The State of

Ras Mohammed National Park

An Evaluation of Management Effectiveness

NATIONAL PARKS OF EGYPT

COOPERAZIONE ITALIANA

UNDP

IUCN The World Conservation Union

Document Information

This report and the related workshops were undertaken for the Nature Conservation Sector Capacity Building Project under the Egyptian-Italian Environmental Cooperation Programme. The programme is funded by Italian Cooperation and Debt for Development Swap Initiative.

Citation: Paleczny, Dan. Khaled Allam Harhash, Mohamad Talaat (2007). *The State of Ras Mohammed National Park, An Evaluation of Management Effectiveness*. Egyptian-Italian Environmental Cooperation Programme, Nature Conservation Sector Capacity Building Project, Cairo.

This report was prepared by Khaled Allam Harhash and Dan Paleczny

July 11, 2007

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Dan Paleczny, Khaled Allam Harhash, Mohamad Talaat

Table of Contents

Executive Summary

The National Parks of Egypt contain the nation's most treasured natural assets. Ras Mohammed National Park (RMNP) was established in 1983 and today is one of the most famous diving sites in the world. The coral reef ecosystems are a key element of the region's economy. Ras Mohammed National Park is an important ecological, economic, social and cultural asset for Egypt and beyond.

This report provides an assessment of the status of the 8 key values at RMNP (see table below). Through discussions with rangers, and input from stakeholders and visitors, this report examines the main threats affecting the key values and the underlying causes of the threats. Actions are identified that should address the existing threats. Where possible, indicators have been described for monitoring and measuring changes in the condition of the park's values.

The table below summarizes the current situation in RMNP. Management concern and actions should be primarily focused on addressing the most important threats, improving the conditions of the ecosystems and other values that are in a poor state, and on maintaining the values that are in a good state.

The State of Ras Mohammed National Park

Value	Threats	Status
1. Biodiversity/Natural Resources/Cultural Resources		
Coral reefs	**H**	**S**
Mangroves	**M**	**S**
Sea grasses	**M**	**S**
Birds	**M**	**I**
Spawning ground	**M**	**I**
2. Ecotourism/Recreational Resources		
Beaches and camp sites	**M**	**W**
Land features	**L**	**S**
3. Community Well-being (socio-economic)		
Sharm El-Sheikh area	**M**	**I**

Threat Today

Status Today vs 5 Years Ago

Very high	**VH**
High	**H**
Medium	**M**
Low	**L**

Improved	**I**
Stable	**S**
Worsened	**W**

This assessment found the following:

- The coral reef and spawning ground are high value resources with a high level of threats and should be the top priority for conservation. As the park is developed for more visitors to improve local economic benefits, these sensitive natural resources must be maintained, and over-development or over-use from tourism and fishing must be avoided. Over-exploitation and the resulting degradation of these natural assets will have a direct negative effect on the area's economy.

- While Sharm El-Sheikh city and the region enjoy substantial economic benefits derived from the coral reef ecosystems, the management of the park is substantially under-funded. The past investments of the EU support program and current work of the park are undermined by lack of adequate funding for patrolling, monitoring ecosystems, research, and public and stakeholder awareness. Declining infrastructure (visitor centre – camp sites – WCs – exhibits) poses a huge threat and can be expected to result in a loss of customers and revenues. However, there is also a huge potential to effectively solve this threat by employing active management techniques, such as a concession for the camping area, and a "Friends of RMNP" NGO. These tools for sustainable financing should complement sufficient government funding (an adequate annual budget), which is estimated to be 2-3 million Egyptian pounds/year, for RMNP alone.

- There is a very large potential to increase revenues through tickets sales to the hundreds of thousands of visitors entering the park by sea on boats. This is a great business case for revenues generation and retention of funds at RMNP.

- The condition of the RMNP beaches has worsened over the last years due to lack of well defined maintenance program for infrastructures and lack of funds.

- Visitors expressed a low degree of awareness about RMNP and the benefits the protected area brings to the communities. As such, this situation is a threat to effective management and also a missed opportunity for resolving issues. Improvements in this area are recommended.

Arising from the examination of each of the 8 key values, presented in part III, 101 actions have been listed. A number of strategic considerations are described in part V of this report, several of which may apply to other protected areas in Egypt:

- Ensure that a management plan with clear objectives is established with associated actions. An annual report on the implementation of the management plan should be prepared.

- Identify specific objectives and actions for the range of representative habitats (the main key values mentioned in this report), such as coral reefs, mangroves channel, sea grasses, birds, spawning ground, etc.

- Prepare a communication plan to focus on the behavioral changes related to conserving RMNP ecosystems. The plan needs to relate behavioral problems, audiences (stakeholders, visitors, governmental departments, etc.), key messages and communication methods.

- Involve the community meaningfully in the care and development of RMNP. A "Friends of RMNP" NGO could be an effective mechanism.

- Achieve management of the RMNP primarily through the community's commitment to the protection of the coral reef and its understanding and acceptance of the provisions of zoning, regulations and management practices.

- Employ people of high caliber, assisting them to reach their full potential, providing a rewarding and caring work environment and encouraging them to pursue relevant training and development opportunities.

- Substantially more work is needed to develop indicators and monitoring systems, and then implement them. A start has been made with the existing programs now in use, and also with some of the indicators identified in this report. A full review and rationalization of indicators is needed so that a suite of indicators can be established and monitoring efforts further fine tuned. Staff must be fully involved in the design of the indicators and monitoring systems so that they are practical and affordable for the circumstances. More elaborate systems designed by others have not been sustainable with current levels of staffing and budgets.

- Establish a data management system to ensure that data is properly stored and safeguarded (backed up).

- Real collaborative management is needed to engage stakeholders, government departments, NGOs and local communities. Regular meetings with each stakeholder are necessary.

This evaluation of management effectiveness focuses mainly on the threats, outputs and outcomes of management. However, as demonstrated above, there are many other essential facets related to planning, inputs and processes, which are also considered in this report.

Management Effectiveness in Egypt National Parks

In 2006, the Nature Conservation Sector Capacity Building Project, as part of the Egyptian-Italian Environmental Cooperation Programme, undertook a national level management effectiveness evaluation of Egypt National Parks (Fouda et. al., 2006, appendix 5). A recommendation of this national rapid assessment was to implement a pilot project to establish and test an approach for carrying out more detailed site level management effectiveness evaluations. The site level evaluation objectives (see part I) and process (appendix 6) were developed and the approach was tested at four protected areas in Egypt: Wadi El-Rayan, Qaroun, Ras Mohammed and Saint Katherine.

This work is in support of Egypt's commitment toward implementation of the Convention on Biological Diversity and the Programme of Work on Protected Areas (goal 4.2) to conduct management effectiveness evaluations in 30% of the nation's protected areas by 2010.

An assessment of management effectiveness is an important tool for politicians, senior managers and site level staff. With this, the financial needs can be properly rationalized from a strategic and operational perspective. The focus of budgets and work plans can be directed to the most important priorities. Openness and transparency can also garner additional support for management programmes as this demonstrates the care that is being invested in improving the effectiveness of protection and local economic development initiatives.

الملخص التنفيذي:

تحتوي شبكة المحميات الطبيعية علي أهم الثروات الطبيعية والنظم البيئية بمصر. حيث تـم إنـشاء أول محمية طبيعية بمصر وهي محمية رأس محمد عام ١٩٨٣، والتي تعتبر الأن من أشهر مواقع الغوص في العالم. النظم البيئية للشعاب المرجانية الأن هي حجر الزاوية في النمو الاقتصادي لدول منطقـة الـشرق الأوسط. تحتوي محمية رأس محمد علي أهم الثروات البيئية، والاقتصادية، والاجتماعية، والثقافية لـيس فقط في مصر ولكن علي مستوي دول المنطقة.

تتضمن هذه الدراسة تقييم حالة أهم ثمانية نظم بيئية رئيسية بمحمية رأس محمد (انظر الجدول التـالي). وقد تمت عملية التقييم من خلال الحلقات النقاشية التي تمت بورشة عمل تم عقـدها بمـشاركة البـاحثين بالمحمية ونتائج الاستبيانات التي وزعت علي زوار المحمية والمجتمعـات الـسكانية خـارج المحميـة والجهات ذات الصلة. كما تضمنت الدراسة عملية تحديد المهددات التي تتعرض لهـا المكونـات البيئيـة الرئيسية بالمحمية ومسببات تلك المهددات وكذلك تحديد الإجراءات الضرورية لمواجهة تلـك المهـددات والمؤشرات التي تساعد علي رصد حالة تلك المكونات والتغييرات التي تتم بها.

الجدول التالي يلخص الوضع الحالي لإدارة الموارد الطبيعية بمحمية رأس محمد، حيث تم التركيز علـي المهددات التي تؤثر بصورة عالية وخطيرة علي موارد المحمية، وكذلك كيفية حماية وتحسين حالة النظم البيئية الممثلة في المحمية وتحديد الموارد الطبيعية التي تعرضت للتدهور والحفاظ علي الموارد الطبيعية التي لم تتعرض للتدهور كما هي ومحاولة وضع الإجراءات التي تعمل علي تحسين حالة تلك الموارد.

الوضع الحالي للمكونات البيئية الرئيسية بمحمية رأس محمد

المكونات البيئية الرئيسية	قيمة المهددات	الوضع الحالي
أولاً: التنوع البيولوجي / الموارد الطبيعية / الموارد الثقافية		
الشعاب المرجانية	عالية	ثابتة
نبات الشورى (أشجار المانجروف)	متوسطة	ثابتة
الحشائش البحرية	متوسطة	ثابتة
الطيور	متوسطة	تحسنت
منطقة تكاثر الأسماك (فرشة الشعور)	متوسطة	تحسنت
ثانيا: الموارد السياحية والترفيهية		
شواطئ ومنطقة التخييم بالمحمية	متوسطة	تدهورت
التكوينات الأرضية المتميزة	قليلة	ثابتة
ثالثا: الموارد الاجتماعية والاقتصادية		
نطاق مدينة شرم الشيخ	متوسطة	تحسنت

قيمة المهددات	حالة المكون الرئيسي بالمحمية مقارنة بالوضع منذ خمس سنوات ماضية
عالية جدا	تحسنت
عالية	ثابتة
متوسطة	تدهورت
قليلة	

من خلال عمليات تقييم فاعلية الإدارة التي تمت بالمحمية فقد تبين الأتي:

- الشعاب المرجانية ومنطقة تكاثر الأسماك (فرشة الشعور) تعتبر من أهم الموارد الطبيعية بمحمية رأس محمد والتي تتعرض لمخاطر عالية وبالتالي يجب أن تكون علي قمة أولويات الإدارة بالمحمية. وحالياً فقد تم تنمية المحمية لاستقبال الأعداد المتزايدة من الزائرين وذلك بما يعود بالنفع علي المجتمعات المحلية المحيطة بالمحمية. وهذه الموارد الطبيعية الحساسة يجب العمل علي حمايتها من عجلة التنمية الغير موجهه والاستخدام الغير الرشيد من قبل صناعة السياحة بالمنطقة مع التشديد علي ضرورة استمرار عمليات منع صيد الأسماك بالمحمية. حيث أن الاستخدام الغير رشيد لتلك الموارد سوف يؤدي إلي تدهورها بما يعود بالسلب علي الاقتصاد الوطني.

- بينما تتمتع مدينة شرم الشيخ بالعديد من المنافع الاقتصادية العديدة الناشئة عن وجود الشعاب المرجانية بمحمية رأس محمد، فأن إدارة المحمية نفسها تعاني من نقص شديد في مواردها المالية. من خلال برنامج دعم محميات خليج العقبة بالتعاون مع الاتحاد الأوروبي وبرامج المحمية الماضية الحالية، تبين أن برامج الدوريات والرصد البيئي والبحث العلمي والتوعية البيئية تعاني من نقص شديد في الدعم المالي المخصص لتلك البرامج. تدهور مستوي البنية الأساسية بالمحمية (مركز الزوار – منطقة التخييم – الحمامات الحقلية –

المعروضات) يمثل تهديد كبير علي مستوي الخدمات بالمحمية مما قد يؤدي إلي فقد العديد من مستخدمي المحمية وبالتالي مواردها. وبالرغم من ذلك مازال يوجد العديد من الفرص المتاحة لتحسين مستوي الخدمات بالمحمية من خلال تطبيق طرق إدارة فعالة مثل: تحصيل حقوق انتفاع من منطقة التخييم، الشراكة مع جمعية أصدقاء محمية رأس محمد، الخ. الاستدامة المالية الناجمة عن تفعيل بعض الفرص السابقة يجب أن يتم دعمها من خلال موازنة الحكومة (والتي تعتبر غير كافية تماما لتفعيل برامج الصون بالمحمية) والتي تتراوح بين ٢ إلي ٣ مليون جنية في السنة لمحمية رأس محمد فقط.

- يوجد العديد من الفرص لزيادة الموارد المالية للمحمية من خلال تفعيل عملية تحصيل رسوم الدخول لآلاف الزوار الذين يدخلون المحمية من البحر علي المراكب السياحية، وهذا يمثل حالة استثمارية تعمل علي زيادة الموارد المالية للمحمية مع إعادة تدوير تلك الموارد المالية.

- حالة شواطئ محمية رأس محمد تدهورت خلال السنوات الخمس الماضية نتيجة عدم وجود خطط صيانة مستمرة للبنية الأساسية الموجودة بتلك الشواطئ بالإضافة إلي نقص الدعم المالي الحكومي.

- كانت أهم نتائج الاستبيان الذي تم توزيعه علي زوار المحمية والمجتمعات المحلية، هي وجود نقص شديد في عمليات التوعية البيئية الخاصة بالمحمية، كذلك تبين من الاستبيان عدم الاستفادة المباشرة والغير مباشرة للمجتمعات المحلية المحيطة من الخدمات التي تقدمها المحمية. ويعتبر نقص التوعية البيئية ونقص خدمات المحمية للمجتمعات المحلية من المهددات التي تؤثر بالسلب علي تحقيق أهداف المحمية وحل القضايا والمشاكل التي تواجه إدارة المحمية ولذلك يجب زيادة الجهود المبذولة للتقليل من أثار نقص التوعية البيئية بين المجتمعات المحلية داخل وخارج المحمية.

- من خلال تقييم المكونات الثمانية الرئيسية بالمحمية والتي تم التعرض لها بالتفصيل في الجزء الثالث من هذه الدراسة، فقد تم تحديد ١٠١ إجراء يجب علي إدارة المحمية تطبيقها ضمن خطة إدارة المحمية المستقبلية. كذلك تم تحديد العديد من الجوانب الإستراتيجية (في الجزء الخامس من الدراسة) التي يمكن تطبيقها بمحميات مصر المختلفة.

- التأكد من وجود خطة إدارة واضحة للعمل بالمحمية علي أن تتضمن تلك الخطة أهداف الإدارة والإجراءات المتعلقة بها. ويتم مراجعة تفعيل تلك الإجراءات من خلال التقرير السنوي التي تقدمه المحمية.

- تم تحديد أهداف وإجراءات الحماية الخاصة لبعض الموائل الممثلة بالمحمية (بعض هذه الموائل تم دراستها تفصيليا من خلال المكونات الرئيسية لمحمية رأس محمد والمشار إليها في هذا التقرير)، مثل الشعاب المرجانية، قناة المانجروف، الحشائش البحرية، الطيور، منطقة تكاثر الأسماك (فرشة الشعور)، الخ.

- إعداد خطة تواصل بين المحمية ومستخدمي المحمية من خلال التركيز علي المتغيرات المتعلقة بطرق وبرامج الصون بالمحمية. لتفعيل تلك الخطة يجب ربط السلوك السلبي لزوار المحمية، متلقي برامج التوعية (الجهات ذات الصلة – زوار المحمية – الخ)، مع طرق التواصل المختلفة.

- الشراكة بطريقة فعالة مع المجتمعات المحيطة وذلك فيما يتعلق بتنمية وتطوير المحمية، ويمكن أن يتم هـذا بصورة فعالة في حالة تفعيل إنشاء جمعية محبي محمية رأس محمد.

- ضرورة تنفيذ برامج الصون الخاصة بحماية الشعاب المرجانية مع التزام المجتمعات المحلية بتفعيل وأهميـة تلك البرامج وذلك من خلال توعيتهم بطريقة صحيحة بأهمية تقسيم المحمية إلي مناطق حماية مختلفة لهـا تعليمات وممارسات خاصة.

- الالتزام بسياسة تشغيل العمالة المؤهلة مع معاونتهم لتطوير أدائهم من خلال توفير بيئة عمل مناسبة وآمنة مع التركيز علي توفير برامج تدريبية متخصصة لتنمية مهارتها.

- ينبغي بذل المزيد من الجهود بصفة أساسية وذلك فيما يتعلق بتحديد برامج جديدة للرصد ومتابعة المؤشرات البيئية مع تطبيق تلك البرامج. ويمكن اعتبار برامج الرصد الحالية بالمحمية، والمؤشرات البيئية المـذكورة في هذا التقرير كنواه لتلك البرامج. كما يجب أيضا المراجعة الكاملة وإعادة صياغة المؤشرات الحالية لمـا لها من أهمية قصوى في تقييم برامج الرصد وإعادة توجيهها، وكذلك التنبيه علي أهمية مشاركة العاملين في وضع برامج الرصد وطرق مراقبة المؤشرات البيئية لضمان فاعليتها لظروف التغيرات المتواصلة في النظم البيئية.

- تأسيس نظام متكامل لاستخدام المعلومات والبيانات لضمان استخدامها بصورة فعالة، مع حفظها بطريقة أمنة.

- القيام بعمل اجتماعات دورية مع قيادات المجتمعات المحلية والجهات ذات الصلة والمنظمات الغير حكوميـة لضمان شراكتهم الفعالة في متابعة وتوجيه خطط إدارة المحمية السنوية.

تركز هذه الدراسة علي تقييم فاعلية الإدارة من خلال تحديد مهددات ومخرجات ونتائج خطط إدارة المحمية بالرغم من وجود أوجه عديدة أساسية لعمليات التخطيط والمدخلات والتنفيذ التي تقوم عليها عملية التقييم.

Introduction

World wide, protected area organizations have been focusing efforts on measuring conservation success. The effectiveness of management can be evaluated at many scales and in varying levels of details. In January 2006, the Nature Conservation Sector undertook a national workshop to evaluate the management effectiveness of Egypt's protected areas system. Following the framework of The World Conservation Union (IUCN) and World Wildlife Fund's rapid assessment methodology, a broad assessment was implemented through a questionnaire. In the resulting report, Fouda et al (2006) recommended that more detailed site evaluations be carried out at the protected area level. Accordingly, through the Nature Conservation Sector Capacity Building Project, a site level methodology was developed and implemented in Wadi El-Rayan Protected Area, Qaroun Protected Area, St Katherine Protected Area and Ras Mohammed National Park.

Ras Mohammed National Park was declared in 1983. The total area of Ras Mohammed is 480 km^2 (48 000 ha). It is classified into two parts: marine (part of the Gulf of Suez and part of the Gulf of Aqaba) which represents 70%, and terrestrial, representing 30%. Ras Mohammed National Park was the first declared national park in Egypt although until the time of writing this report there is no solid clear document as a management plan for the area.

This report provides a synthesis of evaluation information and aims to assess three aspects of effective management.

- Firstly, what is the condition of RMNP key values related to biodiversity and natural resources, ecotourism resources, and community well-being? As this is the first report of this type for RMNP, it isn't possible in all cases to determine if conditions are improving, remaining stable, or declining, however, a starting point has been established for evaluation, and to the extent possible, baseline indicators have been identified using best available information.

- Secondly, what are the key threats and underlying causes affecting these threats and the conservation (maintenance) of the key values?

- Thirdly, how has RMNP done in implementing its annual operation plans, what are the results of the actions, and what actions or changes are needed?

Information is Important

The information in this report is expected to help in the following ways:

- Ensure productive ecosystems to support sustainable local economic benefits related to coral reef, marine ecosystems and tourism.

- Protect nature to ensure the long term survival of biodiversity and the integrity of natural resources.

- Support adaptive management of the protected area.

- Identify needs of local communities and stakeholders.

- Identify actions that people can take to maintain healthy, clean and productive ecosystems.

Terms and Acronyms

RMNP	Ras Mohammed National Park
EIECP	Egyptian-Italian Environmental Cooperation Programme
AWP	Annual Work Plan
BP	Business Plan
BioMAP	Monitoring and Assessing Biodiversity Project
CBD	Convention on Biodiversity
EEAA	Egyptian Environmental Affairs Agency
EIA	Environmental Impact Assessment
EU	European Union
GoE	Government of Egypt
IUCN	World Conservation Union
MEE	Management Effectiveness Evaluation
MSEA	Ministry of State for Environmental Affairs
NCSCB	Nature Conservation Sector Capacity Building Project
NCS	Nature Conservation Sector
PA	Protected Area
PAMU	Protected Area Management Unit
RAPPAM	Rapid Assessment and Prioritisation of Protected Area Management
TDA	Tourism Development Authority
UNDP	United Nations Development Programme
WESCANA	Western/Central Asia and North Africa Region of IUCN
WWF	Worldwide Fund for Nature

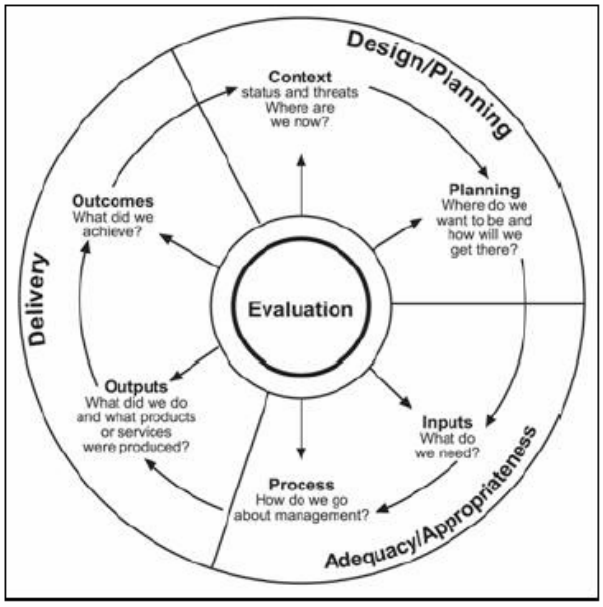
Part I. Evaluation Framework and Objectives

Many evaluation systems are based on the IUCN framework for management effectiveness (see figure; Hockings et al., 2000, 2006). The framework has three main areas of focus:

1. How appropriate is the site's design?

2. How appropriate are the management systems and processes?

3. Are management objectives met and values conserved?



Whereas the national RAPPAM evaluation examined the first two elements for Egypt's system of protected areas (i.e., context, planning, inputs, processes and to some extent, outputs), this site level evaluation aims to examine the third, with a focus on ***outputs*** (implementation of work programmes) and ***outcomes*** (state of the protected area's key values).

Objectives for Site Level Management Effectiveness Evaluations in Egypt

Through the NCSCB project, an approach to site level management effectiveness evaluation is being developed in response to recommendations arising from the first national RAPPAM evaluation in January 2006. The following objectives for site level evaluations have been proposed (Paleczny 2006a):

- Assess the conservation status of Egyptian National Parks (ENP). Are the key values (ecosystems/resources, ecotourism/recreation, community well-being) declining, remaining stable or improving?

- Identify the threats affecting protected area values, the underlying causes and possible solutions.

- Examine the site level track record in implementing management plans (where they exist) and taking positive action toward achievement of conservation. Did the protected areas implement their programme? Were the actions effective in addressing conservation objectives?

- Examine the underlying problems and possible solutions affecting the delivery of effective management and develop priorities and actions for implementation and integration into the protected area management plan or descriptive management plan.

- Disseminate information to managers and decision makers, stakeholders, collaborators and the public to improve awareness about the protected area and its management.

- Further advance a culture of transparency, learning and evaluation in the Egyptian NCS. Aim to enhance continuous improvement and effectiveness (includes monitoring, research, reporting).

- Establish the basis for site level monitoring plans.

- Identify gaps in knowledge that hinder an accurate assessment. Substantiate assessments, as much as possible.

These objectives support Egypt's obligations under the World Heritage Convention to identify, protect, conserve, present, and transmit to future generations, world heritage values. They also support Egypt's commitment toward implementation of the Convention on Biological Diversity and the Programme of Work on Protected Areas (goal 4.2) to conduct management effectiveness evaluations in 30% of the nation's protected areas by 2010.

Site Level Evaluation Process and Methods

A four and a half-day workshop to initiate the evaluation of management effectiveness was carried out at Nature Conservation Training Centre from March 13-17, 2007. The procedure, illustrated in the diagram, is described in appendix 6. In addition to the workshop, a survey of stakeholders and visitors was implemented. Following the workshop, the authors continued to investigate topics and use available information as part of the evaluation in this report.

The methods employed in this evaluation were informed by three key sources. Firstly, the procedure for examining the implementation of the past actions in the last three years was adapted from the World Heritage Management Effectiveness Workbook (Hocking et al., 2004). Secondly, the evaluation of protected area values was adapted from The Nature Conservancy's Enhanced 5-S process for measuring conservation effectiveness (outcomes) and analyzing threats (TNC, 2000; Salzer et al., 2003). The E5-S approach was expanded to include ecotourism-recreational resources and community well-being (socio-economic) with new worksheets and processes. Thirdly, the elements of the ecosystem approach (Shepherd 2004, Smith and Maltby 2003) were examined and built into the respective worksheets and processes. The step-wise process used in this evaluation is presented in appendix 6.

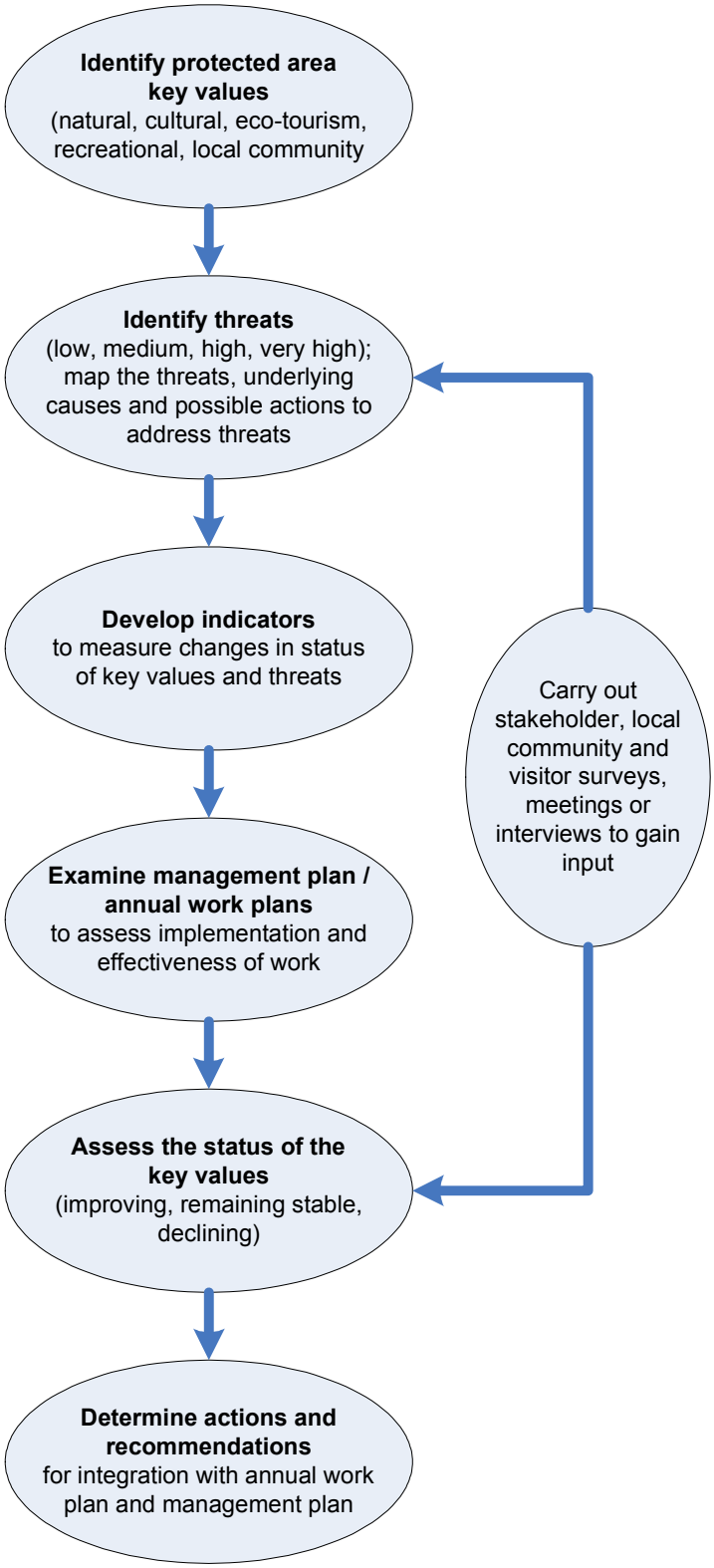
Completing all of this work is a large task, which at first may discourage staff from initiating this work. The key is to start with the priorities and build upon the system through future work. Salzer et al. (42, 2003) underline this point:

> *"We envision the assessment of focal target viability to be an iterative process – it is not realistic to develop comprehensive lists of all key attributes, indicators, and a full set of indicator ratings for all focal targets as part of an initial viability assessment. However, it is important to start with at least one key attribute and indicator and the classification of that indicator into one of the 4 indicator rating categories with sufficient detail that someone else could determine whether that indicator had shifted to another category. We recommend that the viability assessment go deeper for those targets and key attributes where there are known threats delivering uncertain impacts to the conservation target or where priority conservation actions are being implemented to improve certain target's viability status."*

Accordingly, the assessments in the report focus on priority values (focal targets), using available information and experience. We acknowledge that some elements of this evaluation may not be rigorous in all respects; we accept the shortcomings as in interim step along the path toward improvement. For example, in some cases data presented is minimal and this should be kept in mind when drawing conclusions.

We have aimed to provide a credible report using best available information and to make a start at measuring conservation success. We hope that this report will assist in identifying areas where more cooperation can be forged with research and technical institutions to improve the design and implementation of monitoring indicators and protocols.

Management Effectiveness Evaluation Process



Key Inputs for this Evaluation

Several key sources of information were used in the preparation of this evaluation and assessment of the state of RMNP. These included:

- Findings of RMNP staff input to the first national RAPPAM (appendix 5).
- The results of the four and a half day workshop with RMNP rangers and informal discussions.
- Meetings/focus group discussions with stakeholders just prior to and after the workshop.
- Results of 35 surveys administered to stakeholders (19), and visitors (16) (summarized in appendix 4).
- Past draft park management plans, and draft business plan.
- Regrettably, no operation plans or annual work plans were available to the evaluation team, despite requests from them at the park, sector office and NCS office. There is no evidence that they exist, which is considered a serious limitation toward effective management and this affected the evaluation of RMNP outputs. Management actions taken, as identified through discussions, are summarized in appendix 2.

Follow-up:

Upon completion of the RMNP workshop in March 2007, the process was evaluated by participants (appendix 7). Several follow-up steps were recommended as part of this ME evaluation, as follows:

1. Have meetings/discussions with stakeholders and communities on specific topics (discuss their problems and possible solutions, ways to cooperate, threats, proposed actions relevant to the stakeholder).

2. Invite scientific/technical review, for example through email, meetings or workshops. This can occur on an ongoing basis and evolve into a regular forum whereby academics and technical specialists working in their respective fields are encouraged to offer a critical review and presentation of their knowledge. Such a forum could promote integrated and multi-disciplinary perspectives.

3. Communicate the results of the evaluation.

4. Implement the actions in the report, including:
    - Preparing a detailed monitoring plan and indicators. Further rationalization and development of the indicators is needed.
    - Implement monitoring and approved indicators, and do ratings every year.
    - Integrate actions into a comprehensive Annual Work Plan.
    - Prepare a Management Plan.

Part II. Current Context: Ras Mohammed National Park

South Sinai Protectorates are an important holiday destination. There are more than 289,000 visitors per year (source: department of income of RMNP for 2006) for commercial tourism operations in Ras Mohammed National Park and about 240 private boats are registered in Sharm El Sheikh Region. Tourism is expected to increase rapidly in the future with some analysts predicting a 2.5 times increase in visitor nights by the year 2010.

Ras Mohammed National Park (RMNP) incorporates an area of 480 km^2, (expanded from an original area of 97 km^2), and extends into the Gulf of Aqaba, to encompass Tiran and Sanafir islands. Located at the southern tip of the Sinai Peninsula, the park includes coral reefs, desert ecosystems and mangroves, and is an important spot for migratory birds. Ras Mohammed is renowned globally for the diversity and richness of its coral reefs, rated amongst the world's best, and is a significant draw for tourists in the Sharm el Sheikh area, particularly amongst SCUBA divers. The Park is a major tourism and recreational attraction. The development plan for the Ras Mohammed aims at striking a balance between natural resource protection from depletion and destruction, and generating income. The Park's importance is reflected in visitation and revenues: from June 2003 to June 2004 Ras Mohammed National Park received a total of 329,000 visitors and collected LE 11 million in gate receipts.

Ras Mohammed National Park is classified into two parts, the marine part (part of the Gulf of Suez and part of the Gulf of Aqaba), which represent 70%, and the terrestrial part representing 30%. The coast of the Gulf of Suez is low – lying sandy to muddy and influenced strongly by tidal variations. The tidal – intertidal zone of the East Coast of Gulf of Suez is very wide and may exceed 1 km at some areas, which give the chance to migratory and resident birds to rest and feed without disturbance. The vegetation along the coast is very poor; the most common plant is *Zygophylum coccinum*. On the other hand the tidal – intertidal zone of the western Coast of Gulf of Aqaba is narrow and representing typical sea cliffs and fringing coral reefs. This is a key habitat for other related marine species, like hundreds of species of fish, sponges, snails and crustaceans. Birds are important to the area (e.g. storks, waders and herons); about 241 bird species were recorded in the area both of migratory and resident. Sea grasses, mangroves and vegetation are important species to turtles, fishes, shrimps, crustaceans, birds and rodents. *Acacia radiana* is the common tree which is distributed in two wadis at Ras Mohammed and used by migratory passerines to hide and rest under shadow. The area is used for tourism purposes and research. The land and sea tourism activities represent the common threat to the natural habitat by direct or indirect effect. The second threat to coral ecosystem is a natural phenomena when the corals are attacked by crown of thorn (*Acanthaster planci*); sea starfish with 13 - 16 arms, which digest and absorb the coral animal. Oil spill pollution is another threat to all ecosystems. These threats have been followed by the monitoring programmes to enable rabid response to minimize the damage to the area.

Area	Land (km^2)	Sea (km^2)	Total (km^2)
Ras Mohammed National Park	143	337	480
Tiran-Sanafir	100	271	371
Sharm el Sheikh	0	75	75
Total	243	583	

The land of RMNP is completely owned by the Egyptian Governorate (Egyptian Environmental Affairs Agency) but there are some areas inside the protected area under other ownership or administrative control (South Sinai Governorate – Army, etc.).

Between 1989 and 2002, the EU allocated €23 million to implement the South Sinai Protectorate network and build institutional capacity at the local and national levels. Since completion of this

EU programme, the Egyptian Government has provided the budget for RMNP. Fees are currently imposed on visitors to Ras Mohammed National Park and Nabq MRPA at a rate of LE 5 for Egyptians and US$ 5 for foreigners. These fees and other protectorate revenues are not retained locally, but are directed to the national Environmental Protection Fund (EPF) and are its main source of revenue. In 2001/2002, the EPF received a total of LE 38 million from visitor fees, charging for the use of the services, and fines for violations of regulations and causing environmental damage. It would be advantageous for the NCS/EEAA to introduce mechanisms for retaining a percentage of protectorate revenues, to enable proper management of protected areas. Such a system could lead to increased revenues for individual protected areas and for the system as a whole.

Ras Mohammed is situated at 28° N of latitude. Climate in the entire area is typical of that arid region with cool winters and a hot summer. Throughout the year the weather is moderated by the effect of the sea breeze. Very little rainfall (less than 30 mm / year), but localized heavy rains can lead to floods. Floods occur during the winter when rain water is accumulated in the top of mountains near the area and running to the area. Some water run toward the Gulf of Suez and other runs toward the Gulf of Aqaba. Air temperature varies from 15 ° C in the short winter to more than 40° C in the summer. The summer temperature may reach 45 ° C in July and August and the air is slight to moderately humid. Winds are activated in the winter and almost always it is coming from north but sometimes from the west. The combined actions of temperature changes, wind and rain have eroded mountain areas and transported rock and gravel down wadi systems to the coast.

RMNP is composed of igneous and sedimentary rocks and is covered by loose recent deposits. The igneous rocks belong to the pre-cambrian basement rocks of Egypt, which is a part of the Arabian – Nubian shield, and are represented by monzogranites and alkali granites. The

sedimentary rocks belong to miocene and post miocene covering about 29% of the area. The desert area of RMNP is comprised of steep rising mountains, which meet the waterline, and drop to form the magnificent reef walls.

In the RMNP the surface water temperature varies between 18 and 26 and surface salinity between 40% and 41%. During summer, an upper, temperature - stratified water mass can be distinguished from the deeper and more homogenous mass. The water stratification is notably weaker in the winter. The average tidal range is 1 m, covering the intertidal flat of Gulf of Suez and the back reef of the Gulf of Aqaba.

The diversity and extent of the Gulf of Aqaba protectorates is a major reason for its high tourist visits and repetition. Fringing reefs in Ras Mohammed National Park region are most diverse and extensive adjacent to the northern protectorates and together with the outer reefs in Tiran Island support an abundance of reef life. The colorful corals, fish and other reef organisms are a major attraction for visitors to the environmental management area.

Mangroves, reef, soft bottom and seagrass communities throughout the area support internationally important species such as the green turtle (*Chelonia mydas*), loggerhead turtle (*Caretta caretta*) and the hawksbill turtle (*Eretmochelys imbricata*). Dugong (*Dugong dugon*) is also found in seagrass and these and mangroves are important nurseries for juvenile fish and prawns. Threats to marine values include degradation from commercial and private recreational activities, fishing, collecting and pollution. Many of these threats are cumulative and difficult to quantify and demonstrate accurately. Problem areas include Travco Harbour, the coastline at Sharm El Sheikh and many of the fringing reefs popular for recreational activities.

In RMNP habitats are defined according to their dominant biota, physical environmental influences, and or substratum type. However, previous studies indicate that several defined marine habitats exist inside the Park, as follows:

- coral reefs
- sea grass communities
- mangrove stands
- intertidal macroalgae
- subtidal sand, and
- pelagic

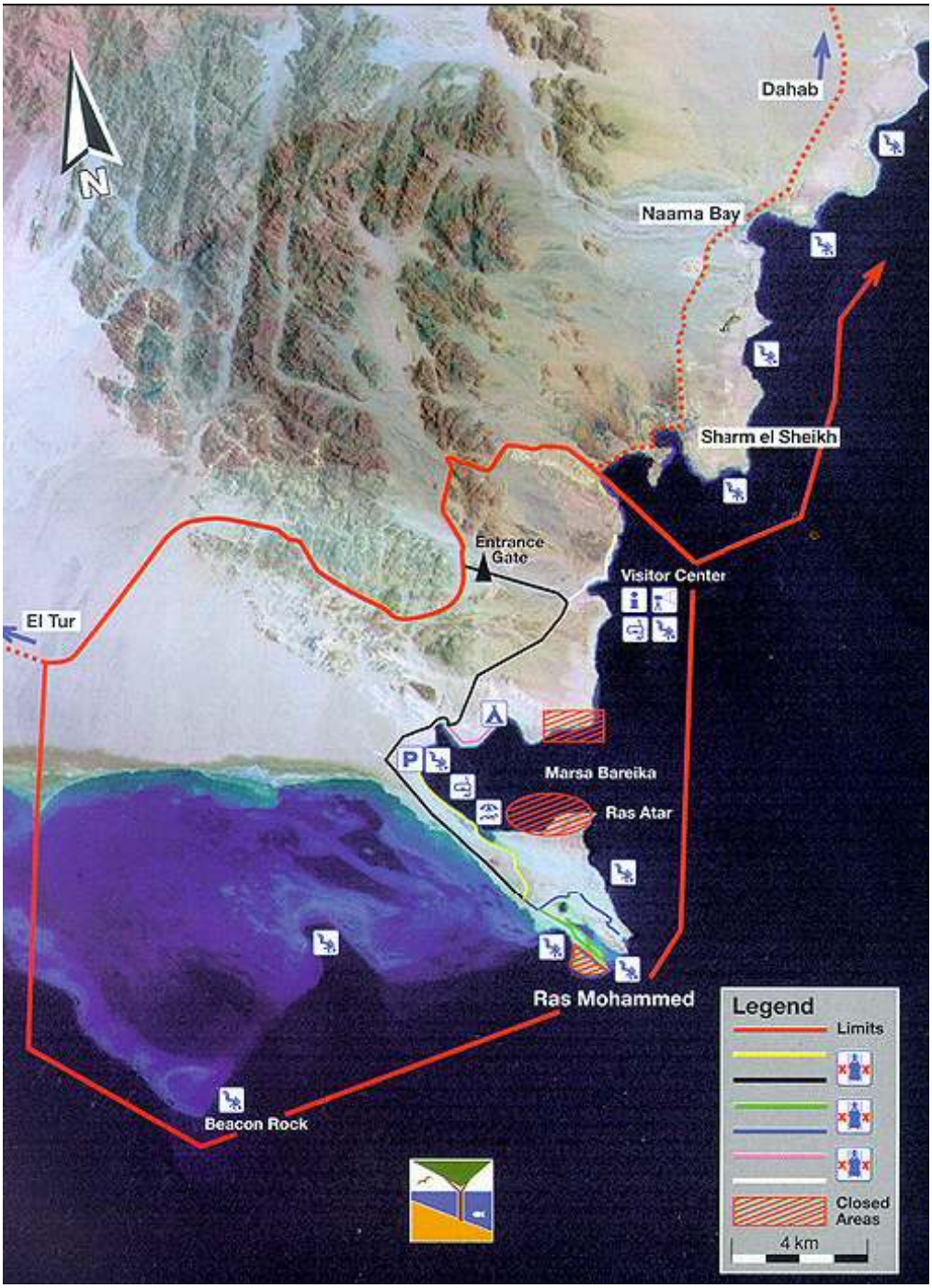
Living hard coral cover is significantly higher in the Red Sea than in the Gulf of Aqaba. At 5m depth hard coral cover ranges from 16-67%, with an average of 45% in the Red Sea and 35% in the Gulf of Aqaba. Soft coral cover averages 10% in the Gulf of Aqaba. The distribution and development of reef-building corals is restricted in the Gulf of Suez by several factors, including temperature, sediment load, salinity and light penetration. Coral cover averages 16%, although this can be as low as 1% in areas heavily impacted by oil pollution.

