

Guide for quick evaluation of management in Mediterranean MPAs



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Guide for quick evaluation of management in Mediterranean MPAs

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WWF The World Wide Fund for Nature is one of the world's leading conservation organisations. It has an operational network in more than 100 countries with thousands of nature protection programmes. WWF's mission is to conserve nature and reduce the most pressing threats to the diversity of life on Earth, to build a future where people live in harmony with nature.

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IUCN Centre for Mediterranean Cooperation was opened in October 2001 with the core support of the Spanish Ministry of Agriculture, Fisheries and Environment, the regional Government of Junta de Andalucía and the Spanish Agency for International Development Cooperation (AECID). The Centre's mission is to influence, encourage and assist Mediterranean societies to conserve and use sustainably the natural resources of the region and work with IUCN members and cooperate with all other agencies that share the objectives of the IUCN.

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In collaboration with:



IUCN-World Commission on Protected Areas



MedPAN Association the network of Mediterranean Marine Protected Areas

and the Marine Protected Areas of:



Krajinski park Strunjan



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Summary

This guideline provides a description of the structured process used to identify the set of common indicators most useful for evaluating the effectiveness of management in Mediterranean Marine Protected Areas (MPAs). The indicators address all elements of the IUCN World Commission on Protected Areas (WCPA) management effectiveness framework and cover all dimensions of MPA management, from management approaches to the final outcomes in terms of biodiversity conservation, stakeholder participation, governance and socio-economic impacts.

The final result, tested in the field by several MPAs, is a simple and robust tool for assessing how a Mediterranean MPA is doing in its management and how well it meets its conservation goals and objectives. It consists of 18 indicators which can be scored for different levels of management quality. The resulting scores allow for year-on-year comparisons to show how a given MPA has improved and can be used to examine trends at Mediterranean level.

Case studies in Mediterranean MPAs in Italy, Spain, Slovenia and Croatia were used to test how well the evaluation performed in the field. The site assessments were conducted by representatives of management (MPA managers and staff) and co-management agencies and drew on available information and the informed opinions of site managers. The results of the evaluation exercise provided a quick overview of the status of management, the issues to be prioritized in the future and the achievement of management objectives.

Overall, this system for evaluating management effectiveness in Mediterranean MPAs is of particular importance as it is the first ever Mediterranean-level approach. It may prove to be a useful tool for the ongoing assessment of Mediterranean MPAs and for informing international and national policies and programmes on protected areas.



Gaz Island, Brijuni National Park (Croatia). Photo: M. Vrdoljak

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The preparation of this guideline has drawn upon the experiences of Mediterranean MPA managers and practitioners. The participants in the MedPAN North meetings held in May 2010 in Málaga (Spain) and in March 2012 in Carovigno (Italy) and the managers attending the training course in September 2011 at Izola (Slovenia) provided important input for the revision of this work.



Cap de Creus MPA (Spain). Photo: T. Font

The MPAs of Miramare, Cinque Terre, Torre Guaceto and Tavolara - Punta Coda Cavallo MPA (Italy), Cap de Creus and Illes Medes (Spain), Strunjan Landscape Park (Slovenia), and Telašćica Nature Park (Croatia), with their respective management organizations and agencies, also contributed to management effectiveness evaluation by using this assessment in the field and bringing us important feedback that led to its refinement.

In particular, we would like to acknowledge the contributions of Alain Jeudy de Grissac (IUCN-Med), Mark Walton (University of Wales, UK) and Dan Laffoley (IUCN-WCPA) for their time and support for this work. Our thanks also go to Marco Costantini (WWF Italy), Carlo Franzosini and Franco Zuppa (Miramare MPA/Shoreline) and David Rodríguez (CSIC, Spain), who provided important assistance during the definition and selection of the indicators.

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The MedPAN Association and WWF-France (leader of the MedPAN North Project) deserve our special gratitude for their support for this work.

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Building the guideline

Background to the guideline

At their 10th Meeting in Nagoya (Aichi Prefecture, Japan) in 2010, the Parties to the Convention on Biological Diversity (CBD) resolved that there is a strong need to assess and improve the effectiveness of protected areas. Target 11 and the Strategic Plan for Biodiversity 2011–2020 aim to achieve conservation of ‘at least 10% of coastal and marine areas’, and these areas should be ‘of particular importance for biodiversity and ecosystem services’, ‘ecologically representative and well-connected’, and also ‘effectively and equitably managed’. This new Aichi target was developed from the earlier CBD Target 1.1 (set in 2003), which called for: ‘at least 10 per cent of each of the world’s ecological regions [to be] effectively conserved’ (Target 1.1, Decision VII/30, CBD). Over the last decade, several other international and regional agreements have strongly emphasized this need to achieve effective management of protected sites. Yet at present there are too few MPAs and not many of them are effectively managed.

In the Mediterranean there are currently 675 MPAs, covering a total surface area of almost 114,600 km², about 4.6% of the Mediterranean, or just 1.1% if we exclude the Pelagos Sanctuary (87,500 km²), which alone accounts for 3.5% (Gabrié et al., 2012). Less than 0.1% of the Mediterranean’s total surface area is covered by a strict protection and/or no take zone, and MPAs in Categories IV (Management areas for habitats and species) and II (National Parks) are the most common management types (Day et al, 2012; Gabrié et al., 2012).

There is increasing evidence that some MPAs are still being degraded and destroyed while others are merely ‘paper parks’, with little implementation or management to achieve their conservation objectives. Threats and problems are occurring along the whole Mediterranean coast and challenges to the management of many sites are common. As a response to this trend, greater efforts are needed to increase the effectiveness of marine protected area management, including the development of assessment tools to evaluate management practices.

Creating a network of well-managed MPAs will play a crucial role in protecting the rich marine biodiversity and

resources of the Mediterranean and will be an important part in achieving sustainable coastal zone management.

This guideline was developed as a new tool for assessing management effectiveness for all Mediterranean MPAs, taking into consideration the marked differences between subregions and countries. It provides a framework for reporting on the progress made by individual MPA management towards achieving national and international marine conservation targets and serves to create a baseline for the monitoring of the Mediterranean MPA network.

Management effectiveness evaluation should be taken into account and integrated into the management process to make MPAs work more effectively. Furthermore, widespread implementation of this shared tool will help pursue the goal of improving the effectiveness of Mediterranean MPAs, contribute to the implementation of the CBD Programme of Work on Protected Areas and support a more unified approach to producing the reports required for national, European, regional and global purposes.



*Veliki Brijuni Island, Brijuni National Park (Croatia).
Photo: M. Vrdoljak*

Understanding management effectiveness evaluation

Management effectiveness evaluation (MEE) is defined as ‘the assessment of how well protected areas are being managed—primarily the extent to which management is protecting values and achieving goals and objectives’ (Hockings et al., 2006).

Due to the large differences among protected areas (in age, levels of use, visitor numbers, funding, size, management objectives, etc.), there have been no standard approaches to the measurement of management effectiveness in these sites. For this reason, the IUCN World Commission on Protected Areas (WCPA) has designed a framework to provide guidance in developing assessment systems and to encourage basic standards for assessing and reporting management effectiveness in protected areas (Hockings et al., 2000). The framework is based on six distinct stages or elements, in which management starts with gaining an understanding of the context of existing values and threats in the MPA in order to establish a vision, progresses through planning and allocation of resources (inputs) and, as a result of management actions (processes), produces products and services (outputs) that result in impacts or outcomes (Hockings et al., 2006). Figure 1 presents this common framework within which the evaluation and monitoring of protected area management can be established.

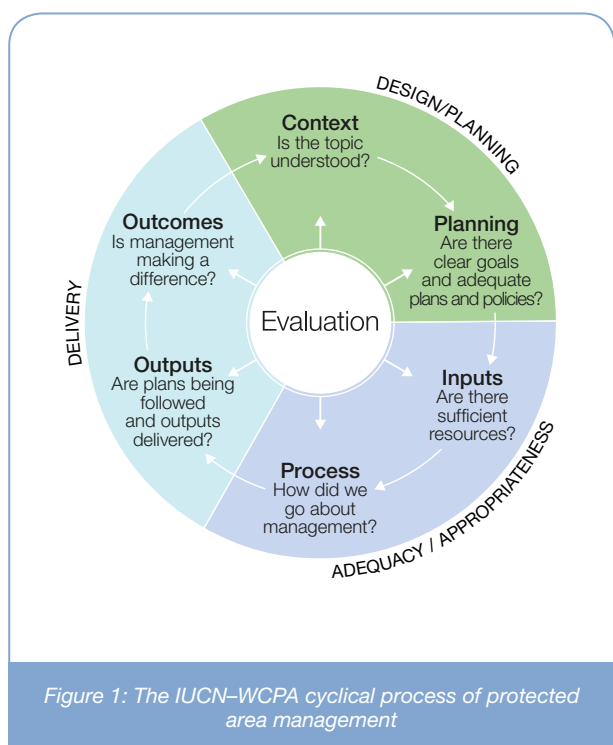


Figure 1: The IUCN-WCPA cyclical process of protected area management

The IUCN-WCPA framework has formed the basis for many evaluation systems around the world for systematically assessing protected area management effectiveness at individual sites and at different regional levels (Hockings et al., 2006; Leverington et al., 2008). To develop a good assessment system, all aspects of the management cycle should be looked at and each of the six framework elements should be assessed to identify shortfalls and any need for improvement:

- Context provides an understanding of the status and significance of the protected area/system and the threats it faces.
- Planning includes national protected area legislation and policies as well as management plans.
- Inputs cover a range of resources, such as the staff available for different activities, funds, equipment and facilities.
- Process consists of issues ranging from maintenance of the sites to participation of local communities and other stakeholders.
- Outputs concern management actions and their results in terms of whether targets and plans have been achieved.
- Outcomes take into account long-term monitoring and evaluation of the condition of the environment and its resources as well as socio-economic aspects.

Most MEE methodologies use questionnaires with indicators to assess various aspects of the management of a protected site or network of protected areas (Leverington et al., 2008). Based on the results of these questionnaires, overall management effectiveness is rated by adding the scores for the individual indicators. Different quantitative, qualitative and descriptive scoring systems are then used to rate the evaluation according to its purpose and/or the resources available, while a combination of all of them may allow for a more thorough individual analysis, providing managers and other relevant stakeholders with more detailed information. Additionally, some methodologies also include a range of certification schemes to accompany these assessments (see section on certification schemes).

Methodology

As mentioned above, the evaluation of management activities has been a widely debated topic in recent years and has led to the definition of good practices, as outlined in several handbooks and publications (Ervin, 2003; Pomeroy et al., 2004; Hockings et al., 2006; Stern, 2006; Hockings and Gilligan, 2009). In the marine environment, guidelines on effective management can also be found in environmental audit tools, such as the procedure described by the European Regulation called EMAS III (Regulation (EC) No 1221/2009 on an Eco-Management and Audit Scheme), the Natura 2000 assessment laid down by the EU Habitats Directive (Directive 92/43/EEC), and the guiding criteria for assessing marine and coastal areas as Specially Protected Areas of Mediterranean Importance (SPAMI) for biodiversity protection under the Barcelona Convention (UNEP–MAP RAC/SPA).

However, due to the large number of different approaches to MEE, methodologies can appear confusing and sometimes out of context for local conditions, making implementation of any assessment difficult. Moreover, many guidelines are focused on terrestrial non-Mediterranean areas, whose needs and problems are different from those of Mediterranean MPAs. In view of this, the approach for this new guideline is to develop a simple tool adapted to the Mediterranean context that provides a standardized methodology that can be applied equally to all the MPAs, as it is built on past methodologies and the experience of Mediterranean MPA managers.

The guideline development process consisted of three steps: (1) an initial review of existing literature, (2) the streamlining of existing methods, and (3) the adaptation of indicators to the Mediterranean regional context. Managers of MPAs participating in the MedPAN North project and of other Mediterranean sites tested the methodology, providing useful information and suggestions for further refinement. By taking into account previous experience of MEE in various Mediterranean contexts, this new simplified tool offers a useful methodology that can easily be implemented by Mediterranean managers to monitor progress, trends and further needs in their management.

The list of indicators was first drawn up by searching the literature on MEE methodologies used in MPAs, as well as those evaluations that had already been performed in Mediterranean MPAs. In particular, the preliminary list of indicators was drafted from the following publications:

- IUCN–WWF guidebook *How is your MPA doing?* (Pomeroy et al., 2004)
- Federparchi–WWF Italy handbook *Valutazione dell'efficacia di gestione delle Aree Marine Protette Italiane* (MATTM, 2008)
- EMAS III Regulation (Regulation (EC) No 1221/2009)
- SPAMI selection criteria (UNEP–MAP RAC/SPA)
- Management effectiveness reports for Port-Cros National Park (Port-Cros National Park, 2007), Cap d'Agde Natura 2000 site (ADENA, 2009) and the Italian MPAs of Miramare, Sinis, Isole Ciclopi, Secche di Tor Parterno and Torre Guaceto (MATTM, 2008).

In parallel, a questionnaire regarding the use of other indicators such as EMAS or ISO 14001 certification was collected from 17 other MPAs in Croatia, Spain, France, Slovenia, Italy and Greece, and provided useful information on the diversity of indicators currently used in assessments.



Cinque Terre National Park (Italy). Photo: M. Tempesta



Expert meeting for the definition of the methodology. Photo M. Tempesta

Selection of indicators

From this initial exercise, 49 indicators were selected and displayed in a matrix format that provided a way of understanding the diversity and similarities among them. The range of indicators covered various dimensions of management effectiveness in protected areas, including biophysical, socio-economic and governance components. Here, the selection process first excluded those indicators not appropriate to the Mediterranean context and those too demanding in terms of the time and staff needed to assess them.

The evaluation then separated the elements of the MPA assessment into four major categories: Legislation and Management, Communication and Outreach, Pressures, and Features of interest. It also highlighted an important difference between management effectiveness evaluation (MEE) indicators and environmental condition rating (ECO) indicators. The first are strictly connected to management and reveal the process and institutionalization of management within the MPA. Environmental condition rating (ECO) indicators, in contrast, measure the status of the marine environment, a process that can in certain circumstances be independent of the MPA management body.

Moreover, the indicators are assigned to one of two priorities. Priority 1 indicators are considered more important to the MPA's integrity, and management should make an effort to gather information on the indicators in this group if data are not currently available. The inclusion of Priority 2 indicators allows for a more comprehensive and consistent MPA assessment and might also provide valuable supporting information for a better understanding of the primary indicators.

The final version, which incorporates 18 indicators, 12 of them Priority 1 and 6 Priority 2 (Table 1) and their means of calculation, was agreed upon by Mediterranean MPA managers and partners after several joint review sessions. The expectations and circumstances of each individual institution and MPA were varied and careful revision work reflected the concerns of all partners, particularly with regard to measurement and interpretation methods.

