The State of
Wadi El-Rayan Protected Area
and
Valley of the Whales
World Heritage Site

An Evaluation of Management Effectiveness

محمية وادى الريان
WADI EL-RAYAN PROTECTED AREA

المحميات الطبيعية بمصر
NATIONAL PARKS OF EGYPT

COOPERAZIONE ITALIANA
ITALIAN COOPERATION
التعاون الإيطالى

UNDP

IUCN
The World Conservation Union

Document Information

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Dan Paleczny, Khaled Allam, Mohamad Talaat

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Synopsis

The National Parks of Egypt contain the nation's most treasured natural assets. Wadi El-Rayan Protected Area was established in 1989 and today encompasses the globally important *Valley of the Whales World Heritage Site* and the nationally important Rayan Lakes recreational area, among many other important natural, social and economic values.

This report provides an assessment of the threats and status of the 12 key values at WRPA (see table below). Through discussions with rangers, and inputs from stakeholders, local communities and visitors, this assessment provides insights about 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 protected area's values.

An assessment of management effectiveness is an important tool for politicians, senior managers and the staff[1]. With this, 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.

The table below summarises the current situation in WRPA. Our concern and actions should be primarily focused on addressing the high and very high 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.

This assessment found the following:

- The Valley of the Whales World Heritage Site, a high value resource with a high degree of threat, should be the top priority for conservation. Now, as the site is developed to welcome visitors and improve local economic benefits, a watchful eye must be maintained on avoiding over-development or over-use from tourism.

- The condition of the Rayan Lakes has worsened over the last five years due to declining water levels and water quality. Lower levels are the result of less water from the Fayoum canals draining into the lakes. The Rayan Lakes are a national recreational resource and a cornerstone of the Fayoum Governorate Ecotourism Plan. However, the recreational infrastructure has seriously worsened over the last five years due to the declining water levels; further decline is a high threat for the Italian-funded investments. The declining water levels and water quality are also a threat to the economic values (fishing, agriculture, tourism) supporting local communities within and outside of WRPA. Stable water levels are essential.

- Local communities expressed a low degree of awareness about WRPA and the benefits the protected area brings to their 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 close look at each of the 12 key values, presented in part III, 56 actions have been listed. A number of strategic considerations are described in part V), several of which may apply to other protected areas in Egypt:

[1] In 2006 a national level assessment of Egypt's National Parks was completed. This study for WRPA is the first follow-up site-level report recommended in the 2006 assessment.

- Ensure that a long range vision and clear objectives are established in the management plan with associated actions. An annual report on the implementation of the management plan should be prepared.

- In the resource use zone, it is time to shift priorities from development focus to protection and management focus. This implies that development will still be necessary, however it should be carefully controlled to ensure that the protected area's social, economic and natural values are properly considered. This is critical to ensure sustainable benefits for local communities and a properly management protected area.

- A suite of indicators should be established to enable focused monitoring in support of management and protection programmes. This will support decision making.

- Establish collaborative management forums for the PA, including community heads, and implement regular meetings with stakeholders.

- Sustainable financing is urgently needed before the EIECP comes to a close. The establishment of Wadi El-Hitan as a World Heritage Site with the consequent development is equivalent to opening a new protected area. A government budget is needed for this new operation.

- A financing strategy should be prepared. Sources of funding could be further diversified, and importantly, alternative mechanisms for retaining funding at sustainable levels should be found. Staff skills must be enhanced to undertake this kind of work.

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. Through the Italian funded EIECP phase II, and with contributions from Gran Sasso National Park, Italy and the University of Michigan, many of these other facets have been provided to improve protection, management and development. This kind of donor support and cooperation has been critically important for WRPA.

The close proximity of WRPA to Cairo provides many opportunities for national and international tourism and the consequent benefits to local communities. As shown in the table below, there are many high level threats. With the strategic considerations and actions in mind, there is an opportunity to secure the protected area for protection and local economic benefits.

The State of Wadi El-Rayan Protected Area

Value	Threats	Status
1. Biodiversity/Natural Resources/Cultural Resources		
Fossils/World Heritage Site	H	I
Springs oasis (Gazelle)	M	I
Lakes (wetlands, shoreline, aquatic)	H	W
Desert	M	S
2. Ecotourism/Recreational Resources		
Main visitor area (waterfalls, beach)	H	W
Visitor centre	M	W
Safary camp	H	W
Campsites and bird hides	H	W
Tracks	H	W
3. Community Well-being (socio-economic)		
Land reclamation villages (Lower Lake)	H	S
Other communities within WRPA	H	S
Local communities outside WRPA	VH	S

Key:

Threat Today	
Very high	VH
High	H
Medium	M
Low	L

Status Today vs 5 Years Ago	
Improved	I
Stable	S
Worsened	W

الملخص التنفيذي:

تمثل شبكة المحميات الطبيعية نماذج من النظم البيئية ذات الأهمية العلمية أو المهددة بمخاطر التدهور نتيجة للأنشطة التنموية. والمحميات الطبيعية وسيلة لصون نماذج للبيئات الخاصة والتكوينات الطبيعية ذات السمات المتميزة. وتعتبر محمية وادي الريان واحدة من أهم محميات مصر والتي تم إعلانها منذ عام ١٩٨٩ والتي تحتوي علي منطقة وادي الحيتان كأحد مواقع التراث الطبيعي العالمي، وبحيرتي وادي الريان ذات الأهمية الترفيهية بالإضافة إلي العديد من المواقع الترفيهية والاجتماعية والاقتصادية المتواجدة بالمحمية.

تتضمن هذه الدراسة تقييم المهددات التي تواجه المكونات البيئية الرئيسية بمحمية وادي الريان (انظر الجدول التالي). وقد تمت عملية التقييم من خلال الحلقات النقاشية التي تمت بورشة عمل تم عقدها بمشاركة الباحثين بالمحمية ونتائج الاستبيانات التي وزعت علي زوار المحمية والمجتمعات السكانية داخل وخارج المحمية والجهات ذات الصلة. ومن كل ما سبق فقد تم تحديد المهددات التي تتعرض لها المكونات البيئية الرئيسية بالمحمية ومسببات تلك المهددات وكذلك تحديد الإجراءات الضرورية لمواجهة تلك المهددات والمؤشرات التي تساعد علي رصد حالة تلك المكونات والتغييرات التي تتم بها.

تعتبر تقييم فاعلية الإدارة من أهم الأدوات التي يستخدمها السياسيون والمديرين والعاملين[1] في اتخاذ القرارات وفيها يتم التركيز علي توجيه الموارد المالية وخطط العمل إلي أولويات الإدارة. شفافية عملية تقييم الإدارة تؤدي إلي تكريس جهود الإدارة لدعم برامجها والتي تمثل الإجراءات التي تتم من خلالها عمليات تحسين فاعلية الإدارة في مجالات حماية الموارد الطبيعية والتنمية الاقتصادية.

الجدول التالي يلخص الوضع الحالي لإدارة الموارد الطبيعية بمحمية وادي الريان، حيث تم التركيز علي 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. ومن خلال عمليات تقييم فاعلية الإدارة التي تمت بالمحمية فقد تبين الأتي:

- منطقة التراث الطبيعي العالمي بوادي الحيتان تعتبر من أهم الموارد الطبيعية بمحمية وادي الريان والتي تتعرض لمخاطر عالية وبالتالي يجب أن تكون علي قمة أولويات الإدارة بالمحمية. وحالياً فقد تم تنمية منطقة وادي الحيتان بالمحمية اقتصادياً وذلك لاستقبال الزائرين في حدود الطاقة الأستعابية للموقع. ولهذا فأنه يجب الحفاظ علي التنمية السياحية لمنطقة وادي الحيتان في حدود عدم تعريض المنطقة للتدهور.
- تدهور كفاءة النظم البيئية لبحيرات وادي الريان خلال الخمس سنوات الأخيرة نتيجة نقص كميات المياه التي يتم ضخها إلي البحيرات. كذلك فقد أدي نقص ضخ المياه إلي البحيرات من خلال نظم الري بمحافظة الفيوم إلي

تدهور جودة المياه بتلك البحيرات. وتعتبر بحيرات وادي الريان من عناصر الجذب الرئيسية التي تقوم عليها خطة تنمية السياحة بمحافظة الفيوم لجذب السياحة الخارجية والداخلية علي حد سواء. وقد أدي نقص كميات المياه التي يتم ضخها في البحيرات إلي تدهور الخدمات السياحية حول تلك البحيرات بالإضافة إلي تعرض استثمارات المشروع الايطالي بالمحمية إلي التدهور نتيجة تدهور عمليات التنمية حول البحيرات. كذلك تدهور جودة المياه بالبحيرات يؤثر بالسلب علي التنمية الاقتصادية للمجتمعات المحلية داخل وخارج المحمية (صيد الأسماك – الزراعة – الكافيتريات). وبالتالي فأنه يمكن استنتاج أنه يجب الحفاظ علي معدلات ضخ المياه إلي البحيرات بصورة ثابتة لوقف تدهور النظم البيئية داخل بحريات وادي الريان.

- وقد كانت أهم نتائج الاستبيان الذي تم توزيعه علي المجتمعات المحلية أن تلك المجتمعات تعاني من نقص شديد في عمليات التوعية البيئية الخاصة بالمحمية، كذلك تبين من الاستبيان عدم الاستفادة المباشرة والغير مباشرة لتلك المجتمعات 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. وبنظرة قريبة علي تقييم المكونات ألاثني عشر الرئيسية بالمحمية والتي تم التعرض لها بالتفصيل في الجزء الثالث من هذه الدراسة، فقد تم تحديد ٥٦ 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 رؤية واضحة للعمل بالمحمية مع مراجعة كافة أهداف الإدارة المتضمنة بخطة إدارة المحمية والإجراءات المتعلقة بها. ويتم مراجعة تفعيل تلك الإجراءات من خلال التقرير السنوي التي تقدمه المحمية.
- وبمراجعة استخدامات الموارد داخل المحمية فأنه يجب توجيه أولويات الإدارة من منظور تنمية الموارد إلي منظور الحماية والإدارة الرشيدة للموارد. ويعني هذا أن تنمية الموارد سوف تظل أحد العناصر الأساسية لخطة إدارة المحمية ولكن يجب توجيه تلك التنمية مع الوضع في الاعتبار أن تكون النواحي الاجتماعية والاقتصادية متضمنة بخطط التنمية لضمان الاستدامة والتوزيع العادل لمنافع استخدامات الموارد علي المجتمعات المحلية.
- تم تحديد مجموعة من المؤشرات والتي تساعد علي عملية رصد خطط الإدارة والحماية بالمحمية والتي تساعد إدارة المحمية في اتخاذ القرارات المناسبة.
- إنشاء لجنة ممثل بها قيادات ورموز المجتمعات المحلية وتعمل تلك اللجنة بالتعاون مع إدارة المحمية لمراجعة وتوجيه خطط إدارة المحمية السنوية.
- ضرورة توافر موارد مالية ثابتة من قبل جهاز شئون البيئة قبل انتهاء المشروع الايطالي بمحمية وادي الريان، ويعتبر إعلان منطقة وادي الحيتان كمنطقة تراث طبيعي عالمي بمثابة إعلان محمية جديدة مما يستتبع توفير موارد مالية حكومية ثابتة لتنمية هذا الموقع.
- إعداد إستراتيجية مالية يتم فيها تنويع المصادر المالية للمحمية وكذلك ضمان استقطاع جزء من تلك المصادر لاستخدامها في تنمية وتنفيذ خطط إدارة المحمية، بالإضافة إلي ضرورة الاهتمام بتنمية القدرات البشرية التي سوف تقوم بتنفيذ تلك الخطط.

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. وقد تم من خلال التعاون بين جهاز شئون البيئة والمشروع الايطالي (المرحلة الثانية) وجامعة جراند ساسو الايطالية وجامعة ميتشاجن فقد تم تنفيذ العديد من أساليب وطرق الحماية لموارد المحمية للعمل علي إدارتها بأسلوب رشيد وتنميتها تنمية مستدامة والذي كان له وقع ايجابي علي محمية وادي الريان. ونظرا لقرب محمية وادي الريان من القاهرة فأن توافر فرص التنمية من خلال المؤسسات الوطنية والدولية تتيح تنمية المحمية وتوافر فرص جيدة لتنمية المجتمعات المحلية داخل وخارج المحمية. وكما هو موضح في الجدول التالي فأنه يوجد العديد من المهددات الخطيرة التي تتعرض لها موارد المحمية ولكن يمكن من خلال تنفيذ استراتيجيات العمل وخطط الإدارة ضمان توافر برامج حماية لموارد المحمية وتعظيم فرص تنمية المجتمعات المحلية.

الوضع الحالي للمهددات التي تتعرض لها النظم البيئية الرئيسية بمحمية وادي الريان

النظم البيئية الرئيسية	قيمة المهددات	الوضع الحالي
أولاً: التنوع البيولوجي / الموارد الطبيعية / الموارد الثقافية		
الحفريات ومنطقة التراث الطبيعي العالمي	عالية	تحسنت
تجمعات الغزلان بمنطقة العيون	متوسطة	تحسنت
البحيرات	عالية	تدهورت
المنطقة الصحراوية	متوسطة	ثابتة
ثانيا: الموارد السياحية والترفيهية		
منطقة الزوار الرئيسية (منطقة الشلالات – شواطئ البحيرات)	عالية	تدهورت
مركز الزوار	متوسطة	تدهورت
منطقة مخيم سفاري	عالية	تدهورت
منطقة المخيمات ومواقع مشاهدة الطيور	عالية	تدهورت
المدقات	عالية	تدهورت
ثالثا: الموارد الاجتماعية والاقتصادية		
قري الاستصلاح الزراعي (البحيرة السفلية)	عالية	ثابتة
المجتمعات السكانية داخل وادي الريان	عالية	ثابتة
المجتمعات السكانية حول وادي الريان	عالية جدا	ثابتة

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[2]. Accordingly, through the Nature Conservation Sector Capacity Building Project, a site level methodology was developed and tested first at Wadi El-Rayan Protected Area.

Wadi El-Rayan Protected Area (WRPA) is located in the western part of the Fayoum Governorate, about 200 km southwest of Cairo. The protected area was established in 1989, and today is 1,759 km^2 and home to Wadi El-Hitan Valley of the Whales World Heritage Site, designated in 2005. Wadi El-Rayan was the first national park in Egypt to have a management plan, which was prepared in 2002 and intended to be in effect for a five year period. Consequently, this evaluation is very timely as it provides a useful mechanism to examine progress over the life of the plan.

This report provides a synthesis of evaluation information and aims to assess three aspects of effective management. Firstly, what is the condition of WRPA key values related to biodiversity and natural resources, ecotourism resources, and community well-being? As this is the first report of this type for WRPA, 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 WRPA done in implementing its first management plan, what are the results of the actions, and what actions or changes are needed now and the revised management plan?

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 fish farms, land reclamation needs, 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.

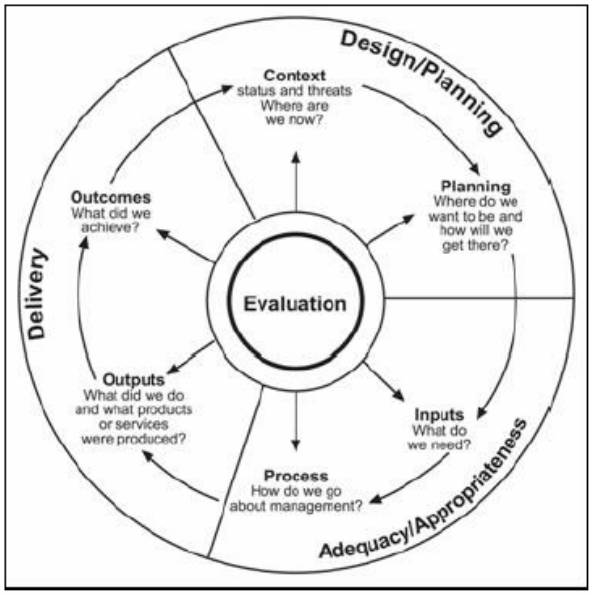
[2] Refer to appendix 5 for the results pertaining to WRPA.

Terms and Acronyms

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
GoE	Government of Egypt
IUCN	World Conservation Union
MEE	Management Effectiveness Evaluation
MSEA	Minister 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
UNDP	United Nations Development Programme
WESCANA	Western/Central Asia and North Africa Region of IUCN
WWF	Worldwide Fund for Nature
Shareholder	A person or group who has demonstrated an interest in WRPA through financial or time donations. They are committed to the goals of the protected area.
Stakeholder	A person or group who derives social, economic or ecosystem services from WRPA. They have a direct connection through their work or activities.

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 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.

Site Level Evaluation Process and Methods

A five-day workshop to initiate the evaluation of management effectiveness was carried out at WRPA from July 26-30, 2006 (see appendix 1 for the agenda and list of participants). As part of the workshop process, a survey of stakeholders, local communities and visitors was also 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 management plan implementation (outputs) was adapted from the World Heritage Management Effectiveness Workbook (Hockings 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, 200; 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 also 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.

Key Inputs for this Evaluation

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

- Findings of WRPA staff input to the first national RAPPAM (appendix 5).
- The results of the five day workshop with WRPA rangers and informal discussions.
- Meetings/focus group discussions with stakeholders just prior to and after the workshop.
- Results of 86 surveys administered to stakeholders (36), residents of local communities (27) and visitors (23) (summarized in appendix 4).

A good source of background information about WRPA can be found in the book *"Wadi el Rayan: Gateway to the Western Desert"*, published in 2002 under the EIECP-I, The full book is available on the web at: www.eiecop.org .

Follow-up:

Upon completion of the WRPA workshop in July 2006, the process was evaluated by participants, and the results were documented in a separate report to NCS. 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). This can be implemented in coordination with the review of the WRPA management plan.

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 the Annual Work Plan.
    - Update the Management Plan.

Part II. Current Context: Wadi El-Rayan Protected Area

WRPA was established in 1989 with a boundary change in 1992 to include the area of Wadi El-Hitan, which was subsequently designation by UNESCO as a World Heritage Site in 2005. WRPA is 1,759 km^2. A key management challenge relates to the variety of agencies and authorities that operate inside WRPA, including the Ministry of Agriculture and Land Reclamation, Ministry of Petroleum, Ministry of Oceans/Fisheries, Ministry of Irrigation, Ministry of Tourism, Ministry of Defence, Ministry of Interior, as well as tourism and environmental police.

WRPA has a comprehensive management plan (2002-06), an operating plan that specifies key management actions, monitoring and patrolling programmes, previous work on management effectiveness and a sizeable staff by Egyptian standards (now exceeding 45).

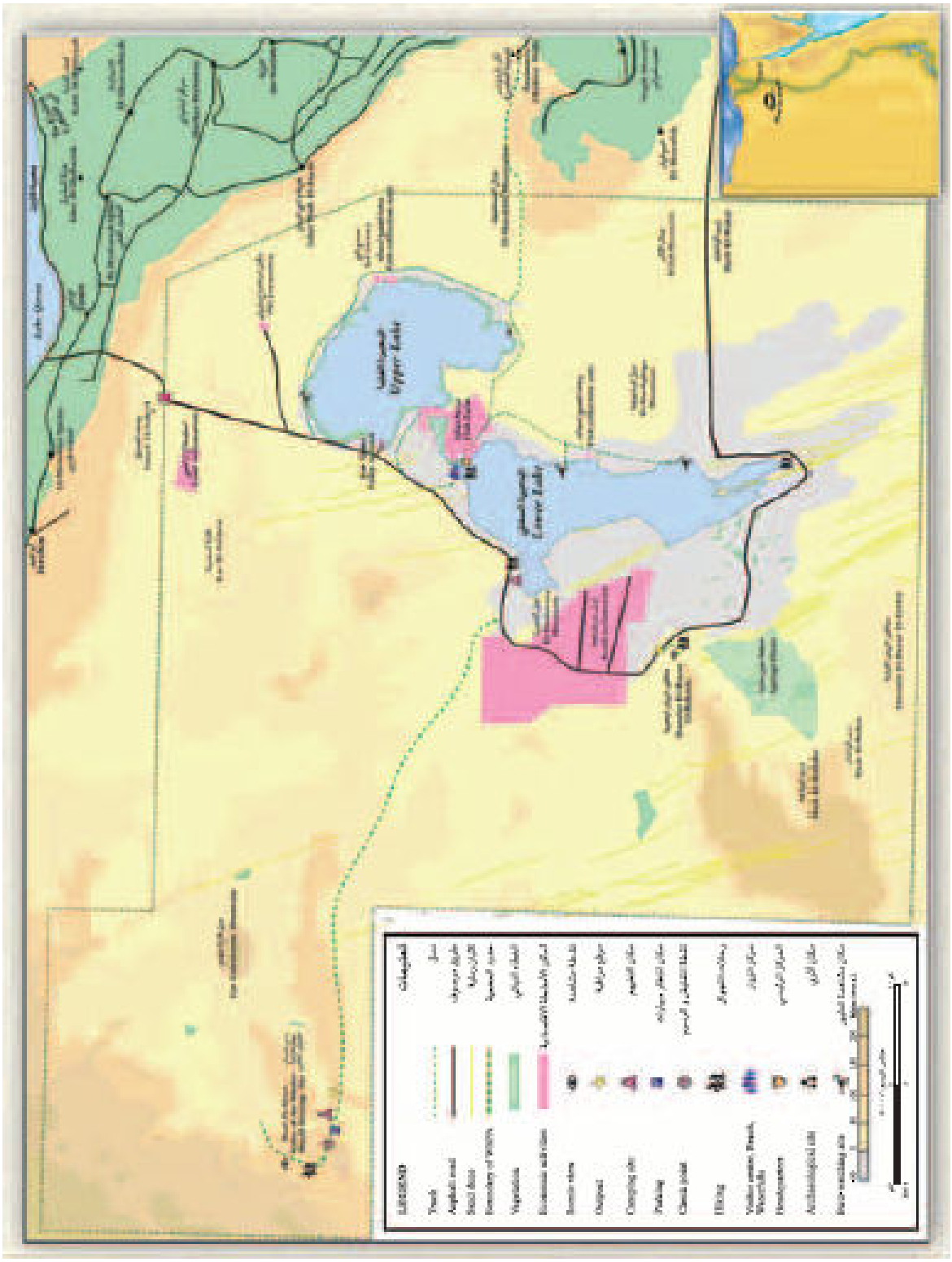
The Government of Egypt budget for WRPA in 2005 was 149,000 LE (85 LE or $15 per km^2), placing it 10^{th} out of 24 protected areas in Egypt (Fouda et al., 2006).

WRPA has been supported for two phases of an Italian-funded programme to increase management capacity and develop ecotourism and educational resources. Total financial inputs of approximately 20 million LE will have been made over a six year period, between 1998-2002 and again from 2005-07. An additional 672,000 LE will have come from WRPA's twin park, Gran Sasso National Park in Italy. These higher levels of investment have resulted in increased infrastructure, which in turn requires higher levels of funding to maintain and operate facilities.

The protected area also contains 90 intensive (cement) fish ponds, 30 extensive (sludge) fish ponds, 3 cage culture operations, an operating oil field, small scale salt mining, tourism cafeterias, private tour boat owners, two land reclamation villages and a Coptic Monastery (refer to map). Numerous villages are located around the periphery of the protected area resulting in frequent unapproved intrusions (e.g., building, cattle grazing, dumping, etc.). Greater intensity of resource uses and higher populations of people generally require greater inputs in terms of staff patrols, liaison, awareness and routine management.

In general, when finances are available, effectiveness improves. For example, vehicles can be maintained enabling staff to undertake routine patrolling and monitoring of resources. During the period between the two phases of the Italian projects, there was a demonstrated reduction in activity. Clearly, some of this will be a direct result of inadequate financing. Arguably, however, money is not the source of all opportunity. Other organizations have found productive partnerships in 'bad' times. In addition, considerable work can be accomplished with minimal finances provided there is a will to succeed and achieve results.

Map of Wadi El-Rayan Protected Area



Part III. Evaluation Results

This section of the report examines the current context, threats, achievement of management objectives, status and needed actions related to the main values of WRPA, which are:

1. Biodiversity/Natural Resources/Cultural Resources:
   - Fossils/World Heritage Site
   - Springs oasis (Gazelle)
   - Lakes (wetlands, shoreline, aquatic)
   - Desert

2. Ecotourism/Recreational Resources:
   - Main visitor area (waterfalls, beach)
   - Visitor centre
   - Safary camp
   - Campsites and bird hides
   - Tracks

3. Community Well-being (socio-economic)
   - Land reclamation villages (Lower Lake)
   - Other communities within WRPA, such as: fishermen, salt miners, cafeterias, boat owners, oil extraction, monastery.
   - Local communities outside WRPA, such as: Yousef Sadeek & area, Rayan, Hana Habbib (solid waste site), Hamouli, Shaalin, Tunis.

Description of these main values were prepared by WRPA staff during the workshop and are presented in this section. 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. The results of the surveys have been integrated into the following sections.

1.0 Biodiversity, Natural and Cultural Resources

1.1 Wadi El-Hitan World Heritage Site

1.1.1 Description

Gahannam formation (Middle Eocene white marl limestone and gypseous clay), Birket qarun formation (Upper Eocene sandstone, clays and hard limestone), Qasr El-Sagha formation (Late Eocene age).

(a) Size: 20,000 hectares (1/3 of this is in the valley core zone)

(b) Condition:

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

- Vertebrate fossils (suborder of whales, the Archaeoceti). Four different species of Eocene whales have been found which are: *Basilosaurus isis*, *Dorudon atrox*, *Ancalecetus simonsi*, and *Saghacetus osiris.* 19 other fossilized vertebrate species also exist such as Sirenians, and invertebrate fossils such as Teridolites.

- Scattered vegetation; some mammals, and bird species in low numbers.

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

- Exceptional concentration of high quality fossils are embedded in sedimentary beds.
- Gehannam Formation, about 40-41 million years old yielding many skeletons of whales, sirenians (sea-cows), shark teeth, turtles, and crocodilians. The middle layer Birket Qarun formation is also yielding whale fossils, while the youngest formation is the Qasr El-Sagha formation of late Eocene age, about 39 million years old. It is rich in marine invertebrate fauna, indicating a shallow marine environment

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

- Poor information.

(c) Landscape Context:

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

- Wind erosion is the dominant process in the highly arid landscape. Erosional landforms.
- Extremely low level of precipitation.