Ras Mohammed National Park marine parts are of high biodiversity with up to 218 species of corals (hard corals and soft corals). The most common corals are the branched corals like Acropora, Pocillipora and Millipora species. Coral reefs provide food and shelter for thousands of organisms, which co-exist in complex interactions and interconnected food chains. The most important barrier – fringing reef complex of the northern Egyptian Red Sea is found in the area. A barrier reef system of the Gulf of Suez differs from the fringing reef, such as those found in the Gulf of Aqaba, by the wide lagoon which separates it from the shore. The outer reef in many instances has not developed with a clear reef shape, comparable to the Gulf of Aqaba. Coral reefs provide protection for shoreline by acting as a fore line defense against incoming storms.

Coral reef ecosystems found in the National Park are recognized internationally as among the world's best. This recognition is based primarily on the diversity of flora and fauna, clear warm water devoid of pollutants, their proximity to shorelines and their spectacular vertical profile. The reef exists as an explosion of color and life in stark contrast to the seemingly barren desert adjacent to it.

There are two marine islands included in the PA, which are Tiran Island, and Sanafir Island. Marine islands offer an important habitat for many organisms. Seabirds and marine turtles intensively use these islands for nesting, due to the lack of predators and disturbance. Each of the islands represents a unique natural evolutionary experiment, which could provide important insights into the ecological past of the region. Urgent, effective management of these islands should be a priority for future conservation efforts in the region. The topography of Tiran Island is made of a combined wadi systems and hills. Small wadis are one of the characteristic features of the landscape of the Island. These small wadis are the drainage system of existing hills, concentrating meager precipitation into limited areas, allowing vegetation and other life to get a foothold in a patchy fashion. Near the foothills, the wadis are wide with a sandy or salty bed.

Map of Ras Mohammed National Park



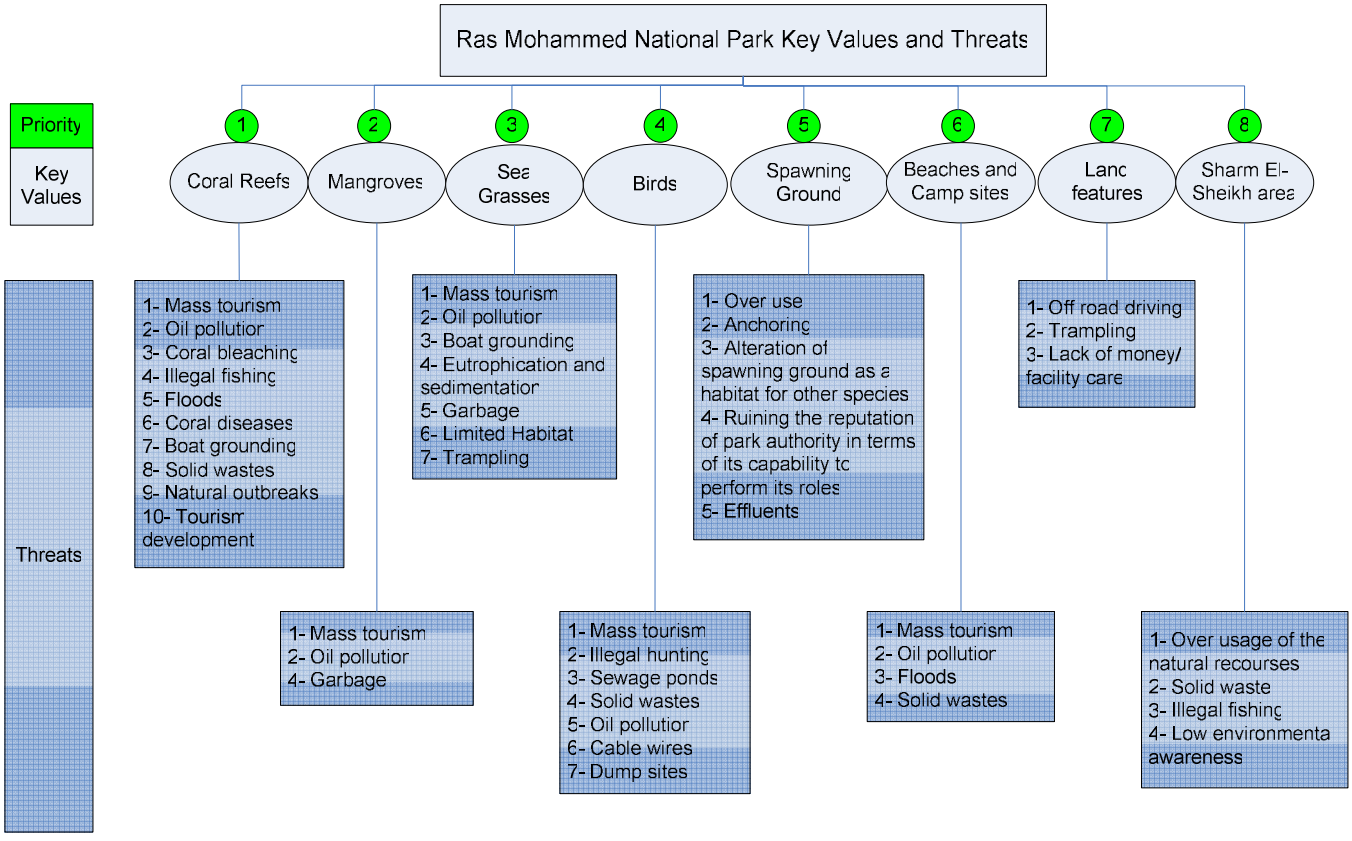
Part III. Evaluation Results

This section of the report examines the current context, threats, achievement of management actions, status and needed actions related to the main values of RMNP. The key values are:

1. Biodiversity/Natural Resources/Cultural Resources:
   - Coral reef
   - Mangroves
   - Sea grasses
   - Birds
   - Spawning ground in RMNP

2. Ecotourism/Recreational Resources:
   - Beaches and camp sites
   - Land features

3. Community Well-being (socio-economic)
   - Sharm El-Sheikh area (economic value)



Descriptions of these main values (following) were prepared initially by RMNP staff during the workshop. The values are characterized in terms of three key attributes: size, condition and landscape context. Following this, potential indicators and measures of status were identified and a diagram of the key threats affecting these main values was prepared, including needed actions. Threats were assessed as very high, high, medium and low for their geographical extent and potential severity, using the following definitions.

Rank	*Guideline for Severity (after TNC 2000)*
Very high	*The threat is likely to eliminate the value.*
High	*The threat is likely to seriously degrade the value.*
Medium	*The threat is likely to moderately degrade the value.*
Low	*The threat is likely to only slightly impair the value.*

Rank	*Guideline for Extent (after TNC 2000)*
Very high	*Very widespread or pervasive for most of the value's area (>75% of the value's area).*
High	*Widespread area (40-75% of the value's area).*
Medium	*Localised area (10-40% of the value's area).*
Low	*Very localised (<10% of the value's area).*

Extent and severity were combined to determine the overall magnitude of the threat. The calculation of the threat magnitude can be summarized in the following table:

		Extent			
		4-Very high	**3-High**	**2-Medium**	**1-Low**
Severity	**4-Very high**	4-Very high	3-High	2-Medium	1-Low
	3-High	3-High	3-High	2-Medium	1-Low
	2-Medium	2-Medium	2-Medium	2-Medium	1-Low
	1-Low	1-Low	1-Low	1-Low	1-Low

The results of the stakeholder and visitor surveys (appendix 4) have been integrated into the following sections, where appropriate.

1.0 Biodiversity, Natural and Cultural Resources

1.1 Coral Reef

1.1.1 Description

- Fringing reefs are the most common reef type in the area. They occur along the entire coastline with a narrow (5 – 50m) well developed reef flat which is occasionally interrupted or becomes discontinuous at a few locations at the back of coastal embayment where freshwater run-off could occur via coastal wadis and drainage channels to form a number of small shallow sharms or marsas. The reef edge is exposed to significant wave action generated by the prevailing northeast wind; this has generated a shallow groove and spurs system along the reef edge. Below this, the reef slope drops steeply to depths ranging between 10 and 85m. On the reef slope coral growth is dominated by the branched hard corals Acropora spp. and Pocillopora spp., massive hard corals particularly Porites spp., Favia spp. and soft corals such as Sinularia spp. providing a live coral cover that typically range between 10 and 35% .

- Offshore patch reefs occur in the Straits of Tiran and in Ras Mohammed. Namely, Jackson Reef, Woodhouse Reef, Thomas Reef, Gordon Reef, Shark Reef and Yolande Reef are the major representatives. These reefs occur offshore and are surrounded by water from all directions forming little coral islets. The southern sector of these reefs is protected from winds and typically, shallow snady platforms extend seawards for distances ranging from 10 to 140m. The reef edge of the northern section is typically exposed to significant wave action generated by the prevailing northeast wind; this has generated a shallow groove and spurs system along the reef edge. Below this, the reef slope drops steeply to depths ranging between 3 and 200m. On the reef slope coral growth is dominated by the branched hard corals Acropora spp. and Pocillopora spp., massive hard corals particularly Porites spp., Favia spp. and soft corals such as Sinularia spp. providing a live coral cover that typically range between 20 and 50%,

- Discontinuous fringing reefs in Ras Mohammed occurs a shallow reef flat varying from 200 m. to 1800 m. in width, though typically about 650 m. wide. Apparently, the landward part of the reef flat is covered with a thin layer of sandy mud and supports thin algal mats and scattered patches of small macroalgae. In many places the central and outer reef flat is broken by scattered small pools (1 - 200 m. in diameter and 0.5 - 8 m. deep). Although coral reefs were categorized into three major reef types, these different habitats do not occur, or function, independently.

- Most divers' journey to dive destinations daily, using a diving charter boat. Each diver makes two dives per day. Based on available data around one million dives are undertaken yearly within the area between Ras Mohammed and Strait of Tiran. This diving pressure is not distributed equally among the established dive sites. Some dive sites receive a huge number of visits annually while others are not used any more by most diving operators.

- Almost continuous fringing reef with scattered, isolated patches. (60 km in RMNP proper; 52 km in Tiran; Sharm 35 km).

- Highly fragile coral, easily damaged by diving and other impacts (both natural and human).

- 218 species of hard corals. 110 species of soft coral (don't have an accurate estimate of soft corals).

- Primary nature based tourism opportunity in Sinai.

- Approximately 289,000 paying visitors per year (source: department of income of RMNP for 2006). However, there are many more visitors that go to Tiran and other locations within Ras Mohammed National Park that are neither registered nor paying. Staff estimates that the number of divers and snorkelers could be 1 million/year in all areas of RMNP. Research has estimated that about 2 million visitors enter the sea area from Sharm every year.

- 1,000 divers and snorkelers per day. Majority come by tour boats.

- About 10 million LE in ticket sales per year.

(a) Size: The current size of the ecosystem is 60 km in length.

(b) Condition:

Composition: (e.g, presence, absence of native and exotic species, recruitment, etc.)

- Very complex ecosystem, comprising soft and hard corals, approximately 350 species of fishes (that spend at least part of their life on the reefs), and innumerable species of associated invertebrates, seaweeds, algae, etc.

- Marine mammals: dolphins pass and feed on fishes of the reef and area.

- Endangered species using this ecosystem:
    - 3 species of marine turtles (green, loggerhead, hawksbill).
    - Top shells (group of mollusks): Lambes spp., strombus. Sp. Tectus sp., Trochus sp. Charonia sp.
    - Sea cucumbers: *Holothuria Fuscogilva* and three other species.
    - Crustaceans: Lobsters.
- No endemic fish species in RMNP (but there is in Gulf of Aqaba). Possibly endemic corals, currently being researched. Currently no comprehensive inventory of species of hard corals. RMNP is poorly researched in terms of endemism.

Structure: (e.g., ground/shrub/canopy vegetation, quality of habitat, etc.)

- Mainly continuous fringing reef (on edge of mainland). Some patch reefs.
- Wall/drop off feature.
- Very high quality of habitat.

Biotic interactions: (e.g., competition, predation, disease, etc.)

- Food chain interactions and competition; all critical importance.
- Over-fishing by people (all illegal).

(c) Landscape (Seascape) Context:

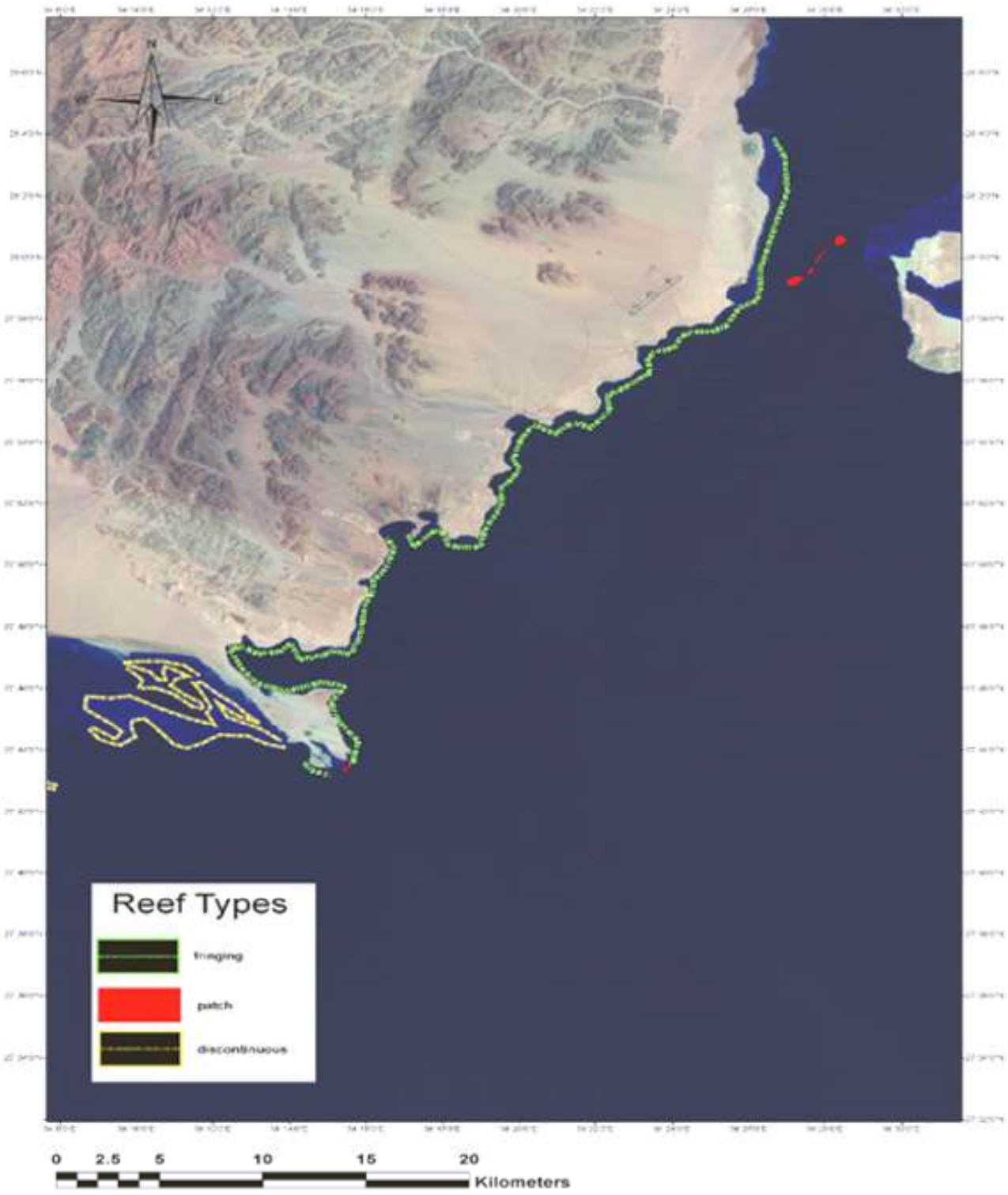
Dominant regimes and processes: (e.g., hydrology, water chemistry, geomorphology, climate, fire, other natural disturbances, etc.)

- Crown of thorns starfish is a major natural disturbance; last invasion occurred between 1998-2001.
- Current patterns in two gulfs, mixing at RMNP. Current is moving from north to south on the eastern and westerns coast of Sinai Peninsula, in general. This creates an issue when oil spills occur, concentrating spill oil in RMNP (first encountering the mangrove area).
- In general, Gulf of Suez is shallower (about 70-120 m) and Gulf of Aqaba is deeper (1,800m); diversity of species associated with both, come together in RMNP.

Connectivity: (e.g., species access to habitats needed for their life cycle, fragmentation, etc.)

- High quality connected habitats for most species using the reef ecosystem.
- For sea turtles, 3 nesting sites in RMNP (proper) plus other sites in Tiran Island. Two of the three sites are used for tourism (Turtle Beach is used for snorkeling and diving from the boats and by coast guard on the land side; Barikie Beach).
- Sea turtles and dolphins are roaming and their status beyond RMNP is uncontrollable.

Ras Mohammed & Sharm El Sheikh : Major Reef Types



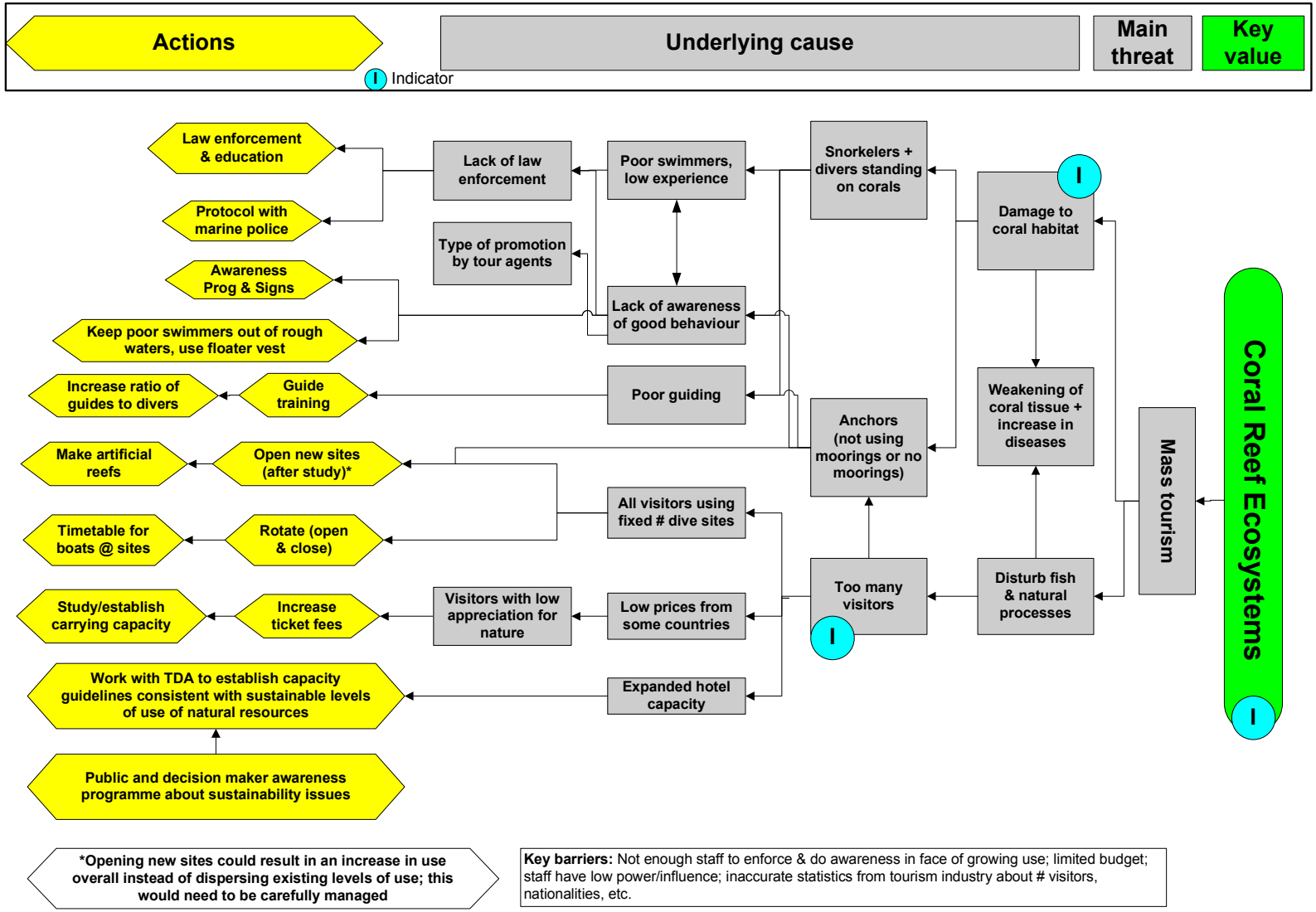
(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1	Mass tourism (diving, snorkelling)	Medium	High	Medium
2	Oil pollution	Low	Very High	Low
3	Global warming (coral bleaching)	Medium	Very High	Medium
4	Fishing (illegal)	Low	High	Low
5	Floods (rare)	Low	High	Low
6	Coral diseases	Low	Low	Low
7	Natural outbreaks (e.g., Crown of thorns, snails)	High	High	High
8	Grounding accidents	Low	Very High	Low
9	Solid waste	Low	Low	Low
10	Tourism development (sedimentation, habitat degradation, desalination unit discharges)	Medium	High	Medium

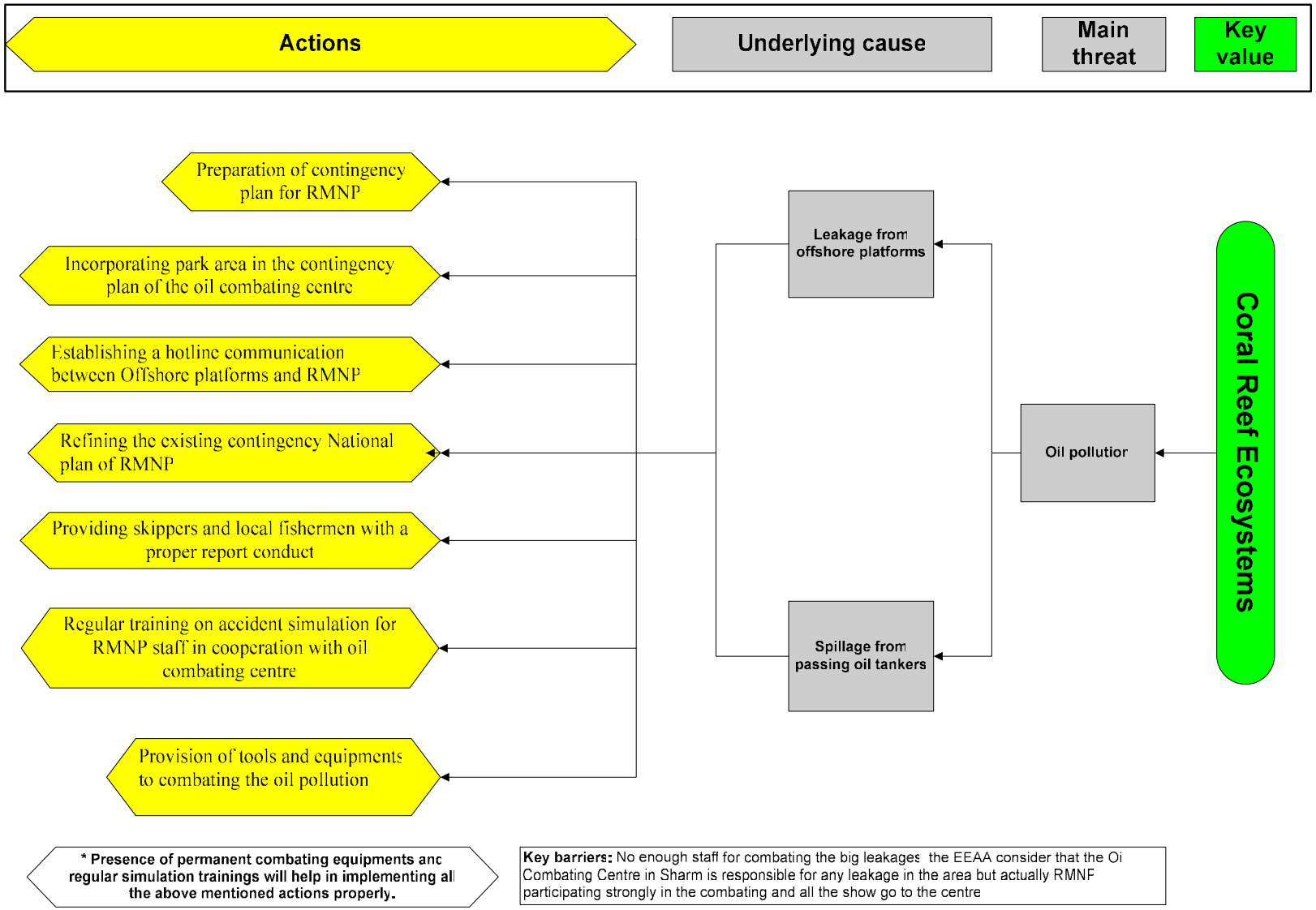
1.1.2 Threat Analysis:

Ten main threats affecting the coral reefs were identified (above chart) and considered in terms of their geographical extent and severity. These are presented in the following threat maps to identify the underlying causes and actions.

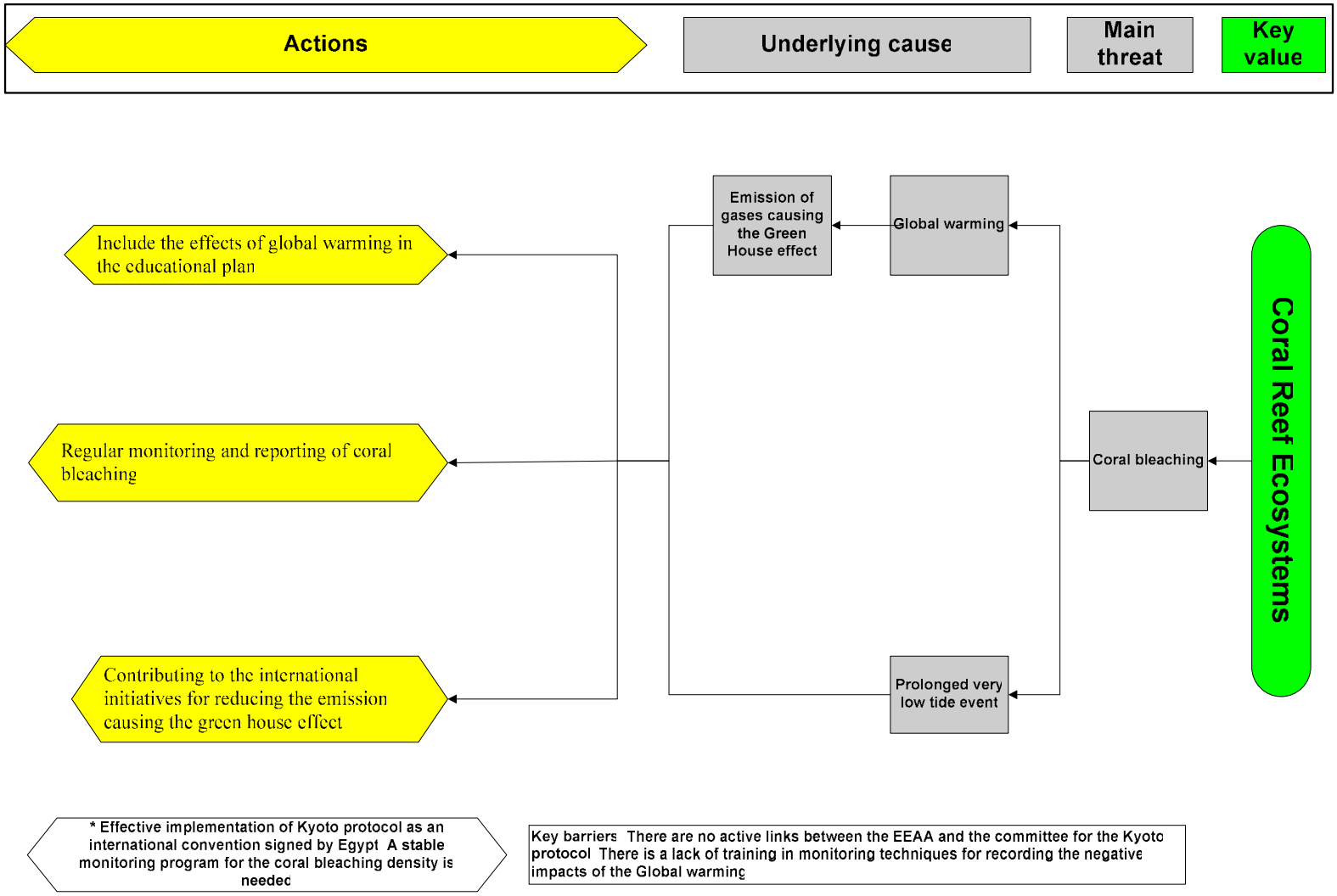
1.1.2.1 Mass tourism threat



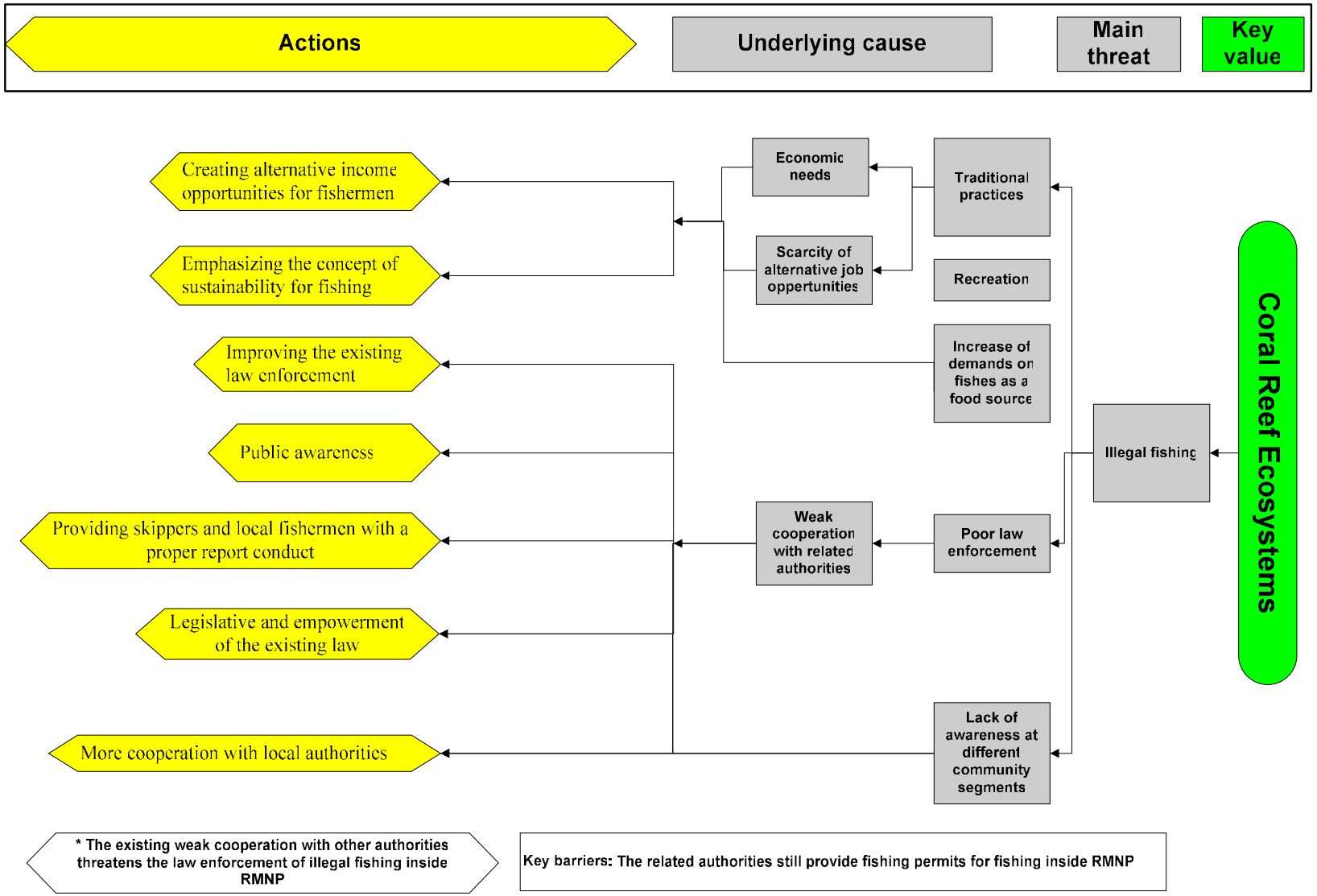
1.1.2.2 Oil pollution threat



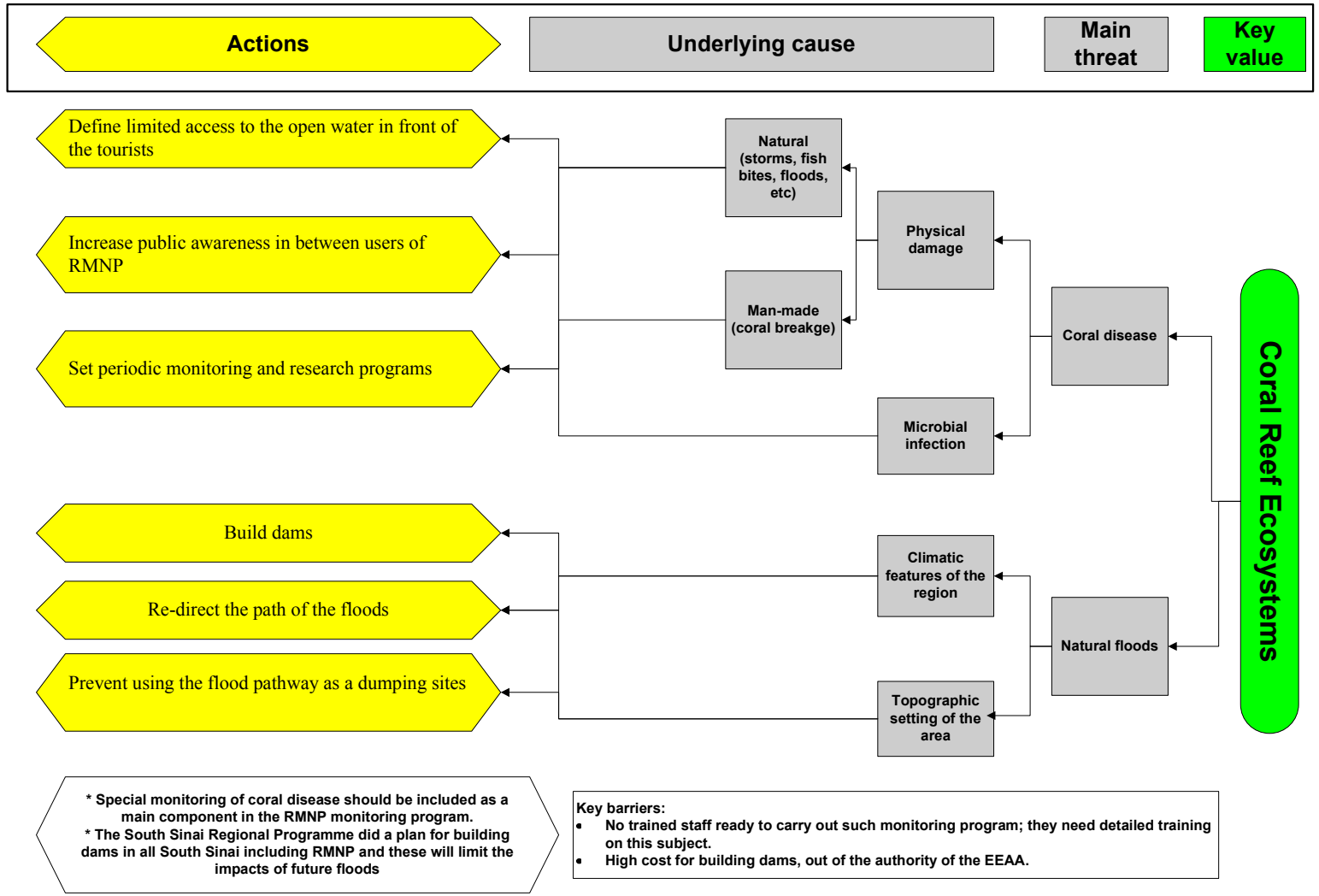
1.1.2.3 Global warming (coral bleaching) threat



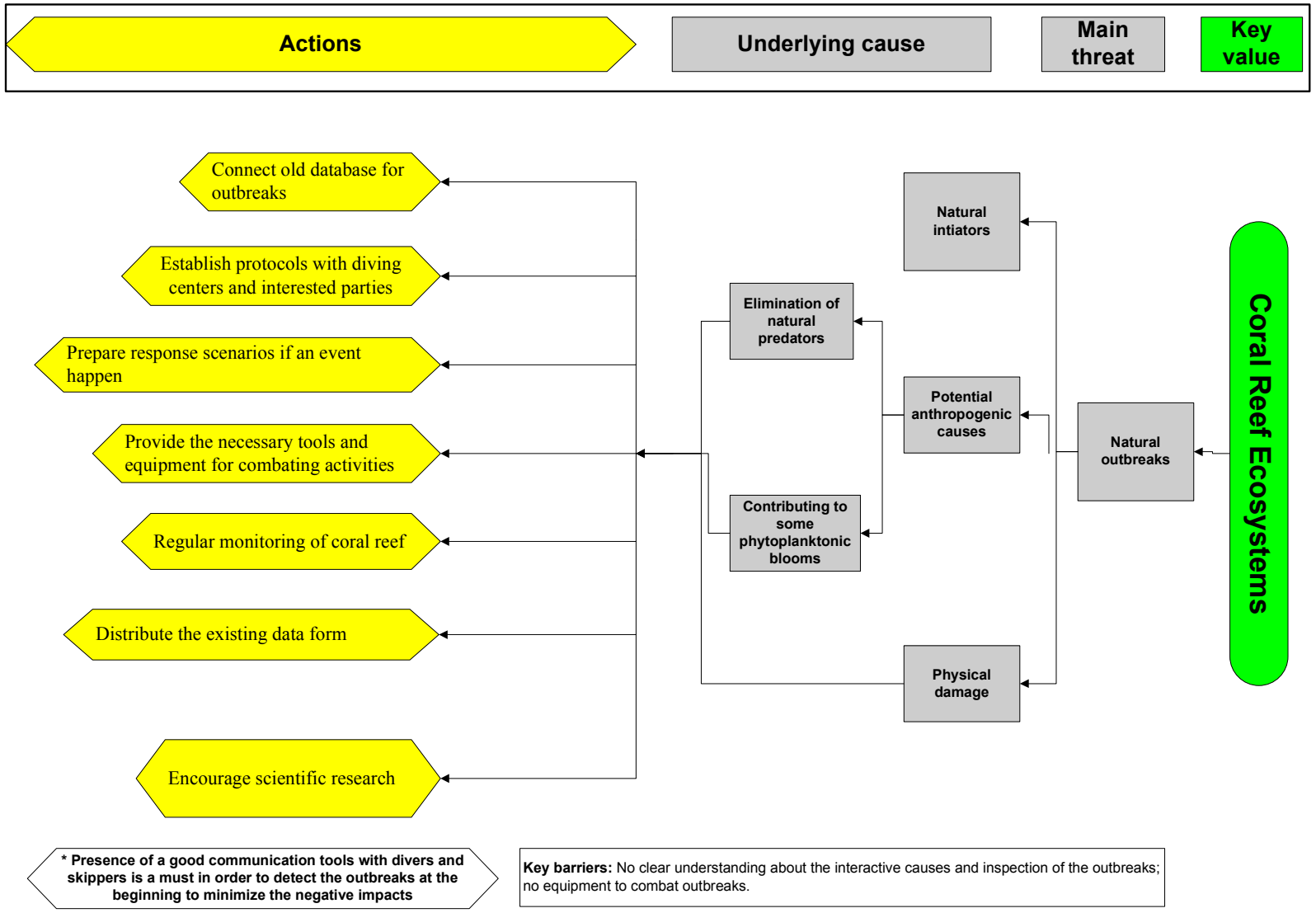
1.1.2.4 Illegal fishing threat



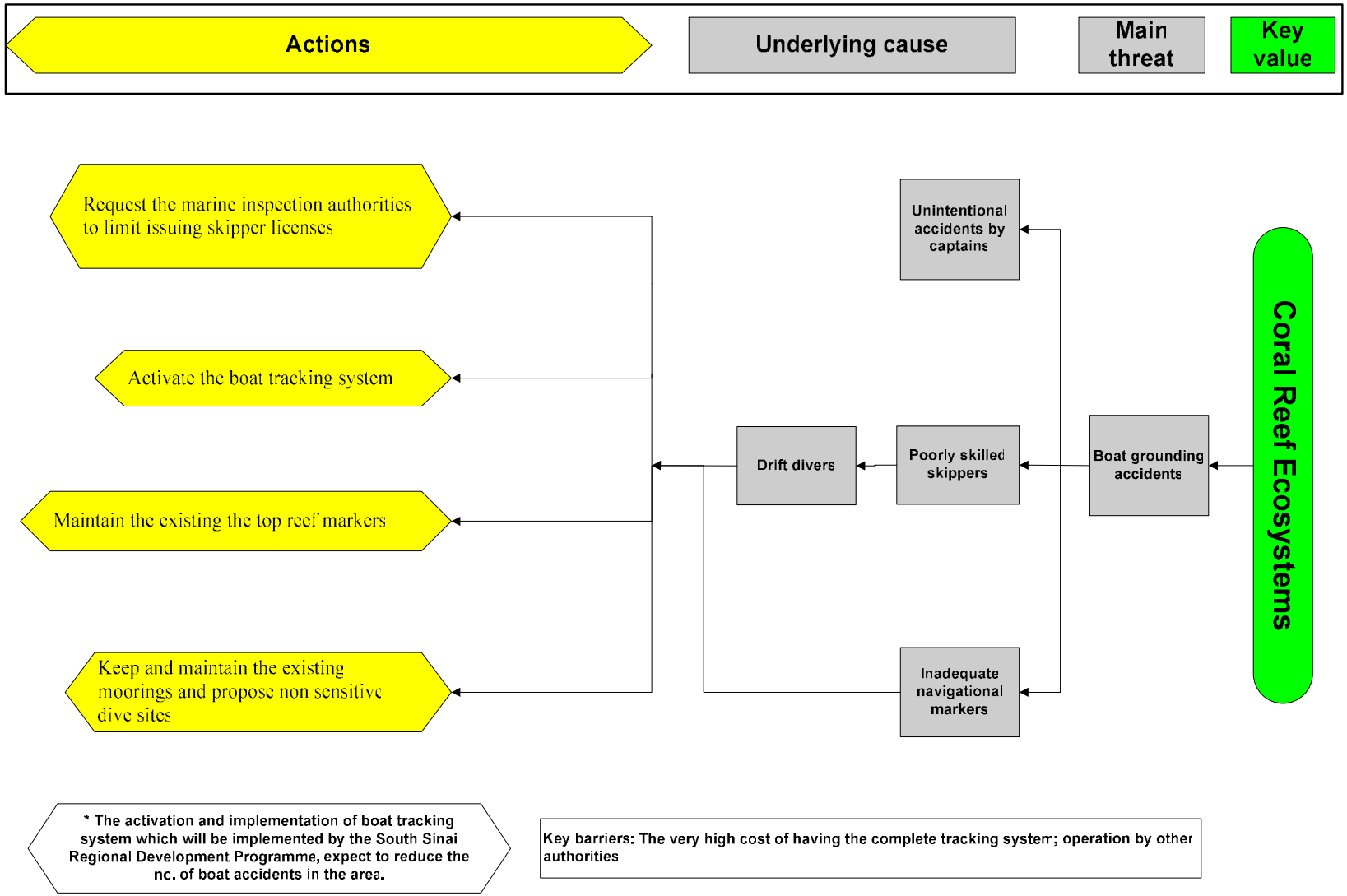
1.1.2.5/6: Flood and coral disease threats