PRIORITY 1

| TYPE | INDICATORS FOR MPA ASSESSMENT | CATEGORY |
|------|---|----------------------------|
| | <p>Existence of legislation on MPAs Assesses whether there exists any local, regional, national or international legislation in force which addresses MPAs specifically.</p> | Legislation & Management |
| | <p>Existence of a functional management body Assesses whether the MPA has a specific body actively devoted to its management.</p> | Legislation & Management |
| MEE | <p>Existence of an updated management plan Assesses whether the MPA has a regularly updated management plan in writing, with specific and measurable management objectives.</p> | Legislation & Management |
| | <p>Financial resources allocated to the MPA Assesses whether there exist adequate financial resources allocated to the protected area to fulfil its mission and objectives.</p> | Legislation & Management |
| | <p>Patrolling and regulation enforcement Assesses whether there is effective surveillance of the MPA to prevent impacts from different sources.</p> | Legislation & Management |
| | <p>Seawater quality Assesses different chemical and physical parameters in the seawater column.</p> | Pressures |
| ECO | <p>Focal habitat conservation status Assesses the status of focal habitats within the MPA.</p> | Features of interest |
| | <p>Focal species abundance and population structure Focuses on the species of specific importance to the site, which are the reason why the MPA was designated.</p> | Features of interest |
| MEE | <p>Management of fishing effort Measures the intensity of fishing pressure in time and space within the MPA.</p> | Pressures |
| ECO | <p>Action on alien invasive species Assesses whether coastal or marine invasive alien species (IAS) exist in the MPA and whether actions are taken to address this threat.</p> | Pressures |
| MEE | <p>Existence of outreach activities Assesses whether the MPA provides outreach activities and has an up-to-date plan in writing for interpretation and education activities.</p> | Communication and Outreach |
| | <p>Management of visitors Measures the number of visitors per year involved in activities inside the MPA.</p> | Pressures |

Table 1a: Mediterranean MPA management effectiveness indicators Priority 1

PRIORITY 2

| TYPE | INDICATORS FOR MPA ASSESSMENT | CATEGORY |
|------|--|----------------------------|
| | <p>Networking and training Measures the existence of data transfer procedures with national/international organizations and takes into account the tasks performed by the training staff.</p> | Communication and Outreach |
| MEE | <p>Coordination with stakeholders and planners Measures relationships and conflict resolution over time.</p> | Legislation & Management |
| | <p>Status of focal physical, cultural and spiritual features Assesses changes in the conservation status of key physical and cultural features within the MPA, including geomorphological and historical features, traditions, etc.</p> | Features of interest |
| ECO | <p>Climate change awareness and actions Assesses whether there is evidence of climate change impact and measures management improvements resulting from mitigation of this impact and its potential outcomes.</p> | Pressures |
| | <p>Alternative Livelihoods and/or Income-Generating Activities Focuses on activities that are compatible with, support or enhance the MPA's objectives.</p> | Features of interest |
| MEE | <p>Local perception of the MPA Measures the level of awareness regarding the MPA's establishment and impacts, the setting of priorities for the MPA and local people's perception of their own roles and responsibilities.</p> | Features of interest |

Table 1b: Mediterranean MPA management effectiveness indicators Priority 2

MPA management effectiveness description sheets

A description sheet has been designed for each indicator (see page 32). Each one is structured as follows:

- **Indicator:** the name of the indicator;
- **Priority:** the priority level of the indicator (1 or 2);
- **Type:** whether it refers to management effectiveness evaluation (MEE) or environmental condition rating (ECO) objectives;
- **Category:** the kind of objective to be assessed (Legislation & Management, Communication & Outreach, Pressures, or Features of interest);
- **Description:** a brief description of the indicator;
- **Rationale:** the purpose and usefulness of the indicator within a management context;
- **Data source:** institutions, authorities, organizations and data bases from which data could be drawn;
- **Data availability:** how easy or difficult it is to gather data of the required quality;
- **Frequency:** how often data should be collected;
- **Measurement:** questions to be answered by the assessor that will help in the interpretation of results; answers will generally be in the form of 'Yes' or 'No', 'favourable' or 'unfavourable', 'maintained' or 'declining';
- **Interpretation:** scoring of the indicator based on a simple rating system, according to the interpretation given;
- **References:** further sources of information;
- **Notes:** additional information
- **Comments:** additional comments

| PRIORITY 1 | EXISTENCE OF LEGISLATION ON MPAs | TYPE MEE |
|--|-------------------------------------|---|
| | | CATEGORY Legislation & Management |
| <p>DESCRIPTION</p> <p>This indicator assesses whether there exists any local, regional, national or international legislation in force which addresses MPAs specifically, be it by a specific law or by the inclusion of MPA designation and management criteria in a broader standard.</p> | | <p>RATIONALE</p> <p>A clear regulatory framework is essential for the effective achievement of the goals and targets of any protected area. If this framework does not exist, many management measures cannot be undertaken and/or enforced.</p> |
| | | <p>DATA SOURCE</p> <p>Government bodies, management body</p> |
| | | <p>DATA AVAILABILITY</p> <p>Easy</p> |
| | | <p>FREQUENCY</p> <p>Every two years</p> |
| <p>MEASUREMENT</p> <p>The following questions should be answered:</p> <ol style="list-style-type: none"> 1. Do the MPAs of the country have a specific regulatory framework (international, national or regional) addressing MPA designation and management criteria as specified in the law currently in force? 2. Is the MPA supported by any additional legislation or regulations (local or regional)? | | <p>INTERPRETATION</p> <p>If the answer to the questions above is:</p> <ul style="list-style-type: none"> • 'There exists a specific, up-to-date law on MPAs or a more general law in which MPA regulations are extensively included': it means that the indicator is adequately complied with. • 'There exist general rules governing protected areas but MPAs are not extensively addressed or explicitly included in them', or 'There exists a specific law on MPAs or a more general law in which MPA regulations are extensively included but it is not up to date': it means that some progress is needed to comply with the indicator. • 'There is no legal framework that specifically applies to MPAs': it means that the indicator is not complied with. |
| <p>COMMENTS</p> <p>Please give brief details of the activities undertaken</p> | |  <p style="font-size: small;">Buoy delimiting the core zone of the Plemmiria MPA (Italy). Photo: M. Tompasta</p> |
| <p>REFERENCES</p> <ul style="list-style-type: none"> • Hookings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. (2006). Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. 2nd edition. Gland, Switzerland and Cambridge, UK: IUCN. • Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007. | | |

How to interpret the indicator and the report format

With a view to simplifying the use of the indicators, a scorecard with a worksheet has been created for each of the 18 indicators showing the measurement criterion, the evaluation system for score calculation and the interpretation of results.

The scorecard provides a simple scoring system for each indicator, together with the measurement and interpretation criteria. To complete the scorecard a series of questions and statements provided for each indicator need to be completed. Positive or negative, favourable or unfavourable replies are then converted into a final score by adding the partial scores given for each question. An additional section for comments or suggestions may also be added.

The scorecard should be completed by MPA managers and also ideally MPA staff. The format is quick and straightforward as the summary score for each indicator is calculated automatically and highlighted in a specific colour. The results of the individual indicator assessments are also automatically combined with the scores from all indicators, allowing managers to see at a glance whether their management is effective.

The resulting scores are not designed to rank MPAs, but rather to allow year-on-year comparisons to show how a given MPA has improved. They can also be used to examine trends at the Mediterranean level.

The management effectiveness review worksheet provides a template for completion by the reviewer. It consists of three sections: (1) the MPA management Score Area, (2) the MPA Context Area and (3) the Indicator Area.

The MPA Management Score Area provides space to write a short justification of the answers given to the questions on the indicator description sheet. If possible, it is advisable to add data evidence supporting the reply and point out whether the trend is positive, negative or unchanged compared to the previous year. An example of the Score Area for the indicator 'Existence of legislation on MPAs' as filled in by Miramare MPA Management Body (Italy) is provided below in Figure 2.

| EXISTENCE OF LEGISLATION ON MPAS | PRIORITY 1 | SCORE AREA | | |
|---|------------|---|---|-------|
| | Your score | Justification | Data (if of pertinence) | Trend |
| Note: mark 1 point for YES and 0 for NO | year 2012 | Docs or qualitative description | Quantitative evaluation | |
| 1. Do the MPAs of the country have a specific regulatory framework (international, national or regional) addressing MPAs designation and management criteria specified in the law currently in force? | 1 | Italy is part to the Barcelona Convention, then recognises SPAMIs and relevant protocols on the protection of biodiversity and endangered species Two national laws take into consideration the establishment of MPAs: law 394/1991 and law 979/1982 Management | Italy presently hosts 8 SPAMIs 30 MPAs are issued after these 2 laws; 17 other sites are undergoing the evaluation and startup procedures. | = |
| Total score | 1 | | | |

Figure 2: Example of the Score Area for the indicator 'Existence of legislation on MPAs' as filled in by Miramare MPA Management Body (Italy)

Comments on the difficulties encountered in carrying out the activity under evaluation can be written in the MPA Context Area. Negative answers to the questions asked by the indicator are sometimes due to specific obstacles that are difficult to overcome, as they relate to the features of the MPA. Any problems and constraints in carrying out the indicator assessment can therefore be described in this area. An example of the Context Area for the indicator 'Existence of outreach activities' as filled in by Cap de Creus MPA Management Body (Spain) is provided below in Figure 3.

| EXISTENCE OF OUTREACH ACTIVITIES | PRIORITY 1 | CONTEXT AREA | |
|---|------------|---------------------------------------|------------------|
| | Your score | Problems in carrying out the activity | Comments |
| | year 2012 | | |
| <i>Note: mark 1 point for YES and 0 for NO</i> | | | |
| 1. Is there an interpretation and education plan for the MPA? | 1 | Decreasing budget | Needs EU Funding |

Figure 3: Example of the Context Area for the indicator 'Existence of outreach activities' as filled in by Cap de Creus MPA Management Body (Spain)

The Indicator Area is used for comments on the application of the indicator and suggestions or recommendations for improving the indicator, its measurement or its interpretation. During the testing phase, comments and suggestions for improvement were of the utmost importance. An example of the Indicator Area for the indicator 'Seawater quality' as filled in by Cinque Terre MPA Management Body (Italy) is provided below in Figure 4.

| SEAWATER QUALITY | PRIORITY 1 | CONTEXT AREA | |
|--|------------|--|---------------------------------|
| | Your score | Problems in applying the indicator | Suggestions and recommendations |
| | year 2012 | | |
| <i>Note: mark 1 point for YES and 0 for NO</i> | | | |
| 1. All parameters are under the reference levels | 1 | Data on web sites of ARPAL are not always easily available and not always update | |

Figure 4: Example of the Indicator Area for the indicator 'Seawater quality' as filled in by Cinque Terre MPA Management Body (Italy)

Scores for each of the individual evaluation elements are added together to give a final Total Score, which is colour coded. This colour code scheme was the most useful way of assessing the MPAs' compliance. The management effectiveness level is thus determined by the colour code assigned for each indicator:

- **BLUE** indicates the best scenario and means that the indicator has been fully complied with; the relative score is the highest.
- **GREEN** indicates a good scenario and means that the indicator has been complied with, although a little more effort is needed to achieve the best possible scenario; the relative score is medium high.
- **YELLOW** indicates a poor scenario and means that significant improvement has to be made to comply with the indicator; the relative score is medium low.
- **RED** indicates the worst scenario and means that the indicator has not been complied with; the relative score is the lowest.

In addition to the Total Score, additional outcome-related questions are included for some indicators to give an Additional Score; this places greater emphasis on the complementary measures and efforts made by the management body in the areas under evaluation. The comments allow the assessor/s to justify their replies by providing explanations and supporting information, as well as further suggestions for improvement.

An example of the Additional Score with the three areas (Score, Context and Indicator) for the indicator 'Existence of outreach activities' as filled in by Torre Guaceto MPA Management Body (Italy) is provided below in Figure 5.

A summary management effectiveness worksheet shows the colour-coded status of the MPA for each indicator. The example provided in Figure 6 shows the final evaluation of management effectiveness by Strunjan MPA (Slovenia) in 2012.

| ADDITIONAL POINTS: 1 POINT FOR YES | | | | | |
|--|---|---|---------------------------------------|---|--|
| 1. Measurement of numbers and trend in visitors numbers are done | 1 | Each outsourced activity should be registered in a informatic system (number of participants, origin) | 5,716 presence in outreach activities | The number of visitors is counted only at the end of the year | It's difficult to obtain a costant updating of the information from the service provider |
| Additional score | 1 | | | | |

Figure 5: Example of the Additional Score for the indicator 'Existence of outreach activities' as filled in by Torre Guaceto MPA Management Body (Italy)



Torre Guaceto MPA (Italy). Photo: F. De Franco

| PRIORITY | NAME OF THE INDICATOR | TOTAL SCORE | ADDITIONAL SCORE |
|----------|--|-------------|------------------|
| 1 | Existence of legislation on MPAs | 1 | 1 |
| | Existence of functional management body | 5 | |
| | Existence of a updated management plan | 1 | |
| | Financial resources allocated to the MPA | 4 | |
| | Patrol and Regulation enforcement | 5 | 0 |
| | Seawater quality | 1 | 0 |
| | Focal habitats conservation condition | UIB | 0 |
| | Focal species abundance and population structure | 1 | 0 |
| | Management of fishing effort | 0 | 0 |
| | Action on alien invasive species | 1 | -1 |
| | Existence of outreach activities | 2 | 1 |
| | Management of visitors presence | 0 | 1 |
| 2 | Networking and training | 2 | 3 |
| | Coordination with stakeholders and planners | 2 | 1 |
| | Status of focal physical, cultural and spiritual features | E | |
| | Climate change awareness and actions | 2 | |
| | Alternative Livelihoods and/or Income Generating Activities (AL/IGA) | 1 | 1 |
| | Local perception of the MPA | 2 | 0 |

Figure 6: Summary management effectiveness worksheet for Strunjan MPA (Slovenia) in 2012. Different colours represent different scores (blue=best, green=medium high, yellow=medium low; red=worst); UIB=unfavorable inadequate; E=equal.

In addition to the scorecard, a report template is provided for supplementary information on specific indicators, the source of data or the rationale behind qualitative answers, so as to give a better understanding of the evaluation results and any future options for improving management.

Further details on the protected area, its management goals, its geographical context and its features should be given in the first part of the report while future actions to improve poor management should be reported in the second part.

Case studies

MPAs are established for different purposes and have differing use levels, management sizes and funding schemes, as well as varied experience of implementation depending on their age since establishment, among many other factors. All these aspects are important when it comes to evaluating the degree of management effectiveness in different MPAs.

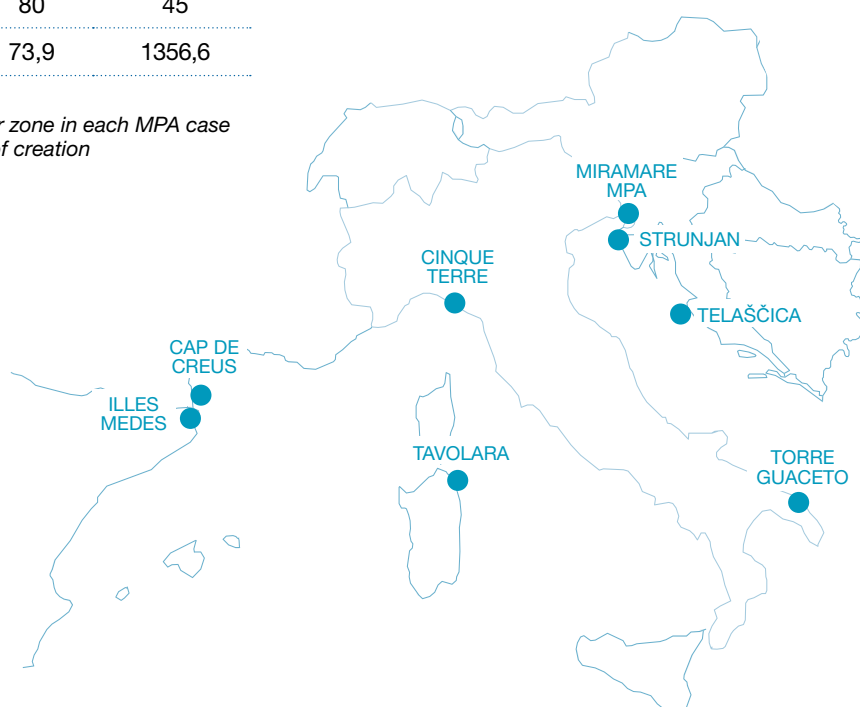
The results of a management effectiveness evaluation conducted on a sample of Mediterranean MPAs are presented here to provide a better insight into the most important elements and factors that influence MPA management, with a view to refining the indicators. The case studies were performed on eight marine protected areas from the MedPAN North project and other MedPAN partners: Miramare, Cinque Terre, Torre Guaceto and Tavolara MPAs (Italy), Cap de Creus and Illes Medes MPAs (Spain), Strunjan MPA (Slovenia), and Telašćica Nature Park (Croatia) (Table 2).

| | YEAR OF CREATION | CORE ZONE (HA) | BUFFER ZONE (HA) |
|----------------------|------------------|----------------|------------------|
| Miramare | 1986 | 30 | 90 |
| Cinque Terre | 1997 | 104 | 4487 |
| Torre Guaceto | 1991 | 179 | 2048 |
| Tavolara | 1997 | 529 | 14828 |
| Cap de Creus | 1998 | | 3074 |
| Illes Medes | 1990 | 93 | 418 |
| Strunjan | 1990 | 80 | 45 |
| Telašćica | 1988 | 73,9 | 1356,6 |

Table 2: Designated core and buffer zone in each MPA case study site and year of creation

Each case study bases its evaluation on the system of indicators discussed above. These examples reflect the diversity of natural and socio-economic conditions of MPAs in the Mediterranean, illustrate the present situation in the MPA system and give an insight into how areas are managed and their future needs.

