



FINAL REPORT - Revised

Measuring Socio-economic impacts of full closure of fish spawning aggregation sites
in and around Bunaken National Park, North Sulawesi, Indonesia in the Sulu
Sulawesi Marine Ecoregion.

By World Wildlife Fund, Inc.

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Table of Contents

Glossary	2
Final Report	3 – 8
List of Appendices	9

Glossary

CCIF	Conservation Community Investment Forum
CRMP	Coastal Resources Management Project
GCRMN/NOAA/WCPA/AIMS	Global Coral Reef Monitoring Network/National Oceanic and Atmospheric Administration/World Commission on Protected Areas/Australian Institute of Marine Science
GEF-UNEP	Global Environment Facility – United National Environment Program
NGO	Non-governmental Organization
NRM	Natural Resources Management
SPAGS	fish spawning aggregation sites
SSME	Sulu Sulawesi Seas Marine Ecoregion
USAID	United States Agency for International Development
WAP	WWF Action Plan

Project Title

Measuring Socio-economic impacts of full closure of fish spawning aggregation sites in and around Bunaken National Park, North Sulawesi, Indonesia in the Sulu Sulawesi Marine Ecoregion.

Objectives

The objectives of this project were three-fold:

- (1) Enhancing local capacity through a training workshop on the socio-economic methodology described in the GCRMN/NOAA/WCPA/AIMS Socioeconomic Manual for Coral Reef Management.
- (2) Implementation of on-site socio-economic assessments using the aforementioned methodologies in and around Bunaken National Park, and
- 3) Designing a long-term regular monitoring program to assess actual impacts of full closure once effective.

The project helped deliver the target set in WWF's Action Plan (WAP) for the Sulu Sulawesi Marine Ecoregion (SSME). In the WAP for the SSME, Indonesia should contribute to all targets, especially for the Priority Conservation Areas of Derawan Archipelago and Bunaken, for the green turtle as a priority marine species and for the live reef fish, tuna and shrimp industries. Project targets are described below. This project in Bunaken contributed particularly to Targets 1 and 2.

WAP Target 1: Prevent further degradation of existing coastal habitats (mangroves, sea grasses and coral reefs).

WAP Target 2: Prevent decline of 50% of biologically viable fish populations.

WAP Target 3: Species of ecoregional importance (defined as important for maintaining ecological processes within the ecoregion), specifically turtles, cetaceans and elasmobranchs, adequately protected in the first 10 years to stop population declines and in the second 10 years to see gradual improvement in population levels.

WAP Target 4: Ecoregional conservation implementation requirements identified and supported through the design of an ecoregional business plan.

Activities and benchmarks

Activities	Benchmarks	Quarter			
		I	II	III	IV
1. Prepare/ finalize contracts and sub-agreements, including project progress reporting requirements and M&E, with partners	4 sub-agreements: WWF-US and WWF-Indonesia, WWF-Indonesia and local Partners	xxxxx			
2. Prepare/ finalize design of training workshop in consultation with socio-economic scientist and partners and with experts from GRCMN/NOAA/WCPA/AIMS on the socio-economic monitoring methodology	One (1) training workshop design	xxxx			
3. Conduct the training workshop to include action plans for on-site assessments using the GRCMN/NOAA/WCPA/AIMS methodology	Locally 10 participants attend the local training workshop. Action plans for on-site assessments in and around Bunaken	xxxx			
4. Prepare the report on the training workshop	One (1) training workshop report	xxxx			
5. Prepare plans for on-site assessments and arrange logistics and finances	Work schedules, contracts for partners, logistical and human resources required for the on-site assessments are available		xxxx		
6. Undertake on-site assessments	Actual on-site assessments following the GRCMN/NOAA/WPCA/AIMS methodology Necessary data collected/ recorded		xxxx		
7. Perform analysis and interpretation on the data collected	Analysis and interpretation of data		xxxx		
8. Prepare report on on-site assessment	One (1) on-site assessment report			xxxx	
9. Consolidate data, perform analysis for management strategy recommendations with partners in meeting and design long-term monitoring program	Detailed workplan for long-term socio-economic monitoring program			xxxx	
	Strategy for education and conservation towards achieving SPAGS full closure			xxxx	

10. Preparation of evaluation and final report on monitoring method	One (1) report on the assessment. The report will include assessment of the use of the GCRMN/NOAA/WCPA/AIMS methodology				xxxx
11. Send copy of reports plus recommendations to management authorities and other WWF offices in SSME	Copies of the reports sent to management authorities, local board/government units, donor				xxxx
12. Preparation and submission of Project technical and financial report	Project technical and financial reports				xxxx

All activities have been conducted as planned.