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

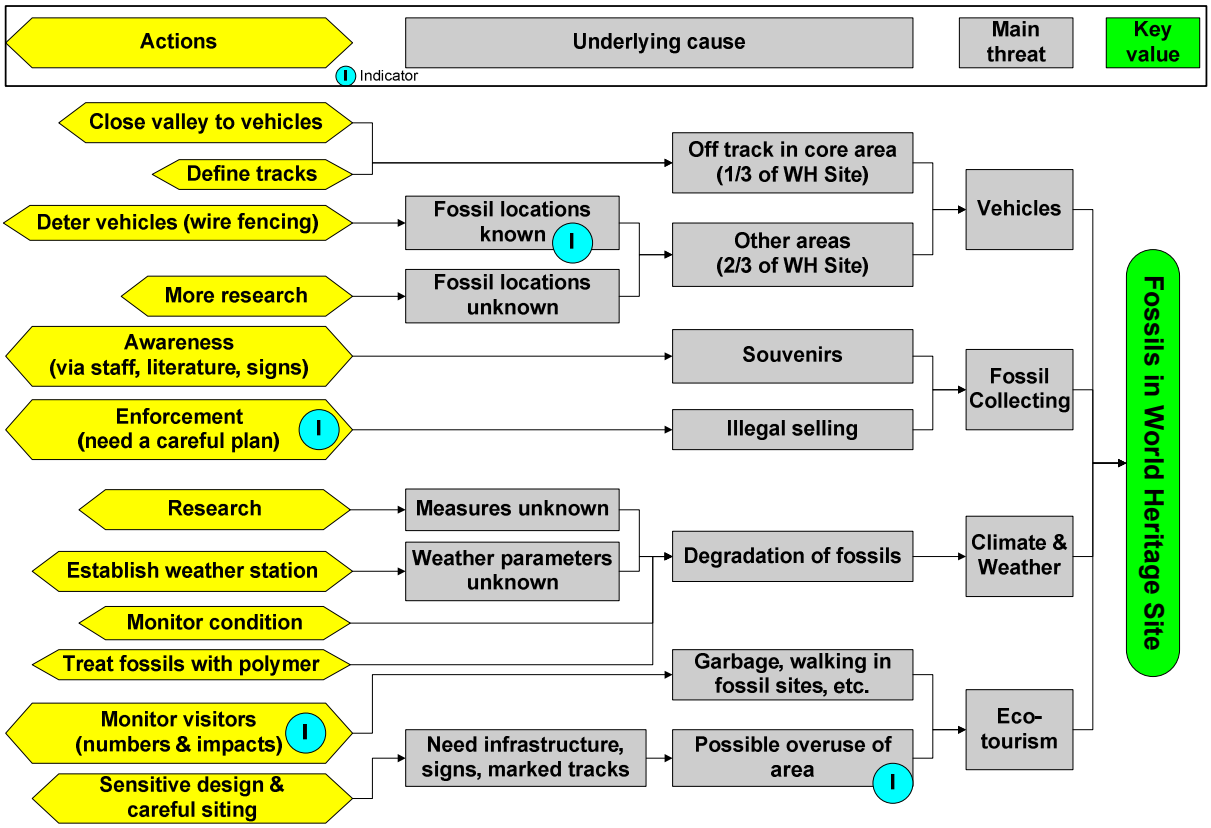
- The geological environment and fossil values are continuous with Gebel Quatrani (currently under study for world heritage nomination), in the northern part of Lake Quarun Protected Area. However, the protected area boundaries are not continuous.

(d) Threats:

#	**Threat**	**Extent** (L, M, H, VH)	**Severity** (L, M, H, VH)	**Threat Magnitude**
1.	Vehicles driving off track*	Very high	Very high	Very high
2.	Too many visitors (core area)	Medium	Medium	Medium
3.	Fossil collecting	High	Very high	High
4.	Natural degradation of fossils	Low	Low	Low

* In section 4, threat summary, this is listed as 'human disturbance'.

1.1.2 Threat Analysis:



1.1.3 Management Objectives and Actions:

Objective 1.3 in the WRPA management plan is for the *"conservation of geological formations and fossil sites."*

The overall status of the site today compared to five years ago is "improving". This rating was given for the following reasons:

- Today there is a higher level of protection through world heritage status designation in 2005.
- A project plan for balancing protection and eco-tourism, which addresses IUCN recommendations, was prepared in 2005 and is presently being implemented. For example, the valley is being physically closed to all vehicles (4 km of stone barriers established), a visitor access scheme is being implemented and interpretive exhibits and DVD being developed.
- Today, there are 8 staff assigned to Wadi El-Hitan, a permanent outpost camp, a designated truck with radio communications, field equipment, and routine patrolling and monitoring activities.
- Since 2005, a tripartite research agreement has been in place with University of Michigan, Egypt Geological Museum and WRPA, providing a focus for research (including locating and mapping new fossil sites) and advanced level training for staff.
- Planning for establishing a joint management team for Hitan and Gebel Quatrani has been undertaken to support wider protection of the valued resources and improved operational effectiveness.

However, with the establishment of a new access road to the site, ecotourism development underway and planned marketing, there is a higher likelihood of ecotourism related threats to the fossil resources. Careful monitoring and patrolling is required to assess these changing and evolving circumstances.

The WRPA management plan also specifies four key activities related to conservation of the geological and fossil resources (refer to appendix 2 for a detailed assessment of these). In general, they have been implemented or are underway and appear to be suitably oriented toward the conservation objective. This demonstrates that the management plan has been an effective tool to guide conservation activities.

A review of the management plan is needed to address the policy and future strategy for this area. The broad direction in the plan has been observed during the last year with the preparation of more specific site project planning, evaluation of options, and two Environmental Impact Statement for the road and the valley developments. Application of these planning tools demonstrates effective planning and management.

1.1.4 Indicators:

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information source
			Poor	Fair	Good	Very Good	
Condition	Composition	Number of vertebrate fossil discoveries/year (note 2)	< 3	5	8	**12**	Research records
	Composition	Number of fully or partially damaged vertebrate fossils/year (note 3)	> 3	2-3	1	**0**	Monitoring records
Threat	Visitor use	Number of visitors per year (note 4)					Tourist monitoring
Action		Number of documented violations inside the core area/year (note 1)	> 10	**6-10**	1-5	0	Patrolling records

Notes/reasons for these ratings:

(1) The rating can be affected by the degree of patrolling and enforcement carried out (low patrolling=low number of arrests); this may not represent the intended status. Improved record keeping and filing to document violations is recommended. Levels of public awareness should also be raised through signs, literature and staff information.

(2) This very good rating is the result of this year's field camp by University of Michigan and follow up surveying by rangers. This indicator may also be a management indicator reflecting management priorities, but it was considered to be relevant here as a status indicator since it provides an indication of the ongoing value of the World Heritage Site.

(3) This would be determined through fossil monitoring program (photo monitoring).

(4) Work is needed on defining the ratings for this indicator. A direct rating associated with the level of use is not possible because higher levels of use than the present would be deemed good in terms of eco-tourism benefits. More research to establish a carrying capacity or optimum level of visitors would be helpful to define this indicator.

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

1.1.5 Summary of Actions:

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

- The fossil monitoring programme should be resumed immediately to re-establish the baseline conditions and to monitor for impacts of ecotourism.

- A research strategy is needed to establish priorities related to the gaps and needs identified in the threat analysis (section 1.1.2), such as finding fossil locations, determining suitable measures for fossil degradation and establishing a suitable visitor carrying capacity. Further work on identifying and implementing suitable indicators is needed; some of these may require initial research to test.

- Information needs should be reviewed in a broad context (e.g., survey and monitoring information about visitors, natural values, infrastructure, etc.) to ensure that all of the information needed is being collected. This management effectiveness report provides a basis for this action. Gaps in information should be identified, protocols monitored, and where necessary, new funding sought to undertake data collection.

- Information management practices should be examined to ensure that data is properly stored, backed-up, and accessible for multiple uses in PA management.

- Police powers for rangers should be increased to provide effective and firm management of this high value resource.

- The management plan needs to be reviewed to address the policy and future strategy for Wadi El-Hitan.

- The Hitan-Quatrani Joint Management Team should be put into practice.

1.2 Springs Oasis and Dorcas Gazelle

1.2.1 Description

The Springs-Rowayn Zone, as defined in the management plan, comprises four natural springs with associated vegetation. A small population of Dorcas Gazelle is a featured species of the area. The oasis is naturally enclosed on three sides by Manakeer Al-Rayan and high sand dunes.

(a) Size:

1. Current size of the area: 53.3 (springs) + 20.6 (Rowayan) =74 sq km

2. Dorcas Gazelle population is estimated to be 8-14 animals. The size of the area needed to sustain the population is unknown, although it is suspected that the Springs zone is sufficient within the larger context of WRPA boundaries.

(b) Condition:

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

- The key-mammal species is *Gazella dorcas dorcas* and other wild life species such as fennec fox, sand fox and Egyptian golden jackal are also present. Other elements of wildlife such as reptiles, insects and birds are also present (see monitoring report 2003).

- Those species are supported by the high Xerophytes and halophytes plant diversity (with key-species *Nitraria retusa* and *Alhagi graecorum*).

- Some exotic species are thought to exist in this area.

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

- The biota of the springs ecosystem is mainly desert component. Plant cover of perennial nature mostly flowering and fruiting in the spring.

- Four brackish springs supports the vegetation and wildlife.

- Soil surface of calcium carbonates covered with sand.

- The limiting factor is the quantity and quality of springs water producing a productive stable habitat.

- In general, there is poor information about the gazelle population in terms of habitat supply, carrying capacity of the population, predation, etc.

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

- Poor information; research and monitoring is needed.

(c) Landscape Context:

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

- Poor information; research and monitoring is needed.

- A hydrology study by the Water Resources Research Institute is underway.

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

- Some mammal species move between the springs and Rowayan area and other systems such as lakes or desert habitats. These two areas are part of the same strict nature reserve zone.

- Possible impact on gazelle from construction and use of the asphalt road, though this is unknown.

- Same pattern of vegetation distribution in springs, Rowayan and area south of Lower Lake.

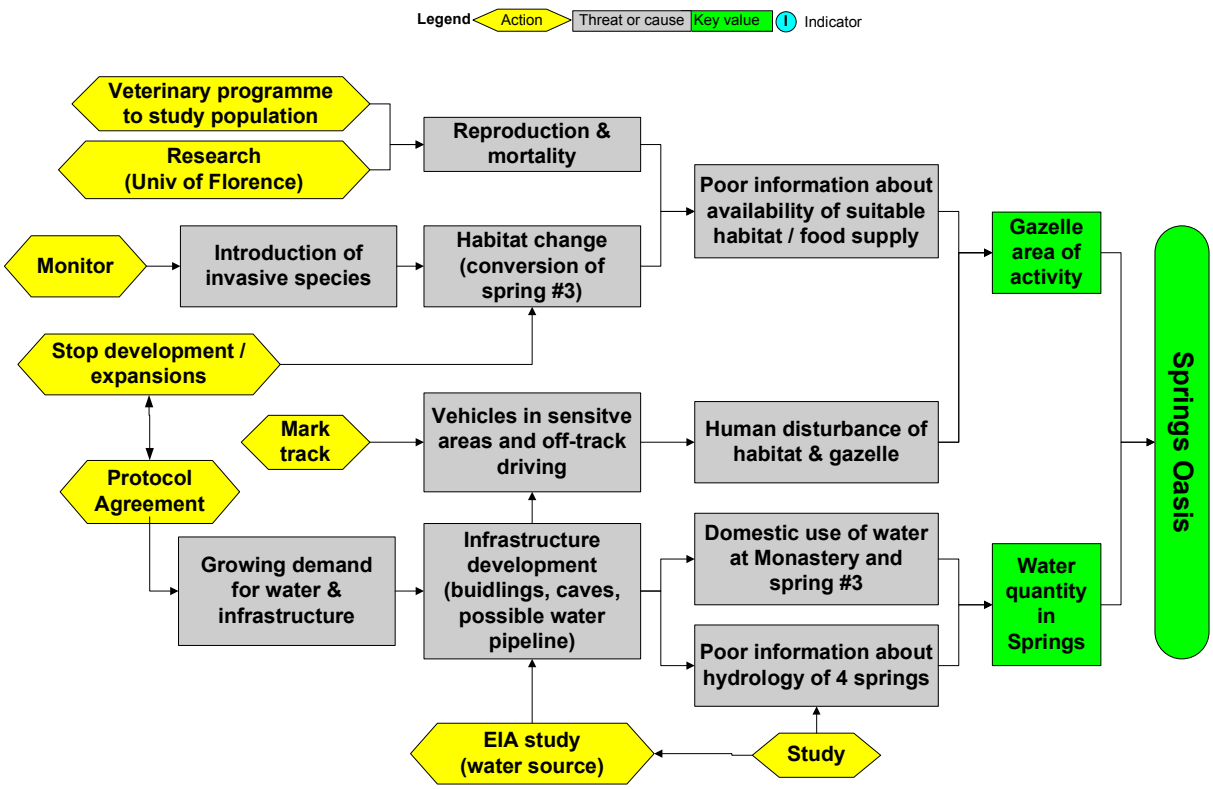
(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Human disturbance (regular human movement, sounds, interference, vehicles in the springs)	Medium	High	Medium
2.	Habitat change (garden in spring #3)	Low	Medium	Low
3.	Invasive species	Medium	Medium	Medium
4.	Water over use	Low	Low	Low

It is noted that feral dogs are commonly found at the Springs Outpost and are resident in the nearby Land Reclamation villages. The size and potential impact of this population is not known

at this time, including potential prey on species in the Springs Oasis. This should be monitored and possible action considered (refer to management of feral dogs Main Visitor Area).

1.2.2 Threat Analysis:



1.2.3 Management Objectives and Actions:

Objective 1.1 in the WRPA management plan is for the *"conservation of biodiversity."*

The overall status of the Springs Oasis today compared to five years ago is "improving". This rating was given for the following reasons:

- Protection has been strengthened through closing the springs area (core biodiversity zone) to visitors, though there is concern over potential over-use of water resources for irrigation in the third spring and domestic use by the monastery. In 2005-06 a hydrological study was initiated through the Water Resources Research Institute to study the area. An Environmental Impact Study on the use of water by the monastery is planned for 2006. These are suitable mechanisms that underpin effective management of protected areas. However, care should be taken to ensure that the participation of the monk community is sought in the discussions and evaluations.

- In general there has been effective monitoring programmes for plants, mammals and water, though mammal monitoring has been inconsistent due to staff changes. Improvements in this area is warranted. Improvements are also needed in the regular submission of monitoring reports.

Although the condition status has been assessed as "improving" for the Springs Oasis, there are some challenges, limitations and threats (see below) that could impact the future status. For example, presently a vehicle and driver are not allocated to this sector of the protected area, thus

limiting fully effective patrolling and monitoring schedules. A lack of information about gazelle habitat and populations limits the possibility of establishing suitable management targets.

Despite past agreements between government (EEAA or WRPA) and the monk community concerning development and approvals of activities, the monk community has continued to expand and undertake its work without prior approval by the PAMU. This tends to frustrate and complicate the system, causing unnecessary work and wasted time for all. Further work on collaborative approaches is warranted, as is ongoing patrolling and enforcement of the law. Options to involve the monk community in monitoring (e.g., location of gazelle sightings) should be included in the collaboration.

New staff have been assigned to the area and there is a need for training on the application of monitoring and patrolling protocols and report writing (some training has been done on biodiversity monitoring).

1.2.4 Indicators:

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Size	Total Area	Reduction in area covered by vegetation from the current area (% of total area)	> 10%	6-10	1-5	**0**	GIS mapping (note 4)
Condition	Composition	Number of gazelle tracks / 1 sq m	??	**(8 – 14)** (note 2)	??	??	Note 4
Condition	Composition	Number of young gazelle tracks / 1 sq m					Note 4
Condition	Composition	Area of the Springs Zone (74 sq km) occupied by tracks (%)	<40	**40-70** (note 3)	70-90	>90	Note 4
Condition	Structure	Browsing by Gazelle					Note 4
Landscape Context	Connectivity	Ratio of the number of tracks inside/outside springs	0	**<±1** ??	>±1 ??	±1 ??	Note 4
Landscape Context	Dominant regimes/ processes	Flow rate for each of 4 springs					Note 4

Notes/reasons for these ratings:

(2) This is the current estimate of the population, not the number of tracks. Other parameters require an assessment of carrying capacity.

(3) This indicator is unclear in terms of how it would be measured and its relationship to carrying capacity of a healthy (normal) population; more may not be better. These ratings are unclear.

(4) Considerable work is needed on these indicators and ratings. They have been retained here to stimulate discussion among reviewers.

Missing data: Habitat supply studies to determine carrying capacity of the system for the gazelles.

1.2.5 Summary of Actions:

- Considerable work is needed to establish and implement suitable indicators.
- Habitat supply studies to determine carrying capacity of the system for the gazelles is an important piece of missing information. University of Florence has expressed interest in gazelle research in the springs and may be able to assist with this.
- More work on establishing collaborative approaches with the monk community is needed. Continued patrolling and enforcement of the laws is warranted.
- Complete the hydrological study and continue with the Environmental Impact Study concerning the provision of water to the monastery.

1.3 Rayan Lakes (wetlands, shoreline and aquatic)

1.3.1 Description

The area includes the Upper and Lower Lakes and associated wetland and shorelines, connected by a 3 km channel and water falls site. Wetlands are composed of mostly emergent vegetation and reed salt marshes and sabkhas.

(a) Size:

1. Current size of the area: Aquatic/Lakes: 112 km^2; Shoreline/Wetlands: 10 km^2

(b) Condition:

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

- Introduced fish species by fish authority
- Water birds migratory and resident; BirdLife International designated Important Bird Area
- Aquatic submerged plant communities
- Aquatic invertebrates, phytoplankton and zooplankton
- The key vegetation species *Phragmites australis* with Juncus sp. associated with *Typha domingensis* surrounding the lake shores
- Wild life include mammals, birds (open water, reed species, shoreline waders). Vertebrates (fish fries) and benthic invertebrates. (see monitoring report 2003)

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

- The water is brakish in nature (TDS is about 1500 ppm for Upper Lake & about 9700 ppm for the Lower Lake)
- Depth in the Upper Lake (30 m max.) and Lower Lake (28 m max)
- The biota of the lakes ecosystem is mainly water related; high wetland density around the Upper Lake and less density around the Lower Lake.
- Fine clay to sandy soils covered with plant ash remains in some sites exposed to fire
- The limiting factors are the quality and quantity (level) of lake water

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

- Feral dogs & feral cats live and reproduce in the area of the fish farms and the main visitor area.

(c) Landscape Context:

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

- Seasonal variation of aquatic communities
- Water quality follows a regular regime (water flows from upper to lower levels producing two variant bodies in terms of quality and salinity content)
- Man made fires, reflected on the natural stability of shore line ecosystem
- Un-stable water consumption system due to high water demands for land investment (reclamation and fish farming activities)

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

- Insects life cycle
- Birds moving between open water, wetland, shoreline and desert habitat
- Some mammal species move between the lakes shoreline and desert

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Wastewater of the aquaculture and reclamation activities affecting water quality especially at the sites of discharge	Medium	Medium	Medium
2.	Illegal fishing activities (poaching)	Low	Low	Low
3.	Disturbance of wild life elements due to human activities such as: fire, aquaculture and grazing	Low	Low	Low
4.	Habitat and landscape change (aquaculture activities)	High	Very high	High
5.	Declining water levels: Uncontrolled use of water has led to the retardation of the shore line especially in the Lower Lake where several kilometers have been affected	Very high	Very high	Very high
6.	Water quality: incoming water via the canal contains pollution	High	High	High

1.3.2 Threat Analysis:

A threat map was not produced in the workshop, however, it would be valuable to do this work.

1.3.3 Management Objectives and Actions:

Objective 1.2 in the WRPA management plan is for the *"conservation of water resources."*

The overall status of the Upper and Lower Lakes today compared to five years ago is "declining". This rating was given for the following reasons:

- Direct observations indicate severe decline in water levels of the Lower Lake through the monitoring program of plants and water quality
- The water level is still declining after long negotiations with the Ministry of Agriculture/Ministry of Irrigation, up to the present.

The WRPA management plan specifies five key activities related to water quality and threats on the lakes (see appendix 2). These are suitably focused and three of the five actions have been completed or are underway. No information is available about wastewater discharging from the land reclamation area; this action remains outstanding. The effectiveness of the management plan actions depend on regular patrolling and monitoring to detect problems in the first place, and then action/follow up to solve the problems, including filing police reports on infractions. The importance of regular patrolling and monitoring should not be underestimated.

Arresting the declining water levels is a priority, if only to protect the investment in eco-tourism resources. Declining levels have left the bird hides, safary camp, and beach facilities further from the shoreline (the bird hides were lost completely). The waterfalls has less water and is less scenic: the boat owners providing tourist boat rides raised this point in the discussions with them. The economic and ecological imperatives are not well known at this time, however these could include the following:

- Loss of fishing benefits related to the change in salinity or habitats.
- Loss of habitat for certain birds such as Purple Gallinule using shoreline wetlands.

- Loss of wild life habitat due to dead vegetation which has not re-established, perhaps due to unstable levels.

1.3.4 Indicators:

Category	Key Attributes	Indicator	Indicator Ratings				Information Source
			Poor	Fair	Good	Very Good	
Size	**Area**	Change in area of vegetation cover (from 8 km sq in 2000) (%)	>10	**9-10**	5-8	0-4	
Size	**Area**	Water input to the lakes (m^3/sec)	**< 6**	6 - 7	8-9	> 9	Min of Irrigation
Condition	**Structure**	Vegetation cover along the shoreline (8 sq km as determined in 2000) (note 1)	<40	40-70	70-90	90-100	
Landscape Context	**Dominant regimes and processes**	Water input/use					Note 2
Landscape Context	**Dominant regimes and processes**	Percentage increase of total dissolved salts	>10	**6-10**	2-5%	<2	

Notes/reasons for these ratings:

(1) This indicator may be affected by the salinity of the Lower Lake for those plants that can't survive the saline conditions. Lower Lake is more significantly affected (shallow gradient) than the Upper Lake (steep gradient). The 8 sq km is for both lakes. While this indicator has some problems, it is a good long term indicator of vegetation response to stable water levels. More work could be done to define the measure.

(2) Data may be available on input from Ministry of Irrigation and on water use from the pumping station. More investigation is required to develop this possible indicator.

Overall, more work is required on these indicators and ratings.

Missing data: water inputs and uses.

1.3.5 Summary of Actions:

- Re-invigorate meetings with the Ministries of agriculture and irrigation concerning water levels. Undertake an information campaign with these ministries and with related groups to educate people about the related problems and impact on social, economic and ecological benefits.

- Develop an education and awareness campaign about clean water, and the situation of WRPA 'at the end of the line', as a recipient of the run-off. The Governorate should also be targeted given their roles in establishing water treatment plants and developing tourism opportunities. Safeguarding the recreational values of WRPA should be a priority.

- Undertake further work on the development of suitable indicators. Where necessary and suitable, develop partnerships with other agencies (e.g., Oceanography Lab) for research and monitoring. Consider indicators to measure human health threats (e.g., coliform bacteria) in the lake water.

- Follow-up on land reclamation waste disposal.

1.4 Desert

1.4.1 Description

Sculpted desert valleys, gravel beds, desert plains throughout WRPA.

(a) Size:

1. Current size of the area: 160,949 ha

(b) Condition:

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

- Scattered vegetation spots (see WRPA book for description)

- Some mammal and bird species

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

- Maximum height is 300 m asl and elevation reaches 64 m asl

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

- Poor information

(c) Landscape Context:

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

- Arid land forms predominantly shaped today by wind erosion; minor precipitation

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

- Some information is provided in WRPA book.

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Garbage (dumping vehicle oil, debris	Low	Medium	Low

	along roads)*			
2.	Tracks from 4-WD vehicles	High	High	High
3.	Oil exploration (unapproved)**	Medium	High	Medium
4.	Salt mining+	Low	Low	Low
5.	Poaching (falcon hunting)	Medium	Low	Low

In section 4, threat summary: * Listed as 'pollution-garbage'. **listed as 'pollution-oil. +listed as 'human disturbance'.

1.4.2 Threat Analysis:

Not undertaken due to lack of time.

1.4.3 Management Objectives and Actions:

The management plan does not contain specific objectives or actions for the desert ecosystems even though this ecosystem comprises the largest portion of the protected area. Despite this, a status rating of 'stable' has been assigned for the following reasons:

- Patrolling and monitoring programmes have been implemented with the exception of the period between the first and second phase of the Italian project when support was low.
- There is generally a low level exploitation in this area, aside from oil exploration, salt mining and falcon hunting.
- There is no specific management programme directed to this area, for example, through the management plan.

1.4.4 Indicators:

Not undertaken due to lack of time.

1.4.5 Summary of Actions:

- As part of the management plan review, add a specific objective and actions pertaining to desert ecosystems.

2.0 Ecotourism-Recreational Resources

2.1 Main Visitor Area

2.1.1 Description

This area includes the beach, waterfalls, WCs, cafeterias, mosque, and main entrance track. The area is bounded on the west by the sand dune and on the east by the waterfall channel.

(a) Size/number: the area is 1 km long x .5 km wide**.** The current number of visitors is approximately 150,000 +/- per year.

(b) Condition:

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

This is a human-made ecosystem and "natural" for this location has not been defined. So we're talking about what "appears natural". Part of the shoreline is natural, representing a beach shoreline.

Water levels change seasonally (low in summer) and have been declining over the last 5 years, causing the following types of problems:

- The shoreline vegetation is dead. This is lost habitat for breeding birds and it does not look very nice.

- Infrastructure is now further away from the water (WC, safary camp for drawing water).

- The quantity of water over the falls is lower so the scenery is not as good as it was. This point was raised by the boat owners that derive some income from giving tours for visitors.

The waterfalls area has a lot of vegetation, making it look natural.

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

Garbage and broken glass is a problem. Some of it is collected by staff. Few visitors collect their own garbage. There are not enough garbage bins. Also, the steal bins are unsightly and they could be improved.

There is a problem with excrement, especially along trails to waterfalls and possibly in the lake water. There are too few WCs and the existing one is in very bad condition. This problem might be solved with improvements and enlargement to the old WC. Education can also help. There is a need to sign the WCs, and where there is an excrement problem, post signs to encourage visitors to use the WCs.

The water quality at the beach is thought to be lower (more polluted) than other nearby locations on the Lower Lake (e.g., in front of HQ). Further investigation is warranted, including establishing a monitoring programme. Indicators to measure human health risks (e.g., coli form bacteria) need to be considered to safeguard the health of visitors.

Festivals: the number of people coming to WRPA during festivals affects safety, cleanliness and infrastructure. For example:

- Parking area is completely full, including the roadways leading in and out. Therefore, emergency response for incidences such as drowning would be a problem.

- During Sham El Neseim considerable damage to infrastructure has occurred such as breaking the stone parking columns and WC fixtures.

- Driving off the track, getting stuck and making an unsightly mess of the desert.

- Huge amount of garbage left on the ground to blow around.

- Fires along the channel and at the waterfalls, destroying habitat and creating a safety hazard for visitors and fire guards.

3. Use (over or under-use) of Facilities

Cafeterias: This topic should be discussed with the individual cafeteria owners as use across the beach area varies.

WCs: The old WC receives heavier use compared to the new WC, which is further away.

Safary Camp: The camp is now closed as a result of imposed limitations (no permission for foreigners to stay overnight) and insurmountable challenges (declining water levels).

(c) Landscape Context:

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

Declining water levels have negatively affected some species habitat. For example, there are fewer sightings of Purple Gallinule. The level of visitor use of the area is not known to impact on key

ecosystems, though water quality may be affected to some degree. The human caused fires affect the shoreline ecosystems and species.