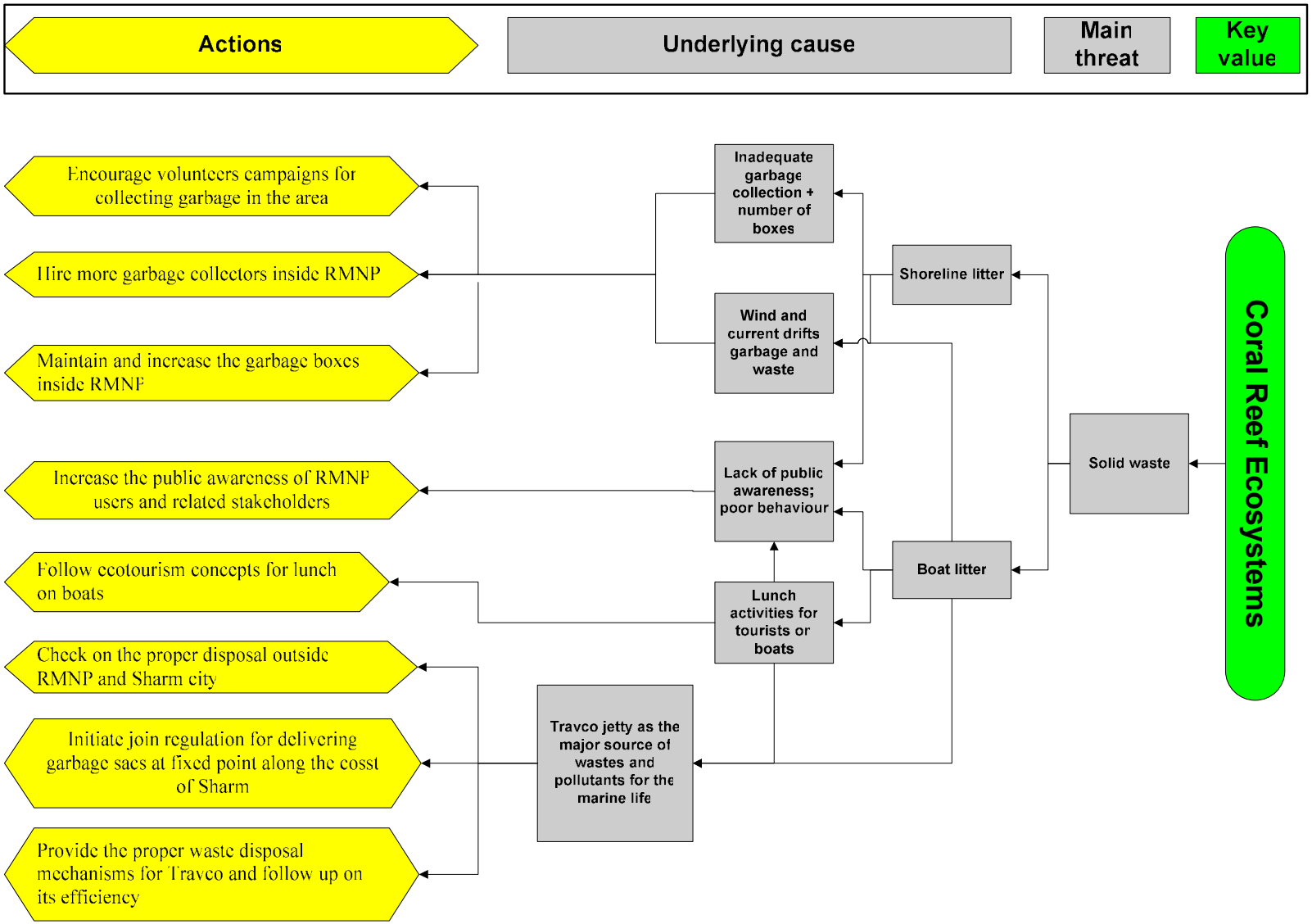
1.1.2.7 Natural outbreak threat



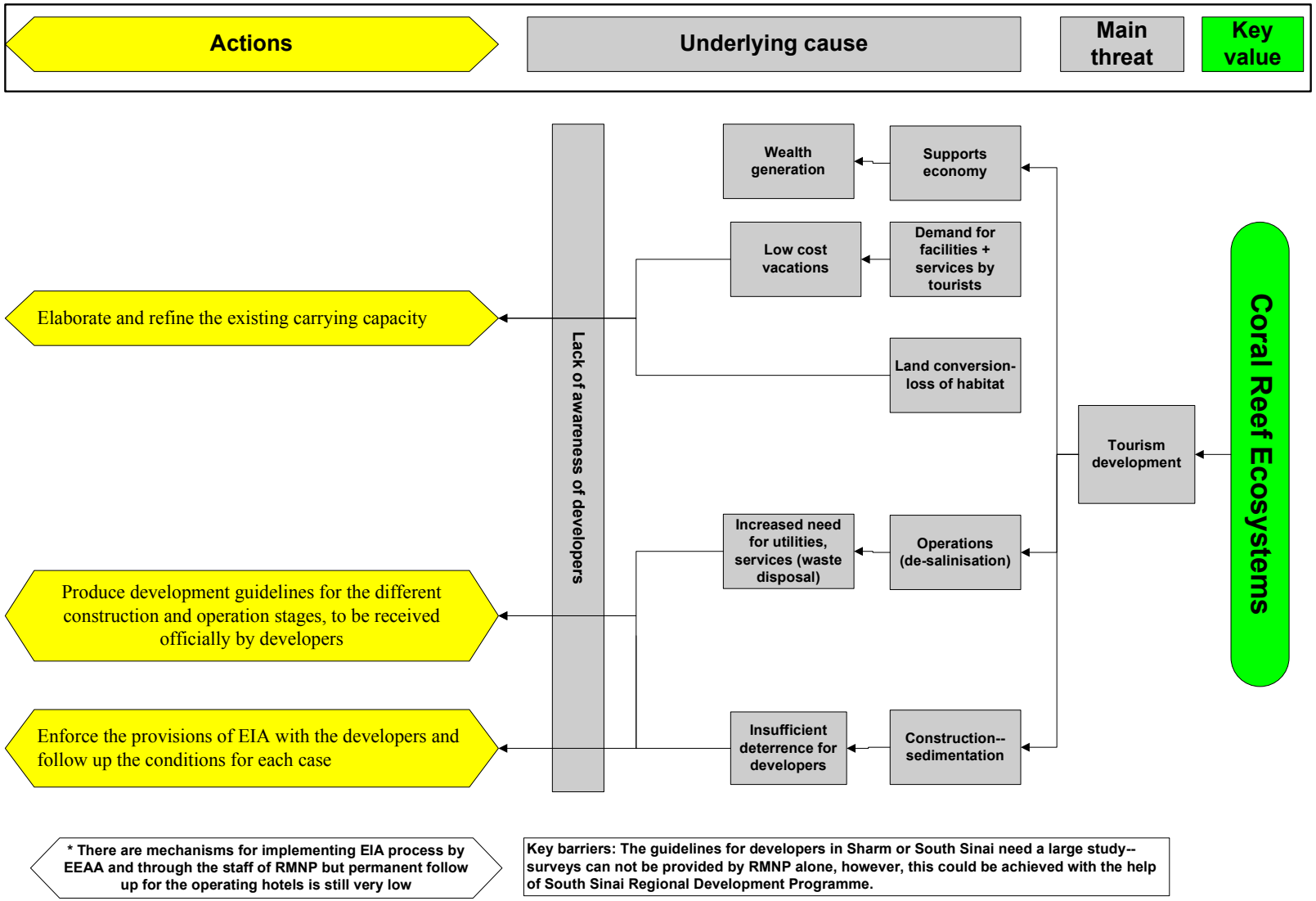
1.1.2.8 Boat grounding threat



1.1.2.9 Solid waste threat



1.1.2.10 Tourism development threat



1.1.3 Management Actions Taken

There is no approved management plan for RMNP until the date of writing this report. There have been many attempts to have a management plan but all have failed to reach the expected standard. The evaluation team did not find evidence that regular annual work plans have been prepared. This is a minimum requirement of the effective management regardless of lack of funding.

The main objective identified by the RMNP staff was "Protection and sustainable management of marine resources". The overall status of the resource today compared to five years ago is "**stable**", for the following reasons:

- The diversity and extent of the Gulf of Aqaba protectorates is a major reason for its high tourist visits and repetition. Fringing reefs in Ras Mohammed National Park region are most diverse and extensive adjacent to the northern protectorates and together with the outer reefs in Tiran Island support an abundance of reef life.

- Mangroves, reef, soft bottom and seagrass communities throughout the area support internationally important species such as the green turtle (*Chelonia mydas*), loggerhead turtle (*Caretta caretta*) and the hawksbill turtle (*Eretmochelys imbricata*). Seagrass and mangroves are important nurseries for juvenile fish and prawns.

- Threats to marine values include degradation from commercial and private recreational activities, fishing, collecting and pollution. Many of these threats are cumulative and difficult to quantify and demonstrate accurately. Problem areas include Travco Harbour, the coastline at Sharm El Sheikh and many of the fringing reefs popular for recreational activities.

- A project was implemented by RMNP staff offered by The Regional Organization for the Conservation of the Red Sea and Gulf of Aden **(PERSGA)** under the title of Sustainable Development of Coastal and Marine Resources along the Gulf of Aqaba Egypt. The project provided equipment and technical support for the staff to study the main marine resources in both Gulf of Aqaba and RMNP. For example, the staff did a lot of studies on coral reef, sea grasses, ornamental fish, sea cucumber, etc.

- Today, 50 staff are assigned to Ras Mohammed National Park (some of them considered as a permanent staff for RMNP while the rest belong to headquarter in Sharm El-Sheikh but their main duties and tasks are within RMNP), a permanent accommodation in Sharm El-Sheikh, field equipment, and routine patrolling and monitoring activities either by the staff or by the research volunteers.

- Since 1989, cooperative research activities are carried out in RMNP with the support of many universities and institutes either in Egypt (Cairo university – Suez Canal university – American university in Cairo – etc.) or abroad (England – Germany – Italy – Hungary – etc). All these researchers participate in monitoring the status of the marine life in RMNP and help the staff in being trained in the most recent methodologies for research and monitoring of the marine resources.

- Establishing a permanent land and sea patrolling schedule in 2002 has helped to support wider protection of the valued marine resources and improved operational effectiveness.

- However, with the massive tourism development in Sharm El-Sheikh city, marine resources are under increasing threat (oil pollution – solid wastes – collection of marine animals – etc.). Strong monitoring and patrolling is required to assess these changing and evolving circumstances.

- RMNP developed a policy for protection of marine resources through implementing a network of 95 mooring lines, installed at the diving sites for general public use. Although moorings reduce physical damage to reefs they can also affect the natural scenery and require continual maintenance. There has been considerable public support for mooring installation at sensitive sites.

1.1.4 Indicators: Coral Reef Ecosystems:

Category	Key Attribute	Indicator	Indicator Ratings (current rating in bold)				Information Source
			Poor	Fair	Good	Very Good	
Condition	Structure: Butterfly fish	Number of species of butterfly fish per 500 square meters	< 2	**2-3**	4-6	>6	Survey; every 6 months; previous studies
Condition	Structure: Butterfly fish	Abundance of butterfly fish per 500 square meters (no. of individual fish)	<15	**15-29**	30-40	>40	Survey; every 6 months; previous studies
Condition	Structure: Coral cover	Cover (%) per unit area	<5	5-24	**25-60**	>60	
Threat	Mass tourism	Number of visitors/month	>40,000	**20,000-40,000**	20,000-10,000	<10,000	

Notes:

Missing data: Enforcement effort and results (how to define the indicator, what information to collect, etc.).

1.1.5 Summary of Recommended Actions

Based upon the foregoing evaluation of threats and status of the resource, the following actions are recommended. These should be integrated into the future management plan and annual work plans.

- Given the huge economic importance of the coral ecosystems to the local and national economy, enhanced monitoring, patrolling and management activities are needed to safeguard the resource. RMNP budget should be substantially increased.

- A sustainable plan for the use of diving sites is needed. To support this, a comprehensive carrying capacity study should be carried out quickly for the diving sites inside RMNP (15 diving sites inside the park border – 16 in front of Sharm El-Sheikh coast – 9 around Tiran Island). This is needed because the existing carrying capacity study for the diving sites inside RMNP is limited and there is a need to upgrade it. This study will help the RMNP staff in setting a well developed plan for the number of visitors (divers – snorkellers – swimmers) per diving site per hour.

- Effective management of the islands and the associated dive sites is urgently needed.

- A top level protocol should be signed between RMNP (represented by EEAA), marine police (represented by the ministry of Interior), the coast guard (represented by ministry of Defense), Sharm El-Sheikh diving centers association, ministry of Tourism and South Sinai governorate. This protocol should concentrate on the implementation of the carrying capacity plan for the diving sites inside RMNP and should result in a decrease in the conflict between the above mentioned organizations.

- With collaboration of diving centers, RMNP staff should set a well organized time schedule for the number of boats per diving site per 4 hours. This schedule should be implemented

strictly without exceptions for any boat or diving centre and in the same time RMNP staff should enforce the implementation of this time schedule through permanent sea patrolling.

- RMNP should encourage the diving centers working in the area to hire more diving guides in order to reduce the ratio between the numbers of divers related to the number of diving guides. In the same time RMNP should continue its training sessions for these new hired diving guides to be sure that they will be at the level of expectations by the park.

- To improve the stable condition now for the coral reef in the existing diving sites, new diving sites can be allocated within RMNP in accordance with the carrying capacity study, in order to reduce the pressure of divers on the existing diving sites. This should give time for the coral colonies to recover and hence improve the quality of the coral reefs.

- With the coordination with the Tourism Development Authority (TDA) in South Sinai governorate, RMNP should set guidelines for carrying capacity of development of Sharm El-Sheikh city in order to restrict the number of hotels to certain sustainable levels.

- There is a critical need to have an effective contingency plan for combating oil spill inside RMNP in cooperation with the oil companies and oil fields in the area. Also, RMNP staff should establish a reporting system for skippers and fishermen to quickly report any oil pollution in the sea.

- A research and monitoring strategy is needed to follow up and evaluate the status of the existing marine resources in order to have a periodical upgrade of the carrying capacity study for the diving site. Also further work on identifying and implementing suitable indicators is needed; some of these may require initial research to test.

- Patrolling and enforcement of non fishing areas needs to be strengthened. Currently the park has insufficient financial and human resources to do this work in an effective way. A protocol should be signed between RMNP (represented by EEAA), marine police (represented by the ministry of Interior), the coast guards (represented by ministry of Defense), fishermen association (represented by ministry of agriculture) and South Sinai governorate, to set rules to control fishing activities inside and outside the park.

- RMNP should follow up the implementation of South Sinai governorate plan for building dams to be sure that the dams allocated in the plan for RMNP will be implemented in order to prevent the physical damage of the coral reef by floods.

- Establishing a good patrolling and monitoring system (taking into consideration provision of the needed tools: enough vehicles, communication tools such as radio and mobile or satellite phones and basic staff training).

- A well formulated communications plan is needed to ensure effective dissemination of key messages. This should include:

    - Information and rules for beginner swimmers, for example, to require them to wear a floating vest. This will lead to decreasing the negative effects of inexperienced swimmers on the coral reef. Experienced skin divers (snorkelers) should be exempt from this rule.

    - More cooperation with the ministry of Media, ministry of Transportation, national airlines (Egypt Air) and the international airlines, to provide certain minutes inside their means of transportations to films about the National Parks of Egypt and especially RMNP. This will give information for the visitors and tourists about the area and include key messages (e.g. never stand on coral – they are living organisms – never collect natural objects – etc).

- RMNP with cooperation with the ministry of Exterior and ministry of Interior should find a mechanism to collect fines from violators who collect and destroy corals. The existing legal system allows the foreign violators to leave Egypt without paying the legal fines and there is no mechanism to collect the fines later from the violators in their home country.

- Implementing a long term public awareness program targeting the local community to encourage protection of these important diving sites.

- Preparation of literature and signs to deliver priority messages and information.

- Establishing a management plan for RMNP and preparing a thorough annual work plan with the input of RMNP rangers.

- Reef carrying capacity should be examined from the perspectives of ecological, physical and social carrying capacities. The estimation of reef carrying capacity requires an integrated survey program that involves a multi-disciplinary set of biological, ecological, socio-economic and oceanographic studies. The results of these studies should identify the major factors and types of environmental impacts and their levels of influence to various coral reef communities and habitats. However, perfect knowledge of these factors requires long term studies and repeated surveys which are never possible along the short term. Management and zoning plans are prepared upon the best available knowledge and scientific information to make reasonably informed decisions providing that reasonable and competent scientific and environmental surveys and efforts are undertaken to obtain this knowledge. (Kotb, M., *et al*; 2004)

1.2 Mangroves

1.2.1 Description

- Mangroves are the main vegetation type in protected intertidal areas along tropical and subtropical coastlines, and are considered to be threatened. Mangroves are important habitat and feeding grounds for a range of benthic and pelagic marine animals and bird species (about 255 species of vertebrates and in vertebrates are related only to mangrove habitat all over the world). Mangroves are well adapted to their saline costal environment. Their root systems, seen as leafless branches, sprout from the ground around each tree, act as a barrier, absorbing nutrients, well fixing of the plant and keeping out most of the salts from the seawater. The water with its dissolved nutrients then nourishes the tree. Salt that is not removed by the roots is exuded by the leaves and seen as salt crystals on both sides of each leaf (Sheberd 1992).

- Mangroves in Sinai are monospecific, with stands of *Avicennia marina* limited to Nabq (65 Hectares) and Ras Mohammed (only 2 Hectars) channel. Unlike other regions of the world where large forests dominate several square kilometers, Red Sea mangrove communities tend to be fairly limited in extent. Sinai mangroves have a diverse associated ecosystem of over 114 species including algal, crustacean, fish, mollusca and insect elements. They also provide habitat and food resources for birds (Sheberd 1992).

- Mangroves at RMNP located at the most southern part of the park majorly restricted to a shallow channel of about 1150 meters length and ranged between 40 to 75 meters width add greatly to the structural diversity of the shore habitats, creating a multitude of niches for

several animal species. Detritus accumulating and trapped among the respiratory roots support a variety of invertebrates like: Uca (*Tabalassuca tetragonon*), *Dotilla sulcata* and *Balanus amphitrite*, etc. .

- Mangroves are the main vegetation type which is important key species to many kinds of invertebrates where they live in the mud, burrowing to hide and thus help the aeration of the soil. Fish come to spawn between the respiratory roots. Mangroves of Ras Mohammed is a key species, considered as a good roosting site for migrating White Storks wheer they accumulate during the migrating season inside the channel at low tide to rest and to feed. Reef heron, Striated heron, Night heron, Slender-billed gull, and Caspian tern breed in the area.

(a) Size: The current size of the mangrove stand in the channel is about 2 ha in form of about 89 mother trees one of the mother trees is separately located in the shallow entrance of the Hidden Bay at about 400 away from the main stand.

(b) Condition:

Over all status is good and this is ensured by the presence of several seedlings and trees at different ages especially in the area trapped between the trees and the Mangrove island. Unlike the two mother trees in the other side which are continuously subject to unaware touching or cutting of leaves or small branches. Knowing the over all status of course would be much more better if a little more annual precipitation were received which assists in the removal of heavily accumulated salts on the leaves passively affecting the plant status.

Composition: (e.g, presence, absence of native and exotic species, recruitment, etc.)

- The key mangrove species in RMNP is *Avicenia marina.* All of the mangrove trees in RMNP exist in one sandy bottom shallow channel at the southern west of the park. Most of these trees located on the western bank of the mangrove channel while a few trees on the eastern bank of the channel.

- Mangrove trees are important supporting habitat providing feeding grounds and shelter for a range of benthic and pelagic marine animals and birds species.

- The beauty and magnetism of the site emerging from its naturalness; all habitats located in the area are natural (coral reefs, fish, mangroves, plants, birds, mammals, clifs, etc.). This site, on the east coast of the Gulf of Suez and some other sites have a high degree of naturalness. In comparison with other sites, it is difficult to find such areas having this quantity of natural habitats, which coexist and reacting as a single unit.

- No exotic species exist in this channel.

Structure: (e.g., ground/shrub/canopy vegetation, quality of habitat, etc.)

- The bottom of the mangrove channel is mainly sandy with silts, which means that the soil inside this channel is compacted with a low rate of gas exchanges.

- The mangrove tree density is 557 ha^{-1} (source: RMNP staff during the workshop).

- The mangrove seedling density is 333 ha^{-1} (source: RMNP staff during the workshop).

- The mangrove trees are characterized by dense branching below 1.3 m.

Biotic interactions: (e.g., competition, predation, disease, etc.)

- Poor information; more research and monitoring are needed.

- Uca crab live in the mud soil of the mangrove in their burrows forming under ground network of tunnels which ensure well mixing and aeration of soil contents which is greatly important for the roots development.

- Most of the migratory birds used the mangrove channel inside RMNP as a resting and feeding site where they can find plenty of food (eg. Juvenile fish, crustacean, etc).

(c) Landscape Context:

Dominant regimes and processes: (e.g., hydrology, water chemistry, geomorphology, climate, fire, other natural disturbances, etc.)

- Poor information; more research and monitoring are needed.

- Air temperature varies from 15^{o} C in the short winter to more than 40^{o} C in the summer. The summer temperature may reach 45^{o} C in July and August and the air is slight to moderate humidity. Winds are activated in the winter and normally come from north but sometimes come from the west.

- In the mangrove channel, the surface water temperatures vary between 18 and 26 and surface salinity between 40% and 41% during summer.

- The mangrove channel is the major place in RMNP which receives the first wave of oil pollution from spills in the Gulf of Suez due to its geographic position facing the north western wind which drives any form of pollution toward this site. Knowing that mangrove habitat is very sensitive to petroleum pollution because oil is normally becomes as chocolate emulsion which precipitate on the soil and roots to passively affect the whole ecosystem while the grater levels of pollution which may arrives to the mangrove channel in form of tar balls results severe effects to the mangrove and direct death of almost all of associated animals.

- Windy days and higher tides are more effectively drive several types of solid wastes to settle on the mangrove Arial roots which acting as sieves collecting various types of plastics woods and any floating solids which blocks the fine respiratory opening of the roots.

- As mangroves stabilize shore line against erosion by the growth mode of the root system, they minimize the sedimentation rate on the fore reef which enhances the coral growth

Connectivity: (e.g., species access to habitats needed for their life cycle, fragmentation, etc.)

- Some fish species move between the mangrove channel and the sea especially during the production season. Also some fish species use the channel as a feeding ground.

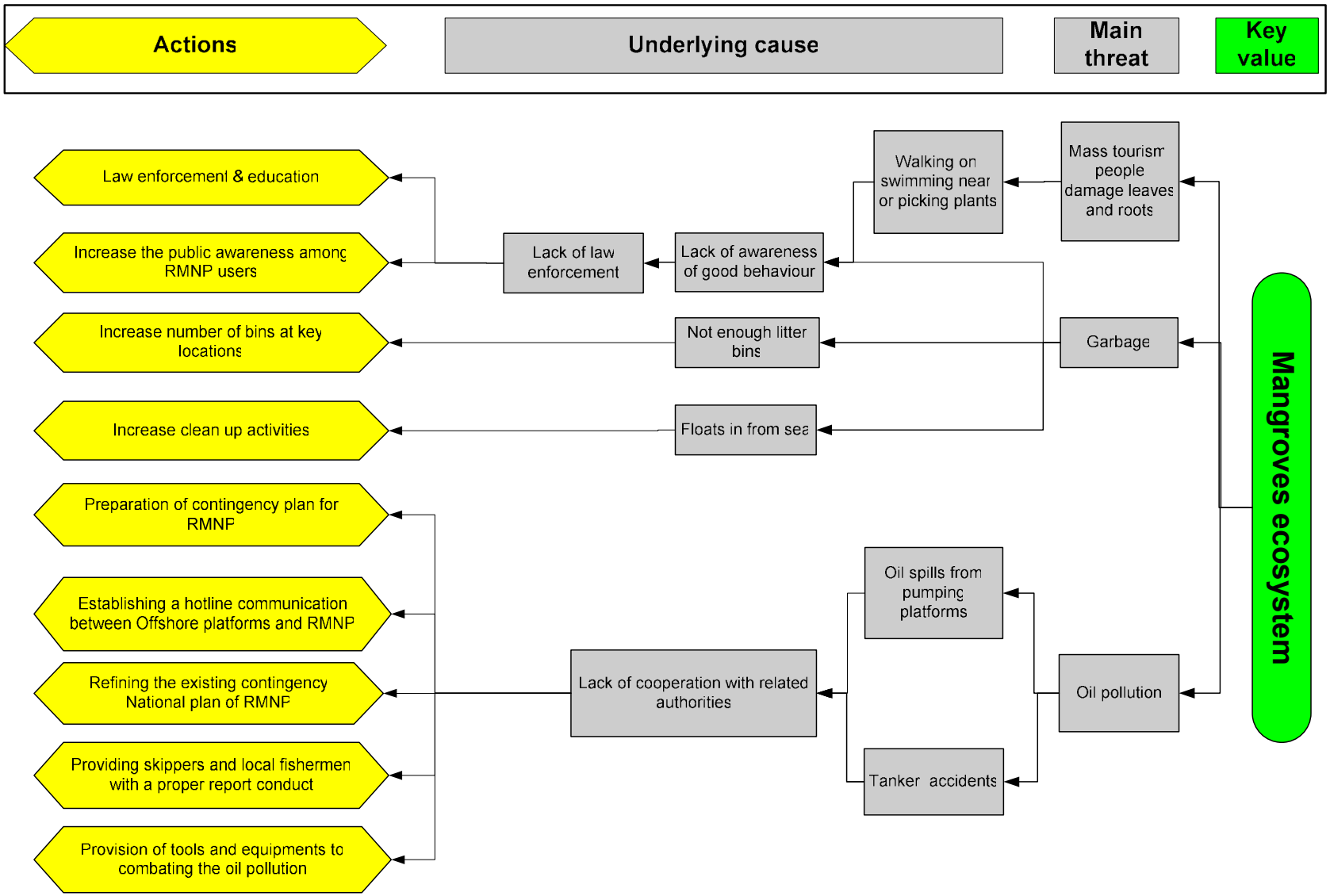
- There is a possible impact on the mangrove trees and its associated fauna from oil pollution expected from the oil field working in the Gulf of Suez.

- About 250 species of vertebrates and invertebrates are related only to mangrove habitat.

(d) Threats:

#	Threat	**Extent** (L, M, H, VH)	**Severity** (L, M, H, VH)	**Threat Magnitude**
1.	Oil pollution	Medium	Very High	Medium
2.	Mass tourism	Very High	Low	Low
3.	Garbage	Very High	Medium	Medium

1.2.2 Threat Analysis:



1.2.3 Management Actions Taken

The overall status of the resource today compared to five years ago is "**stable**", for the reasons:

- The mangroves channel supports internationally important bird species (e.g. white stork). This is why RMNP staff give attention to this area during their daily land patrolling.
- Staff in RMNP have put a series of ropes along the channel edge and some of the mangrove trees to prevent visitors from going down into the channel.
- A project was implemented by RMNP staff offered by The Regional Organization for the Conservation of the Red Sea and Gulf of Aden **(PERSGA)** under the title of Sustainable Development of Coastal and Marine Resources along the Gulf of Aqaba Egypt. The project provided equipment and technical support for the staff to study the main marine resources in both Gulf of Aqaba and RMNP. A small project for mangroves was implemented in both RMNP and Nabq protected area for the rehabilitation of mangrove trees in the area.
- In the last few years, cooperative research activities were completed in RMNP with the support of some universities abroad (e.g. Milan university). This research has supported monitoring the status of the mangrove in RMNP.
- The parking area were moved back to the visiting site by 25 meters to provide more area for the visitors and deriving the vehicles away from the in land developed trees during the crowded periods.
- Informational and instructional wooden panels were installed in this site but didn't resist the over exposure to weather conditions in this area which may require using of other more proofing material.

1.2.4 Indicators: Mangrove Ecosystem

Category	Key Attribute	Indicator	Indicator Ratings (current rating in bold)				Information Source
			Poor	Fair	Good	Very Good	
Size	Area	Average basal area in RMNP proper (square meter/hectare)	1-4	**5-7**	8-12	>12	Monitoring Unit Note 1
Condition	Productivity	Litter fall (tons/hectare/year)	0-0.5	0.6-1	**1.1-2**	>2	Monitoring Unit
Threat	Deformation	Percentage of deformed aerial roots/hectare (based on a measure of the number of roots per sq m)	<25	11-25	6-10	**0-5**	Monitoring Unit

Notes:
1. Higher basal area means more recruitment and growth. In RMNP proper, the stand basal area is relatively stable. These ratings are specific for Arabian Peninsula arid zones.

1.2.5 Summary of Recommended Actions

Based upon the foregoing evaluation of threats and the status of the resource, the following actions are recommended. These should be integrated into the future management plan and annual work plans.

- A visitor management and site plan for the mangrove channel and whole peninsula should be established to address the following threats and opportunities:
    - Better protect the mangrove channel area to keep the unique ecological processes and fluxes of the mangrove channel in a productive stable status.
    - Minimize impacts of cars and buses on migrating birds during the heavy migration seasons.
    - Create an interesting hiking opportunity on the peninsula as this gives people a chance to experience the southern tip of the Sinai.
    - Enhance on-site educational facilities.
    - Purposing a different visiting mechanism for this area depending on closing this site and the whole area of hidden bay back by a half kilometers or more to be visited as by foot natural trail which will rise the value of the site and provide chance for more quite natural scene to listen to the whisper of the nature in this area without the buses engines which wastes the majority of the scene and sound of nature in this area with providing some other resting and shading facilities in this site.
- The following actions should be considered when preparing the visitor management and site plan:
    - Establish a parking area well before the mangrove channel. From this point forward, no vehicles would be permitted, and instead a walking track would be established.
    - At the parking area, install a map of the peninsula showing the main natural features and location of the track, with distance and walking times. Install interpretive panels at the key locations to tell the main stories (e.g., migration, mangroves, the convergence of two seas to create the special marine and terrestrial ecosystems in RMNP-located at the tip of the peninsula, etc.).
    - During the migratory bird seasons, the number of visitors walking to the mangrove channel should be very limited. They could be allowed to visit the site, only with a Ranger or a certified guide who will be sensitive to the site and the birds. Temporary “bird hides” could be installed during migration.
    - An extra fee could be established for the special privilege to see this natural spectacle that occurs only twice per year, and for the special guided services. This “low volume-high value” strategy enables conservation and economic benefits.
- A protocol should be signed between RMNP and all the oil companies working in the Gulf of Suez. This protocol will concentrate on having a quick communication response and different oil combating scenarios when oil pollution happens by any of these oil companies. This protocol should improve response rate and the effectiveness of the response, thereby decreasing the oil pollution damage in the mangrove channel.
- RMNP should encourage the tourists companies working in the area to hire more tour guides to reduce the ratio between the numbers of visitors related to the number of tour guides. In the

same time RMNP should continue its training sessions for these new hired tour guides to be sure that they will be at the level of expectations by the park.

- Encourage research that will lead to improve indicators and measurement protocols (including threats), and look for alternatives to combat threats.

1.3 Sea grasses

1.3.1 Description

- Sea grasses are flowering plants able to live permanently in the marine environment and are represented by about 50 species within 12 genera (Shebered 1992).

- Sea grasses are fairly widespread along Sinai's coasts, concentrated in shallow water areas such as lagoons, sharms and mesas. In the Gulf of Aqaba, high concentrations of sea grasses are found in just a few sites in Ras Mohammed, Nabq, and Abu Galum. Although the majority of sea grasses occur in depths of less than 10m, communities in the gulf of Suez are found as deep as 30m, and due to the more favorable conditions, they are more abundant (Shebered 1992).

- Of the eleven seagrass species in the Red Sea, seven are known from the Gulf of Aqaba and eight from the Gulf of Suez. Studies from the Gulf of Aqaba found 49 species associated with sea grasses ecosystems, 70% of which were gastropods, 10% bivalves and about 5% polychaetes.

- Sea grass communities are amongst the most distinct habitats of RMNP, supporting similarly distinct communities of benthic fauna and fishes.

(a) Size: Current size of the area: 60 km^2

(b) Condition:

Composition: (e.g, presence, absence of native and exotic species, recruitment, etc.)

- In RMNP there are three species of sea grasses, which are *Thalassia hemprchii*, *Halophila ovalis,* and *Cymodocea rotundata.*

- The main dominant species of sea grasses in RMNP is *Thalassia hemprchii*. The sea grasses in RMNP concentrate mainly in the Gulf of Suez and also exist in small patches in the Gulf of Aqaba.

- Sea grasses are important habitat and feeding grounds for Dugongs (*Dugong dugon)* and Green Turtles *(Chelonia mydas*).

Structure: (e.g., ground/shrub/canopy vegetation, quality of habitat, etc.)

- Sea grasses exist mainly in continuous large patches nearby the reef edge.

- Sea grasses grow in the shallow water ranging between 2-25 m depth.

- Very high reproductive capacity of the habitat and important in the process of gas exchange between air and sea water.

Biotic interactions: (e.g., competition, predation, disease, etc.)

1. No information available about this section.

(c) Landscape Context:

Dominant regimes and processes: (e.g., hydrology, water chemistry, geomorphology, climate, fire, other natural disturbances, etc.)

- Poor information; research and monitoring are needed.
- From RMNP staff experience, huge amounts of sea grasses stick to the tar remains after any oil pollution happens in the Gulf of Suez.
- Stabilize shores against erosion.
- Minimize the sedimentation rate on the fore reef which enhances the coral growth.

Connectivity: (e.g., species access to habitats needed for their life cycle, fragmentation, etc.)

- Fish species using the sea grasses communities especially during the reproduction seasons for both laying their eggs and as a feeding ground.
- Turtles and dugong move from the sea to the patches of the sea grasses for feeding purposes.

(d) Threats:

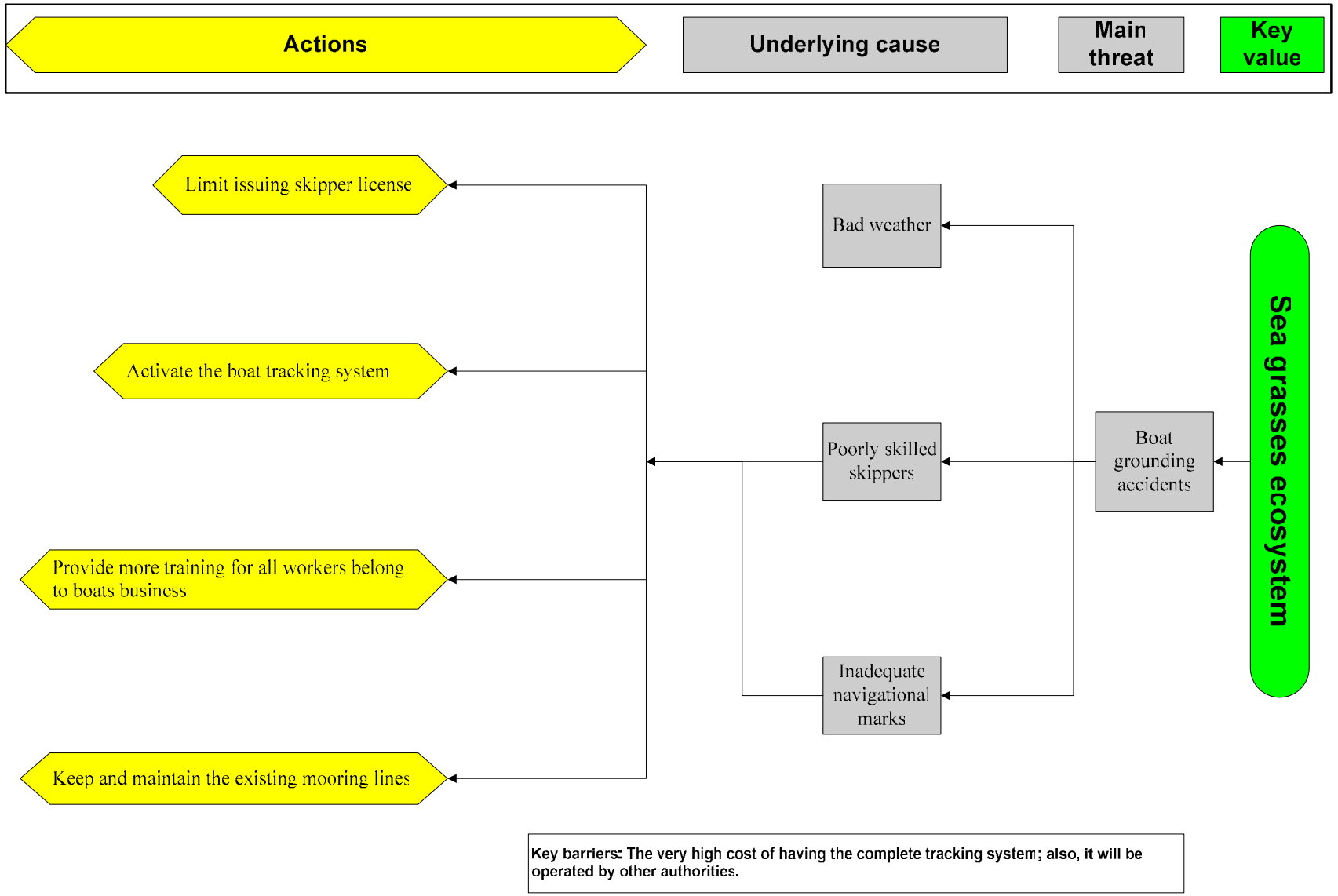
#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1	Mass tourism (diving, snorkeling)*	Medium	Medium	Medium
2	Oil pollution	Low	Very High	Low
3	Garbage*	Low	Low	Low
4	Boats grounding	Low	Low	Low
5	Trampling by tourist activities	Medium	Low	Low
6	Eutrophication and sedimentation	Low	Low	Low

* see charts in section 1.1.2

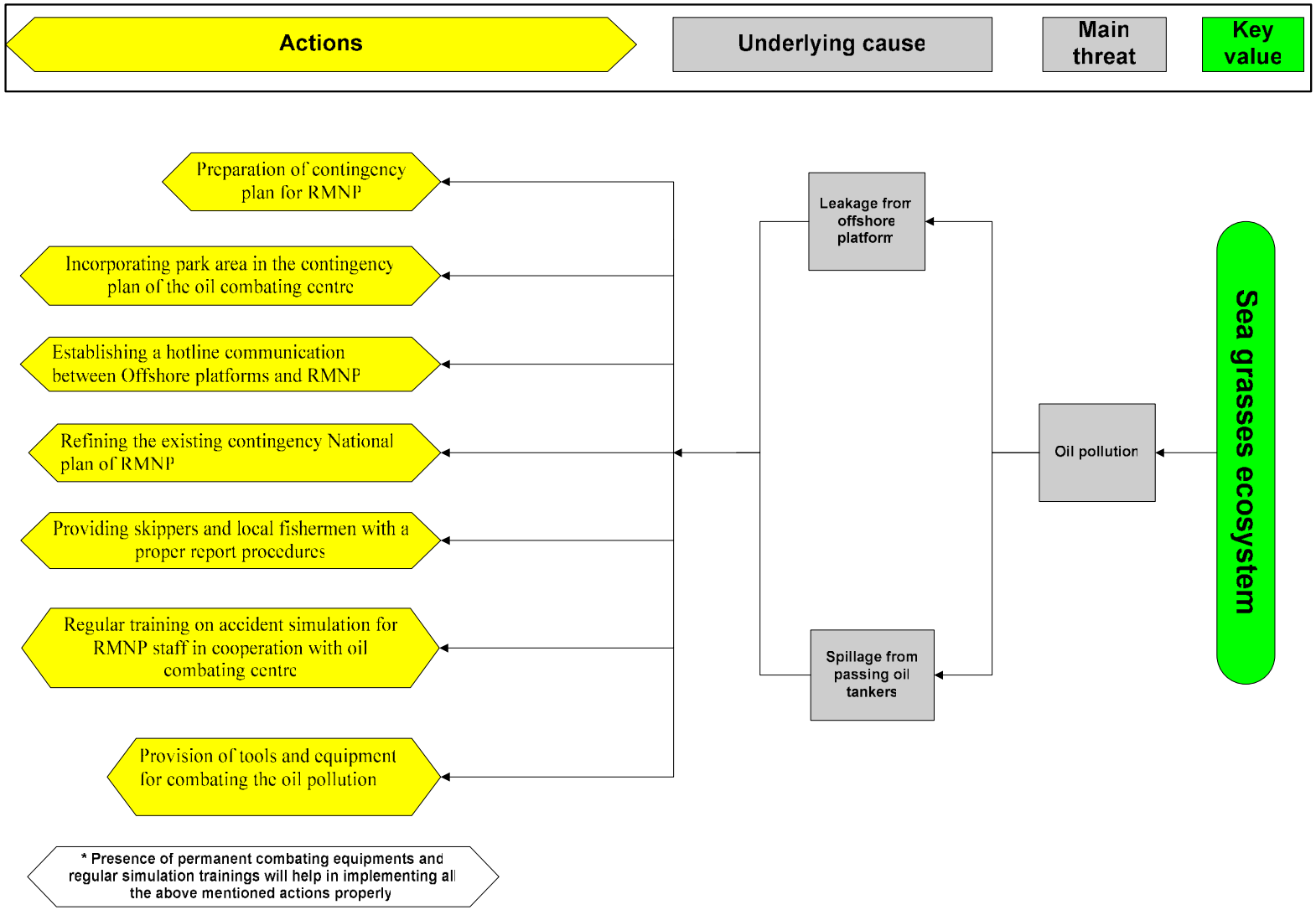
1.3.2 Threat Analysis

Because the threats affecting the sea grasses are many, the team divided the threat map for sea grasses into three to make them easier to understand. Also refer to charts in section 1.1.2 pertaining to mass tourism and garbage.