Some of these sites focus on protecting specific ecosystems or species, while others have a more general marine biodiversity conservation focus or are part of the Natura 2000 Network (EU Habitats Directive). The evaluation results recorded in their final reports and scorecards provide useful information on both the use of the indicators and the general activity situation in the various sites, forming the basis for any future assessment.



Analysis of the application of indicators in the eight testing MPAs

Figure 7 summarizes the findings of the case studies, indicating that all the MPAs were effective at addressing Priority 1 indicators for which they had data and monitoring information, with the exception of a single MPA (Miramare, Italy) where 'Management of fishing effort' was not scored, as fishing is not allowed within its boundaries and the indicator result was 'not applicable'.

The evaluation of Priority 2 indicators offered information additional to the basic set proposed and might be used to evaluate MPAs according to the initial objectives. Indicators such as 'Status of focal physical, cultural and spiritual features', 'Alternative Livelihoods and/or Income-Generating Activities' and 'Local perception of the MPA' were in practice less used by MPAs in the evaluation process because they are the most challenging in terms of time and staff needed to collect the data required.

| | | | |
|---|---|---|---|
| EXISTENCE OF LEGISLATION ON MPAS | 8 | EXISTENCE OF OUTREACH ACTIVITIES | 8 |
| EXISTENCE OF A FUNCTIONAL MANAGEMENT BODY | 8 | MANAGEMENT OF VISITORS | 8 |
| EXISTENCE OF A UPDATED MANAGEMENT PLAN | 8 | NETWORKING AND TRAINING | 8 |
| FINANCIAL RESOURCES ALLOCATED TO THE MPA | 8 | COORDINATION WITH STAKEHOLDERS AND PLANNERS | 7 |
| PATROL AND REGULATION ENFORCEMENT | 8 | MANAGEMENT OF FISHING EFFORT | 7 |
| SEAWATER QUALITY | 8 | CLIMATE CHANGE AWARENESS AND ACTIONS | 7 |
| FOCAL HABITATS' CONSERVATION CONDITION | 8 | PHYSICAL, CULTURAL AND SPIRITUAL FEATURES | 5 |
| FOCAL SPECIES ABUNDANCE AND POPULATION STRUCT | 8 | ALTERNATIVE LIVELIHOODS | 4 |
| ACTION ON ALIEN INVASIVE SPECIES | 8 | LOCAL PERCEPTION OF THE MPA | 4 |

Figure 7: Frequency of indicator used by the testing MPAs



Striped dolphin (*Stenella coeruleoalba*) jumping off Miramare MPA (Italy). Photo: S. Ciriaco

A comparison of the self-assessments of management effectiveness by case-study MPAs shows that all the sites rated themselves fairly highly (blue colour code) in terms of sea water quality and the adequacy of legislation to specify MPA designation, zoning and management criteria (Table 3).

The assessments also indicate that patrolling programmes and law enforcement are rated relatively highly among the range of management objectives and activities, and are fairly effective. Specific MPA staff or local government enforcement agencies are usually responsible for regulation enforcement within the case-study sites.

| PRIORITY | | CAP DE CREUS | 5 TERRE | MIRAMARE | STRUNJAN | TAVOLARA | TORRE GUACETO | ILLES MEDES | TELAŠČICA | TOTAL | | | |
|----------|---|--------------|---------|----------|----------|----------|---------------|-------------|-----------|-------|---|---|---|
| | | | | | | | | | | | | | |
| 1 | Existence of legislation on MPAs | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | 8 | 0 | 0 | 0 |
| 1 | Seawater quality | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | 8 | 0 | 0 | 0 |
| 1 | Patrol and Regulation enforcement | Green | Blue | Blue | Blue | Green | Blue | Green | Green | 4 | 4 | 0 | 0 |
| 1 | Focal habitats' conservation condition | Green | Green | Green | Green | Blue | Green | Blue | Green | 2 | 6 | 0 | 0 |
| 1 | Focal species abundance and population structure | Green | Green | Blue | Yellow | Blue | Blue | Blue | Yellow | 4 | 2 | 2 | 0 |
| 1 | Existence of outreach activities | Blue | Green | Green | Yellow | Blue | Green | Yellow | Yellow | 2 | 3 | 3 | 0 |
| 2 | Networking and training | Yellow | Yellow | Green | Green | Blue | Green | Yellow | Yellow | 1 | 3 | 4 | 0 |
| 1 | Existence of a functional management body | Blue | Red | Blue | Green | Blue | Blue | Blue | Blue | 6 | 1 | 0 | 1 |
| 1 | Management of visitors | Blue | Blue | Blue | Red | Blue | Green | Blue | Green | 5 | 2 | 0 | 1 |
| 1 | Action on alien invasive species | Blue | Red | Green | Green | Blue | Green | Blue | Green | 3 | 4 | 0 | 1 |
| 1 | Existence of an updated management plan | Red | Green | Green | Red | Green | Green | Green | Green | 0 | 6 | 0 | 2 |
| 1 | Financial resources allocated to the MPA | Red | Yellow | Yellow | Green | Red | Green | Green | Red | 0 | 3 | 2 | 3 |
| 1 | Management of fishing effort | Green | Blue | N.A. | Red | Green | Blue | Blue | Red | 3 | 2 | 0 | 2 |
| 2 | Coordination with stakeholders and planners | Red | Red | N.E. | Yellow | Blue | Green | Red | Yellow | 1 | 1 | 2 | 3 |
| 2 | Climate change awareness and actions | Red | Red | Green | Yellow | Blue | N.E. | Red | Red | 1 | 1 | 1 | 4 |
| 2 | Status of focal physical, cultural and spiritual features | Green | N.E. | N.E. | Green | Blue | N.E. | Green | Red | 1 | 3 | 0 | 1 |
| 2 | Alternative Livelihoods and/or Income Gen Activities | Blue | N.E. | N.A. | Green | N.E. | N.E. | Blue | Red | 2 | 1 | 0 | 1 |
| 2 | Local perception of the MPA | Yellow | N.E. | N.E. | Green | N.E. | N.E. | Green | Blue | 1 | 2 | 1 | 0 |

Table 3: Indicator rankings based on the total scores achieved by the eight testing MPAs. The indicators given the best scores by all eight MPAs (in blue and green) are positioned at the top, whereas those with the worst scores (yellow and red) are at the bottom, followed by the indicators measured by only some of the testing MPAs. 'N.A.' = not applicable; 'N.E.' = not evaluated.

Similarly, seawater quality in the MPAs is generally measured by MPA staff, collaborating scientific institutes or government departments. Although this information is often not easily available to MPA managers and staff, monitoring programmes in place indicate that all parameters are below the thresholds established by law and the indicators are fully met.

These MPAs are in general achieving their objectives in terms of biodiversity and the conservation status of focal habitats as well as attaining a good level of protection for focal species populations. Nevertheless, despite efforts to prioritize certain species, a monitoring plan still needs to be put in place in some sites. Likewise, monitoring plans to detect the presence of the most common alien species have begun in most MPAs with the exception of Cinque Terre, which has yet to set up a programme. Future work will be needed to increase their ability to identify other highly damaging invasive alien species, develop mitigation and control measures and assess the specific impact of management actions on this threat.

Outreach activities are also carried out in all the MPAs through environmental education and interpretation plans and programmes, and the use of information tools such as boards and brochures, with staff appointed to perform these activities all year round. However, although some MPAs have an information centre, display boards and other communication tools, the effectiveness of their outreach programmes is hampered by a lack of well-organized education and public awareness activities and insufficient staff to implement them.

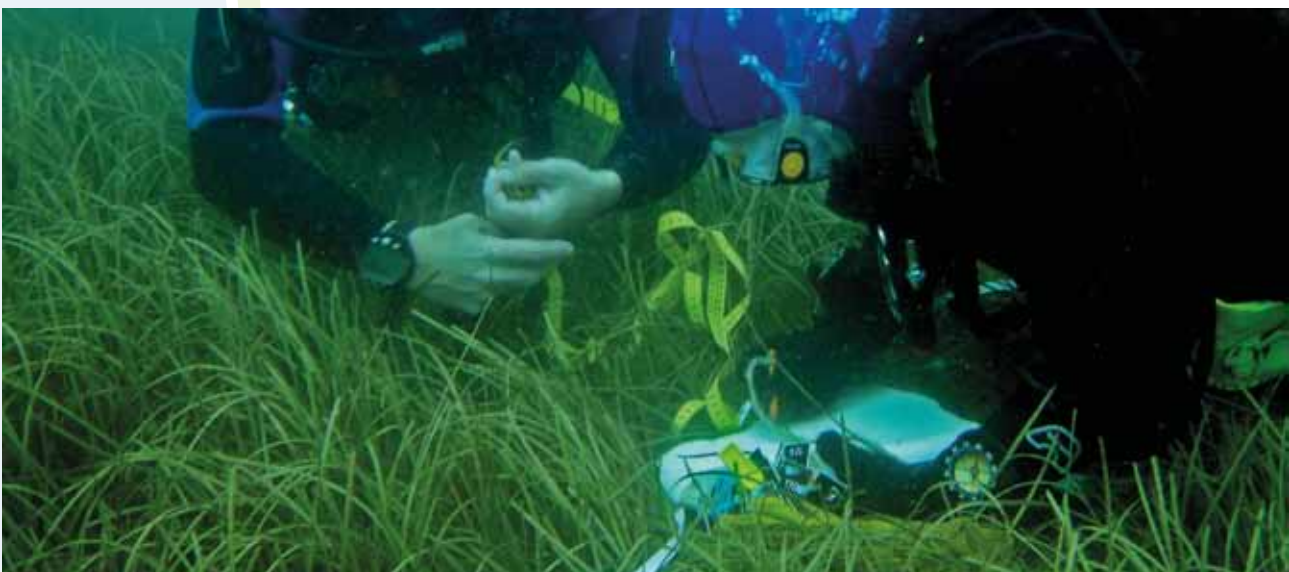
The assessments revealed that most of the MPAs are relatively used to having contact and exchanging experience and good practice with national or international organizations or other Mediterranean MPAs. Capacity-building exercises are conducted on a regular

basis in most MPAs, although Cinque Terre and Cap de Creus MPAs lack some specific training programmes. Moreover, MPA visitors are well managed in general and the number of visitors is in line with site protection and conservation goals. At one site, however, the number of visitors seems well above the site carrying capacity (especially during the summer period) and this might have a major negative impact on the ecosystem.

In evaluating the level of management it is also important to measure the existing governance of MPAs in terms of their having a functional management body and conducting periodic reviews of management plans. A regularly updated management plan is an indication of effective management, demonstrating that the MPA has a future orientation and a means to attain these goals. All the Italian MPAs have management plans that will run over a medium- to long-term period, as they have received assistance for their preparation from a previous project funded by the Italian Ministry of the Environment. In other sites however, management plans are still in the early stages of preparation or going through regional government approval procedures. In addition, most of the MPAs have an appropriate organizational framework, with the exception of Cinque Terre, where the framework has not yet been approved by the Italian Ministry for the Environment due to a recent comprehensive reorganization of the protected area's governance.

Artisanal fisheries appear to be well managed and, according to scientific publications, are in line with site conservation values, although the limited level of monitoring and assessment carried out at some sites suggests management of fishing effort may be low.

One of the criteria assessed as weakest was financial resources. Most MPAs feel income is insufficient for management and is provided under a short-term



Monitoring activity. Photo: S. Ciriaco



Artisanal fishermen. Photo: S. Ciriaco

perspective. There is a general concern that present funding arrangements will not be maintained in the future due to the current economic problems. This will result in reduced budgets and delayed payments with a decrease in management's ability to deliver.

The role of local communities and other stakeholders and planners in relation to the MPAs was very diverse. The MPAs and local authorities in Tavolara and Torre Guaceto appear to engage particularly well with local stakeholder groups (mainly fishermen and farmers), who are regularly consulted during the year, and the MPA management body plays an active role in integrated coastal zone management (ICZM) decision making. In contrast, a lack of consistency between MPA management and local development plans, combined with a failure to attend meetings where ICZM decisions are made, suggests that there is limited stakeholder participation in some MPAs and that coastal development plans may not be aligned with the MPAs' goals. The inclusion of stakeholders in the MPA management body should be an asset for future participation and to this end the organization of yearly meetings at Cap de Creus between the MPA management body and various local advisory groups will benefit site management. A well-established management structure with an advisory board should further encourage local stakeholders to become involved in site management.

Climate change will play an increasingly important role in determining the condition and future of the MPAs, and will make their biodiversity more vulnerable. Public awareness and management actions will help to build resilience and increase knowledge, providing the best chance for MPAs to adapt and recover from the threats ahead. Regular surveys and specific monitoring

programmes like the ones currently being conducted by Miramare and Tavolara can help in understanding the vulnerabilities of the ecosystem and in examining possible adaptations. Conversely, a lack of regular monitoring activities or the collection of data only on an occasional basis limits the ability of some MPAs to plan for climate change. Awareness activities can further help to create community understanding of issues and develop effective partnerships for future actions.

Sites that assess the conservation status of specific physical, cultural and spiritual features report that these features are maintained in good condition or in better condition than previously. This is aided by collaboration with local and regional institutions.

Alternative livelihoods for local communities was only measured in four MPAs. At Cap de Creus, Medes and Strunjan there is a positive output, as their managements encourage or are aware of income-generating activities inside the MPAs that are compatible with conservation goals.

Lastly, local perception of the MPAs was high for some sites, especially at Telaščica and Strunjan, where the management body is in regular contact with the local population, which is well informed about the significance of the marine protected area. At other sites, despite regular socio-economic impact assessment surveys, the management is not aware of the extent to which the local population understands the opportunities and the constraints imposed by the MPA. While the public perception of MPAs has improved, their effectiveness will benefit from increased public understanding of the MPAs' role.

Role of indicators in defining the strengths and weaknesses of MPA management

The collection of standardized data on a range of indicators and the use of a common scorecard-based methodology such as this is critical if any regional evaluation of the effectiveness of Mediterranean MPAs is to be carried out. Furthermore, this common evaluation methodology provides a practical tool for undertaking evaluations at site level, examining trends and communicating the effectiveness of management quickly and simply—all essential factors for the long-term sustainability of any MPA. This tool, including indicators, scorecards and descriptive reports, may be considered a good starting point for examining trends, which can also be tested by recently designated MPAs.

Nonetheless, the scorecard system admittedly seems perhaps too schematic, and some evaluations based on managers' opinions and experience may be too subjective and unduly influenced by the respondents. That is why the scorecards need to be coupled with a report providing qualitative and quantitative evidence for the answers given.



Visitors at Strunjan Landscape Park (Slovenia). Photo: M. Otero

The case studies demonstrate that in general terms the MPAs are managed effectively. The Priority 1 indicators were successfully evaluated by all MPAs, and the Priority 2 ones, which allow for a more comprehensive and consistent assessment, provided valuable supporting information for a better interpretation of the primary indicators in the sites that were assessed.

The need to secure sufficient operational funding each year, which has been aggravated by the current government cuts in many countries, is a challenge for many MPAs which are already finding it difficult—or soon will—to deliver a good standard of management. Increasing the diversity of partnerships and the types and sources of income, including alternative private and tax revenues, may help to support the MPAs' conservation objectives in the future.