1. *Benchmark: 4 sub-agreements between WWF-US and WWF-Indonesia and between WWF Indonesia and local partners.* WWF organized two sub-agreements for the implementation of the project: 1) with the Bunaken Collaborative Management Advisory Board and 2) with the socio-economic expert Sam Ratulanggi from the North Sulawesi University for the training.
2. *Benchmark: One training workshop design.* WWF received and integrated input from 3 socio-economic experts into the design of the workshop and training: 1) Nancy Dahl-Tacconi; 2) the University lecturer, and 3) Lida Pet-Soede from WWF Indonesia.
3. *Benchmark: Locally 10 participants attend the local training workshop and action plans for on-site assessments in and around Bunaken created.* The workshop and training were implemented with 15 participants: 5 authorities from Bunaken National Park and 10 students from the Manado University (3 women joined the training). Assessment action plans were designed and implemented.
4. *Benchmark: One training workshop report:* The training report is available.
5. *Benchmarks 5 - 7: Work schedules, contracts for partners, logistical and human resources required for the on-site assessments are available. Analysis and interpretation of data. Actual on-site assessments following the GCRMN/NOAA/WCPA/AIMS methodology. Necessary data collected/recorded.* The Site Assessment was prepared and conducted, and data were analyzed. A second Site Assessment on the benefits of the park was conducted using the methodology.
6. *Benchmark 8: One on-site assessment report:* The Site Assessments were reported on in the local Indonesian language and translated into English.

[Site Reports attached in Appendix 1 and 2]

7. *Benchmark 9: Detailed workplan for long-term socio-economic monitoring program. Strategy for education and conservation towards achieving SPAGS full closure.* WWF is currently assessing impacts of the assessment results for management recommendations. The park authorities and more importantly for us, the collaborative management board, had some trouble during this project and decided that they did not want to focus on setting up regular monitoring because they realized, following our WWF memo [Appendix 3], that they did not have a clear enough management plan. While we are now helping them to finalize a meaningful management plan, we are planning to recommend standard socio-economic mentoring methods and other monitoring methods (coral, SPAGS and resource use). The management plan must come first, as they simply won't talk about monitoring now.

[Memo providing recommendations to the Park for management and monitoring attached in Appendix 3.]

[Power Point providing Cost Model for Effective Park Management attached in Appendix 4.]

[3 documents that are components of the standardized complete set of monitoring protocols: Appendix 6: Survey Form for fisheries monitoring at Bunaken, Appendix 7: Monitoring Protocol for Bunaken, Appendix 8: SPAG data monitoring form]

8. *Benchmark 10: One report on the assessment. The report will include assessment of the use of the GCRMN/NOAA/WCPA/AIMS methodology.* The management recommendations will be combined with recommendations on the application of the methodology to standard regular monitoring for Bunaken National Park's management effectiveness.

[Assessment of the use of the methodology attached in Appendix 5]

Progress towards the project objectives

- (1) Enhancing local capacity through a training workshop on the socio-economic methodology described in the GCRMN/NOAA/WCPA/AIMS Socioeconomic Manual for Coral Reef Management.
- (2) Implementation of on-site socio-economic assessments using the aforementioned methodologies in and around Bunaken National Park, and
- 3) Designing a long-term regular monitoring program to assess actual impacts of full closure once effective

In the first phase of the project, the team was established and a realistic workplan to achieve objectives was developed. Initial introductions were made, especially locally, and support by local government for participation was obtained. From desk study research it became clear that very limited information is available in the public environment, so it was already clear that this project would significantly contribute to the enhanced understanding of issues.

During the second phase of the project, partners were trained and involved in implementing a socio-economic assessment of direct and indirect benefits of the Bunaken National Park for local stakeholders. Skills of these team members are now well-developed for the originally planned assessment of socio-economics surrounding closure of fish spawning aggregation sites (SPAGS).

Achievements and Impact during reporting period

Objective 1: *Enhancing local capacity through a training workshop on the socio-economic methodology described in the GCRMN/NOAA/WCPA/AIMS Socioeconomic Manual for Coral Reef Management.*

For Bunaken National Park, local capacity to implement relevant and sound monitoring of socio-economic parameters has been increased through the training provided and the subsequent application of newly learned approaches and monitoring skills in the assessment of socio-economic impacts of full closure of fish spawning aggregation sites for fisher communities.

