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Increasing Pacific Island participation in oceanic fisheries stock assessment

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INCREASING PACIFIC ISLAND PARTICIPATION IN OCEANIC FISHERIES STOCK ASSESSMENT

Purpose

1. The purpose of this paper is to:

   - respond to the concerns raised during previous HoFs, and through the 2009 independent review of the SPC Marine Resources Division, on the lack of Pacific Islanders involved in the stock assessment of oceanic fisheries resources;
   - present several potential modes for the delivery of capacity building in this area; and
   - seek your endorsement of a four-year project proposal, to be provided to CRGA and potential donors, that aims to: 1) increase the level of understanding among Pacific Island fisheries officers of regional stock assessments; and 2) provide a pathway for those Pacific Island fisheries officers who wish to pursue a career in stock assessment.

Introduction

2. The lack of Pacific Islander involvement in oceanic fisheries stock assessments is a concern that has been raised at previous Heads of Fisheries meetings and was noted in the 2006 Marine Resources Division independent review; it is also a concern shared by staff in the Oceanic Fisheries Programme.

3. To help address this issue, OFP began by developing workshops to train PICT fisheries officers in how to understand and interpret the results from regional stock assessments. These workshops were built upon with short-term attachments at SPC, where OFP staff worked together with PICT fisheries officers on issues of national interest. These interactive educational opportunities were a key step in promoting the development of stock assessment capacity within PICTs.

4. A paper on this subject was presented during the 2012 Informal Consultation with Heads of Fisheries at a time when funding for National support and training workshops within OFP was very low. We have updated this original paper and present it again at a time when we are better placed to support some of these initiatives, and with a more direct focus on some capacity building areas which are currently unfunded.

5. This paper describes a proposal to implement educational programmes to increase PICT fisheries officers' understanding of regional stock assessments and increase their participation in the development of complex quantitative stock assessments. The proposal involves the establishment of a training coordinator role within the FAME Division. This position would be expected to liaise between technical staff involved in training delivery and donors and relevant regional agencies (e.g., USP). The position would also work with the FAME Monitoring Evaluation and Learning advisor in evaluating the efficiency and effectiveness of capacity building exercises We specify several modes for the delivery of capacity building (see Annex I for a summary of proposed activities).

6. The remainder of this paper summarises the proposed modes of delivery for capacity building, indicates the likely level of budget support necessary to implement these initiatives, identifies the intended outcomes, and identifies some risks to achieving these.

Stock assessment training workshops

7. The stock assessment workshops began in 2006 and have utilised a wide range of funding sources over time. The workshops aim to 'increase the ability of PICT fisheries officers to: 1) understand the regional stock assessments and interpret and communicate these to PICT fisheries managers; and 2) participate meaningfully and fully in the Commission and its associated Scientific Committee meetings'.

8. The workshops have been very successful in achieving these aims. For example, past participants of these workshops now hold formal roles (e.g. convener) within the WCPFC Scientific Committee or have gone on to pursue further studies. The workshops have become so popular that many PICTs — and even some non-SPC members — have obtained their own funding to allow their fisheries officers to attend. These workshops are not intended to provide training in how to undertake the assessment itself, but rather to provide tools to critically evaluate and interpret assessment results.

9. These workshops are of value to both those PICT fisheries officers with an interest in undertaking further work in stock assessment, and those who may be more interested in a career in fisheries management or compliance, but would like to have a general understanding of the regional stock assessments.

10. Two workshops have been developed, with one covering the basic principles behind stock assessment and the second focused on the more advanced features of the regional assessments (e.g. key assumptions and weaknesses). The performance of each participant was monitored with marked assignments and, in some years, exercises were provided online for participants to refresh their knowledge throughout the year. Workshops have previously been scheduled a few weeks prior to the WCPFC Scientific Committee meeting so as to facilitate the participation of member countries in that forum.

11. Two problems were encountered in the delivery of these workshops: 1) Funding sources: Often, several sources of funding were necessary to support all SPC members. Considerable human resources were often spent on proposals to secure funds and on post-workshop reporting to funders. 2) Workshop material development: while significant resources were required to update the workshop material each year to reflect the most recent stock assessments, there was often less time available to focus on how material was to be presented.

