG recognizes that a 'privilege' to participate in the Southwest Pacific deepwater fisheries should be tied to a 'responsibility'.
- 10.3.2 We propose that in exchange HSFG will equip their vessels with 'state-of-the-art acoustic systems, including appropriately matched transducers that are capable of doing calibrated quantitative acoustic surveys. The details of vessel survey capability may be confirmed by SPRFMO. The HSFG would undertake the incorporation of such surveys into commercial fishing operations, including exploratory fishing. This, in practice, means the execution of aggregation-based acoustic surveys<sup>15</sup>.
- 10.3.3 HSFG's operators are willing to undertake the analysis of such data and subject this process to audit by expert overview, e.g. by SPRFMO's Scientific Committee. Should this be acceptable, we believe that any vessels entering this fishery should be required to participate in this process as a requirement of obtaining permission to fish. Alternatively, we are open to equivalent solutions.
- 10.3.4 In addition, HSFG believes that all vessels licensed to participate in this fishery should agree to perform the data collection tasks required to ensure its effective management. In practice, in addition to the conventional collection of biological information (length, weight, sex frequencies, gonad conditions, ageing material, etc.) we believe that determining the needs for population analyses should be undertaken.
- 10.3.5 HSFG is concerned that no reference is made to the generation of benefits from the fishing process or how the activities of the Scientific Committee will be linked to the efforts of the Commission in this regard. No insights are provided as to the interpretation of the term 'sustainable' - fisheries can be sustained at a range of levels of productivity. Lamentably,

<sup>15</sup> We note that precedents and procedures for aggregation-based commercial-vessel acoustic surveys are well established. FAO 2012 documents recent developments in this method.

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words such as 'maximum', 'benefit' or 'optimum' in the context of resource management objectives are not to be found in the SPRFMO Convention or in the Interim Management Measures.

- 10.3.6 We expect that the objective of maintaining fish stock biomass at levels that can generate maximum sustainable benefits would be best achieved through the well-established and conventional measures of fisheries resource management by the setting of appropriate total allowable catches on a stock-by-stock basis conditioned by the availability of information.
- 10.3.7 However, given the data paucity that exists, not least the uncertainty as to the structures of the stock that are being exploited, we believe that to fully achieve this objective may require other some-what innovative management initiatives. We further agree that fisheries biology management measures should also embrace retained bycatch species.

#### **10.4 Near-term resource management for the SPRFMO orange roughy fishery**

- 10.4.1 The New Zealand Government has adopted a number of interim management measures for the deepwater fishery prosecuted by the HSFG. Many of these measures are, in the view of the HSFG, standard measures that are indispensable for effective management of any fishery: as such they should be afforded full support in the future. Such measures include e.g., the use of position location monitors of fishing vessels (i.e. VMS), adequate data collection schemes, marine observer programmes, etc. However, the critical issue is how will catch and/or effort be controlled in this fishery for 2013 and beyond?
- 10.4.2 It is not entirely clear to the HSFG what method of resource management of this fishery, at least in the interim, will produce the greatest benefits. Of course, longer terms arrangements will require an appropriate review of relevant information and resource analysis. For now, we see three management options:
- i. Apply a limit on fishing effort based on recent historical fishing practice that recognizes the contribution of recent fishing operators in the fishery;
  - ii. Apply a limit on catch based on an appropriate historical period;
  - iii. Apply some combination of (i) and (ii).

##### *i. Limiting Fishing Effort*

In the absence of sufficient and satisfactory resource management information, we believe that permitted fishing effort should remain the same as it was last year, thereby maintaining the status quo in the interim. However - and as soon as possible - catches for the period 1990 - 2010 should be reassessed (applying the use 'all relevant information' principle) and the new value taken as the limit catch until new management arrangements are established. This is essentially a bottom trawl, winter-spawn fishery and it may be sensible to limit fishing to this *general* period.

As is widely accepted practice, HSFG is strongly of the view that past participation by an operator in the fishery should be recognised by allocating an effort quota to the operators' vessel(s), and thus to the flag state - i.e. New Zealand, that have prosecuted the fishery during the accepted qualifying period. As is consistent with the objective of maximizing the social welfare benefits to be obtained from the fishery, participating vessels should be permitted to assign vessel-specific fishing-day entitlements to other vessels of the same

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flag state, in our case New Zealand. Permitted fishing days might be stratified by area to prevent unbalanced fishing effort, and thus fishing mortality, by area.

While the effort control remained in place, actions would be undertaken to collect the information needed to better inform decisions on harvesting protocols and desirable levels of catches.

*ii. Implementing a TAC*

While a fully enforced and enforceable TAC has several advantages the HSFG believes that the basis for establishing an appropriate TAC has not yet been established. This will require review of the possible population structures, past harvests taken from the different stock components, and an analysis of acceptable rates of harvesting based on conclusions as to the status of the stocks.

A programme should be established to undertake these activities. The HSFG remains concerned that should other flag states, e.g. Russia, Korea and/or the Ukraine decide to enter this fishery, our past experience is that there is unlikely to be compliance with a TAC in which case such an approach would penalize New Zealand operators and result in overfishing of the resource.

*iii. A combination of effort and catch limits*

Given the absence of the information needed to provide a fully satisfactory basis for determining resource management reference points at this time, a combination of the two primary management controls may offer some benefits. What this balance should be remains a matter for investigation.

It is widely accepted that best international practice for creating the incentives for responsible fisheries management and voluntary compliance with licensing and conservation regulations is through the provision of secure, exclusive and durable access entitlements to a fishery. The ability to transfer fishing entitlements further contributes to responsible fisheries management and the HSFG is open to discussions on how such a desirable objective could be obtained.

We note that only HSFG vessels have participated in this fishery for several years now. By coordinating our vessels' operations so that a strictly limited number of vessels take the catch allocated to the entire fleet we have achieved a level of efficiency that contributes to creating an efficient and optimum arrangement that creates maximum welfare benefits. In our view, the formal recognition of the exclusive participation by New Zealand vessels in this fishery will maximize the welfare benefits to be obtained from this fishery, benefits that are extended, through consumer surpluses, to those in export markets.

We believe that the egregious management measures, and subsequent results for the quasi open-access fishery for jack mackerel in the SPRFMO area, that resulted in the overfishing and depletion of this resource as Parties watched in disbelief, offers compelling support for the adoption of some form of 'ITQ management' in the SPRFMO area. For this reason, while aware of the challenges that are involved, we strongly support the extension of policies now well accepted in New Zealand concerning formalizing fishing entitlements, to the SPRFMO area.

We encourage the New Zealand Government to be proactive in promoting a similar form of fishing entitlements at SPRFMO meetings and would welcome the opportunity of



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nominating an industry representative to assist with such an initiative. For this reason we propose that MPI and HSFG officials sit together to determine how this arrangement may be institutionalized as it may be the best way of achieving a wide suite of management objectives.

## **11. CONSERVATION/PROTECTION OF THE MARINE ENVIRONMENT**

### **11.1 Introduction**

11.1.1 In reviewing the SPRFMO's Interim Measures, the HSFG finds it difficult to accept that SPRFMO is, indeed, primarily a fisheries organization given the overriding emphasis given to complex arrangements for environmental protection.

11.1.2 The HSFG both recognises the need for, and endorses, actions that protect marine biodiversity. However, in reviewing the interim measures we fear that achieving these overriding objectives is threatened, if not thwarted, by the complexity of what is proposed.

11.1.3 We recognise that this situation is the consequence of multiple UNGA resolutions, a series of international forums convened in response in a process subjected to intense pressures from both national and globally-organised lobbying groups. Thus, it is imperative that conservation actions are carefully considered to ensure that they will achieve their objectives and are not primarily the response to well-intentioned, but not well conceived, if not flawed, declarations purporting to be in the public's interest. Possibly more than anything else, missteps in conservations measure have the greatest potential to detract from obtaining the full benefits from this fishery.

