

WHEN MOROCCO'S MEDITERRANEAN MPAs BECOME THE MAIN CONSERVATION TOOL FOR SEABIRDS

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STUDY AREA

INTRODUCTION

Morocco very early launched an initiative on its Mediterranean coast to identify sensitive sites of ecological and biological interest hosting species of fauna and flora that are sometimes unique at the regional level. It works in collaboration with international organizations to establish a dynamic of conservation management at the level of these sites, through the creation of marine and coastal protected areas, as part of its national protected areas initiative and its new legislation (Law 22 – 07, relating to protected areas). Three types of marine protected areas have been identified or created:

10 SIBEs have been identified on the Mediterranean coast, including Jbel Moussa, Cape Three Fourches and Al Hoceima National Park.

An Intercontinental Biosphere Reserve of the Mediterranean encompassing a marine part extending over an area of 17,976 ha

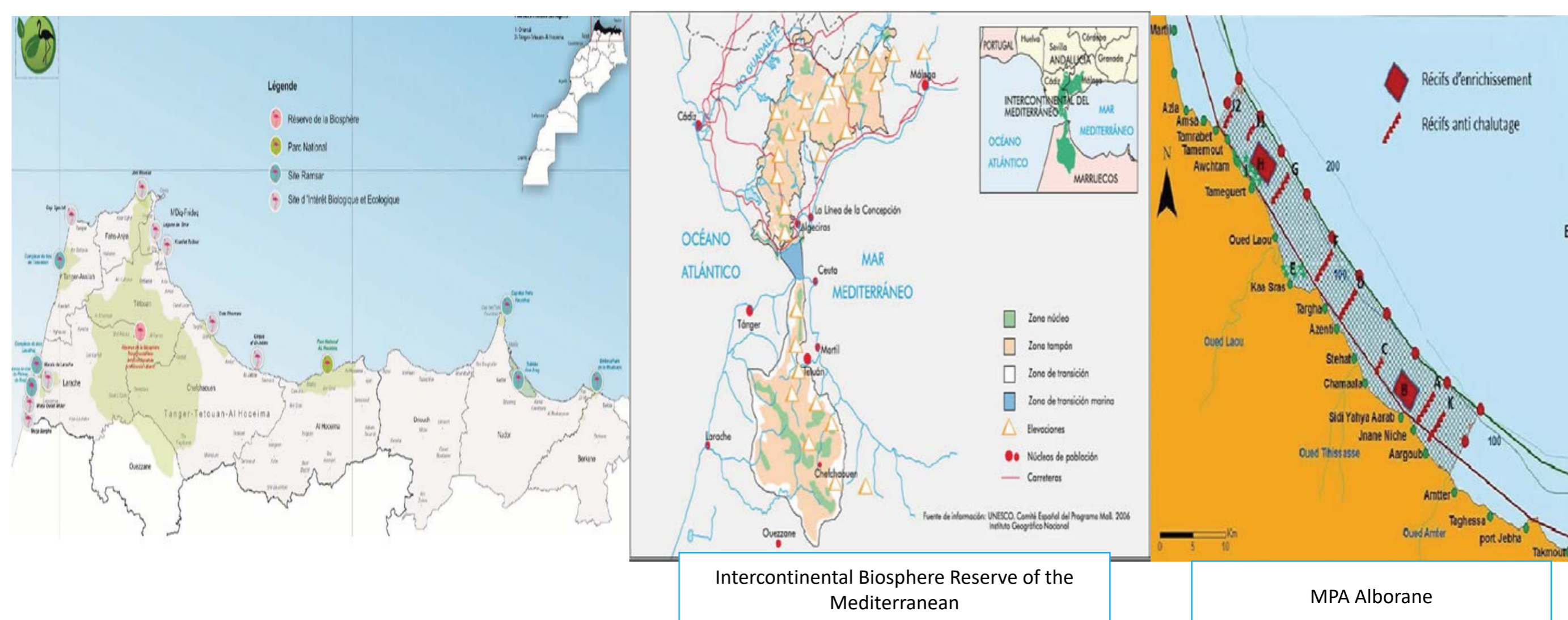
A marine protected area for fishing purposes, which is another more participatory concept for the protection of marine heritage. It extends over 22,000 ha with two strong protection zones.