Many protected area managers are not able to systematically review the results of their efforts on an annual basis. Launching a data collection campaign to measure these indicators requires a major effort in terms of time, staff and resources, which are hard to find in the current economic and human resources climate. Nevertheless, these reviews and evaluation exercises are very important and will help to improve the quality of communication with government bodies and coastal stakeholders. As such, the results obtained from these evaluations need to be communicated internally as part of the project management cycle and externally to promote best practice and an understanding of the challenges. The integration of MPAs into a wider coastal planning process is key to achieving the protected areas' objectives.

The limited degree of communication with local communities seen at some sites may represent a significant opportunity to increase dialogue and enhance a common understanding of management goals and how to achieve them.

The case-study assessments also suggest that there are significant opportunities to increase the effectiveness of the MPAs and to develop management plans more in alignment with adaptation approaches. In general, managers believe that measures to counteract the impacts of climate change and the spread of invasive alien species are currently difficult to implement and unlikely to succeed, and consequently they tend to afford them little attention in their management plans. Climate change and invasive species are starting to show their effects in MPAs, particularly in highly vulnerable habitats, posing a threat to the integrity of the protected areas. Guidance and a better understanding to account for and minimize the likely impacts of these threats still need to be incorporated more effectively into site management.

Overall, the case studies show the complexity and variability of the MPAs by providing snapshots of the current state of MPA management practices. Nonetheless,



Illes Medes MPA (Spain). Photo: A. Lorente

eight case studies cannot provide an overview of all the diversity in Mediterranean MPA management, as they are intrinsically associated with their local needs and circumstances. Care must be taken to ensure that evaluation is not perceived as a scoring system for ‘bad’ and ‘good’ MPAs, but rather as a general view of their present status that can show where future management actions should be focused.

A recent survey conducted by the MedPAN Association over 80 Mediterranean MPAs reveals some findings in common with the case studies and raises other management issues (Gabrié et al., 2012). More than half of the MPAs surveyed did not yet have a management plan for the sites or were still going through the legal procedure to obtain one, and 75% of the Natura 2000

sites (in EU countries) still did not have a management body. Moreover, not all the MPAs showed the same management capacity or means and, whereas having a comprehensive and regular monitoring programme was commonly achieved, local community participation in protected area management decisions appeared still to be weak in many sites.

The use of the present scorecard-based methodology at the regional level is not only useful for prioritizing issues but also can provide further information about the achievement of management objectives and a detailed analysis of the management effectiveness of Mediterranean MPAs, since it includes all the key elements and factors for evaluating management actions within the evaluation framework.

Certification and verification schemes for the marine protected areas

There is growing concern that many protected areas around the world are not achieving their objectives and there is also a general consensus that some kind of official verification or certification system for protected areas is needed. This need was stated in Recommendation 18 of the 5th World Congress on Protected Areas (2003) and reiterated in the recent World Conservation Congress in the Republic of Korea (Jeju, 2012).

This move has led to the emergence of a variety of voluntary certification schemes for protected areas in recent years, particularly for the European region. The use of independent management assessments, with a certification system whereby protected areas are certified or verified against agreed standards, can help to support conservation objectives in or near MPAs (Scanlon and Burhenne-Guilmin, 2004; WCC-2012-Res-076). These certificates can bring national and international recognition to the MPAs' work and raise their profile as examples of effective management. Furthermore, they can help raise the profile of managers and management bodies, promote tourism and encourage investment in programmes and policies in protected areas, among other opportunities.

Most of these types of certification are based on third-party assessments and audits of a protected area's compliance with a set of criteria and management standards. Examples of these assessments for protected areas are:

- EUROPARC Transboundary Parks Certification; a special verification and certification system that aims to promote and facilitate transboundary cooperation between European protected areas;
- The PAN Parks certification scheme, which focuses especially on sustainable tourism within large protected areas (WWF, 2004);
- The European Diploma for Protected Areas (Resolution CM/ResDip (2008)1, adopted on 20 February 2008), which provides a recognized standard for heritage conservation and the promotion of sustainable development models for natural and semi-natural areas and landscapes of exceptional European importance;
- The European Union's Eco-Management and Audit Scheme (EMAS), following the ISO 14000 standard series (by the International Organization for Standardization) on environmental management for organizations;
- The UNESCO World Heritage Convention Natural World Heritage Sites, regarded as recognition of the universal value of certain areas (World Heritage Convention, adopted by UNESCO in 1972).

For a more international and generic approach, the IUCN Green List of Well-Managed Protected Areas is a simple new programme that aims to make an international recognition award to protected areas that reach good standards of management. It offers a means for countries to demonstrate progress towards the CBD Strategic Plan Target 11, which calls for at least 10% of coastal and marine areas to be conserved through effectively and equitably managed protected areas. Nominated sites will need to fulfil a set of minimum standards including conservation objectives, legitimate establishment, management effectiveness, appropriate governance and stakeholder participation, as well as visitor management and experience.

Although the IUCN Green List of Well-Managed Protected Areas is still in its infancy, the initiative will serve as an important basis for showing the success of protected areas, including marine and coastal sites (Figure 8).

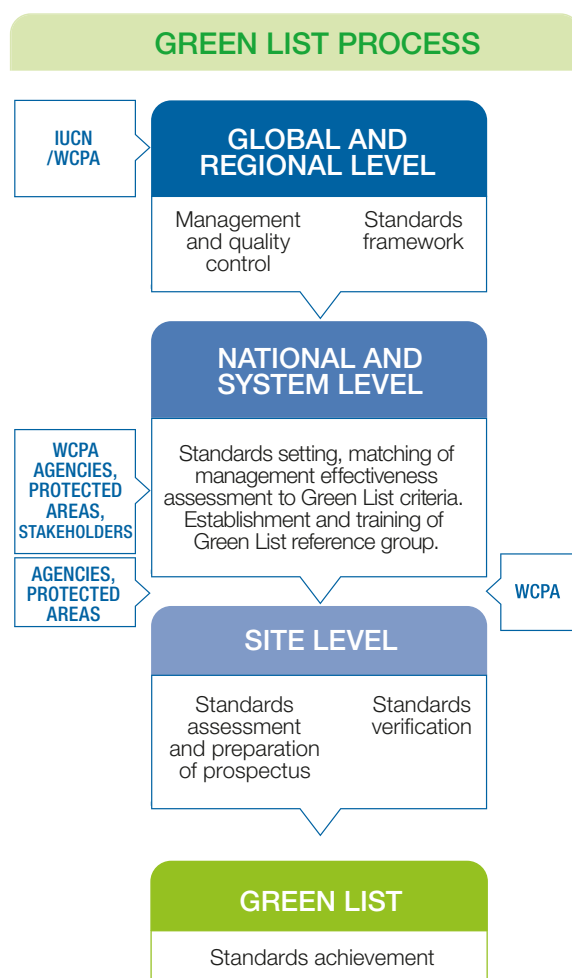


Figure 8: Diagram of the IUCN Initiative for a Green List of Well-Managed Protected Areas

Other certification schemes for marine protected areas

In addition to the systems being developed specifically for protected areas, several other certification schemes are of relevance to marine protected area management for evaluating specific issues within or close to a protected area. Some examples are given below.

- The Blue Flag Programme, a certification scheme for coastal recreation in Europe, particularly the use of beaches and marinas and the management of coastal areas (Foundation for Environmental Education; website: www.blueflag.org);
- The Green Key, a certificate awarded to tourism establishments and companies that meet a minimum set of standards on environmental management, communication, training and technical criterion (www.greenkeyglobal.com);
- Sustainable use of marine resources, including the Marine Stewardship Council (www.msc.org/fr) and the Marine Aquarium Council (www.aquariumcouncil.org) relevant to marine fisheries;
- The European Charter for Sustainable Tourism in Protected Areas, a voluntary agreement that aims to encourage good practice by recognizing protected areas that meet agreed requirements for the sustainable development and management of tourism (www.european-charter.org/home/).



Cabrera National Park (Spain). Photo: Park Authority archive

Communicating the results and future options

Many significant accomplishments have resulted from the Mediterranean MPAs' management efforts. Specific management measures for vulnerable species and habitats, educational and outreach activities, surveillance and enforcement, lesson sharing and increased community participation in management activities are among these. There are of course, still many challenges to meet in making improvements to MPA effectiveness. Creating new partnerships and initiatives and obtaining ongoing support for these efforts are necessary to improve policies and overall management activities.

This quick management evaluation tool is a positive means of encouraging and strengthening adaptive management, and particularly of focusing on those actions that are most needed. To achieve this, the results and recommendations of each individual assessment need to be communicated to stakeholders so as to influence future plans, resource allocation and management actions. It is vital to adopt an effective, wide-reaching communication approach to help get the message across, in order to strengthen the influence of MPA management in securing adequate funding and local community support or getting the necessary regulations or assistance put in place (Hockings et al., 2006).

Nonetheless, it is difficult to evaluate the efficacy of MPAs and their follow-up improvements through a one-off assessment. Management effectiveness evaluation should be a regular, integral part of the management

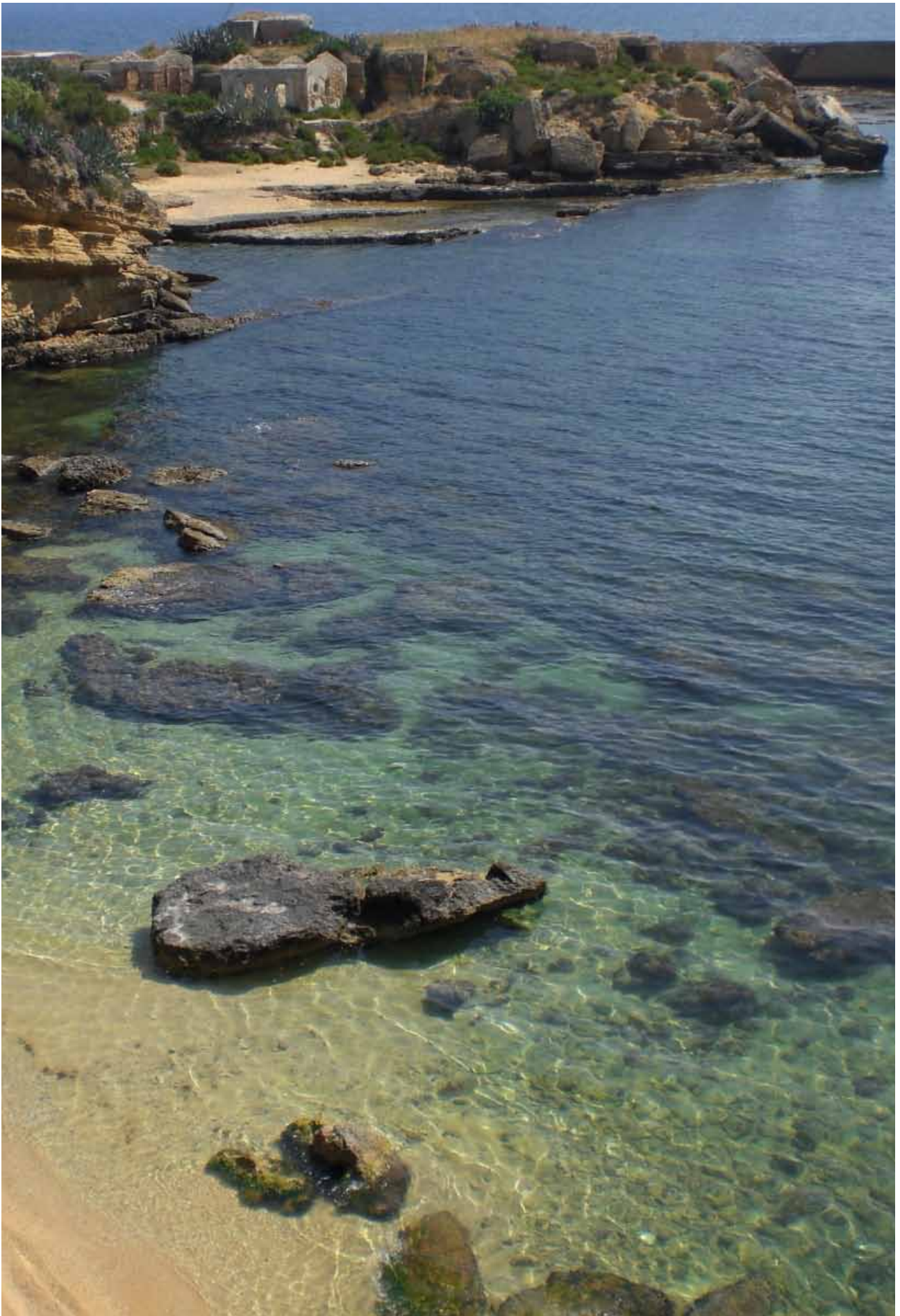
process, because gathering time-series information is essential for demonstrating changes in management effectiveness. Management is a complicated task and results are not always due to direct management actions and may go beyond a manager's control. Incorporating all the six elements of the IUCN-WCPA Framework in the evaluation is important to gain a good understanding of the circumstances in which any management is operating (Hockings et al., 2006).

This management evaluation tool for Mediterranean MPAs helps to provide the information needed to explain the individual context, the inputs and their interactions so that the evaluation results may be properly interpreted. Its final aim is for managers to learn from both good and less successful management approaches, to cooperate with and learn from the network of Mediterranean MPA managers and others, and to take every opportunity to achieve better results in the future.

Most efforts to improve MPA effectiveness are at the implementation level. Work towards developing management capacity and skills is needed to improve site management, regulation enforcement, monitoring plans and better coordination and cooperation with stakeholders and planners. MPAs are dependent on the marine and coastal environment around them, as well as any planning and management decisions taken on these environments. Local community and stakeholder support is vital for the successful conservation of MPAs.



*Informative panel at Tavolara-Punta Coda Cavallo MPA (Italy).
Photo: Park Authority archive*



Plemmirio MPA (Italy). Photo: M. Tempesta

MPA Management Effectiveness Description Sheets

The following list consists of 18 indicators, each one described according to a common framework, with its name, description, frequency of measurement, type of measures to be complied with, etc.

The indicators are divided into two categories, one strictly related to management effectiveness evaluation (MEE) and the other associated with the state of the marine environment (ECO: environmental condition rate). Indicators are also given a priority of 1 or 2.

For those who are interested in applying the use of the indicators to evaluate the management effectiveness of its MPA, the scorecards in form of excel file can be downloaded from the MedPAN website

> www.medpan.org/management-tools



Caves habitat. Photo: J. Cuetos OCEANA

EXISTENCE OF LEGISLATION ON MPAs

TYPE MEE

CATEGORY Legislation & Management

DESCRIPTION

This indicator assesses whether there exists any local, regional, national or international legislation in force which addresses MPAs specifically, be it by a specific law or by the inclusion of MPA designation and management criteria in a broader standard.

RATIONALE

A clear regulatory framework is essential for the effective achievement of the goals and targets of any protected area. If this framework does not exist, many management measures cannot be undertaken and/or enforced.

DATA SOURCE

Government bodies, management body

DATA AVAILABILITY

Easy

FREQUENCY

Every two years

MEASUREMENT

The following questions should be answered:

1. Do the MPAs of the country have a specific regulatory framework (international, national or regional) addressing MPA designation and management criteria as specified in the law currently in force?
2. Is the MPA supported by any additional legislation or regulations (local or regional)?

INTERPRETATION

If the answer to the questions above is:

- ‘There exists a specific, up-to-date law on MPAs or a more general law in which MPA regulations are extensively included’: it means that the indicator is adequately complied with.
- ‘There exist general rules governing protected areas but MPAs are not extensively addressed or explicitly included in them’, or ‘There exists a specific law on MPAs or a more general law in which MPA regulations are extensively included but it is not up to date’: it means that some progress is needed to comply with the indicator.
- ‘There is no legal framework that specifically applies to MPAs’: it means that the indicator is not complied with.

COMMENTS

Please give brief details of the activities undertaken



Buoy delimiting the core zone of the Plemmirio MPA (Italy). Photo: M. Tempesta

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- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007.