### **11.2 Conservation and the SPRFMO Convention**

11.2.1 The SPRFMO Convention commonly addresses in tandem the objective of sustainable use of fishery resources and protection of the marine ecosystems. The preamble starts with the following text:

"Committed to ensuring the long-term conservation and sustainable use of fishery resources in the South Pacific Ocean and in so doing safeguarding the marine ecosystems in which the resources occur;"

#### **Article 2 - OBJECTIVE**

The objective of this Convention is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur.

#### **Article 3 - CONSERVATION AND MANAGEMENT PRINCIPLES AND APPROACHES**

(vii) marine ecosystems shall be protected, in particular those ecosystems which have long recovery times following disturbance;

### **11.3 SPRFMO Interim Measures**

11.3.1 In terms of bottom fisheries and management of bottom fishing the Interim Measures note the following.

3. Starting in 2010, before opening new regions of the Area or expanding fishing effort or catch beyond existing levels, establish conservation and management measures to prevent

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significant adverse impacts on vulnerable marine ecosystems<sup>16</sup> and the long-term sustainability of deep sea fish stocks from individual bottom fishing activities or determine that such activities will not have adverse impacts, based on an assessment undertaken in accordance with paragraphs 11 and 12 below.

6. In respect of areas where vulnerable marine ecosystems are known to occur or are likely to occur based on the best available scientific information, close such areas to bottom fishing unless, based on an assessment undertaken in accordance with paragraphs 11 and 12 below, conservation and management measures have been established to prevent significant adverse impacts on vulnerable marine ecosystems and the long-term sustainability of deep sea fish stocks or it has been determined that such bottom fishing will not have significant adverse impacts on vulnerable marine ecosystems or the long term sustainability of deep sea fish stocks.
7. Require that vessels flying their flag cease bottom fishing activities within five (5) nautical miles of any site in the Area where, in the course of fishing operations, evidence of vulnerable marine ecosystems is encountered, and report the encounter, including the location, and the type of ecosystem in question, to the interim Secretariat so that appropriate measures can be adopted in respect of the relevant site. Such sites will then be treated in accordance with paragraph 6 above.
10. Assess, on the basis of the best available scientific information, whether individual bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems, and to ensure that if it is assessed that these activities would have significant adverse impacts, they are managed to prevent such impacts, or not authorized to proceed.
11. Apply the following procedures regarding the assessment described in paragraph 11 above:
  - a) Participants are to submit to the interim Science Working Group their assessments of whether individual bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems, including the proposed management measures to prevent such impacts, and make these assessments publicly available.
  - b) The interim Scientific Working Group will review the assessments and proposed management measures and provide comments to the submitting Participant. For the purposes of carrying out such reviews, the interim Scientific Working Group will design a preliminary interim standard for reviewing the assessments and develop a process to ensure comments are provided to the submitting Participant and all other Participants within two months. In the meantime, the submitting Participant may provisionally apply their proposed management measures.
  - c) Participants may, on the basis of the assessments submitted under sub-paragraph (a) above and the comments provided under sub-paragraph (b) above, authorize vessels flying their flag to undertake bottom fishing activities in the region of the Area for which the assessment was conducted and require such vessels to implement conservation and management measures to prevent significant adverse impacts.
  - d) Participants are to notify the interim Secretariat of the measures required under sub-paragraph (c) above and a list of the vessels to which the measures relate, and to make that information publicly available.
12. In undertaking the assessments as described in paragraphs 11 and 12 above, take into account any international technical guidelines regarding standards, criteria or

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<sup>16</sup> For the purposes of these interim measures, “vulnerable marine ecosystems” includes seamounts, hydrothermal vents, cold water corals and sponge fields.

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specifications for identifying vulnerable marine ecosystems and the impacts of fishing activities on such ecosystems that may have been developed.

*What Do Paragraphs 11 and 12 Require?*

- 11.3.2 As noted, events that trigger paragraph 6 require an assessment ‘paragraphs 11 and 12’. SPRFMO (2012) notes in paragraph 11:

Assess, on the basis of the best available scientific information, whether individual bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems, and to ensure that if it is assessed that these activities would have significant adverse impacts, they are managed to prevent such impacts, or not authorized to proceed.

- 11.3.3 Paragraph 12 requires one to “Apply the following procedures regarding the assessment described in paragraph 11 above”. These procedures are a), b) and c) below.

- a) Participants are to submit to the interim Science Working Group their assessments of whether individual bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems, including the proposed management measures to prevent such impacts, and make these assessments publicly available.
- b) The interim Scientific Working Group will review the assessments and proposed management measures and provide comments to the submitting Participant. For the purposes of carrying out such reviews, the interim Scientific Working Group will design a preliminary interim standard for reviewing the assessments and develop a process to ensure comments are provided to the submitting Participant and all other Participants within two months. In the meantime, the submitting Participant may provisionally apply their proposed management measures.
- c) Participants may, on the basis of the assessments submitted under sub-paragraph (a) above and the comments provided under sub-paragraph (b) above, authorize vessels flying their flag to undertake bottom fishing activities in the region of the Area for which the assessment was conducted and require such vessels to implement conservation and management measures to prevent significant adverse impacts.
- d) Participants are to notify the interim Secretariat of the measures required under sub-paragraph (c) above and a list of the vessels to which the measures relate, and to make that information publicly available.

- 11.3.4 But, according to paragraph 6, fishing will only have been permitted if “conservation and management measures have been established to prevent significant adverse impacts on vulnerable marine ecosystems” and “it has been determined that such bottom fishing will not have significant adverse impacts on vulnerable marine ecosystems”.

- 11.3.5 We repeat that the outcome of future trawling (what is emptied from the trawl on the factory deck) is always unknown. Degrees of belief can be assigned to the possible consequences of trawling in terms of encountering fragile sessile animals but this is, unavoidably, a subjective process and we believe that vessel skippers would have the most experience (= best [scientific] information?) to parameterize such prior distributions. Past fishing results can be used to determine the probability of encountering EVMEs on a specific fishing tow line but the SPRFMO Interim Measures do not treat this as the probabilistic or stochastic process that it is. Uncertainty in the sense of Magallanes (2006) will exist in areas for which information is lacking.

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Then,

- a) The interim Scientific Working Group will review the assessments and proposed management measures and provide comments to the submitting Participant. For the purposes of carrying out such reviews, the interim Scientific Working Group will design a preliminary interim standard for reviewing the assessments and develop a process to ensure comments are provided to the submitting Participant and all other Participants within two months. In the meantime, the submitting Participant may provisionally apply their proposed management measures.
- 11.3.7 HSFG is concerned that when information is scarce, e.g., 105% of the trigger amount of a benthic animal occurs in a single tow in an area infrequently fished, then any such review by a Scientific Working Group can be no more than judgmental. And, we know of no reason why an objective 'scientists' judgment would be more informative or useful than the judgment of an objective fishing skipper, or indeed for that matter, anyone else in possession of an understanding of the issues and facts.
- 11.3.8 We suspect that the only justifiable response to many reports of EVME will be that in the absence of additional information, no assertions or advice can be confidently provided – though opinions, of course, may be. But, does this constitute what plenary-session representatives understand as *Science*, or would it be only an abrogation of decision making responsibilities? This returns discussion on this issue to that of obtaining further data on 'non-informative' situations and the common sense of repeating tows where the situation regarding the presence of fragile benthos is unclear to gain more information.
- 11.3.9 In any event, the process outlined in paragraph 12, b) of the SPRFMO measures appears to be, in effect, non-controlling. There appears to be no obligation (at least with the wording that has been provided) that flag states must adopt/observe any pronouncements of the Scientific Working Group. As is noted, a "Participant may provisionally apply their proposed management measures. for the up to two months while the Scientific Working Group reflects on the information that it has received.
- 11.3.10 Notwithstanding the issue that fishing may have an adverse impact on animals comprising what is described as a vulnerable marine ecosystem, i.e. the trawl damages or destroys individual benthic animals, paragraph 11 raises the following points:
- i. The only available information on the actual affect of a trawl on benthos is usually the bycatch that is found in the net (discussion on the use of videos is deferred to Paragraph 12).
  - ii. The HSFG is unable to offer a view on whether data collected on fragile benthic bycatch by an observer or crew member is 'scientific' but clearly it may be the only available information, 'best' or otherwise.
  - iii. While benthos may be destroyed in the process of retrieval by the trawl, a decision as to whether the destruction is a significant adverse impact requires knowledge of the relative impact upon the ecosystem in question, or perhaps more appropriately the benthic population that has been affected. Almost never is such information available for the trawl usually affects a minor part of the population when fishing is restricted to defined fishing lines.