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

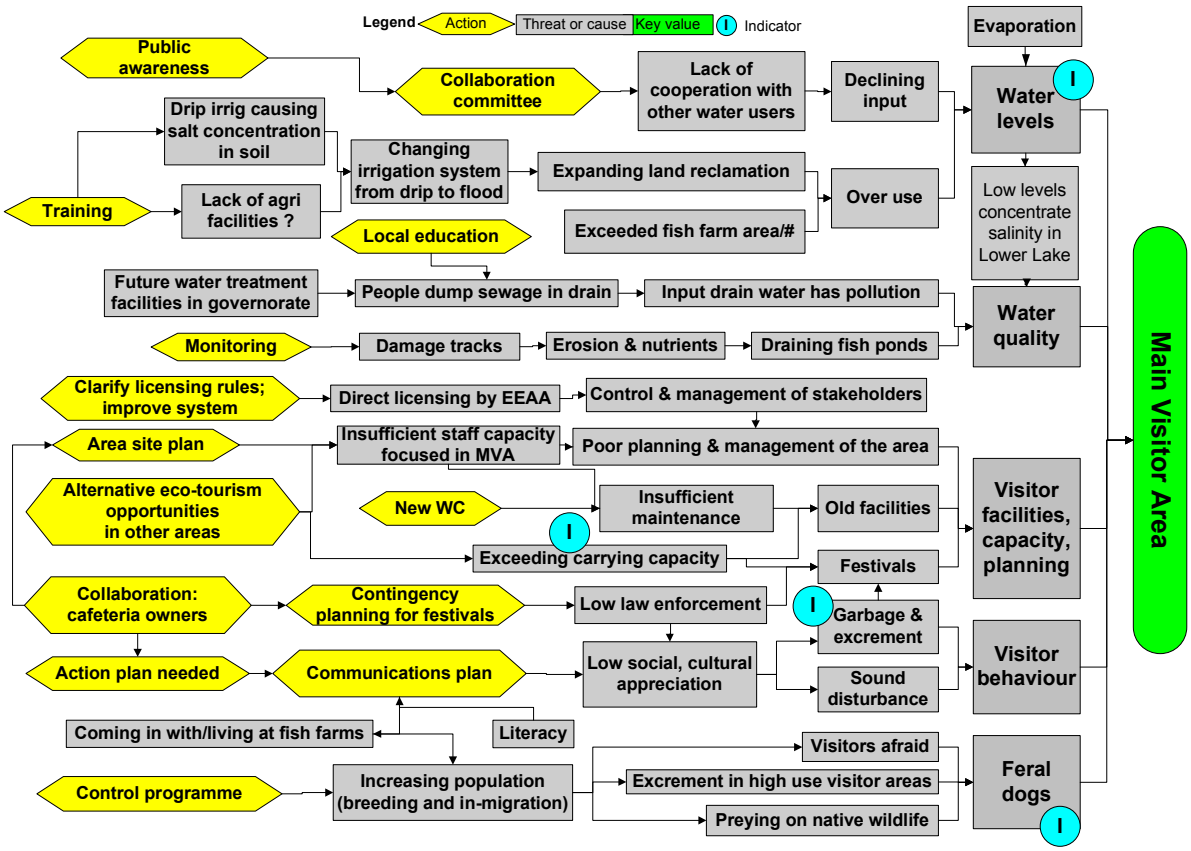
Positive economic effect on cafeterias, safary camp (potential) and local businesses, especially during festivals. Negative effects arising from high numbers of visitors.

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Declining water levels	High	High	High
2.	Water quality	High	Medium	Medium
3.	Visitor behaviour	High	High	High
4.	Level of facilities, capacity, planning	High	High	High
5.	Exceeding carrying capacity of area during festivals	High	High	High
6.	Feral dogs*	High	Medium	Medium

*In section 4, threat summary, listed as invasive species

2.1.2 Threat Analysis:



2.1.3 Management Objectives and Actions:

The treatment of the Main Visitor Area in the WRPA management plan is week in view of the fact that this area receives about 98% of the protected area's annual visitation of 150,000. For example, there are no specific objectives pertaining to recreational use. The area is zoned as recreational, however this is contained within the much larger (and low intensity use) recreational zone encompassing the two Rayan Lakes. There are few specific management actions for this area stated in the management plan and no site plan map, despite the intensive development found here. Furthermore, the above-noted description and threat analysis demonstrate that there are significant threats, underlying causes and actions that need active management.

Overall, the condition of the Main Visitor Area has been assessed as "declining" over the five year period of the management plan, for the following reasons:

- Management of garbage remains a problem. While actions have been taken from time to time to solve this problem (e.g., sharing responsibility with the cafeteria owners), overall the problem persists. Public surveys for the report confirmed this point.

- The parking area and track system is in a general state of disrepair. Action was taken in 2005 to define the parking area however this infrastructure was substantially damaged during the last Sham El Neseim festival.

- Visitor management, especially during the feasts is insufficient and damage occurs to infrastructure (as reported above).

- Co-management with the economic stakeholders (cafeterias, boat owners, safary camp) is not formalized nor regular, and is antagonistic (police reports are made by the PAMU against the stakeholders and vice versa). Reform and repair of the relationships is needed.

There is reason for hope. Through EIECP, several efforts have been initiated or are planned for the project. These include establishing written collaborative management agreements with the aim of more positive and proactive relationships, re-design of the Main Visitor Area including the track from the asphalt road, renovation of the old WC, expansion of the Visitor Centre to house a Whale Evolution Hall and new exhibits, new signs, garbage bins and regular/scheduled garbage collection system. In addition, for internal management purposes, the Main Visitor Area has been established as a sector with a Senior Ranger appointed to lead staff and work activities.

2.1.4 Indicators:

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Size/number	Visitors	Number of visitors to main visitor area	<100,000 and >250,000	100,000 – 150,000	150,000-200,000	200,000-250,000 Operating at the upper limit of carrying capacity (note 1)	Visitor monitoring records (not ticket sales)
Condition	1. Naturalness: Water quantity	Quantity of water entering Upper Lake (average cu metres/sec over a 5-year period)	**<6**	6-7	8	>8	Ministry of Irrigation records
Condition	1. Naturalness: Water quantity	Decline of water levels (distance from WC)	Current level or lower (__ metres)	2002 level (photos to estimate)	2001 level	2000 level	Monitoring
Condition	1. Naturalness: Stable water levels	Vegetation cover along the shoreline (8 sq km as determined in 2000) (note 2)	<40%	40-70%	70-90%	90-100%	Survey

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Condition	2. Clean and safe: Garbage	Amount of garbage (tons) / year collected from all cafeterias	>60-70	50-60	40-50	<40 (note 5)	Maintenance records
Condition	Clean and safe: Excrement	Number of human scats on specific trails at the waterfalls (note 3)	>9	5-9	1-4	0	Monitoring
Condition	Clean and safe: Human presence in water	Sulphide concentration (mg/l) (note 4)	>2.0	1.5-2.0	1.0-1.49	<1.0	Monitoring
Condition	Clean and safe: Visitors	Number of drownings / year	>1	1	0	0	Monthly reports
Condition	Clean and safe: Driving off the track	Number of tracks in a random sample area (2 metres along track by 10 metres away from the track)	>10	6-10	1-5	0	Needs work on protocol
Landscape Context	2. Impact on adjacent land uses: Cafeterias	Number of visitors to main visitor area (proxy indicator for spending)	<100,000 and >250,000	100,000 – 150,000	150,000-200,000	200,000-250,000 Operating at the upper limit of carrying capacity (note 1)	Visitor monitoring records (not ticket sales)
Condition	Clean and safe & naturalness	Number of feral dogs in the area	Note 6				Period census

Notes/reasons for these ratings:

(1) Based on the estimate that 90% of visitors go to the main visitor area. 200,000 is estimated to be the optimum carrying capacity for the PA.
(2) This indicator may be affected by the salinity of the lower lake for those plants that can't survive in saline conditions. Lower Lake is more significantly affected (shallow gradient) than the Upper Lake (steep gradient). The 8 sq km is for both lakes. While this indicator has some problems, it is a good long term indicator of vegetation response to stable water levels. More work could be done to define the measure.
(3) This may be a good indicator for education actions to solve this problem.
(4) Need more discussion and investigation to determine if this actually indicates effects of human use.
(5) Based on 1 kg / family group and the optimum number of visitors of 200000 divided by 5 (average family size) = 40000 kg.
(6) Currently no census information is available on the feral dog population.

Missing data: health hazards in water (shistosomiasis, coli form bacteria); feral dog population

2.1.5 Summary of Actions:

- Improve the direction in the management plan to specify a recreational objective and associated actions.

- Enhance overall management of the area by increasing and focusing the staff activity on priority actions, including co-management with the economic stakeholders.

- As part of the water quality monitoring programme, include indicators to measure threats for human health (e.g., shistosomiasis, coli form bacteria).

- Take action on the feral dog population, including educating fish farmers to discourage them from keeping domestic animals.

2.2 Visitor Centre

2.2.1 Description

(a) Size/number:

- The current number of visitors is about 2000 per year, mainly coming in group tours.

(b) Conditions:

1. 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.)

- Area is natural; car tracks around the centre because the tracks and parking are not well defined or maintained.

- Quality of the displays (information and materials) needs updated information and method of display to be more interactive. Currently, the displays are static—but overall fair.

- The theatre is underused. The VC is mainly used for visiting groups and to a lesser extent for individual visitors to the beach.

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

- The centre is cleaned twice per week (displays, floors swept and washed). This is adequate.

3. Use (over or under use)

- Under-used. The centre could receive substantially more visitors.

- Not getting full value for the investment.

(c) Landscape Context:

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

- The centre, through the displays and programmes is intended to have a positive impact on conservation. But we don't know if this is true because there has been no evaluation.

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

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

(d) Threats:

- In the long term, lack of money to maintain and operate the facility at an appropriate level.

- Capacity and skills to make effective use of the Visitor Center (e.g., setting out an interpretive programme, keeping regular hours, staff effort to promote the VC and its programmes to visitors).

2.2.2 Threat Analysis:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Lack of money/facility care	Low	Medium	Low
2.	Capacity and skills	Medium	Medium	Medium
3.	Under use	Medium	Medium	Medium

2.2.3 Management Objectives and Actions:

Objective 3 in the WRPA management plan is for *"public awareness and education programmes."*

The overall status of the Visitor Center and public awareness programme today compared to five years ago is "declining". This rating was given for the following reasons:

- Report from Ministry of State for International Cooperation indicated that the efforts of the project towards the education and awareness programs have been limited.
- The community, stakeholder and visitor surveys conducted for this management effectiveness evaluation all indicated low ratings for the Visitor Center and public awareness. For example:
    - 6 of 23 *visitors* attended the Visitor Center, and 2 of 23 visitors received literature about WRPA during their visit.
    - Most *stakeholders* feel that WRPA does a poor or very poor job at informing them. The level of support among stakeholders is low or very low.
    - Most *local community* people surveyed feel that the level of community support and the provision of information is poor or very poor.

The management plan lists four key actions (in section 4 with the objectives) related to public awareness and environmental education, two of which are being implemented on an ongoing basis, one is underway and another has not been started (appendix 2). In section 6 of the management plan, public awareness and community outreach information is presented for each of the management zones in terms of target audiences, the focus of activities and some methods.

Staff are making an effort to implement educational activities, though this is irregular. An Information, Education and Communications Plan (IEC) was prepared in 2005-06 and is being implemented through the EIECP. Work is underway on preparing actions for education.

2.2.4 Indicators:

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Size/number	Visitors	Total number of visitors per year to the VC, including # attending programmes (1)	**<10,000**	10,000 – 20,000	20,000 – 30,000	>30,000	Visitor Centre register book
Size/number	Visitors	% of total optimum number of visitors (200,000) to the PA (2)	**<10%; 20,000**	10-15%; 20,000 – 30,000	15-20%: 30,000 – 40,000	20%; 40,000	Visitor/tourist monitoring
Size/number	Visitors	Number of visitors per year attending programmes (3)					Reports

Size/number	Visitors	Number of interpretive programmes per year delivered (3)	Reports
Size/number	Visitors	Number of school programmes and number of children contacted per year (3)	Reports

Notes/reasons for these ratings:

(1) The estimated the carrying capacity of the VC is about 100 people/day, or 36,500/year.
(2) These targets are based on the optimum (ideal) number of visitors to the PA, which is estimated to be the carrying capacity (i.e., 200,000/year).
(3) At this time, indicator ratings have not been established for these, however, such statistics should kept to support programme planning and evaluation.

Missing data: There are no evaluations of the VC or the programmes.

2.2.5 Summary of Actions:

- The Visitor Center hours of operation and programme of activities needs to be established and followed, including promoting the programmes through staff, literature and sign boards.
- There is a need to review the management plan direction for public awareness and outreach, taking into consideration the IEC plan. The long range (strategic) role of the protected area in environmental education (as a specific sub-component of IEC) is needed.
- Management plan direction has been established, however it appears that it is not carefully followed and translated into work plans, and then implemented. Accordingly, to enhance effectiveness, each programme area needs to include tracking, evaluation and reporting.
- Collaborative management requires a thoughtful process involving 'communications for behavioural change'. While this is recognized in the Information, Education and Communications Plan, a real effort to engage key stakeholders is necessary. Some on-the-job training has been undertaken in 2005-06 however more is required to ingrain the process.
- There has been no evaluation of the outcomes of the specific public awareness actions. This can be a difficult area to address in terms of design and implementation of evaluations and may be an area for social science research.
- A bi-annual IEC report should be prepared to summarise activities, statistics, challenges and solutions, and the plan of the action for the following six months. This should include the personal tours given by rangers at Wadi El-Hitan to VIPs and others.

2.3 Safary Camp

2.3.1 Description

The safary camp is located beside the Visitor Centre along the shoreline of Lower Rayan Lake. It is currently closed and in a run-down condition. Despite its current state, the facility was examined as a means of learning from the past.

(a) Size/number:

1. Current size of the area: approximately 2 feddan

2. Visitors: Presently there are no visitors as the camp is closed. Visitor capacity was about 20 people/night.

Condition:

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

- Sand dunes on the west side and lake on the south side.

- Lakeshore has some damage from the illegal canal built by the leaseholder. This was built due to declining water levels.

- Building is made from natural materials which looked very nice when new. It is currently in a poor state.

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

- When the camp was operating, it was very clean. WC was a closed tank; excrement was removed by tank trunk.

3. Use of facility

- Under used due to security rules. According to the leaseholder, the tourism police did not allow him to bring foreigners to the camp for overnight visits.

(c) Landscape Context:

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

- None

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

- Some positive impact as local people were employed to run the camp.

- Buying fish from the fish farmers and fishers for guests.

- Very close to Visitor Centre—there could be night programmes for visitors. Many visitors to the VC ask about the eco-lodge, suggesting there is good interest in this facility. It is away from the crowded beach area.

(d) Threats:

- Lack of use due to security rules not to allow foreign visitor to stay overnight. While intended to be a precautionary measure, this action has the negative effect of eliminating tourism and the consequent benefits.

- Declining water levels made it difficult to maintain infrastructure such as water pumping system. Also, the facility became further away from the lake (an aesthetic consideration of the site).

- Cooperation and support from the protected area (e.g., marketing, operational support with water, etc.).

- Lack of quality of service is a threat to the ongoing success and health of the facility. However, it is noted that this threat may be a result of the aforementioned threats.

- Negative image on WRPA. As a result of the above factors and the related legal action between the lease holder and the government, the facility has fallen into a state of disrepair. This results in a poor image for the protected area.

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Security rules+	Very high	Very high	Very high
2.	Declining water levels	High	Very high	High
3.	Cooperation with PAMU	High	High	High
4.	Lack of quality of service*	Medium	High	Medium
5.	Negative image	Medium	Medium	Medium

*In section 4, threat summary, listed as 'facilities'. +listed as 'visitor use-under use'.

2.3.2 Threat Analysis:

A threat map was not prepared during the workshop.

2.3.3 Management Objectives and Actions:

Objective 2 in the WRPA management plan is for *"human and economic activities."*

The overall status of the Safary Camp today compared to five years ago is "declining". This rating was given because the above-listed threats are actual issues that have negatively affected the success of the operation. The stated actions in the management plan could support more effective management of the safary camp. Overall, there is a need to begin fresh with the camp, giving consideration to such options as:

- Removing the camp completely with no replacement.
- Developing and operating a camping facility. This could be done within the capacity of WRPA.
- Developing a new eco-lodge through a lease arrangement. This type of service requires specialty skills not presently found in WRPA staff.
- Re-habilitating the camp for use as an environmental education facility. It's location is complementary to the Visitor Centre and other resources. Specialized skills are necessary for management and administration of this kind of facility and would therefore need a lease arrangement.

Such options should be examined through an Environmental Impact Assessment and considered in the management plan review.

2.3.4 Indicators:

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Size/number	Visitors	# overnight visitors/year	**<3000**	3000-4500	4500-7000	>7000 (full capacity)	Estimate (1)
Condition	Local employment	# of local workers employed	**<4**	4	5-8	>8	Estimate

Notes/reasons for these ratings:

(1) Current ratings for both indicators is poor as the camp is now closed.

Missing data: Use statistics while under lease.

2.3.5 Summary of Actions:

- Undertake an evaluation of options for this facility (as described above).
- Prior to any further investment, there is a high need to resolve the security police issue and to determine through a business plan if there is a reasonable degree of assurance that such a facility can be profitable (or in the case of an EE facility, can pay for itself).

2.4 Campsites and Bird Hides

2.4.1 Description

(a) Size/number:

1. Current size of the area: The total length of bird hide fence is 20 m however this are is presently not used due to low water levels. There is one campsite near the second lake of a total area of about 500 m2. This are is also far from the water due to declining levels.
2. Visitors:

- From three years ago, 10 % of the visitors of WRPA used to stay in the campsite. This campsite not used anymore from three years. It needs to be rebuilt and improved again to receive visitors. The target for use of the campsite is 25 % of the visitors using the campsite facilities, which will provide more fees for the WRPA.

(b) Condition:

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

- The areas are completely natural.

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

- Presently use is low to non existent so this is not a problem.

(c) Landscape Context:

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

- There are no impacts on conservation priorities.

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

- None; there could be positive impacts through economic benefits, especially if local people can operate the sites.

(d) Threats:

- Declining water levels.

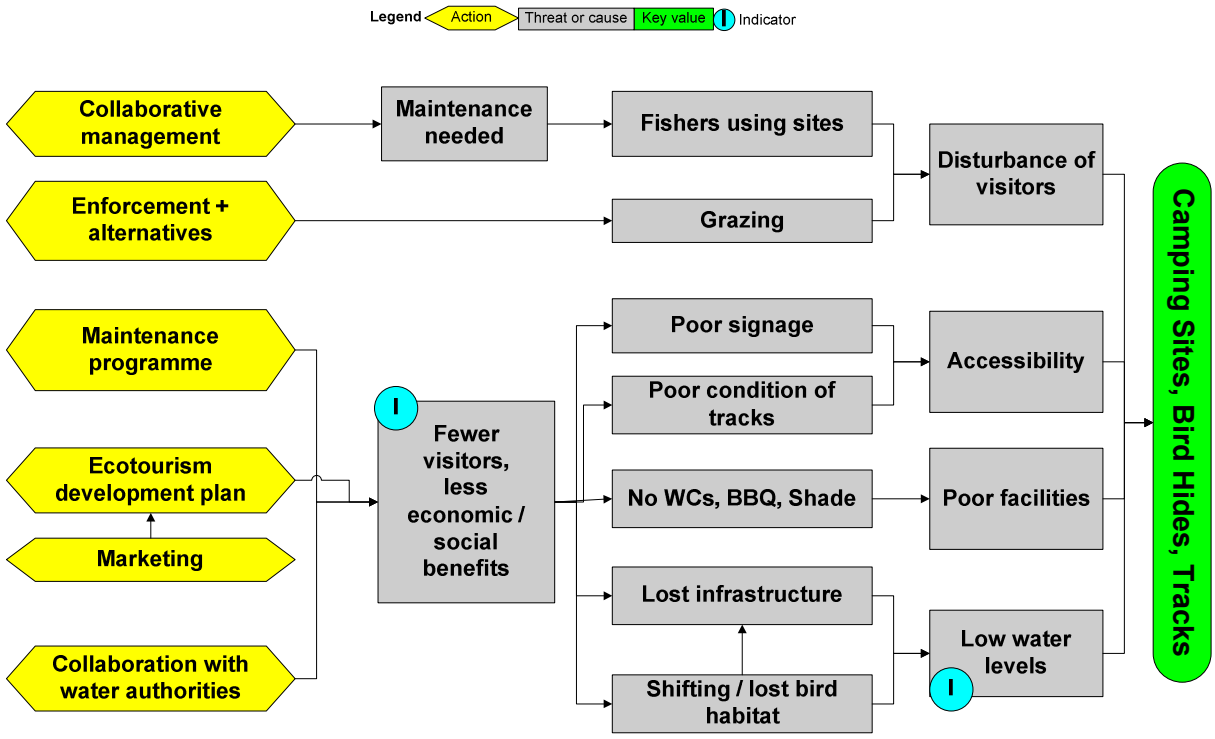
- Budgets for sustainable operations when there is no project to support vehicles and equipment for monitoring and care of the sites.

- Fishermen using the sites.

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Human disturbance	Medium	Low	Low
2.	Low water levels	Very high	Very high	Very high
3.	Accessibility	High	Medium	Medium
4.	Poor facilities (wc, signs)	Very High	High	High

2.4.2 Threat Analysis:



2.4.3 Management Objectives and Actions:

Objective 2 in the WRPA management plan is for *"human and economic activities."*

The overall status of the bird hides and campsite today compared to five years ago is "declining". This rating was given because the above-listed threats, low (declining) water levels have left the facilities far from the water's edge, making the campsites unattractive and bird hides devoid of aquatic habitat in which they were constructed. The loss of eco-tourism infrastructure in WRPA is a direct result of declining water levels and calls into question the practicality of re-developing infrastructure for the future. This could be mis-directed spending.

2.4.4 Indicators:

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Size	Number	Number of campsite in each sector of the protected area	**0-1**	2	3-5	>6	WRPA records
Size	Number	Number of visitors using each campsite per year	**<120**	120-360	360 – 720	> 720	Note 1

Notes/reasons for these ratings:

(1) These ratings are based on the following estimate: A family of 5 on 1 campsite x 2 weekends/month x 12 months = 120 visitors/campsite/year. This (or any number) can be used to assist in target setting, and revised as time goes on. Monitoring will need to determine if there is a carrying capacity issue.

Missing data: Data collection and recording protocol needs to be established.

2.4.5 Summary of Actions:

- There is a need to resolve the declining water issue. WRPA should take a lead role, with the Fayoum Governorate, to establish a water use/stakeholder committee to address the water quantity and quality issues. WRPA is an the 'end of the line' and is the recipient of the remaining flow. Investments in eco-tourism infrastructure local economic benefits are at risk.

2.5 Tracks (sand roads)

2.5.1 Description

The system of tracks surrounds the Upper and Lower Lakes and includes the new packed sand road to Wadi El-Hitan. There are numerous small side tracks that are used informally.

(a) Size/number:

1. Currently, the total length of road and tracks inside WRPA is about 120 km. This will increase with the construction of the planned Medinet Madi track.

2. Visitors: The number of visitors using these tracks is not known, however, about 150,000/year come to WRPA and particularly to the beach/waterfalls area. A small proportion presently use the Upper and Lower Lake tracks due to their poor condition and accessibility only to four wheel drive vehicles.

(b) Condition:

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

- The natural qualities of the areas adjacent to the tracks has been negatively affected. Due to poor track maintenance, people usually drive beside the track, creating an ever-widening system of alternate tracks. This has marred the natural scenery, which is an important element of the WRPA 'product'.

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

- Existing track is not well defined and maintained and need many signposts for the visitor's safety. In addition, other infrastructures (like garbage boxes, rest places, parking, etc.) are needed for the proper use of these tracks.

(c) Landscape Context:

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

- The impacts of these tracks on the ecosystems inside WRPA are very limited because the tracks exist from long time ago and to some extent, exist in a balance with the surrounding ecosystems.

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

- Tracks can have positive impacts on the adjacent land uses by focusing vehicle use on the tracks and reducing the problem of vehicles driving anywhere. However, the poor state of the tracks has reduced this positive effect.

(d) Threats:

- Sustainability of the maintenance programme: lack of money when there is no project to support maintenance.

- Improved access means that more people, including those engaged in illegal activities (falcon hunting) can travel further, faster. This requires continuous patrolling by rangers.

- Track washout due to draining of fish ponds. Repairs have often been inadequate. While the effect is localized at the washout the impact affects the use of the wider track system and therefore 'extent' has been determined to be high in the following table.

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Long term sustainability	High	High	High
2.	Better access leading to more illegal activities*	Low	Low	Low
3.	Washouts from fish farms	High	High	High
4.				

*In section 4, threat summary, this is listed as 'poaching' as this is the main illegal activity.

2.5.2 Threat Analysis:

Not undertaken during workshop.

2.5.3 Management Objectives and Actions:

Objective 2 in the WRPA management plan is for *"human and economic activities."* The system of tracks are an important part of the infrastructure to support this objective.

The overall status of the tracks today compared to five years ago is "declining". This rating was given because of the current poor condition. Despite this, through the current Italian programme, there are plans to improve the tracks, signposting and public awareness information that would lead to more visitor use of the tracks. As a result of more use, visitors should benefit from improved recreational opportunities and have a greater appreciation of its resources. Of course, more use will require routine maintenance.

2.5.4 Indicators:

No indicators were developed during the workshop.

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	

2.5.5 Summary of Actions:

- Establish a regular track maintenance programme. NCS has talked about establishing a national programme with the support of the army.
- Consider a partnership programme with others who have the proper equipment (e.g., the oil company or Yosef Saddeek town) or others who are beneficiaries (e.g., fish farmers) to maintain the tracks.
- Clarify the responsibilities for fish farmers if/when the track is washed out.
- Develop indicators for this value.

3.0 Community Well-being

3.1 Land Reclamation Area and Villages (Lower Lake)

3.1.1 Description

This area is located within WRPA on the west side of the Lower Lake. Construction of the land reclamation project and villages (Sidna Kheidr and Sinda Moussa) was initiated prior to establishment of the protected area.

(a) Size/number:

Current size of the area inside PA is 8000 fedan . Estimated population size is about 4000.

40% are children and youth – 60% adults
55% of the population are female – 45% are male
55% of the population can not read or write.
200 LE per month / family
Most employment is through agriculture.

(b) Condition:

1. Economic benefits derived from PA: (e.g, direct employment, indirect tourism)

- Presently, there is no direct employment from WRPA to LR community.
- Indirect (random) employment by WRPA (i.e, laborers have been hired periodically on an as-need basis).

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

- All LR community depends on agricultural activities irrigated by water coming from the Upper Lake.

- Poor livestock which is mainly poultry and little cows and buffalos.

3. Use of natural resources (inside and outside protected area)

- Using the water from the Upper Lake for irrigation; the agricultural sewage returns back again to the Lower Lake.

(c) Management Context:

1. Impacts of community on conservation priorities: (e.g., on key ecosystems, species, boundary, grazing, poaching, etc.)

- Activities of LR affect the normal behavior of foxes in the spring area. For example, their garbage and livestock attract the foxes.

- Possible introduction of some invasive species and related disease into WRPA.

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

- Currently Springs Area rangers maintain some liason with LR manager but there is a need for more contact with PAMU and for a formal collaboration mechanism.

- There are opportunities for people from the LR community to work within the WRPA, such as in the planned Mudawara campsite doing maintenance and maintaining its infrastructure and through the eco-products project of the EIECP).

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Population size	High	High	High
2.	Agricultural and community sewage	High	High	High
3.	Introduction of invasive species	Low	Low	Low
4.	Decline of water levels in the lakes	High	High	High
5.	Over use of water of the Upper Lake	High	High	High
6.	Low environmental awareness	Medium	Medium	Medium
7.	Human disturbance	Low	Medium	Low
8.	Garbage	Medium	Medium	Medium

3.1.2 Threat Analysis:

The workshop group identified the threats and potential actions.

3.1.3 Management Objectives and Actions:

In general, the management plan key actions for objective 1 and 2 refer to the land reclamation area in terms of issues (a negative overtone):

- Under objective 1 for *"natural resource management"*, the plan states: "avoiding the wastewater discharging from the land reclamation scheme."

- Under objective 2 for *"human and economic activities"* the plan refers to promoting wise use of resources 'which can be greatly affected by the land reclamation activities.'

Indeed, these are issues that must be addressed, however the objectives for the protected area do not consider important outcomes related to poverty reduction or engaging people through collaborative mechanisms, as suggested in the Millenium Development Goals and the principles of the ecosystem approach (Sheppard 2004, Smith and Maltby 2004, UNEP 2000). The protected area has the potential to benefit local communities and this should be established as a key objective with priority actions to guide annual work planning.

The management plan identifies the land reclamation area as a development zone, and provides the following descriptions for public awareness and community outreach in this zone.