EXISTENCE OF A FUNCTIONAL MANAGEMENT BODY

TYPE MEE

CATEGORY Legislation & Management

DESCRIPTION

This indicator assesses whether the MPA has a specific body actively devoted to its management.

RATIONALE

It is widely accepted that protected areas need to have specific active management to be effective. As a result, a protected area without a functional management body is just a 'paper park' that is usually unable to meet its conservation objectives.

DATA SOURCE

Management body, government bodies

DATA AVAILABILITY

Easy

FREQUENCY

Annual

MEASUREMENT

The following questions should be answered, giving 1 point for each 'Yes' and 0 points for each 'No':

1. Is there a specific management body for the MPA?
2. Does this management body regularly perform conservation management activities focused on habitats and/or species?
3. Does this management body regularly perform public use activities (visitor management, guided tours)?
4. Does this management body regularly perform surveillance activities either directly or by agreement?
5. Does this management body regularly perform maintenance activities?
6. Does this management body regularly perform administrative activities?

INTERPRETATION

If the sum of the scores for the six answers is:

- 6 points: it means that the indicator is properly complied with.
- 5 points: it means that some progress is needed to comply with the indicator.
- 4 points: it means that substantial progress is needed to comply with the indicator.
- ≤ 3 points: it means that the indicator is not complied with.

NOTES

'Management body' can be any management organization or persons with legal endorsement for the management of the MPA.

A management body should be composed of at least an MPA Director, a technical officer on marine or coastal environment, and an administrator.

'Management activities' can be any activities performed to enhance the conservation status of the MPA or its resources.

'Regularly' means that the management activities in question take place and are fully reported every year.

'Public use activities' means activities undertaken by visitors to the MPA or local residents, primarily including water-based recreation activities, especially boating, fishing, swimming, snorkelling and scuba diving, but also commercial activities such as commercial fishing and collection of marine resources, guide services (tourism and recreation) and other subsistence activities.

COMMENTS

Please give brief details of the activities undertaken.

REFERENCES

- Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. (2006). Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. 2nd edition. Gland, Switzerland and Cambridge, UK: IUCN.
- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007.

EXISTENCE OF AN UPDATED MANAGEMENT PLAN

TYPE MEE

CATEGORY Legislation & Management

DESCRIPTION

This indicator assesses whether the MPA has a regularly updated management plan in writing, with specific, measurable management objectives.

RATIONALE

Management plans are a fundamental part of effective MPA management. They should include specific, clearly measurable objectives and provisions, as well as a logical timeframe for their implementation.

DATA SOURCE

Management body, government bodies

DATA AVAILABILITY

Easy

FREQUENCY

Annual

MEASUREMENT

Each of the following questions should be answered, giving 1 point for each 'Yes' and 0 points for each 'No':

1. Is there a written management plan for the MPA?
2. Is this plan updated by the end of its stipulated period of validity? Or, if its period of validity is not stipulated, is the plan less than 10 years old?
3. Does the plan include specific, clearly measurable management objectives?
4. Does the plan include management effectiveness indicators that demonstrate adaptive management practices?
5. Is this management plan endorsed by a legal provision?

INTERPRETATION

If the sum of the scores for the five answers is:

- 5 points: it means that the indicator is properly complied with.
- 4 points: it means that some progress is needed to comply with the indicator.
- 2-3 points: it means that substantial progress is needed to comply with the indicator.
- < 2 points: it means that the indicator is not complied with.

NOTES

A management plan can be as complex or simple as needed as long as it is based on the objectives of the MPA and an accurate and up-to-date assessment of its management needs. Internal action plans or individual management plans for Natura 2000 sites may be regarded as management plans as long as the above-mentioned requirements are met. Please specify whether the written management plan is legally binding and has been approved by a legal authority.

COMMENTS

Please give brief details of the activities undertaken.

REFERENCES

- Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. (2006). Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. 2nd edition. Gland, Switzerland and Cambridge, UK: IUCN.
- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007.

FINANCIAL RESOURCES ALLOCATED TO THE MPA

TYPE MEE

CATEGORY Legislation & Management

DESCRIPTION

This indicator assesses whether there exist adequate financial resources allocated to the protected area to fulfil its mission and objectives. Specifically, financial resources should be broken down into operational and maintenance costs, personal costs and investment costs.

RATIONALE

Sufficient financial resources are key to the effective management of a protected area. A protected area without management or without enough funding to perform basic management activities is just a 'paper park', unable to fulfil its objectives.

DATA SOURCE

Management body

DATA AVAILABILITY

Easy

FREQUENCY

Annual

MEASUREMENT

The following questions should be answered, giving 1 point for each 'Yes' and 0 points for each 'No':

1. Does the MPA have regular funding on an annual or more frequent basis to cover its annual objectives?
2. Does this standard funding increase annually (official increase in line with inflation or in response to a specific request)? (Use all data records for calculation and for showing trends.)
3. Does the current (previous) year's funding cover 100% of the MPA's investment needs?
4. Does the current (previous) year's funding cover 100% of the MPA's staff needs?
5. Does the current (previous) year's funding cover 100% of the MPA's operational and maintenance needs?

INTERPRETATION

If the sum of the scores for the five answers is:

- 5 points: it means that the indicator is properly complied with.
- 3–4 points: it means that some progress is needed to comply with the indicator.
- 2 points: it means that substantial progress is needed to comply with the indicator.
- < 2 points: it means that the indicator is not complied with.

NOTES

'Basic management activities' are the activities needed for the proper conservation of the MPA and its resources under normal circumstances. Financial resources allocated to the MPA may come from public institutions, private donors, NGOs or visitors.

COMMENTS

Please give brief details of the activities undertaken. If possible, please also describe the source of the financial resources received.

REFERENCES

- Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. (2006). Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. 2nd edition. Gland, Switzerland and Cambridge, UK: IUCN.
- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007.



Sandy coast inside the Porto Cesareo MPA (Italy). Photo: S. Ciriaco

PATROL AND REGULATION ENFORCEMENT

TYPE MEE

CATEGORY Legislation & Management

DESCRIPTION

This indicator assesses whether there is effective surveillance of the MPA to prevent impacts from different sources.

RATIONALE

Protected areas may fail to achieve their conservation targets if no effective regulation enforcement is established.

DATA SOURCE

Management body

DATA AVAILABILITY

Moderate

FREQUENCY

Annual

MEASUREMENT

The following questions should be answered:

1. Is there adequate legislation and regulations with clearly defined enforcement procedures for protecting the MPA and its focal species and habitats?
2. Is the MPA kept under regular surveillance by official bodies?
3. Can staff or appropriate designated bodies enforce MPA rules effectively enough?
4. Is there a permanent system for coordinating efforts to combat illegal activities outside the MPA that may have potential impacts inside the MPA itself?
5. Is action taken in the event of incidents? (If so, please give details in the comments box.)

The following measurements and actions are recommended:

- Number of reported incidents/ Number of patrol hours;
- Actions to communicate enforcement issues to the broader public.

INTERPRETATION

If the answer to question 1 is:

- *Yes, there is adequate legislation and regulations:* it scores 2 points.
- *Partially, there is evidence of a certain need for improvement:* it scores 1 point.
- *No, there are no clear laws and regulations to protect the MPA:* it scores 0 points.

If the answer to question 2 is:

- *Yes, the MPA is patrolled regularly and sufficiently or it is under continuous video-surveillance in its most sensitive areas:* it scores 2 points.
- *Partially, the MPA is under sporadic surveillance:* it scores 1 point.
- *No, the MPA is not patrolled:* it scores 0 points.

If the answer to question 3 is:

- *Yes, the MPA has adequate law enforcement capacity to assist enforcement:* it scores 1 point.
- *No, the MPA does not have adequate law enforcement capacity to assist enforcement:* it scores 0 points.

If the answer to questions 4 and 5 is:

- *Yes:* it scores 1 point.
- *No:* it scores 0 points.

If the sum of the scores for the five answers is:

- ≥ 5 points: it means that the indicator is properly complied with. The MPA has excellent capacity and resources to enforce protected area legislation and regulations.
- 3–4 points: it means that some progress is needed to comply with the indicator. The MPA has acceptable capacity and resources to enforce protected area legislation and regulations but some deficiencies remain (requiring increased patrolling, enforcement of fines, confiscation of illegal catches, etc.).
- 2 points: it means that substantial progress is needed to comply with the indicator. There are major deficiencies in the MPA's capacity and resources to enforce protected area legislation and regulations (e.g. lack of skills, or no patrol budget).
- < 2 points: it means that the indicator is not complied with. The MPA has no effective capacity or resources to enforce protected area legislation and regulations.

COMMENTS

Please give brief details of the incidents that have occurred and the actions taken.

REFERENCES

- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007.
- Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. (2006). Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. 2nd edition. Gland, Switzerland and Cambridge, UK: IUCN.

EXAMPLE FROM THE FIELD: PATROL AND REGULATION ENFORCEMENT

Miramare has adequate legislation and regulations to protect the MPA. The rules focus on the enforcement of the MPA as a whole, but are not specific to its species and/or habitats. Other regulations apply for species/habitat protection both inside and outside a protected environment, whereby damage to a protected site implies severe punishment.

There are clearly defined enforcement procedures consisting in:

- 24/7 video surveillance of the stretch of sea encompassing the MPA, carried out by the Coast Guard;
- a framework agreement and procedural schemes between the various Police authorities at sea, in order to have patrolling activities over an extended area;
- a specific agreement with the Coast Guard to increase their presence in the MPA and its surroundings, especially in the summer.

For example, in the 2011 summer period (July to September) the Coast Guard patrolled the MPA

for an average of 6-8 hours per day, for a total of at least 36 hours per week, plus a night and holiday service. Over the remaining months surveillance activities continued on a regular basis though with a different schedule, given the smaller numbers of recreational and professional boats. In 2011 only two administrative sanctions were reported out of a total of 1,087 patrolling hours.

The MPA staff is not allowed to carry out any enforcement activities, but their ongoing presence in the field gives the same results as patrolling activities as any infringement is immediately reported to police, who are asked to intervene.

A wider procedural scheme is also envisaged among police authorities, including the fire brigade and the Coast Guard, to prevent accidental pollution from ports and industries. The **Miramare** MPA is part and parcel of this alert system and has several tools available to limit the spread of pollutants.

This indicator is fully complied with as the total score is blue and the additional score green.



Surveillance activity carried out by the Police authority. Photo: S. Ciriaco

DESCRIPTION

This indicator assesses different chemical and physical parameters in the seawater column. Measurement parameters include temperature, salinity, dissolved oxygen concentration, pH, organic and inorganic pollutants, chlorophyll a/primary production, and turbidity. Other abiotic and/or biotic parameters (in the case of bacterial pollution) will be measured by the MPA in the event of specific kinds of pollution. The choice of which parameters should be measured needs to be functionally linked to the management objectives of the site, since it is known or supposed that they influence the presence or health of species.

Since several scientific research institutions are working on this issue, it is advisable to check whether there are monitoring programmes and/or protocols and available data in or near MPA waters. Evaluators should use data collected by public agencies first, and then see what other measurements are needed, if any.

DATA SOURCE

Managing authority or external agency

DATA AVAILABILITY

Medium

FREQUENCY

Seasonally; ideally monthly or more frequently in particular cases

RATIONALE

Water quality is a key determinant of overall community health and viability. It can easily be affected by a great many human activities. The presence of sea pollutants may be due to either external or internal factors affecting the MPA; they may therefore be beyond MPA managers' control or range of action. Nevertheless, seawater quality data can be useful for environmental monitoring as an alarm bell for possible pollutants and can be cross-referenced with biological monitoring data. If specific pollutants are found, a more in-depth analysis should be performed. Managers should therefore access the information available on seawater quality in surrounding waters.

COMMENTS

Please give brief details of the action taken.

MEASUREMENT

If all parameters are under the reference levels than the indicator is properly complied with.

If some parameters are above the reference level, the following questions should be answered, giving 1 point for each 'Yes' and 0 points for each 'No':

1. Do you take action to investigate these parameters in greater detail? (If 'Yes' please give details in the comments box.)
2. Do you take action to solve the problem (at least partially)? (If 'Yes' please give details in the comments box.)

The following measurements should be taken regularly at different sampling locations inside the MPA according to established protocols, or new protocols, should none yet exist:

- Temperature;
- Salinity and freshwater input;
- Dissolved oxygen content;
- pH;
- Turbidity;
- Chlorophyll and primary production levels;
- Standard water analysis: presence of known pathogens such as *Escherichia coli*, presence and amount of oil, nutrients (especially nitrogen and phosphorous) and fertilizers, pesticides and other toxins, and heavy metals.

Some of these parameters can be measured with simple instruments (thermometer for temperature, refractometer for salinity, Secchi disk for turbidity, litmus paper for pH, etc.) or with more sophisticated and expensive multiparameter probes. Others, such as pathogens and heavy metals, need more complicated laboratory procedures. The latter require the services of an expert and a laboratory, while the former only require staff training on the use of a particular instrument.

The parameters to be measured can be chosen in connection with actions included in the management plan.

REFERENCES

- Waterbase Database – Waterbase contains timely, reliable and policy-relevant data collected from countries in the European Economic Area through the WISE-SoE data collection process.
- <http://www.eea.europa.eu/data-and-maps/data/waterbase-transitional-coastal-and-marine-waters-7>

INTERPRETATION

Every parameter has its own reference level on the basis of national and EU legislation on water quality. These standards have to be respected and measurements must lie below the relevant threshold to comply with the indicator.

Unexpected values for one or more parameters must be investigated.

If all parameters are under the reference level than the indicator is properly complied with.

In the event that some parameters are above the reference level, if the sum of the scores for answers 1 and 2 is:

- 2 points: it means that the indicator is properly complied with.
- 1 point: it means that some progress is needed to comply with the indicator.
- 0 points: it means that the indicator is not complied with.

NOTES

Although it is almost impossible to demonstrate in the short to medium term that the MPA management body can improve the physical-chemical condition of the environment, it is very important to demonstrate that the management body is concerned about this issue, is monitoring its development and is taking action.

EXAMPLE FROM THE FIELD: SEAWATER QUALITY

Seawater quality in **Cinque Terre** MPA is totally under control and the indicator results are fully compliant, as indicated by the blue code on the scorecard. Abiotic parameters such as temperature, salinity, dissolved oxygen, pH, turbidity and chlorophyll A are collected by the Regional Agency for the Protection of the Environment (ARPAL). ARPAL is the regional authority of the Ministry of Environment responsible for the measurement of sea water quality (data are available on their web site: www.arpal.gov.it).

Unfortunately, some parameters are recorded only during the summer.

With regard to the additional points, the indicator is partially fulfilled: there is an 'ecological' boat used to remove floating garbage, but its use may be limited due to high maintenance costs.

The only problem observed in the application of this indicator is that sometimes it is difficult to find up-to-date data on the web page of the scientific institution involved in the seawater quality monitoring.



Multiparametric probe for measuring seawater quality. Photo: M. Tempesta

FOCAL HABITAT CONSERVATION STATUS

TYPE ECO

CATEGORY Features of interest

DESCRIPTION

This indicator assesses the status of focal habitats within the MPA.

DATA SOURCE

Environmental agencies, management body, volunteers, others

RATIONALE

The Convention on Biological Diversity and Directive 92/43/EEC recognise the importance of habitats for safeguarding biodiversity. One of the main objectives of a protected area should be to maintain the favourable conservation status of its biodiversity, be it genetic, specific or ecosystem-related. According to Article 1 of the Habitats Directive, the conservation status of a natural habitat is favourable when it is prospering (in quality, extent and the size of the populations it supports) and is likely to continue to do so in future as well. This definition is used in assessing the conservation status of focal habitats.

DATA AVAILABILITY

Moderate

FREQUENCY

Every three years

MEASUREMENT

The following questions should be answered:

1. Is the conservation status of each focal habitat favourable? The answer should fall into one of four categories—'favourable', 'unfavourable inadequate', 'unfavourable bad' or 'unknown'—as explained below.
2. What efforts is management making to conserve focal habitats? (Please give details in the comments box.)