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- iv. Without additional information it would seem impossible to assess “if ... these activities would have significant adverse impacts”.

11.3.11 More generally, the Interim Measures raise several particular concerns for the HSFG:

- What are vulnerable marine ecosystems with the emphasis of what is the ecosystem in question?
- The implications of ‘trigger effects’
- What are significant adverse impacts, not on individuals but on populations?, and
- What does a ‘Move-on-Rule’ achieve?

#### **11.4 What are vulnerable marine ecosystems?**

11.4.1 Unfortunately, the term ‘vulnerable marine ecosystem’ has both a common-sense interpretation and an interpretation defined by the Interim Measures. In our fishery, we understand that what is intended to be understood to be VMEs are fragile sessile animals living on the seafloor that can be damaged or destroyed if trawl gear drags over them. The Interim Measures repeats the definition of the UNGA resolutions – “for the purposes of these interim measures, vulnerable marine ecosystems” includes seamounts, hydrothermal vents, cold water corals and sponge fields.”

11.4.2 The usage brought to mind by the UNGA declarations may be appropriate in, e.g. the fisheries of the Northeast Atlantic where a single deepwater bottom trawl may continue for up to five hours and cover a distance of 15 nautical miles. Such tows would clearly cross a wide range of habitat types and affect an extensive ecosystem area. That is not the case for the HSFG’s fishery. As MF (2008) notes, bottom contact in the New Zealand HSFG’s SPO deepwater fishery is short, and with the continuing development of technology, HSFG’s impression is that it is getting shorter. In fact MF (2008) also describes many ways in which the gear used by New Zealand vessels in this fishery will result in less effects than, e.g. traditional trawl gear, such as that used in the Northern Hemisphere. These differences in the nature of the fisheries emphasize the damage caused to responsible operators by misconceptions resulting from ‘one-size-fits-all’ type statements of some governments and many environmental lobbyists then voiced through organisations such as the United Nations General Assembly.

11.4.3 This definition, repeated in the Interim Measures, confounds specific faunal groups, i.e. cold water corals and sponge fields with seafloor features, i.e. seamounts and hydrothermal vents, which is unfortunate and unnecessary. Seamounts are just one type of seafloor feature on which fragile emergent benthos may be, or may not be, found. In the SPRFMO deepwater fishery, what is being referred to are primarily coldwater corals and deepwater sponges. Self-evidently, talking about a trigger effect for encountering a seamount is nonsensical - deepwater trawling is, with few exceptions, centred on or around seamounts and the many other types of seafloor features that exist.

#### **11.5 Triggering of evidence of a vulnerable marine ecosystem**

11.5.1 The Ministry of Fisheries uses a ‘Total VME Indicator Score’ to assess whether evidence of a vulnerable marine ecosystem has been triggered. Eleven faunal groups are listed, of which any presence in the catch, no matter how small, of any one of six categories<sup>17</sup> contributes to the ‘trigger’ point score. A score of three is defined as ‘evidence of a vulnerable marine ecosystem’. Even if the faunal item is ‘stone dead’, e.g. a piece of coral rubble, it is still to

<sup>17</sup> Porifera, Scerlractinia, Antipatharia, Alcyonacea, Gorgonacea and Hydrozoa.

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be taken as “evidence of a vulnerable marine ecosystem”. It is unclear to the HSFG how this scoring system was developed, e.g. is it the result of an unexplained scientific process or is it a bureaucratic algorithm whose function is simply to result in a management action and operational response. In either event, we find this to be a highly unsatisfactory protocol for interpreting what characterises the fauna of the seafloor in terms of ‘ecosystems’.

- 11.5.2 Ensuring that all fauna that contribute to the “Total VME Indicator Score” are indeed ‘scored’ is further problematical. Even with two observers monitoring the emptying of a trawl, by their nature corals will be entangled in different parts of the nets. Some will be emptied with the catch; others will remain in the netting, and if unobserved, be shot away when the next tow is made. It is naïve to believe that crew will go out of their way to bring to the attention of the observer whose task it is to make this measurement, bits of coral that they come across while handling the trawl. Indeed, one might expect the opposite and no doubt there have been many deft ‘taps’ of unofficially observed benthos into the scuppers or the sea: something that scarcely will add to confidence among fishermen that this protocol achieves its purpose.
- 11.5.3 If the EVME is in an area where little or no fishing has occurred, requiring the offending fishing vessel to move may, or may not, make sense. If a barely threshold amount of EVME occurs in the trawl then the situation to be addressed may be summarised as:
- i. Extensive EVME occur and small movements of the vessel before setting the gear can be expected to result in further catches of EVME, or
  - ii. The EVME that was caught was the result of random ‘sampling’ by the trawl of fragile sessile animals, a result of the highly dispersed nature, or spatial distribution, of the EVME; if the trawl was repeated there would be a high probability of zero occurrence of the EVME in the trawl.
- 11.5.4 Without further information being gathered from the area to allow a more accurate assessment of the situation, we believe an untenable situation is created whereby management of the fishery and the broader ecosystem is based on inferences that are predicated upon questionable data and arcane formulae. For example, at present, the scoring system does not distinguish between living and dead faunal items. It would appear that a quantity of living coral is potentially far more significant EVME than the same quantity of long dead coral rubble and yet the current system makes no distinction. We can, and should, do better than that.
- 11.5.5 The HSFG therefore believes that proper management of this fishery demands that the basis upon which EVME is triggered is revised in light of the means now available to gather the information required to inform decision making. This would allow management measures to develop from the blunt (and likely highly inaccurate) tools they are at present, to measures based on the best available information.

## **11.6 What are significant adverse impacts?**

- 11.6.1 The Interim Measures imply that the meaning of ‘significant adverse impacts’ is that given in the FAO Guidelines (FAO 2009):

17. Significant adverse impacts are those that compromise ecosystem integrity (i.e. ecosystem structure or function) in a manner that: (i) impairs the ability of affected populations to replace themselves; (ii) degrades the long-term natural productivity of habitats; or (iii) causes, on more

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than a temporary basis, significant loss of species richness, habitat or community types. Impacts should be evaluated individually, in combination and cumulatively.

18. When determining the scale and significance of an impact, the following six factors should be considered:

- i. the intensity or severity of the impact at the specific site being affected;
- ii. the spatial extent of the impact relative to the availability of the habitat type affected;
- iii. the sensitivity/vulnerability of the ecosystem to the impact;
- iv. the ability of an ecosystem to recover from harm, and the rate of such recovery;
- v. the extent to which ecosystem functions may be altered by the impact; and
- vi. the timing and duration of the impact relative to the period in which a species needs the habitat during one or more of its life history stages.

19. Temporary impacts are those that are limited in duration and that allow the particular ecosystem to recover over an acceptable time frame. Such time frames should be decided on a case-by-case basis and should be in the order of 5-20 years, taking into account the specific features of the populations and ecosystems.

20. In determining whether an impact is temporary, both the duration and the frequency at which an impact is repeated should be considered. If the interval between the expected disturbance of a habitat is shorter than the recovery time, the impact should be considered more than temporary. In circumstances of limited information, States and RFMO/As should apply the precautionary approach in their determinations regarding the nature and duration of impacts.