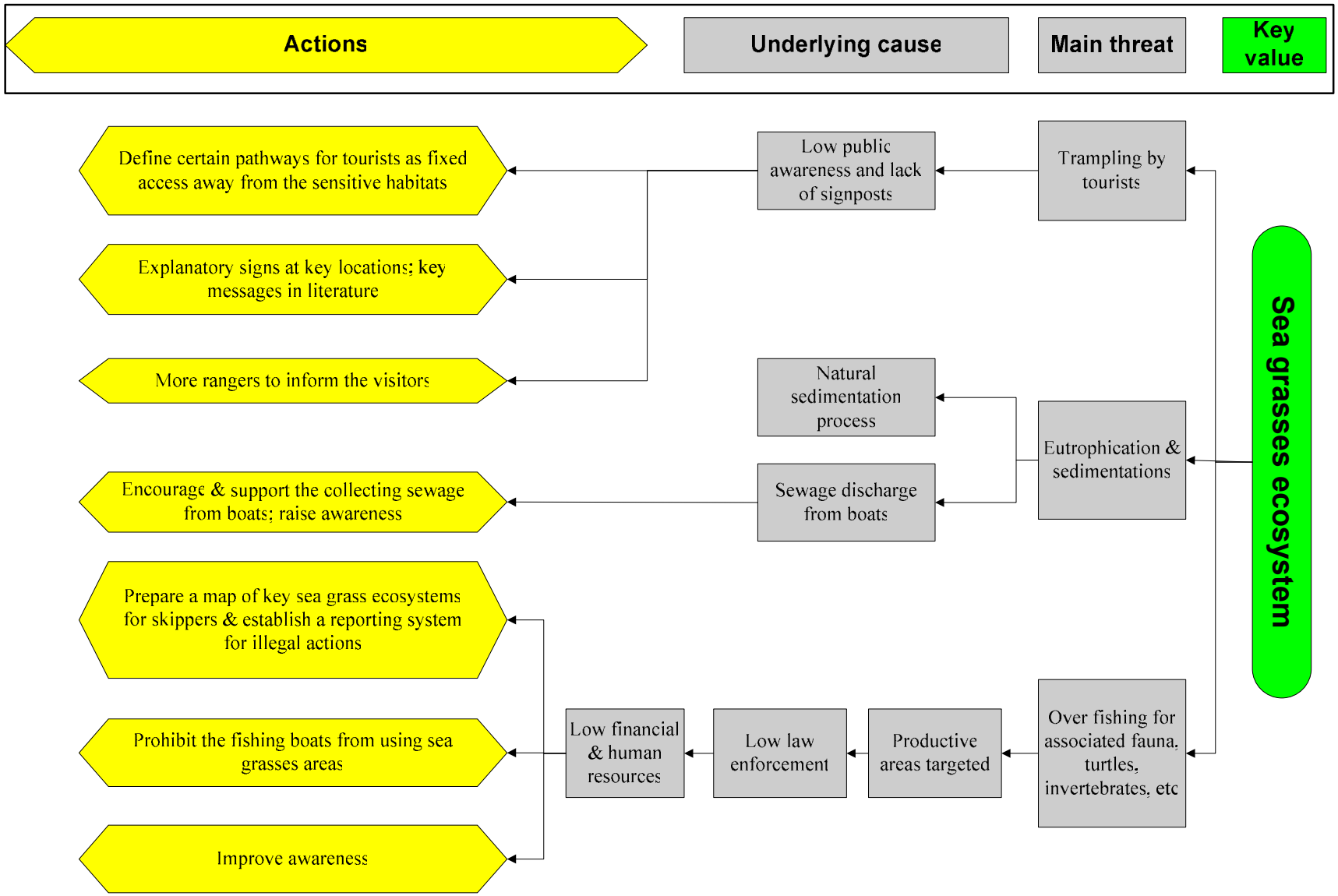
1.3.2.1 Boat grounding:



1.3.2.2 Oil pollution threat



1.3.2.3 Trampling, eutrophication and over fishing threats



1.3.3 Management Actions Taken

The overall status of the resource today compared to five years ago is "**stable**", for the reasons:

- The sea grasses patches inside RMNP provide a feeding ground for internationally threatened species (e.g. dugong, turtles) and for this reason staff take care of the quality of the sea grass habitat and they try to protect this habitat against oil pollution.
- The sea grass ecosystems continue to exist and provide habitat as nurseries for juvenile fish and feeding grounds.
- No studies done on the sea grasses in RMNP under the umbrella of the project offered by PERSGA for Sustainable Development of Coastal and Marine Resources along the Gulf of Aqaba Egypt.
- There has been a reduction in the number of oil pollution accidents in the last few years.

1.3.4 Indicators: Sea grass ecosystem

Category	Key Attribute	Indicator	Indicator Ratings (current rating in bold)				Information Source
			Poor	Fair	Good	Very Good	
Size	Area	Percentage of the area covered by sea grass (using a 1 square meter grid)	<10	**11-45**	46-75	>75	Monitoring Unit Note 1
Condition	Productivity	Number of shoots of sea grass per square meter	<50	51-100	**101-150**	>150	Monitoring Unit Note 1
Threat	Trampling by snorkelers entering dive sites from beaches	Reduction of area of sea grass					Note 2

Notes:

1. These ratings are based on staff experience and knowledge and are estimates. Need more surveys to fine tune the ratings and establish the current baseline situation. This is the case for all, except mangrove.

2. Possible to measure through satellite photos or by GPS boundary mapping and observation of areas showing decline. Currently being researched.

1.3.5 Summary of Recommended Actions

Based upon the foregoing evaluation of threats and the estimated status of the resource, RMNP staff recommend the following actions to be taken in the future. These should be integrated into the future management plan and annual work plans.

- Zonation of the sea grasses should be prepared as soon as possible. Zonation will help the staff to measure the natural and human caused changes, and to focus enforcement and education efforts.

- In the same protocol for mangrove that should be signed between RMNP and all the oil companies working in the Gulf of Suez, a part of this protocol should include the necessity to conserve the sea grass.

- Enhance the enforcement of non-fishing regulations.

- RMNP staff should set permanent monitoring programs in order to study the health of sea grass habitats as the main feeding ground for the two most threatened species inside RMNP (e.g. turtles and dugong).

- RMNP should coordinate with the tourist companies working in the area in order to arrange with them continuous campaigns for clean up of the sea grasses patches inside the park.

- Develop materials about sea grasses in all education and awareness products, including on-site signs.

- Undertake further work on the development of suitable indicators.

1.4 Birds

1.4.1 Description

- The area is recognized by Birdlife International as an "Important Bird Area" (IBA) for its importance as a migratory route. The first organized survey of birds was done in autumn 1998 (Celimens, 1998) to generate base line data about South Sinai birds and to train two rangers in bird identification. 134 bird species were recorded in Ras Mohammed. The most prominent species are soaring birds (24 kinds of raptors), the most common are Honey Buzzard and Common Buzzard. More than 120,000 white storks were recorded in autumn 2006, which are considered globally threatened. The breeding birds in the area include Osprey (2 pairs), Sooty Falcon (3 pairs) Reef Heron, Night Heron (3 pairs) Caspian Tern, Slender-billed Gull, White-eyed Gull and Kentish Plover and Crowned Sandgrouse. Migratory storks and waders rest at many places along the intertidal flats along Gulf of Suez and in many bays along Gulf of Aqaba. At Ras Mohammed some of these sites are permanently closed and the others are seasonally closed to provide protection to the species.

- The main roost sites are located along Gulf of Suez (within the territory of the Park), Hidden Bay, Mangrove Channel and the Stony Gate. Sites of secondary importance are Conny Bay and South Breika and Ras Attar.

(a) Size: The current size of the area is approximately 60 km of shorelines inside the park.

(b) Condition:

Composition: (e.g., presence, absence of native and exotic species, recruitment, etc.)

- There are 230 species of birds using the shorelines inside RMNP.
- The shorelines in RMNP are of two main types: flat sandy shorelines especially along the coast of the Gulf of Suez, and rocky shorelines which mainly exist along the coast of the Gulf of Aqaba.
- Ras Mohammed is a bottleneck for migratory birds, primarily storks, but also lots of raptors which assemble in the air above Ras Mohammed in the period August to November.
- White Stork passes through in very large numbers from mid-August to the end of September. The largest number recorded in one day was 48.000 bird, and continue passing through in a fewer numbers until the med of November. Nearly a quarter of a million, representing almost half of the Eastern Europe population has been recorded at one time.
- Wadi Khoshbi in Ras Mohammed draws attention to wadis of South Sinai in general as rich bird sites during autumn migration. Significant numbers of Red-backed Shrikes were recorded there. This species is under decline over most of Europe. In Wadi Khoshbi however it was the most numerous of all bird species, outnumbering even common warblers. This suggests that it has a migration bottle-neck in wadis of South Sinai. In addition, Corncrake, Turtle Dove, Wryneck, Lesser Grey Shrike (all in decline) and other passerine species pass through Wadi Khoshbi and other wadis during autumn in large numbers.

Structure: (e.g., ground/shrub/canopy vegetation, quality of habitat, etc.)

- Ras Mohammed has a considerable diversity of habitats like; high cliffs, mountain, sand and rocky bays, wadies, intertidal flats and mangroves. All these habitats are known to be important habitats for both resident and migratory birds.

Biotic interactions: (e.g., competition, predation, disease, etc.)

- Many predatory processes happen during the migratory season of birds in RMNP. For example, birds prey on the fish in the sea, small mammals, crustacean and other birds near the coral reef.
- Migratory birds have a high probability for transferring diseases in-between countries (e.g. avian flu).

(c) Landscape Context:

Dominant regimes and processes: (e.g., hydrology, water chemistry, geomorphology, climate, fire, other natural disturbances, etc.)

- RMNP is considered to be an important fly way for migrating birds and especially for the narrow front migrants, due to the peninsula's unique location before facing the inevitable crossing to Africa (bottle neck for soaring birds).

Connectivity: (e.g., species access to habitats needed for their life cycle, fragmentation, etc.)

- The birds not only use the shorelines but also feed along the exposed back reef and reef edge.

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Tourism pressure	High	Medium	Medium
2.	Oil pollution	Low	Very High	Low
3.	Solid wastes	Low	Low	Low
4.	Illegal hunting	Low	Medium	Low
5.	Cable wires	Low	Low	Low
6	Dump site	Low	High	Low
7	Sewage ponds	Low	High	Low

1.4.2 Threat Analysis

The short time for the workshop did not allow the staff to define a threat map for the birds as a key value in RMNP. This is not regarded as a significant concern because the threat magnitudes are rated as low and medium. The issue of visitor impacts on migratory White Stork at the mangrove channel was addressed in section 1.2.5.

1.4.3 Management Actions Taken

In the workshop, RMNP staff defined the current status of birds, compared to five years ago, as '**improved**' for the following reasons:

- Patrolling and monitoring programmes have been implemented in the last 7 years for the detection of bird movements and behavior during their migratory stop in RMNP.
- A bird ringing program was introduced in 2002 -2003 by the staff with the support of an international expert and the staff does not run it since 2004. This allows RMNP staff to monitor any changes in the migratory behavior of these birds.
- There is a continuous follow up monitoring program and schedule for patrolling the sewage ponds and dumping sites in Sharm El-Sheikh. This could help in the early detection of diseases.
- There is now a clinic for wildlife inside headquarters of South Sinai protectorates, which offers a treatment for injured or exhausted birds.

1.4.4 Indicators: Birds (tourism value), Diversity, Migration Habitat

Category	Key Attribute	Indicator	Indicator Ratings (current rating in bold)				Information Source
			Poor	Fair	Good	Very Good	
Size		Number of White Stork individuals passing through RMNP during full migration	<150000	150000 - 250000	**250000 - 350000**	>350000	
Condition	Structure: Diversity	Diversity of species (number of species recorded in RMNP per year)	<50	50-80	80-100	**100-140**	Note 1
Threat	Garbage & sewage	Number of dead birds by species in dump and sewage site together (spring and fall survey)	>80	60-80	**40-60**	<40	Monitoring, patrolling
Threat	Cable wires	Mortality of birds killed by antenna guide wires during migration					More work required
Threat	Garbage & sewage	Number of dead birds by species in RMNP proper (excluding dump and sewage site) (spring and autumn survey)	>20	10-20	**5-10**	<5	
Threat	Oil pollution	Number of birds (dead) from oil pollution					More work required

Notes:
1. The current list of birds recorded at RMNP is 134 (over the last 15 years). The maximum number recorded in one autumn season in the past was 140. This indicator requires more work to determine its value and to resolve contradictions. For example, number recorded could be a function of observation effort, expertise of observers, and time of day light, etc. This could also be an indicators of management action, whereby higher number represent greater input of effort on this area of focus.

1.4.5 Summary of Recommended Actions

During the evaluation process of threats and the estimated status of the resource, RMNP staff recommended the following actions:

- Obtain the nomination of at least 40% of the sites inside RMNP to be of international importance through coordination with international organizations of birds.
- Ensure adequate **bird conservation planning** and fundraising for the development of the bird watch sites inside RMNP for visitors. Conduct annual reviews of the implementation of this plan.
- Provide access for RMNP staff to training in species monitoring, wetland management, public awareness and education programs.

- Provide a range of tools and programs to promote public awareness and education activities on migratory birds. The target will be to have 50% of the bird watching sites in RMNP conducting awareness and education programs or involved in activities developed and promoted under the **RMNP bird conservation plan**.

- Conduct dedication ceremonies at any new bird watching sites in RMNP that involve all the stakeholders and communities representatives.

- Develop a special program of activities to address the ongoing loss and degradation of bird habitat in the Gulf of Aqaba and Gulf of Suez. (Including the Red Sea).

- Enhance the exchange of information on bird conservation and habitat management between Egyptian protected areas, researchers and Non-government organizations.

- Design and implement sound indicators through statistically robust methodologies to monitor bird populations in RMNP, including Tiran and Sanafir Islands.

- Support and initiate new projects on bird migration with a special focus on the use of color leg flags. Seek to maximize community involvement in these projects through reporting and analysis of sightings of color flagged birds.

- Develop a database to collate bird counts in the flyway. Compile and publish an up-date of the population estimates of birds. Also, assess the adequacy of the roosting sites in RMNP to conserve bird species.

- Prohibit or restrict commercial and private aerial operations within 1500 feet above sea level and within 1 kilometer in lateral distance of significant seabird breeding sites.

- Protect the mangrove channel area to keep the unique ecological processes and fluxes of the channel in a productive stable status as a feeding area for migratory birds.

1.5 Spawning ground in RMNP

1.5.1 Description

- A resourceful underwater area filled with food resources in addition to other unknown attributes (e.g. current pattern) and hence chosen by the emperor fish to mass spawn in. Spawning season occurs during the months from April to early June, situated in Jackfish Alley.

- Jackfish Alley is also known by the names Stingray Alley and Fisherman's Bank. From shore, diving starts with a nice wall which early sections are porous and have created many caves and overhangs. One cave is even more than 40 meters long and can be entered. Continuing southwards you will find a reef top which is a sandy plateau at around 20 meters deep. This used to be where local fisherman fished, hence its name Fisherman's Bank. Later it changed to Jackfish Alley and Stingray Alley because of the large numbers of jacks and blue spotted stingrays that are found here. Divers often start at a white mark on the cliff where they drop down to a nice cave and make a drift dive to the sandy alley seeing all kinds of life on the way. (Sharm El-Sheikh website – diving sites)

(a) Size: The current size of the area: 0.5 square km.

(b) Condition:

Composition: (e.g., presence, absence of native and exotic species, recruitment, etc.)

- Many species of angelfish such as the emperor, regal and yellowband angelfish. There are caves with glassfish and some sharks, barracuda and tuna can be found near the sandy alley. Jacks and stingrays are very common. Coral is brilliant with some great coverage on top of the many coral heads and pinnacles that enlighten this bright sandy area.

- Jackfish Alley is the largest aggregation spawning ground not only in RMNP but also in the whole Red Sea.

- *Lethrinus nebulosu.* is the main common fish species using this spawning ground.

Structure: (e.g., ground/shrub/canopy vegetation, quality of habitat, etc.)

- The main plateau in Jackfish Alley contains very rich coral reef communities with associated invertebrates and algal coverage which support the feeding needs of the fishes spawning in the site.

Biotic interactions: (e.g., competition, predation, disease, etc.)

- There are some tangible signs of predation on coral by different biomes such as parrot fish and dropila snails.

(c) Landscape Context:

Dominant regimes and processes: (e.g., hydrology, water chemistry, geomorphology, climate, fire, other natural disturbances, etc.)

- Poor information; research and monitoring are needed.

Connectivity: (e.g., species access to habitats needed for their life cycle, fragmentation, etc.)

- Poor information; research and monitoring are needed.

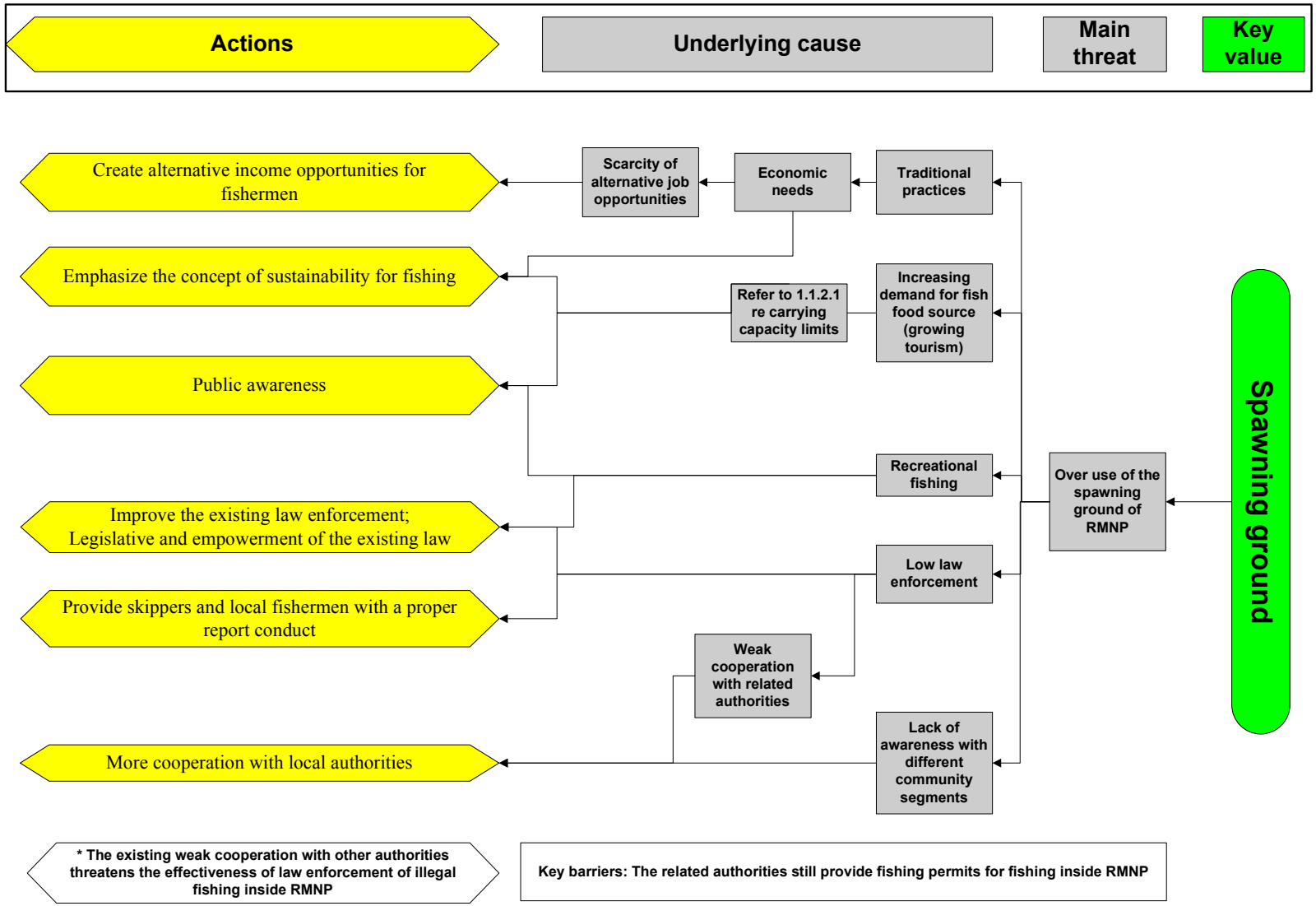
(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Over use (tourism, fishing, etc.)	Very High	High	High
2.	Coral breakage by anchors	Medium	High	Medium
3.	Alteration of spawning ground as a habitat for other species	Very High	Low	Low
4.	Ruining the reputation of park authority in term of its capability to perform its roles	Medium	Very High	Medium
5.	Effluents	Medium	Medium	Medium

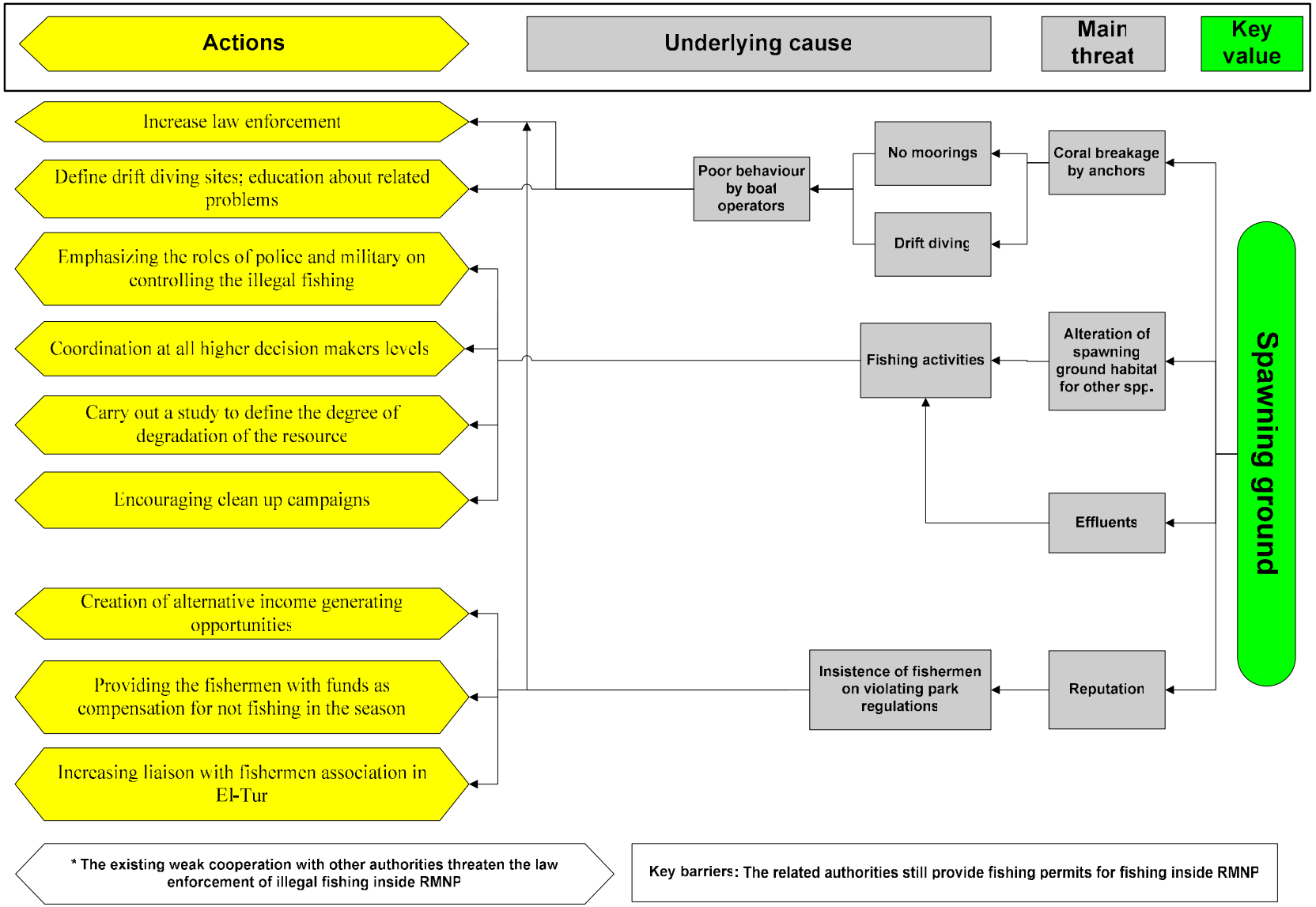
1.5.2 Threat Analysis

There are two threat maps for the spawning ground key value in RMNP, one for over use of the spawning grounds, and one that combines coral breakage, alteration of the spawning grounds, reputation and effluents.

1.5.2.1 Over use of the spawning ground



1.5.2.2 Coral breakage, alteration of spawning grounds of habitat for other species, effluents and reputation



1.5.3 Management Actions Taken

In the workshop RMNP staff defines the current status of spawning ground, compared to five years ago, with rating of '**improved**' for the following reasons:

- Jackfish Alley diving site in RMNP provides a spawning ground for many fish species (e.g. *Lethrinus nebulous*). For this reason RMNP put Jackfish Alley as a very sensitive diving site and therefore the mooring lines that existing in the site, are removed some years ago by RMNP staff and allow only the diving in order to reduce the continuous disturbance of diving boats to the fish communities in the site.

- In addition to its role as a breeding ground for some fish species, Jackfish Alley also is an important diving site with high diversity of marine life. Because of the shape of the underwater plateau the site has a high rate of recruitment for coral larvae.

- In the past (7-8 years ago), fishermen from El-Tur city used to get fishing permission in Jackfish Alley during the spawning season of some fish species. During this fishing season, there was a high fishing pressure of the fish stock of that species. These fishing boats (40-50 fishing boats in the season) cause huge coral reef destruction because of boat anchoring. The PhD study on the management of fishery inside RMNP (Dr. Mohammed Salem – 1999) showed that there is a rapid decline in the fish stock of *Lethrinus nebulous* because of the high fishing pressure during the spawning season. This result gives the right to RMNP to have a decree to stop any fishing activities in the park forever. This decree leads to stop any fishing activities during the spawning season, so it gives the chance to fish stock restoration in addition to decrease the destruction of coral reef by anchoring.

- RMNP staff conducts a daily boat patrol (day and night boat patrolling) during the spawning season of *Lethrinus nebulous* to prevent illegal fishing by the local fishermen.

1.5.4 Indicators

Category	Key Attribute	Indicator	Indicator Ratings (current rating in bold)				Information Source
			Poor	Fair	Good	Very Good	
Size	Population size	Size structure of Emperor Fish (lethrenus sp) per season (april-june) (per change from length-count distribution curve)			Current status		Survey of fishermen; Data interpretation from Monitoring Unit Note 1
Condition	Structure: Population size	Catch per unit effort (kg/boat/night)	<30	30-99	100-199	>200	Monitoring Unit Note 2
Landscape / Management Context							
Threat	Illegal fishing	Fishing effort (Number of boats/day)	>20	10-20	0-9	0	Note 3

Notes:

1. Based on M Salem PhD research, survey of fishermen, which is illegal catch. Some possible issue with the reliability of this number, since it is illegal catch. Have 5 years of data by staff who surveyed fishermen during the night catch. Cannot be 100% certain with this data and it is not possible to be statistically accurate; it might be a general indicator.

2. This indicator relies on other data, size structure. Must count number of boats coming into spawning area. This has not yet been done. Ratings are estimates, no data is yet available. Subject to same data collection problems/getting accurate data from fishermen.

3. Staff estimates that there is currently an average of 30-50 boats per night during the spawning season. Fishermen concentrate their activities, during 6 nights/month when catch is expected to be high. Reported in daily reports. More work is required to refine this indicator.

1.5.5 Summary of Recommended Actions

Based upon the foregoing evaluation of threats and the status of the resource, RMNP staff recommends the following actions to be taken in the future. These should be integrated into the future management plan and annual work plans.

- Prevent human disturbance activities affecting breeding, nursing, resting, and behaviors.

- The best management tools to protect fish stock in the water are no-approach zones or persons on land, and no-transit zones for vessels at sea, during the spawning seasons. The size of the zones should be based on Red Sea ecology. The larger zones may be more effective in limiting direct mortality from illegal fishing. Therefore, the size of no-transit zones should be a matter of public consultation so that sizes chosen for Jackfish Alley (it can extend to Ras Attar) can reflect the best available scientific data, anecdotal information, local knowledge of the site, and considerations of required human activity. Human interactions should also be considered.

- Initiate a protocol for fishery management inside RMNP that should be signed between RMNP and all interested parties. A part of this protocol should mention the necessity to find alternatives in the Gulf of Aqaba for fishing.

- RMNP staff should set permanent monitoring programs in order to study all fish species.

2.0 Ecotourism-Recreational Resources

2.1 Beaches and camp site in RMNP

2.1.1 Description

- Coastal flats along Gulf of Suez (15 km within territory of Ras Mohammed National Park), are monotypic over tidal flats, generally plane and with gradual slope towards the sea. Scattered very low vegetation (of only 3 species) at places. Shoreline is straight for most of territory, but also a couple of sand spits jut out, and a few sandy are islets available. Closest off shore water zone is shallow, and wading storks have been seen up to 200 m from the coast.

- Wading storks, Greater Flamingo, gulls and several waders can be seen easily from the road.

- Hidden Bay area is a shallow marine bay surrounded by sandy flats from SW side, and 2-12 meters hills from NE, is a center of the area. Being about 1.5 x 2 km, the site has rather complex habitat structure and shape.

- Only 15-20% of the beaches in RMNP are opened for visitation while the remaining 80-85% is closed to visitors but research activities are allowed.

(a) Size/number: The area is 30 km in length**.** The current number of visitors is approximately 290,000 +/- per year.

(b) Condition:

Naturalness: (e.g., has the area retained its natural qualities?)

- Tourism infrastructure in RMNP beaches are well developed attracting more tourists.
- The quality of coral reefs and other marine resources in front of RMNP have, to some extent, declined so the underwater scenery is not as good as it once was. This point was raised by the boat owners that derive some income from giving tours for visitors.
- Camping areas are natural with easy process to excellent snorkeling.

Clean and safe: (e.g., garbage, glass, excrement, pollution, traffic hazards, etc.)

- Wastes and garbage are a problem. Some of it is collected by staff. Few visitors collect their own garbage. There are not enough garbage bins on the beaches.
- There are few WCs which are considered a problem. Sometimes they are hiding to find or to know they exist due to lack of signs.
- WCs are in a very poor condition, especially the ones in the visitor centre (see visitors survey, appendix 5).
- There is a need for apparent sign for the WCs to facilitate directing visitors to use the WCs.

Use (over or under-use) of Facilities:

- Shelters have been increased three times from the original situation because of increased visitation pressures on the beaches. These shelters now need to be maintained on a regular base.
- The infrastructure in the camp sites (4 camp sites) is too small to the visitation level nowadays, which means lower services quality to visitors.
- Campsites can not be reserved and sometimes tour operators move in and around campers and disturbing them.

(c) Landscape Context:

Impacts on conservation priorities: (e.g., on key ecosystems, species, etc.)

- The increased number of visitors on RMNP beaches and camp area has negative impacts on some critical habitats (e.g. coral reef – mangroves – desert flora – etc).

- Also the existing level of visitation in RMNP might negatively affect the bird migration resting sites.

Impacts on adjacent land uses: (e.g., positive and negative impacts, etc.)

- No available information.

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Oil pollution	Low	Very High	Low
2.	Natural floods	Low	High	Low
3.	Solid wastes	Low	Medium	Low
4.	Mass tourism	Medium	Medium	Medium

2.1.2 Threat Analysis

Refer to the threat maps in section 1.1.2 for the similar threats identified above.

2.1.3 Management Actions Taken

In the workshop, RMNP staff defined the current status of beaches and camp sites, compared to five years ago and rated this resource as '**declining**' for the following reasons:

- Garbage management remains a problem. Although actions have been taken from time to time to solve this problem, the overall problem persists. Public surveys for the report confirmed this point.

- Many of the existing infrastructures in RMNP are in a low quality conditions (e.g., tracks – sign posts – some shelters – undefined parking areas – etc.). These infrastructures have no long term maintenance programs which lead to low quality services to the visitors. The declining condition can be expected to translate into "negative marketing" and a loss of the customer base.

- There is no visitor management framework for RMNP, which results in low law enforcement and damage to both infrastructures and natural resources.

- There is a cash money problem in the financial governmental systems which delays or even stops maintenance programs for the infrastructures in RMNP. This administrative problem further compounds the situation of insufficient budgets.

2.1.4 Indicators: Beaches and Campsites

Category	Key Attribute	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Condition		Campsite Occupation (e.g., number of nights campsites are occupied compared to the total available)					Note 1
Threat	Visitor activities	Cleanness of the beach (% of area occupied by garbage)	>40	15-40	1-15	0	Ranger reports
Action		Weight and Quantity of garbage collected in volunteer cleanups (2x/year) (number of bags)					Note 2

Notes:

1. Commercial companies have regular use and this can be estimated, possibly with their data. Ticket collectors now write 'camping' on the permit, so it is now possible to calculate. (Number of campsite nights from ticket sales: Number of campsites available). More work is wanted on this indicator.

2.1.5 Summary of Recommended Actions

During the workshop a list of actions were recommended to be implemented in the future, which are:

- The existing infrastructures on the beaches should be improved in response to the visitation pressure in order to reach to high quality sustainable services for visitors.

- More attention to beaches with low visitation level should be taken by RMNP staff and re-establish a plan for improving infrastructures in these beaches to attract visitors from other high visitation beaches. This action will reduce pressure in the high visitation beaches.

- RMNP should establish partnership with meteorologists to enhance the use of predictive modeling in forecasting potential or actual beach closure.

- RMNP needs to develop an information network with permitting agencies and other local authorities to share technological databases.

- RMNP should initiate a survey for beaches to identify the current area for critical erosion; identify beaches of environmental concern; identify beach profile for all beaches in RMNP and track shoreline changes through the GIS unit.

- Improved management of the camping resource is warranted. For example, the whole camping area operations (ticket sales, reservations, site maintenance, WC maintenance, repairs, development) could be leased to a service provider (concession).

2.2 Land features (including the Visitor Centre)

2.2.1 Description

- RMNP is composed of igneous and sedimentary rocks and is covered by loose recent deposit. The igneous rocks belong to the Pre-Cambrian basement rocks of Egypt, which is a part of Arabian – Nubian shield, and are represented by Monzogranites and alkali granites. The sedimentary rocks belong to Miocene and post Miocene covering about 29% of the area. The desert area of RM is comprised of high rising mountains, which meet the waterline, and drop to form the magnificent reef walls (Kotb M. *et al*, 2004)

- High altitude deserts, wadis, flattened desert areas, sea cliffs, flattened shoreline and sand dunes, are the main landscape features of Ras Mohammed.

(a) Size/number: The current number of visitors is about 289,000 per year by land only. The current number of visitors to the visitor centre is about 15,000 per year.

(b) Condition:

Naturalness and Quality and suitability of the Ecotourism Resource: (e.g, has the area retained its natural qualities, quality of the facility such as the building, displays, etc.)

- Land features are natural; the area of land used in RMNP is representing only 25% of the total terrestrial part of RMNP. Only off tracks driving in the visitor activities area may cause disturbance of the naturalness of RMNP.

- Sign post quality is low and (information and materials) need updating. The method of display should be more interactive.

- The visitor centre is mainly used for visiting groups and individual tourists. There is no fixed time table for movies in the V.C. The display quality is generally low quality, old and missing the storyline to explain key topics). This was mentioned in the results of the survey of the visitors (see appendix 5).

Clean and safe: (e.g., garbage, glass, excrement, pollution, traffic hazards, etc.)

- There is a continuous garbage collection program by Bedouins in RMNP, which cover both opened and closed areas in the park.

- No adequate cleaning for the visitor centre and most of complains arise in the questionnaire is about the uncleanness of the visitor centre in RMNP. The WC near the visitor centre was in extremely poor condition.

Use (over or under use):

- Under-used. The terrestrial part of RMNP could receive substantially more visitors.

- There is no linkage between the diving boats and the visitor centre, which represents a key audience in need of education, and a substantial opportunity. However, according to the Coast Guard regulations, it is prohibited to have any type of contact or movement between the boats and the land.

(c) Landscape Context:

Impacts on conservation priorities: (e.g., on key ecosystems, species, etc.)

- The visitor centre, through the displays and movies is intended to have a positive impact on conservation. However, as stated, it is missed opportunity at present.

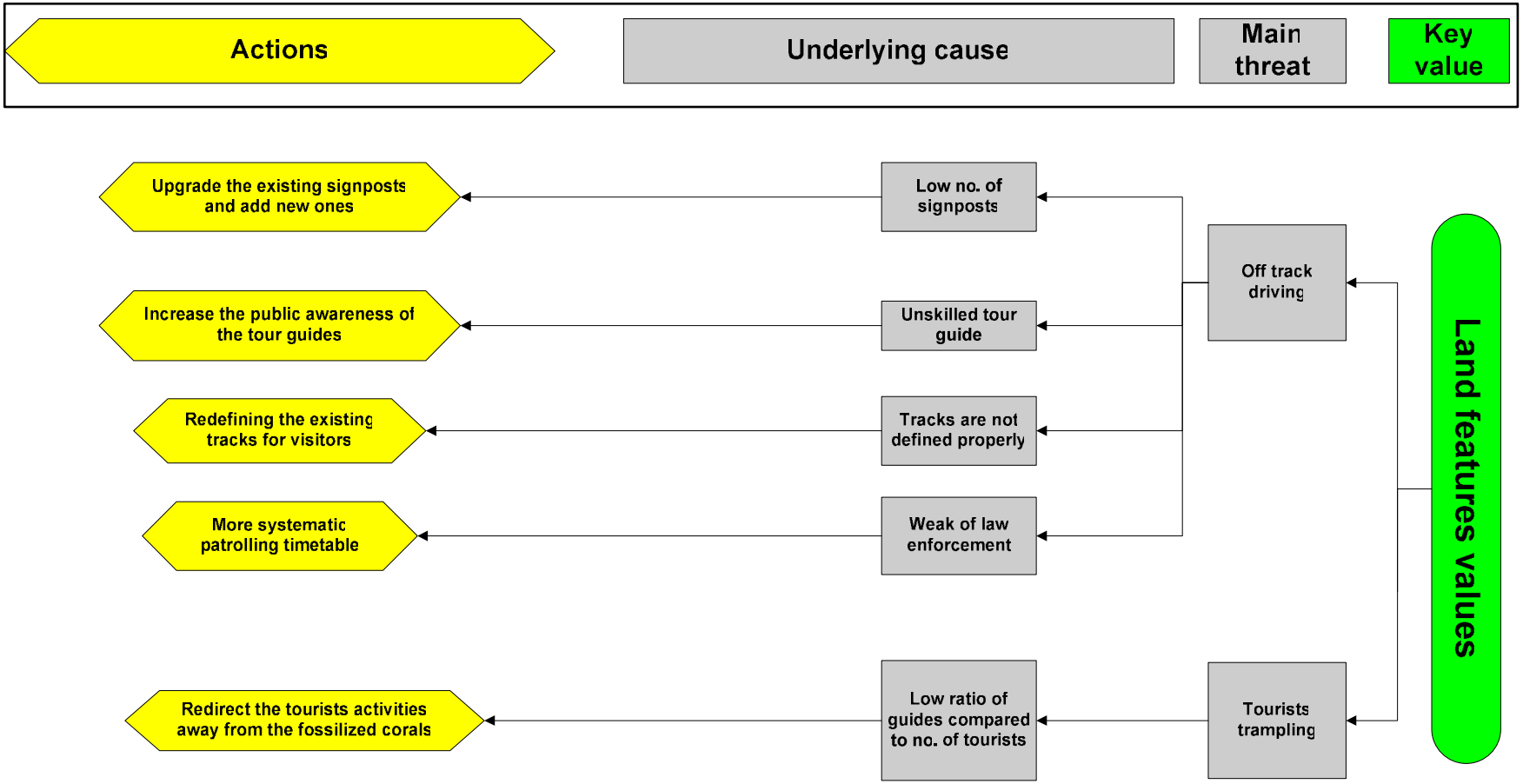
Impacts on adjacent land uses: (e.g., positive and negative impacts, etc.)