12. Under the OFMP II GEF project there is funding available (60,000 CFP units) for 2015-2019 that would cover most, but not all SPC member participation. However, this project does not provide sufficient funds for workshop materials.

13. In previous discussions with HoFs, there has been a request to investigate if the workshop could be integrated into a formal programme within USP that would allow a "credit" for successfully passing this workshop. We would aim to complete this transition during this project and note that USP is one of the proposed partners on the current EDF 11 fisheries concept note. In order to assist in this transition, funds for a teaching consultant have been budgeted.

Data analysis training workshops

14. Whilst the stock assessment workshops are mostly based around building an understanding of stock assessments, the data analysis training workshops will provide opportunities for more hands-on development of new skills and techniques.

15. It is critical that participants in the data analysis workshops have opportunities in their work environment to exercise these new skills regularly. Therefore, these workshops should be restricted to officers from those PICTs with an interest in further work in stock assessment, not those that are more interested in other aspects of fisheries.

16. It is anticipated that these workshops could be delivered primarily by outside statistical consultants (e.g. university faculty), but will use examples relevant to regional oceanic fisheries resources. The main software tool used by participants would be the software R. This is the most widely used statistical software in the world; it is used on a daily basis by all stock assessment and modelling scientists within OFP and is free[1].

17. We propose to pre-screen interested individuals to ensure that the workshop material can be pitched at the appropriate level. Depending on demand, we envisage workshops covering the following areas: a) introductory statistics; b) analysis of fisheries data (e.g. linear models); and c) introductory stock assessment (unlikely before year 3). Exercises would be developed for completion throughout the year.

Short-term attachments

18. These attachments were historically aligned with the development of National Tuna Fisheries Status Reports and involved a PICT fisheries officer coming to SPC to work closely with OFP scientists on some aspect of these reports. Under the current model of national work, there is scope to work on any small issue of national significance that can be completed within the time constraints of the attachment.

19. The short time frame does not provide much scope for the learning of new concepts or approaches (e.g. new software packages), but it does provide an opportunity for the PICT fisheries officer to exercise his or her skill set and get one-on-one feedback in a collaborative work environment. This promotes relationship building and development of greater confidence in communicating and discussing scientific issues. As with the stock assessment workshops, these attachments build analytical/scientific capacity regardless of whether the fisheries officer has longer-term aspirations to be involved in quantitative fisheries data analysis.

[1] www.r-project.org

Long-term attachments

20. Skills are best developed when you have an opportunity to apply them frequently. In contrast to short-term attachments, long-term attachments (e.g. six months) provide the basis to establish new skills. These longer attachments should be restricted to officers from those PICTs with an interest in further work in stock assessment, rather than those that are more interested in other aspects of fisheries. Due to the longer time frames, officers on long-term attachments can expect to work on larger projects, most likely of regional significance, and to learn and use the same software tools used in OFP. The output of the attachment would most likely be either a scientific manuscript or a paper submitted to the WCPFC Scientific Committee.

21. These Pacific Islanders are drawn from at least two sources:

- Existing fishery staff who are released[2] from their roles for six months; or
- Recent graduates from either graduate or post-graduate study getting some specific training before heading on [hopefully] to a role with their national fisheries department or a regional agency.

Support for post-graduate study

22. Specific skills in stock assessment and data analysis can be initiated during the various workshops and attachments proposed above, but a comprehensive post-graduate study programme is the best way to develop the skills at the level required to work full-time in this area[3]. Post-graduate study provides an opportunity to be immersed in learning new skills and techniques with a mixture of course work, research, and, importantly, other students to work with and learn from. It represents a huge commitment, both personally and financially, but has the potential to produce long-term benefits to the region.

23. Qualified Pacific Islanders have opportunities to apply for scholarships through many bilateral programmes from other donor countries. In our experience, good post-graduate students can easily find funding for particular fisheries projects, i.e. potential supervisors typically have funds and projects available and are actively seeking these graduate students.

24. We do not propose that SPC has a direct role in seeking funds for post-graduate study; rather we propose that SPC provide the following support:

- Recommendations for particular schools and advisors who might be a good match;
- Informal or formal advisory roles on supervising committees; and
- Travel funds for study visits to SPC.