11.6.2 Fisheries impact marine environments<sup>18</sup> if the ground rope contacts the sea floor where fragile benthos occurs it will be damaged or destroyed by the gear. We note that it is impossible to have complete certainty that no fragile benthos will ever be in the path of a trawl, even in areas where there may have been much fishing in the past. This is especially so if the decision is made that coral rubble<sup>19</sup> constitutes EVME, in our view a conclusion that stretches one's biological credulity. Operators then face the potential situation where capture of, e.g. 29.5 kg of benthic organism x may not constitute evidence of a fragile benthic animal but, if the trigger level is 30 kg, then 30.5 kg of x does. In such situations it is difficult, if not impossible to believe that VMEs are being effectively protected.

11.6.3 A second issue of concern is that arising from the relative impact of trawling on a seafloor feature. Indeed there are a few seafloor features whose surface is such that all of it can be trawled. Where targeted fish occur in association with such seamounts, then we expect that there will have already been significant changes to the nature of the benthos in those areas. But, characteristically, some, often most, of the surface area of a seafloor feature cannot be fished because of its gradient or surface roughness. Fishing such areas risks either fastenings, loss of gear or extended periods of down time while the trawl is repaired. In such cases, we cannot understand how trigger amounts of EVMEs, should they occur as bycatch, would "compromise ecosystem integrity (i.e. ecosystem structure or function) in a manner that: (i) impairs the ability of affected populations to replace themselves;" any more than catching a 20 t bag of orange roughy will impair the ability of the targeted orange roughy population to replace itself.

11.6.4 The HSFG believes that the critical requirement will be to determine (a) those features where a major part cannot be fished but targeted species are known to occur; (b) those

<sup>18</sup> It should be unnecessary to bring to attention the global environmental/ecosystem affects of the removal of around one million tonnes of fish on their predators and prey and the status of the associated food webs and their linkages.

<sup>19</sup> The piece of coral rubble may have lain on the seafloor for thousands of years, have been transported there by slope slides or other unknown processes.

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features that have been extensively affected by past fishing and (c), features known to contain important populations of fragile sessile animals where targeted species occur.

- 11.6.5 The second issue is whether there is such a concept as an acceptable affect on populations of fragile deepwater sessile animals. If 50% of the population of a fragile sessile animals on a seafloor are unaffected by fishing does this constitute sufficient assurance that the population will be sustained? Self-evidently while qualitatively the population may be sustained, quantitatively it will have been reduced.

## **11.7 The 'move on' rule**

- 11.7.1 The SPRFMO Interim Measures note:

7. Require that vessels flying their flag cease bottom fishing activities within five (5) nautical miles of any site in the Area where, in the course of fishing operations, evidence of vulnerable marine ecosystems is encountered, and report the encounter, including the location, and the type of ecosystem in question, to the interim Secretariat so that appropriate measures can be adopted in respect of the relevant site. Such sites will then be treated in accordance with paragraph 6 above.

- 11.7.2 The HSFG notes that paragraph 7 implies that should one vessel trigger a threshold level then "vessels flying their flag cease bottom fishing activities within five (5) nautical miles of [the] ... site". Thus, fishing by all vessels of the flag state must stop but, implicitly, vessels flagged to a different flag state may continue to fish the same area?

- 11.7.3 Paragraph 6 then refers to paragraphs 11 and 12. But before then, paragraph 7 presents a further conundrum. When there is EVME a report is made "to the interim Secretariat so that appropriate measures can be adopted in respect of the relevant site". No further information is given about the nature of these measures. But perhaps all is not lost. paragraph 7 seems to allow that, following the report of EVME to the Secretariat, the process reverts to paragraph 6. Once the process returns to control under Paragraph 6 there is nothing to prevent fishing from continuing subject to:

- i. conservation and management measures have been established to prevent significant adverse impacts on vulnerable marine ecosystems ... (paragraph 6) and
- ii. that such bottom fishing will not have significant adverse impacts on vulnerable marine ecosystems ...

- 11.7.4 As noted, once a trigger level amount of what is deemed to be EVME is exceeded the offending vessel must move five nautical miles distant. We have noted the arbitrariness of the distance though we accept that there is no quantitative basis (that we know of) on which to decide on any particular distance, bigger or smaller, as being appropriate. Adopting a distance that has been used in other fisheries (see Shotton & Patchell 2008, Kenchington, 2009), albeit of completely different characteristics, is as rational or irrational as choosing any other distance. This distance of 5-miles was originally selected in mobile pelagic fisheries where the objective was to avoid capture of undersized fish. Should the offending vessel return to that location at a later date there would be good reason to expect the fish would have moved away, or they would have grown beyond the minimum size - not the situation to which this distance has been applied of sessile organisms.

- 11.7.5 Selection of a distance that would result in 'low' probability of a subsequent tow encountering that particular 'ecosystem' requires knowledge of the characteristics of the spatial distribution of the particular 'EVME'. Reliably collecting such information is



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unfeasible as it would require areal surveying of every potential fishing situation. Transect information alone is subject to ambiguous interpretation as it depends on assumptions as to the two-dimensional shapes of the distribution of the 'EVMEs' and ideally understanding of the relief and other variables, such as factors that have a deterministic affect upon the distribution of benthos.

- 11.7.6 Given that an EVME may occur as a random event in the operations of a deepwater fishing vessel, it is understandable that skippers may choose to avoid this additional source of risk to the viability of their fishing operations. Indeed, preliminary analysis of the results of HSFG vessels bycatch of EVME indicates that in many situations, its presence can no better be predicted than that of a random event. This appears perverse to our members, both ashore and at sea, and we believe that alternative management protocols will contribute to better operational procedures.
- 11.7.7 HSFG (2010) has noted many concerns with the decisions as to how the presence of various amounts of sessile benthic animals taken as bycatch in deepwater trawls requires fishing operations to cease and the vessel to move 5 miles from where it started the tow. A detailed re-analysis of these concerns is not given here as the arguments made in HSFG (2010) still stand - we are unaware of any refutation of the case made in that document.
- 11.7.8 If the vessel has been fishing in a traditional fishing area or along a well established tow lane, requiring the vessel to move on is pointless. The vessel would be permitted to return to that area in a subsequent voyage and/or other flag-state vessels would remain permitted to fish in that area or along the established tow lane. Small differences in currents affecting the position of the trawl or of the vessel's position by a few metres may result in EVME where no such event has occurred over the preceding years of fishing in that position.

## **11.8 Discussion**

- 11.8.1 HSFG (2010) documents our concern with the *regulatory measures* regarding biodiversity that have been adopted as conditions of New Zealand high-seas fishing licences and as SPRFMO interim measures and we raise these concerns again below. We believe it valuable to note here comments from MF (2008) as they directly relate to the need for closed areas and the doubtful need for an automatic response such as a vessel 'move on' rule when a bycatch of sessile invertebrates, or particularly when coral rubble, are retrieved in the trawl and are then deemed to be EVME.

P2: Modern deepwater trawling is an aimed method of trawling, usually targeting relatively dense aggregations of fish which are ... targeted acoustically. This differs from the herding type trawl fishing ... using long, non-aimed tows ... . To reduce damage to fishing gear ... and to enable nets to be rapidly and accurately aimed at fish aggregations, *deepwater trawling methods have evolved in various ways towards agile net systems that minimise ground rope length, net size and unnecessary ground contact, particularly by non-fishing gear components such as trawl doors.*

P3: Modern doors ... are generally designed and rigged to operate off the bottom, being set to minimise the risk of digging in should there be any contact with the seabed. Deepwater trawl nets rigged in this way are ideally 'flown' such that the net contacts the seabed only in the area of the aggregated fish shoals, with the doors themselves preferably not touching the seabed. Lengths of sweeps and bridles ... have also been significantly reduced ... to provide better control over the gear and reduced seabed contact.

P6: It has been found that [steel bobbins as used in the Northern Hemisphere] are not necessary and that gear efficiency is improved and bottom contact reduced by incorporating rubber

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components in the ground rope. ... replaced by smaller 40 cm - 60 cm diameter rubber bobbins. ... there has been a shift to ... 50 cm - 80 cm rubber discs ... causing the net to 'hop' over encountered obstacles, ...