- Don't know as there has been no evaluation.

(d) Threats:

#	**Threat**	**Extent** (L, M, H, VH)	**Severity** (L, M, H, VH)	**Threat Magnitude**
1	Off track driving	Low	Medium	Low
2	Trampling by tourists	Low	Medium	Low
3	Lack of money/facility care	Very High	High	High

2.2.2 Threat Analysis: Land features



2.2.3 Management Actions Taken

In the workshop, RMNP staff defined the current status of land features compared to five years ago as '**stable**' for the following reasons:

- The area of land used in RMNP is representing only 25% of the total terrestrial part of RMNP which means there is a huge terrestrial part unused. This gives RMNP staff a chance to do recovery programs for any destroyed habitat or landscape.
- Off track driving in the opened areas in RMNP may cause the only disturbance to land features and this can be controlled by law enforcement.
- There is a cash money problem in the financial governmental systems which delay or even stops any recovery programs for the habitats and landscape in RMNP.
- In general, infrastructure is declining despite the best efforts of staff with limited budgets.

2.2.4 Indicators: Land features (the components of the landscape, including wadis, mountains, cracks, hills, dunes, fossilized corals) and Visitor Centre

Category	Key Attribute	Indicator	Indicator Ratings (current rating in bold)				Information Source
			Poor	Fair	Good	Very Good	
Size		Visitors to visitor centre					
Threat	Driving off marked tracks	Area occupied by car tracks					

Notes: Work is needed to develop suitable indicators.

2.2.5 Summary of Recommended Actions

The following actions were recommended by RMNP staff after the evaluation of the threats:

- RMNP should adopt a list of landscapes and habitats that may be destroyed, or important by their nature, cultural or historical value that constitute the natural, historical and cultural heritage or present other significance for the park.
- Maintain/improve existing tracks and construct new tracks in Ras Mohammed National Park.
- Establish a holistic lease-concession for camping.
- Establish Friends of RMNP NGOs.
- Prepare a formal financial submission to the CEO, outlining the business plan to arrest damages and losses due to impending threats and to capitalize potential benefits.

3.0 Community Well-being

3.1 Sharm El-Sheikh Area (Economic values)

The section focuses primarily on Sharm El-Sheikh, a tourist city that depends on tourists seeking sun-vacations in hotels, shopping, beaches and diving. Other local communities exist, such as the Bedouin population around RMNP which represents a unique nomad culture. These other communities should be examined in more detail, however time limitations in this study did not permit this.

3.1.1 Description

- The following data is taken from a study (Economic Values of the Gulf of Aqaba Protectorates Network) done by an international consultant in 1999 under the umbrella of the EU project. Other than this there is no current data about the economic values of RMNP.

- The economic value of RMNP comes from its naturalness. The reefs function to protect coastal infrastructure and beaches against erosion by wave action and water currents. They protect the sandy beaches and shoreline which are used today as a tourism attraction. This process also keeps the wide intertidal areas for birds and turtle nests. About 250,000 tourists come to Ras Mohammed annually for the internationally famous diving sites which include recognized coral reefs famous for its color and unique landscape. Hundreds of hotels and tens of diving centers and tourism companies, in addition to the local Bedouin populations, profit from the tourism developments that depend absolutely on the natural resources. Fishing is the main job of the local populations as a source of income and food. The fishermen at Gulf of Suez fish outside the park borders, but in certain fish migrating seasons they enter the park to catch fish. In the past it was legal to open certain places for fishing under supervision of the park rangers. The monitoring unit found that the fish stocks during the migrating seasons decreased so, the fish seasons inside RMNP were closed.

- The South Sinai Peninsula has several economic activities, which include petroleum exploration, quarrying and other mining activities, as well as intense tourism due to the coral reefs of the Gulf of Aqaba, combined with deserts and mountains and the unique Bedouin culture on the South Sinai Peninsula. The expanding tourism industry contributes to the GDP of Egypt and is a major foreign exchange earner for the country. In 1998 Sharm El Sheikh had 19,000 beds available for tourism. The development of tourism is a priority area for the government due to its impact on foreign exchange earnings and capacity for employment generation.

(a) Size/number:

Projected population increase (derived from tourism employment)

Added during Interval	as of 2003	2004-2008	2009-2013	2014-2017	Total 2017
Sharm el Sheikh	40,250	11,062	11,899	13,929	77,141
South Sinai	59,441	34,125	43,792	45,714	183,072

Source: South Sinai Environmental profile – 2006

Tourist origin in Sharm El Sheikh 1990-96

Year	Egyptian	Arab	Other	Total
1990	57,264	6,805	98,326	162,395
1991	129,196	3,333	124,284	256,783

1992	127,258	7,768	280,830	415,856
1993	167,604	9,125	271,625	448,354
1994	186,780	8,217	347,105	542,102
1995	186,150	6,444	440,847	633,441
1996	181,560	7,489	501,268	690,337

Source: City Council, Sharm El Sheikh

(b) Condition:

Economic benefits derived from PA:

Income based on park fees at Ras Mohammed National Park

Year	# of visitors Egyptian	# of visitors Foreigners	Total income LE
1990	8,333	6,141	53,203
1991	9,703	6,000	91,770
1992	10,372	28,834	241,095
1993	8,305	40,945	394,881
1994	7,800	52,900	1,281,914
1995	7,650	83,850	1,639,573
1996	7,181	89,803	1,747,829
1997	8,000	101,850	2,103,334
1998	9,537	121,273	2,418,029

Source: Entrance Ticket Sales, Ras Mohammed National Park.

Estimated value of properties in Sharm El Sheikh in March 1999

Category of development	Area (m^2)	LE/m^2	Total Value (LE)
Hotels	10,000,000	600	6,000,000,000
Sea Park	2,000,000	600 (min)	1,200,000,000
Commercial	19 units		
Malls	4,000,000	600	2,400,000,000
Housing	1,000,000	1,000	1,000,000,000
Golf			5,000,000,000
Total			15,600,000,000

Source: City Council Sharm El Sheikh

Estimated revenues in the hotel sector 1998 (exclusive of 'soft openings')

# of hotels	# of rooms	# of beds	Average occupancy Rate (%)	Estimated unit price (LE)	Estimated total revenue
52	9,392	18,806	73	102	260,000,000

Source: survey done during the study (Economic Values of the Gulf of Aqaba Protectorates Network)

Inventory of tourism establishments in Sharm El-Sheikh and South Sinai - 2003

	No. of establishment	No. of rooms	No. of Beds	% of SS rooms
Sharm el Sheikh	122	27267	53266	72.8%
South Sinai	279	37429	72421	100.0%

Source: Governorate Information Center – 2003

Sharm El-Sheikh and South Sinai projections tourist rooms (2003 – 2017)

	2003	2008	2013	2017
Sharm el Sheikh	27,267	67,849	136,469	199,804
South Sinai	37,429	93,135	187,328	274,268
Implied Annual Increase	-------	20%	15%	10%

Source: Governorate Information Center – 2003

Estimated travel costs – 1 weeks package

# of tourists	Estimated cost US 1,000=3,400 LE per person (1998)
600,000	2,040,000,000 LE

Revenue from diving and other trips Sharm El Sheikh 1998

Description	Revenues (LE)
250 dive boats x average 20 divers/boat x 300 days/year x 220 LE per trip	330,000,000

Summary of revenues from private sector (1998)

Description	Revenue (LE)
Employment creation	
VALUE OF INVESTMENTS	15,600,000,000
VALUE OF REVENUES	
Travel revenues	1,780,000,000
Hotel revenues	260,000,000
Local travel agencies	330,000,000
Diving revenues	330,000,000
Commerce, shops	?
Other	
Total	18,300,000,000

Productive systems (e.g., fisheries, agriculture, livestock)

- There has been an explosive development in the tourist industry along the Gulf of Aqaba. The number of hotels has increased and land prices skyrocketed. The value of the benefits generated by the protection of the natural reserve stem from a variety of sources: financial benefits include both private and public sectors.

- The economic study (Economic values of the Gulf of Aqaba protectorates network-1999) estimated the private sector investments and public and private sector revenues for 1998 to be in the range of 18,525,644,000 LE. This would imply an estimated 7,410 LE /m^2 of coral reef. As mentioned further below these estimates would need some further analysis as the estimate is based on a test study only. Nevertheless, they provide an indication of the huge importance of the natural resources.

Use of natural resources (inside and outside protected area)

- RMNP presents a unique combination of habitats and natural resources: coral reefs, mangroves and desert, mountains and wadis, as described in other sections of this report.

- The geographical location of Sharm El-Sheikh dive sites, is unique in its features. More than 80% of the hotels in Sharm El-Shiekh exist along the coast of Gulf of Aqaba, so tourists does not need time to reach to the dive sites.

- The Sharm El-Sheik area uses the RMNP resources in several ways, primarily for tourism (reef diving).

(c) Management Context:

Impacts of Sharm El-Sheikh on conservation priorities: (e.g., on key ecosystems, species, boundary, grazing, poaching, etc.)

- Shoreline development has a negative impact on marine ecosystems, related to loss of valuable habitat, reduced abundance of species, siltation of reef complexes, etc.

- The number of hotels in South Sinai governorate increased rapidly in the last 15 years. There is a large number of small investments in water plants (desalination), waste water plants, solid waste management contracts, etc which do not allow for optimum economies of scale.

- The large number of dive charters operating from Sharm introduce significant management challenges in the marine areas of the park (anchor damage to chorals, inexperienced divers breaking choral, solid and liquid waste, etc.).

- On the South Sinai a number of human induced competing activities take place which have an impact on the natural resources: tourism industry, petroleum exploration, quarrying etc.

Impacts of RMNP on Sharm El-Sheikh:

- There has been an important impact on the national objectives, such as regional and rural development, influencing the macro economic stability through factors, such as foreign exchange earnings, improving the balance of payments, employment generation etc.

Involvement in PA management: (e.g., current situation, opportunities for participation, co-management, etc.)

- RMNP has cooperated with the concerned local Bedouin to understand the importance of the ecological system and how they can share in the protection of natural resources. Bedouin staff at Ras Mohammed have been contracted be EEAA as skippers or to provide services to the area (Garbage collectors).

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Over use of the natural resources (mass tourism)	High	High	High
2.	Solid waste	Low	Low	Low
3.	Illegal fishing	Medium	Medium	Medium
4.	Low environmental awareness	Medium	Medium	Medium
5.	Shoreline development	High	Very High	High

3.1.2 Threat Analysis

Refer to section 1.1.2 for the threat maps.

3.1.3 Management Actions Taken

In the workshop RMNP staff rated the current status of local community well-being in Sharm El-Sheikh area as '**improved**' for the following reasons:

- RMNP with the cooperation with South Sinai governorate and the city council of Sharm El Sheikh have set comprehensive regulations and distributed these to the investors in the area. Several hotel managers have already taken important steps to initiate waste minimization and separation policies within the hotels. Several other initiatives are stemming from environmental policies of overseas head offices, which is having a spill over effect on the Egyptian tourist industry.

- Also, enforcement of Law 4 by RMNP staff lead to implementation of the previous regulations and these attract more investors to the area. This attraction comes from the existence of RMNP near Sharm El-Sheikh with its restricted laws and regulations—a guarantee to the investors of long term profitability.

However, while the economic well-being may be considered to have improved, this is associated with important threats to the natural assets, as described. More must be done by the city and the park to enhance environmental protection and environmentallay-sensitive operations of the tourism industry and other sectors.

3.1.4 Indicators: Sharm El-Sheikh area (economic values)

Category	Key Attribute	Indicator	Indicator Ratings (current rating in bold)				Information Source
			Poor	Fair	Good	Very Good	
Size	Number of visitors	Number of visitors to Ras Mohammed (proper)	<100,000 >400,000	100,000-150,000 350,000-400,000	**150,000-250,000**	250,000 – 350,000	Income Unit Note 1
Size	Number of visitors	Total number of visitors to all of RMNP (all areas)					
Condition		Number of employees in tour companies	<200	200-400	**400-600**	600-800	South Sinai governorate – information centre
Threat	Illegal fishing	Fishing effort (Number of boats/day)	>20	10-20	0-9	0	Note 2

Notes:
1. This indicator pertains to visitors to RMNP proper, determined through the sale of tickets. Staff feel that RMNP (proper) has reached its maximum carrying capacity of existing facilities at this time with about 350,000 visitors per year. If more facilities are developed, then the numbers will be changed.

2. Staff estimate that there is currently an average of 30-50 boats per night during the spawning season. Fishermen concentrate their activities, during 6 nights/month when catch is expected to be high. Reported in daily reports. More work is required to refine this indicator.

3.1.5 Summary of Recommended Actions

The following actions are recommended for better management of the community well-being in Sharm El-Sheikh city:

- There have been a number of positive impacts due to the conservation of the natural resources and the growth of the tourist industry. Net benefit evaluation is an important input into decisions about conservation of natural resources. However, all economic benefits and costs should be taken into account, including non-market benefits and costs during any process of resources evaluation inside the park.

- RMNP should have strong communication links with the international Reef Check Program which will help the park with valuable monitoring data. These may be used as a baseline for future monitoring of the financial indicators of the area.

- Although there are several studies on the Bedouin society and life, there is little information on the changes, which are taking place due to the tourist development and there are no data on the

benefits that they are deriving from this. It is recommended that RMNP staff undertake a survey of this situation. Such a survey should be integrated with the collection of data for the income generating activities of the women and other support to the Bedouins.

- RMNP should encourage what is called eco labeling of dive shops. Eco labeling of dive shops may be considered with an independent commission responsible for the labeling. Eventually the standard of the environmental awareness would increase and the customers' awareness of selecting those dive shops which are labeled. Eco labeling of tour operators and hotels may also be considered.

- Tourists already pay extra tickets for photographing in many of the tombs in Egypt. In accordance with several studies, the photographers are having a relatively high impact on the corals and could be charged a photographers ticket in accordance with the 'polluter pays principle'. A willingness to pay study should be done first in order to establish its feasibility by RMNP staff.

- Improve the ticket sales and revenue collection system. Annual independent (external) audits should be institutionalized and recommendations followed up. Spot checks that divers receive their tickets should be done randomly to show the divers and dive shops that there is controlled system in place.

- Preliminary evaluation of the value of the existing ecosystems in RMNP (mangroves, desert, mountains and wadis).

- Establish a local stakeholder's forum to identify, evaluate and recommend solutions on the ongoing issues. Results of such meetings should be publicly available (e.g. posted on the internet). Recommendations arising from the forum could be made to the relevant authority.

Part IV. Synthesis: Effective Management

Effective management of RMNP is a complex process, as demonstrated in this report. The ecological, social and economic dimensions are all complex in their own right. When taken together, they present challenging situations that require a balanced approach to management. Consideration of the principles of sustainable development and the ecosystem approach is warranted, especially in RMNP which encompasses strict protection (category II).

This evaluation primarily focused on the following:

- *Threats:* what are the threats affecting the key values in RMNP?
- *Outputs:* was the annual operational plan implemented?
- *Outcomes:* were the actions effective in protecting the area, and what is the status of the area?

These aspects are summarized and discussed below, including the associated planning, inputs and processes needed to address the threats and improve the outputs and outcomes.

4.0 Threats

The threats affecting each of the key values described in part III (sections 1, 2 and 3) were listed and ranked, using available information and judgment, according to their potential severity for damage and their geographical extent of damage (TNC, 2000). The severity and extent ratings allow an estimate of threat magnitude, which was recorded in table-1. Upon compiling the ratings from the staff workshop, the evaluation team further reviewed the different terminologies and ratings applied by staff to ensure consistency and clarity. As a result, some threats were combined under one name, and in some cases, a threat rating was added where it was missing but known to exist. This additional analysis ensured that the results were as complete as possible.

Threat Defined:
Any human activity or process that has caused, is causing or may cause the destruction, degradation and/or impairment of biodiversity and natural processes, *eco-tourism resources or community well-being.* (per Salafsky et al., 2003; the additional elements *in italics* were included to reflect the added focus of this evaluation on socio-economic perspectives).

Table 1 provides an overview of the threats affecting each of the 8 key values in RMNP (read down the columns) and the importance of the individual threats across the protected area (read across the rows). These results show the 1 of the 8 key values, coral reefs, have a high degree of threat, while 6 of the 8 key values have medium degrees of threat (mangroves, sea grasses, birds, spawning ground, beaches and campsites, Sharm El-sheikh area); and 1 of the 8 key values has a low degree of threat (land features).

The principle threats operating in RMNP are: tourism development (sedimentation, habitat degradation, desalination unit discharges), grounding accidents, over use of biological resources (over fishing, over grazing, over hunting), illegal fishing, mass tourism or tourism pressure and oil pollution. As noted in the table, there are many other threats that have high or very high impacts on individual values, such as: natural outbreaks (e.g., Crown of thorns, snails), garbage, coral breakage by anchors, etc.

Often the longer term threats are difficult to identify and address, especially when the impact is small, variable or incremental. For example, in this evaluation, little attention in the way of

discussion of threats was given to the potential long term impact of new and growing communities adjacent to RMNP. There is little to no buffer. There will be a need to enhance patrolling, monitoring and public awareness activities as tourism and local populations grow, exerting increasing use and pressure on the values.

Abatement efforts should focus on the high and very high threats. The threat maps in the report provide a useful look at the underlying causes and actions that relate to the threats and values.

Table 1. Threat Summary for RMNP Values

Main Source of Threat	Specific Threats to Values	Stress on the Value	Coral reefs	Mangroves	Sea grasses	Birds	Spawning ground in RMNP	Beaches and camp sites	Land features	Sharm El-Sheikh area (economic values)	Overall Threat Rank
Global warming	Coral bleaching	Loss of habitat; impaired populations; impaired economy	Medium	-	-	-	-	-	-	-	**Low**
Institutional management	Lack of money	Low quality facilities leading to loss of tourism and economic benefits; declining value of facilities; poor knowledge of natural assets due to low monitoring	Low	Low	Low	Low	Low	Low	Low	-	**Low**
Institutional management	Lack of money for proper enforcement	Populations impaired; also leads to ruining the reputation of park authority in terms of its capability to perform its roles and to over use of biological resources	Medium	Low	Low	Low	Medium	Low	-	-	**Medium**
Mass tourism	Diving and snorkeling disturb natural processes	Fish and other species are dispersed; habitat damage (broken choral)	Medium	Low	Medium	Medium	-	Medium	-	-	**Medium**
Mass tourism	Eutrophication (effluents from boats)	Loss and impairment of habitat	-	-	Low	-	Medium	-	-	-	**Low**
Mass tourism	Garbage – solid waste	Impairs scenery and recreational values; can kill wild life	Low	Medium	Low	Low	-	Low	-	Low	**Low**
Mass tourism	Off track driving	Impairs scenery, introduces garbage	-	-	-	-	-	-	Low	-	**Low**
Mass tourism	Trampling	Loss and impairment of habitat	-	-	Low	-	-	-	Low	-	**Low**
Natural processes	Coral diseases	Sedimentation; decline in corals; negative effects on economy	Low	-		-	-	-	-	-	**Low**
Natural processes	Floods (rare)	Sedimentation; decline in corals; negative effects on economy	Low	-	-	Low	-	Low	-	-	**Low**
Natural processes	Natural outbreaks (e.g., Crown of thorns, snails)	Sedimentation; decline in corals; negative effects on economy	High	-	-	-	-	-	-	-	**Medium**
Oil drilling and tankers	Oil seepage or spills	Loss of habitat function and species; impaired recreational values	Low	Medium	Low	Low	-	Low	-	-	**Low**
Ships, boats	Grounding accidents	Habitat impairment	Low	-	Low	-	-	-	-	-	**Low**
Mass tourism	Construction of hotels; development	sedimentation, habitat loss and degradation	Medium	-	-	-	-	Low	-	-	**Low**
Urbanization: growth of Sharm El Sheik	Dump site (lack of adequate management)	Impairs recreational areas; dead birds	-	-	-	Low	-	-	Low	-	**Low**
Urbanization: growth of Sharm El Sheik	Low environmental awareness; poor behavior	Values impaired	Low	Low	-	Low	Low	Low	-	Medium	**Low**

Main Source of Threat	Specific Threats to Values	Stress on the Value	Coral reefs	Mangroves	Sea grasses	Birds	Spawning ground in RMNP	Beaches and camp sites	Land features	Sharm El-Sheikh area (economic values)	Overall Threat Rank
Urbanization: growth of Sharm El Sheik	Sewage ponds	Dead birds	-	-	-	Low	-			-	**Low**
Use of biological resources	Alteration of spawning ground by fishers as a habitat for other species	Habitat altered; natural balance disrupted	-	-	-	-	Low	-	-	-	**Low**
Use of biological resources	Illegal fishing	Fishing (illegal)	Low	-	-	-	-	-	-	Medium	**Low**
Use of biological resources	Illegal hunting	Dead birds	-	-	-	Low	-	-	-	-	**Low**
Use of biological resources	Over use (over fishing, over grazing, over hunting)	Reduced abundance of species and ecosystem function; reduced economic benefits	-	-	-	-	High	-	-	High	High
Utility Services	Tower cable wires in RM	Dead birds	-	-	-	Low	-	-	-	-	**Low**
Threat status for each value			**High**	**Medium**	**Medium**	**Medium**	**Medium**	**Medium**	**Low**	**Medium**	**High**

Notes: The following method was used for summing low, medium, high and very high ranks (per TNC, 2000) for the values(columns) and threats (rows):

1. For the individual ranks in each column and each row (before summing the **'overall threat rank'** and **'threat status for each value'**), apply the following rules:
   Less than 7 Low=Low; 7 Low = 1 Medium; 5 Medium = 1 High; 3 High = 1 Very High. Example: For Coral Reefs: 7 low=1 medium; plus 4 medium = 5 medium=1 high.

2. Calculate the sum across each row to find the **'overall threat rank'** and down each column to find the **'threat status for each value'.**
   Apply the following rules when summing: Less than 2 Medium=Low; 2 Medium or1 High=Medium; 2 High or 1 Very High=High; 2 Very High=Very High.
   Example: Coral Reefs: 1 high (from step 1) plus 1 high rating=2 high=High rating

The **'overall threat rank'**=High because: Applying rule #1, 18L=2M. Add to this 3M=5M=1H; Applying rule #2, 1H+1H=2H

5.0 Outputs and Outcomes

5.1 Outputs

In part III (sections 1, 2 and 3) the actions (outputs) implemented by RMNP, were considered and a status assessment was provided for each of the 8 values (table 2). Regrettably, neither an operational plan nor annual work plans were made available to the evaluation team and this restricted the evaluation of the outputs. Alternatively, information was collected during the workshop discussions and through interviews (appendix 2). The preparation of thorough annual work plans, with the input of staff, is a key management tool. Quarterly evaluation of work plans and a final end-of-year evaluation is also helpful in emphasizing the accountability of staff, and determining the effectiveness of the work, as a basis for the new work plan. It is strongly recommended that this work be carried out.

5.2 Outcomes

This evaluation has demonstrated that RMNP is in reasonable condition; however serious threats pose a growing risk to this park. The overall threat rank for RMNP is high (section 4).

- The **positive rating** for the birds and spawning ground in RMNP is a reflection of the priority they have received in funding programmes and by staff implementing the actions within their capacities.

- The **positive rating** for Sharm El Sheik area is a reflection of the economic growth in the area. However, there is a high level of concern among staff that the growth is not sustainable and is negatively affecting the choral reef and shoreline systems. This has the potential to seriously undermine the area's economy.

- The **poor condition** of the beaches and camp sites are the result of no or low infrastructure maintenance and the increasing number of visitors each year using the same beaches. There is no visitor management plan for RMNP. This means that extra effort is required to establish mechanisms in the future management plan for RMNP in order to improve the quality of beaches and camp sites and also, discussing the possibility of closing some of the existing beaches and opening new ones.

- The **stable ratings** for coral reefs, sea grasses, mangroves and land features, are a good indicator about the past management action taken by RMNP for these key values. It appears that, although there is huge mass tourism in the area, RMNP has succeeded in protecting these key values and keeping them in stable condition until now.

Table 2: Status of Key Values in RMNP

Key:

Improved condition or situation over the last five years	⇧
Stable condition or situation over the last five years	⇔
Worsened condition or situation over the last five years	⇩

Value	Status
1. Biodiversity/Natural Resources/Cultural Resources:	
Coral reefs	⇔
Mangroves	⇔
Sea grasses	⇔
Birds	⇧
Spawning ground	⇧
2. Ecotourism/Recreational Resources:	
Beaches and camp sites	⇩
Land features + visitor centre	⇔
3. Community Well-being (socio-economic):	
Sharm El-Sheikh area (economic values)	⇧

Part V. Toward the Future

6.0 Strategic Considerations

Arising from this evaluation, 101 recommended actions have been identified to address the specific needs associated with the values and threats (appendix 3). If implemented, these should be expected to lead toward improved implementation of work plans and greater effectiveness. Clearly, there are significant challenges ahead if the conditions of the values are to be maintained at satisfactory levels or improved.

From these recommendations, a few strategic considerations are of paramount importance.

6.1 Sustainable financing

Perhaps the most critical need facing RMNP is stable, sustained funding.

Sharm El-Sheikh city and the region enjoy substantial economic benefits derived from the coral reef ecosystems. Safeguarding this resource is critically important to the economy. However, management of the park is substantially under-funded. The past investments of the EU support program and current work of the park are undermined by lack of adequate funding for patrolling, monitoring ecosystems, research, and public and stakeholders awareness.

In addition, declining infrastructure (visitor centre – camp sites – WCs – exhibits) poses a huge threat and can be expected to result in a loss of customers and revenues.

However, there is also a huge potential to effectively solve this threat by employing active management techniques, such as:

- Improved ticket collection for the whole of RMNP, which could generate many millions of LE in new revenues. There is a very large potential to increase revenues through tickets sales to the hundreds of thousands of visitors entering the park by sea on boats. This is a great business case for revenues generation and retention of funds at RMNP.
- A concession for the camping area
- A "Friends of RMNP" NGO.

These tools for sustainable financing should complement sufficient government funding through an adequate annual budget, which is estimated to be 2-3 million Egyptian pounds/year, for RMNP alone.

While diversification of funding sources should be sought, protected area organizations throughout the world have found that ***mechanisms for retaining funds*** can be highly effective. Once the mechanism is in place, area staff can work effectively to increase revenues. Presently, it costs money to collect money and there's no real incentive or support to pursue this.

Financial Resources for Protected Areas

Chape *et al* (2003) calculated the average level of PA expenditure worldwide to be $1,300 per km^2 per year. James *et al* (1999) reported that the mean annual expenditure in developed countries was $2,058 per km^2 per year, while for developing countries it reached only $157 per km^2 per year. In Africa, government expenditures range from $200 to $300 per km^2 per year, while in the Middle East and North Africa the regional mean was $74 (in 1996 $US value). In Egypt the total expenditure on PAs (including staff costs) averages $19 per km^2 per year, approximately 11% of the average for developing countries. (Sourced from Fouda et al., 2006)

6.2 Management plan and objectives

A key priority is to have a well developed management plan for RMNP that includes a goal, objectives, zoning scheme, park policy on permitted and non-permitted uses and priority actions.

Management plan directions should be translated into an annual work plan. The absence of annual work plan is a serious situation.

Annual reporting on the implementation of the management plan is recommended as a means to assist the park manager and staff in assessing effective implementation of programmes and the preparing the annual work plans.

During the workshop, key objectives for the future management plan were developed:

- Protect the marine and terrestrial ecosystems of Ras Mohammed National Park to retain their ecological functions.
- Protect the historical and cultural resources of Ras Mohammed National Park.
- Provide compatible and sustainable opportunities to explore the natural ecosystems of RMNP and to provide associated economic benefits, while giving first priority to the protection of ecosystems.
- Provide opportunities for the people of Egypt and foreign visitors to learn about the special natural and cultural values of RMNP.
- Conduct monitoring and research activities to support the evaluation of effective protection and management, and the provision of economic benefits.

6.3 Collaborate, Communicate and Conserve

Three key strategies—collaboration, communication and conservation—are critical in the park's efforts to secure effective management. Together, these three strategies recognize that other stakeholders have a role to play in the sustainable use of the park's natural assets. The following more specific strategies and actions should be carried out:

- Prepare and implement a detailed action plan for reef protection, conservation and use. As part of this, establish and implement a carrying capacity research and monitoring program, including:
  - Re-examine the existing carrying capacity study.
  - Work closely with dive centers and other key stakeholders to establish carrying capacities for sites.
  - Defining reef access locations from the land.
- Establish an active public awareness program, including:
  - Focusing messages on the most important threats and needs such as sensitivity of the corals, sustainable use of the reefs, effects of development, etc.
  - Setting clear information and education objectives, identifying audiences and using the most suitable forms of communications (print, audio, video, personal presentations, news media, etc.).

- Enhancing the displays in the visitor centre, increasing visitation to the centre from land and sea visitors, setting regular hours of operation.

- Implementing an active community relations program to enhance awareness and involvement of Sharm El-Sheik in RMNP. This can be facilitated through the establishment of a Friends of RMNP non governmental organization.

- Establish a solid waste action plan.

- Enhance law enforcement functions by preparing a specific strategy and actions to address threats and conservation priorities, seeking cooperation of other agencies, and where necessary, additional staff.

- Protect the important bird habitats.

- Create alternative job opportunities for fishermen, in collaboration with them and other stakeholders.

- Enhance oil spill preparation and response in collaboration with other agencies. Seek funding from companies to improve protection and response readiness.

- Management of RMNP should include very strong and close community collaboration to define problems, examine possible solutions and recommend actions for the protection of the coral reefs, the provisions of zoning, regulations and management practices. Cooperation should lead to greater acceptance and effectiveness. A review of the findings of this report, in a series of meetings or workshops, could be a good way to focus discussion on key values, and to encourage real collaborative management with stakeholders, government departments, NGOs and local communities. Active collaboration can be undertaken through:

    - Quarterly meetings of a Stakeholder's Forum

    - Posting meeting notes on a website (could be a website sponsored by the diving community) to increase transparency and openness

    - Inviting stakeholders, from time to time, to Park Management Unit meetings, etc.

    - Examining important topics, such as reef carrying capacity and use limits, creating a shared vision and actions on all aspects of planning and management.

- RMNP should conduct scientific research aimed at protecting and preserving the biological and landscape diversity of the park and should undertake, where appropriate, joint programmes and projects of scientific research, and exchange relevant scientific data and information as provisioned. This could include the following:

    - Develop indicators and monitoring systems, and then implement them. A start has been made with the existing programs now in use, and also with some of the indicators identified in this report. A full review and rationalization of indicators is needed so that a suite of indicators can be established and monitoring efforts further fine tuned. Staff must be fully involved in the design of the indicators and monitoring systems so that they are practical and affordable for the circumstances. More elaborate systems designed by others have not been sustainable with current levels of staffing and budgets.

    - Identify Key Ecological Interactions, including predator-prey relationships, migratory patterns, life history stages, and the role of biogenic habitat (e.g. white storks - raptors). Evaluate other existing or planned ecosystem, fishery, or land-based management tools, as feasible within staff limitations. Determine types of socioeconomic analyses to assist in the design and evaluation of biologically effective natural resources in RMNP that will allow continuation of sustainable management.

- A geographic and geospatial database should be developed for RMNP to identify gaps in data and information. It should include information on the biologic, hydrologic, and geologic resources integrated with data reflecting anthropogenic activities, as well as other data contributed by EEAA. The database should have uniform data standards and storage to ensure all information collected can be shared among partners. This effort should be coordinated with the data and information management strategy, including means to ensure that data is properly stored and safeguarded (backed up).

- Employ people of high caliber, assisting them to reach their full potential, providing a rewarding and caring work environment and encouraging them to pursue relevant training and development opportunities.

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Appendices

1. Workshop Agenda and Participants
2. Evaluation of Past Actions in RMNP
3. Summary of Recommended Actions Arising from this Evaluation
4. Results of Stakeholder and Visitor Surveys
5. RAPPAM Results for RMNP
6. Site Level Management Effectiveness Evaluation Procedure Used in This Study
7. Workshop Participant Evaluation Results

Appendix 1. Workshop Agenda and Participants

A five day workshop was held in March 2007 to examine the current status of RMNP, threats, and the overall effectiveness of management. The following individuals participated in the workshop: Osama El-Gibaly, Attef El-Gihany, Said Abu Bakr, Magdy Saad, Magdy Abd El-Hay, Mahmoud El-Mongy, Essam Saadallah, Hany El-Shaer, Ayman Mabrouk, Marawan Abd El-Latif, Yasser Awadallah, Waleed Salama, Khaled Allam, Mohammed Talaat and Dan Paleczny.

Agenda

March 13-17, 2007

	Day 1	Day 2	Day 3	Day 4	Day 5
	Tuesday, 13	Wednesday, 14	Thursday, 15	Friday, 16	Saturday, 17
Morning		9:00 am Introduction to values & indicators Working Groups Surveys	9:00am Values, indicators Working Groups Surveys	9:00am Threat Analysis	9:00am Review Survey Results Synthesis and Action Planning Key Recommendations
Afternoon	12:00-2:00 pm Introduction to Management Effectiveness 3:00 Surveys (training and plan of action) Management Plan/operational plan/ annual work plan evaluation	Continue… Working Groups Surveys	Continue… Working Groups Surveys (Monastery)	Continue … Finish Surveys	Continue …. Wrap up evaluation of process {team meeting, next steps, evaluation}

Appendix 2. Evaluation of Past Actions in RMNP

Review Period: Five years **Date of this Review:** March 2007

A. Management Objectives: No management plan and objectives

B. Management Actions Taken: No annual operational plan or annual work plan. All actions mentioned in the table are collected through interviews with RMNP manager by the evaluation team during the workshop.

Status codes:
1 = Completed or part of an ongoing programme
2 = Implementation underway but not yet completed
3 = Planning is in progress
4 = Not commenced, but action is still worthy of implementation
5 = Circumstances have changed; action is no longer appropriate or necessary

Evidence of Effectiveness:
1. Estimation
2. Expert opinion
3. Results of patrolling and monitoring
4. Results of technical or research study or other reports/products

Work Plan Actions	Status Code	**1+2:** Description of Effectiveness, Needed Changes, Follow-up; **3+4:** Note problems and/or reasons for status; **5:** Rationale	Evidence of Effectiveness
Infrastructure	2	• An efficient way to protect coral reefs but need more allocated budget • There are a great shortage in signs allover the PA. The PAMU Should have a clear signposting plan for orientation and descriptive signs inside and outside the protected area. • An important tool to keep the PA resources. Needs a definite plan for future maintenance.	
Marine structures • Construction of 1 reef access			1
Signposts • Construction of 1 wood main signpost at the main gate site 2004 • Construction of 2 signpost structures at mangrove and RM sites 2006			1

Work Plan Actions	Status Code	1+2: Description of Effectiveness, Needed Changes, Follow-up; 3+4: Note problems and/or reasons for status; 5: Rationale	Evidence of Effectiveness
Maintenance • Maintaining the staff accommodation, laboratories, workshop, diving center, marine RM Jetty 2004-2005 • Maintaining all Ras Mohammed tracks 2004-2005 • Maintaining of RM Jetty (painting…etc) • Modifying the main entrance			1
Research	1, 2		
• Construction of 3 nesting structures (2 reef flat , 1 under water) for following general behavior of sea cucumber • Construction of 1 hatchery for sea cucumber just beside the laboratories • Comparative study about human impact on the reef flat systems 2004 • Biomap project implemented some annual activities about monitoring of coral reefs in RMNP • Marine survey in Abu Gallum PA, 2 of the staff had been shared the study in cooperation with Suez Canal Univ. • Sharing a research about mangrove in Nabq. PA • Participating in the RAPPAM in Cairo 2006		• There is no definite research strategy for RMNP, even though the park is a target focus for the national/international researchers, which enable the protected area staff to share some of these studies with different research institute.	1
Patrolling / law enforcement	1,2		
Preventing of any sort of illegal hunting and fishing		• the most regular and effective tool conserving the natural resources. The patrolling and law enforcement system is recommended to continue. The	3

Work Plan Actions	Status Code	1+2: Description of Effectiveness, Needed Changes, Follow-up; 3+4: Note problems and/or reasons for status; 5: Rationale	Evidence of Effectiveness
• Regular daily land patrolling • Regular marine patrols 3 times/week • seasonal night marine patrols (about 2 months)		capacity of the protected area need to be raised in terms of cars and motor boats. • Collaboration with relevant authorities need to be enhanced and strengthened for supporting the law enforcement tool inside and around RMNP	
Preventing of any sort of resource collection (reefs, shells, fossils,			
Limiting off track driving			
cases (mostly marine) 7 (2004) + 20 cases (2005) + 14 land violations (2006)			
Public awareness		• There is no Public awareness and education plan for RM, while the area is of national and international spot since long time has helped for marketing the area. Presence of education as well as awareness program will enhance the protection process especially with the targets of fishermen and tour operators. • Stakeholders training programs are strongly recommended to continue • Awareness through the volunteer work recommended to enhanced to be a part from the future awareness program of the protected area. This may be through fixing the volunteer element to be an effective way to pursue the awareness program outside RMNP	
Influencing all the PA targets through Lectures + brochures + documentary + exhibitions +field guiding • visits to Ras Mohammed visitor center in 2004: 16.980 and 18.884 in 2005. 16.558 in 2006			3
Volunteer work • Beach Cleaning day (Sharm hotels). Annual action in September • General cleaning (land + underwater) + track maintenance • Creating of 30 paintings about landscape and biodiversity elements			3
Stakeholder Training programs • Tour Guides training program 2006			

Work Plan Actions	Status Code	1+2: Description of Effectiveness, Needed Changes, Follow-up; 3+4: Note problems and/or reasons for status; 5: Rationale	Evidence of Effectiveness
Estimation Questionnaire for tour guides for detecting their capability			
Monitoring			
• Annual Bird Monitoring started from 1998-up to date which named (migration survey) • Ringing activities started in 2004 and 2005 and stopped due to inadequacy of collected birds. • Marine surveys (done by marine sector) is something depending on cases. **********changes to sectors 2006 • Combating the locust attack case at the end of 2004 • Marine turtle survey end of 2004. 20 turtles had been surveyed in addition to 3 tracks were found. • Bird Flu sampling and analyses • Combating oil spills		• Only one continuous program is existing, which is bird monitoring. Other monitoring works are done as well but not in regular way but due to certain cases.	3
Training			
• Training programs (11 for 4 staff) national/international		• Continue training programs	3
• Selecting of rangers for red sea project (field training)		•	
Others			
Accidents: Flash air lines			
Freed 1 marine turtle captured at Naama Bay			

The separation of marine and land sections make the RMNP staff is only responsible about land enforcement

Appendix 3. Summary of Recommended Actions

Value	Section	Action	Comment on Implementation
Coral reef	1.1.5	• Given the huge economic importance of the coral ecosystems to the local and natural economy, enhanced monitoring, patrolling and management activities are needed to safeguard the resource. RMNP budget should be substantially increased.	
Coral reef	1.1.5	• A sustainable plan for the use of diving sites is needed. To support this, a comprehensive carrying capacity study should be carried out quickly for the diving sites inside RMNP (15 diving sites inside the park border – 16 in front of Sharm El-Sheikh coast – 9 around Tiran Island). This is needed because the existing carrying capacity study for the diving sites inside RMNP is limited and there is a need to upgrade it. This study will help the RMNP staff in setting a well developed plan for the number of visitors (divers – snorkellers – swimmers) per diving site per hour.	
Coral reef	1.1.5	• Effective management of the islands and the dive sites is urgently needed.	
Coral reef	1.1.5	• A top level protocol should be signed between RMNP (represented by EEAA), marine police (represented by the ministry of Interior), the coast guard (represented by ministry of Defense), Sharm El-Sheikh diving centers association, ministry of Tourism and South Sinai governorate. This protocol should concentrate on the implementation of the carrying capacity plan for the diving sites inside RMNP and should result in a decrease in the conflict between the above mentioned organizations.	
Coral reef	1.1.5	• With collaboration of diving centers, RMNP staff should set a well organized time schedule for the number of boats per diving site per 4 hours. This schedule should be implemented strictly without exceptions for any boat or diving centre and in the same time RMNP staff should enforce the implementation of this time schedule through permanent sea patrolling.	
Coral reef	1.1.5	• RMNP should encourage the diving centers working in the area to hire more diving guides in order to reduce the ratio between the numbers of divers related to the number of diving guides. In the same time RMNP should continue its training sessions for these new hired diving guides to be sure that they will be at the level of expectations by the park.	
Coral reef	1.1.5	• To improve the stable condition now for the coral reef in the existing diving sites, new diving sites can be allocated within RMNP in accordance with the carrying capacity study, in order to reduce the pressure of divers on the existing diving sites. This should give time for the coral colonies to recover and hence improve the quality of the coral reefs.	

Value	Section	Action	Comment on Implementation
Coral reef	1.1.5	• With the coordination with the Tourism Development Authority (TDA) in South Sinai governorate, RMNP should set guidelines for carrying capacity of development of Sharm El-Sheikh city in order to restrict the number of hotels to certain sustainable levels.	
Coral reef	1.1.5	• With the coordination with the TDA in South Sinai governorate, RMNP should set guidelines for carrying capacity of development of Sharm El-Sheikh city in order to restrict the number of hotels to certain sustainable levels.	
Coral reef	1.1.5	• There is a critical need to have an effective contingency plan for combating oil spill inside RMNP in cooperation with the oil companies and oil fields in the area. Also, RMNP staff should establish a reporting system for skippers and fishermen to quickly report any oil pollution in the sea.	
Coral reef	1.1.5	• A research and monitoring strategy is needed to follow up and evaluate the status of the existing marine resources in order to have a periodical upgrade of the carrying capacity study for the diving site. Also further work on identifying and implementing suitable indicators is needed; some of these may require initial research to test.	
Coral reef	1.1.5	• Patrolling and enforcement of non fishing areas needs to be strengthened. Currently the park has insufficient financial and human resources to do this work in an effective way. A protocol should be signed between RMNP (represented by EEAA), marine police (represented by the ministry of Interior), the coast guards (represented by ministry of Defense), fishermen association (represented by ministry of agriculture) and South Sinai governorate, to set rules to control fishing activities inside and outside the park.	
Coral reef	1.1.5	• RMNP should follow up the implementation of South Sinai governorate plan for building dams to be sure that the dams allocated in the plan for RMNP will be implemented in order to prevent the physical damage of the coral reef by floods.	
Coral reef	1.1.5	• Establishing a good patrolling and monitoring system (taking into consideration provision of the needed tools: enough vehicles, communication tools such as radio and mobile or satellite phones and basic staff training).	
Coral reef	1.1.5	• A well formulated communications plan is needed to ensure effective dissemination of key messages. This should include: o Information and rules for beginner swimmers, for example, to require them to wear a floating vest. This will lead to decreasing the negative effects of inexperienced swimmers on the coral reef.	