> *"The program is directed at the settlers inside the area. The program is dealing mainly with the creation of appropriate communication channel between WRPA management unit and the settlers. These channels are represented in a) establishment of a permanent office for the protected area inside the reclamation area to increase the collaboration as well as help WRPA staff in different management issues, b) introduction of important and vital studies for the area as the bio-agriculture program, increasing awareness in the administration as well as the settlers of the area with the advantages of this program for them and in the same time for the protected area and c) raising the level of public awareness for school children to create new generation able to assist and support the nature conservation concept."*

In the assessment of outputs (appendix 2), only the key actions associated with each objective have been the main focus of attention. The more detailed actions throughout the management plan, such as this one concerning public awareness and community outreach were not systematically reviewed. To assist in monitoring plan implementation, this level of review on the more detailed actions should be done on an annual basis.

Taking into consideration the following indicators, a rating of 'stable' (compared to five years ago) has been given.

Indicators:

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Size/number	Size of the area	Area cultivated (fedan)	> 4000	**3000-4000** (note 1)	2000-3000	<2000	LR manager
	Demographic	Total no. individuals inside the LR community	> 6000	5000 - 6000	**4000 - 5000**	< 4000	Periodic survey (note 2)
Condition	Economic benefits	Direct employment by WRPA (% of total no. of WRPA staff)	**< 5**	5 – 7.5	7.5 – 10	>10	WR records
	Productive systems	Amount of water pumped to LR area (m3 / second)	> 4	3 - 4	**2 - 3**	< 2	Pumping station records
Management Context	Impacts	No. of new invasive species found/year	> 1	1	0	0	Monitoring records (note 3)
Management Context	Impacts	Area of spread of invasive species (% of Springs Area)	> 25	11-25	0-10	0	Monitoring records (note 3)

Notes/reasons for these ratings:

In general, until now, this development is not considered to have caused a critical threat to the protected area's high value resources. A 'very good' rating is considered to be within the level of sustainability.

(1) This represents the current situation, however, infrastructure is increasing and water quantity is a limiting factor of significant concern. Therefore this fair rating is at risk of decline.

(2) These ratings are arbitrary.

(3) The current rating is not known.

3.1.5 Summary of Actions:

- Enhance the management plan with respect to land reclamation by including an objective (a desired outcome) and key actions.

- Seek agreement with Ministry of Agriculture to stop any further land reclamation inside WRPA, controlling the fish farms, and promoting the prevention of the introduction of invasive species.

- Seek agreement with Ministry of Irrigation to increase the water pumped into the lake.

- WRPA should enhance the information, education and communications program for local communities inside WRPA.

- Set a plan for signposts inside WRPA to direct the communities toward the proper behavior.

3.2 Other Communities Within WRPA

3.2.1 Description

This section deals with the economic communities within WRPA such as fish farmers, commercial fishermen, salt miners, cafeterias, oil extraction, and the monastery.

(a) Size/number:

1. Current size of the area (if inside PA): 17,600 fedan

2. Demographic Characteristics: (e.g., population, age structure, literacy, income levels, employment profile)

- Total population size having activities inside the above area, is about 2100 individuals including fishermen, salt miners, cafeterias, oil extraction, monastery.

- The individuals involved in the above-mentioned activities are mostly adults.

- 10% from the total communities inside WRPA are educated (includes oil extraction and monastery) while the other 90% are not educated (includes fishermen, salt miners, and cafeterias).

- The income levels for communities inside WRPA vary tremendously. It ranges from 200 LE/month for fishermen, salt miners, and cafeterias to 2,000 LE/month for oil extraction workers.

(b) Condition:

1. Economic benefits derived from PA: (e.g, direct employment, indirect tourism)

- Use of the resources provides direct employment to the workers. No economic information about employment is available. The number of people employed in the various activities was not readily available.

- The WRPA business plan (in preparation) lists the lease payments (revenues to government) that are paid by leaseholders; payment of leases suggests that the economic activities are viable.

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

- Lakes, soil, underground crude oil and springs are the main productive systems available to the communities inside WRPA.

3. Use of natural resources (inside and outside protected area)

- Commercial fishermen are using both lakes for their fishing activities.

- Fish farmers have about 90 intensive (cement) ponds and 30 extensive (sludge) ponds, occupying most of the area between the Upper and Lower lakes. Approximately 20 cage operations have operated in the Lower Lake in the past, though only one was operating at this time. Water from the Upper Lake is diverted into the ponds and later flushed into the Lower Lake.

- Salt miners are using the soil for their salt collection activities.

- Cafeterias are using the beach, waterfalls and scenery of the lakes and desert for ecotourism.

- Oil company is using the underground oil resources inside WRPA.

- Monastery is using the water from the springs and land area for gardens.

(c) Management Context:

1. Impacts of community on conservation priorities: (e.g., on key ecosystems, species, boundary, grazing, poaching, etc.)

- Garbage is the main impacts of the ecotourism activities generated by the cafeterias.

- The potential depletion of the underground water of the springs from the monastery's use of water for the garden and domestic needs, is a concern.

- The garden of the monastery is a source of invasive species and its related diseases in addition to the garbage coming out of the monastery.

- Fish stocks in the two lakes are affected by fishing activities, however these are artificial populations, that are maintained through annual introductions.

- Salt miners have their negative impacts (still not critical threat) on the soil and their activities need to be regulated and controlled by WRPA.

- Use of water by the fish farms increases nutrients which are released into the Lower Lake.

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

- The Rangers feel there is co-management between WRPA and the fishermen whereby WRPA puts specific regulation for controlling the fishing activities in the lakes by determining the type of the net, the size of the mesh, the size of the fish collected, etc., and the fishermen follow these rules.

- In general, greater efforts are needed to improve collaboration.

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Over fishing	High	Medium	Medium
2.	Fish farming activities	High	High	High
3.	Human population size	Low	Low	Low
4.	Agricultural and communities sewage	High	High	High
5.	Introduction of invasive species	Low	Low	Low

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
6.	Decline of water levels in the lakes	High	High	High
7.	Over use of water from Upper Lake	High	High	High
8.	Low environmental awareness	High	High	High
9.	Human disturbance	Medium	Medium	Medium
10.	Garbage	High	Medium	Medium
11.	Pollution from oil company	Low	Low	Low

3.2.2 Threat Analysis:

Threats	Actions
Over fishing	• Protocol with Fish Authority to stabilize the no. of licenses for fishermen working in the lakes, and also to provide WRPA with periodic technical reports about the fishing activities in the lakes. • Agreement with the environmental police for regular follow up of fishing activities in the lakes.
Fish farming activities	
Human population size	• Agreement with Ministry of Agriculture to stop any further land reclamation inside WRPA, control the fish farms, and prevent introduction of invasive species.
Agricultural and communities sewage	
Introduction of invasive species	
Decline of water levels in the lakes	• Agreement with Ministry of Irrigation to adjust its plans to allow an increase in the water pumped into the lake.
Over use of water of the Upper Lake	
Low environmental awareness	• WRPA should enhance the IEC program for local communities inside WRPA. • Set a plan for signposts inside WRPA to direct the communities toward the proper behavior.
Human disturbance	
Garbage	
Pollution from oil company	• Agreement with the Oil Company for the mitigation measures for any future pollution.

3.2.3 Management Objectives and Actions:

Objective 2 in the WRPA management plan is for *"human and economic activities"*, which are mostly covered in this group of communities. The overall status of these communities today compared to five years ago is "improving". This rating was given because the indicators noted below are generally favourable. There have been some expansions in economic activities in some areas and declines in others (refer to appendix 2).

The more specific actions in the management plan for this objective are being implemented however there are important needs to be addressed, as outlined below under actions. Among these is the need to enhance overall knowledge and management of fisheries resources, as recommended by Fouda and Fouda (2002, chapter 11 concerning fisheries management).

The actual processes of co-management are not operating and likely not leading to the potential benefits that could be realized.

3.2.4 Indicators:

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Size/number	Number	No. of fishermen fishing in the lakes	> 3000	2500 – 3000	2000 - 2500	**< 2000** (note1)	

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
	Number	No. of cafeterias inside main visitor area	< 6 or > 12	11-12	9-10	**6- 8** (note 2)	
Condition	Use of natural resources	Weight (tons) of collected adult fish / year	> 5000	4000 – 5000	3000 - 4000	**3000** (note 3)	
	Use of natural resources (economic)	No. of visitors to WRPA	<50,000	50000-100000	**100000-150000**	150000-200000 (note 4)	
Condition	Use of natural resources (social-quality of recreational experience)	No. of visitors to WRPA	> 300000	250000 - 300000	200000 - 250000	**< 200000** (note 5)	
Management Context	Impacts of community on conservation priorities	Amount of garbage (tons) / year collected from all cafeterias	>60-70	50-60	40-50	**<40** (note 6)	
	Impacts of community on conservation priorities	No. of illegal fishers without license / year (based on violations)	**>15** (note 7)	10 - 15	6-10	<5	

Notes/reasons for these ratings:

(1) These indicator rating are according to the available data. Until now this is not considered to cause a critical threat to the lakes. Therefore, the current number of fishermen is estimated to be sustainable, based on limited information, so this has been chosen as a 'very good' condition. More research related to fish productivity and suitable habitat (with consideration of declining water levels) may help to more accurately determine yield estimates, and as a result, the optimum number of fishers.
(2) The existing number of visitors is approximately 150,000 and the estimated optimum number of visitors is 200,000. There are presently 6 cafeterias plus the safary camp (now closed) = 7 cafeterias. There may be room for more; however it is unclear if more would have a negative effect on existing cafeterias which may cause a reduced level of quality. There is uncertainty about this indicator, however, it is retained here as a means to generate discussion about its validity.
(3) This is the existing harvest level, thought to be sustainable, based on 2000 fisherman in WRPA, in total. This indicator should be discussed with the Ministry of Agriculture (fisheries authority). Currently, WRPA does not have a mechanism to determine fish stocks.
(4) Normally, a higher number of visitors would indicate more economic benefits, however, this indicator must be considered in the context of the optimum number of visitors for carrying capacity, which is estimated to be 200,000. This indicator is based on Visitor Monitor numbers, not ticket sales. Visitation is concentrated on feast days. Most days, the MVA operates with low numbers but on the feasts, there is a huge over-capacity problem.
(5) This is a measure of quality of recreational experience—fewer people means higher quality.
(6) Based on 1 kg / family group and the optimum number of visitors of 200,000 divided by 5 (average family size) = 40,000 kg.
(7) Co-management agreement with the fisheries authorities is needed. This indicator needs to be grounded with patrolling effort. As it is, this may not be a good indicator.

Missing data: Fish productivity and habitat availability to determine production and yield estimates.

3.2.5 Summary of Actions:

- Intensive meetings and follow up are urgently needed with Ministry of Agriculture and Irrigation to fix and control water demands for aquaculture and land reclamation activities.
- Licensing procedure should be updated to consider inputs from protected area management unit before issuing any license.
- Market alternative days (increase visitation at other times) and alternative opportunities (other locations) to reduce the impact on feast days and to enhance benefits in other periods.
- Develop "memorandums of understanding" for each individual economic community to outline key problems and agreements on solutions, including a code of conduct for all parties.
- Ecotourism opportunities, facilities, etc need a clear strategy and time table for implementation in other parts of WRPA.
- Improve knowledge and management of fisheries, including the following (drawing from Fouda and Fouda, 2002):
    - Re-establish the committee to manage fisheries, including consideration of the effects of aquaculture on other activities (water quantity and quality).
    - Determine suitable indicators to measure effective management and benefits (per previous section).
    - Hire a fisheries biologist ranger to coordinate management, patrolling, monitoring and awareness programmes with fish farmers, commercial fishermen and cage operators.
    - Prepare a fisheries management plan.
    - Develop a fisheries management model to correlate introductions, growth and yield, and harvest. This should become a useful tool in setting sustainable harvest limits.
    - Study benthic communities, as well as infectious or parasitic diseases originating in fish farms that may have an impact on fisheries and human health (including presence of Schistosoma).
    - Construct filtering or sedimentation ponds to reduce organic loading and eutrophication of the Lower Lake.

3.3 Local Communities Outside WRPA

3.3.1 Description

This section deals with communities outside WRPA that are nearby or bordering the protected area (e.g., Yousef Sadeek & area, Rayan, Hana Habbib (solid waste site), Hamouli, Shaalin, Tunis). It is not possible to deal with all of them individually in an initial review. However, the findings here may be considered on a case by case basis.

(a) Size/number:

1. Demographic Characteristics: (e.g., population, age structure, literacy, income levels, employment profile)

- No data available about the communities outside WRPA, which is considered a gap in the WRPA database; there is a need to cover it in the near future.

(b) Condition:

1. Economic benefits derived from PA: (e.g, direct employment, indirect tourism)

- 25% of WRPA staff come from the surrounding communities (a substantial increase from 5 years ago).

- There are some businesses (e.g., cafeterias, pumping station, guest house) outside WRPA, which receive indirect benefits from tourism activities inside the protected area.

- Most community members surveyed said the protected area provides no benefits to them (appendix 4).

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

- The areas outside WRPA have the full range of productive systems, including fish farming, agriculture, livestock, mining). Agricultural runoff (sewage) in about one-third of Fayoum Governorate, eventually discharges into the two lakes.

- Runoff (sewage) from fish ponds around WRPA discharge into the canals which eventually feed the two lakes.

3. Use of natural resources (inside and outside protected area)

- Fishermen living outside WRPA are using both lakes for their fishing activities.

- Salt miners living outside WRPA are using the soil for their salt collection activities.

(c) Management Context:

1. Impacts of community on conservation priorities: (e.g., on key ecosystems, species, boundary, grazing, poaching, etc.)

- Fish stocks in the two lakes are affected by fishing activities by the fishermen living around WRPA which until now is properly controlled by WRPA.

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

- The Rangers feel there is co-management between WRPA and the fishermen in the surrounding communities, whereby WRPA put specific regulation for controlling the fishing activities in the lakes by determining the type of the net, the size of the mish, the size of the fish collected, etc., and the fishermen follow the rules.

- There are opportunities for the persons from the surrounding communities to work within the WRPA, however this should be balanced with providing employment to people within WRPA (land reclamation villages).

- There are local residents who have the interest and ability to contribute to WRPA, as witnessed by the following survey respondent (see box).

Survey Comment:

"I think the Tunis offcomer community could be much more involved with the PA management. Most of us have professional connections outside the area that could be exploited. Perhaps some of us could occasionally do volunteer work in the PA (such as litter collection!). And maybe some of us could act as an informal support group on some level—'Friends of Wadi el-Rayan'? Such a group could also of course involve other visitors to the PA, not just Tunis residents."

(d) Threats:

#	Threat	Extent (L, M, H, VH)	Severity (L, M, H, VH)	Threat Magnitude
1.	Over fishing	High	Medium	Medium
2.	Agricultural and communities sewage	Very high	Very high	Very high
3.	Introduction of invasive species	Low	Low	Low
4.	Low environmental awareness	Very high	Very high	Very high
5.	Human disturbance	Low	Low	Low
6.	Garbage	Low	Low	Low
7.	Initiate illegal tracks	High	Medium	Medium
8.	Over use of water	Very high	Very high	Very high

3.3.2 Threat Analysis:

Threats	Actions
Over fishing	• Protocol with Fish Authority to stabilize the no. of license for fishermen working in the lakes. • Agreement with the environmental police for regular follow up of fishing activities in the lakes.
Agricultural and communities sewage; Over use of water	• Agreement with Ministry of Agriculture for controlling the agricultural sewage and prevention of introduction of invasive species. • Awareness campaign and water use committee aimed at raising awareness and finding solutions for declining water inputs.
Introduction of invasive species	
Low environmental awareness, human disturbance, garbage, illegal tracks	• WRPA should enhance information, education and communications efforts for local communities outside WRPA. • Set a plan for producing brochures designed specifically for the communities outside WRPA.

3.3.3 Management Objectives and Actions

Refer to comments under 3.1.3 for suggestions about objectives for local communities.

The results of the community surveys carried out for this evaluation of management effectiveness (appendix 4) indicate that:

- The protected area does very poorly in informing surrounding communities.
- The level of cooperation between local communities and the protected area is very poor, and is much weaker than five years ago.

Although the local communities have experienced an increase in employment from the protected area over the last 5 years, the level of local cooperation and public awareness is lower. There are also important threats at play. Therefore a rating of 'stable' has been assessed.

3.3.4 Indicators:

Category	Key Attributes	Indicator	Indicator Ratings (current rating in **bold**)				Information Source
			Poor	Fair	Good	Very Good	
Condition	Economic benefits derived from PA	% of WRPA staff coming from the surrounding communities	< 25	**25 - 30**	30 - 35	> 35	WRPA records
	Productive system	Amount of water entering the Upper Lake (average m^3/second over a 5-year period) (note 1)	**< 6**	6-7	8	> 8	Ministry of Irrigation
Management Context	Impacts of community on conservation priorities	No. of violations by local community / year	> 15	**10 - 15**	5 - 9	< 5	WRPA records

Notes/reasons for these ratings:

(1) Refer to section 2.1.4 where the same indicator is used for the Main Visitor Area.

3.3.5 Summary of Actions:

- An enhanced awareness campaign and water use committee should be established, aimed at raising awareness and finding solutions for declining water inputs into the Rayan Lakes.
- Community socio-economic profiles should be researched and maintained to assist in planning and implementing programmes (e.g., IEC, employment opportunities, etc.).
- In response to community surveys for this evaluation, more effort should be made in the areas of public awareness, providing local job opportunities and supporting community development.
- Targets for employment from specific communities should be established, perhaps in the management plan. Presently, there seems to be a concentration of employment in certain local areas.
- Staff from the protected area should be encouraged to participate in local committees to increase the visibility of WRPA and the potential for active cooperation.
- A 'local benefits' initiative should be designed and implemented to include measurable economic benefits as well as less tangible social and ecological service benefits. Such initiatives could include the following examples:
    - Providing venues and marking for the sale of fresh fish to visitors.
    - Offering promotions and opportunities for local residents to visit the PA.
    - Providing opportunities for hiring horses or camels in the Main Visitor Area.
    - Providing training for local guides and assisting with marketing local services.

Part IV. Synthesis: Effective Management

Effective management of Wadi El-Rayan Protected Area is a complex business, 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 Wadi El-Rayan which encompasses strict protection (category II) and resource use (category VI) areas.

This evaluation primarily focused on the following:

- *Threats:* what are the threats affecting the key values in WRPA?
- *Outputs:* was the management 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. This table provides an overview of the threats affecting each of the 12 key values in WRPA (read down the columns) and the importance of the individual threats across the protected area (read across the rows).

These results show a very high degree of threat for one key value, local communities outside WRPA; 8 of the 12 key values have a high degree of threats; and 3 of 12 have a medium degree of threat.

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. (italics per Salafsky et al., 2003; additional elements were added to reflect the added focus of this evaluation on socio-economic perspectives).

The principle threats operating in WRPA are: declining lake levels and over use of water, poor facilities/services/planning, fish farming activities, low environmental awareness, agricultural and community sewage, and under use due to security requirements in some cases. As noted in the table, there are many other threats that have high or very high impacts on individual values, such as: exceeding carrying capacity, human disturbance or damage, visitor behaviour, 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 WRPA. There is little to no buffer. There will be a need to enhance patrolling, monitoring and public awareness activities.

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 WRPA Values

Threat	Fossils WHS	Springs	Rayan Lakes	Desert	Main Visitor Area	Visitor Centre	Safary Camp	Camping, Bird Hides	Tracks, Roads	Land Rec	Local Comm Inside	Local Comm Outside	Overall Threat Rank
Cooperation with PAMU	-	-	-	-	-	-	High	-	-	-	-	-	Medium
Facilities*	-	-	-	-	High	-	Medium	High	-	-	-	-	High
Fish farming activities	-	-	Medium	-	-	-	-	-	High	-	High	-	High
Fishing-over fishing & illegal	-	-	-	-	-	-	-	-	-	-	Medium	Medium	Medium
Fossils-collecting	High	-	-	-	-	-	-	-	-	-	-	-	Medium
Fossils-natural degradation	Low	-		-	-	-	-	-	-	-	-	-	Low
Habitat change	-	Low	High	-	-	-	-	-	-	-	-	-	Medium
Human disturbance or damage	Very high	Medium	Low	Low	-	-	-	Low	-	Low	Medium	Low	Medium
Image (bad)	-	-	-	-	-	-	Medium	-	-	-	-	-	Low
Invasive species	-	Medium	-	-	Medium	-	-	-	-	Low	Low	Low	Medium
Sustainable funding	-	-	-	-	-	Low	-	-	High	-	-	-	Medium
Low environmental awareness	-	-	-	-	-	-	-	-		Medium	High	Very high	High
Poaching	-	-	Low	Low	-	-	-	-	Low				Low
Pollution from oil company	-	-	-	Medium	-	-	-	-	-		Low		Low
Pollution-agricultural and communities' sewage	-	-	Medium	-	-	-	-	-	-	High	High	Very high	High
Pollution-garbage	-	-	-	Low	-	-	-	-	-	Medium	Medium	Low	Medium
Population size	-	-	-	-	-	-	-	-	-	High	Low	-	Medium
Tracks-poor accessibility	-	-	-	-	-			Medium	-	-	-	-	Low
Tracks-Initiating illegal tracks	-	-	-	High	-	-	-	-	-	-	-	Medium	Medium
Insufficient capacity & skills	-	-	-	-	-	Medium	-	-	-	-	-	-	Low
Visitor behaviour	-	-	-	-	High	-	-	-	-	-	-	-	Medium
Visitor use-exceeding carrying capacity of area	Medium	-	-	-	High	-	-	-	-	-	-	-	Medium
Visitor use-under use, security	-	-	-	-	-	Medium	Very high	-	-	-	-	-	High
Water-declining levels (input)	-	-	Very high	-	High	-	High	Very high		High	High	-	Very high
Water-deteriorating quality	-	-	High	-	Medium	-	-	-	-	-	-	-	Medium
Water-over use	-	Low	-	-	-	-	-	-	-	High	High	Very high	Very high
Threat status for each value	*High*	*Medium*	*High*	*Medium*	*High*	*Medium*	*High*	*High*	*High*	*High*	*High*	*Very high*	**Very high**

* Includes: poor wc's, signs, capacity of area, poor planning, low service. **Notes:** The method for summing low, medium, high and very high ranks (per TNC, 2000) was used. In this system, the first step is to apply these rules to the individual ranks (not yet summing the columns or rows): 3 High = 1 Very High; 5 Medium = 1 High; 7 Low = 1 Medium. Second, using the revised individual ranks, apply the following rules to find the sum for each column (the area) and row (threat): 2 very high=very high; 1 very high or 2 high=high; 1 high or 2 medium=medium; less than 2 medium=low.

5.0 Outputs and Outcomes

In part III (sections 1, 2 and 3) the management plan objectives (outcomes) and actions (outputs) were examined, and a status assessment was provided for each of the 12 values (table 2). Arising from that, actions have been identified to address the specific needs associated with the values and threats. These actions are compiled in 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[3]. The strategic considerations follow in the next section.

Table 2: Status of Key Values in WRPA

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:	
Fossils/World Heritage Site	⇧
Springs oasis (Gazelle)	⇧
Lakes (wetlands, shoreline, aquatic)	⇩
Desert	⇔
2. Ecotourism/Recreational Resources:	
Main visitor area (waterfalls, beach)	⇩
Visitor centre	⇩
Safary camp	⇩
Campsites and bird hides	⇩
Tracks	⇩
3. Community Well-being (socio-economic):	
Land reclamation villages (Lower Lake)	⇔
Other communities within WRPA (fishermen, salt miners, cafeterias, boat owners, oil extraction, monastery)	⇔
Local communities outside WRPA (Yousef Sadeek & area, Rayan, Hana Habbib (solid waste site), Hamouli, Shaalin, Tunis)	⇔

[3] Refer to the respective section of the report for the reasons for the ratings.

Part V. Toward the Future

6.0 Strategic Considerations

6.1 Clear Direction, Action and Evaluation

This evaluation has demonstrated that good direction in the management plan improves effectiveness. Clear direction should lead to action.

The positive rating for the Hitan World Heritage Site and Springs Area is a reflection of the priority they have received in the management plan, in funding programmes and by staff implementing the programmes within their control.

The poor condition of the lakes and the declining ecotourism resources are substantially the result of declining lake levels; this threat is not adequately emphasized in the current plan and it is beyond the direct control of WRPA management unit. This means that extra effort is required to establish collaborative mechanisms and a focussed public awareness initiative.

The stable ratings for community well-being are an estimation in the absence of specific objectives and management plan actions against which to measure change and progress. In line with the Millennium Development Goals, a focus for WRPA should include poverty reduction and community development.

A strategic priority, therefore, is to ensure that clear objectives are established in the management plan with associated actions. To this end, annual reporting on the implementation of the management plan is recommended. Preparation of an annual work plan is a useful way to translate management plan actions into reality. Also, the management plan should include a section or an appendix that summarizes the actions (commitments) stated in the plan. This would assist the park manager in preparing an annual report on implementation of the management plan.

As part of the management plan review, a long range vision should be prepared for the management of WRPA in 2020. The most important actions to achieve the vision (or to avert major looming problems) need to be specified. Adequate in-flow into the lakes is one such example that must be resolved to avert a multiple impacts and loss of socio-economic benefits. The detailed actions from this review are summarized in appendix 3 and should be integrated into the management plan and/or annual work plans.

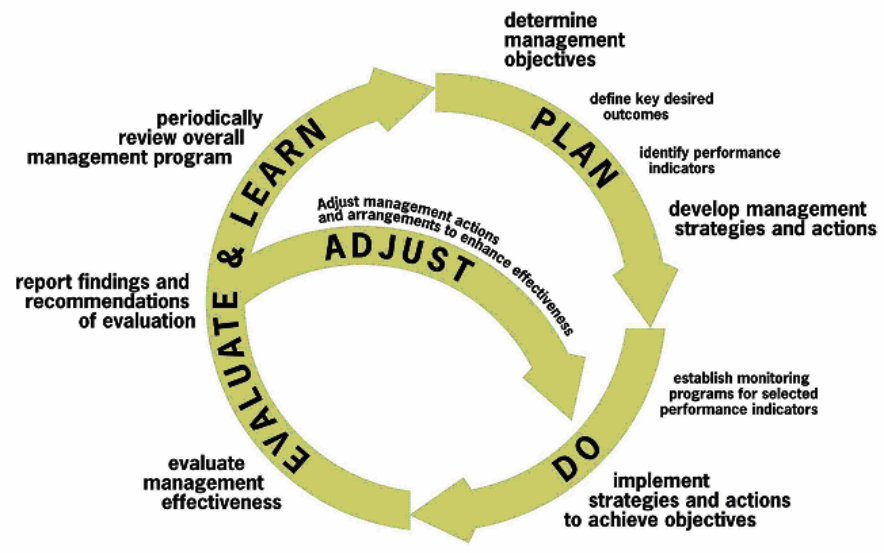
The management cycle for the Tasmanian Wilderness World Heritage Area (see diagram) provides a sensible and practical illustration of the elements of good protected area management.

6.2 Shift Priorities: Development to Protection and Management

A substantial area of WRPA is classified as IUCN category VI resource protected area. Here, there are too many activities with conflicting goals concentrated in the development/utilization zone. Signs of wear and tear are prominent, such as erosion, uncontrolled vehicle use off of the tracks, washouts caused by the draining of fish ponds, increasing infrastructure and uses of fish farms, grazing, increasing use of water, etc.

The focus in this area has been on development with little effort by the economic stakeholders on protection and management. Consequently, parts of the area tend to look more like an industrial or construction zone than a protected area. At some point, the infrastructure required to meet the needs of fish farming should be completed. The focus should shift away from development toward sustainable management. The following suggestions are offered to facilitate this shift:

Management cycle for the Tasmanian Wilderness World Heritage Area
(Jones 2005)



- Confirm the needs of the fish farms and then strictly enforce a development control programme. All development should be subject to the written authorization (a work permit) by the protected area Manager. Written authorizations should be based upon site inspections by Rangers and should include *'conditions of approval'* that are written out on the letter of authorization, and also signed by the applicant. These conditions should then be monitored and enforced. Verbal approvals in any circumstance tend to confuse the management system and should not occur.