P30: noting the ongoing move towards shorter, more highly targeted tows, and the continuing modification of gear and implementation of operational measures to minimise seabed contact ..., *questions arise regarding what the expected frequency of trawl tows actually producing 'evidence of a VME'<sup>20</sup> might be.*

P70: Most of the tow time for deepwater trawls is spent shooting and hauling, with actual bottom contact and fishing time being very short, ... . The bottom times of orange roughly targeted tows are ... perhaps 3 - 10 minutes, compared to 2 - 5 hours for traditional flat-bottom trawling. All contact of the trawl gear with rough ground ... carries the risk of gear damage .... This encourages continual investment in systems ... with minimal bottom contact.... and there has been continuous investment in acoustic, navigational and gear systems to reduce trawling time ...

p71: Net positioning systems such as the Simrad ITI® allow accurate placement of the net on the intended target trawl zone, minimising the impact of currents which could push the net off the tow line.

P71: The recent move to sophisticated 3D plotting software such as the Piscatus® or MaxSea® underway mapping systems allows vessels to rapidly generate high resolution three dimensional maps of an area without the need for experimental tows. The level of detail available from such plots allows very precise and consistent placement of the gear. These systems also accurately record the vessel trawl tracks and footprint, potentially providing information useful for evaluation of habitat impact.

P73: ... the actual impacted area amounted to maximally 0.14% of those areas (assuming a swept width of 200m<sup>21</sup> per tow), which amounts to only 0.05% of the total area of the New Zealand trawl footprint. Industry implemented operational measures ... appear to have been successful at reducing contact with the seabed, as benthic bycatch weights, even when fishing in new areas, were substantially lower than in historical data. The short tows and high catch rates achieved by these fishing operations attest to the accurate and successful targeting of orange roughly aggregations. Low benthic bycatches and absence of any benthic materials in the nets on two thirds of the tows, despite fishing in new areas, indicates that nets made reduced bottom contact in comparison with ... historical fishing operations.

- 11.8.2 These well qualified and pertinent observations from the New Zealand's (then) Ministry of Fisheries Bottom Fishery Impact Statement show how far comment on this fishery has developed from the quite silly analogy expressed by many environmentalists that trawlers engaged in deepwater fishing were "mowing down the forest to catch the squirrels".
- 11.8.3 HSFG is concerned as to the vagueness of the process defined by the Interim Measures that will result in judgments being made on the consequences as to whether EVME is in fact proof that a VME exists. HSFG is concerned about how such judgments can be made in what appears will be commonly an absence of any additional information. And, the HSFG is concerned about who will make this decision? What background or qualifications, if any, will indicate that a person is suitably judged to make pronouncements on what may be in reality stochastic processes?
- 11.8.3 HSFG is concerned about the apparent absence of any evaluation of what constitutes a viable population of a fragile sessile animal or any comment or consideration as to the

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<sup>21</sup> We note that HSFG vessels use a trawl with a ground rope length of 20 m.

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expected relative impacts of fishing on a seafloor feature. The HSFG is concerned that there has been no apparent effort by those drafting the Interim Measures to discuss with HSFG skippers and officers what information exists and what it could mean. The HSFG is concerned that in the six years following the UNGA resolutions there has been no attempts (known to us) to measure the potential rates of regeneration of coldwater corals despite the opportunities to do so; in fact it would appear that marine research has specifically avoided undertaking such relatively easy-to-undertake research. (We note anecdotal evidence of apparently rapid coldwater coral regeneration though this needs appropriate evaluation.) HSFG is concerned about the impartiality, or perhaps, the career independence, of those responsible for these technical guidelines.

### **11.9 Some HSFG proposals**

- 11.9.1 There are a number of actions that can be undertaken immediately. First, marine observers, in conjunction with the bridge officers present on past fishing trips, could review the relevant echorecord of the seafloor. Emergent benthos are often visible in the echo record, though not of course a few kilograms of a sessile low-profile coral reef. Second, the observer and respective bridge officer can review existing information regarding bycatch of EVMEs as is usually recorded by observers on previous fishing trips. The HSFG have generated a large amount of information on occurrence of fragile sessile benthic bycatch from tows and this information is available for review and creation of an appropriate data base. Third, and most importantly, by undertaking a repeat tow where there has been EVME rather than moving away, possibly to a different seafloor feature, the opportunity is availed to determine if the occurrence of the EVME in the first tow is a rare, random events or indeed, EVMEs characterise the area more generally. This third action is important given the actions proposed in the SPRFMO interim arrangements.

## **12. CAN THE BEST AVAILABLE INFORMATION GET BETTER?**

- 12.1 Direct observation of seafloor fauna is now well established to the point that it can be a practical adjunct of commercial fishing operations, though of course additional expenses and labour are incurred and expertise is required. Subject to successful negotiations as to how the results of video recording may be used the HSFG is open to equipping their trawls with this technology. The obvious mode of its use would be where EVME had been encountered during fishing and more information is needed to determine if there were large populations of fragile benthos, i.e. were there numbers of fragile sessile animals at risk or were there little or no vulnerable benthos in the area? One situation where video investigation could be useful would be where trigger-levels of coral rubble had been encountered. Direct observation would show if there were fragile emergent corals present in the just-fished area or if there was nothing other than coral rubble.
- 12.2 HSF is also aware that the results of extensive and well-designed benthic surveys are now becoming available. These surveys provide an insightful complement to more restricted-area benthic video surveys, which, because of the nature of the research objectives are often directed to areas known to have plentiful coldwater corals.

### 13. ARE THERE BETTER ALTERNATIVES?

#### 13.1 Keep it simple ...

- 13.1.1 The HSFG has much difficulty understanding the reasons for the complexity and convoluted nature of the SPRFMO Interim Management Arrangements for determining if there has been EVME. Perhaps it has arisen from the wish or requirement to follow the evolution of processes arising from the UNGA resolutions, which then gave direction to the FAO consultations. On reflection we believe that the objective of conserving biodiversity (in its widest sense) will be best achieved by closing areas to fishing where (a) it does not conflict with the fishery-related objective of the SPRFMO convention and (b), where fragile benthos are known to exist or where their presence can be expected beyond that predicted simply because the depth and other physical variables are 'right'.
- 13.1.2 There is another reason for avoiding the complexity of the current EVME process. It is general fisheries management experience that to be effective conservation regulations should be as simple as possible and still be effective and be rigorously enforced. Complex, convoluted conservation regulations, especially those with a contrived logic, will be difficult to implement, difficult to assess or audit in terms of implementation, often ineffective and costly, and thus usually self-defeating. They do not gain the confidence of those who are to be regulated, which in turn discourages compliance. A simple regulation process of closed or open areas will be unequivocal to all involved and be the easiest to monitor and enforce, and thus most likely to be successful. This is not to say that when there are grounds to believe that there are important populations of fragile sessile animals in a fishing area they should not be protected (See paragraph 13.2).

#### 13.2 A Proposal for seafloor-based measures and management

- 13.2.1 HSFG (2010) proposed the adoption of a process of seafloor-feature based management. In essence this would involve characterization of the seafloor features of the Southwest Pacific Ocean such that a management protocol would be assigned to each one. It is recognised that these protocols might evolve and additional information accumulated regarding the characteristics of each feature and that groups of features might be aggregated together for management purposes, e.g. because of proximity or because it was known or believed that a single population of targeted fish moved around a cluster of features.
- 13.2.2 Such a management method could further evolve so that defined areas within specific seafloor features could be closed to fishing. This method would strengthen biological connectivity as no-fishing zones may then be closer while being far more geographically widespread than that achieved with fewer, but larger, closed areas. Closing areas to fishing where sea floors are rough and fishing would involve a high risk of bottom fastenings would contribute to achieving the two otherwise conflicting objectives. Possible conditions applying to management of individual seafloor features might be as follows.