The status categories are determined as follows:

- Favourable: all parameters favourable, or all favourable except for one unknown;
- Unfavourable (inadequate) (= recovering): one or more parameters unfavourable (inadequate) but none of them unfavourable (bad);
- Unfavourable (bad) (= declining): one or more parameters unfavourable (bad);
- Unknown: all parameters unknown, or all unknown except for one favourable.

INTERPRETATION

The conservation status of each focal habitat is presented in one of four categories: 'favourable', 'unfavourable inadequate', 'unfavourable bad' or 'unknown'.

The conservation status of a focal habitat will be taken as 'favourable' when:

- its natural range and areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The conservation status of a focal habitat will be taken as 'unfavourable inadequate' when a change in policy is required but the habitat is not in great danger of disappearance. 'Unfavourable bad' is when a habitat is in serious danger of disappearing (at least locally in the MPA).

If the answer to question 1 above is:

- favourable: it means that the indicator is appropriately complied with.
- unfavourable inadequate: it means that some progress is needed to comply with the indicator.
- unfavourable bad: it means that substantial progress is needed to comply with the indicator.
- unknown: it means that the indicator is not complied with.

In the event that the MPA has more than one focal habitat with different conservation statuses (favourable, unfavourable inadequate, unfavourable bad or unknown), the overall interpretation of the indicator will always be that some progress is needed to comply with the indicator.

In this case, special care should be taken to monitor these habitats and to take the necessary steps to restore them.

REFERENCES

- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007.
- European Commission (2005). Assessment, monitoring and reporting of conservation status—Preparing the 2001–2007 report under Article 17 of the Habitats Directive (DocHab-04-03/03 rev.3). Note to the Habitats Committee. Brussels: European Commission, DG Environment.
- European Commission (2006). Assessment, monitoring and reporting under Article 17 of the Habitats Directive: Explanatory Notes & Guidelines. Brussels: European Commission, DG Environment.

NOTES

'Focal habitat' is any habitat whose continuous monitoring is advisable due to legal mandate (a national and/or international act such as an EU Directive) or scientific advice on the grounds of its degree of threat, limited distribution, or importance in providing ecosystem services.

The **'conservation status of a focal habitat'** is assessed according to the definition in Article 1 of the Habitats Directive as 'the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species' within the region.

Assessment of a focal habitat's conservation status requires clear, measurable **'favourable reference values'** for each habitat depending on its specific condition. They should be established in technical terms based on the best available conservation knowledge or, in the absence of other data, 'best expert judgement'. The descriptors used to assess a focal habitat's conservation status are based on its range, area, structure and function, and future prospects.

The **'favourable reference value'** for a focal habitat is the total area in a given biogeographical region that is considered the minimum necessary to ensure the long-term viability of the focal habitat type; this should include areas required for restoration or development for those habitat types for which the present coverage is not sufficient to ensure their long-term viability.. Information on the historical distribution of the habitat may be useful when defining the favourable reference area.

COMMENTS

Please give brief details of the action taken.

EXAMPLE FROM THE FIELD: FOCAL HABITATS CONSERVATION STATUS

The focal habitats reported on the indicator scorecard are the four included in the **Telaščica Nature Park** Management Plan under Theme A—Protection and Conservation of Natural Values and Landscapes (Specific goal AB—Reduce degradation of the *Posidonia oceanica* meadows in areas where increased anthropogenic pressure is present in relation to the state in 2011, and specific goal AD—Preserve the favourable state of vulnerable marine habitats: Reefs, Submerged or partially submerged sea caves, Caves and passages in complete darkness).

For these habitats the specific activities foreseen include mapping, monitoring and assessment of the state of conservation, as well as activities that will lead to a decrease in anthropogenic pressures from anchoring, fishing and diving. Activities are based on scientific and monitoring studies that showed a significant impact of anchoring on *Posidonia* meadows and of scuba diving and fishing gear on reef communities. Additional impacts (cases of necrosis) on reef communities and submerged or partially submerged sea caves

due to increased seawater temperatures were detected, but so far negative impacts have been limited.

Based on these reports it is possible to evaluate the habitats' conservation status as favourable for reef communities and submerged or partially submerged sea caves and unfavorable inadequate for *Posidonia oceanica* meadows, while the status of the caves and passages in complete darkness habitat has to be evaluated as unknown. This is due to the fact that research into this habitat is both expensive and technically demanding (ROVs and cave divers need to be involved). The limited research carried out in this habitat so far has resulted in the discovery of a carnivorous sponge of the species *Asbestopluma hypogea*. This is only the second find of this species in the world.

The green colour of the total score obtained shows that the indicator is complied with, but something more could be done. It is also important to note that, under the additional score, the managers foresee taking action to ameliorate the status of conservation in the MPA.

FOCAL SPECIES ABUNDANCE AND POPULATION STRUCTURE

TYPE ECO

CATEGORY Features of interest

DESCRIPTION

This indicator focuses on the species of specific importance to the site, which are the reason why the MPA was designated (see note for further details).

Species abundance is the number of individuals of a particular species found to occur within and outside the MPA. Species abundance is commonly used to indicate population size and is thought to reflect the status of a species' population at a specific location: for example, whether or not the population is growing over time. The density of a species is determined from its abundance within a defined (unit) area.

Survey replication should be done if possible at multiple sampling sites—both sites within the MPA and external reference sites—to show whether MPA-related actions have direct effects on species' populations.

Population structure is the probability with which different sizes and ages of individuals are likely to occur within a population of a focal species. A population experiencing no or reduced impacts is more likely to include the necessary number of reproducers in order to replenish and maintain itself through time than one whose individuals are being removed for human use.

DATA SOURCE

Management body, external agencies (e.g. universities), divers and local fishermen

DATA AVAILABILITY

Medium

FREQUENCY

Flora-fauna check-lists to be updated annually
Surveys to be done seasonally, or more frequently in particular circumstances (e.g. when certain fish species frequent the MPA in the spawning season)

RATIONALE

This indicator is part of a monitoring plan for focal species, as it assesses whether there is a programme of measurement in place and whether the population(s) are declining, stable or increasing.

Monitoring changes in the abundance of populations of focal species is one of the most common activities overseen by MPA managers, in which a comparison is made between the numbers of individuals of a population observed within versus outside the MPA.

An effectively managed MPA is one that is thought to contain populations of focal species whose individuals are adequately distributed from juvenile to adult size classes ('population structure') so as to enable their populations to replenish themselves, be viable and persist in the area through time.

MEASUREMENT

The evaluation team should estimate the number of individuals observed in situ within the survey area according to classes of abundance and size. Whenever possible the reproductive potential and condition of fish species should be evaluated.

Visual census observations follow given procedures, which usually require swimming along transects or remaining still at a given point in mid-water.

The following questions should be answered:

1. Is there a list of focal species in the MPA?
2. Is there a monitoring plan for those species?
3. Has any relevant change been noticed in population density/ies or structure/s? Yes/No
4. If the answer to question 3 is 'Yes', are the conservation values declining or being sustained/maintained? (Please give details in the comments box.)
5. Is information from monitoring fed back into the management of the site resulting in new management actions to address the observations made? (Please give details in the comments box.)

Answer giving 1 point for 'Yes' and 0 points for 'No' for questions 1 and 2. Answer giving 1 point for 'conservation values sustained/maintained' and 0 points for 'conservation values declining' for question 4.

The following measurements are recommended:

1. Focal species abundance:
 - assess the number of individuals observed in situ through visual census techniques;
 - assess the extent of the observed population in terms of area (e.g. total hectares of seagrass beds estimated using GPS).
2. Focal species population structure:
 - collect size data on individuals observed in surveyed areas both within and outside the MPA, e.g. by estimating fish size classes during visual census surveys.

INTERPRETATION

If the sum of the scores for the three answers to questions 1, 2 and 4 is:

3 points: it means that the indicator is properly complied with.

- 2 points: it means that some progress is needed to comply with the indicator.
- 1 point: it means that substantial progress is needed to comply with the indicator.
- 0 points: it means that the indicator is not complied with

As it is impossible to set general thresholds, each MPA should indicate its own limits and year-on-year trends per species.

COMMENTS

Please give brief details of the activities undertaken and explain your answer to question 4.

NOTES

A '**focal species**' is an organism of ecological and/or human value whose management in the MPA is of priority interest. There are several different types of focal species:

Endemics—species that are only found to occur naturally in the waters near the MPA;

Exotics—non-native species that are of concern due to their negative effects on the local ecology;

Flagships—charismatic species that are of social or cultural significance and are therefore used by managers as symbols of MPA efforts to encourage public interest and support;

Indicators—species that signal how disturbance may be impacting other organisms within the community;

Keystones—species upon which others in the community directly depend;

Targets—species of interest due to their extractive or non-extractive use value;

Vulnerables—species that are known to be less resilient to environmental change than others in the community and/or require careful management to sustain. They include slow-growing organisms or those with few offspring, or threatened, endangered or rare species (such those on IUCN's Red List of Threatened Species). (Pomeroy, Parks and Watson, 2004)

If negative effects are measured, disturbances within the MPA (e.g. fishing, visiting activities or poaching) must be reduced or stopped.

Enforcement must be increased and monitoring of environmental conditions outside MPA boundaries questioned.



Long-snowed sea-horse (*Hippocampus guttulatus*) in a seagrass meadow. Photo: Y. Issaris

REFERENCES

- Guidetti, P., Verginella, L., Viva, C., Odorico, R. and Boero, F. (2005). 'Protection effects on fish assemblages, and comparison of two visual-census techniques in shallow artificial rocky habitats in the northern Adriatic Sea'. *Journal of the Marine Biological Association of the UK* 85(2):247–255.
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- Francour, P. (1997). 'Fish assemblages of *Posidonia oceanica* beds at Port-Cros (France, NW Mediterranean): Assessment of composition and long-term fluctuations by visual census'. *Marine Ecology* 18(2):157–173.
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MANAGEMENT OF FISHING EFFORT (COMMERCIAL AND/OR RECREATIONAL FISHERIES)

TYPE MEE

CATEGORY Pressure

DESCRIPTION

This indicator measures the intensity of fishing pressure in time and space within the MPA. Fishing effort is a measure of the amount of fishing carried out, such as the number of hours or days spent fishing, the number of hooks used (in longline fishing) or kilometres of nets used, or a combination of these variables.

As recreational fishing can be more significant than commercial fishing in terms of pressure or socio-economic importance, managers should focus their monitoring on the more relevant activity or, if feasible, on both of them. Data on fishing effort in time and space (e.g. number of boats or gears) and fish catch (Catch Per Unit Effort, CPUE, expressed as the number or weight of fish taken for a given (unit) effort) can be measured or estimated by MPA managers. Then, percentage fish removal, as either the rate of exploitation or the instantaneous rate of fishing in the MPA, can be established. Fishing effort in this case is measured in time and space by using CPUE, as kg of fish/unit of fishing effort.

It is recommended to check whether scientific research institutions have monitoring protocols (or standardized CPUE methods adapted to local gears) and data available for waters inside or near the MPA.

DATA SOURCE

Management body or external agencies (e.g. universities or regional/national fishery research institutes or government departments)

DATA AVAILABILITY

Medium to difficult

FREQUENCY

Ideally monthly, or more frequently in particular cases (e.g. when commercial or/and recreational fisheries target certain fish species that frequent the MPA only in a particular season)

RATIONALE

Mediterranean MPAs have to manage commercial and/or recreational fishers as key stakeholders.

MPA management bodies usually solve conflicts with the fishery sector by managing fishing pressure through spatial and/or temporal planning approaches, e.g. by allowing fishermen to set fishing gears (nets, pots or longlines) in certain sectors of the MPA (buffer zones or close to MPA boundaries) at specific times of the year. Fishing effort and resulting fish removal measurements (e.g. CPUE trends in time and space) are key information for managing fishing pressure.

COMMENTS

Please give brief details about the fishing effort data and explain your answer to question 3.

MEASUREMENT

Good availability of useful data depends on:

1. Development of a standardized sampling protocol;
2. Frequent monitoring by fishing observers, such as MPA staff trained to characterize fishing gears (e.g. by measuring line length or number of hooks), to recognise fish species and to measure species weight.

The following questions should be answered:

1. As a management body, do you manage fishing in your MPA?
2. If 'Yes', do you (internally or through other organizations) measure fishing effort?
3. According to your experience, is the level of fishing consistent with maintaining the conservation values of the site? (Please give brief details in the comments box.)
4. If the level of fishing is NOT in equilibrium with conservation, is action taken to solve the problem (at least partially)?

Answer giving 1 point for 'Yes' and 0 points for 'No' for questions 2, 3 and 4.

The following measurements are recommended:

1. Fishing fleet composition (number of vessels allowed to fish in the MPA);
2. Fishing effort (commercial or/and recreational fisheries), as the total number of allowed fishing gears in use for a specified period of time in the MPA;
3. CPUE, as kg of fish per unit of fishing effort;
4. Proportion of fishing gear types (number of gears of type 'x' / number of gears of type 'y').

When a management body allows commercial or/and recreational fishing within the MPA, the gear type, its features and use should be laid down in advance (i.e. all fishers must use the same net type, mesh size and length) so that its impact on conserved fish stocks in space and time can be measured.

REFERENCES

- Guidetti, P., Bussotti, S., Pizzolante, F. and Ciccolella, A. (2010). 'Assessing the potential of an artisanal fishing co-management in the Marine Protected Area of Torre Guaceto (southern Adriatic Sea, SE Italy)'. *Fisheries Research* 101:180–187.
- Guidetti, P. and Claudet, J. (2009). 'Comanagement practices enhance fisheries in Marine Protected Areas'. *Conservation Biology* 24(1):312–318.

INTERPRETATION

Where fishing is managed directly, if the sum of the scores for answers 2 to 4 is:

- 2 points: it means that the indicator is properly complied with.
- 1 point: it means that some progress is needed to comply with the indicator.
- 0 points: it means that the indicator is not complied with.

As it is impossible to set general thresholds, each MPA should indicate its own limit for fishing effort (for commercial and/or recreational fisheries) and year-on-year trend.

NOTES

'Fishing effort' is a measure of the amount of fishing. A proxy relating to a given combination of inputs into the fishing activity is often used, such as the number of hours or days spent fishing, number of hooks used (in longline fishing) or kilometres of nets used.

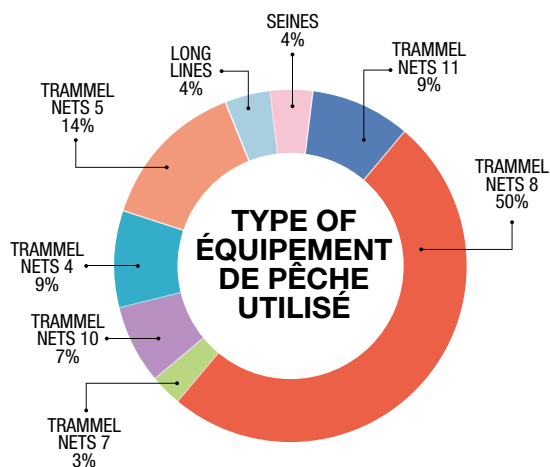
The European Union defines fishing effort as fleet capacity (tonnage and engine power) \times days at sea (time; t); the formulas are $GT \times t$ and $kW \times t$. (Source: OECD (1998) Review of Fisheries in OECD Countries: Glossary.) Fishing effort (commercial or/and recreational) is to be measured only for fishing taking place within the MPA's boundaries.

In the event of negative effects (i.e. negative CPUE trends), measurement of this indicator will provide the evidence needed to reduce fishing effort or stop it, or to modify fishing gears.

EXAMPLE FROM THE FIELD: MANAGEMENT OF FISHING EFFORT (COMMERCIAL AND/OR RECREATIONAL FISHERIES)

Tavolara MPA Management Body does not measure the fishing effort defined as the total number of fishing gears and boats used in a given period of time; still, the maximum potential number of vessels that can fish within the MPA is well known (less than 15). The reason why the fishing effort is not measured is the lack of a specific implementing regulation.

The Management Body carries out regular monitoring of fishing activities and their efficiency, defined as the catch per unit effort (CPUE kg/km of nets used).