Objective 2: *Implementation of on-site socio-economic assessments using the aforementioned methodologies in and around Bunaken National Park.,*

The assessment pointed out that not very many fishers are directly gaining a benefit of fishing on the locations of the fish spawning aggregations currently, so that if these sites were to be fully closed for fishing, the impact on local communities' direct benefits would be very minimal. On the other hand though, full protection of these spawning aggregation sites may safeguard grouper populations inside the park from full collapse. Fishing pressure on these fish is generally very high and allowing reproduction processes to occur undisturbed is one of the most critical among many strategies that need to be used to prevent full collapse. The communities of the village Alung Banua that have the right currently to fish at two of these sites have

agreed to protect the two spawning sites as they agree and understand that the sites most likely underpin a larger grouper population throughout the park.

Objective 3: *Designing a long-term regular monitoring program to assess actual impacts of full closure once effective.*

Design of long-term and regular monitoring of various parameters, biological and socio-economic in the park is currently a priority in the discussions between park authorities, the collaborative management advisory board and a combination of NGOs¹ working to establish a cost estimate for effective management of Bunaken National Park.

Constraints and measures taken

The project started later than expected due to administrative reasons. WWF Indonesia policy is to no longer pre-finance projects and so field activities were postponed approximately 2 months. However, the period was used well to initiate desk research and conduct detailed planning for the team. Furthermore, when the project could finally start, the holiday season of November and December had begun, which reduced effective collaboration with partners. The work started in earnest in January 2005.

During the second phase of the project, the main partner, the Bunaken Collaborative Management Advisory Board came to a stand-still. Previously, this Board had been supported both financially as well as technically by the NRM program, funded for approximately 6 years by USAID. In November 2004 this NRM project ended and another USAID program, the Coastal Resource Management Program (CRMP) agreed to collaborate another 8 months with the Board to achieve a number of last deliverables that included increasing the entrance fee for Bunaken and the finalization and formalization of the Bunaken zonation plan.

Discussions had been held with WWF to become involved in this but it did not materialize. While WWF had agreed with the Board to start conducting the work for socio-economic monitoring, the Board had to turn its focus for 8 months on achieving those deliverables and instead asked WWF to help with another socio-economic study, into the direct and in-direct benefits of the Bunaken National park for local stakeholders. WWF decided to respond to this request, with the result that this socio-economic assessment for SPAGS had to be postponed. However, the methods for socio-economic assessments used in the MPA benefit study were the same and members involved in that benefit study have now high capacity to implement these assessments again. Also, the Board and the park authorities already agreed on these methods as suitable for long-term monitoring of socio-economic output of effective management. Thus, one of the outcomes has already been achieved, although in different order than originally planned. The actual SPAGS socio-economic assessment was then planned for November-December 2005 and results are now available.

One of the outcomes following the biological and socio-economic assessments is that the village communities of Alung Banua have formally agreed to stop fishing at two fish spawning aggregation sites, through signing of a village agreement.

Currently, the Collaborative Management Advisory Board is starting to get back on track. WWF has been asked to step in and help guide the Board back to full activity. However, rather than doing this, WWF is working with the Conservation Community Investment Forum (CCIF) to obtain a medium size grant from GEF-UNEP that will allow streamlining and finalizing of the park management plan and its organization. It will create a conservation fund that will become seeded for long-term effective management. The management plan will include socio-economic monitoring methods trialed through this project in its standard monitoring component.

¹ WWF and the Conservation Community Investment Forum - CCIF

Evaluation of the socio-economic methods used

A comparative survey method was used where different types of fisheries were compared on their economic input and output, and also for different sub-districts. Questionnaires were developed and information was gathered via interviews following the questionnaires. The number of respondents was 111 people. One interview took about 30 minutes, so 10 respondents per day could be interviewed. The interview team was mostly composed of 2 people, one asking questions, one writing down answers. For 1 village 3 teams would be active. A proportionate sample would be selected based on data by the village secretary on total numbers of fishers in that village.

The most difficult questions to answer were those about the yield per trip, expenses per trip and the perception about the national park. Also, it was generally difficult to get people to sit down and respond while they were getting ready to go to sea.

The method used was reviewed as very useful as it is not very expensive, it does not take a lot of time and it did not require very many surveyors.

Budget

Implementation of the field assessment was postponed so expenditures were behind schedule during the first phase, however, by the end of the project all funds have been spent as planned. WWF's matching contribution was used to conduct another socio-economic assessment, that of benefits to local stakeholders of the Bunaken National Park. The same methods were applied and the same partners participated in this assessment.

Lessons learned

The big lesson learned during the project was that WWF needs to be more flexible in working with the main partner, the Bunaken National Park Management Advisory Board, in order to facilitate their efforts to determine their core tasks and priorities for the long-term. Pushing for implementation of this project in time to meet the project schedule did not appear appropriate under the circumstances where the Advisory Board had to finalize previous deliverables that had not been achieved in full and where the executive director of the secretariat of the Board had resigned unexpectedly.