The present study try to classify MPAs according to their degree of management effectiveness and hence their significant contribution to the conservation of marine biodiversity and the preservation of crucial habitats for marine and coastal birds.

OBJECTIVE

The objective of the study is to evaluate the management effectiveness of the different categories of MPAs implemented in the Moroccan Mediterranean sea and its impact on the conservation of marine biodiversity with a focus on marine and coastal birds

- 10 SIBE on 612 km of the Mediterranean coast including a national park,
 - 7 : on the Ramsar list (2004 – 2019)
 - 4 : a Management Plan
 - 3 : an intersectoral management committee.
- Intercontinental Biosphere Reserve of the Mediterranean (IBRM)
- Marine Protected Area Alborane



Main threats weighing on Moroccan Mediterranean MPAs (UNEP/MAP PAP/RAC Split, 2023)



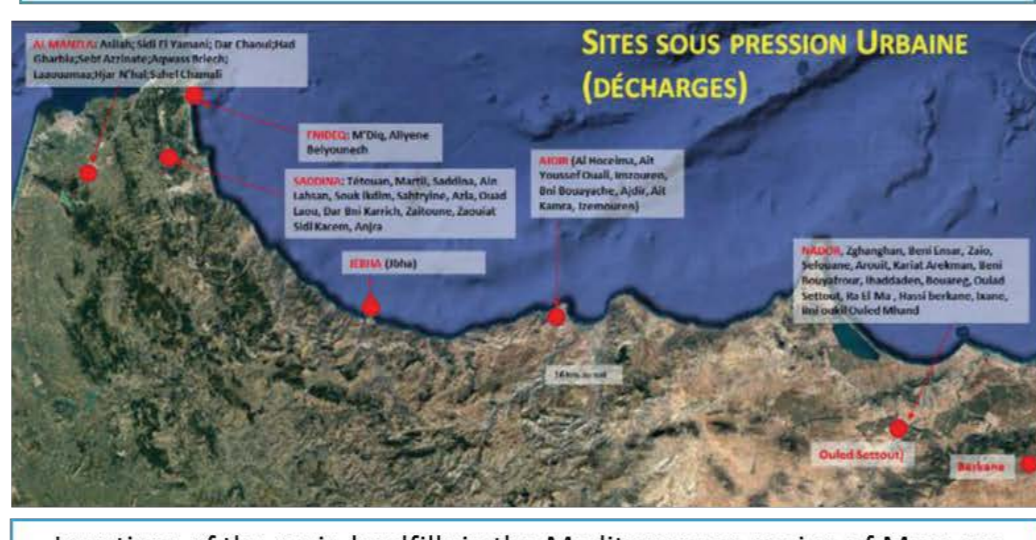
Audouin's gull by Imad CHERKAOUI



Nature of artificialization along the Mediterranean coast of Morocco (MTE-DD, 2021)



Map of the main sand quarries in the Mediterranean region of Morocco



Locations of the main landfills in the Mediterranean region of Morocco



Sites under tourist pressure

Importance of the study area for seabirds

MPA	Ornithological characteristics
Cap des trois fourches	Transition and nesting area for migratory birds, with a total of 69 species recorded, 19 of which winter on the site. We can cite the Audouin's gull <i>Larus audouinii</i> , the black-legged kittiwake <i>Rissa tridactyla</i> or the traveling tern <i>Sterna bengalensis</i>
Parc national d'Al Hoceima	Al Hoceima National Park has the largest nesting colony in the Mediterranean of osprey <i>Pandion haliaetus</i> , Audouin's gull, <i>Larus audouinii</i> (bird considered near threatened globally) and other birds of interest for conservation
baie d'Al Hoceima	No data
Cirque de Jebha	Presence of osprey (<i>Pandion haliaetus</i>).
Jbel Moussa	There is a nesting colony of Pontine gulls <i>Larus cachinnans</i> on the island of Leila, located 200 m from the coast. The Osprey, in the 1920s, nested on the Leila islet.
îles Chafarines (Ya'fariyya)	Presence of protected species: in particular nesting colonies of seabirds (<i>Pardela cenicienta</i> , <i>Calonectris diomedea</i> and the Audouin's gull <i>Larus audouinii</i>),
cap de l'Eau (Ras el Ma)	Presence of protected species: notably birds, identical to those present on the Chafarines Islands and others, rare, such as the Short-toed <i>Circus caelestis</i> .
la lagune de Nador	Important transit area for migratory and wintering birds with a total of 160 species recorded. The greater flamingo <i>Phoenicopterus ruber</i> and the collared pratinola <i>Glareola pratincola</i> are present. During winter, we can note the presence of significant populations of cattle egrets <i>Bubulcus ibis</i> , ringed ringed plovers <i>Charadrius alexandrinus</i> , pontine gulls <i>Larus cachinnans</i> , traveling terns <i>Sterna bengalensis</i> , and greater flamingos <i>Phoenicopterus roseus</i> .
l'embouchure de la Moulouya	Important area for the residence, migration and hibernation of birds, with approximately a third of the known poultry fauna in Morocco, i.e. 112 species
Cap Nègre (Kudiet Taifour)	Area of passage for migratory species, and in particular birds, marine mammals and certain fish