A seafloor feature or part of a feature is closed to fishing because:

- i. It is known to provide extensive habitat to fragile sessile benthos such that there would be an unacceptable risk should fishing be permitted on that seafloor feature or
- ii. Commercial aggregations of fish are never associated with that particular feature.

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- iii. Defined areas of a seafloor feature are closed to fishing because they are known to provide habitat to fragile sessile benthos in those parts of its area such that there would be an unacceptable risk should fishing be permitted on that seafloor feature and fish aggregations are found in areas where fishing is possible, or,
- iv. parts of the feature are known to be unsuitable for fishing and thus may be closed to fishing without loss of benefits.

A seafloor may be opened to fishing because:

- i. Extensive fishing has occurred on that seafloor feature in the past and thus it is expected that the feature's benthos has already been affected or
- ii. Information exists that indicates that there are no important populations of fragile benthos on that feature or
- iii. Adjacent seafloor features have been closed to fishing and thus it can be reasonably expected that the population existence/structure will be maintained in the defined geographical area.

Fishing may be regulated on a feature by:

- i. Limiting the fishing effort that is permitted to fish that feature, or
- ii. Setting a quota for that feature or group of features based on resource information that is collected, existing data or other analyses.

### **13.3 Other sources of best available information**

- 13.3.1 This note cannot purport to provide even a start to a balanced review of the relevant literature concerning knowledge on the benthos in the management area. However, work has been done in the general area that shows that care should be taken in projecting that 'vulnerable marine ecosystems' characterise deepwater seafloor features. An interesting paper in point is that of Anderson *et al.* (2011) who, in an extensive video study on the Lord Howe Rise, found rocky features covered only 2% of the mapped area and would be relatively resistant to the affects of trawling. No habitat-forming biota were found over large areas and the distribution of coral rubble was patchy - 5.3% of coverage. They note that coral rubble may have accumulated over a long time or have been from a past die-off event. Live corals were 0-4% of cover, which did not explain the amount of coral rubble present. While many seamounts may support dense coverage of cold water corals others support much sparser assemblages, thus not all seamounts are equally capable of supporting high density assemblages even when rocky substrata are present. Anderson *et al.* further noted that many deep-sea environments are characterised by scarcity of cold-water corals and sponges. The HSFG concludes that particular care is necessary before expressing sweeping generalisations about the nature of the benthos on the seafloor where deep-sea fishing is undertaken.
- 13.3.2 HSFG vessels are commanded by some of the best deepwater fishing skippers and bridge officers in the world, a reality that is certainly the case when this class of fishing is restricted to aimed-trawling, which is acknowledged in the impact statement prepared by the New Zealand Government (MF 2008). And, almost all of HSFG's officers have experience in operating in other areas of the world. Collectively they have enormous experience as to how this fishery operates, the behaviour of the fish in this area and other related knowledge, what we refer to as "*Best Available Hands-on Information*" - it is the 'Intellectual Property' of our members.
- 13.3.3 HSFG has for some time thought that there would considerable benefit in formally accessing the knowledge and information of our skippers through appropriately structured



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‘skippers meetings’. Indeed, one such meeting has already been held to start the process of documenting anecdotal information. Fourteen HSFG skippers met in Nelson to pool their knowledge and as a result produced a set of maps indicating what were deemed good fishing areas and what areas could be, or ought to be, closed for conservation purposes. During this process proposals for what parts of seafloor features should be closed were agreed upon by the skippers. While it is recognised that their efforts are a first step, it is a first step that has been taken! As such we believe it demonstrates our willingness, initiative and good will to contributing to this management process. It barely needs mentioning that we found this process to be highly productive with much to recommend it.

- 13.3.4 There ought to be benefits from repeating such a process, ideally with the participation of relevant fishery managers: this should enable a good evaluation of past information and improved management proposals and insights into the practicality of proposed management actions. Subject to careful review, some external people might be permitted to attend such meetings in addition to those from the New Zealand Government. The HSFG notes that they are available to work with managers to develop this management method by identifying areas of potential application and securing industry information.

## **14. CONSERVATION ISSUES**

- 14.1 As MF (2008) notes, all trawl fishing is not the same, just as all trawl fishing is not destructive fishing. One concern of the HSFG is the possible entrance into the Southwest Pacific deepwater fishery, even on an exploratory basis, of vessels of flag states that do not have the experience, competence or technology to undertake deepwater fishing targeting benthic-pelagic species such as orange roughy, alfonso, bluenose wareou and the various oreostomidae. Inexperienced operators will be at greater risk of causing excessive bottom contact with their fishing gear, if not gear loss itself. This risk may be mitigated by SPRFMO demanding evidence that any vessels intending to enter this fishery are properly equipped in terms of winch capability, vessel and gear positioning equipment and acoustic systems, not only for positioning the gear but for resource management purposes as well.
- 14.2 HSFG vessels all use nets with a stretched mesh size of 110 mm<sup>22</sup> and a ground rope length of about 20 m. This restriction on gear dimensions is necessary to achieve the manoeuvrability required for this fishery. The HSFG proposes that 110 mm be established as the minimum stretched mesh size permitted in trawls taking the species mentioned above. This would primarily be a preventative measure to avoid vessels entering the fishery with unnecessary small mesh sizes in their trawl gear. Similar arguments may be used to require that gear dimensions are appropriate for the nature of the fishery though this note is not the appropriate document for more prescriptive details. Further, in our view, the conservation requirements we raise may only be achieved if this fishery is limited to vessels that are equipped with all appropriate fishing gear to undertake aimed trawling, and whose officers have experience/competence in this method of deepwater fisheries.

## **15. CONCLUSIONS**

- 15.1 The HSFG finds that the current management protocols for the deepwater fishery in the Southwest Pacific Ocean have been captured by complex and convoluted procedures derived from premises that hold either weakly, or in some situations, scarcely at all. This

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<sup>22</sup> We acknowledge the complexities involved in taking this measurement.

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outcome has been, perhaps, the unavoidable result of the institutions and organisations that have lead this process and the difficulty of the issue to be addressed. Such complex and convoluted conservation regulations tend to be self-defeating, difficult to implement, ineffective and costly. And, they fail to gain the confidence of those who are to be regulated, which discourages compliance.

- 15.2 A further factor has been the need to develop general methods that address the global situation when there are major regional differences in the nature of deep-sea fisheries and the management and operational issues to be resolved. We believe that it is time to stand back and assess the situation that exists, in terms of the nature of the problem, what is the best understanding of the regional risks, and how to best resolve them in the context of achieving an efficient profitable fishery delivering maximum social welfare benefits - consistent with the First Principle of the 1992 Rio Declaration.<sup>23</sup>
- 15.3 The HSFG believes (HSFG 2010) that current interim management measures in relation to bycatch of specified benthic sessile animals imposed by the Ministry for Primary Industries as licence conditions for the SPRFMO Southwest Pacific Ocean fishery have been based on arbitrary statistical measure for they depend on subjective decisions as to what is an appropriate indication of the amount of fragile sessile invertebrates to constitute evidence of a vulnerable marine ecosystem. MPI regulations assign trigger levels to different sessile taxa in the bycatch from a single tow: e.g. 29.5 kg of particular sessile taxa in the bycatch may not be deemed EVME while 30.5 kg of the same taxa is. The length of a tow, at least the time the ground rope of the trawl is in contact with the sea floor, is irrelevant in these decisions. Interpreting coral rubble as evidence of a vulnerable marine ecosystem is, in our view, nonsensical, and not supported by what we have found in the 'scientific' literature.
- 15.4 The management response required when an arbitrary EVME is encountered is for the unlucky (in the sense that the occurrence of an EVME is well described as a stochastic process<sup>24</sup>) vessel to move an arbitrary distance before attempting any further fishing operation. The distance specified - 5 nautical miles - is apparently taken for convenience from other fisheries that operate in entirely different circumstances. Because the SPRFMO Southwest Pacific deepwater fishery is undertaken by aimed trawling on localized fish aggregations at specific seamounts, triggering a 'move-on-rule' results in the vessel having to restart searching for another viable fish aggregation. Because of the limited size of many sea floor features this often requires the vessel to move elsewhere, which may involve a 24 hour steam. Such interruptions thwart viable fishing operations and thus HSFG skippers avoid areas where they may trigger the move-on requirement.
- 15.5 By requiring a vessel to move on once the EVME threshold has been triggered, no further information can be obtained and the compulsory review of the incident by 'experts' that is required will be unable to come to any informed conclusion without further information. As vessels from other flag states are permitted to fish the area, if there are threatened benthic animals on the tow lane, they will not be protected. Our understanding is that most of the area fished by the HSFG's vessels is of basaltic bottom with sparse irregular benthic fauna, a view supported by available video recordings and recent scientific publications. Further, unfortunate as it may be, almost all of the fishable area will have

<sup>23</sup> [The 1992] Rio Declaration on Environment and Development of The United Nations Conference on Environment and Development ... Proclaims ... : Principle 1 - *Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.*

<sup>24</sup> Rolling of dice (=dies) is a common heuristic for stochastic processes.