Appendix 1: Socio-Economic Valuation of Demersal Fisheries in Bunaken National Park – A Site Study Report [attached in Word]

Appendix 2: Local and Semi-Local Economic Impacts of Dive Tourism in Bunaken National Park, North Sulawesi, Indonesia [attached in Word]

Appendix 3: Memo to Bunaken Management Board on management recommendations [Attached in Word]

Appendix 4: Cost Model for Effective Park Management – Recommendations. [Attached in PowerPoint]

Appendix 5: Report on Evaluation of the socio-economic methods used [Attached in Word]

Appendix 6: Survey Form for fisheries monitoring at Bunaken [Attached in Word]

Appendix 7: Monitoring Protocol for Bunaken [Attached in PDF file]

Appendix 8: SPAG data monitoring form [Attached in PDF file]

Appendix 3: Memo to Bunaken Management Board on management recommendations

Memo

To Whom it may Concern

From Lida Pet-Soede

Date 1-1-06

Subject Concerns for effectiveness of BNP management

Copies to

WWF Memo on Bunaken National Park Management

In the late 80s, WWF assessed possible priority areas for marine conservation throughout Indonesia (Rili Djohani and Gayatri Lilley were involved) and recommended Bunaken to become declared and gazetted as a National Park which happened in 1991. Then NRM I started to support process of zonation and design of the management plan.

WWF at the time of NRM I, NRM II, and NRM III always was involved by communicating closely with the various NRM teams how best to support their work and fill gaps. Throughout the US-AID funded NRM-programs, WWF supported public awareness in the early stages on the needs and benefits of Bunaken as a National Park and later with ReefCheck (beach clean-ups) and Team Raja Laut who monitored fish catches and specifically tried to locate another Coelacanth. Furthermore, WWF supported enforcement against destructive fishing practices through substantive grants to the Dewan and patrol team over the past 4 years. Lastly, WWF has worked together with some members of the North Sulawesi Watersports Association on identification, monitoring and protection of fish spawning aggregation sites.

When the series of NRM programs ended, the main aim of WWF was to finalize empowering the collaborative management board with tools for effective long-term management of Bunaken National Park. These would include legalization, improved zonation including ecological criteria for fisheries benefits and strategies for sustainable finance of park management costs. To this date, WWF has had discussions with local groups to discuss the above approach and how WWF could assist best.

On November 29, 2005, WWF and CCIF convened a Conservation Finance workshop. This aimed at presenting initial results of the cost analysis for management of Bunaken NP and at discussing steps forward. However, as part of the 3 months process, feeding input into the cost model WWF has taken a close look at some of the processes that have taken place over the past 2 years and must summarize a couple of serious concerns. Please note that the points below are a summary of many smaller concerns combined.

1. The organizational structure for management is in-effective, unclear and appears to lose support from constituencies.

- Dewan has almost foregone the tasks and roles stated so clearly at the beginning of its establishment: coordination, consultation and support for fund raising.
- Expectations towards the Dewan are unrealistic, too varied and not in-line with the original tasks and roles. This creates a lot of unfair and unnecessary pressure on Dewan members.
- Certain PEMDA members of Dewan, have shown a tendency to put everything PEMDA was already responsible for now on Dewans plate, which is legally incorrect and results in inaction on PEMDAs behalf.
- While park authorities are part of the Dewan, it appears that people in the area expect Dewan to be the real park management authority instead of park authority, which does not match with Dewan's formal tasks and roles.
- Planning of park budget and activities and planning of PEMDA budget and activities for the park are conducted in isolation of that by Dewan. Thus many things run parallel, or not at all
- Dewan focuses on some narrow definition of management including merely park entrance fee and some community based enforcement, which is only a small part of what management of the park would involve.

It is recommended to return to the original tasks and role of the Dewan, facilitate coordination of agencies and individuals who already have certain authorities and responsibilities to align with Bunaken targets and objectives. Also, it is recommended to conduct a large communication campaign to clarify this again to the public and Dewan constituencies.

WWF can facilitate organizational management training and Lestari can facilitate in the communications campaign.

2. Management plan does not exist in comprehensive clear structure and format

- No real management plan for the entire park has been developed that is comprehensive and that clearly identifies targets and strategies to meet those targets in 5, 10, and 25 years.
- The zonation plan is still not formally endorsed and interest to support it has eroded over the past year.
- The BNP management currently involves a series of unrelated and badly monitored activities, complaints about ineffectiveness hamper continuation and lack of clarity on who is responsible for what hampers adaptation for improvements.