- Maintenance of roads should be shared with the stakeholders, particularly those that are major beneficiaries and those that damage them (e.g., draining fish ponds that wash away the tracks into the canals and lake). Options for achieving this should be examined, including for example, increasing the lease fee, doing in-kind repair work to a higher standard than is currently done now, or directly paying contractors for road work.

- Enhanced monitoring and patrolling is warranted. A Fisheries Ranger and Community Guard should be hired (possibly sponsored / paid for by the fish farming association and appointed to the WRPA staff). This would improve overall coordination and collaboration with the community.

- Regular collaboration meetings should be held to improve communications and management priority setting.

- Management of the fish farms to reduce their impacts. WRPA, together with the fish farming community and other agencies should work together to develop a best practice guideline on fish farming, taking into consideration the objectives of the protected area.

6.3 Review and Rationalize the Indicators

Establishing and implementing suitable indicators is a large challenge for most organizations. However, regular reviews of management effectiveness can improve accountability, especially when the results are shared with stakeholders, local communities, government, NGOs and others. It can also support and encourage corporate and private donations by shareholders who want to be assured that there contributions are being wisely invested. This requires accurate information.

Additional work is required now and on an ongoing basis to further develop the indicators and monitoring systems, and then to implement them. A start has been made with the existing protocols 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. Some key steps and needs include the following:

- Describe each indicator in detail in terms of the precise measure and sources of data that will be used.
- Describe the field monitoring and data compilation protocols for making any measurements and how the indicator will be used in reporting.
- Set threshold limits for each indicator to know when acceptable conditions are being exceeded.
- Compile historical data that will assist in establishing baseline conditions.
- Identify research that may be necessary to further study and refine important indicators.
- Adjust the monitoring plan and carry out monitoring and data collection.
- Use the data to assess changes in conditions or the status of threat. Prepare regular reports on the status and management effectiveness of WRPA.
- Establish a data management system to ensure that data is properly stored and safeguarded (backed up).

6.4 Collaboration

Real collaborative management is needed to engage stakeholders, government departments, NGOs and local communities. Regular meetings with each stakeholder is necessary, and a collaborative management committee for the protected area (or series of committees for particular areas or issues like water quality and quantity) should be established to make collaboration more formal and accountable. A staff member should be appointed to oversee this area.

6.5 Sustainable financing

The results of the national RAPPAM (Fouda et al., 2006) (appendix 5 for WRPA) and this report emphasize the numerous needs to support effective management. WRPA is not alone in Egypt in terms of its need for more base level funding (see box), however, it has benefited from the substantial investment through the EIECP (two phases), the contributions from Grand Sasso National Park, Italy through the twinning agreement, the research agreement with University of Michigan and at the time of writing, from investments through the US-Egypt Fund to support a new fossil laboratory.

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)

Such investment, while beneficial in making improvements can also introduce higher operating costs to maintain infrastructure in the longer term, after projects have come to an end and financing has ceased. Staff have first hand experience following the first phase of the EIECP. For example,

the Springs Outpost and Visitor Centre were constructed during phase 1, and after, considerable difficulty was experienced in maintaining the facilities and supporting staff in the outpost to a sufficient level. The new Hitan infrastructure is further away and subject to a degradable access road; the potential for future challenges looms in the minds of experienced staff.

Therefore, sustainable financing is a strategic issue. Diversification of funding sources should be sought, and perhaps more importantly, alternative mechanisms for retaining funding at sustainable levels is urgently needed to ensure a basic level of protection.

This is doubly important because international marketing of the World Heritage Site will take a few years to gear up (e.g., updates to travel books), bringing more tourists at a point in time when the EIECP will be completed and presumably funding will be severely constrained.

Funding should be more sustainable in the long term if it is derived from several sources, so that if one source is lost, the impact is not devastating. Sources might include the following:

- A new allocation from the Environmental Fund given that Wadi El-Hitan is a new operation that has not previously been funded.
- An active corporate sponsorship programme (e.g., a company could sponsor research and monitoring).
- Establishment of an NGO, such as the Friends of Wadi El-Hitan to support educational endeavours.
- Donor funds, focused on specific elements.
- Research agreements, such as the current tripartite agreement with University of Michigan and EMRA.

To achieve sustainable funding, several actions and changes to the current context are needed. For example:

- An examination of possible models that could work in Egypt is needed. Cult-Nat, among other models, should be examined. From this, a sustainable financing strategy should be established.
- Staff should be assigned full time to fund raising and relationship building. For this, new skills are needed that do not presently exist with the staff. Therefore a training and development initiative is needed.

Staff must become more product oriented to support the fund raising efforts, for example by producing regular reports and newsletters for ‘shareholders’ to report on conservation actions, research, monitoring and educational developments.

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Appendices

1. Workshop Agenda and Participants

2. Evaluation of the Management Plan (A. Management Objectives B. Management Actions)

3. Summary of Recommended Actions Arising from this Evaluation

4. Results of Stakeholder, Community and Visitor Surveys

5. RAPPAM Results for Wadi El-Rayan Protected Area

6. Site Level Management Effectiveness Evaluation Procedure Used in This Study

Appendix 1. Workshop Agenda and Participants

A five day workshop was held in July 2006 to examine the current status of WRPA, threats, and the overall effectiveness of management. The following individuals participated in the workshop: Mohammed Ali, Wed Abdel Latif, Mohamed Hwihi, Mohammed Mayhoob, Mohamed Talaat, Arafa El-Sayed, Walid Ahmed, Mohamed Effat, Wail, Mahmoud Ahmed Mokhtar, Ayman, Gebelly, Ahmed (Hitan), Regab, Hossam Kamel, Khaled Allam, Dan Paleczny.

Agenda

July 26-30, 2006

	Day 1	Day 2	Day 3	Day 4	Day 5
	Wednesday, 26	Thursday, 27	Friday, 28	Saturday, 29	Sunday, 30
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 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 the Management Plan

Part A. Management Objectives **Part B.** Plan Actions

Management Plan Approval Date and Period: 2002 - 2006 **Date of this Review:** July-August 2006

A. Management Objectives

Objectives (from management plan)	**Overall Status Compared to 5 years ago** (declining, stable, improving) (description)	**Evidence** (1. Estimation 2. Expert opinion 3. Results of PA patrolling and monitoring 4. Results of technical or research study, management effectiveness evaluation)
1. Natural Resources Management	Improving for biodiversity and fossils, declining for water resources	1, 3 (monitoring reports), 4
1.1 Conservation of biodiversity	**Improving** • Protection has been strengthened through closing the springs area (core biodiversity zone) to visitors, though there is concern over potential over-use of water resources for irrigation in the second spring and domestic use by the monastery • Effective monitoring program for plants, mammals and water	1-Concerning protection and possible overuse of water (under study in 2006) 3-Monitoring reports for plants, mammals and water
1.2 Conservation of water resources	**Declining** • Direct observations indicate severe decline in water levels of the Lower Lake through the monitoring program of plants and water quality • The water level is still declining after long negotiations with the Ministry of Agriculture/Ministry of Irrigation up to date	4-A complete study has been done by water research institute (ministry of irrigation) with collaboration of WRPA (meeting, monitoring results) introduced the current situation and expected scenarios of water in future
1.3 Conservation of geological formations and fossil sites	**Improving** • Higher level of protection through world heritage status in 2005. • Project plan for protection and eco-tourism, which addresses IUCN recommendations. • More staff, permanent camp, truck, field equipment. Routine patrolling and monitoring. • Tripartite research agreement with University of Michigan and Egypt Geological Museum providing a focus for research and technical training.	3-Visitor monitoring records 4-Results of management effectiveness evaluation, 2006; report to UNESCO on state of Wadi El-Hitan (2005), World Heritage nomination decision, IUCN technical evaluation with recommendations.
2. Human and economic	**Stable** • Number of fish cages decreased from 3 stakeholders to 1.	3-Direct patrolling and monitoring observations by WRPA staff

Objectives (from management plan)	**Overall Status Compared to 5 years ago** (declining, stable, improving) (description)	**Evidence** (1. Estimation 2. Expert opinion 3. Results of PA patrolling and monitoring 4. Results of technical or research study, management effectiveness evaluation)
activities	• 6 cafeterias (in 2002) instead of 3. • The 2 fish farms are currently operating. The extensive one is extending the activity without new license. • Oil company requested expansion in mid 2006 (pending at time of writing). • Ice factory is not operating since 2003. • Pumping station occupying the same area with the same activities. • Monastery is expanding in the Springs Area without written authorization. • Safary Camp has closed.	
3. Public awareness and environmental education programs	**Declining** • Report from Ministry of State for International Cooperation indicated that the efforts of the project towards the education and awareness programs have been limited. • Surveys for the evaluation of management effectiveness of stakeholders, communities and visitors indicated poor levels public awareness (see separate appendix). • The near future outlook appears positive as a result of programme planning in 2006.	4-Report from Ministry of State for International Cooperation, 2006. 1-School visits have been made; programme planning has been undertaken in 2006

B. Management Actions

For this evaluation, actions in the management plan were listed and the following codes were applied to assess implementation.

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
5. No evidence available

Focus of the initiative:

1. Protection, conservation, rehabilitation: includes patrolling, legal actions, boundary, etc.
2. Ecotourism, recreation: providing services and facilities
3. Community well-being: socio-economic support and benefits
4. Information, education, communications: services, products, programmes
5. Operations: taking care of facilities, roads, staffing, administration, etc.
6. Inventory, monitoring, assessment, reporting, planning: includes EIA, management effectiveness, studies about values, management planning

Management 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	Focus
1. Natural Resources Management ***1.1 Conservation of biodiversity.***				
1.1.1 Preventing of illegal hunting.	1	• Implementing clear schedule for patrolling and law enforcement to be applied by recently recruited personnel (who need more experience about the area) and supervised by management unit. • Patrolling is carried out during the hunting season, arrests are made and court actions followed. • Need to issue newspaper release following successful court cases, as a means to increase profile and warnings.	3	1
1.1.2 Limiting of all sorts of habitat destruction.	2	• Currently carrying out hydrological study and Environmental Impact Assessment before permitting monastery to construct pipe line for pumping springwater for domestic use.	2, 4-Hydrological study and EIA, when completed	1
1.1.3 Monitoring programme.	1	• Some programes are currently operating (water quality, vegetation, fish monitoring, paleontology and visitors surveys) while some others need to be resumed for mammals, birds, developing WR GIS maps and economic activities. • Improve continuity of submitting monitoring reports.	4-Monitoring reports introduced until 2003 4-New maps	
1.2 Conservation of water resources.				
1.2.1 Monitoring fish farming activities.	1	• Patrolling; need for follow-up on reports to take action on infractions. • Patrolling schedule with objectives and actions should be strictly applied.	3	1

Management 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	Focus
1.2.2 Preventing of any illegal discharging of different pollution sources to the water of the lakes e.g. illegal fishing activities that use decayed remains, vehicle cleaning beside the body of the lake system.	1	• Resuming awareness and communication programs with fishermen which has been lost in recent years.	3-Observations coming from patrolling and monitoring activities	1, 3
1.2.3 Limiting of man made fires that increase the enrichment of the water of the lakes with inorganic elements.	3	• Need to study the fire effects on the wetlands for grazing benefits and restore/maintain healthy wetland system.	1, 3-Results of the study will be ready by the end of 2007	1
1.2.4 Avoiding the wastewater discharging from the land reclamation scheme.	4	• No information available, indicating this has .ot been a priority or a completed action. • Need to re-assess this action and correct patrolling and monitoring programmes in response to the direction.	5	
1.2.5 Water quality monitoring program for the 2 Rayan Lakes and springs.	2	• This monitoring programme is strictly following the schedule with results being analysed by a Cairo lab.	3	1
1.3 Conservation of geological formations and fossil sites.				
1.3.1 Keeping and protecting the naturally stored fossil remains.	1	• As of January 1, 2006 a permanent outpost tent camp was established with a core staff of 4. Patrolling and monitoring are their main duties, along with selling tickets, maintaining tracks and facilities, and implementing site projects.	3	1
1.3.2 Developing a site plan that ensures the control of the public use of the area for the scientific, educational and eco-tourism purposes.	1	• Site plan is part of the World Heritage Area project plan developed in 2005. It reflects the recommendations of the IUCN technical review for the UNESCO nomination. It focuses on providing ecotourism benefits with essential management infrastructure.	4-Project plan, 2005	1
1.3.3 Controlling the illegal access of the vehicle tours to the valley that can adversely affect the fossil remains.	2	• For many years staff have guided visitors when possible. The on-site presence of staff, as a result of the permanent outpost tent camp has improved this action. • At the time of preparing this report, the valley was being physically closed to all vehicular traffic using large stones. Options for closing the valley were examined and documented.	3	1
1.3.4 Fossil monitoring.	2	• As of January 1, 2006 a permanent outpost tent camp was established with a core staff of 4. Patrolling and monitoring are their main duties. • Fossil photo monitoring program should be resumed.	3	1
1.4. *Patrolling and law enforcement*	2	• Patrolling scheme should be elaborated and effectively	3	1, 5

Management 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	Focus
		implemented to control illegal hunting and other illegal processes. • Police powers for arresting violators were issued to 2 additional rangers in 2006 (one has since left, leaving 2 with police powers; however police powers are recommended for 3 additional rangers.		
2. Human and economic activities.				
2.1 Promoting wise exploitation of the natural resources present such as the water of the lakes, which can be greatly affected by the fish farming and land reclamation activities.	1	• Intensive meetings and follow up are urgently needed with Ministry of Agriculture and Irrigation to fix and control water demands for aquaculture and land reclamation activities. • Rangers visit areas such as land reclamation. • See part 3 for further actions related to public awareness.	1 4	1
2.2 Conserving the natural resources of the protected area through the high level control of the licensed activities (license format and restricted eligibility for the EIA studies of the different activities).	1	• Licensing procedure should be updated to consider inputs from protected area management unit before issuing any license.	1, 3	1
2.3 Identifying and promoting the development of potential activities such as ecotourism in alignment of management goals.	2	• Several steps have been taken towards Wadi el-Hitan as a promising eco-tourism site through declaration as a World Heritage Site in 2005 and development planning in 2006. • Ecotourism opportunities, facilities, etc needs a clear strategy and time table for implementation in other parts of WRPA. • Signposting plan is currently underway.	4-Wadi el-Hitan site plan	
3. Public awareness and environmental education programs.				
3.1 Promoting WRPA as a valuable recreational and educational area.	1	• Information, education, communications plan was prepared in 2006 and is being implemented (e.g., outdoor display panels, brochures, school visits, etc.). • Awareness and educational plan should be properly implemented.	1 4-IEC plan, 2006	4
3.2 Influencing policy makers and other key players by highlighting the economic significance of the protected area and how judicious management can create sustainable and growing real income.	4	• Awareness and educational plan should be properly developed (targeted) and implemented. • Evidence about applying the program should be provided.		4
3.3 Improving the accountability of license holders operating inside the protected area.	1	• The effectiveness (outcome) of this action is unclear. • Awareness activities need to be further implemented. • There is an opportunity and need to develop collaborative management processes, which are really not happening.	??	4
3.4 Increasing the targets of environmental education and awareness program by WRPA staff (school children, lower-	2	• Information, education, communications plan was prepared in 2006 and is being implemented (e.g., outdoor display panels,	1 4-IEC plan, 2006	4

Management 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	Focus
middle income Egyptian nationals and upper-middle class Egyptian nationals and foreigners).		brochures, school visits, etc.). • Rangers have done environmental education fairs in the land reclamation area and school visits over the years. • A detailed educational strategy is still required.		
Summary Total of 20 actions	10 7 1 2 0	1 = Completed or part of an ongoing programme 2 = Implementation underway but not yet completed 3 = Planning is in progress 4 = Not commenced, action still worthy of implementation 5 = Circumstances have changed; action is no longer appropriate or necessary		Total/% by focus

Appendix 3. Summary of Recommended Actions

Value	Section	Action	Comment on Implementation
Fossils/ World Heritage Site	1.1.5	• The fossil monitoring programme should be resumed immediately to re-establish the baseline conditions.	
Fossils/ World Heritage Site	1.1.5	• A research strategy is needed to establish priorities related to the gaps and needs identified in the threat analysis (section 1.1.2), such as finding fossil locations, determining suitable measures for fossil degradation and establishing a suitable visitor carrying capacity. Further work on identifying and implementing suitable indicators is needed; some of these may require initial research to test.	
Fossils/ World Heritage Site	1.1.5	• Information needs should be reviewed in a broad context (e.g., survey and monitoring information about visitors, natural values, infrastructure, etc.) to ensure that all of the information needed is being collected. This management effectiveness report provides a basis for this action. Gaps in information should be identified, protocols monitored, and where necessary, new funding sought to undertake data collection.	
Fossils/ World Heritage Site	1.1.5	• Information management practices should be examined to ensure that data is properly stored, backed-up, and accessible for multiple uses in PA management. .	
Fossils/ World Heritage Site	1.1.5	• Police powers for rangers should be increased to provide effective and firm management of this high value resource.	
Fossils/ World Heritage Site	1.1.5	• The management plan needs to be reviewed to address the policy and future strategy for Wadi El-Hitan.	
Fossils/ World Heritage Site	1.1.5	• Sustainable financing is urgently needed before the EIECP comes to a close in 2008. As part of this, a financing strategy is needed and staff skills must be enhanced to undertake this kind of work. Refer to section 1.1.3 for details	
Fossils/ World Heritage Site	1.1.5	• The Hitan-Quatrani Joint Management Team should be put into practice.	
Springs Oasis	1.2.5	• Considerable work is needed to establish and implement suitable indicators.	
Springs Oasis	1.2.5	• Habitat supply studies to determine carrying capacity of the system for the gazelles is an important piece of missing information. University of Florence has expressed interest in gazelle research in the springs and may be able to assist with this.	

Value	Section	Action	Comment on Implementation
Springs Oasis	1.2.5	• More work on establishing collaborative approaches with the monk community is needed. Continued patrolling and enforcement of the laws is warranted.	
Springs Oasis	1.2.5	• Complete the hydrological study and continue with the Environmental Impact Study concerning the provision of water to the monastery.	
Rayan Lakes	1.3.5	• Re-invigorate meetings with the Ministries of agriculture and irrigation concerning water levels. Undertake an information campaign with these ministries and with related groups to educate people about the related problems and impact on social, economic and ecological benefits.	
Rayan Lakes	1.3.5	• Develop an education and awareness campaign about clean water, and the situation of WRPA 'at the end of the line', as a recipient of the run-off. The Governorate should also be targeted given their roles in establishing water treatment plants and developing tourism opportunities. Safeguarding the recreational values of WRPA should be a priority.	
Rayan Lakes	1.3.5	• Undertake further work on the development of suitable indicators. Where necessary and suitable, develop partnerships with other agencies (e.g., Oceanography Lab) for research and monitoring. Consider indicators to measure human health threats (e.g., coliform bacteria) in the lake water.	
Rayan Lakes	1.3.5	• Follow-up on land reclamation waste disposal.	
Desert	1.4.5	• As part of the management plan review, add a specific objective and actions pertaining to desert ecosystems.	
Main Visitor Area	2.1.5	• Improve the direction in the management plan to specify a recreational objective and associated actions.	
Main Visitor Area	2.1.5	• Enhance overall management of the area by increasing and focusing the staff activity on priority actions, including co-management with the economic stakeholders.	
Main Visitor Area	2.1.5	• As part of the water quality monitoring programme, include indicators to measure threats for human health (e.g., shistosomiasis, coli form bacteria).	
Main Visitor Area	2.1.5	• Take action on the feral dog population, including educating fish farmers to discourage them from keeping domestic animals.	

Value	Section	Action	Comment on Implementation
Visitor Center	2.2.5	• The Visitor Center hours of operation and programme of activities needs to be established and followed, including promoting the programmes through staff, literature and sign boards.	
Visitor Center	2.2.5	• There is a need to review the management plan direction for public awareness and outreach, taking into consideration the IEC plan. The long range (strategic) role of the protected area in environmental education (as a specific sub-component of IEC) is needed.	
Visitor Center	2.2.5	• Management plan direction has been established, however it appears that it is not carefully followed and translated into work plans, and then implemented. Accordingly, to enhance effectiveness, each programme area needs to include tracking, evaluation and reporting.	
Visitor Center	2.2.5	• Collaborative management requires a thoughtful process involving 'communications for behavioural change'. While this is recognized in the Information, Education and Communications Plan, a real effort to engage key stakeholders is necessary.	
Visitor Center	2.2.5	• There has been no evaluation of the outcomes of the specific public awareness actions. This can be a difficult area to address in terms of design and implementation of evaluations and may be an area for social research.	
Visitor Center	2.2.5	• A bi-annual IEC report should be prepared to summarise activities, statistics, challenges and solutions, and the plan of the action for the following six months. This should include the personal tours given by rangers at Wadi El-Hitan to VIPs and others.	
Safary Camp	2.3.5	• Undertake an evaluation of options for this facility (as described above).	
Safary Camp	2.3.5	• Prior to any further investment, there is a high need to resolve the security police issue and to determine through a business plan if there is a reasonable degree of assurance that such a facility can be profitable (or in the case of an EE facility, can pay for itself).	
Camping and Bird Hides	2.4.5	• There is a need to resolve the declining water issue. WRPA should take a lead role, with the Fayoum Governorate, to establish a water use/stakeholder committee to address the water quantity and quality issues. WRPA is an the 'end of the line' and is the recipient of the remaining flow. Investments in eco-tourism infrastructure local economic benefits are at risk.	
Tracks	2.5.5	• Establish a regular track maintenance programme. NCS has talked about establishing a national programme with the support of the army.	

Value	Section	Action	Comment on Implementation
Tracks	2.5.5	• Consider a partnership programme with others who have the proper equipment (e.g., the oil company or Yosef Saddeek town) or others who are beneficiaries (e.g., fish farmers) to maintain the tracks.	
Tracks	2.5.5	• Clarify the responsibilities for fish farmers if/when the track is washed out.	
Tracks	2.5.5	• Develop indicators for this value.	
Land Reclamation Area & Villages	3.1.5	• Enhance the management plan with respect to land reclamation by including an objective (a desired outcome) and key actions.	
Land Reclamation Area & Villages	3.1.5	• Seek agreement with Ministry of Agriculture to stop any further land reclamation inside WRPA, controlling the fish farms, and promoting the prevention of the introduction of invasive species.	
Land Reclamation Area & Villages	3.1.5	• Seek agreement with Ministry of Irrigation to increase the water pumped into the lake.	
Land Reclamation Area & Villages	3.1.5	• WRPA should enhance the information, education and communications program for local communities inside WRPA.	
Land Reclamation Area & Villages	3.1.5	• Set a plan for signposts inside WRPA to direct the communities toward the proper behavior.	
Other Communities Within WRPA	3.2.5	• Intensive meetings and follow up are urgently needed with Ministry of Agriculture and Irrigation to fix and control water demands for aquaculture and land reclamation activities.	
Other Communities Within WRPA	3.2.5	• Licensing procedure should be updated to consider inputs from protected area management unit before issuing any license.	
Other Communities Within WRPA	3.2.5	• Market alternative days (increase visitation at other times) and alternative opportunities (other locations) to reduce the impact on feast days and to enhance benefits in other periods.	

Value	Section	Action	Comment on Implementation
Other Communities Within WRPA	3.2.5	• Develop "memorandums of understanding" for each individual economic community to outline key problems and agreements on solutions, including a code of conduct for all parties.	
Other Communities Within WRPA	3.2.5	• Ecotourism opportunities, facilities, etc need a clear strategy and time table for implementation in other parts of WRPA.	

Other Communities Within WRPA	3.2.5	• Improve knowledge and management of fisheries, including the following (drawing from Fouda and Fouda, 2002):
		  • Re-establish the committee to manage fisheries, including consideration of the effects of aquaculture on other activities (water quantity and quality).
		  • Determine suitable indicators to measure effective management and benefits (per previous section).
		  • Hire a fisheries biologist ranger to coordinate management, patrolling, monitoring and awareness programmes with fish farmers, commercial fishermen and cage operators.
		  • Prepare a fisheries management plan.
		  • Develop a fisheries management model to correlate introductions, growth and yield, and harvest. This should become a useful tool in setting sustainable harvest limits.
		  • Study benthic communities, as well as infectious or parasitic diseases originating in fish farms that may have an impact on fisheries and human health (including presence of Schistosoma).
		  • Construct filtering or sedimentation ponds to reduce organic loading and eutrophication of the Lower Lake.	

Local Communities Outside WRPA	3.3.5	• An enhanced awareness campaign and water use committee should be established, aimed at raising awareness and finding solutions for declining water inputs into the Rayan Lakes.	
Local Communities Outside WRPA	3.3.5	• Community socio-economic profiles should be researched and maintained to assist in planning and implementing programmes (e.g., IEC, employment opportunities, etc.).	

Value	Section	Action	Comment on Implementation
Local Communities Outside WRPA	3.3.5	• In response to community surveys for this evaluation, more effort should be made in the areas of public awareness, providing local job opportunities and supporting community development.	
Local Communities Outside WRPA	3.3.5	• Targets for employment from specific communities should be established, perhaps in the management plan. Presently, there seems to be a concentration of employment in certain local areas.	
Local Communities Outside WRPA	3.3.5	• Staff from the protected area should be encouraged to participate in local committees to increase the visibility of WRPA and the potential for active cooperation.	
Local Communities Outside WRPA	3.3.5	• A 'local benefits' initiative should be designed and implemented to include measurable economic benefits as well as less tangible social and ecological service benefits. Such initiatives could include the following examples: • Providing venues and marking for the sale of fresh fish to visitors. • Offering promotions and opportunities for local residents to visit the PA. • Providing opportunities for hiring horses or camels in the Main Visitor Area. • Providing training for local guides and assisting with marketing local services.	
Strategic Considerations	6.1	• Ensure that clear objectives are established in the management plan with associated actions. • Prepare an annual report on the implementation of the management plan. • Include a section or an appendix in the management plan that summarizes the actions (commitments) stated in the plan. • Prepare a long range vision.	
Strategic Considerations	6.2	• Shift priorities from development to protection and management (see specific actions in section 6.2.	
Strategic	6.3	• A full review and rationalization of indicators is needed so that a suite of indicators can be established and	

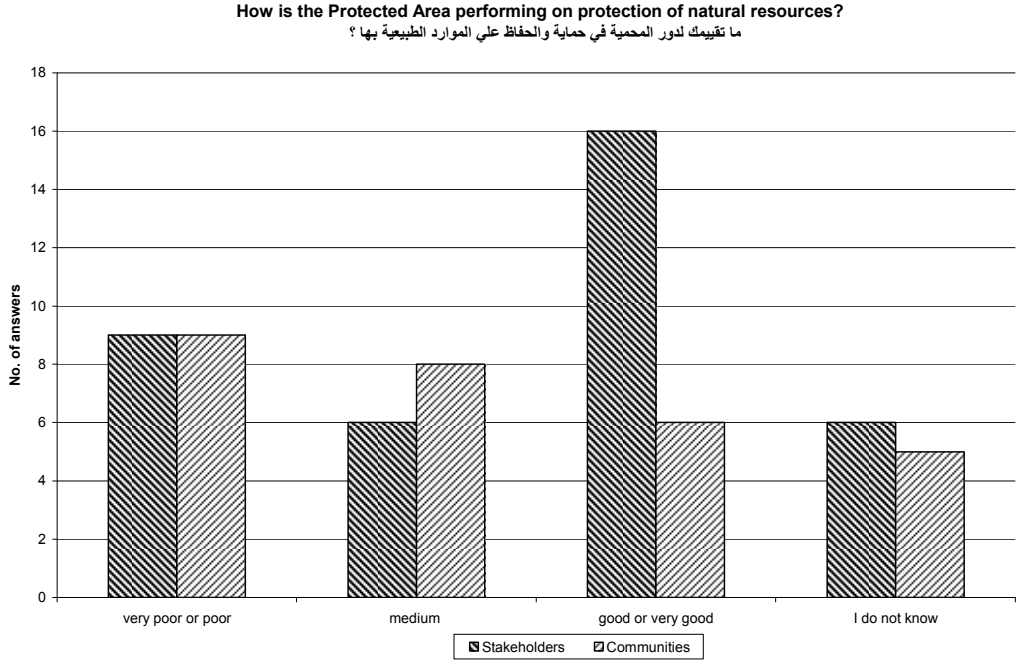
Value	Section	Action	Comment on Implementation
Considerations		monitoring efforts further fine tuned.	
Strategic Considerations	6.4	• Implement regular meetings with stakeholders. • Establish a collaborative management committee for the PA.	
Strategic Considerations	6.5	• Sustainable financing is urgently needed before the EIECP comes to a close. The establishment of Wadi El-Hitan as a World Heritage Site with the consequent development is equivalent to opening a new protected area. A government budget is needed for this new operation. • A financing strategy should be prepared. Sources of funding could be further diversified, and importantly, alternative mechanisms for retaining funding at sustainable levels should be found. Staff skills must be enhanced to undertake this kind of work.	