Percentage of fishing gears used
(the number after trammel nets indicates the mesh size)

Collected data show that fishing pressure is in line with optimal conservation levels.

During fishery monitoring, the following components are also taken into account:

- Fleet composition: all vessels fall within the category of small-scale coastal fishing;
- CPUE measurement as kg of fish/km of nets: 10.9 (\pm 6.6 sd) kg/1,000 m in 2005, 21.14 (\pm 11.5 sd) kg/1,000 m in 2009, 18.2 (\pm 31 sd) kg/1,000m in 2011.
- Types of fishing gear used in the MPA:
 - trammel nets: 92%;
 - gillnets: not reported in the questionnaires;
 - pots: not reported in the questionnaires;
 - long lines: 4%;
 - seines: 4%



Fishermen at Ain El Ghazala (Libya). Photo: F. Maamouri WWF MEDITERRANEAN

ACTION ON INVASIVE ALIEN SPECIES

TYPE ECO

CATEGORY Pressures

DESCRIPTION

This indicator assesses whether coastal or marine invasive alien species (IAS) exist in the MPA and whether action is taken to address this threat.

INTERPRETATION

If the sum of the basic scores is:

- 2 points: it means that the indicator is complied with.
- 1 point: it means that some progress is needed to comply with the indicator.
- 0 points: it means that the indicator is not complied with.

RATIONALE

IAS are considered one of the major threats to biodiversity worldwide. In addition, IAS may have substantial social and economic impacts in the new areas where they thrive. The Mediterranean Sea is especially exposed to biotic invasions, as it is one of the world's main trade and maritime routes. Eradicating IAS often requires an intense and costly effort. However, eradicating IAS is not always possible once they have expanded in their new habitats. That is why identifying new IAS is critical as an early-warning system for preventing the introduction and expansion of IAS.

DATA SOURCE

Management body, agencies, visitors, others

DATA AVAILABILITY

Medium

FREQUENCY

Annual

NOTES

IAS can be defined as those alien species which become established in natural or semi-natural ecosystems or habitats and become an agent of change, increasing in abundance and distribution and threatening native biological diversity (IUCN, revised 2012).

'Presence' may be stable or sporadic. If the indicator's score is over 0 points, some prevention and eradication measures are needed.

MEASUREMENT

Basic scoring: The following questions should be answered:

1. Is there is regular IAS monitoring to detect the presence and abundance of current and new IAS?
2. Is any action taken (e.g. an eradication programme, specific research or an alert system)?

Answer giving 1 point for 'Yes' and 0 points for 'No'.

Additional scoring:

1. Has the number of IAS increased annually since the establishment of the management plan? (Answer giving -1 (minus one) point for 'Yes' and 0 points for 'No'.)
2. Have the main pathways of introduction of IAS been identified and is a programme to reduce the risk of spread in place (Answer giving 1 point for 'Yes' and 0 points for 'No'.)
3. Are the follow-up actions helping to mitigate the level of IAS spread? (Answer giving 1 point for 'Yes' and 0 points for 'No'.) (Please describe your actions in the comment box.)
4. Is an awareness-raising programme in place? (Answer giving 1 point for 'Yes' and 0 points for 'No'.)

COMMENTS

Please give brief details of the action taken.

REFERENCES

- Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. (2006). Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. 2nd edition. Gland, Switzerland and Cambridge, UK: IUCN.
- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007.



Caulerpa racemosa var. *cylindracea*. Photo: B. Weizmann

EXISTENCE OF OUTREACH ACTIVITIES

TYPE MEE

CATEGORY Communication and Outreach

DESCRIPTION

This indicator assesses whether the MPA provides outreach activities and has an up-to-date plan in writing for interpretation and education activities (outreach activities) with specific, measurable objectives linked to the management plan. The plan should include an environmental education programme with specific activities and actions. Outreach activities are a fundamental management tool for good MPA governance as, without outreach, users, visitors and the community are likely to have limited understanding of the MPA, which will hamper meeting the MPA's objectives in terms of reaching consensus on sustainable development.

MEASUREMENT

The following questions should be answered, giving 1 point for each 'Yes' and 0 points for each 'No':

1. Is there an interpretation and education plan for the MPA?
2. Are there interpretive tools and facilities (visitor centres, teaching laboratories, interpretation panels, information panels and/or leaflets about the MPA)?
3. Is there an outreach budget for the site (for hiring outreach staff, and for maintenance and improvement of interpretive/educational tools)?
4. Are there education and/or interpretation activities occurring on the site during the year?
5. What is the level of and trend in visitor numbers connected with outreach activities?

RATIONALE

The interpretation and education plan is a tool for making choices. It helps parks and protected areas decide what their objectives are, who their audiences are, and what mix of media and personal services to use. The product is not the plan, but an effective and efficient interpretive and/or environmental education programme achieving management goals, providing appropriate services for visitors, and promoting visitor experiences.

DATA SOURCE

Management body or external agency

DATA AVAILABILITY

Easy

FREQUENCY

Annual

INTERPRETATION

If the sum of the scores for the four answers from 1 to 4 is:

- 4 points: it means that the indicator is properly complied with.
- 3 points: it means that some progress is needed to comply with the indicator.
- 2 points: it means that substantial progress is needed to comply with the indicator.
- 1–0 points: it means that the indicator is not complied with.

For question 5 please provide a context statement to explain the trend in visitor numbers.

NOTES

Interpretation and education

Interpretation uses advanced educational and communication skills to inspire a wider public. Interpretation is, in essence, an educational activity but, importantly, it is an informal educational process. It aims to provide new insights and deeper understanding. Interpretation is aimed at people on leisure visits and trips and its informality and personal approach distinguish it from many other forms of education.

The interpretation and education plan should be updated at least once every three years.

COMMENTS

Please give brief details of the activities undertaken.

REFERENCES

- Beck, L. and Cable, T.T. (2002). Interpretation for the 21st century. 2nd edition. Urbana, IL, USA: Sagamore Publishing.
- Ham, S.H. (1992). Environmental interpretation: A practical guide for people with big ideas and small budgets. Golden, CO, USA: North American Press.
- Huckle, J. and Sterling, S. (1996). Education for sustainability. London: Earthscan Publications.
- National Park Service (2000). Comprehensive interpretive planning. NPS Interpretation and Education Guideline. Washington, DC, USA: Department of the Interior, National Park Service.
- Palmer, J.A. (1998). Environmental education in the 21st century: Theory, practice, progress and promise. London, UK, and New York, USA: Routledge, 1998.
- Tilbury, D. and Wortman, D. (2004). Engaging people in sustainability. Gland, Switzerland and Cambridge, UK: Commission on Education and Communication, IUCN.
- UNECE (2009). Learning from each-other: The UNECE strategy for education for sustainable development. Geneva: The United Nations Economic Commission for Europe.
- Van Matre, S. (1990). Earth education: A new beginning. Reprint, Greenville, WV, USA: The Institute for Earth Education, 1993.

EXAMPLE FROM THE FIELD: EXISTENCE OF OUTREACH ACTIVITIES

The green code for the total score obtained by **Miramare MPA** shows that this indicator is complied with but some things could be done better.

The only negative score corresponds to the first question, as the last Interpretive Plan carried out (2008–2010) has now expired and has not been updated. The changes in the educational staff and the continual turnover of guides make it difficult to find an appropriate moment to share the mission and vision for Education and Interpretation in Miramare.

A Marine Environmental Education Centre has been working since 1989 to foster environmental education inside the protected area. Its activities comprise school environmental education, tourist visits and training courses in the fields of biology, ecology and marine management. Every year, the MPA is visited by almost 20,000 people; more than 7,000 students make use of its education services and almost 4,000 snorkellers and scuba divers visit its seabed.

The Visitor Centre, located in the Castelletto of Miramare, hosts a multisensory museum path designed to give visitors the feeling of diving in the reserve's protected waters, as part of the wide range of educational activities on offer.

The reserve's budget to sustain its outreach activities only covers maintenance costs, such as the daily care of the fish tanks, the furniture in the visitor centre and the consumables needed for our activities. In previous years part of the budget was targeted at educational projects, but this line was cancelled in 2012. That means that all the personnel involved in outreach activities (three full-time staff and ten seasonal guides) are supported from visitors' entrance fees. A greater effort will be needed to increase the number of paying visitors (schools, divers and entries to the visitor centre), bearing in mind that the carrying capacity of the visitor facilities has almost reached its maximum level.



Educational activities in Miramare MPA (Italy). Photo: M. Tempesta

MANAGEMENT OF VISITORS

TYPE MEE

CATEGORY Pressure

DESCRIPTION

This indicator measures the number of visitors per year involved in activities inside the MPA, or any other variable linked to their presence (e.g. number of boats anchored). It correlates with the total number of school children attending educational activities carried out by the MPA staff, the total number of scuba divers and snorkellers visiting the area, the number of tourists visiting the visitor centre or other facilities, etc. It is also important to specify the areas that visitors frequent and which activities are allowed in order to check what human pressure is exerted on the marine environment over time.

RATIONALE

Knowing the total number of visitors affecting the MPA, the trend in visitor numbers over time (rising, falling or stationary) and the different areas and habitats affected by the visitors' presence is important to understand their impact on the site and the need for changes in management. If they are having a negative impact, the number of visitors in that area must be reduced or their activities better controlled. There is a clear relationship between what this indicator measures and adaptive management.

DATA SOURCE

Management body or external agencies (e.g. diving guides, educational guides in charge of visitor groups)

DATA AVAILABILITY

Medium to easy, depending on the MPA's points of access and regulations

FREQUENCY

Seasonally, but ideally monthly during the summer peak visiting time

MEASUREMENT

The following questions should be answered:

1. As a management body, do you manage the number of visitors to your MPA?
2. If 'Yes', do you have information on visitors' presence and preferences?
3. According to the information collected and your experience, are visitor numbers on the site consistent with maintaining its conservation values? (Please give details in the comments box.)

Answer giving 1 point for 'Yes' and 0 points for 'No' for question 2.

Answer giving 1 point for 'below an acceptable threshold' and 0 points for 'above an acceptable threshold' for question 3.

The following measurements are recommended:

- Total number of visitors broken down by main activities (educational, scuba diving, visitor centre);
- Trend in the total number of visitors per activity over seasons and years;
- Total number of visitors in different parts of the MPA (if possible).

See references for specific protocols on measurements and data interpretation.

INTERPRETATION

As it is impossible to set general thresholds, each MPA should indicate its own limits and year-on-year trends. This can be done with the information from a carrying-capacity study on the various visitor activities and from consultations with stakeholders. It is therefore advisable for the MPA or another body to carry out such a study to help comply with the indicator.

COMMENTS

Please give brief details of visitor numbers and activities.

NOTES

The positive or negative impact of the number of visitors may be interpreted by cross-referencing numerical data and trends with data from scientific monitoring. The idea is to assess whether to increase the number of people visiting the MPA (with a positive effect on participation, education and self-financing) or to reduce and limit the number if the environment proves to be too fragile.

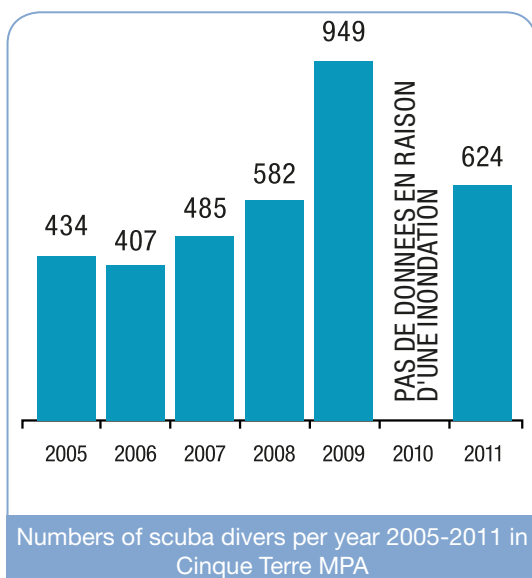
REFERENCES

- Brigand, L. and Le Berre, S. (2007). Bases méthodologiques pour la mise en oeuvre d'observatoires Bounfiles. Outil de gestion projet Interreg 3C MedPAN. Brest, France: Géomer, Université de Bretagne Occidentale.

EXAMPLE FROM THE FIELD: MANAGEMENT OF VISITORS

The issue of visitors in **Cinque Terre MPA** has been addressed in different ways in recent years. The management body gathers information on tourist numbers mainly through the distribution of service cards, currently called 'Cinque Terre Cards'. Another direct measure of tourist numbers comes from the issuing of permits, such as for diving or fishing. Nonetheless, such data suffer from a lack of information on certain categories of tourists, such as day trippers (tourists spending just one day in the Park) and tourists staying in holiday (second) homes, as well as on visitors' main characteristics (their personal profiles, how their visit to Cinque Terre Park was organized, how much they know about the Park and its regulations, etc.). A special survey has been developed by the Leonardo-IRTA (Leonardo Territorial and Environmental Research Institute) to assess the presence of tourists in the Cinque Terre area.

The 'Tourism Observatory in the Cinque Terre 2011/12' project was launched as a specific local action of the MedPAN North project and consists of two ad hoc sample surveys: a face-to-face survey on the numbers and characteristics of tourists in the Cinque Terre Park and Marine Protected Area, and a web survey on tourist satisfaction.



Visitor numbers seem to be below an acceptable threshold for this MPA, at least for activities such as boating and scuba diving.

Despite their discontinuous nature, some monitoring activities seem to show a rising trend in tourist numbers in **Cinque Terre MPA**. Such a trend is revealed more clearly by the results of the Tourism Observatory project.

The survey suggests that the real number of visitors is much larger than that detected by other methods.

The indicator is fully complied with.



Snorkeling tour. Photo: E. Merson

NETWORKING AND TRAINING

TYPE MEE

CATEGORY Communication and Outreach

DESCRIPTION

This indicator measures the existence of data transfer procedures with national and international organizations and exchange of experiences and good practices with peers. It also takes into account the tasks performed by the training staff in terms of the number of meetings and/or workshops held with other organizations and attended by MPA staff, and the number of staff trained.

DATA SOURCE

Management body

DATA AVAILABILITY

Easy

RATIONALE

The level of training provided for management staff measures the amount and effectiveness of capacity-building efforts to empower people with knowledge, skills and attitudes to participate in MPA activities.

Staff need to be equipped with knowledge, skills and attitudes to be ready to carry out new tasks and meet future challenges.

Capacity building must address not only the technical and managerial dimensions but also attitudes and behaviour patterns. Capacity building may be carried out by specific organizations, such as a network of MPAs; in this case the activity will be held in the form of seminars or conferences rather than as a vocational training course.

FREQUENCY

Annual

MEASUREMENT

Each of the following questions should be answered, giving 1 point for each 'Yes' and 0 points for each 'No':

1. Is the MPA actively present or involved in a national or international network able to provide capacity building and exchange of information on best practices?
2. Is there a procedure for staff in-service training?
3. Is there a procedure for seasonal staff training?

The following measurements are required:

- Number of national or international meetings or workshops per year attended by MPA staff;
- Percentage of MPA staff involved in training or capacity-building courses every year;
- Number of new papers (scientific or internal reports) addressing management and environmental conservation.

INTERPRETATION

If the sum of the scores for the three answers is:

- 3 points: it means that the indicator is properly complied with.
- 2 points: it means that some progress is needed to comply with the indicator.
- 1 point: it means that substantial progress is needed to comply with the indicator.
- 0 points: it means that the indicator is not complied with.

COMMENTS

Please give brief details about the data and the activities undertaken.

REFERENCES

- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007

EXAMPLE FROM THE FIELD: NETWORKING AND TRAINING

The National Network of Nature Parks of Slovenia was established in 2011, with the purpose of strengthening the role of protected areas in relation to the Ministry of Agriculture and the Environment and other stakeholders. **Strunjan Landscape Park** is also one of the members of the MedPAN Association and participates in the workshops and training activities organized through the Association.

Strunjan Landscape Park has no procedure for staff in-service training, but it does offer short introductions, which are organized yearly for seasonal staff.