Value	Section	Action	Comment on Implementation
		Experienced skin divers (snorkelers) should be exempt from this rule. o More cooperation with the ministry of Media, ministry of Transportation, national airlines (Egypt Air) and the international airlines, to provide certain minutes inside their means of transportations to films about the National Parks of Egypt and especially RMNP. This will give information for the visitors and tourists about the area and include key messages (e.g. never stand on coral – they are living organisms – never collect natural objects – etc). o RMNP with cooperation with the ministry of Exterior and ministry of Interior should find a mechanism to collect fines from violators who collect and destroy corals. The existing legal system allows the foreign violators to leave Egypt without paying the legal fines and there is no mechanism to collect the fines later from the violators in their home country. o Implementing a long term public awareness program targeting the local community to encourage protection of these important diving sites. o Preparation of literature and signs to deliver priority messages and information.	
Coral reef	1.1.5	• Establishing a management plan for RMNP and preparing a thorough annual work plan with the input of RMNP rangers.	
Coral reef	1.1.5	• Reef carrying capacity should be examined from the perspectives of ecological, physical and social carrying capacities. The estimation of reef carrying capacity requires an integrated survey program that involves a multi-disciplinary set of biological, ecological, socio-economic and oceanographic studies. The results of these studies should identify the major factors and types of environmental impacts and their levels of influence to various coral reef communities and habitats. However, perfect knowledge of these factors requires long term studies and repeated surveys which are never possible along the short term. Management and zoning plans are prepared upon the best available knowledge and scientific information to make reasonably informed decisions providing that reasonable and competent scientific and environmental surveys and efforts are undertaken to obtain this knowledge. (Kotb, M., *et al*; 2004)	
Mangroves	1.2.5	• A visitor management and site plan for the mangrove channel and whole peninsula should be established to address the following threats and opportunities: o Better protect the mangrove channel area to keep the unique ecological processes and fluxes of the mangrove channel in a productive stable status.	

Value	Section	Action	Comment on Implementation
		○ Minimize impacts of cars and buses on migrating birds during the heavy migration seasons. ○ Create an interesting hiking opportunity on the peninsula as this gives people a chance to experience the southern tip of the Sinai. ○ Enhance on-site educational facilities.	
Mangroves	1.2.5	• The following actions should be considered when preparing the visitor management and site plan: ○ Establish a parking area well before the mangrove channel. From this point forward, no vehicles would be permitted, and instead a walking track would be established. ○ At the parking area, install a map of the peninsula showing the main natural features and location of the track, with distance and walking times. Install interpretive panels at the key locations to tell the main stories (e.g., migration, mangroves, the convergence of two seas to create the special marine and terrestrial ecosystems in RMNP-located at the tip of the peninsula, etc.). ○ During the migratory bird seasons, the number of visitors walking to the mangrove channel should be very limited. They could be allowed to visit the site, only with a Ranger or a certified guide who will be sensitive to the site and the birds. Temporary "bird hides" could be installed during migration. ○ An extra fee could be established for the special privilege to see this natural spectacle that occurs only twice per year, and for the special guided services. This "low volume-high value" strategy enables conservation and economic benefits.	
Mangroves	1.2.5	• A protocol should be signed between RMNP and all the oil companies working in the Gulf of Suez. This protocol will concentrate on having a quick communication response and different oil combating scenarios when oil pollution happens by any of these oil companies. This protocol should improve response rate and the effectiveness of the response, thereby decreasing the oil pollution damage in the mangrove channel.	
Mangroves	1.2.5	• RMNP should encourage the tourists companies working in the area to hire more tour guides to reduce the ratio between the numbers of visitors related to the number of tour guides. In the same time RMNP should continue its training sessions for these new hired tour guides to be sure that they will be at the level of expectations by the park.	
Mangroves	1.2.5	• Encourage research that will lead to improve indicators and measurement protocols (including threats), and look	

Value	Section	Action	Comment on Implementation
		for alternatives to combat threats.	
Sea grasses	1.3.5	• Zonation of the sea grasses should be prepared as soon as. Zonation will help the staff to measure the natural and human caused changes, and to focus enforcement and education efforts.	
Sea grasses	1.3.5	• In the same protocol for mangrove that should be signed between RMNP and all the oil companies working in the Gulf of Suez, a part of this protocol should include the necessity to conserve the sea grass.	
Sea grasses	1.3.5	• Enhance the enforcement of non-fishing regulations.	
Sea grasses	1.3.5	• RMNP staff should set permanent monitoring programs in order to study the health of sea grass habitats as the main feeding ground for the two most threatened species inside RMNP (e.g. turtles and dugong).	
Sea grasses	1.3.5	• RMNP should coordinate with the tourist companies working in the area in order to arrange with them continuous campaigns for clean up of the sea grasses patches inside the park.	
Sea grasses	1.3.5	• Develop materials about sea grasses an all education and awareness products, including on-site signs.	
Sea grasses	1.3.5	• Undertake further work on the development of suitable indicators.	
Birds	1.4.5	• Obtain the nomination of at least 40% of the sites inside RMNP to be of international importance through coordination with international organizations of birds.	
Birds	1.4.5	• Ensure adequate **bird conservation planning** and fundraising for the development of the bird watch sites inside RMNP for visitors. Conduct annual reviews of the implementation of this plan.	
Birds	1.4.5	• Provide access for RMNP staff to training in species monitoring, wetland management, public awareness and education programs.	
Birds	1.4.5	• Provide a range of tools and programs to promote public awareness and education activities on migratory birds. The target will be to have 50% of the bird watching sites in RMNP conducting awareness and education programs or involved in activities developed and promoted under the **RMNP bird conservation plan**.	
Birds	1.4.5	• Conduct dedication ceremonies at any new bird watching sites in RMNP that involve all the stakeholders and communities representatives.	

Value	Section	Action	Comment on Implementation
Birds	1.4.5	• Develop a special program of activities to address the ongoing loss and degradation of bird habitat in the Gulf of Aqaba and Gulf of Suez. (Including the Red Sea).	
Birds	1.4.5	• Enhance the exchange of information on bird conservation and habitat management between Egyptian protected areas, researchers and Non-government organizations.	
Birds	1.4.5	• Design and implement sound indicators through statistically robust methodologies to monitor bird populations in RMNP, including Tiran and Sanafir Islands.	
Birds	1.4.5	• Support and initiate new projects on bird migration with a special focus on the use of color leg flags. Seek to maximize community involvement in these projects through reporting and analysis of sightings of color flagged birds.	
Birds	1.4.5	• Develop a database to collate bird counts in the flyway. Compile and publish an up-date of the population estimates of birds. Also, assess the adequacy of the roosting sites in RMNP to conserve bird species.	
Birds	1.4.5	• Prohibit or restrict commercial and private aerial operations within 1500 feet above sea level and within 1 kilometer in lateral distance of significant seabird breeding sites.	
Birds	1.4.5	• Protect the mangrove channel area to keep the unique ecological processes and fluxes of the channel in a productive stable status as a feeding area for migratory birds.	
Spawning ground in RMNP	1.5.5	• Prevent human disturbance of land-based activities including breeding, nursing, resting, and social structure and behaviors.	
Spawning ground in RMNP	1.5.5	• The best management tools to protect fish stock in the water are no-approach zones or persons on land, and no-transit zones for vessels at sea, during the breeding seasons. The size of the zones should be based on Red Sea ecology. The larger zones may be more effective in limiting direct mortality from illegal fishing. Therefore, the size of no-transit zones should be a matter of public consultation so that sizes chosen for Jackfish Alley (it can extend to Ras Attar) can reflect the best available scientific data, anecdotal information, local knowledge of the site, and considerations of required human activity. Human interactions should also be considered.	
Spawning ground in RMNP	1.5.5	• Initiate a protocol for fishery management inside RMNP that should be signed between RMNP and all interested parties. A part of this protocol should mention the necessity to find alternatives in the Gulf of Aqaba for fishing.	

Value	Section	Action	Comment on Implementation
Spawning ground in RMNP	1.5.5	• RMNP staff should set permanent monitoring programs in order to study all fish species.	
Beaches and camp sites	2.1.5	• The existing infrastructures on the beaches should be improved in response to the visitation pressure in order to reach to high quality sustainable services for visitors.	
Beaches and camp sites	2.1.5	• More attention to beaches with low visitation level should be taken by RMNP staff and re-establish a plan for improving infrastructures in these beaches to attract visitors from other high visitation beaches. This action will reduce pressure in the high visitation beaches.	
Beaches and camp sites	2.1.5	• RMNP should establish partnership with meteorologists to enhance the use of predictive modeling in forecasting potential or actual beach closure.	
Beaches and camp sites	2.1.5	• RMNP needs to develop an information network with permitting agencies and other local authorities to share technological databases.	
Beaches and camp sites	2.1.5	• RMNP should initiate a survey for beaches to identify the current area for critical erosion; identify beaches of environmental concern; identify beach profile for all beaches in RMNP and track shoreline changes through the GIS unit.	
Beaches and camp sites	2.1.5	• Improved management of the camping resource is warranted. For example, the whole camping area operations (ticket sales, reservations, site maintenance, WC maintenance, repairs, development) would be leased to a source provides (concession).	
Land features	2.2.5	• RMNP should adopt a list of landscapes and habitats that may be destroyed, or important by their nature, cultural or historical value that constitute the natural, historical and cultural heritage or present other significance for the park.	
Land features	2.2.5	• Maintain/improve existing tracks and construct new tracks in Ras Mohammed National Park.	
Land features	2.2.5	• Establish a holistic lease-concession for camping.	
Land features	2.2.5	• Establish Friends of RM NGOs.	
Land features	2.2.5	• Prepare a formal financial submission to the CEO, outlining the business plan to arrest damages and losses due	

Value	Section	Action	Comment on Implementation
		to impending threats and to capitalize potential benefits.	
Economic values	3.1.5	• There have been a number of positive impacts due to the conservation of the natural resources and the growth of the tourist industry. Net benefit evaluation is an important input into decisions about conservation of natural resources. However, RMNP staff should note that all economic benefits and costs should be taken into account, including non-market benefits and costs during any process of resources evaluation inside the park.	
Economic values	3.1.5	• RMNP should have strong communication links with the international Reef Check Program which will help the park with valuable monitoring data. These may be used as a baseline for future monitoring of the financial indicators of the area.	
Economic values	3.1.5	• Although there are several studies on the Bedouin society and life, there is little information on the changes, which are taking place due to the tourist development and there are no data on the benefits that they are deriving from this. It is recommended that RMNP staff undertake a survey of this situation. Such a survey should be integrated with the collection of data for the income generating activities of the women and other support to the Bedouins.	
Economic values	3.1.5	• RMNP should encourage what is called eco labeling of dive shops. Eco labeling of dive shops may be considered with an independent commission responsible for the labeling. Eventually the standard of the environmental awareness would increase and the customers' awareness of selecting those dive shops which are labeled. Eco labeling of tour operators and hotels may also be considered.	
Economic values	3.1.5	• Tourists already pay extra tickets for photographing in many of the tombs in Egypt. In accordance with several studies, the photographers are having a relatively high impact on the corals and could be charged a photographers ticket in accordance with the 'polluter pays principle'. A willingness to pay study should be done first in order to establish its feasibility by RMNP staff.	
Economic values	3.1.5	• Improve the ticket sales and revenue collection system. Annual independent (external) audits should be institutionalized and recommendations followed up. Spot checks that divers receive their tickets should be done randomly to show the divers and dive shops that there is controlled system in place.	
Economic values	3.1.5	• Preliminary evaluation of the value of the existing ecosystems in RMNP (mangroves, desert, mountains and wadis).	
Economic values	3.1.5	• Establish a local stakeholder's forum to identify, evaluate and recommend solutions on the ongoing issues.	

Value	Section	Action	Comment on Implementation
		Results of such meetings should be publicly available (e.g. posted on the internet).	
Strategic Considerations	6.1	• The results of the national RAPPAM (Fouda et al., 2006) (appendix 4 for RMNP) and this report emphasize the numerous needs to support effective management. One of the major needs is stable funding for RMNP in order to achieve its management objectives. Diversification of funding sources should be sought, and perhaps more importantly, alternative mechanisms for retaining funding at sustainable levels are urgently needed to ensure a basic level of protection.	
Strategic Considerations	6.2	• A key priority is to have a well developed management plan for RMNP with clear objectives and associated actions. Annual reporting on the implementation of programs is recommended until RMNP management plan developed. Also, the future management plan should include a section or an appendix that summarizes the actions (commitments) stated in this report. This would assist the park manager in preparing an annual report on implementation of the management plan.	
Strategic Considerations	6.2	• During the workshop RMNP staff with the help from the evaluation team developed a list of objectives that can be used in the future management plan, which are as follow; o Protect the marine and terrestrial ecosystems of Ras Mohammed National Park to retain their ecological functions. o Protect the historical and cultural resources of Ras Mohammed National Park. o Provide compatible and sustainable opportunities to explore the natural ecosystems of RMNP and to provide associated economic benefits while giving first priority to the protection of ecosystems. o Provide opportunities for the people of Egypt and foreign visitors to learn about the special natural and cultural values of RMNP. o Conduct monitoring and research activities to support the evaluation of effective protection and management and the provision of economic benefits.	
Strategic Considerations	6.3	• Prepare and implement a detailed action plan for reef protection, conservation and use. As part of this, establish and implement a carrying capacity research and monitoring program, including: o Re-examine the existing carrying capacity study.	

Value	Section	Action	Comment on Implementation
		○ Work closely with dive centers and other key stakeholders to establish carrying capacities for sites. ○ Defining reef access locations from the land	
Strategic Considerations	6.3	● Establish an active public awareness program, including: ○ Focusing messages on the most important threats and needs such as sensitivity of the corals, sustainable use of the reefs, effects of development, etc. ○ Setting clear information and education objectives, identifying audiences and using the most suitable forms of communications (print, audio, video, personal presentations, news media, etc.). ○ Enhancing the displays in the visitor centre, increasing visitation to the centre from land and sea visitors, setting regular hours of operation. ○ Implementing an active community relations program to enhance awareness and involvement of Sharm El-Sheik in RMNP. This can be facilitated through the establishment of a Friends of RMNP non governmental organization.	
Strategic Considerations	6.3	● Establish a solid waste action plan.	
Strategic Considerations	6.3	● Enhance law enforcement functions by preparing a specific strategy and actions to address threats and conservation priorities, seeking cooperation of other agencies, and where necessary, additional staff	
Strategic Considerations	6.3	● Protecting the important bird habitats	
Strategic Considerations	6.3	● Create alternative job opportunities for fishermen, in collaboration with them and other stakeholders	
Strategic Considerations	6.3	● Carry out active collaboration with the relevant stakeholders to create a shared vision and actions on all aspects of planning and management (listed above), through: ○ Quarterly meetings of a Stakeholder's Forum ○ Posting meeting notes on a website (could be a website sponsored by the diving community) to	

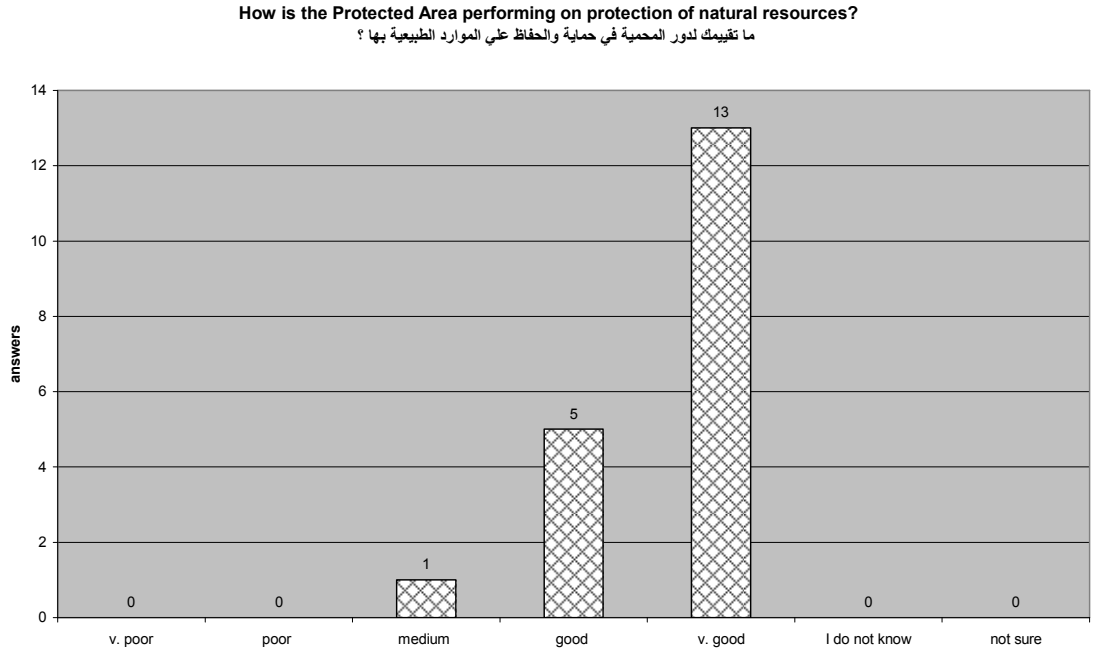
Value	Section	Action	Comment on Implementation
		increase transparency and openness o Inviting stakeholders to Park Management Unit meetings, etc.	
Strategic Considerations	6.3	● Identify Key Ecological Interactions, including predator-prey relationships, migratory patterns, life history stages, and the role of biogenic habitat (e.g. white storks - raptors). Evaluate other existing or planned ecosystem, fishery, or land-based management tools, as feasible within staff limitations. Determine types of socioeconomic analyses to assist in the design and evaluation of biologically effective natural resources in RMNP that will allow continuation of sustainable management.	
Strategic Considerations	6.3	● Involve the community meaningfully in the care and development of the RMNP. This sould include active participation in preparing the management plan. A review of the findings of this report, in a series of meetings or workshops, could be a great way to focus discussion on key values.	
Strategic Considerations	6.3	● Problems examine possible solutions and recommend actions for the management of RMNP should include very strong and close community collaboration to define protection of the coral reefs, the provisions of zoning, regulations and management practices. Cooperation should lead to greater acceptance and effectiveness	
Strategic Considerations	6.3	● Employ people of high caliber, assisting them to reach their full potential, providing a rewarding, useful and caring work environment and encouraging them to pursue relevant training and development opportunities.	
Strategic Considerations	6.3	● Develop indicators and monitoring systems, and then implement them. A start has been made with the existing programs now in use, and also with some of the indicators identified in this report. A full review and rationalization of indicators is needed so that a suite of indicators can be established and monitoring efforts further fine tuned.	
Strategic Considerations	6.3	● RMNP should conduct scientific research aimed at protecting and preserving the biological and landscape diversity of the park and should undertake, where appropriate, joint programmes and projects of scientific research, and exchange relevant scientific data and information as provisioned	
Strategic Considerations	6.3	● A geographic and geospatial database should be developed for RMNP to identify gaps in data and information. The database will include information on the biologic, hydrologic, and geologic resources integrated with data reflecting anthropogenic activities, as well as other data contributed by EEAA. The database will have uniform data standards and storage to ensure all information collected can be shared among partners. This effort will be coordinated with the data and information management strategy.	

Appendix 4. Results of Stakeholder and Visitor Surveys

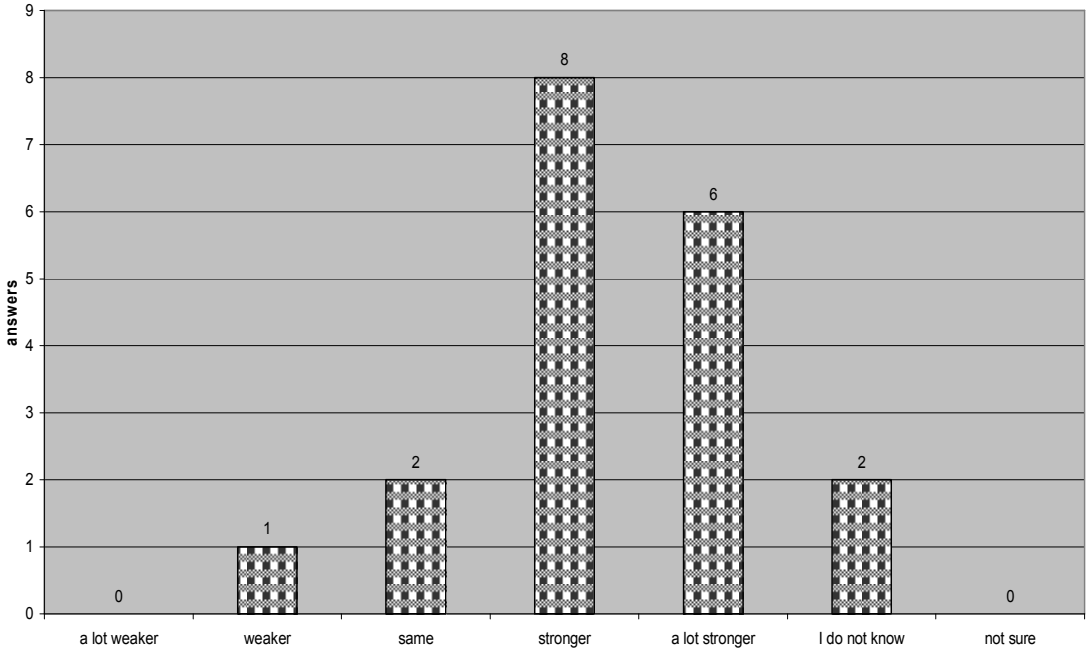
Introduction:

A survey of RMNP stakeholders and visitors was undertaken as part of the evaluation of management effectiveness to gain their perspectives. In total, 35 surveys were administered, including stakeholders (19) and visitors (16). The first set of graphs presents stakeholder survey results and the second set presents visitor survey results.

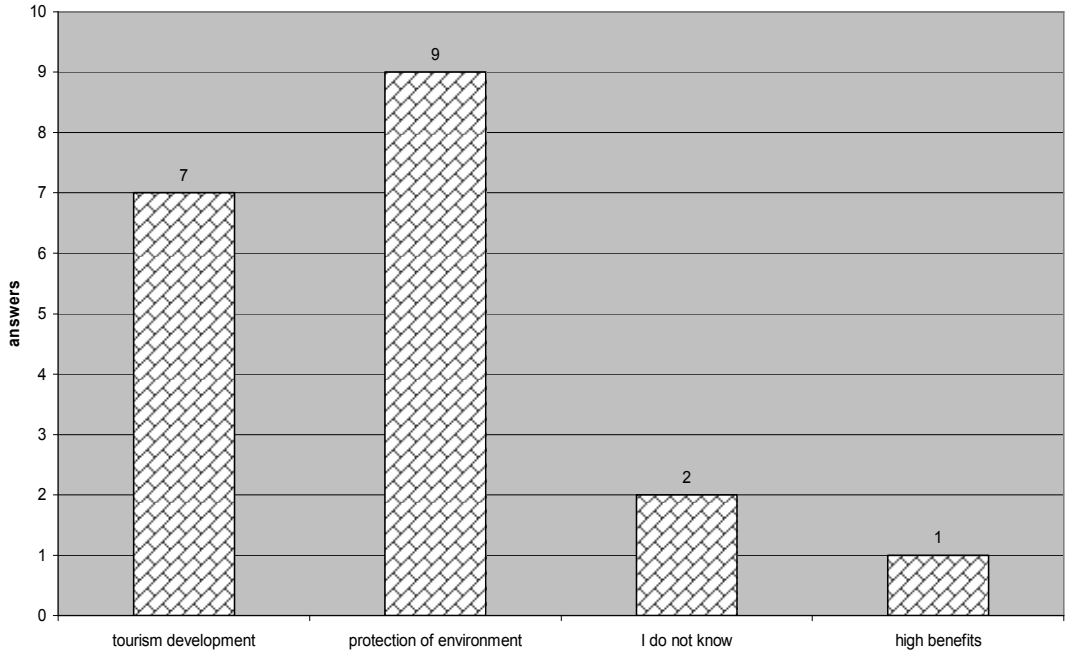
Stakeholder Survey Results:



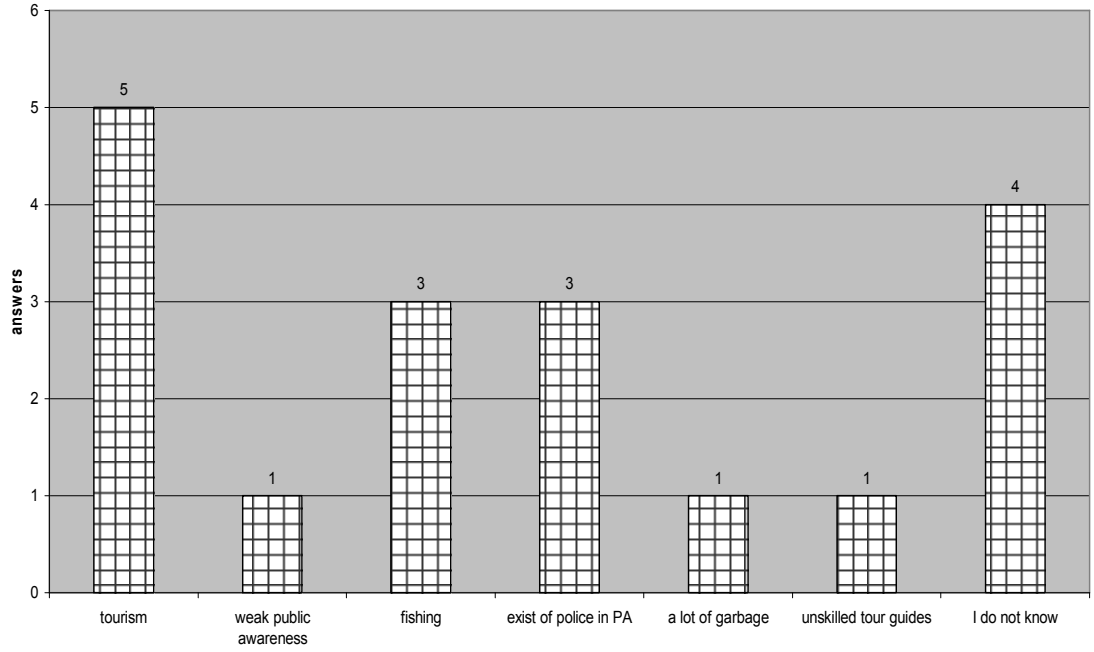
Has the management of the Protected Area become stronger or weaker over the last five years? **هل تعتقد أن إدارة المحمية لمواردها اصبحت تتم بصورة فعالة أم سيئة خلال الخمس سنوات الماضية؟**



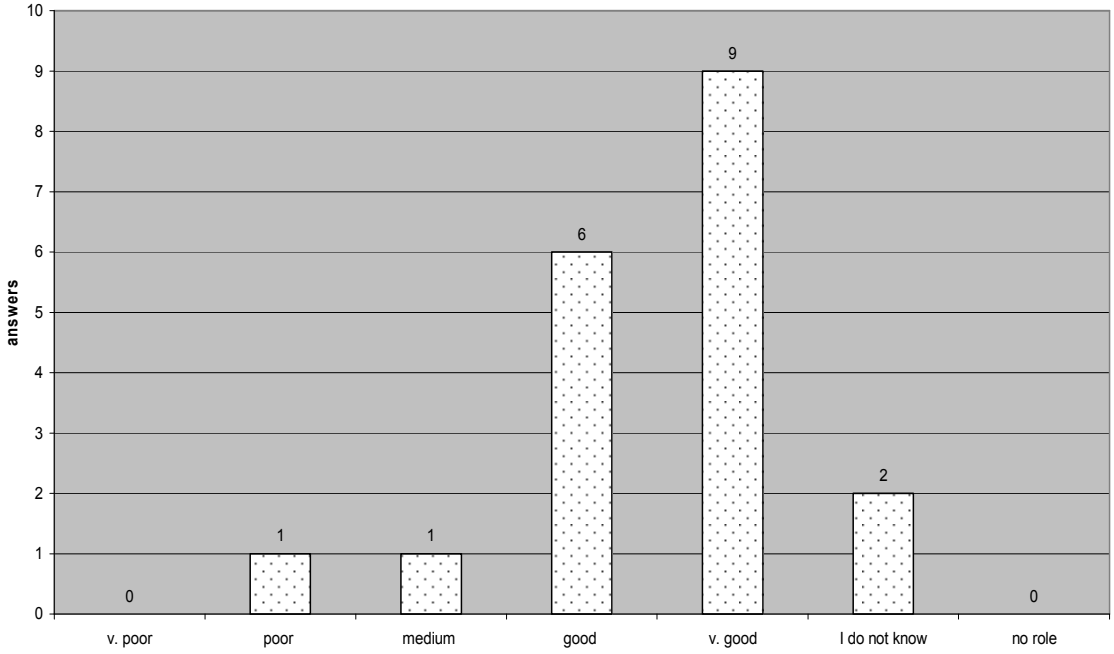
What factors contributed positively to the overall management of the Protected Area? **ما هي ايجابيات إنشاء/وجود المحمية بالمنطقة؟**



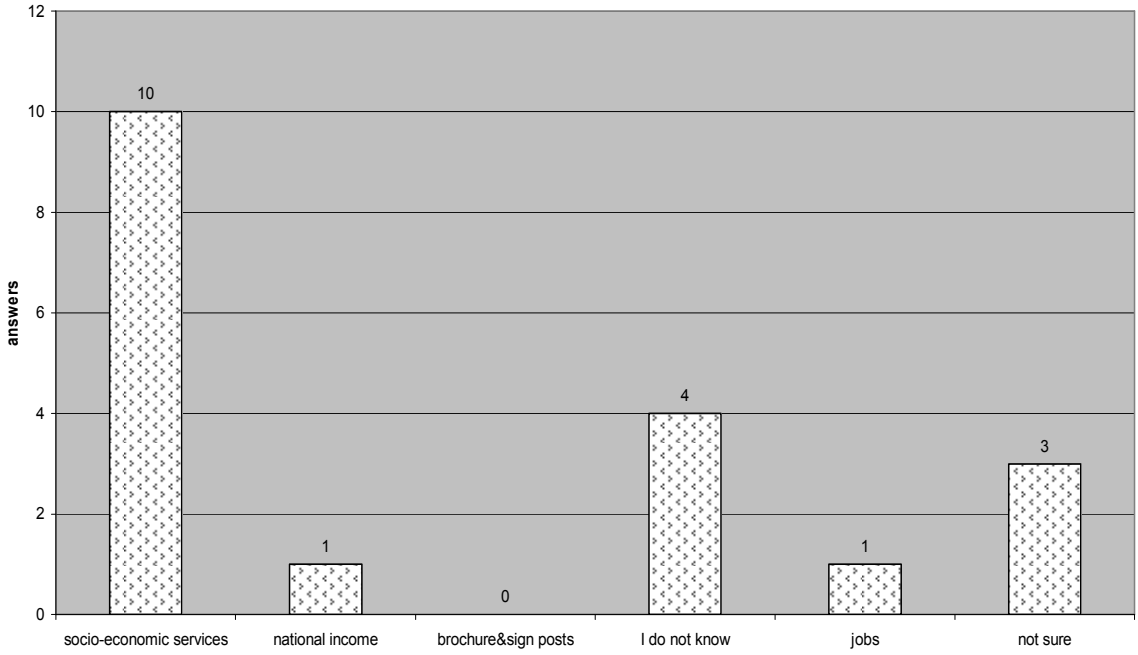
What activities are happening (either legal or illegal) that you feel pose a threat to the Protected Area? ما
هي الانشطة (المصرح بها والغير مصرح بها) والتي تعتقد انها تؤثر بالسلب علي المحمية؟



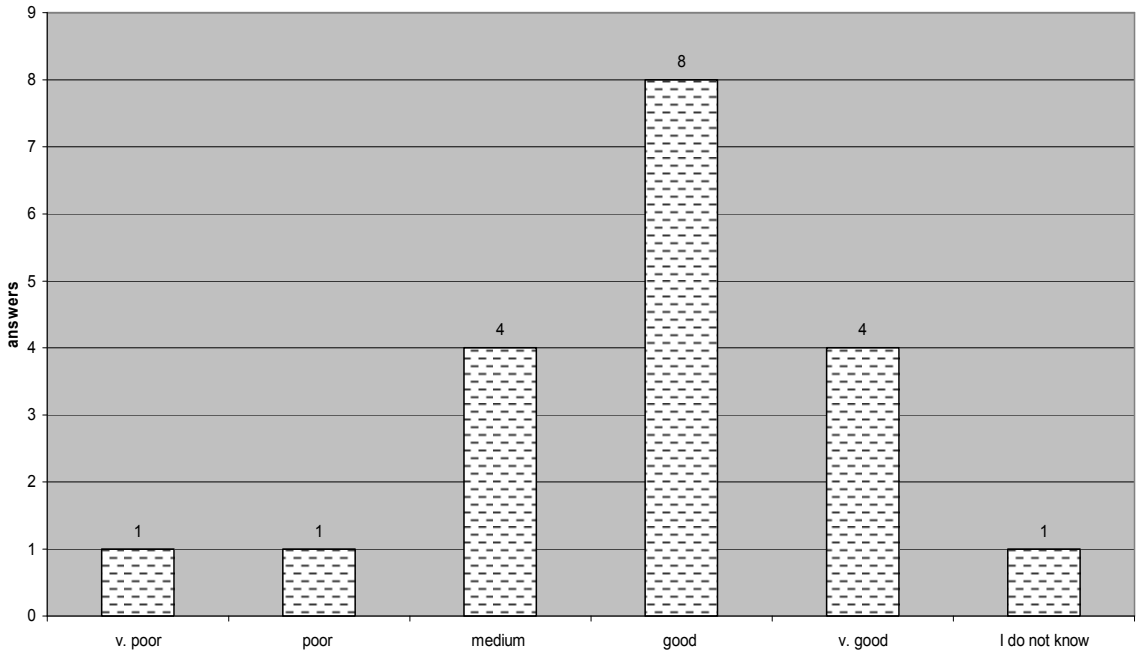
How well does the Protected Area do in informing stakeholders about the PA?
ما تقييمك لدور المحمية في نشر الوعي البيئي بين المجتمعات المحلية المحيطة بها؟



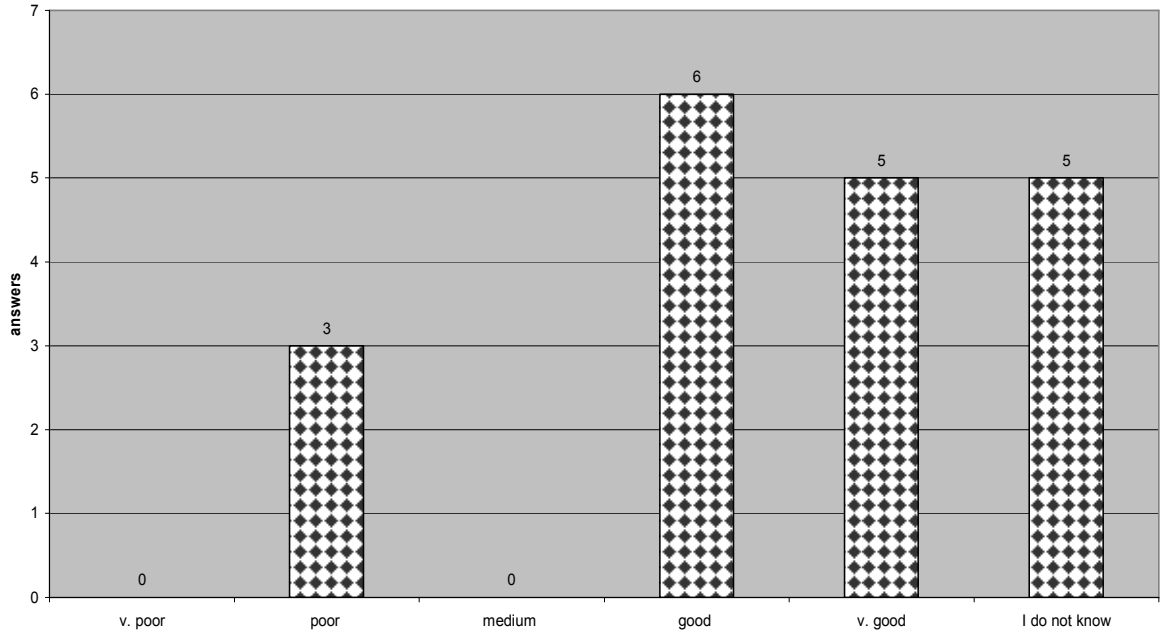
What benefits does the Protected Area provide to you? **ما**
هي الخدمات والانشطة المفيدة التي تقدمها المحمية للمجتمعات المحلية؟



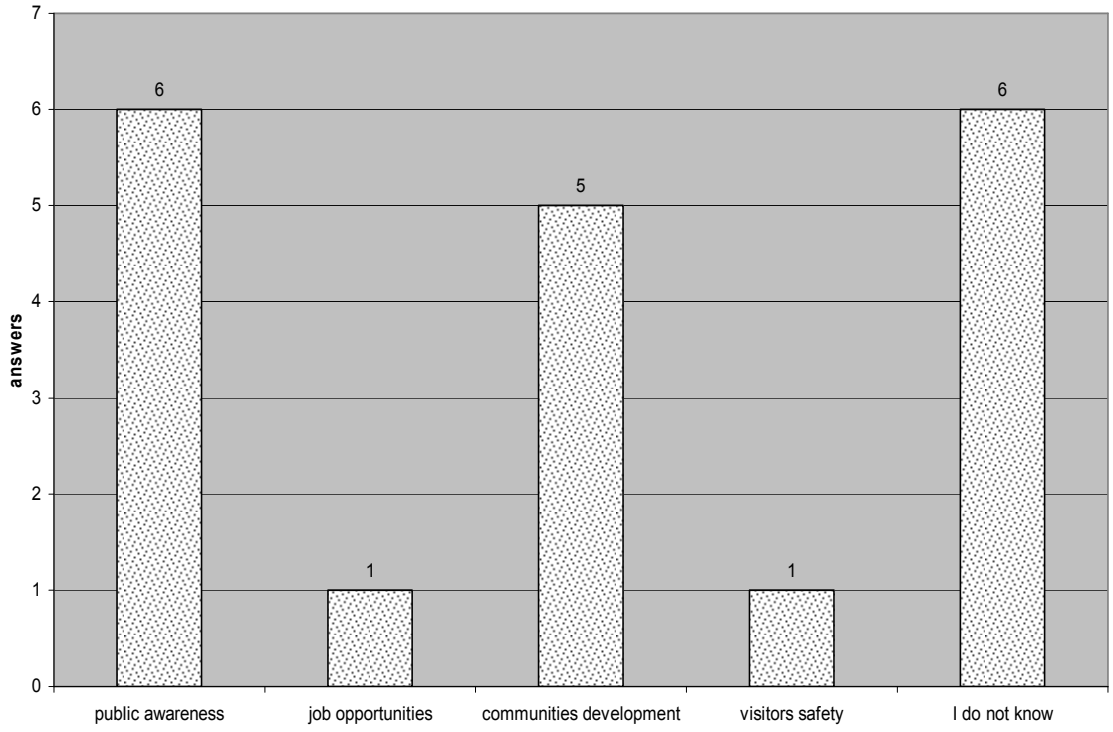
How would you rate the level of support by your stakeholder community for the Protected Area?
ما هو تقييمك لمستويات التعاون بين المجتمعات المحلية وإدارة المحمية؟



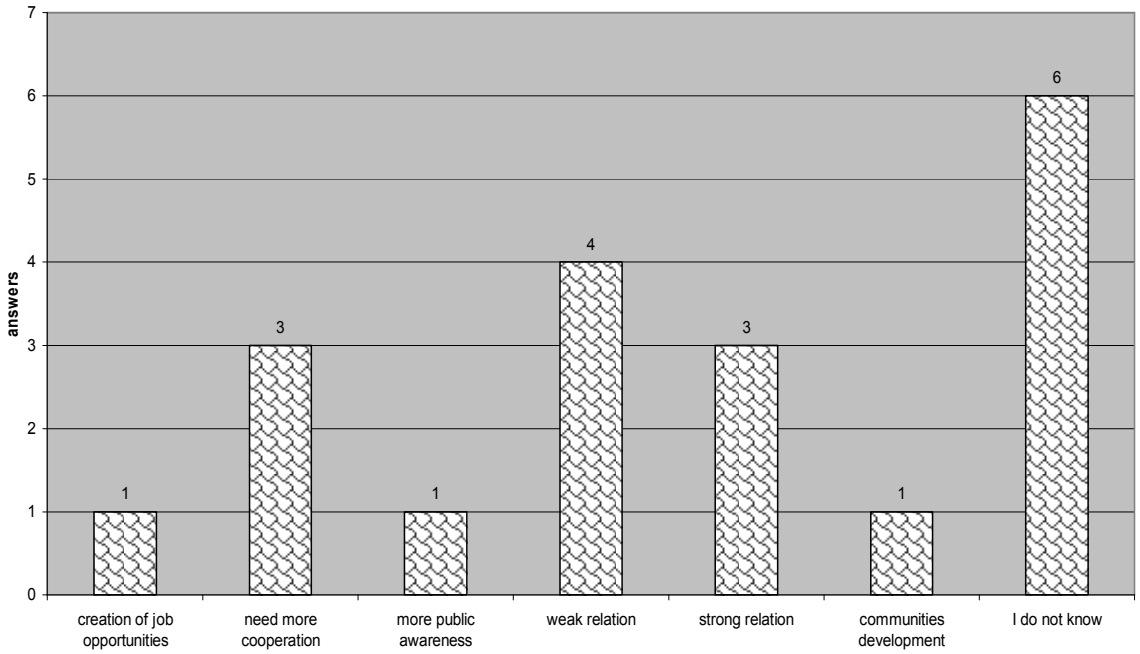
Is the current level of stakeholder support for the Protected Area stronger or weaker than 5 years ago?
هل مستويات التعاون بين المجتمعات المحلية وإدارة المحمية اصبحت تتم بصورة فعالة أم سيئة خلال الخمس سنوات الماضية؟