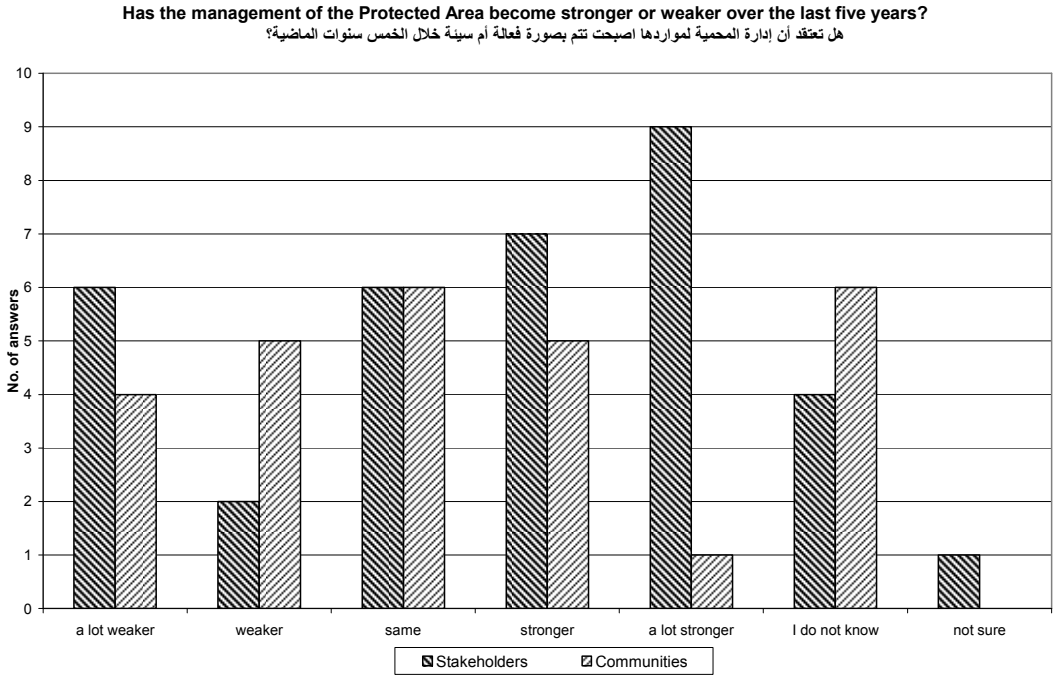
Appendix 4. Results of Stakeholder, Community and Visitor Surveys

Introduction:

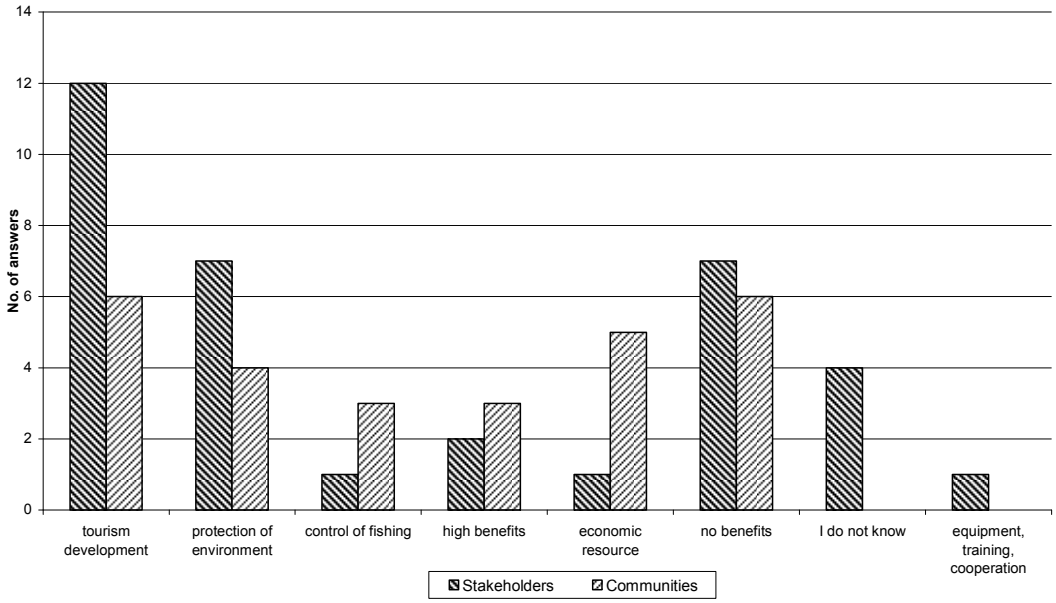
A survey of WRPA stakeholders, local communities and visitors was undertaken as part of the evaluation of management effectiveness to gain their perspectives. In total, 86 surveys were administered, including stakeholders (36), residents of local communities (27) and visitors (23). The first set of graphs present a comparison between stakeholders and local communities. The second set presents visitor survey results.

Stakeholder and Local Community Survey Results:

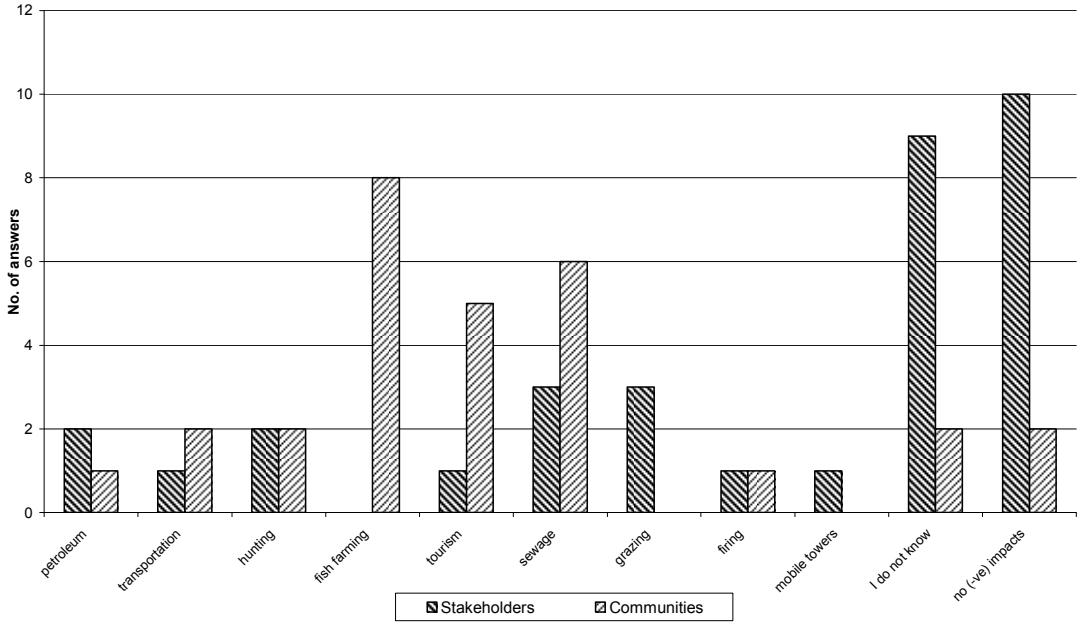




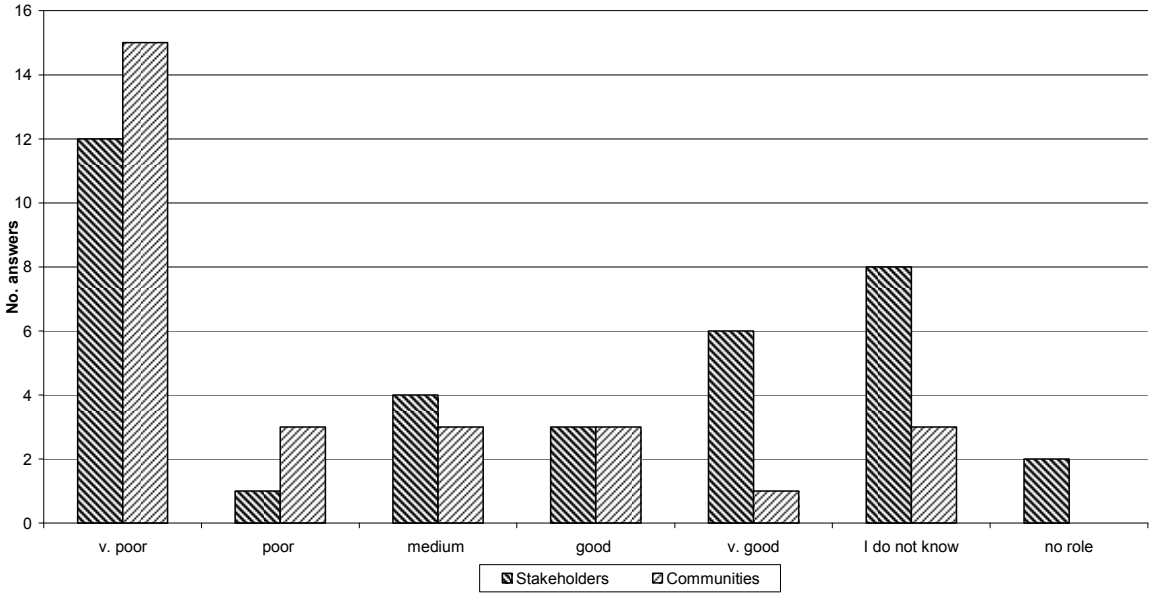
What factors contributed positively to the overall management of the Protected Area?
ما هي ايجابيات إنشاء/ وجود المحمية بالمنطقة؟



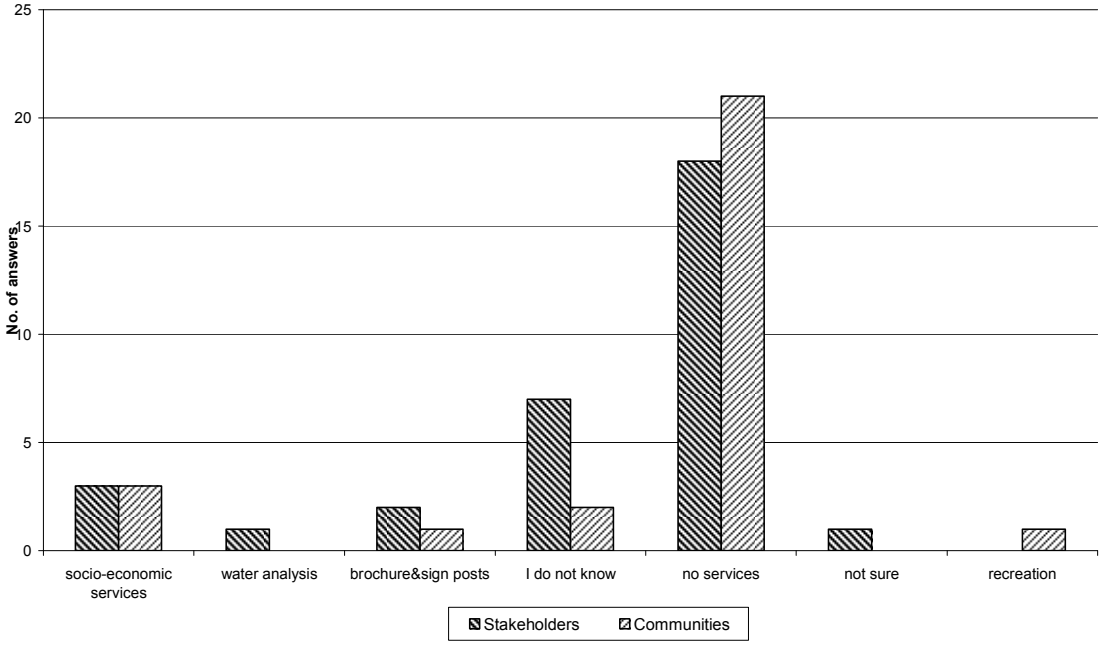
What activities are happening (either legal or illegal) that you feel pose a threat to the Protected Area?
ما هي الانشطة (المصرح بها والغير مصرح بها) والتي تعتقد انها تؤثر بالسلب علي المحمية؟



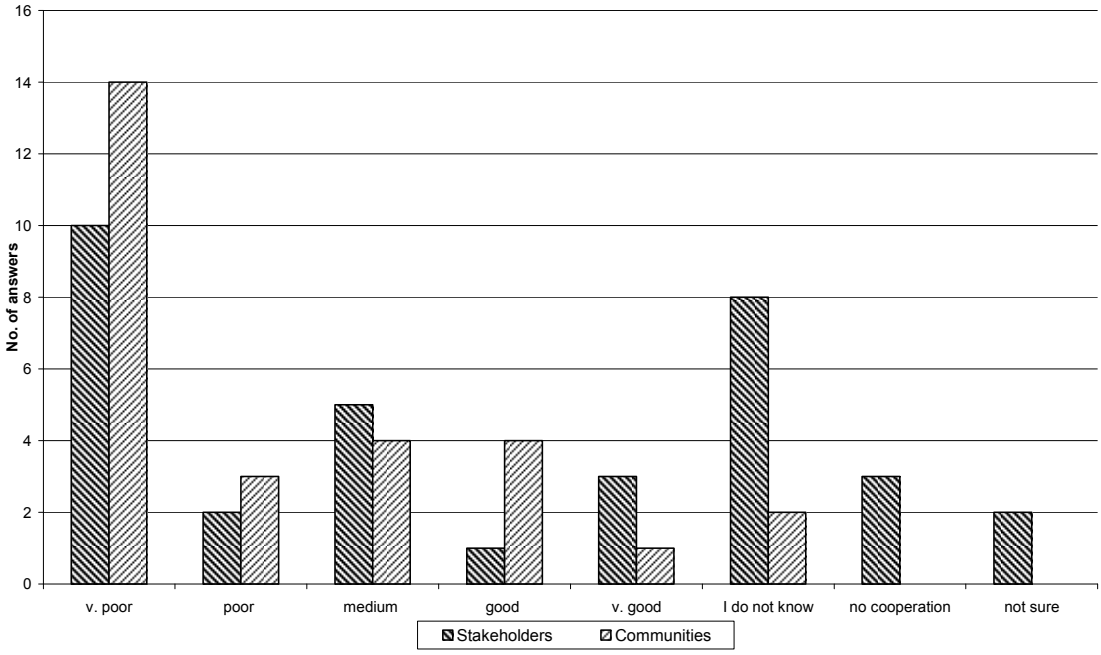
How well does the Protected Area do in informing stakeholders and communities about the PA?
ما تقييمك لدور المحمية في نشر الوعي البيني بين المجتمعات المحلية المحيطة بها؟



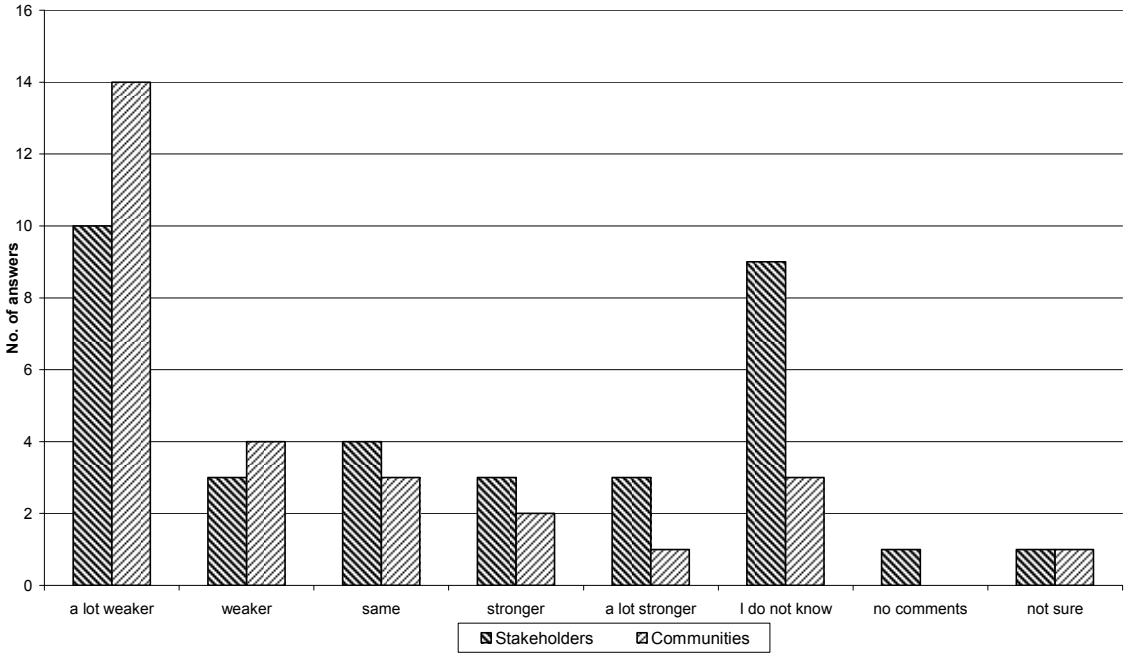
What benefits does the Protected Area provide to you?
ما هي الخدمات والانشطة المفيدة التي تقدمها المحمية للمجتمعات المحلية؟



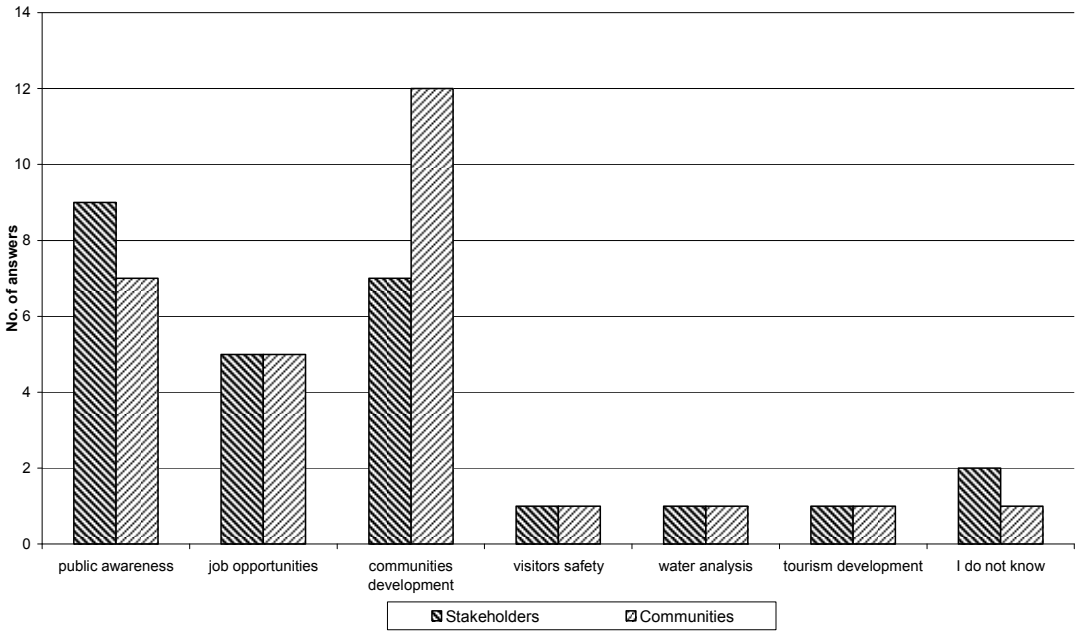
How would you rate the level of support by your stakeholder community for the Protected Area?
ما هو تقييمك لمستويات التعاون بين المجتمعات المحلية وإدارة المحمية؟



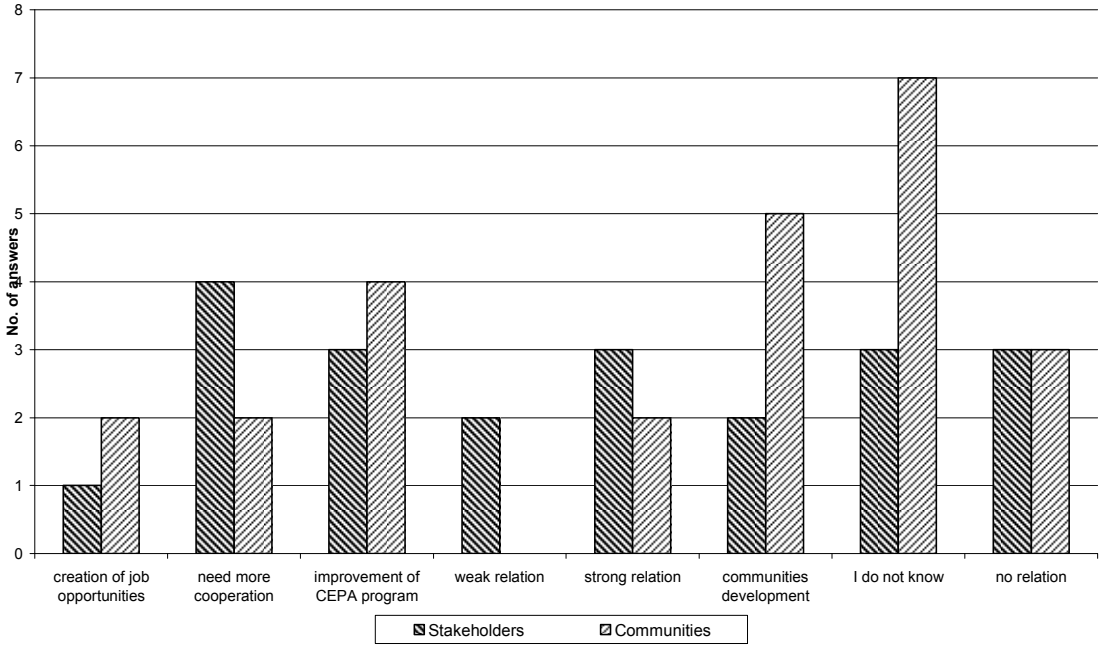
Is the current level of stakeholder support for the Protected Area stronger or weaker than 5 years ago?
هل مستويات التعاون بين المجتمعات المحلية وإدارة المحمية اصبحت تتم بصورة فعالة أم سيئة خلال الخمس سنوات الماضية؟



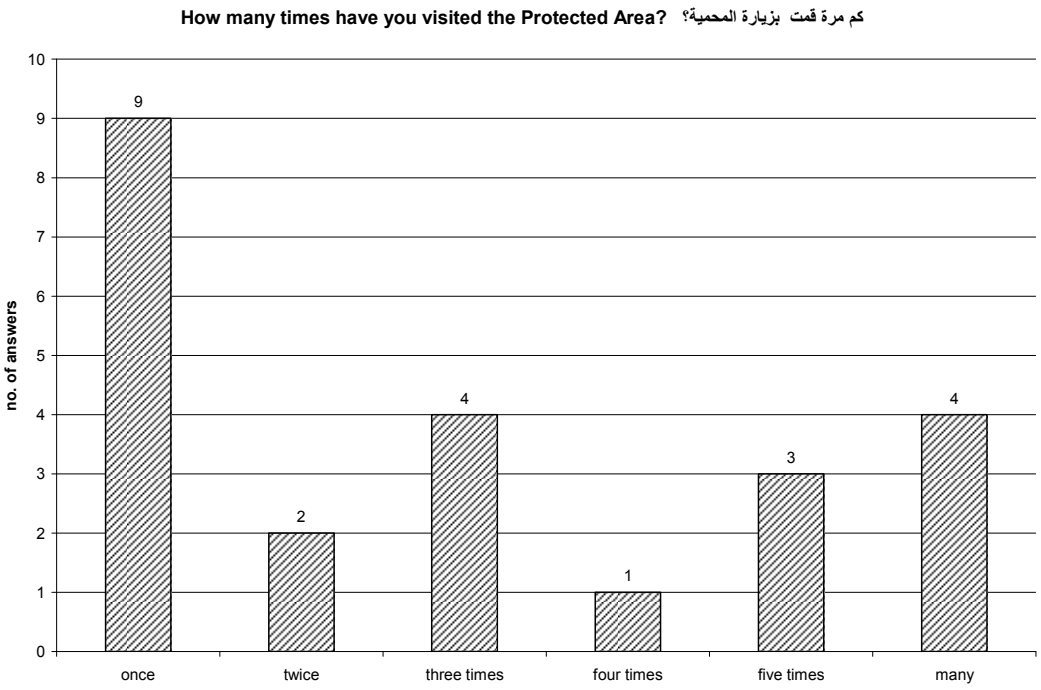
In what ways could the PA help the community?
كيف يمكن لإدارة المحمية (وجود المحمية بالمنطقة) ان تخدم المجتمعات المحلية داخل - خارج المحمية؟

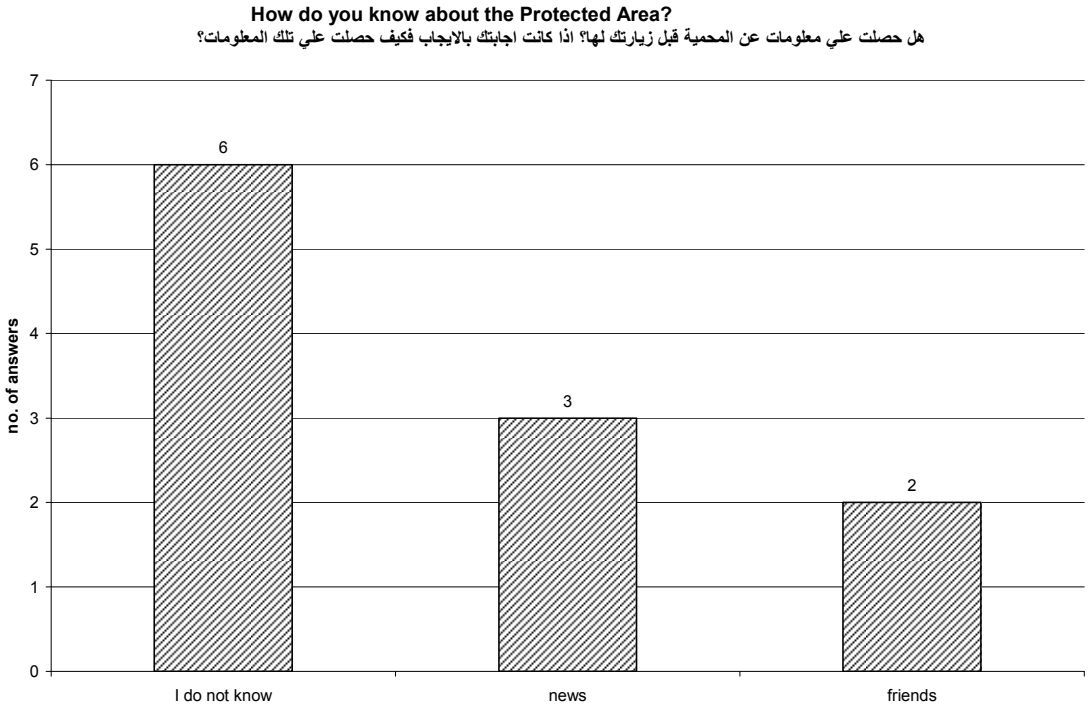


What is your vision for the PA and community?
ما هي رؤيتك الشخصية لطبيعة العلاقة بين المحمية والمجتمعات المحلية؟