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already been subject to fishing with methods less developed than are now standard practice.

- 15.5 Further, we stress that minimising the fleet capacity/fishing effort required to take a TAC will contribute to protection of all non-targeted species - fish and invertebrates whether sessile or not - by minimising unwanted/unnecessary gear effects. This will also create maximum social welfare benefits! Management of these fisheries should always be directed towards this objective, which in our view is implicit in the *Ecosystem Approach to Fisheries*. For these reasons, particular concern is directed toward Article 3, paragraph (iii); overfishing and excess fishing capacity shall be prevented or eliminated.
  
- 15.6 The ‘boutique’ nature of the deepwater Southwest Pacific fishery means that obtaining the information needed for effective resource management will require the coordinated participation of the industry in stock assessment. The HSFG operators are prepared to equip their vessels in this fishery with scientific-grade acoustic systems so that they can undertake quantitative stock assessment surveys on fish aggregations and support or lead actions needed for the collection of any other information required for resource management. This offer should be a negotiated on-going obligation for all participants in the fishery.
  
- 15.7 The proposals for feature-based management we make here imply that management of the fishery must move from regulations based on rectangles - a method that has changed little from the early 1900s - to sea-floor feature-based management. Highly accurate, precise navigation technology now makes it feasible (if not easy) to custom manage even relatively small parts of individual seafloor features. We urge the MPI to build on the world-leading skills of the New Zealand industry and indeed the Ministry’s own world-leading methods of fishery management to propose to SPRFMO Parties the adoption of such innovative and effective fisheries resource management for this fishery. We believe such proposals would have the support of many Parties.
  
- 15.8 The HSFG understands the need of the New Zealand Government to support, and to be seen to support, now widely accepted management desiderata such as the *Precautionary Approach* and the *Ecosystem Approach to Fisheries [Management]*. However, we note that the implementation of these concepts struggles when faced with operational realities. Notwithstanding this, implicit in both concepts (shibboleths?) is that resource management and conservation decisions should be based on ‘*the best available scientific information/evidence*’. To ignore available information is thus contrary to the policy position of the New Zealand Government and will militate against good decision making. Thus, it is incomprehensible (and contrary to purported policy) that decisions regarding TACs and fishing areas have been based on a time period that is only part of the past fishery’s time frame. We urge that this decision be re-visited and relevant decisions be revised based on a full, but realistic, time period. We believe that the base time period for evaluating resource management decisions should be the years of 1990 - 2010. We are willing to participate in discussions to explain and justify the choice of this period.
  
- 15.9 Likewise, particularly in the early stages of this fishery, the locations of many areas in which there was, at times, vigorous fishing activity, were either misreported or unreported. Consistent with using the best available information, this aspect of the fishery should be researched to accurately identify where deepwater trawl fishing has (and has not) actually occurred.

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- 15.10 The best available data and information in relation to this fishery are held by the HSFG operators themselves. This information includes that recorded by the skippers as well as anecdotal knowledge learnt from their operations and those of others in the area. Such information and experience is a synthesis of complex technical and environmental variables that permit a deep understanding of the nature of the fishery. Management that fails to use such knowledge risks suboptimal results through erroneous decisions. It is axiomatic that effective management must include a formal mechanism to use the knowledge held by HSFG's members.

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<<http://www.southpacificrfmo.org/interim-measures/>>



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### Appendix A



New Zealand High Seas Group Incorporated

14 December 2012

### Feature Based Management: NZHSG Update

#### Important Note

*The information provided in this summary and any subsequent documentation outlining a new proposed management regime for the SPRFMO fishery may contain information that is commercially sensitive and would prejudice the commercial position of the members of the HSFG. We require any release of this memorandum or subsequent documentation to be withheld from any request for information under the OIA in terms of Section 9(2)(b), (d) of the Official Information Act 1982*

#### Feature Based Management.

- It is general experience in fisheries management that to be effective conservation regulations should be as simple as possible and be rigorously enforced. Complex, convoluted conservation regulations usually are self-defeating, difficult to implement, ineffective and costly to implement. They do not gain the confidence of those who are to be regulated: this discourages compliance.
- The NZHSG has on various occasions addressed the current interim management measures imposed by MPI on its vessels operating in the SPRFMO Southwest Pacific Ocean fishery. These measures have evolved from arbitrary assumptions based on statistical conveniences, if not artefacts. The management of the High Seas fishery has been based on partial information and predictive modelling, whose assumptions do not reflect the actual history of the fishery. In particular the HSFG has pointed out that:
  - The use of spatial closures is not an effective method of mitigating adverse impacts; and
  - The implementation of particular catch limits on the High Seas based on the Penney review is seriously flawed; and
  - The categorisation of areas as heavily trawled, lightly trawled and medium trawled together with the "move on rule" is ineffective.
  - The arbitrary use of the 2002 to 2006 catch years as a management tool to restrict effort.
  - The VME indicator score thresholds are flawed.
  - The continued reliance on ill-defined concepts and assumptions is unsatisfactory.
- The continued reliance on ill-defined assumptions that are scientifically weak gives rise to subjective decisions; for example, what is an appropriate trigger level bycatch of sessile benthic invertebrates to constitute "evidence of a vulnerable marine ecosystem" (EVME). MPI regulations assign trigger levels to different sessile taxa in the bycatch from a single tow: e.g.

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29.5 kg of particular sessile taxa in the by catch may not be deemed EVME while 30.5 kg of the same taxa is. The length of a tow, at least the time the ground rope of the trawl is in contact with the sea floor, is irrelevant in making such a decision.

- The management response required when there is EVME is for the offending vessel to move an arbitrary distance before attempting any fishing operation. Because the SPRFMO South West Pacific Deep-Water Fishery is undertaken by aimed trawling on localized fish aggregations at specific seamounts, this results in the vessel having to restart searching, for another viable fish aggregation. Because of the limited size of some sea floor features this usually requires steaming elsewhere. As such interruptions prevent viable fishing operations HSFG skippers avoid areas where this may occur.
- Further, this "move on" rule, results in no further information being obtained and as a consequence, the compulsory review of the incident that is required, will be unable to come to any informed conclusion on the impact. As other vessels may fish the area, if there are threatened benthic animals on the tow lane, they will not be identified and protected. Our understanding is that most of the area fished by the HSFG's vessels is of basaltic bottom with sparse irregular fragile benthic fauna, a view supported by available video recordings and recent scientific publications.
- The HSFG is committed to the protection of biodiversity. The HSFG believes that the current suite of management tools represents a regulatory *cul de sac* and a more effective alternative to protect the biodiversity of the benthic environment exist. The HSFG supports:
  1. the closure of any area where satisfactory, credible information shows that there are significant populations of fragile benthic invertebrates vulnerable to aimed trawling – this may be only part of a particular seafloor feature;
  2. that fishing be permitted in all other areas where past fishing has customarily occurred subject to (1) above.
- Further, the HSFG stresses that minimizing the fishing effort required to take a TAC (when this can be agreed) will contribute to protection of all non-targeted species – fish and invertebrates whether sessile or not - by minimizing unwanted/unnecessary gear effects. This will maximise sustainable social welfare benefits which reflects the objectives of the Fisheries Act 1996. Management of these fisheries must be balanced against this objective. In our view this is implicit in the *Ecosystem Approach to Fisheries*.
- The boutique nature of this discreet deep water fishery means that obtaining the information needed for effective resource management will require the coordinated participation of the industry and MPI in stock assessment. The HSFG operators are prepared to equip their vessels in this fishery so that they can undertake quantitative acoustic stock assessment surveys and support or lead actions needed for the collection of any other information required for management. This offer should be a negotiated obligation for all participants in the fishery.
- HSFG proposes that management of the fishery must move from management based on rectangles – a method that has changed little from the early 1900s – to sea-floor feature-based management. Highly accurate, precise navigation technology now makes it feasible (if not easy) to custom manage even relatively small parts of individual seafloor features.