[2] Consideration required as to whether these are paid appointments to SPC with national staff taking leave of absence, or attachments to SPC where the staff are paid from home and we only cover DSA etc.

[3] Stock assessment staff at OFP have either PhDs in stock assessment or Masters Degrees and many (5+) years of professional experience.

25. In our experience, it is invaluable to have links to people actively working in the field while pursuing post-graduate study. It provides feedback on the research area — allowing it to be kept "relevant" to current regional needs. It also provides professional links which prove useful once studies conclude. Further, providing and maintaining professional links to the region is critical, as quantitative fisheries graduates are in extremely high demand globally!

Intended outcomes

26. The primary goals of the proposed activities are two-fold: to *"increase the participation of Pacific Islanders in the quantitative assessment of oceanic fisheries resources"*, and to *"raise the level of understanding of stock assessment and data analysis among those not actively working in this area"*. Indicators that could be assessed at the end of the project could include[4]:

- number of participants in formal roles within the WCPFC Scientific Committee;
- number of participants working in analytical positions within national governments (not only restricted to fisheries);
- number of participants engaged in graduate or post-graduate studies; and
- number of participants working in stock assessment and data analysis with OFP.

27. In order to monitor and evaluate the impact of the proposed capacity building activities, we propose that specific resources be allocated to this area. The key tasks would be to a) collect detailed information on all participants; b) annually track their career paths; and c) conduct interviews with all participants to determine the value of the training and its role in their career choices. This task would also involve proposal writing and reporting associated with the project. Gender disaggregated statistics would be collected through this work.

[4] Note that many of these outcomes are only likely to be achieved over longer time frames than four years.

Risks to achieving outcomes

28. For this proposed capacity building programme to achieve its objectives, there needs to be buy-in, not only from the participants, but also from their home fisheries departments. The table below outlines the greatest risks we see to this project and some potential solutions.

Risk area	Issue	Risk mitigation
No opportunity to participate	Fisheries departments are typically small, with most staff having multiple responsibilities. The appropriate staff may not get released for training activities.	Seek buy-in for the project concept through Heads of Fisheries and CRGA.
No opportunity to exercise skills	As above, the opportunities for scientific analysis and use of the skills learned could be limited.	Provide online refresher activities that participants can complete from home to keep skills honed.
Change of career path	Young people often change jobs and careers.	Having capacity building programmes to participate in should provide an incentive to stay in fisheries.
Trained staff move away (from home or fisheries)	Qualified fisheries stock assessment scientists are in high demand globally and their quantitative skills will make them attractive to other government departments or the private sector.	As the value of fisheries resources is increased, opportunities for more fully scientific roles should increase with the hope that funding for fisheries positions can be competitive.

29. Through our proposed monitoring and evaluation activities we will stay in close contact with all training participants and WCPFC Scientific Committee delegates (if not involved in training) throughout the project. This will provide the basis for evaluating how various factors contribute to the success of the project.

Budget

30. A draft four-year budget for the proposed activities is provided as Annex II and a summary of the total budget is provided below. This is indicative only as we note that SPC is reviewing how costs are recovered from projects. The total budget that covers all staff time, participant costs, consultancies and equipment is 1.9 million CFP units over four years.

Item	CFP units
SPC staff	520,000
Stock assessment workshops*	210,000
Data analysis workshops	296,000
Short-term attachments	80,000
Long-term attachments	480,000
Study visits	40,000
Equipment	40,000
Subtotal	**1,666,000**
SPC project management fee @ 15%	249,900
TOTAL	**1,915,900**
Annual average	**478,975**

* Note that 60,000 CFP units per year is available from the OFMP II GEF project.

31. We do not currently have any particular donor source in mind for this proposal, but there is scope to link it to currently emerging issues such as the application of the precautionary approach to fisheries (e.g. reference points). While it is desirable to have such a project funded from a single source, it is likely that multiple sources would be needed — this would increase the cost associated with reporting from that listed above.

Conclusions

32. The Heads of Fisheries meeting is invited to:

- reiterate the importance and high priority assigned to capacity building and training in the area of oceanic fisheries stock assessment;
- recommend that SPC seek support to fund the proposed activities; and
- provide guidance to SPC on prioritising activities if full funding cannot be obtained.