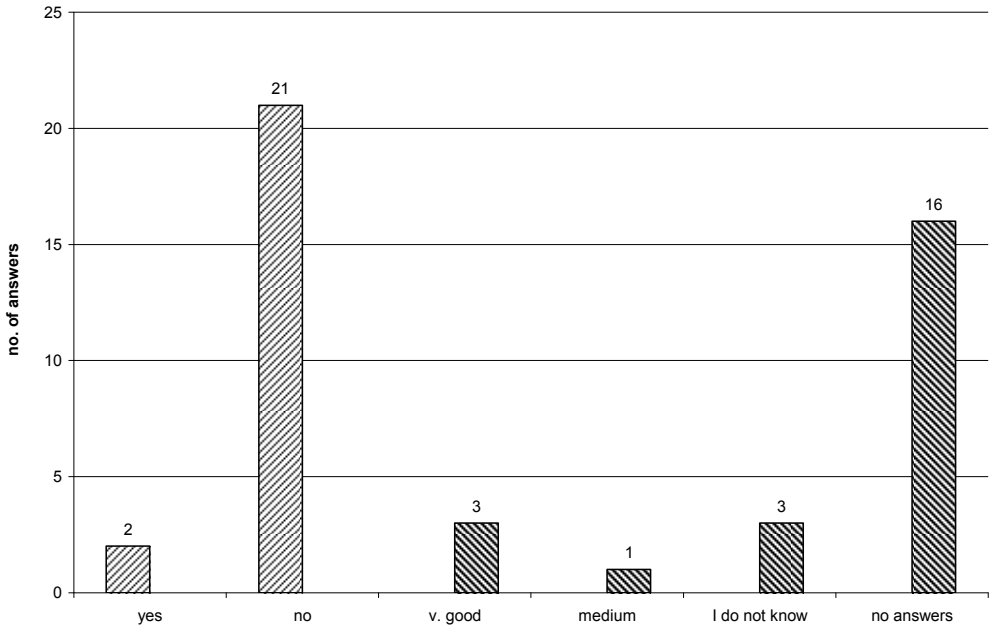


Visitor Survey Results:

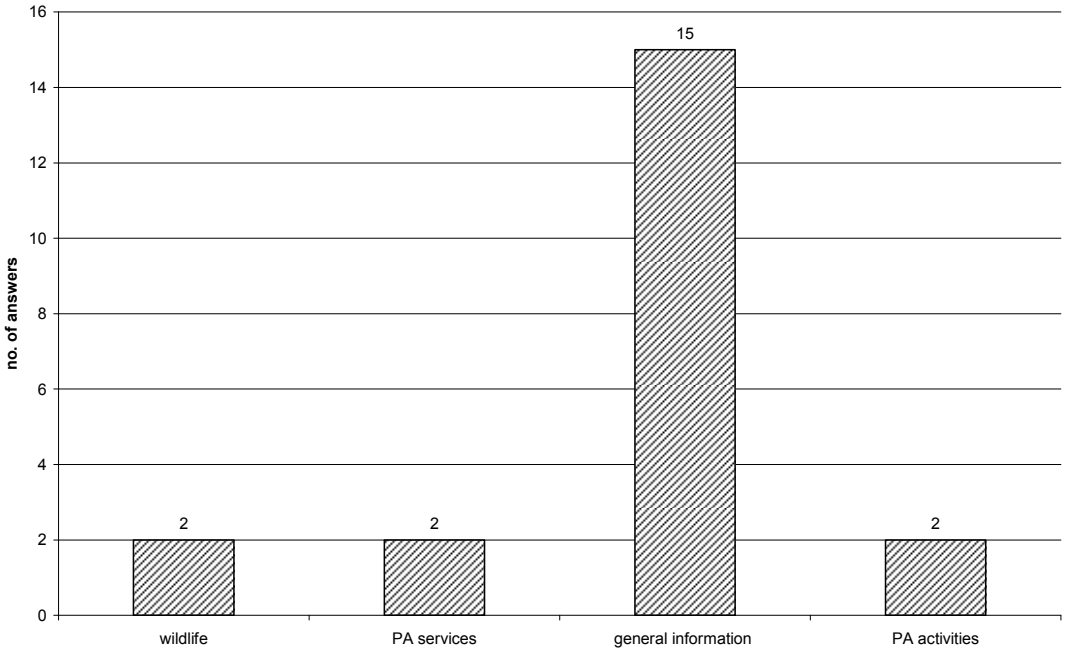




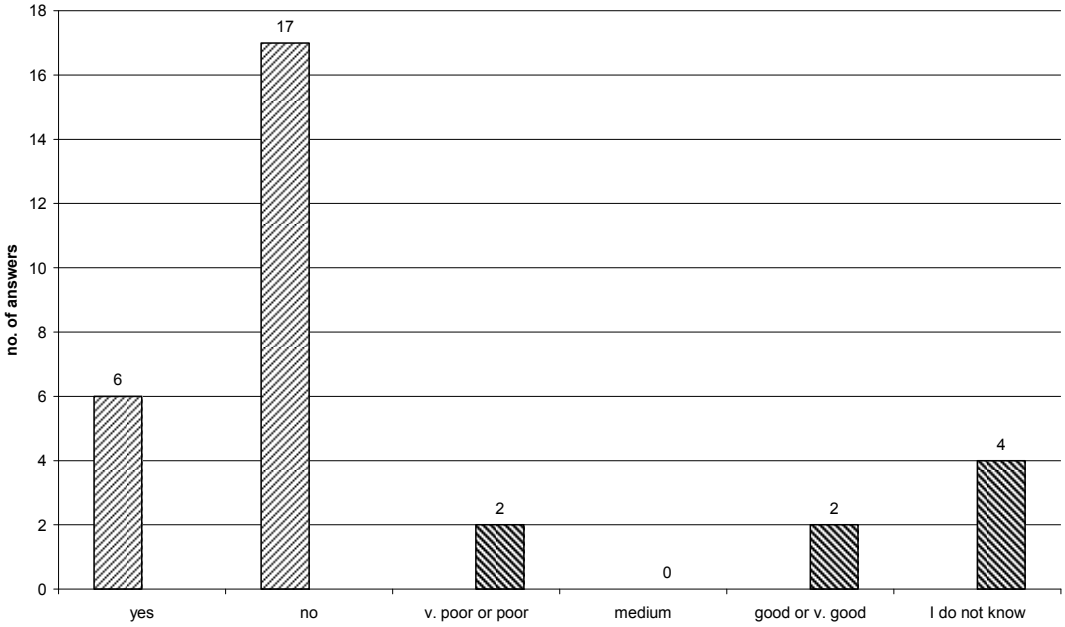
Did you receive any literature about the PA during your visit? if yes, rating of literature.
هل حصلت علي اي مطبوعات عن المحمية اثناء زيارتك لها؟ ما هو تقييمك لجودة المطبوعات التي حصلت عليها اثناء زيارتك للمحمية؟



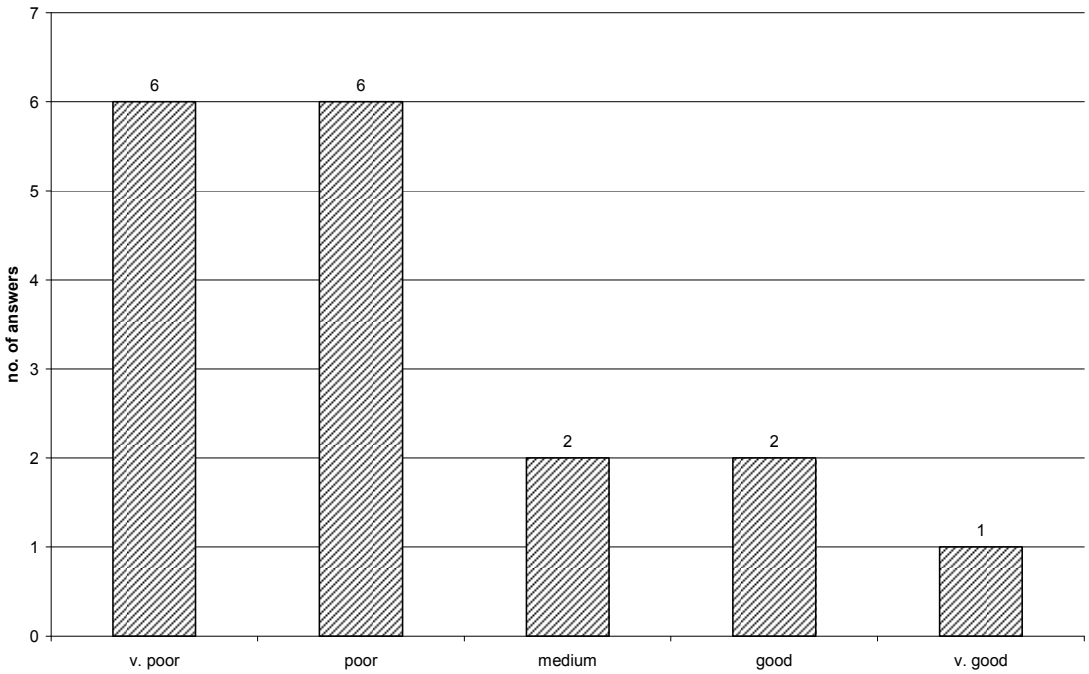
What literature would you like to have? **ما هي طبيعة المعلومات التي تفضل ان تجدها داخل مطبوعات المحمية؟**



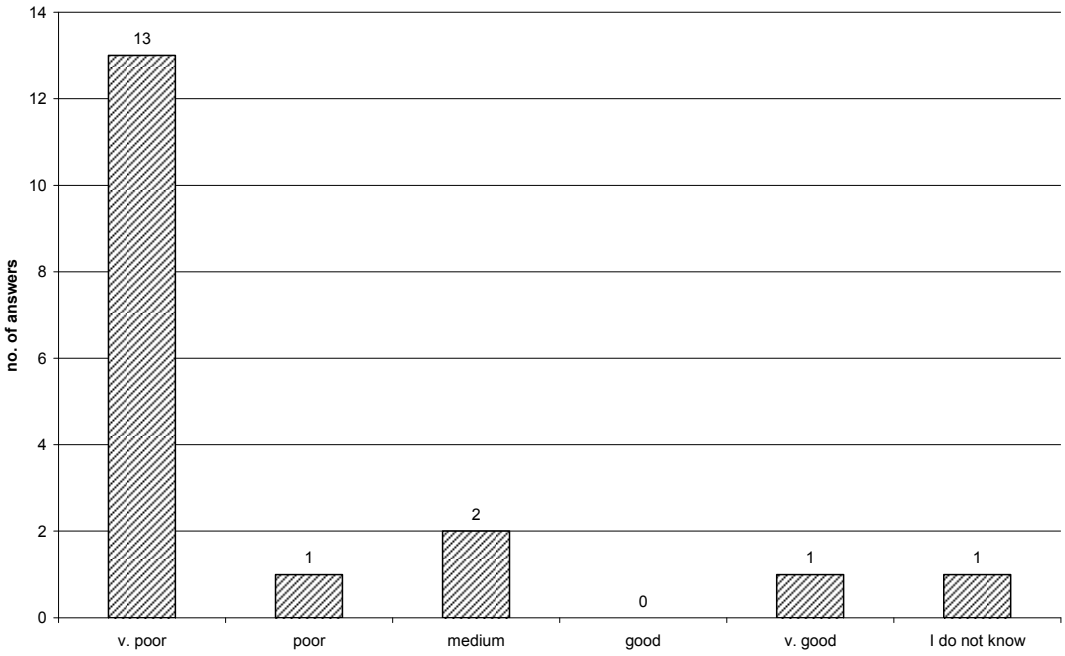
Did you go to the Visitor Centre? If yes, rate the centre.
هل قمت بزيارة مركز زوار الخاص بالمحمية؟ما هو تقييمك لجودة مركز الزوار؟



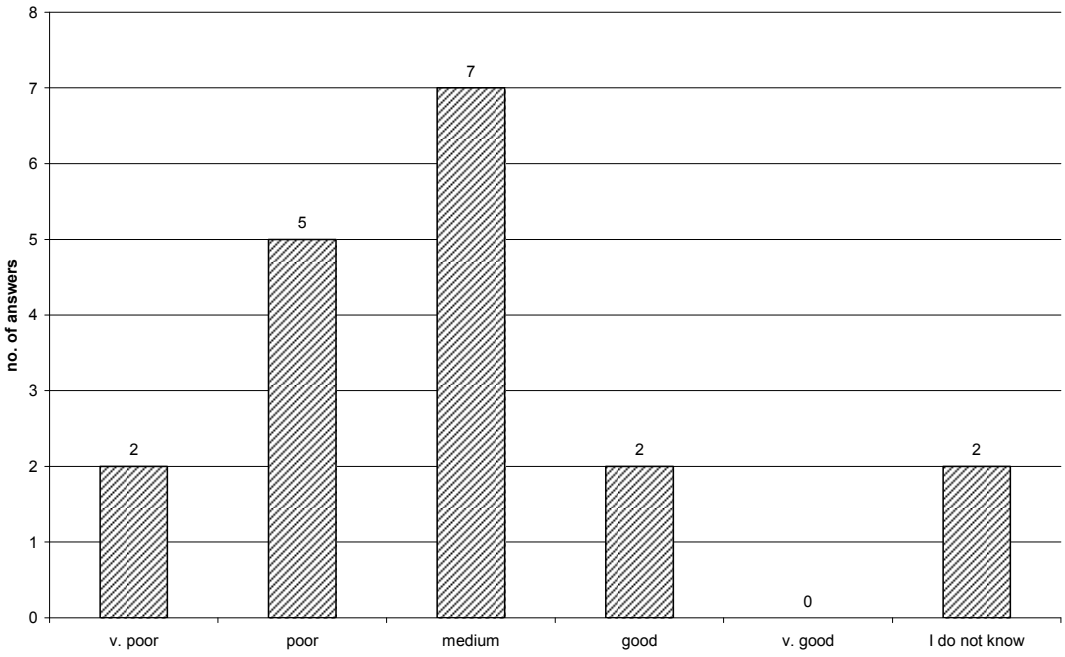
How would you rate the roads and tracks? ما هو تقييمك لجودة الطرق والمدقات داخل المحمية؟



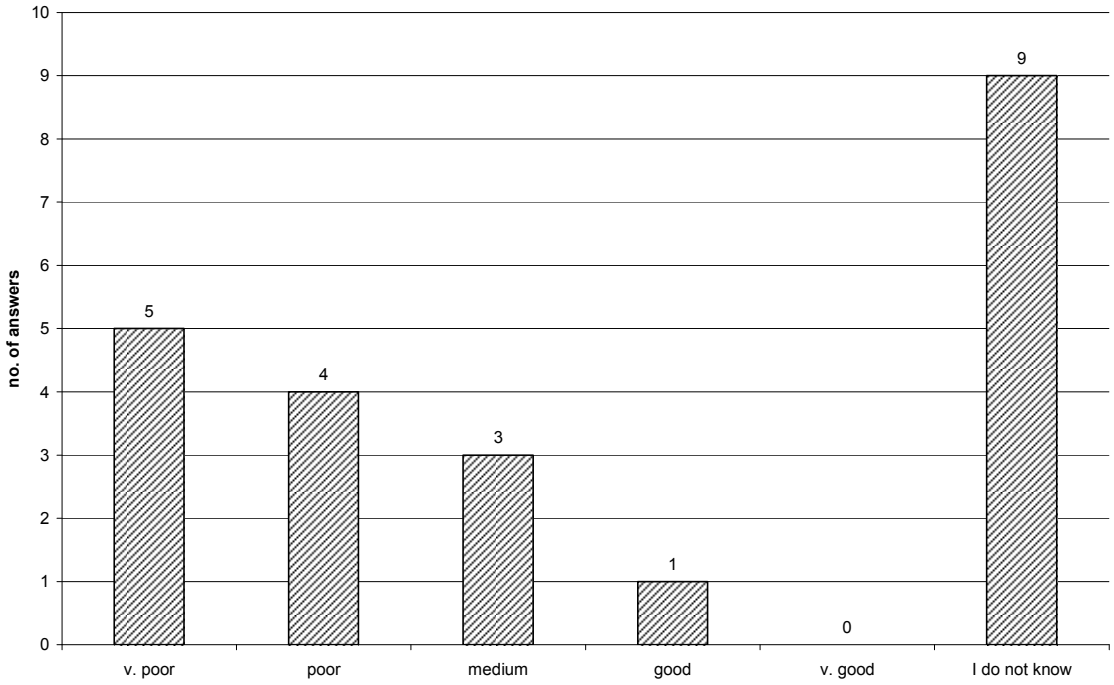
How would you rate the WCs (toilets)? ما هو تقييمك لجودة الحمامات داخل المحمية؟



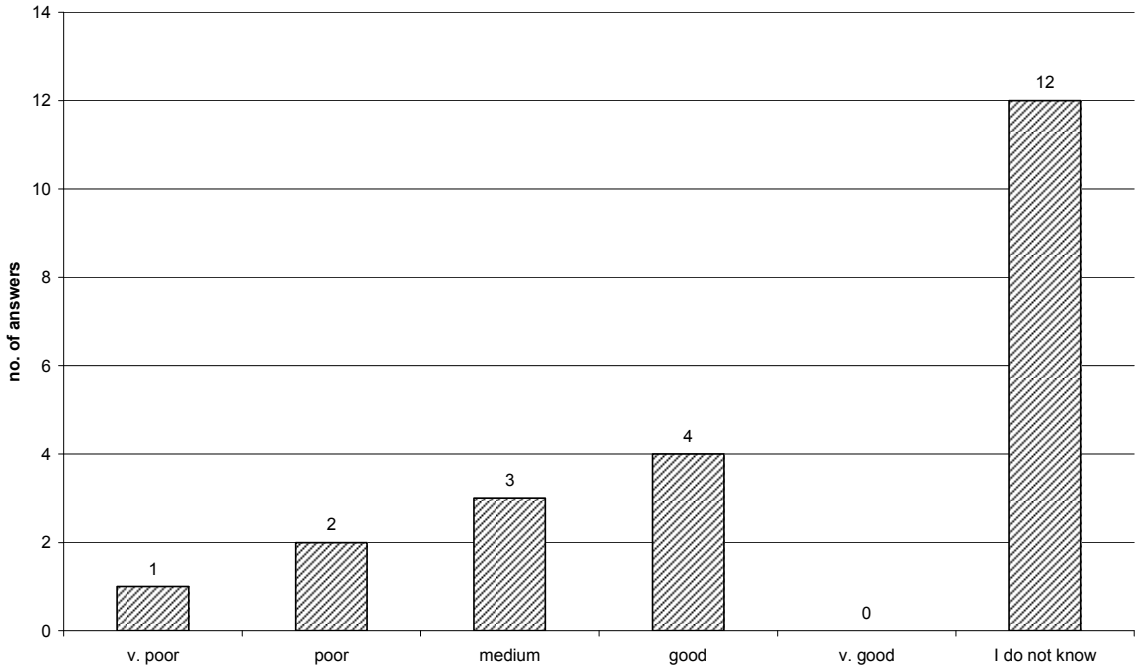
How would you rate the cafeterias? ما هو تقييمك لمستوي الكافيتريات داخل المحمية؟



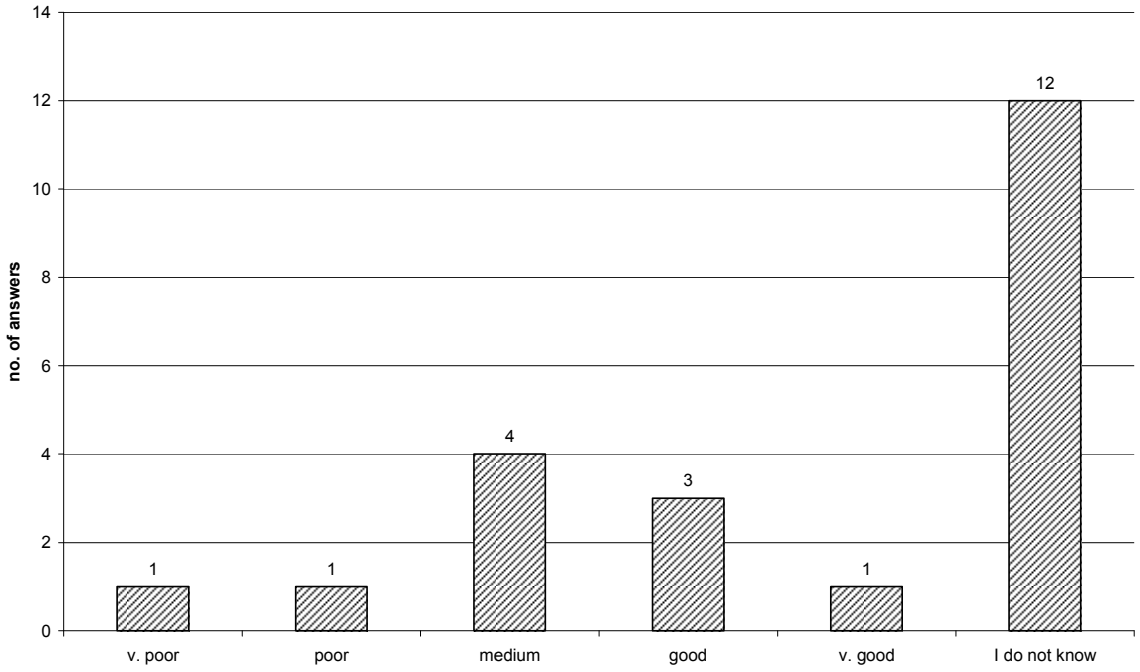
How would you rate the other facilities? ما هو تقييمك لجودة الخدمات الاخري المقدمة داخل المحمية؟



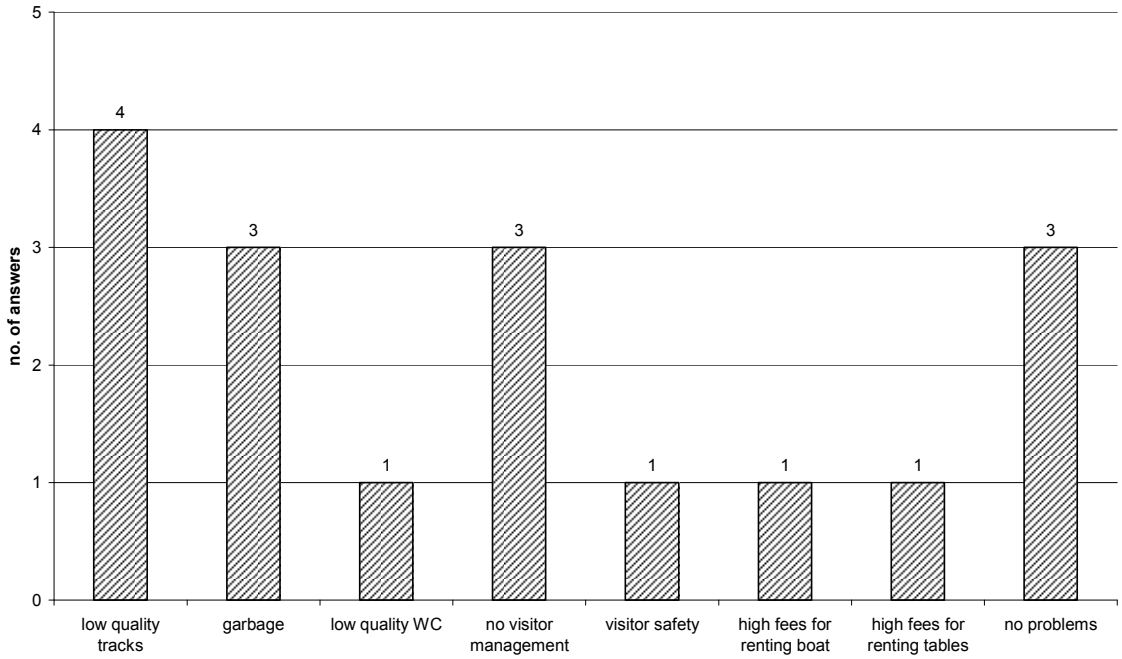
How would you rate the overall cleanness of the Protected Area?
ما هو تقييمك لمستوي النظافة العام داخل المحمية؟



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. RAPPAM Questions and Results

1. Background Information

The results in this report come from the national RAPPAM exercise conducted in January 2006 (Fouda et al., 2006). They have been extracted from the full report to for use by WRPA staff.

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)
Qaroun	1357	1,385	250	1989	17	40	206	0	6	19
Wadi El Rayan	1759	1,759	1,225	1989	17	100	149	3,000	42	41
Egypt PAs		**100,152**	**94,183**			**1013**	**2,776**		**159**	**470**

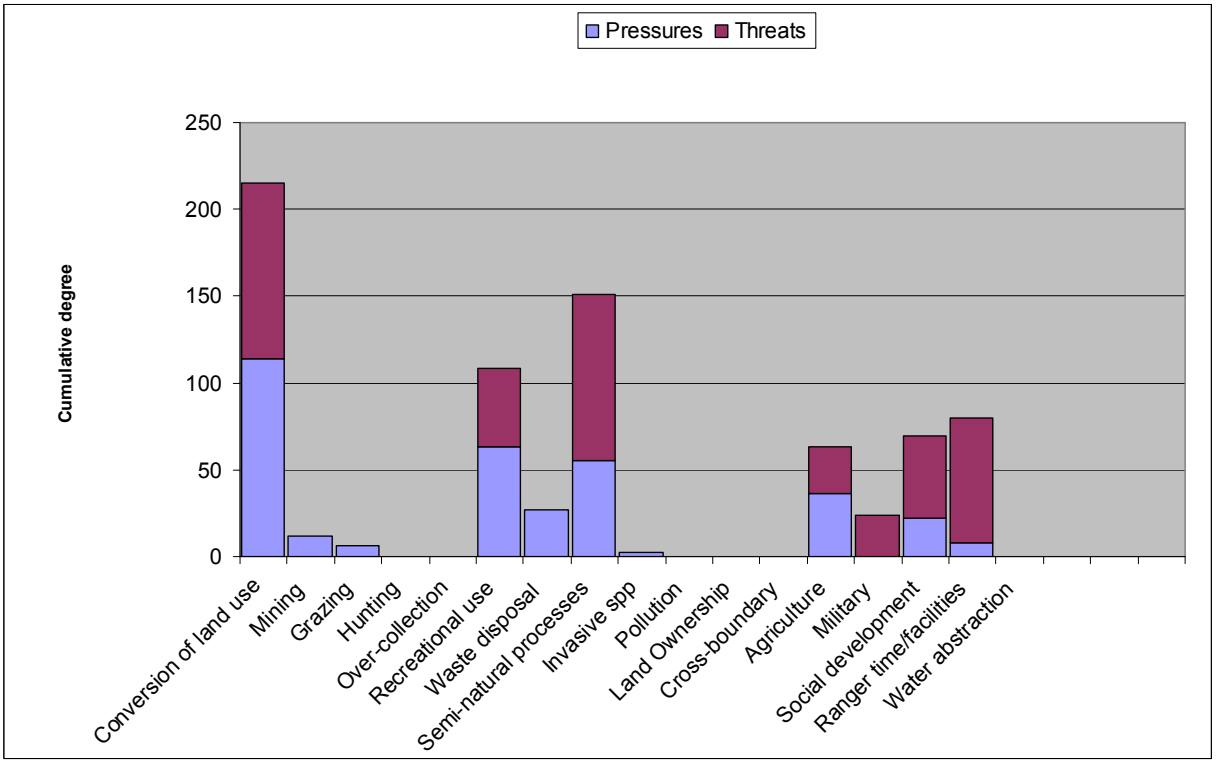
Staffing and Funding per km^2

Protected Area	Area NCS km^2	Area PA System km^2	Total Staff	Staff /km^2	Op and Mtc Expenditure 2004-2005 (LE) *	Exp/km^2 (LE) *
Qaroun	**1385**	**250**	**19**	**0.01**	**206,000**	**148.74**
Wadi El Rayan	**1759**	**1225**	**41**	**0.02**	**149,000**	**84.71**

* 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 scoring for this is different from the subsequent sections (3-19) in that 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.