It is recommended to use an example management plan of another National Park such as Komodo and Wakatobi and consider the strategy components from those areas to design a meaningful management plan for BNP.

WWF can facilitate drafting of a comprehensive management plan.

3. Costs for effective management cannot be calculated due to point 1 and 2

- As there is no formal management plan, inputs given so far by various individuals for the collection of activities and their likely costs, are close to useless as they remain just that, a collection of activities, and will not likely result in effective management in the long run.
- As the organizational structure of the Dewan and park authority is not clear or optimized, costs cannot be calculated for the management of the park.

It is recommended to use the cost examples for management plans of other national parks such as Komodo and Wakatobi, and make relevant adjustments for BNP, instead of start from scratch and merely mention activities for costing purposes.

CCIF can facilitate this process of comparing BNP costs with Komodo and Wakatobi as long as the BNP management plan will involve similar strategy components.

4. Finance strategy does not exist

- A finance strategy cannot be drafted now as there is no clear organizational structure and no management plan for the park.
- Park entrance fees are not enough to even support dewan activities.
- Planning by PEMDA is done in isolation of the planning by park authorities and Dewan, and so funding priorities for BNP are not met whereas there may be opportunities from PEMDA or funding from PEMDA is allocated to activities that are of lesser priority.
- Many people think that money will come from outside sources, whereas cash flow problems reduce the effectiveness of money already allocated for BNP management.

It is recommended to fix the organizational structure, make a comprehensive management plan that is costed out entirely and then create a finance strategy, whereby existing finance options from government is aligned to BNP targets and strategies first before external new funding will be sought.

WWF can facilitate drafting of finance strategy if closely involved in the PDF-B implementation.

Conclusion

WWF is willing to help BNP management if WWF will be closely involved in the drafting and eventual implementation of the PDF-B project for the next 2 years. The PDF-B project is the only opportunity to address the 4 issues above. If not, WWF will need to reconsider its involvement in supporting enhanced BNP management effectiveness and focus its attention to other sites in Indonesia.

Appendix 5: Report Evaluation of the socio-economic methods used

Report by the Team Leader and Socio-Economic Expert

A comparative survey method was used where different types of fisheries were compared on their economic input and output also for different sub-districts. Questionnaires were developed and information was gathered via interviews following the questionnaires. Number of respondents are 111 people, one interview took about 30 minutes and so 10 respondents per day could be interviewed. The interview team was mostly composed of 2 people, one asking questions, one writing down answers. For 1 village 3 teams would be active. A proportionate sample would be selected based on data by the village secretary on total numbers of fishers in that village.

The most difficult questions to answer were those about the yield per trip, expenses per trip and the perception about the national park. Also, it was generally difficult to get people to sit down and respond while they were getting ready to go to sea.

The method used was reviewed as very useful as it is not very expensive, it does not take a lot of time and it did not require very many surveyors.

Appendix 6: Survey Form for fisheries monitoring at Bunaken

TEAM RAJA LAUT

Form Survey Fisheries at Bunaken

Day: _____ Date: _____ Weather: _____ Location/village/landingsite: ...

SPECIAL DATA

gear/boattype number of crew:	owner:	Fishing location (how many hrs from home?) : _____ at FAD? Yes/No
Species of fish caught (indicate kg or pcs	_____ pieces/kg _____ pieces/kg _____ pieces/kg	_____ pieces/kg _____ pieces/kg _____ pieces/kg
gear/boattype number of crew:	owner:	Fishing location (how many hrs from home?) : _____ at FAD? Yes/No
Species of fish caught (indicate kg or pcs	_____ pieces/kg _____ pieces/kg _____ pieces/kg	_____ pieces/kg _____ pieces/kg _____ pieces/kg
gear/boattype number of crew:	owner:	Fishing location (how many hrs from home?) : _____ at FAD? Yes/No
Species of fish caught (indicate kg or pcs	_____ pieces/kg _____ pieces/kg _____ pieces/kg	_____ pieces/kg _____ pieces/kg _____ pieces/kg
gear/boattype number of crew:	owner:	Fishing location (how many hrs from home?) : _____ at FAD? Yes/No
Species of fish caught (indicate kg or pcs	_____ pieces/kg _____ pieces/kg _____ pieces/kg	_____ pieces/kg _____ pieces/kg _____ pieces/kg

GENERAL DATA

- Turtle nesting** Location _____ remarks _____
- Turtle capture/seacow** Location _____ remarks _____
- foreign vessel/locals catch sharks** Location _____ remarks _____
- Dive boat drop anchor** Location _____ remarks _____
- Blastfishing/cyanide** Location _____ remarks _____
- Other** Location _____