Annex I — Summary of capacity building modalities

Mode	Objective	Annual volume	Resource requirement
Stock assessment training workshops	To improve understanding of stock assessment concepts and interpretation of model results. To enable PICT fisheries officers to ask the right scientific questions and integrate regional stock assessment results into national fishery management processes.	Two one-week workshops of 10 participants each.	• Travel and daily subsistence allowance (DSA) for participants • Two staff to deliver the material • Consultancy to update material to for current teaching methods • Consultancy to support web development for online exercises • Administrative support for seeking donor funds, arranging travel, and subsequent donor reporting
Data analysis training workshops	To provide a basic level of statistical knowledge and practice using commonly used statistical packages to enable those PICT fisheries officers with a genuine interest to undertake statistical analyses of fisheries data.	One or two short (2–3 day) workshops each year for 6–8 participants.	• Travel and DSA for participants • Consultancy for the workshop delivery • One staff member to work with consultant to help develop workshop material (e.g. examples) that is specifically relevant to participants

Annex I *(cont.)*

Mode	Objective	Annual volume	Resource requirement
Short-term attachments	To gain an understanding of the thought and technical steps taken to analyse a particular issue. The focus is on the research approach and writing. It would rely on the analytical tools available to the attaché — too short to develop skills with new tools.	Three two-week attachments.	• Travel and DSA for participants • One staff member to work with participants
Long-term attachments	To learn new analytical or stock assessment techniques through working on a large-scale (regional) analysis.	Two six-month attachments.	• Costs for participants — travel, and salary • One staff member to work with participants
Advisory support for graduate students	Graduate study offers the best opportunity to learn and develop new analytical and assessment skills; in particular it offers a sustained period to apply these techniques. The objective of OFP's involvement would be to provide advice and introductions to help identify the best programmes for graduate study and then have a formal or informal role in advising the student throughout the programme.	Two students per year, but could be combined with short-term or long-term attachments above.	• Prospective students would be responsible for applying for funding and SPC would help where appropriate • Funding would be available for study visits to SPC • Advisory support could come from various OFP staff depending on the research area

ANNEX II: PROPOSED FOUR-YEAR BUDGET

Item	Cost in CFP units				
	Y1	Y2	Y3	Y4	TOTAL
SPC staff					
Project oversight	25,000	25,000	25,000	25,000	100,000
Training coordinator	90,000	90,000	90,000	90,000	360,000
Monitoring & evaluation	15,000	15,000	15,000	15,000	60,000
Subtotal	*130,000*	*130,000*	*130,000*	*130,000*	*520,000*
Stock assessment workshops					
Participant travel costs	30,000	30,000	30,000	30,000	120,000
Workshop materials	5,000	5,000	5,000	5,000	20,000
Teaching and Web consultancies	25,000	15,000	15,000	15,000	70,000
Subtotal	*60,000*	*50,000*	*50,000*	*50,000*	*210,000*
Data analysis workshops					
Participant costs	60,000	60,000	60,000	60,000	240,000
Statistics consultancy	20,000	12,000	12,000	12,000	56,000
Subtotal	*80,000*	*72,000*	*72,000*	*72,000*	*296,000*
Short-term attachments					
Participant costs	20,000	20,000	20,000	20,000	80,000
Subtotal	*20,000*	*20,000*	*20,000*	*20,000*	*80,000*
Long-term attachments					
Participant costs	120,000	120,000	120,000	120,000	480,000
Subtotal	*120,000*	*120,000*	*120,000*	*120,000*	*480,000*
Graduate student support					
Study visits	10,000	10,000	10,000	10,000	40,000
Subtotal	*10,000*	*10,000*	*10,000*	*10,000*	*40,000*
Equipment (computing and printing)					
Equipment	10,000	10,000	10,000	10,000	40,000
Subtotal	*10,000*	*10,000*	*10,000*	*10,000*	*40,000*
Subtotal – operation costs	***430,000***	***412,000***	***412,000***	***412,000***	***1,666,000***
SPC project management fee @15%	64,500	61,800	61,800	61,800	249,900
Total	**494,500**	**473,800**	**473,800**	**473,800**	**1,915,900**