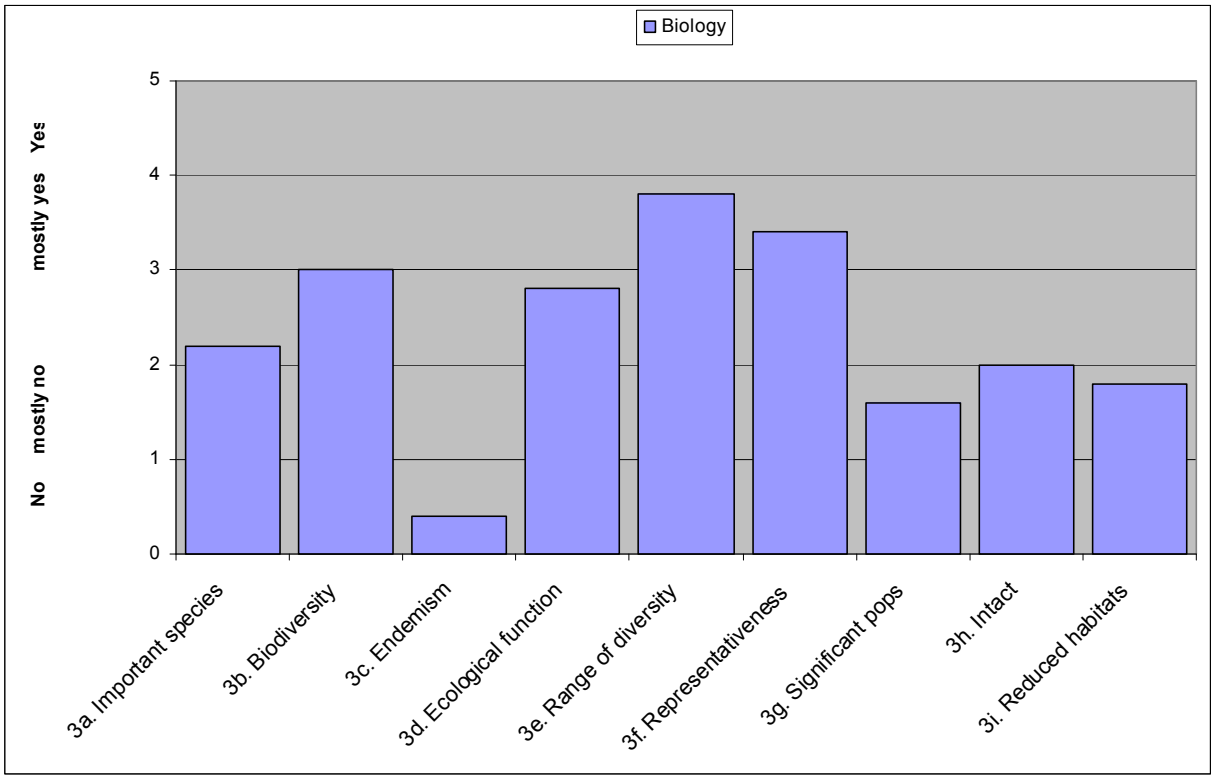


3. BIOLOGICAL IMPORTANCE – CONTEXT

الأهمية البيولوجية (السياق)

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.

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.
لقد ألغى السؤال (م

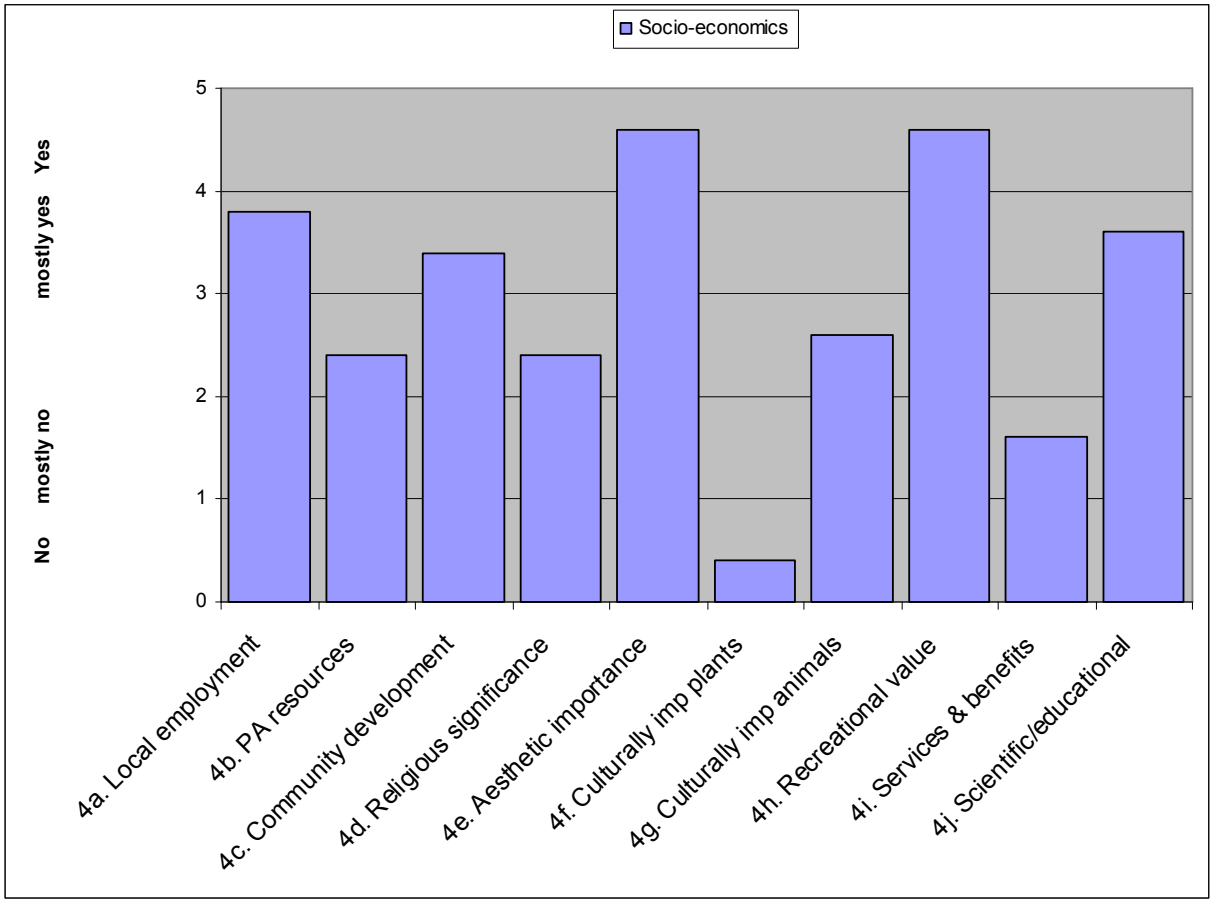


4. SOCIO-ECONOMIC IMPORTANCE – CONTEXT

الأهمية الإقتصادية والإجتماعية (السياق)

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.

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.

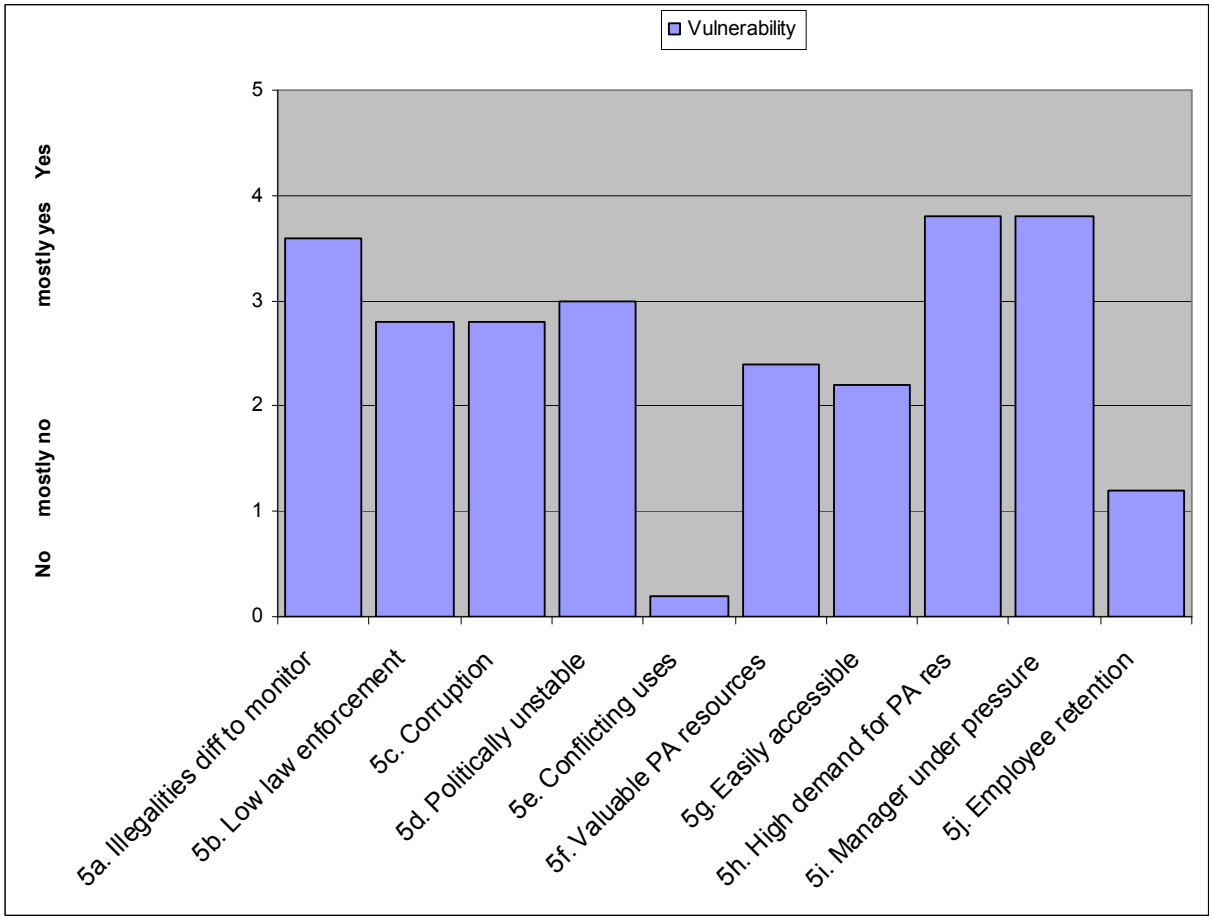


5. VULNERABILITY – CONTEXT

نقاط الضعف (السياق)

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.

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

الأهداف (التخطيط)

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.

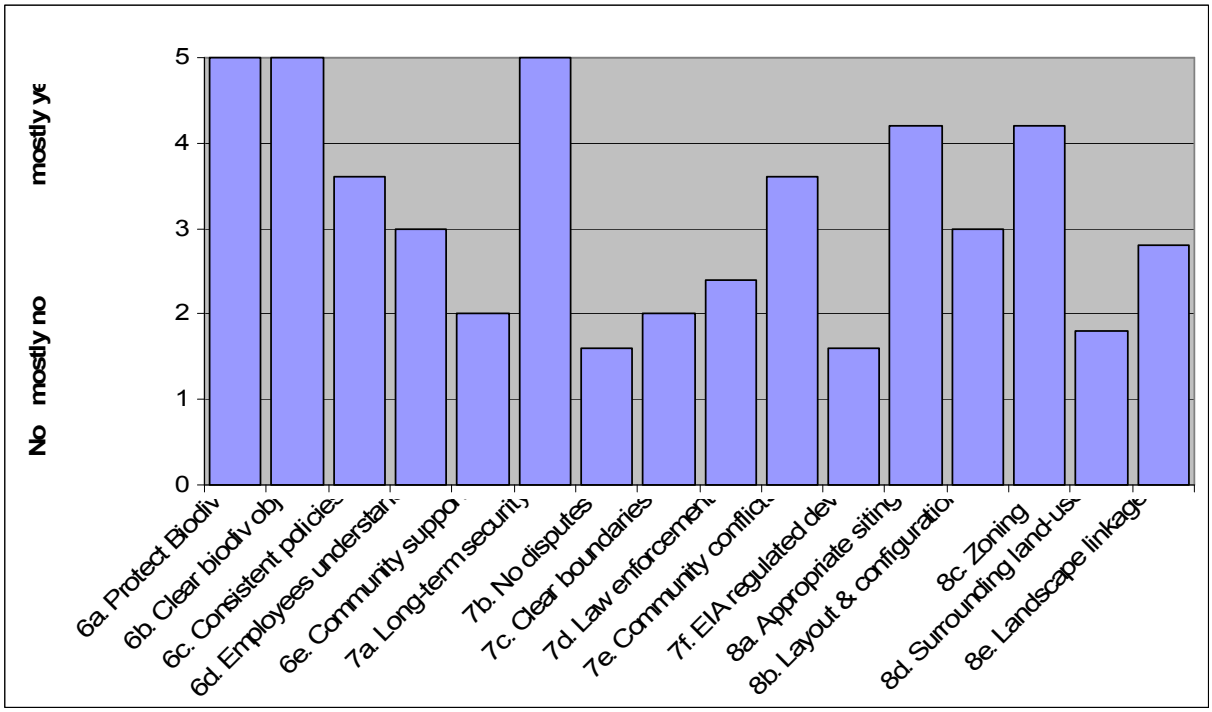
أ- تسعى أهداف المحمية إلى حماية التنوع البيولوجي والإبقاء عليه.
ب- توضع الأهداف الخاصة المتعلقة بالتنوع البيولوجي في مخطط الإدارة بشكل واضح.
جـ- تكون سياسات ومخططات الإدارة متسقة مع أهداف المحمية.
د- يكون الإداريين والعاملين بالمحمية متفهمين لأهدافها وسياساتها.
هـ- يدعم المجتمع المحلي الأهداف العامة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

7. LEGAL SECURITY – PLANNING

الحماية القانونية (التخطيط)

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.

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

تصميم وتخطيط الموقع (التخطيط)

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**.**

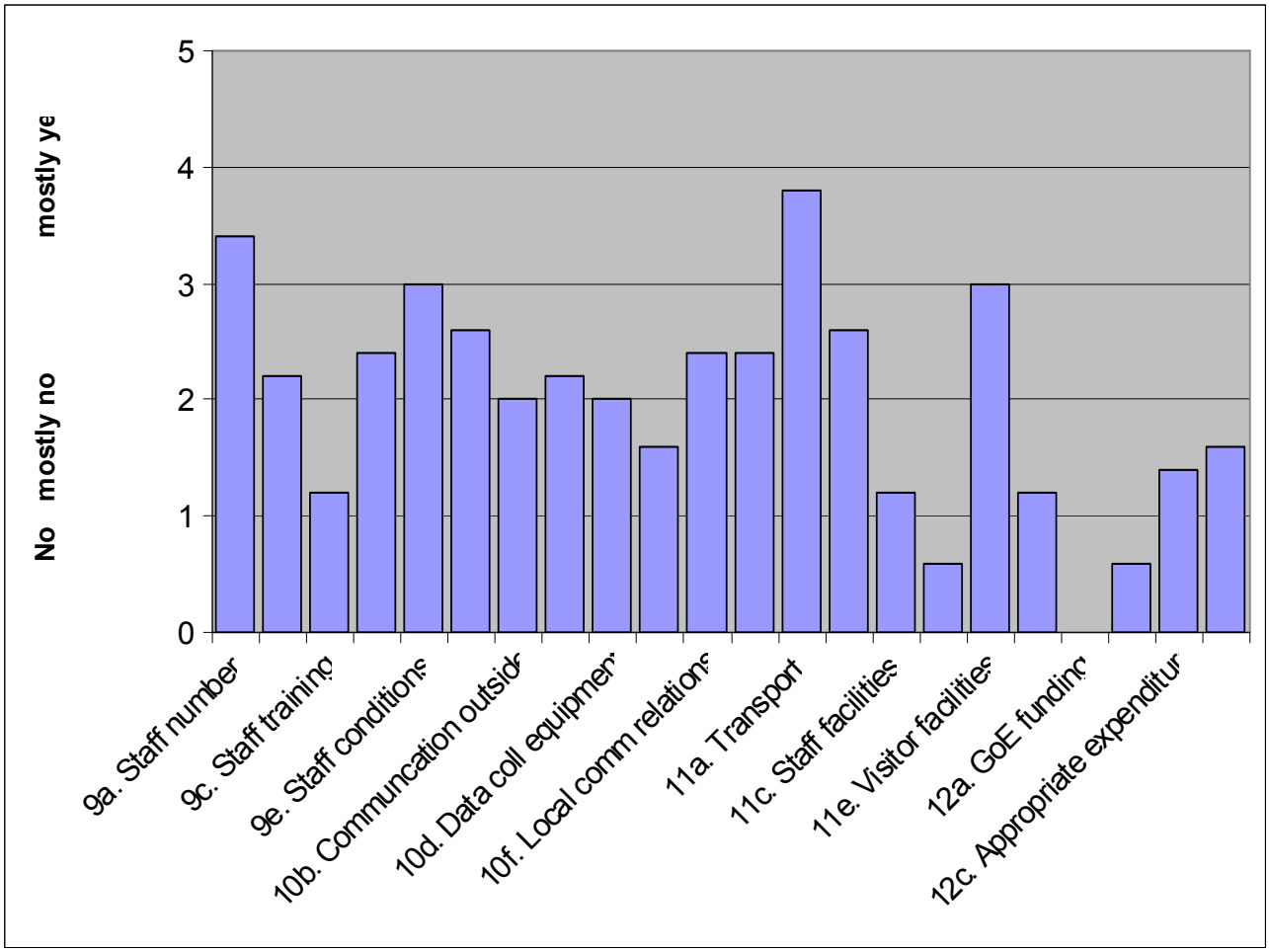
أ- تحديد موقع المحمية متسق مع أهدافها.
ب- تخطيط وتشكيل المحمية يحسن من عملية الحفاظ على التنوع البيولوجي.
جـ- نظام تقسيم المحمية كافي لتحقيق أهدافها.
د- استخدام الأرض في المنطقة المحيطة يمكن من إدارة فعالة للمحمية.
هـ- ترتبط المحمية بمنطقة أخرى سواء كانت محمية أخرى أو أرض محفوظة.

9. STAFFING – INPUTS

العمالة (المدخلات)

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.

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

الإتصالات والمعلومات (المدخلات)

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.

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

البنية التحتية (المدخلات)

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.

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

الموارد المالية (المدخلات)

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.

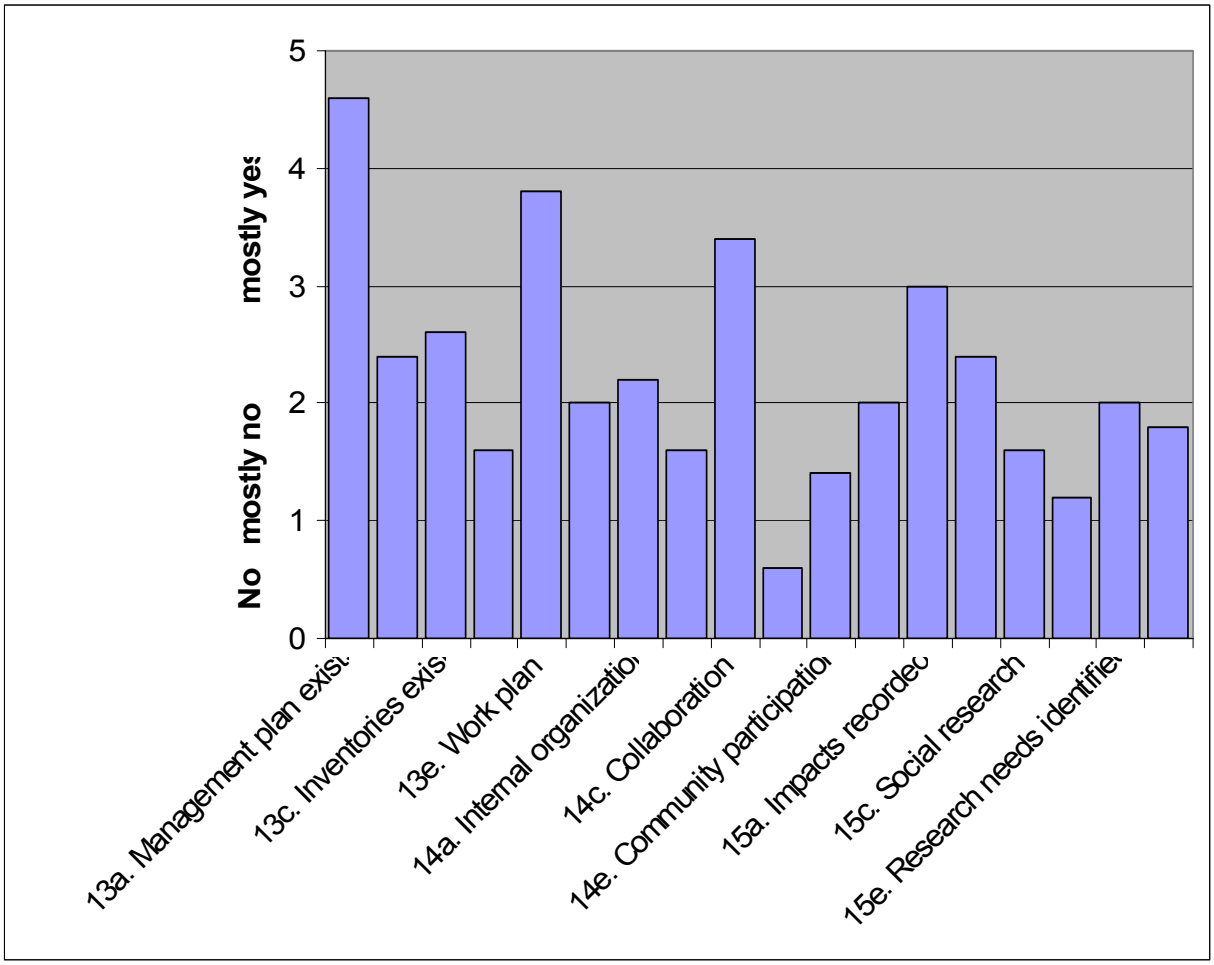
أ- لقد كان الدعم المالي (المقدم من الحكومة الإيطالية) في الخمس سنوات الماضية كافي لإجراء الأنشطة الإدارية الهامة.
ب- تمكن الممارسات المالية الإدارية من إدارة كفء وفعالة للمحمية.
جـ- تخصيص الإنفاق يناسب أولويات وأهداف المحمية.
د- إستقرار الوضع المالي طويل المدى للمحمية.

13. MANAGEMENT PLANNING – PROCESSES

التخطيط الإداري (العمليات الإدارية)

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.

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

إتخاذ القرارات الإدارية (العمليات الإدارية)

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.

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

البحث والمراقبة والتقييم (العمليات الإدارية)

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.

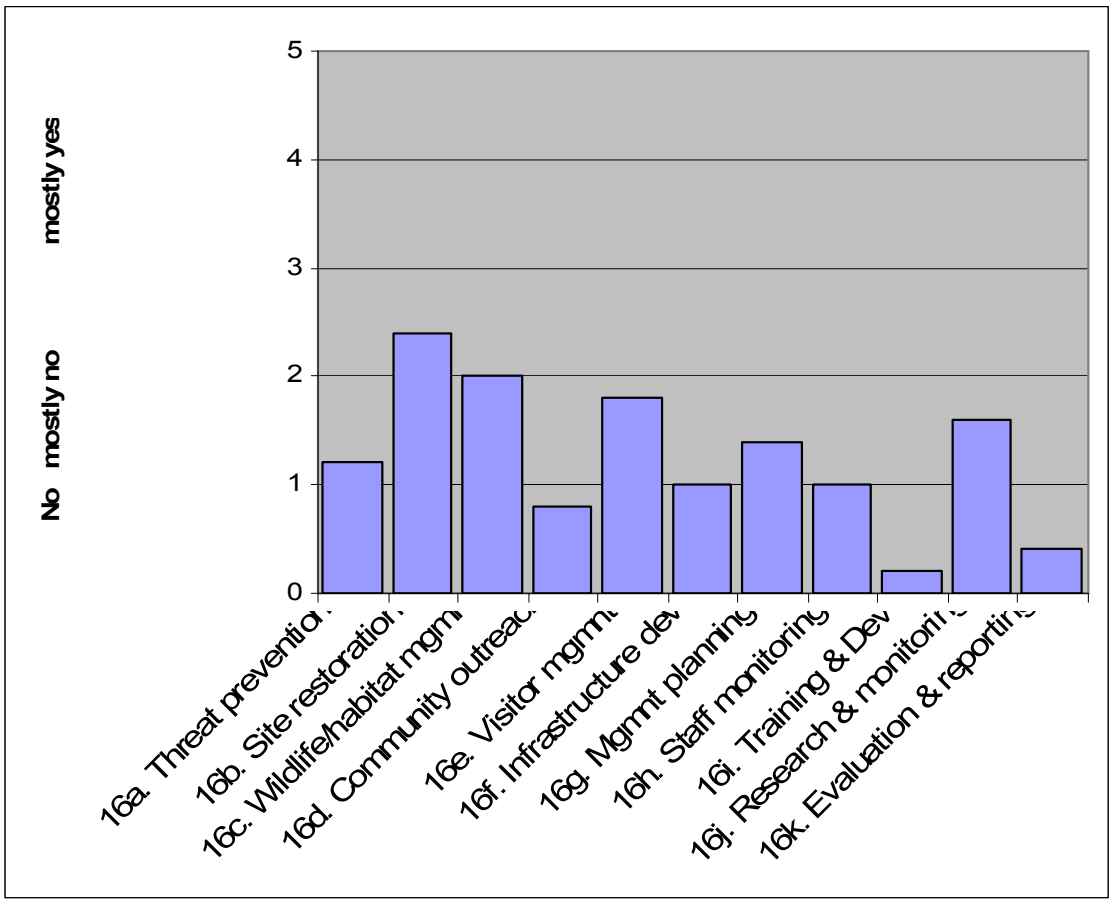
أ- تراقب وتسجل وقائع الاستخدامات القانونية والغير قانونية للمحمية بدقة.
ب- يكون البحث في القضايا البيئية الرئيسية متسق مع احتياجات المحمية.
جـ- يكون البحث في القضايا الإجتماعية الرئيسية متسق مع احتياجات المحمية.
د- لدى العاملين بالمحمية وسيلة وصول للأبحاث والنصائح العلمية الأخيرة.
هـ- تكون الاحتياجات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

16. OUTPUTS

المخرجات

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.

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.


No
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16a. Threat preventi
16b. Site restoratio
16c. Wildlife/habitat mgm
16d. Community outreac
16e. Visitor mgmt.
16f. Infrastructure dev
16g. Mgmt planning
16h. Staff monitoring
16i. Training & Dev
16j. Research & monitori
16k. Evaluation & reportin

Appendix 6. Site Level Management Effectiveness Evaluation Procedure Used in This Study

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 what 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 prioritise 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.