Last year the staff of the Park participated in five workshops, two of them at international level, and produced four scientific papers on management and environmental conservation. Due to the very low number of staff their participation in meetings and workshops is limited and usually strictly linked to the employee's field of work .



Marine food web. Photo: M. Tempesta



Workshop of MPAs managers in Port-Cros National Park (France). Photo: M. Tempesta

COORDINATION WITH STAKEHOLDERS AND PLANNERS

TYPE MEE

CATEGORY Legislation & Management

DESCRIPTION

This indicator measures relationships and conflict resolution over time. It corresponds to the total number of participatory procedures implemented by the MPA management body over a fixed period of time. It also measures the presence of MPA management body representatives at higher-level decision-makers' meetings, concerning management of the local coastal zone.

DATA SOURCE

Documents produced by the management body (e.g. management plan, reports, stakeholder analysis and role).

RATIONALE

In the Mediterranean eco-region, establishing an MPA leads to conflicts between marine resource stakeholders (e.g. fishers, tourist operators and the local population). Management bodies usually resolve conflicts by managing their MPAs through participatory procedures, which involve allowing stakeholders to participate in management decisions or simply listening to their opinions in 'advisory committees'.

This approach is functional and effective if participation is allowed in a legal and institutional framework, in which roles and rules are clearly defined.

The participatory approach framework needs to be fully in line with existing local plans affecting the area at a broader scale (e.g. coastal zone management planning) in terms of vision, goals, objectives, etc., so that the effort expended on protecting an area is not depleted by actions affecting its boundaries.

DATA AVAILABILITY

Easy

FREQUENCY

Annual

INTERPRETATION

Measurements 1, 2 and 3: at least 1 per year in order to be considered 'positive'.

Measurements 4 and 5: Yes for 'positive', No for 'negative'.

Measurement 6: to be judged as 'positive', the number must be at least 50% of all the opportunities initiated by local government (municipalities, districts, etc.) for marine and coastal planning.

MEASUREMENT

Good availability of useful data can be achieved through:

- Well-developed, standardized reporting;
- Clear MPA governance.

The following measurements are required:

1. Number of management body meetings and advisory group meetings per year;
2. Stakeholders' participation in management body meetings and advisory group meetings, with the number of people involved and their affiliations;
3. Number of actions or measures put in place following a consensus among users, or the percentage of proposals adopted out of the total number of proposals per meeting (measurement of consensus);
4. Is there consistency between the management plan and the local plan (in terms of the same vision, goals, objectives, etc.)
5. Have there been successful cases of conflict solving?
6. Number of meetings on integrated coastal zone management to which the MPA is invited as a stakeholder or expert.

COMMENTS

Please give brief details about the data and the activities undertaken.

REFERENCES

- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007.



Cinque Terre National Park and MPA (Italy). Photo: Park Authority archive

STATUS OF FOCAL PHYSICAL, CULTURAL AND SPIRITUAL FEATURES

TYPE MEE

CATEGORY Features of interest

DESCRIPTION

This indicator assesses changes in the conservation status of key physical and cultural features within the MPA, such as geomorphological and historical features, and traditions.

MEASUREMENT

The following question should be answered, ideally by an expert, manager or government official:

‘What is the conservation status of the focal physical, cultural and spiritual features in the MPA?’

RATIONALE

Culture (including traditions, languages and historical features) and physical features (caves, canyons, etc.) constitute a valuable heritage which should be taken into account when assessing protected areas, as stated in the widely accepted definition of ‘protected area’ (Dudley, 2008), which includes the effective protection of its ‘associated cultural resources’.

DATA SOURCE

Environmental agencies, management body, experts, volunteers, others.

DATA AVAILABILITY

Medium

FREQUENCY

Every two years

INTERPRETATION

If the reply to the previous question is:

‘Better than in the previous assessment’: it means that the indicator is properly complied with.

‘The same as in the previous assessment’: it means that some progress is needed to comply with the indicator (unless the status of these features was good initially, in which case the indicator will be regarded as properly complied with).

‘Worse than in the previous assessment’: it means that the indicator is not complied with.

In the event that the MPA has more than one focal cultural feature with different conservation trends, the overall interpretation of the indicator will always be that some progress is needed to comply with the indicator.

In this case, special care should be taken to monitor the degrading cultural features and to take the necessary steps to restore them.

COMMENTS

Please give brief details about the data and the actions taken.

NOTES

‘Focal physical, cultural and spiritual feature’ can be any tangible or intangible feature related to traditional culture or the physical environment whose continuous monitoring is advisable due to legal mandate or scientific advice on the grounds of its uniqueness or degree of threat.

It is highly advisable that a clear protocol for the quantitative or qualitative measurement of the conservation status of each set of similar focal cultural features be followed (where available) or developed, in order to minimize the subjectivity of the assessment and to allow for comparability.

A feature’s conservation status can be enhanced by protection, restoration, training or teaching, and therefore suitable compliance with the indicator should be achieved by continually implementing such actions.

REFERENCES

- Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. (2006). Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. 2nd edition. Gland, Switzerland and Cambridge, UK: IUCN.
- Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2004). How is your MPA doing? A guidebook of natural and social indicators for evaluating Marine Protected Area management effectiveness. Reprint, Gland, Switzerland and Cambridge, UK: IUCN, 2007.
- Dudley, N. (ed.) (2008). Guidelines for applying protected area management categories. Gland, Switzerland and Cambridge, UK: IUCN.



Ancient roman city of Baelo Claudia in Natural Park of Estrecho (Spain). Photo: M. Otero

EXAMPLE FROM THE FIELD: STATUS OF FOCAL PHYSICAL, CULTURAL AND SPIRITUAL FEATURES

The conservation status of physical and cultural features present in the marine protected area is good. Thanks to the collaboration between institutions some actions were implemented to further improve the protection or enhance valuable elements of historical, cultural or traditional features.

For example, between September and October of 2011 on the island of Tavolara, MPA and the Superintendence for Archaeological Heritage excavated archaeological sites and discovered artifacts relating to the Monte Claro culture, a prehistoric phase which corresponds to the central part of the Copper Age (2500-2000 BC).

The indicator has to be considered fully complied with.



*Archaeological remains in Tavolara Island
(<http://www.archeossnu.beniculturali.it/>)*

DESCRIPTION

This indicator assesses whether there is evidence of climate change impact by measuring a set of climate change related variables; it also measures management improvements resulting from mitigation of this impact and its potential outcomes.

MEASUREMENT

The following questions should be answered, giving 1 point for each 'Yes' and 0 points for each 'No':

1. Is there a monitoring programme in the MPA to evaluate the physical impacts of climate change (such as annual surface sea water temperature or sea level rise)?
2. Is there a monitoring programme in the MPA to evaluate the biological impacts of climate change (such as increased abundance or biomass of new warm-water or tropical species, or bleaching events)?
3. Has the MPA a decision-making support tool to evaluate such impacts?
4. Does the MPA already implement actions to reduce risks or mitigate the impacts of climate change or deliver adaptation responses in site management?
5. Does the MPA's management plan include raising awareness about climate change?

RATIONALE

Climate change is currently one of the biggest threats to biodiversity worldwide, which may make conservation efforts largely inefficient. The potential impacts of climate change on such a global biodiversity hotspot as the Mediterranean basin means it is critical to assess the evolution of key climate change variables in order to identify, prevent and mitigate its impacts. This information will help in adapting management plans, strategies and efforts to the effects of climate change.

DATA SOURCE

Agencies, management body, divers, others.

DATA AVAILABILITY

Medium

FREQUENCY

Annual

INTERPRETATION

If the sum of the scores for all five answers is:

- 5 points: it means that the indicator is properly complied with.
- 3–4 points: it means that some progress is needed to comply with the indicator.
- 2 points: it means that substantial progress is needed to comply with the indicator.
- ≤ 1 point: it means that the indicator is not complied with.

NOTES

A 'decision-making support tool' can be a group of experts that help managers to understand the scientific impacts of CC and facilitate climate change decision-making and the adoption of adaptive strategies.

COMMENTS

Please give brief details about the data and the actions taken.

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Violescent sea-whip (Paramuricea clavata). Photo: A. Rossetti SUNCE

ALTERNATIVE LIVELIHOODS AND/OR INCOME-GENERATING ACTIVITIES (AL/IGA) IN THE MPA

TYPE MEE

CATEGORY Features of interest

DESCRIPTION

This indicator focuses on activities that are compatible with, support or enhance the MPA's objectives, as managers have at all costs to avoid encouraging activities that hamper the management of the site or damage the features for which the site has been identified.

By measuring it, managers reveal the trends in Alternative Livelihoods and/or Income-Generating Activities (AL/IGA) in the MPA, with reference to businesses and occupations that:

- create and launch new activities;
- convert existing activities;
- improve existing activities making them more environmentally friendly and sustainable.

Activities may include the following:

- Sea resource exploitation: collection and processing of fish and sea products, certification of products and production processes, mariculture, etc.;
- Environmental tourism: environmentally friendly accommodation facilities (e.g. hotels, camping sites, youth hostels, private houses) and catering facilities, ecotourism activities (sea watching, bird watching, whale watching, canoeing, etc.), fishing tourism, training, environmental education and environmental interpretation activities, diving centres, bottle refilling stations, rental and sale of scuba diving equipment, tourist boats (e.g. glass-bottomed boats);
- Scientific tourism: workshops, conferences, summer schools, etc.;
- Sales activities: handicrafts, gadget production and sale, information booklets.

DATA SOURCE

Management body or external agencies (e.g. statistical institutes, universities) or other administrative bodies (municipalities, chambers of commerce, etc.)

DATA AVAILABILITY

Medium

FREQUENCY

Every three years

RATIONALE

This indicator measures to what extent the setting-up and management of the MPA promotes local implementation of economic models in line with environmental protection, through the public's direct involvement. Economic growth can potentially increase environmental impact and activities should therefore be established within commonly agreed limits. The effectiveness of adaptive management is based on the measurement and adaptation of such limits, among other things.

MEASUREMENT

The following questions should be answered:

1. Does the management body have information on Alternative Livelihoods and/or Income-Generating Activities (AL/IGA) in the MPA?
2. If so, based on that information and personal experience, is the trend in AL/IGA in the MPA consistent with maintaining its conservation values? (Please give details in the comments box.)

Answer giving 1 point for 'Yes' and 0 points for 'No' for question 1.

Answer giving 1 point for 'below an acceptable threshold' and 0 points for 'above an acceptable threshold' for question 2.

The following measurements are recommended:

1. Number of existing activities in the MPA connected to its existence;
2. Percentage of AL/IGA companies out of the total number of companies in the MPA;
3. Number of people employed in AL/IGA out of the total working population;
4. Number of activities certified by the management body.

REFERENCES

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INTERPRETATION

Any rise in AL/IGA must be consistent with the environmental limits set by the MPA management, and should therefore be related to other impact indicators.

AL/IGA should show a rise over the early years of MPA management, to then settle at a certain threshold value with small positive or negative variations thereafter.

The trend in AL/IGA should be regulated not only by MPA management but also by market trends and overall economic forces.

The results are to be considered positive if the figures given in answers 1, 2 and 3 are in line with the trends forecast for the MPA over time.

NOTES

For a definition of environmentally friendly tourism facilities, see existing sources such as the European Charter for Sustainable Tourism in Protected Areas (Europarc Federation) or the European Code of Conduct for Coastal Zones (Coastal & Marine Union–EUCC).

COMMENTS

Please give brief details about the data and the actions taken.

EXAMPLE FROM THE FIELD: ALTERNATIVE LIVELIHOODS AND/OR INCOME- GENERATING ACTIVITIES (AL/IGA) IN THE MPA

Strunjan Landscape Park is a combination of important natural and cultural features and the result of different human activities dating way back in the past, ranging from fishery to salt making and agriculture. Both cultural and biological diversity are at the very core of the establishment of the protected area, and are by definition compatible with its aims and goals.

At present, the only activity that could threaten nature and cultural heritage conservation is tourism in both the terrestrial and marine parts of the protected area.

In this context, apart from general considerations on pollution, the protected area regulations do not impose any bans on traditional activities and, consequently, there is no real need to develop alternative livelihoods.

This indicator obtained a green colour for total score and yellow colour as additional score.



Salt making and olive trees in Strunjan Landscape Park (Slovenia). Photo: A. Popic

LOCAL PERCEPTION OF THE MPA

TYPE MEE

CATEGORY Features of interest

DESCRIPTION

The focus of this indicator is to measure the level of awareness about the MPA's establishment and impact, the setting of priorities for the MPA and, lastly, local people's perception of their own roles and responsibilities.

The aim of this indicator is to assess the level of local support for the MPA by:

1. Understanding the perceived impact of the MPA's establishment on local people's access to coastal and marine resources;
2. Outlining and examining the factors that local people perceive should be the basis for determining the priorities of the MPA;
3. Documenting the perceived opportunities and constraints associated with the MPA;
4. Capturing perceptions about the roles and responsibilities that local people believe they have in the MPA.

DATA SOURCE

The survey instrument is a questionnaire which has to be used to gain insight into peoples' perceptions. Face-to-face interviews with respondents and focus-group discussions with stakeholders have to be undertaken.

DATA AVAILABILITY

Medium

RATIONALE

Understanding the factors that influence support for protected areas is essential for their effective management: on the one hand, support by local people minimizes antagonism, poaching and inappropriate resource use; unnecessary costs and conflicts can be avoided and replaced with collaboration between the protected area staff and local people. On the other hand, lack of support can undermine protected area management goals and aspirations, as operations can be disrupted leading to significant delays in implementation and the realization of desired goals.

Therefore, MPAs cannot be managed outside the context of the human communities that depend on their associated ecosystems and resources. Local people's perceptions need to be considered in the establishment of MPAs as well as in their subsequent management, planning and decision-making processes.

FREQUENCY

Ideally on a three-yearly basis, or more frequently in particular cases (e.g. when specific questions concerning planning or management have to be assessed)

INTERPRETATION

If the sum of the scores for the three answers is:

- 3 points: it means that the indicator is properly complied with.
- 2 points: it means that some progress is needed to comply with the indicator.
- 1 point: it means that substantial progress is needed to comply with the indicator.
- 0 points: it means that the indicator is not complied with.

MEASUREMENT

The following questions should be answered, giving 1 point for each 'Yes' and 0 points for each 'No':

1. Does the management body have information on the socio-economic impact of the MPA's establishment as perceived by local people?
2. Does the management body have information on local people's awareness of the extent to which the MPA is likely to change their current livelihoods?
3. Does the management body have information on local people's awareness of the opportunities and constraints associated with the MPA?

If negative effects are reported (i.e. negative opinions from respondents), it is recommended to perform a proper stakeholder analysis and to launch a communication strategy.

NOTES

Useful data are expected to be collected after a preliminary stakeholder analysis at a local scale.

COMMENTS

Please give brief details about the data and the actions taken.

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EXAMPLE FROM THE FIELD: LOCAL PERCEPTION OF THE MPA

The first comprehensive information on the local perception of **Telaščica MPA** came from the management plan preparation process in 2010, when Telaščica staff interviewed local people and held workshops with all local stakeholder groups. Most of the interviewed local residents considered the MPA to be an extremely valuable area of rich cultural, natural and geomorphological heritage that needed to be protected. Some saw the MPA as a tool that could aid in the restoration of fish stocks and create added value for their agricultural products. Some interviewed individuals had unrealistic expectations and

saw the MPA as a developed tourist centre with accompanying infrastructure. Only a small number saw the park area as a preserved, well-explored area, with potential for the development of the sustainable use of natural resources, and hoped to achieve good communication between the MPA management body and local communities. Based on this information **Telaščica** achieved a blue colour code for this indicator as the maximum number of points was scored. The additional score achieved a green colour code, as our communication strategy has not been launched yet but it is included in the management plan.



Artisanal fishery gears in Tavolara - Punta Coda Cavallo MPA (Italy). Photo: M. Tempesta

Further reading and resources

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Red starfish (Echinaster sepositus). Photo: D. Poloniato

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