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- MPI should build on the world-leading skills of the HSFG members and indeed its own world-leading methods of fishery management to propose to SPRFMO Parties that they adopt a fresh, innovative and effective fisheries resource management regime for this fishery.
- The HSFG understands the need of the New Zealand Government to support now widely accepted management desiderata such as the *Precautionary Approach* and the *Ecosystem Approach to Fisheries [Management]*. However, we note that in many cases the practical application of these concepts struggles when faced with operational realities. Notwithstanding this, implicit in both concepts is that resource management and conservation decisions should be based on 'the best available scientific information/evidence'. To ignore available information is thus contrary to the policy position adopted by the New Zealand Government and will militate against good decision making. Thus, it is incomprehensible (and contrary to policy) that decisions regarding TACs and fishing areas have been based on a time period that is only part of the historic fishery's time frame. We urge that this decision be revisited and relevant decisions be revised based on a full, but realistic, time period. We believe that the base time period for evaluating resource management decisions should be the years of 1990 – 2010. We are agreeable to participate in discussions to explain and justify the choice of this period.
- Likewise, particularly in the early stages of this fishery, the locations of many areas in which there was, at times, vigorous fishing activity, were either misreported or unreported. Consistent with using the best available information, this aspect of the fishery should be researched to accurately identify where deepwater trawl fishing has (and has not) actually occurred.
- The best available source of data and information are held by the operators themselves. This information is a combination of data recorded by the skippers themselves, what they have learnt anecdotally from their operations and those of other vessels in these areas, and in many cases an intuitive understanding of a range of complex technical and environmental inputs that all add to a deep understanding of the fishery. To exclude these inputs in formulating a management plan, and to rely on predicted computer modelling which is only as good as the data that is inputted, blunt science and broad general principals, results in the distortions (or cul de sacs) that we refer to. It is imperative that the detailed and accurate knowledge held by the HSFG members be distilled into a detailed feature based management plan

A detailed document containing the NZHSG proposal will be circulated soon, subject to caution outlined in the preamble.

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December 2012  
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## Appendix B

< <http://www.southpacificrfmo.org/interim-measures/> >

### INTERIM MEASURES ADOPTED BY PARTICIPANTS IN NEGOTIATIONS TO ESTABLISH SOUTH PACIFIC REGIONAL FISHERIES MANAGEMENT ORGANISATION

#### **Bottom fisheries**

##### *Management of bottom fishing*

In respect of bottom fisheries, Participants resolve to:

1. Limit bottom fishing effort or catch in the Area to existing levels<sup>25</sup> in terms of the number of fishing vessels and other parameters that reflect the level of catch, fishing effort, and fishing capacity.
2. Not expand bottom fishing activities into new regions of the Area where such fishing is not currently occurring.
3. Starting in 2010, before opening new regions of the Area or expanding fishing effort or catch beyond existing levels, establish conservation and management measures to prevent significant adverse impacts on vulnerable marine ecosystems<sup>26</sup> and the long-term sustainability of deep sea fish stocks from individual bottom fishing activities or determine that such activities will not have adverse impacts, based on an assessment undertaken in accordance with paragraphs 11 and 12 below.
4. Cooperate through coastal States adjacent to the Area informing the interim Secretariat of their own conservation and management measures in respect of deep sea fish stocks.
5. Cooperate to identify, on the basis of the best available scientific information, vulnerable marine ecosystems in the Area and to map sites where these ecosystems are located, and provide such data and information to the Interim Secretariat for circulation to all Participants.
6. In respect of areas where vulnerable marine ecosystems are known to occur or are likely to occur based on the best available scientific information, close such areas to bottom fishing unless, based on an assessment undertaken in accordance with paragraphs 11 and 12 below, conservation and management measures have been established to prevent significant adverse impacts on vulnerable marine ecosystems and the long-term sustainability of deep sea fish stocks or it has been determined that such bottom fishing will not have significant adverse impacts on vulnerable marine ecosystems or the long term sustainability of deep sea fish stocks.
7. Require that vessels flying their flag cease bottom fishing activities within five (5) nautical miles of any site in the Area where, in the course of fishing operations, evidence of vulnerable marine ecosystems is encountered, and report the encounter, including the location, and the type of ecosystem in question, to the interim Secretariat so that

<sup>25</sup> Existing levels of fishing effort or catch means the average annual levels over the period 1 January 2002 to 31 December 2006.

<sup>26</sup> For the purposes of these interim measures, "vulnerable marine ecosystems" includes seamounts, hydrothermal vents, cold water corals and sponge fields.

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appropriate measures can be adopted in respect of the relevant site. Such sites will then be treated in accordance with paragraph 6 above.

8. Notwithstanding paragraph 2, in regions of the Area where bottom fishing is not currently occurring, undertake, as appropriate, scientific research activities for stock assessment purposes in identified parts of such regions and only in accordance with a research plan that has been provided to the interim Secretariat for forwarding to the interim Science Working Group and all Participants, preferably 60 days prior to the commencement of that activity. Participants will provide promptly a report of the results of such scientific research activities to the interim Secretariat for circulation to all Participants.
9. Appoint observers to each vessel flying their flag and undertaking or proposing to undertake bottom trawling activities in the Area and ensure an appropriate level of observer coverage on vessels flying their flag and undertaking other bottom fishing activities in the Area.
10. To strengthen its control over bottom fishing vessels flying its flag, each participant will ensure that all such vessels operating in the Area be equipped with an operational vessel monitoring system no later than [sic] 31 December 2007, or earlier if so decided by the flag State.

*Assessment of bottom fishing*

Participants resolve to:

11. Assess, on the basis of the best available scientific information, whether individual bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems, and to ensure that if it is assessed that these activities would have significant adverse impacts, they are managed to prevent such impacts, or not authorized to proceed.
12. Apply the following procedures regarding the assessment described in paragraph 11 above:
  - b) Participants are to submit to the interim Science Working Group their assessments of whether individual bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems, including the proposed management measures to prevent such impacts, and make these assessments publicly available.
  - c) The interim Scientific Working Group will review the assessments and proposed management measures and provide comments to the submitting Participant. For the purposes of carrying out such reviews, the interim Scientific Working Group will design a preliminary interim standard for reviewing the assessments and develop a process to ensure comments are provided to the submitting Participant and all other Participants within two months. In the meantime, the submitting Participant may provisionally apply their proposed management measures.
  - d) Participants may, on the basis of the assessments submitted under sub-paragraph (a) above and the comments provided under sub-paragraph (b) above, authorize vessels flying their flag to undertake bottom fishing activities in the region of the Area for which the assessment was conducted and require such vessels to



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implement conservation and management measures to prevent significant adverse impacts.

- e) Participants are to notify the interim Secretariat of the measures required under sub-paragraph (c) above and a list of the vessels to which the measures relate, and to make that information publicly available.
13. In undertaking the assessments as described in paragraphs 11 and 12 above, take into account any international technical guidelines regarding standards, criteria or specifications for identifying vulnerable marine ecosystems and the impacts of fishing activities on such ecosystems that may have been developed.