In what ways could the PA help your stakeholder community?
كيف يمكن لإدارة المحمية (وجود المحمية بالمنطقة) ان تخدم المجتمعات المحلية داخل - خارج المحمية؟

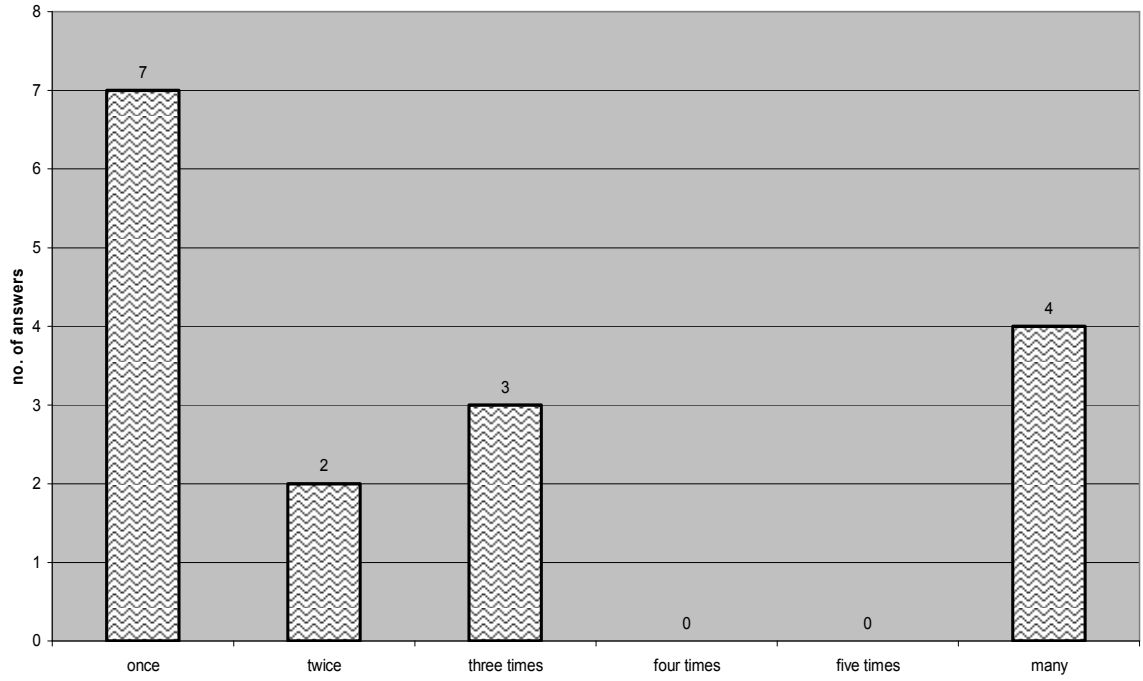


What is your vision for the PA and your stakeholder community?
ما هي رؤيتك الشخصية لطبيعة العلاقة بين المحمية والمجتمعات المحلية؟

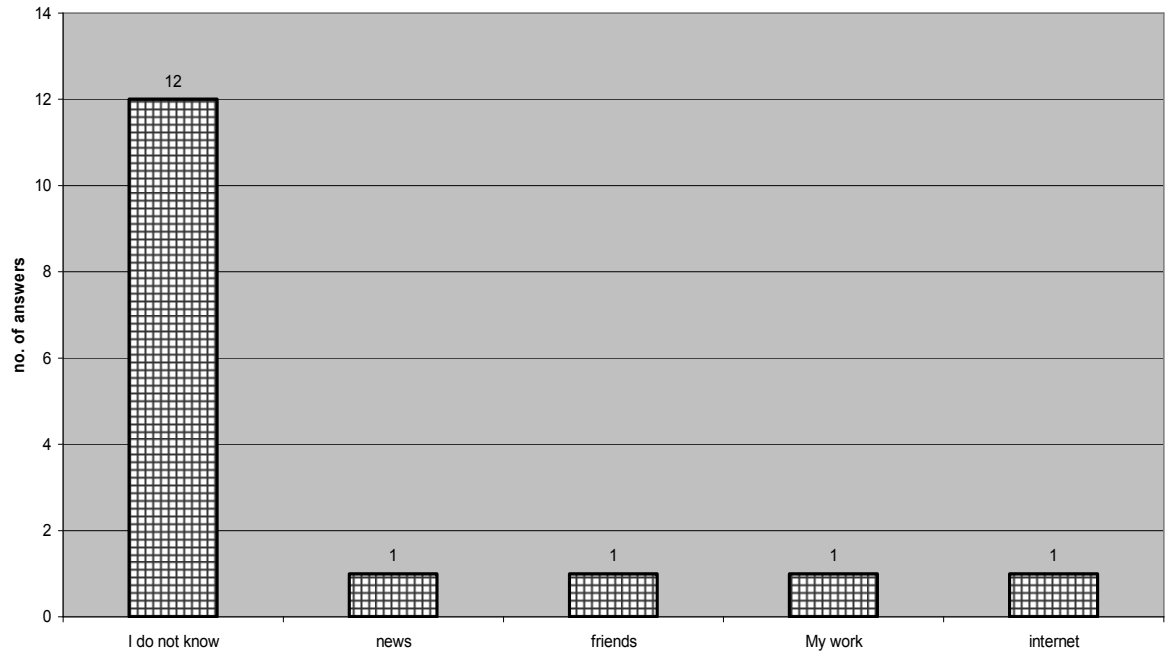


Visitor Survey Results:

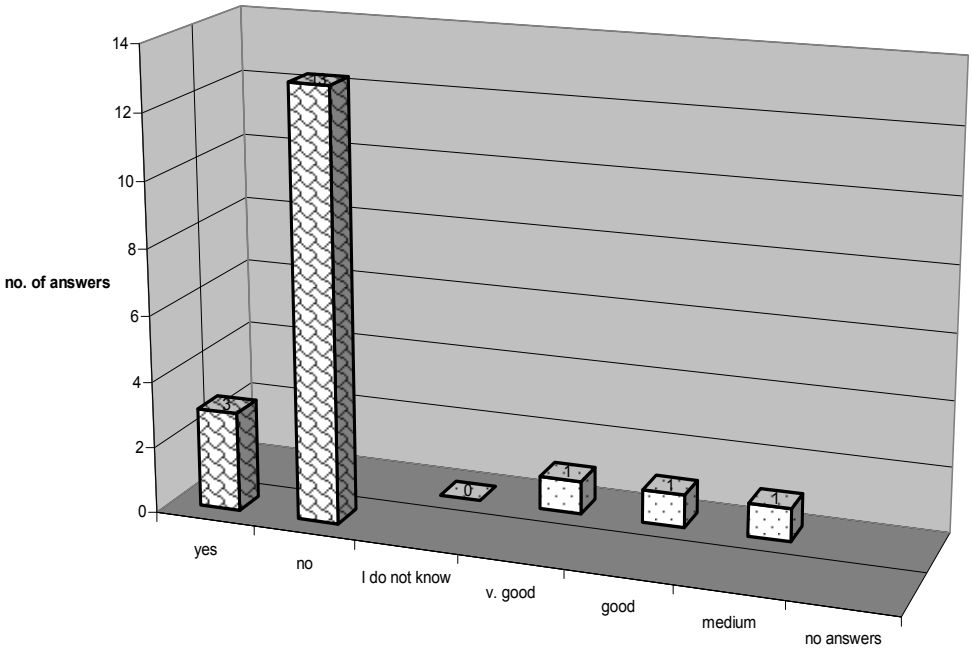
How many times have you visited the Protected Area? كم مرة قمت بزيارة المحمية؟



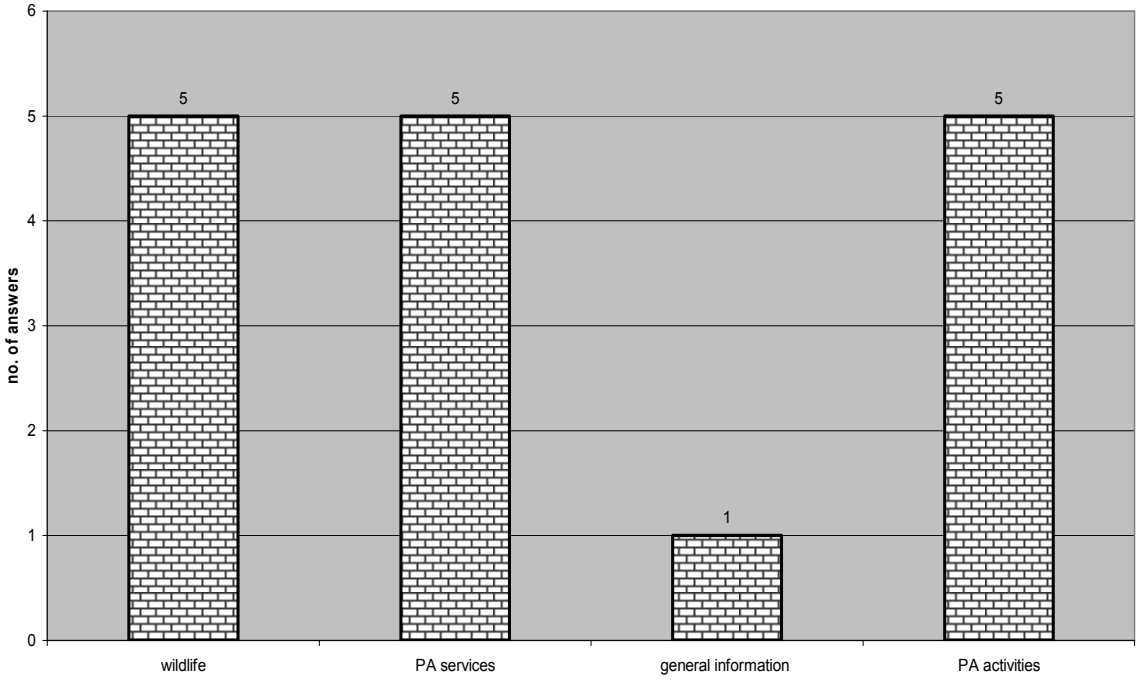
How do you know about the Protected Area? هل حصلت علي معلومات عن المحمية قبل زيارتك لها؟ اذا كانت اجابتك بالايجاب فكيف حصلت علي تلك المعلومات؟



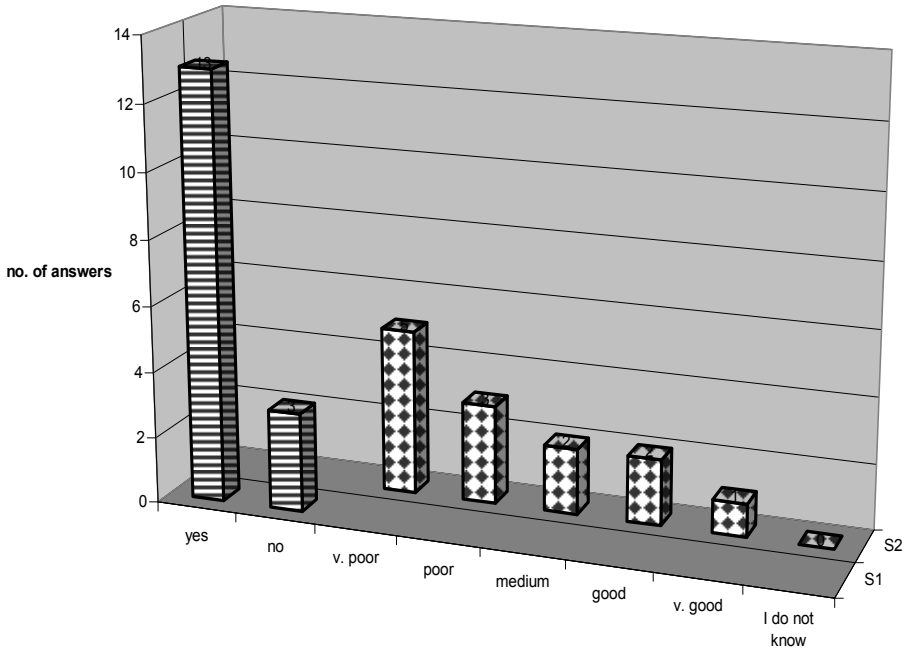
Did you receive any literature about the PA during your visit? if yes put rates?
هل حصلت علي اي مطبوعات عن المحمية اثناء زيارتك لها؟ ما هو تقييمك لجودة المطبوعات التي حصلت عليها اثناء زيارتك للمحمية؟



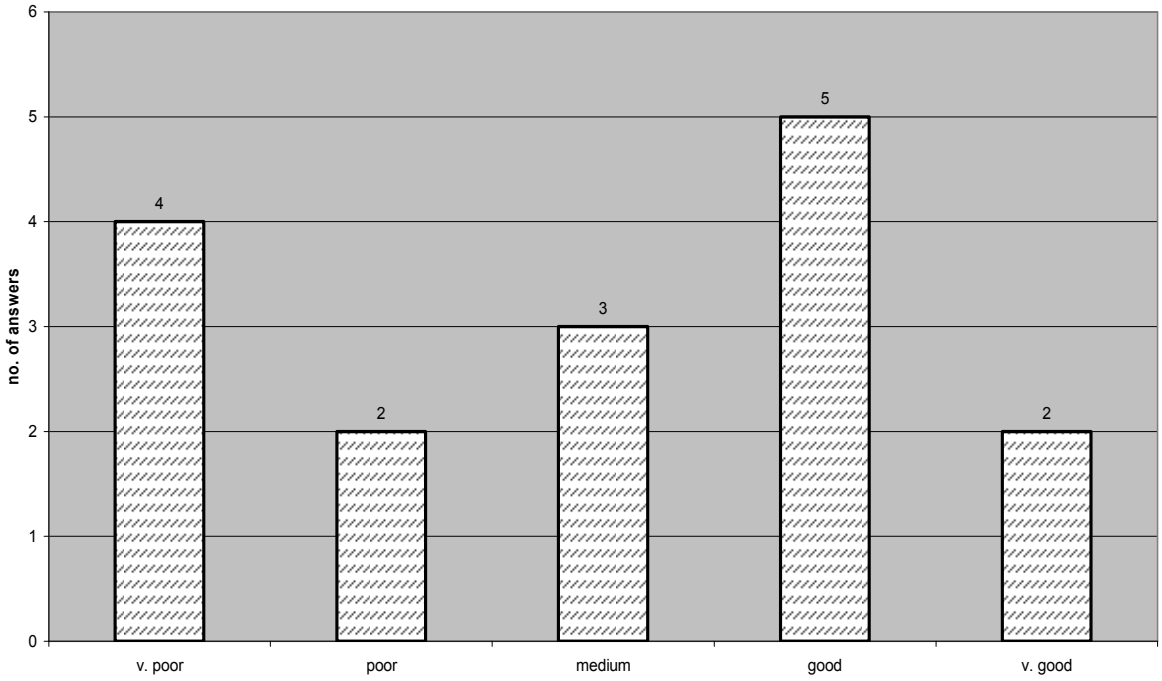
What literature would you like to have? **ما هي طبيعة المعلومات التي تفضل ان تجدها داخل مطبوعات المحمية؟**



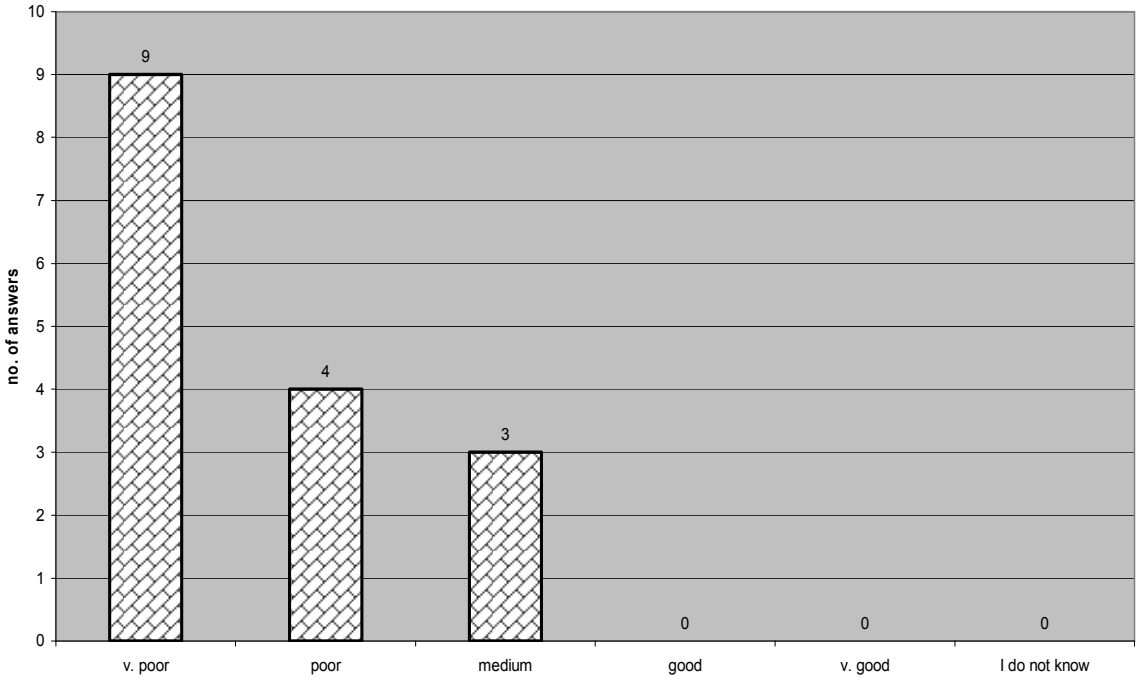
Did you go to the Visitor Centre? if yes rate the quality? **هل**
قمت بزيارة مركز زوار الخاص بالمحمية؟ما هو تقييمك لجودة مركز الزوار؟



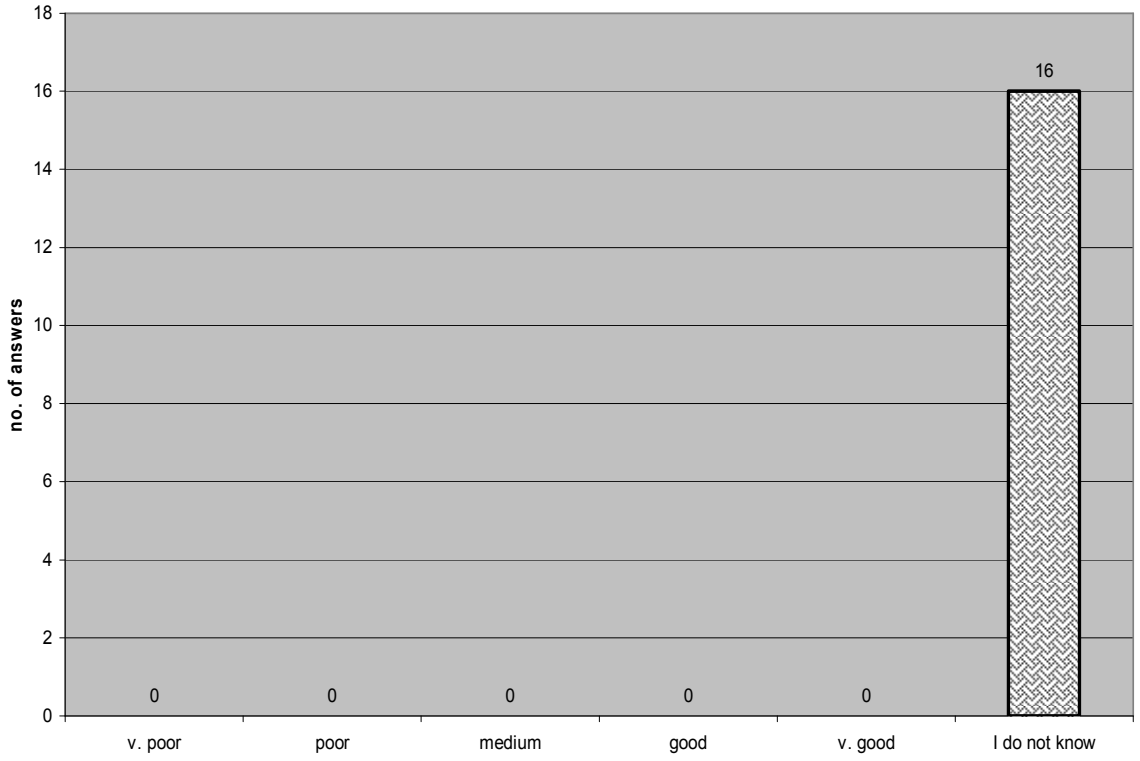
How would you rate the roads and tracks? **ما هو تقييمك لجودة الطرق والمدقات داخل المحمية؟**



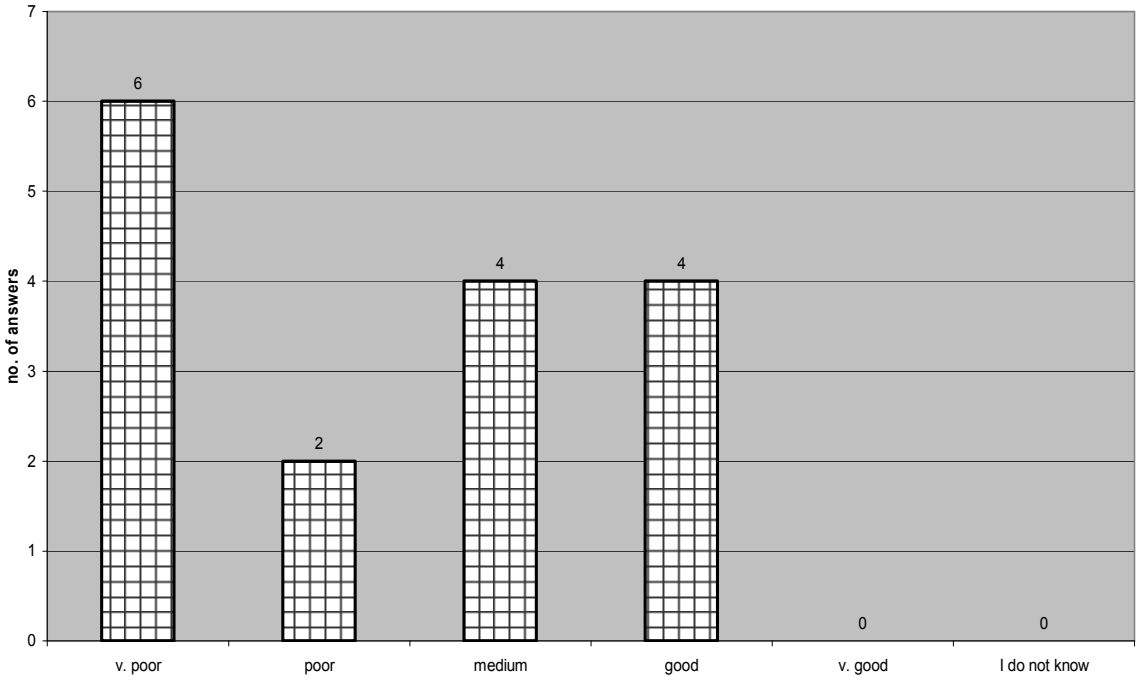
How would you rate the WCs (toilets)? ما هو تقييمك لجودة الحمامات داخل المحمية؟



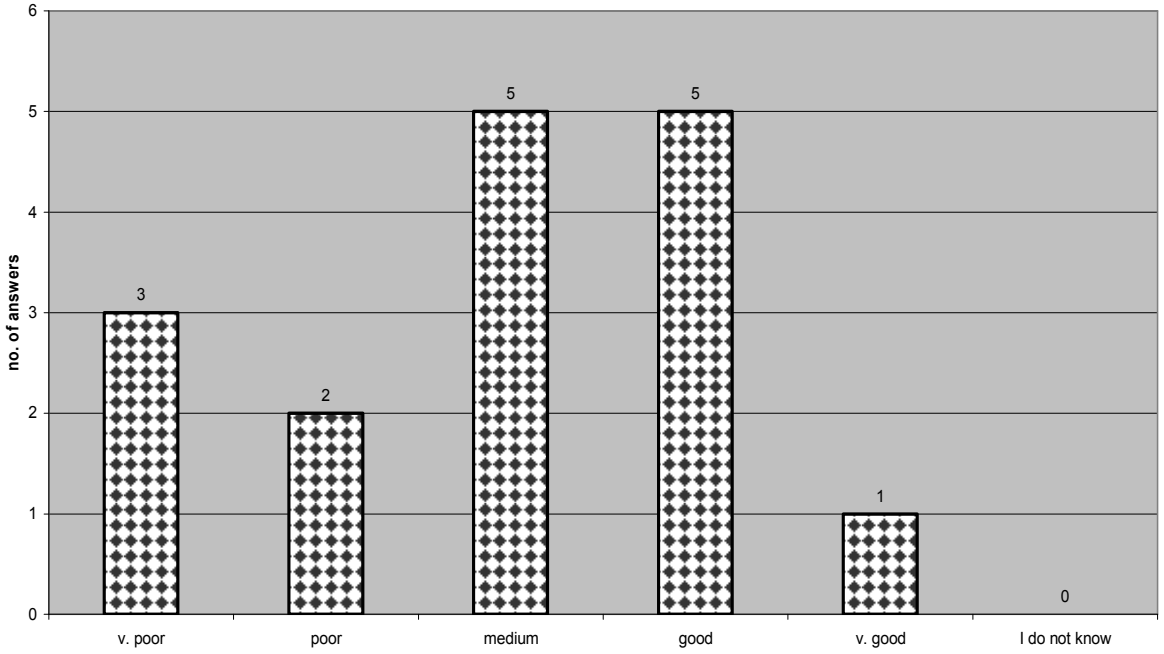
How would you rate the cafeterias? ما هو تقييمك لمستوي الكافيتريات داخل المحمية؟



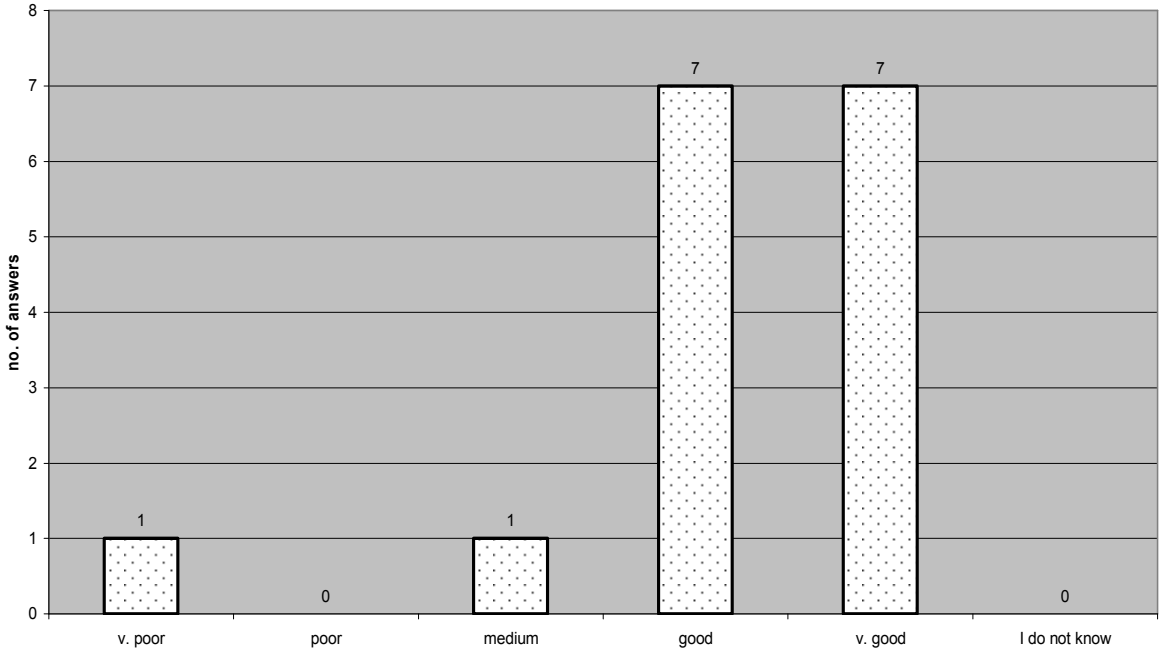
How would you rate the other facilities? ما هو تقييمك لجودة الخدمات الاخري المقدمة داخل المحمية؟



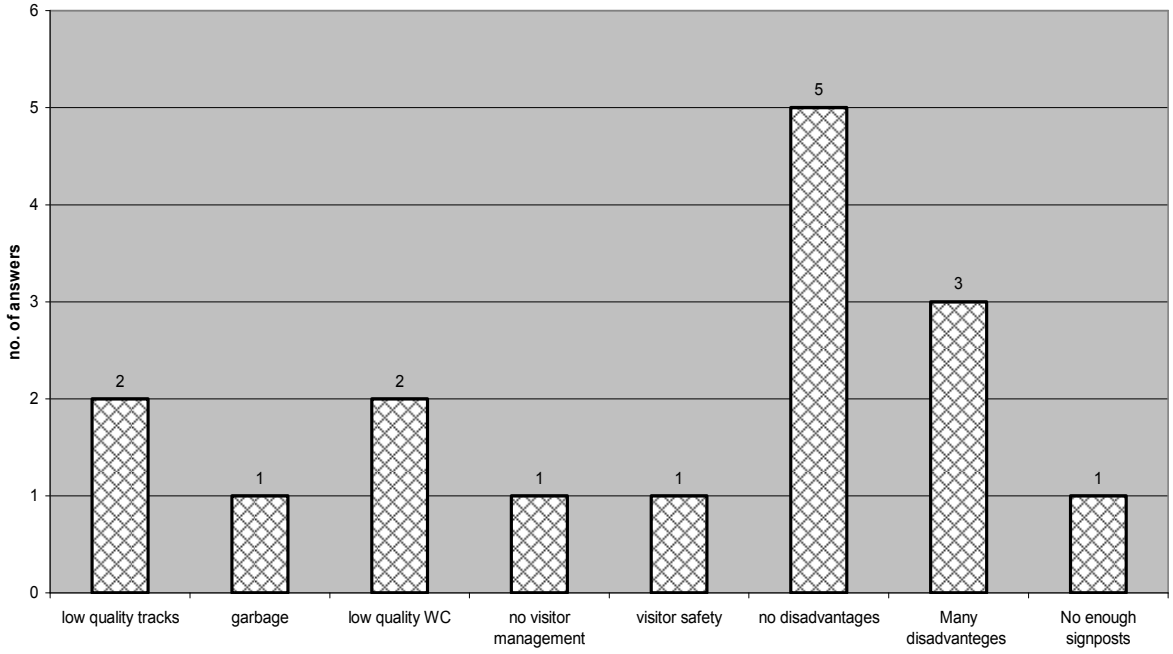
How would you rate the overall cleanness of the Protected Area? ما هو تقييمك لمستوي النظافة العام داخل المحمية؟



How would you rate the staff in terms of knowledge, presentation, helpfulness and friendliness? ما هو
تقييمك لمستوي تعاون ومعرفة والمظهر العام للعاملين بالمحمية؟



Are there any problems in the PA that you would like to mention? ما هي
السلبيات التي وجدتها داخل المحمية؟



Appendix 5. National RAPPAM Results

MANAGEMENT EFFECTIVENESS EVALUATION OF EGYPT'SPROTECTED AREA SYSTEM *(Fouda et al., 2006)*

Report Synopsis

This report, presents the results of a two day workshop held in January 2006 in which NCS staff undertook a rapid assessment of the management effectiveness of Egypt's system of Protected Areas. This was the first such evaluation of Egypt's Protected Areas, and is also the first such evaluation for Arab countries, and may serve as a model for the WESCANA region. The main findings from this exercise were:

- Egypt has declared a relatively good proportion of its land as PAs, and the ecological and social benefits offered by Egypt's PA system are high.
- In general the system contains a good representation of Egyptian habitats (but this needs quantitative verification) with high biological significance.
- The system appears to be equally important for most aspects of biodiversity conservation, i.e. representativeness, important species, full range of diversity, significant populations etc.
- The PAs generally are meeting their conservation objectives and the PAMU staff technical skills are generally good.
- The PA system is a vitally important socio-economic asset to Egypt but many benefits are unrealised.
- Egypt's Protected Areas are all chronically under-resourced, far below the norm for Developing Countries or even for Africa. In Egypt the total expenditure on PAs (including staff costs) averages 108 LE ($19) per km^2 per year, approximately 11% of the average for developing countries. In order to match the regional or developing countries norms Egypt would need to invest between $7.4 million and $15.7 million annually in its national protected area system – a 4 to 9 fold increase on current expenditure.
- In administering the system, there is a marked disparity in the allocation of staff and budgets to areas as opposed to their needs and the national priorities in regard to biodiversity value.
- The conversion of land use, recreational use (especially tourism) and hunting are considered as the greatest pressures operating on the PA system. Since they will continue to threaten the system, coordinated national strategies will be required to address these issues.
- While there appear to be good local relations, local people don't necessarily support the PAs and they are not involved in management decisions.
- The system is vulnerable as a result of poor law enforcement, overexploitation of resources, and lack of resources.
- Site planning is generally poor; only one third of the protected areas have formal management plans or definitive work plans – this is a serious concern because it makes it difficult to implement proper management, track effectiveness or develop business plans.
- Inputs to the system are inadequate from all aspects. The main limitations to effective management are considered to be the very low levels of Government funding, the low staff levels, and the lack of training opportunities. Inadequate management resources (especially transport) and poor infrastructure facilities are also important constraints.
- PA staff have major concerns with staffing levels, salaries and funding for their many duties, especially transport. They also cite an unresponsive central office with administrative delays (in releasing funds, in approvals, etc) and uncoordinated requests for data and information.

1. Background Information

The results in this appendix pertain to RMNP and have been extracted from the national RAPPAM exercise conducted in January 2006 (Fouda et al., 2006).

Name	Size (km^2)—RAPPAM Reported	Size-- NCS Records	Size-- System Plan	Date Establishment	Age as a PA (yrs)	GoE Budget RAPPAM Reported	Actual Budget 2004-5—NCS	Donor Budget (K_LE)	No. of staff RAPPAM Reported	No. of Staff (NCS)
Ras Mohammed	480	850	480	1983	23		1,105		5	
Nabq		600	600							95
Abu Galum	400	500	500	1992	14			0	4	
Taba	2800	3595	3,595	1998	8			0	0	
Egypt PAs		**100,152**	**94,183**			**1013**	**2,776**		**159**	**470**

Staffing and Funding per km²

PA	Area NCS km2	Area PA System km2	Total Staff	Staff /km2	Op and Mtc Expenditure 2004-2005 (LE) *	Exp/km2 (LE) *
Ras Mohammed	850	480	95	0.017	1,105,000	199.28
Nabq	600	600				
Abu Galum	500	500				
Taba	3595	3595				

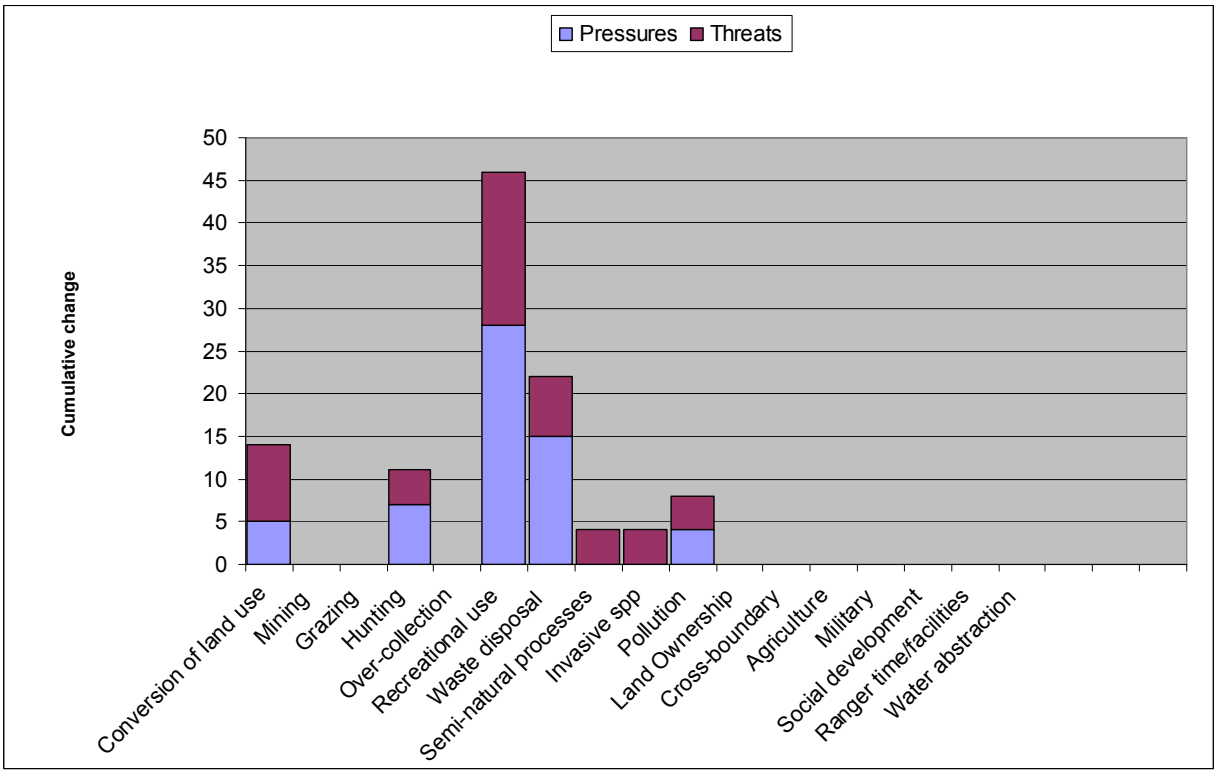
* Calculated on NCS supplied data

2. Pressures and Threats

Pressures describe forces, activities or events *that have already* impacted the area.

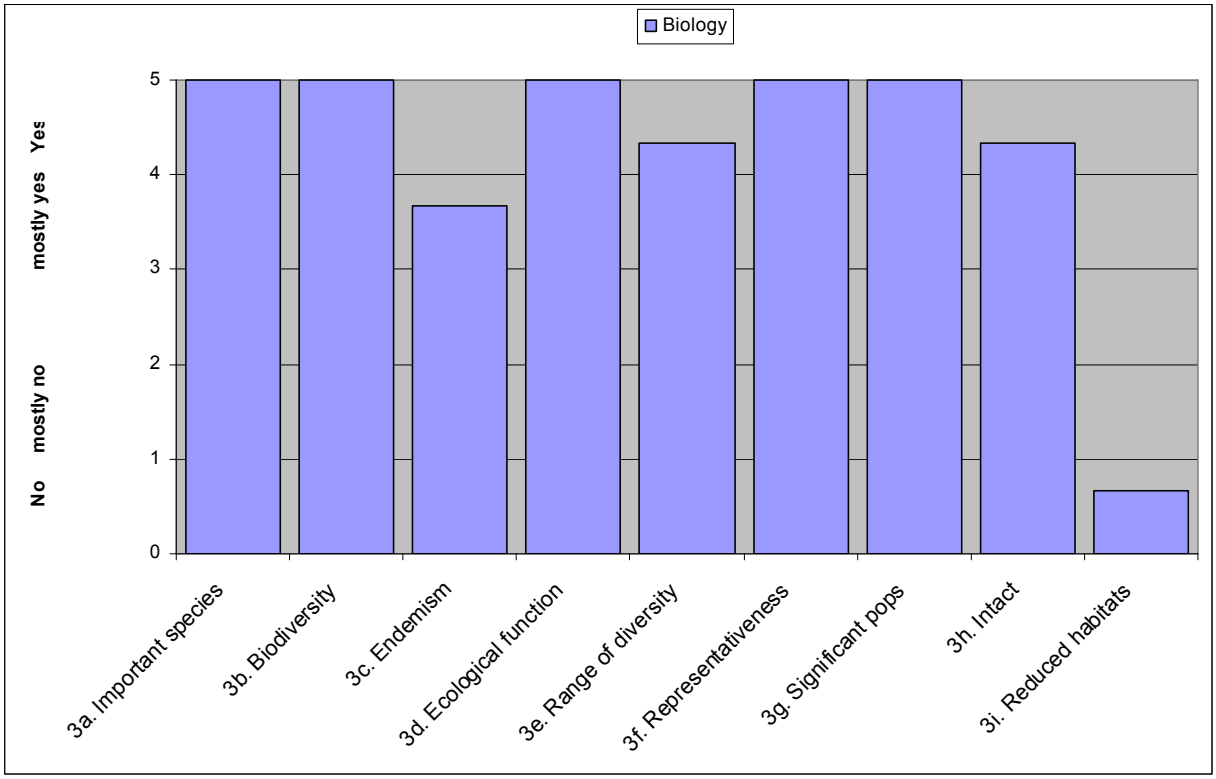
Threats describe *potential or future pressures* likely to impact area.

The "degree" of threat and pressure is the product of the three elements of Extent, Impact and Permanence, each rated on a scale of 1 to 4 (low to high). [Degree=E x I x P]



3. BIOLOGICAL IMPORTANCE – CONTEXT

a) The PA contains a relatively high number of rare, threatened, or endangered species.
b) The PA has relatively high levels of biodiversity.
c) The PA has a relatively high degree of endemism.
d) The PA provides a critical ecological function.
e) The PA contains the full range of plant and animal diversity.
f) The PA significantly contributes to the representativeness of the PA system.
g) The PA sustains significant populations of key species.
h) The structural diversity of the PA is largely intact, undamaged and unchanged.
i) The PA includes ecosystems whose historic range has been greatly diminished.

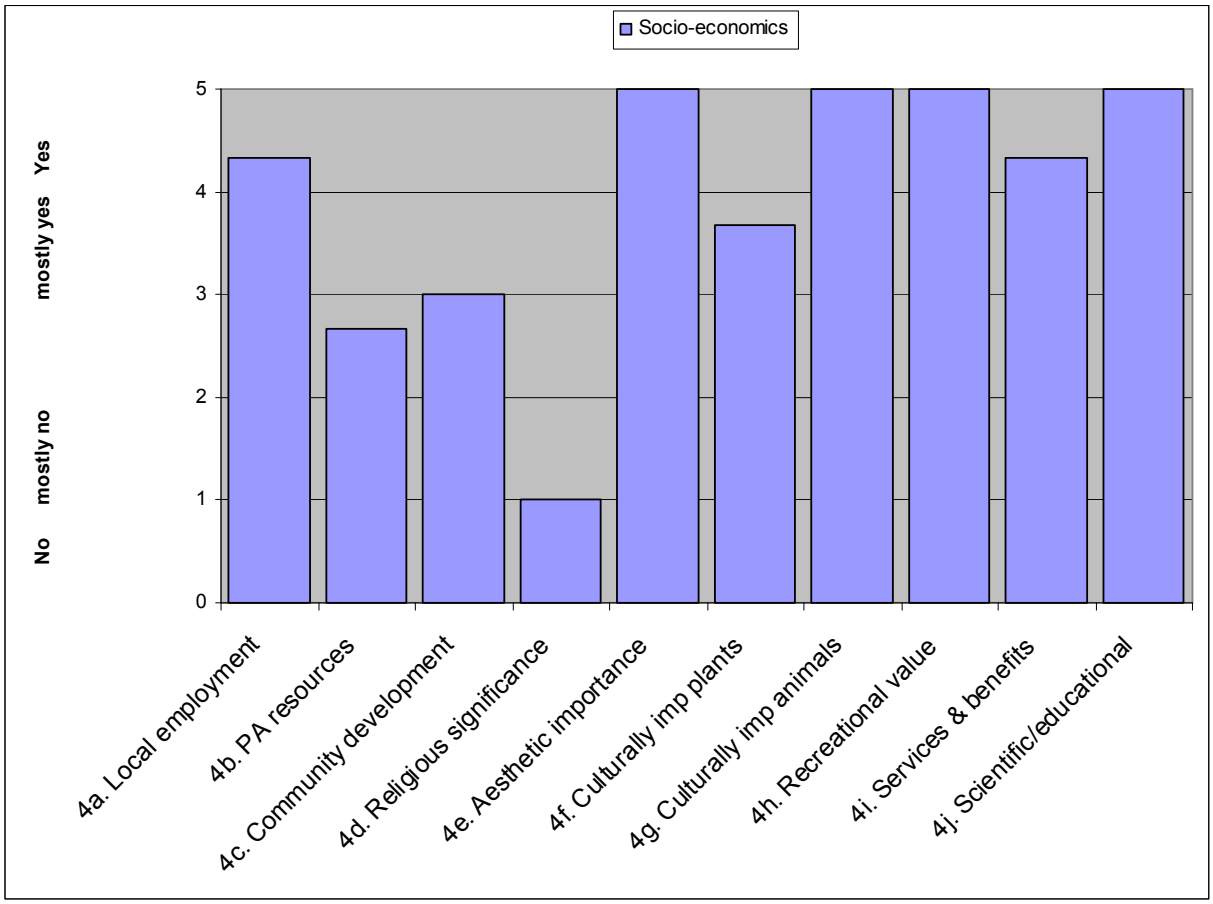


٣. الأهمية البيولوجية (السياق)

أ- تحتوي المحمية على عدد كبير نسبياً من الأنواع النادرة أو المهددة أو المعرضة لخطر الإنقراض.
ب- تمتلك المحمية درجة عالية نسبياً من التنوع البيولوجي.
جـ- تمتلك المحمية نسبة عالية إلى حد ما من الأنواع المتوطنة.
د- للمحمية وظائف بيئية حرجة.
هـ- تحتوي المحمية على مدى متكامل من التنوع للنباتات والحيوانات.
و- تساهم المحمية بشكل ملحوظ في تمثيل نظام المحمية الطبيعية.
ز- تحتوي المحمية على نسبة كبيرة من جماعات الأنواع الرئيسية.
ح- الهيكل البنائي للمحمية سليم لم يتم ايذائه أو تغييره.
ر- تتضمن المحمية أنظمة بيئية قد تغيرت كثيراً عبر التاريخ.

4. SOCIO-ECONOMIC IMPORTANCE – CONTEXT

a) The PA is an important source of employment for local communities.
b) Local communities depend upon the PA resources for their subsistence.
c) The PA provides community development opportunities through legalized sustainable resource use.
d) The PA has religious or spiritual significance.
e) The PA has unusual features of aesthetic importance.
f) The PA contains plant species of high social, cultural, or economic importance.
g) The PA contains animal species of high social, cultural, or economic importance.
h) The PA has a high recreational value.
i) The PA contributes significant ecosystem services and benefits to communities.
j) The PA has a high educational and/or scientific value.

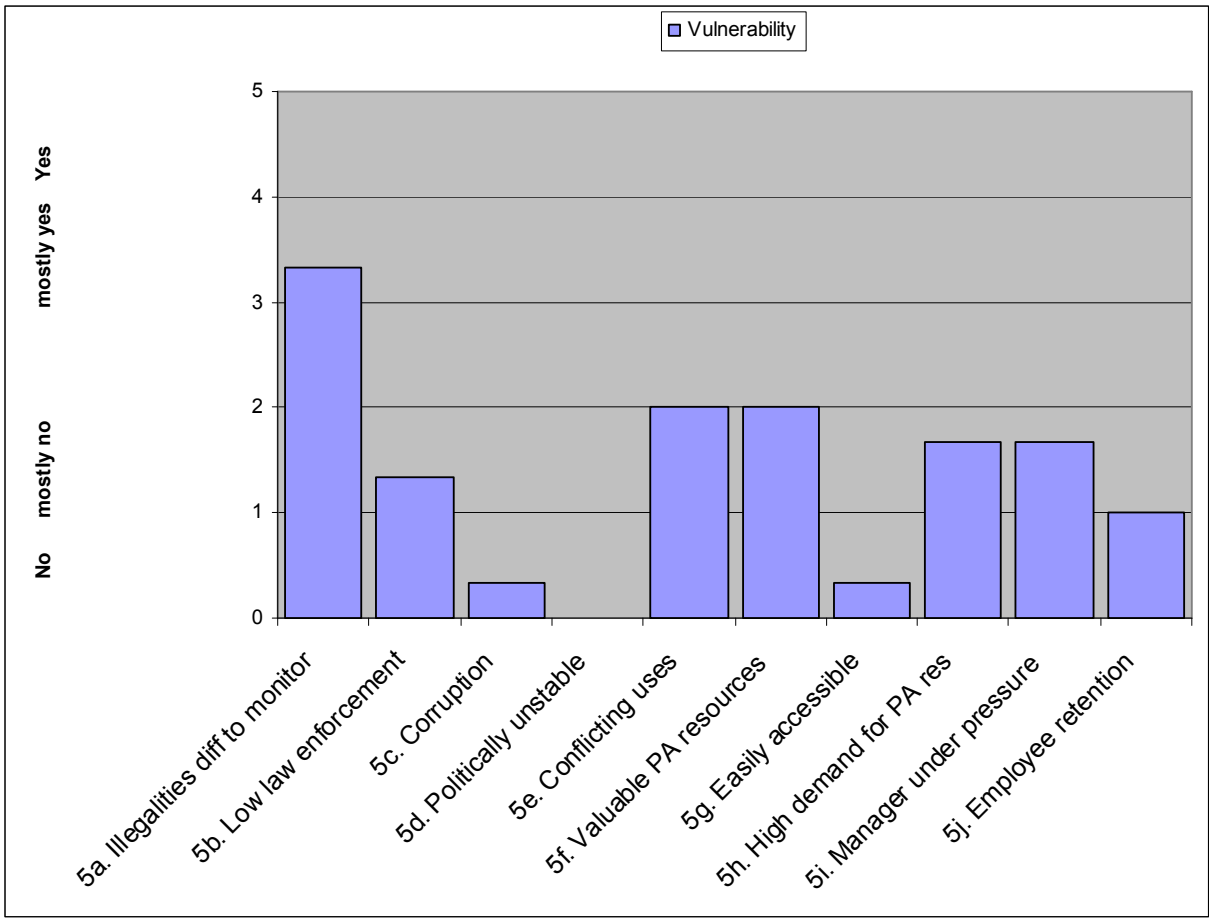


٤. الأهمية الإقتصادية والإجتماعية (السياق)

أ- تعتبر المحمية مصدر مهم للعمل بالنسبة للسكان المحليين.
ب- يعتمد المجتمع المحلي على موارد المحمية للمعيشة.
جـ- تمنح المحمية السكان فرص للتنمية من خلال الاستغلال القانوني والمستمر للموارد.
د- للمحمية أهمية دينية أو روحية.
هـ- للمحمية أهمية غير عادية من حيث الخصائص الجمالية.
و- تحتوي المحمية على أنواع نباتية ذات أهمية إجتماعية أو ثقافية أو إقتصادية عالية.
ز- تحتوي المحمية على أنواع حيوانية ذات أهمية إجتماعية أو ثقافية أو إقتصادية عالية.
ح- للمحمية قيمة ترفيهية عالية.
ر- تساهم المحمية في تقديم خدمات ومنافع بيئية هامة للسكان.
م- للمحمية قيمة تربوية وعلمية هامة.

5. VULNERABILITY – CONTEXT

a) Illegal activities within the PA are difficult to monitor.
b) Law enforcement is low in the region.
c) Bribery and corruption is common throughout the region.
d) The area is experiencing civil unrest and/or political instability.
e) Cultural practices, beliefs, and traditional uses conflict with the PA objectives.
f) The market value of the PA resources is high.
g) The area is easily accessible for illegal activities.
h) There is a strong demand for vulnerable PA resources.
i) The PA manager is under pressure to unduly exploit the PA resources.
j) Recruitment and retention of employees is difficult.



٥. نقاط الضعف (السياق)

أ- أنشطة غير قانونية داخل المحمية ومن الصعب أن تراقب.
ب- تطبيق القانون قليل بالمنطقة.
جـ- الرشوة والفساد منتشرين بالمنطقة.
د- تواجه المنطقة إضطراب مدني مع عدم الإستقرار السياسي.
هـ- ممارسات ثقافية ومعتقدات واستخدامات تقليدية تنافي أهداف المحمية.
و- سعر السوق لموارد المحمية عالي.
ز- تعتبر المنطقة قابلة لإقامة أنشطة غير قانونية.
ح- هناك مطلب قوي على موارد المحمية الضعيفة.
ر- مدير المحمية تحت ضغط مما يؤدي للإفراط في إستغلال موارد المحمية.
م- عدم القدرة على تطويع العاملين والإحتفاظ بهم.

6. OBJECTIVES – PLANNING

a) PA objectives provide for the protection and maintenance of biodiversity.
b) Specific biodiversity-related objectives are clearly stated in the management plan.
c) Management policies and plans are consistent with the PA objectives.
d) PA employees and administrators understand the PA objectives and policies.
e) Local communities support the overall objectives of the PA.

6. الأهداف (التخطيط)

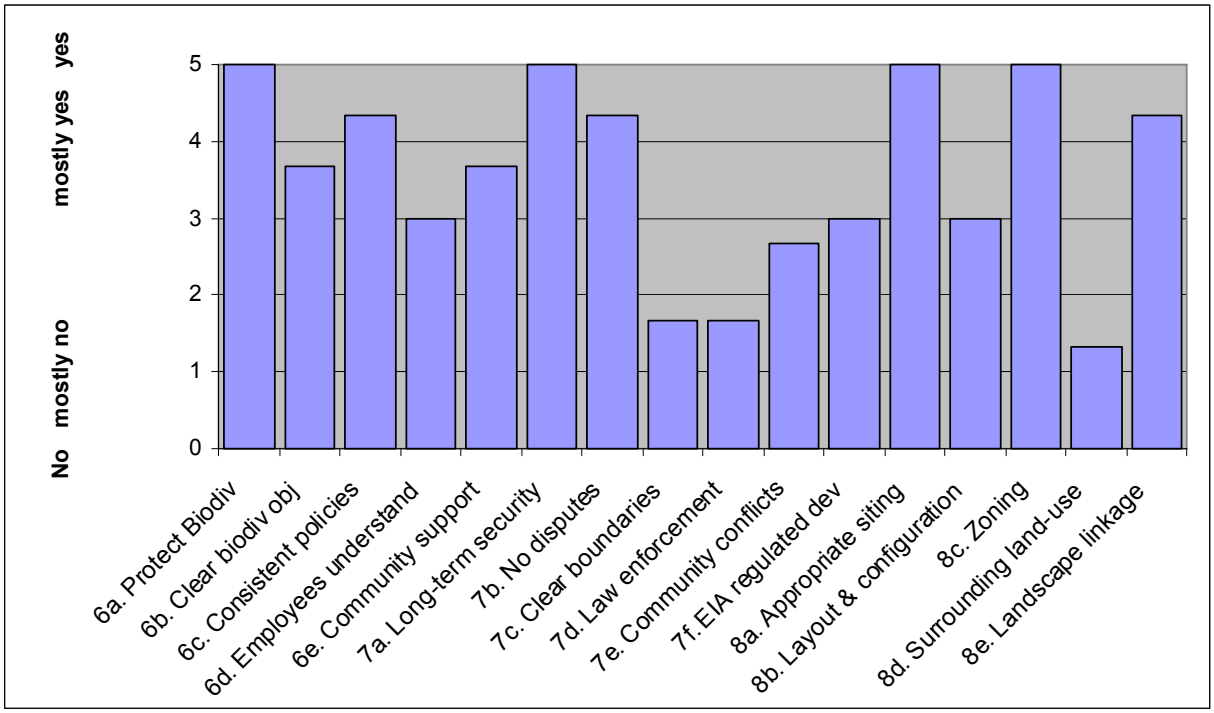
أ- تسعى أهداف المحمية إلى حماية التنوع البيولوجي والإبقاء عليه.
ب- توضع الأهداف الخاصة المتعلقة بالتنوع البيولوجي في مخطط الإدارة بشكل واضح.
جـ- تكون سياسات ومخططات الإدارة متسقة مع أهداف المحمية.
د- يكون الإداريين والعاملين بالمحمية متفهمين لأهدافها وسياساتها.
هـ- يدعم المجتمع المحلي الأهداف العامة للمحمية.

7. LEGAL SECURITY – PLANNING

a) The PA has long-term legally binding protection.
b) There are no unsettled disputes regarding land tenure or use rights.
c) Boundary demarcation is adequate to meet the PA objectives.
d) Staff and financial resources are adequate to conduct critical law enforcement activities.
e) Conflicts with the local community are resolved fairly and effectively.
f) EIA arrangements to regulate development activities are adequate and enforced.

٧. الحماية القانونية (التخطيط)

أ- للمحمية حماية قانونية طويلة المدى.
ب- ليس هناك نزاعات قائمة خاصة بإمتلاك الأرض أو حقوق الاستغلال.
جـ- يكون تعيين حدود المحمية كافياً لمقابلة أهداف المحمية.
د- تعتبر العمالة والموارد المالية كافية لإجراء الأنشطة الهامة لتطبيق القانون.
هـ- تحل النزاعات مع السكان المحليين بطريقة عادلة وفعالة.
و- إن الترتيبات الخاصة بتقييمات الوقع البيئي من أجل تنظيم الأنشطة التطويرية كافية ومطبقة.



8. SITE DESIGN AND PLANNING – PLANNING

a) The siting of the PA is consistent with the PA objectives.
b) The layout and configuration of the PA optimizes the conservation of biodiversity.
c) The PA zoning system is adequate to achieve the PA objectives.
d) The land use in the surrounding area enables effective PA management.
e) The PA is linked to another area of conserved or protected land**.**

٨. تصميم وتخطيط الموقع (التخطيط)

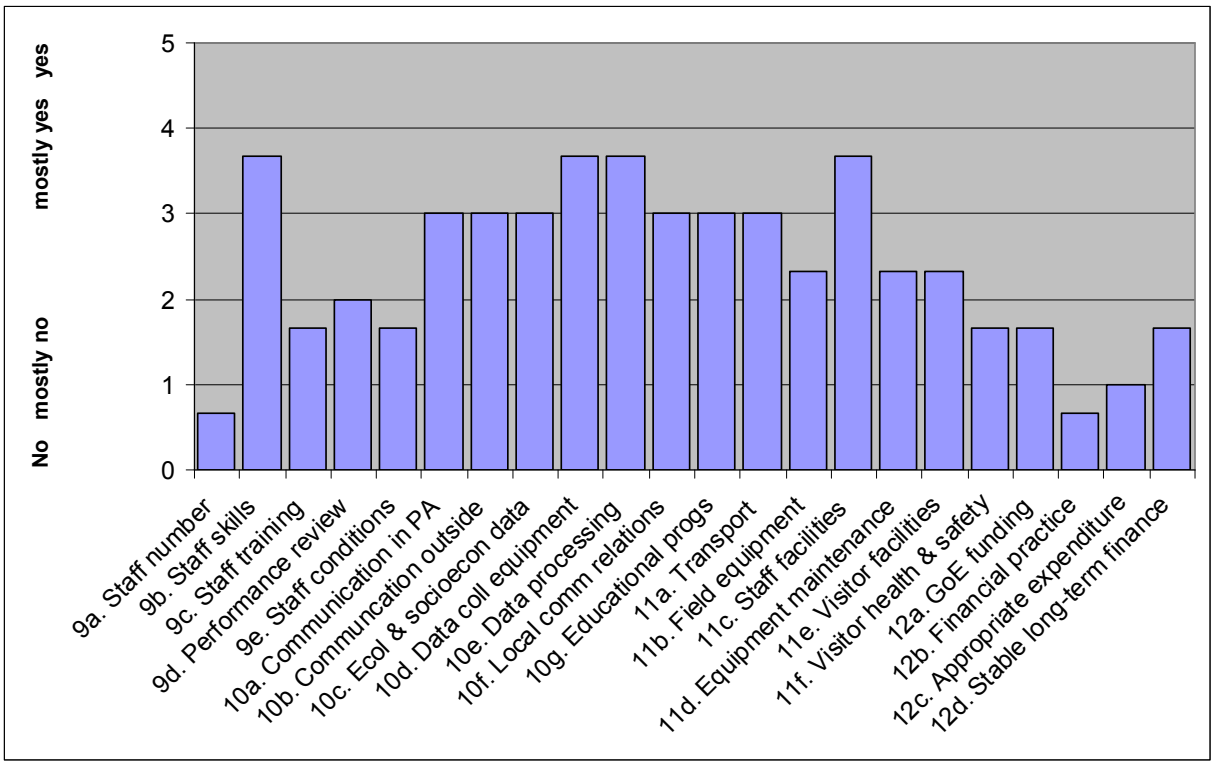
أ- تحديد موقع المحمية متسق مع أهدافها.
ب- تخطيط وتشكيل المحمية يحسن من عملية الحفاظ على التنوع البيولوجي.
جـ نظام تقسيم المحمية كافي لتحقيق أهدافها.
د- استخدام الأرض في المنطقة المحيطة يمكن من إدارة فعالة للمحمية.
هـ ترتبط المحمية بمنطقة أخرى سواء كانت محمية أخرى أو أرض محفوظة.

9. STAFFING – INPUTS

a) The level of staffing is sufficient to effectively manage the area.
b) Staff members have adequate skills to conduct critical management activities.
c) Training and development opportunities are appropriate to the needs of the staff.
d) Staff performance and progress on targets are periodically reviewed.
e) Staff employment conditions are sufficient to retain high-quality staff.

٩. العمالة (المدخلات)

أ- مستوى العمالة كافي لإدارة المنطقة بفاعلية.
ب- للعاملين مهارات كافية لإجراء أنشطة إدارية هامة.
جـ تكون فرص التدريب والتطوير مناسبة لإحتياجات العاملين.
د- يراجع أداء العاملين وتقدمهم بصفة دورية.
هـ ظروف العمل مناسبة للحصول على عمالة عالية الجودة.



10. COMMUNICATION AND INFORMATION – INPUTS

a) There are adequate means of communication within the PA.
b) There are adequate means of communication with the outside world.
c) Existing ecological and socio economic data are adequate for management planning.
d) There are adequate means of collecting new data.
e) There are adequate systems for processing and analysing data.
f) There is effective communication with local communities.
g) There are effective educational and interpretative plans and programmes in place.

١٠. الإتصالات والمعلومات (المدخلات)

أ- هناك وسائل إتصال كافية داخل المحمية.
ب- هناك وسائل إتصال كافية مع العالم الخارجي.
جـ- التواجد الكافي للبيانات البيئية والإقتصادية والإجتماعية لاستخدامها في التخطيط الإداري.
د- هناك وسائل كافية لتجميع بيانات جديدة.
هـ- هناك أنظمة لمعالجة وتحليل البيانات.
و- هناك إتصال فعال بين أفراد المجتمع المحلي.
ز- هناك برامج وخطط تعليمية وتوضيحية فعالة بالمنطقة.

11. INFRASTRUCTURE – INPUTS

a) Transportation infrastructure is adequate to perform critical management activities.
b) Field equipment is adequate to perform critical management activities.
c) Staff facilities are adequate to perform critical management activities.
d) Maintenance and care of equipment is adequate to ensure long-term use.
e) Visitor facilities are appropriate to the level of visitor use.
f) Visitor health and safety requirements are adequately addressed.

١١. البنية التحتية (المدخلات)

أ- البنية التحتية للنقل والمواصلات كافية لأداء أنشطة المحمية الهامة.
ب- المعدات الحقلية كافية لأداء الأنشطة الإدارية الهامة.
جـ- التسهيلات المقدمة للعاملين كافية لأداء الأنشطة الإدارية الهامة.
د- صيانة المعدات ورعايتها كافي لضمان استخدام طويل المدى.
هـ- التسهيلات المقدمة للزوار مناسبة لمستوى استخدام الزائر.
و- الإهتمام بصحة وسلامة الزائرين.

12. FINANCES – INPUTS

a) Funding from the GoE in the past 5 years has been adequate to conduct critical management activities.
b) Financial management practices enable efficient and effective PA management.
c) The allocation of expenditures is appropriate to PA priorities and objectives.
d) The long-term financial (5 years) outlook for the PA is stable.

١٢. الموارد المالية (المدخلات)

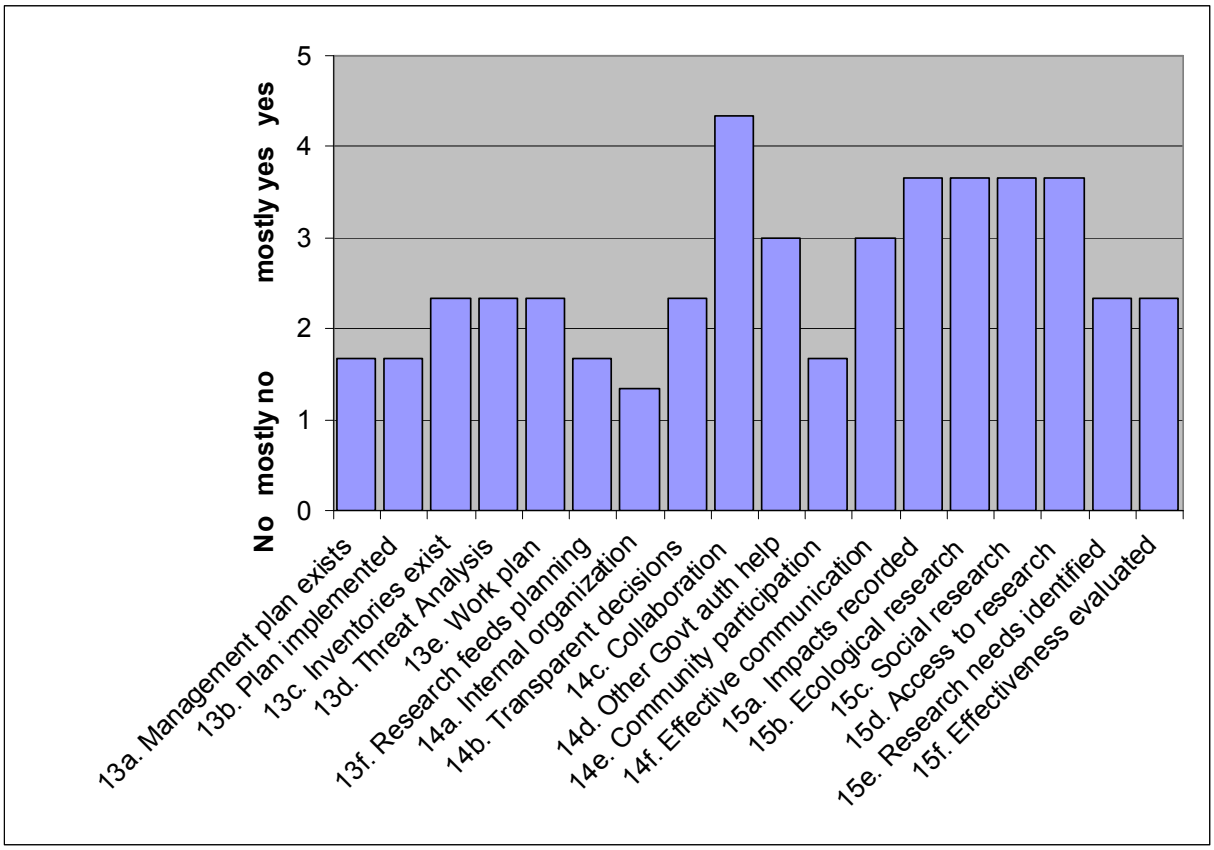
أ- لقد كان الدعم المالي (المقدم من الحكومة الإيطالية) في الخمس سنوات الماضية كافي لإجراء الأنشطة الإدارية الهامة.
ب- تمكن الممارسات المالية الإدارية من إدارة كفء وفعالة للمحمية.
جـ- تخصيص الإنفاق يناسب أولويات وأهداف المحمية.
د- إستقرار الوضع المالي طويل المدى للمحمية.

13. MANAGEMENT PLANNING – PROCESSES

a) There is a comprehensive, relatively recent written management plan.
b) The management plan is largely implemented and effective.
c) There is a comprehensive inventory of natural and cultural resources.
d) There is an analysis of, and strategy for addressing, PA threats and pressures.
e) A detailed work plan identifies specific targets for achieving management objectives.
f) The results of research and monitoring are routinely incorporated into planning.

١٣. التخطيط الإداري (العمليات الإدارية)

أ- هناك خطة إدارية مكتوبة شاملة وحديثة إلى حد ما.
ب- تكون الخطة الإدارية فعالة ومطبقة لحد كبير.
جـ- هناك جرد شامل للموارد الطبيعية والثقافية.
د- هناك تحليل للضغوط والتهديدات التي تواجه المحمية واستراتيجية لحصرهم.
هـ- هناك خطة عمل لتحديد وسائل تحقيق أهداف الإدارة.
و- تدمج نتائج البحث والمراقبة بشكل روتيني مع التخطيط.



14. MANAGEMENT DECISION MAKING – PROCESSES

a) There is clear internal organization.
b) Management decision making is transparent.
c) PA staff regularly collaborate with partners, local communities, and other organizations.
d). Other Government authorities endorse and enforce the decisions made
e) Local communities participate in decisions that affect them.
f) There is effective communication between all levels of PA staff and administration.

١٤. إتخاذ القرارات الإدارية (العمليات الإدارية)

أ- هناك تنظيم داخلي واضح.
ب- شفافية إتخاذ القرارات الإدارية.
جـ- يتعاون العاملون بالمحمية مع الشركاء والمجتمع المحلي ومع منظمات أخرى.
د- تصدق السلطات الحكومية الأخرى على القرارات المتخذة وتنفذها.
هـ- يشارك المجتمع المحلي في القرارات المؤثرة عليه.
و- هناك إتصال فعال بين كل المستويات من العاملين بالمحمية والإداريين.

15. RESEARCH, MONITORING, AND EVALUATION – PROCESSES

a) The impact of legal and illegal uses of the PA are accurately monitored and recorded.
b) Research on key ecological issues is consistent with the needs of the PA.
c) Research on key social issues is consistent with the needs of the PA.
d) PA staff members have regular access to recent scientific research and advice.
e) Critical research and monitoring needs are identified and prioritized.
f) The PA management, including management effectiveness is routinely evaluated and reported.

١٥. البحث والمراقبة والتقييم (العمليات الإدارية)

أ- تراقب وتسجل وقائع الاستخدامات القانونية والغير قانونية للمحمية بدقة.
ب- يكون البحث في القضايا البيئية الرئيسية متسق مع احتياجات المحمية.
جـ- يكون البحث في القضايا الإجتماعية الرئيسية متسق مع احتياجات المحمية.
د- لدى العاملين بالمحمية وسيلة وصول للأبحاث والنصائح العلمية الأخيرة.
هـ- تكون الاحتياجات الهامة للبحث والمراقبة محددة ولها الأولوية.
و- تقيم فاعلية إدارة المحمية بشكل روتيني مع كتابة تقارير عنها.

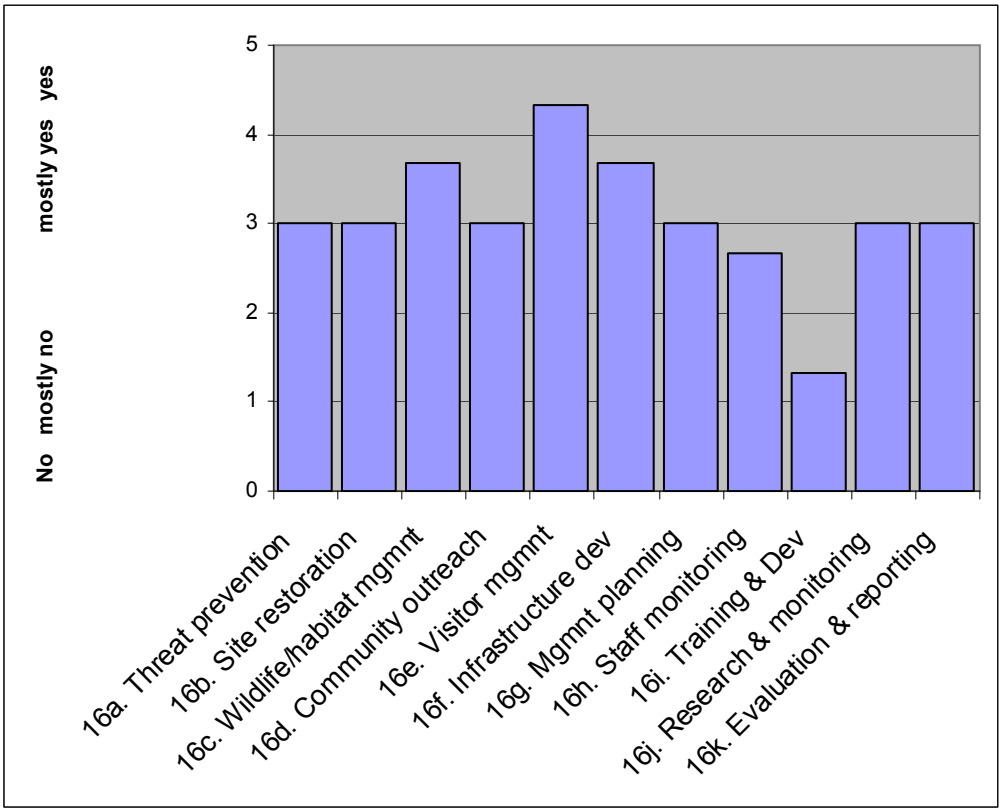
16. OUTPUTS

In the last 2 years, the following outputs have been consistent with the threats and pressures, PA objectives, and annual workplan:
a) Threat prevention, detection and law enforcement.
b) Site restoration and mitigation efforts.
c) Wildlife or habitat management.
d) Community outreach and education efforts.
e) Visitor and tourist management.
f) Infrastructure development.
g) Management planning and inventorying.
h) Staff monitoring, supervision, and evaluation.
i) Staff training and development.
j) Research and monitoring.
k) Evaluation and reporting.

١٦. المخرجات

في السنتين الماضيتين، كانت المخرجات التالية متسقة مع الضغوط والتهديدات، وأهداف المحمية، وخطة العمل السنوية:

أ- إكتشاف التهديد ومنعه، وتطبيق القانون.
ب- جهود إعادة تأهيل الموقع وتقليل الخطر الموجه له.
جـ- إدارة البيئة أو الحياة البرية.
د- جهود تنمية وتعليم المجتمع.
هـ- إدارة السياح والزائرين.
و- تطوير البنية التحتية.
ز- عمليات التخطيط والجرد الإدارية.
ح- مراقبة وتقييم العاملين والإشراف عليهم.
ر- تدريب وتطوير العاملين.
م- عمليات البحث والمراقبة.
ى- عمليات التقييم والتدوين.



Appendix 6. Site Level Management Effectiveness Evaluation Procedure

Introduction

This appendix summarizes the detailed process for conducting site level management effectiveness evaluations (Paleczny 2006b). A series of 'worksheets' were used to assist in completing the respective steps. This process is designed to focus on "outputs" and "outcomes" of management. Outputs include the actions the protected area has implemented and if the actions have resulted in positive changes. Outcomes include the status of the protected area. For example, are current conditions improving, remaining stable or declining? A thorough evaluation must also include an examination of threats and possible actions to address the problems.

This system should be applied with an understanding of the limitations related to available human, financial and technical resources. Over time, the evaluation can evolve with greater sophistication, as time and money and experience allow.

The Evaluation Process

1. Implementation of Management Objectives and Actions (e.g., Management Plan / Annual Work Plans)

a) Review status of implementation and the effectiveness of past actions toward meeting objectives (see worksheet).

2. Status of Protected Area Resources

a) Identify the key values of the protected area, in the following three groups. Then select the one or two priorities from each of these groups to examine in detail.

- *Biodiversity/Natural Resource:* Characterise each key ecosystem/resource in terms of its key attributes (see worksheet).
- *Ecotourism/Recreational Resources:* Characterise each ecotourism/recreational resource (see worksheet).
- *Community Well-being* (socio-economic): Characterise each community (see worksheet).

b) For each key value being examined, choose at least one key attribute and one indicator for further assessment. (see worksheets).

3. Threats

a) Revisit and confirm pressures and threats from RAPPAM, management plan, systems plan and participants' experience.

b) Draw a chart to show the relationship of the threats to each of the key values selected in part 2 (biodiversity, recreational resources, community well-being). Discuss the underlying causes and find possible solutions. (see worksheet).

c) Rate the threats for each key value (see worksheet).

d) Prepare a summary chart for all of the threats (see worksheet).

e) Discuss and prepare initial list of possible actions.

4. Action Planning

a) Review, confirm, refine or establish goal and specific objectives for key values, taking into consideration the problems and needs to manage key values and threats. (Note that objectives should be stated as desired outcomes, not as actions).

b) Develop actions for each objective. Evaluate and prioritize the actions based on cost, practicality, and likelihood of achieving a desired impact.

c) Initiate* the development of indicators and a monitoring plan for tracking and measuring the following (* it is expected that this will take considerable effort beyond the initial evaluation):

- Status of key values (outcomes).
- Threats.
- Implementation of actions (outputs) and effectiveness of actions (outcomes).

Following the site Management Effectiveness Evaluation, additional steps are needed by the Protected Area Management Unit, as follows:

5. Management plan / descriptive plan

a) Update the existing management plan or prepare descriptive plan.

6. Annual work plan and project plans

a) Integrate actions into work processes, such as Annual Work Plans and Environmental Impact Assessments.

7. Monitoring, assessment, reporting on MEE

a) Monitor key indicators.

b) Prepare monthly reports, annual report on implementation of management plan, and status reports for stakeholders and communities.

c) Adapt and change programmes and actions, as required, to improve effectiveness.

Appendix 7. Workshop Participant Evaluation

تقييم للمشاركين فى ورشة العمل لتقييم فاعلية إدارة محمية

Workshop: March 13-16, 2007

1. The management effectiveness evaluation can be carried out by the staff?

١. يمكن إجراء عملية تقييم فاعلية الإدارة بواسطة أفراد المحمية؟

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
0	1	1	8	2	0

Comments: تعليق:

R1: Staff are close to resources and know the priorities of conservation.
R3: PA staff because they are the best persons know about the positive and negative aspects of work.
R4: The PA staff is the best who can evaluate the management effectiveness due to their experience and honesty.
R6: Experts may be required for such small points.
R7: It needs more participants.
R9: The local community, diving centers, tourists guides, city council and the police should apply the evaluation.
R11: Provided that they develop a dialogue or a common language among them.

2. A facilitator is important to guide the participants through the process.

2. وجود ا facilitator ضرورى لتوجيه المشاركين أثناء عملية التقييم

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
0	0	1	7	4	0

Comments: تعليق:

R1 : to manage and direct the discussion.
R3 : To benefit from his experience in the evaluation.
R4 : Strongly agree if the facilitator will be from the NCS staff.
R6 : Because our experience actually not enough to come over all the tasks, by mean clarification of some items is essential.

3. The survey of stakeholders, communities and visitors is useful to help understand their perspective about the protected area.
3. المسوح المتعلقة بالجهات ذات الصلة والمجتمعات المحلية والزائرين نافعة للمساعدة على فهم منظورهم تجاه المحمية

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
0	0	0	2	10	0

Comments: تعليق:

R3 : Because it helps to know their opinions and their over view towards the PA.
R6 : Because our efforts may be directed totally to wrong way and other requirement are needed.

4. What methods would be suitable to get input from these groups?
4. ما هى الطرق المناسبة للحصول على نتائج من مجموعات العمل فى عملية التقييم؟

Comments: تعليق:

R1 : Open discussion because it makes all ideas of each member clear and examined from all points of view.
R2 : Open discussion.
R3 : The open discussion with all the staff.
R4 : Discussion through the workshop and dividing into work groups.
R5 : Open discussion – feed back.
R6 : filling standard forms and open discussion.
R7 : Surveys from different samples.
R8 : Open discussions and questionnaires.
R9 : Tourists guides evaluations.
R10: Open discussions and work groups.
R 11 : Grouping them into work groups that one homogenous.
R12 : Questionnaires.

5. The workshop process was helpful to study problems and solutions, and other needs. **. عملية**
5ورشة العمل كانت نافعة لدراسة المشاكل والحلول والحاجات الأخرى

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
0	0	0	4	8	0

Comments: تعليق:

R3 : because it discussed all the problems with trying to find solutions.
R4 : Due to attending large numbers of the PA staff.
R6 : Different opinions clarify several new points.
R8 : The problems is known already but the important is how to find its solutions.

6. How could the evaluation process be improved? **6. كيف يمكن تحسين عملية التقييم؟**

Comments: تعليق:

R2 : It needs more time and more organization.
R3 : Increasing the participant numbers and the decision makers should join the assessment.
R4 : Explaining for some items for discussion such as; meaning of the objectives, the meaning of the evaluation and its aim.
R5 : More workshops and meetings.
R6 : Sharing of new participants from protectorates having a similar situations.
R7 : Needing for more workshops.
R9 : Inviting the decision makers to the evaluation.

R10 : Doing the evaluation continuously and from time to time.
R 11 : Through having more robust information and data about the natural resources in the protected area.
R12 : Training and workshops.

7. The results of the evaluation will be helpful to staff.

7. سوف تكون نتائج عملية التقييم نافعة لأفراد المحمية

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
0	0	1	5	6	0

Comments: تعليق:

R3 : Because it concentrated on shortage aspects of the work.
R4 : Helpful for who has information and very helpful for who hasn't information.
R6 : Because routine and bad financing stops any new improvements.
R7 : Starting in making the management plan which is one of the most important thing in the protectorate.
R9 : It will be if it increased the number of participants.
R11 : They will put their hands on the priority actions and needs.

8. I learned useful information or approaches from the process.

8. لقد تعلمت اتجاهات ومعلومات نافعة من عملية التقييم

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
0	0	0	9	3	0

9. What did you like about the evaluation? **9. ما هو الشئ الذي أحببته فى عملية التقييم؟**

Comments: تعليق:

R2 : Listen and respect the other opinion.
R3 : Concentrating on shortage aspects of the work.
R5 : There are more and different opinions.
R6 : Knowing that monitoring must be concerning to the management and should be continuous.
R7 : Stopped on the PA problems and trying to find solutions.
R8 : Presenting the problems, objectives, requirements and the solutions through the different view points.
R9 : Open discussions.
R10 : Improving the advantages and disadvantages clearly.
R11 : It is clearing our vision about the problems and the ways to solve them.
R12 : Debate and discussion.

10. Staff have had an adequate chance to input to the evaluation of management effectiveness.

10. أتيحت لأفراد المحمية فرصة طيبة لإثراء عملية تقييم فاعلية الإدارة

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
0	1	1	5	5	0

Comments: تعليق:

R3 : because of variety of specialists.
R6 : The period were very short to enable actual positive participation.
R11 : Needs more logistics.

11. Stakeholders, community and visitors have had an adequate chance to input?

١١. كان للجهات ذات الصلة، المجتمعات المحلية والزائرين فرصة طيبة للمشاركة بمدخلاتهم

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
1	2	4	3	0	2

Comments: تعليق:

R2 : All the persons applied the evaluation are guides.
R6 : Through the questionnaire, visitors provided us of a new inputs.
R7 : There is many others should join the evaluation.
R8 : Due to difference of the point view in the ecological and economical terms.

12. The evaluation of management effectiveness has led to improved awareness, communications, collaboration or co-management with others (e.g., stakeholders, communities).
12. قادت عملية تقييم فاعلية الإدارة إلى تحسين الوعى وتبادل الآراء والتعاون مع الآخرين (مثل الجهات ذات الصلة والمجتمعات المحلية)

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
1	3	4	2	0	2

Comments: تعليق:

R4 : Just lead to interacting and didn't lead to improved awareness because it depended on printed evaluation.
R6 : It really to assume that.
R11 : Not yet experienced.
R12 : No one take part in MEE.

13. Overall, the evaluation of management effectiveness is a worthwhile exercise for protected areas staff.
13. كانت عملية تقييم فاعلية الإدارة فى مجملها تمرين جدير باهتمام أفراد المحمية

لا أوافق إطلاقا	لا أوافق	محايد	أوافق	أوافق تماما	لا يوجد رد
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	No reply
0	0	0	3	9	0

Comments: تعليق:

R3 : To establish the strategy of the protectorate management.
R4 : Strongly agree because discussing the ideas.
R6 : Really more attention is required from all concerning groups in the NCS and protectorates.
R8 : It needs one week at least.

Survey Respondents: R1-R12 Ranger participants in workshop