OVERVIEW OF THE CLASSIFICATION AND PRIORITIZATION OF MPAs

Different initiatives, cited below, have focused on the evaluation and classification of marine protected areas of the Moroccan Mediterranean within the framework of national or regional studies or projects. The criteria they have adopted concern more particularly the ecological aspect based on the rarity or vulnerability of sites, habitats and species.

AEFCS Initiative 1996

Identified sites of interest for protection in the Moroccan Mediterranean coast

- Estuary of the Moulouya,
- Nador Lagoon,
- Cap des Trois Fourches,
- Al Hoceima National Park,
- Jebha Circus,
- Rhomara Coast,
- Koudiat Taifour,
- Smir Lagoon,
- Jbel Moussa,
- Cape Spartel

IUCN Initiative 2012

Towards a representative network of marine protected areas in the Alboran Sea

- Intercontinental Biosphere Reserve of the Mediterranean
- Jbel Moussa and Bel Younech (CDB, ZEPIM, IBA)
- Jebha Circus (CBD, ASPIM, ZICO)
- The marine area of Al Hoceima National Park (CBD, SPAMI)
- Al Hoceima Bay
- Cap des Trois Fourches (RAMSAR, CBD, ZEPIM)
- Chafarine Islands (Ya'fariyya)
- Cape of Water (Ras el Ma)
- The Lagoon of Nador (Sebkha Bou Areg or Mar Chica)
- The estuary of the Moulouya (RAMSAR, IBAS, CBD, SPAMI)
- Cap Nègre (Kudiet Taifour)

RAC/SPA Initiative - UNEP/MAP, 2012

MedMPA net project

- Estuary of the Moulouya
- Nador Lagoon,
- Cap des Trois Fourches,
- Jebha Circus,
- Rhomara Coast,
- Koudiat Taifour,
- Smir Lagoon,
- Jbel Moussa.

Three sites were particularly judged to be potential, namely:

- Cap des Trois Fourches;
- SIBE "Jbel Moussa"
- SIBE "Jebha Circus".

METHODOLOGY AND APPROACH

In this study we capitalized on the initiatives, cited above, and we used a methodology based on the evaluation of a large number of criteria and key elements to evaluate the management effectiveness of these MPAs. The criteria vary depending on the categories of each MPA, its specific objectives and conservation priorities.

The approach adopted to inform these evaluation criteria boils down to a detailed analysis of documents related to these indicators, but also to discussions with national stakeholders concerned by the ecology of marine birds, by the integrated management of coastline and its artificialization and by MPA managers.

CRITERIA ADOPTED

All of the general criteria often used to assess the effectiveness and impact of marine protected areas listed below are relevant

1. Establishment and expansion of the MPA Network;
2. Zoning and Spatial Planning of each of the MPAs with varying levels of protection;
3. The degree of integration and governance of MPAs;
4. The degree of collaboration of populations and partners;
5. Degree of artificialization of the coastline surrounding the MPA;
6. Capacity Building;
7. Application of the Regulations;
8. Monitoring and control;
9. Scientific Research and Monitoring;
10. Technological Innovation;
11. Sustainable Tourism to minimize negative impacts;
12. Education and Awareness;
13. Degree of integration of adaptation strategies to Climate Change.

Evaluation of MPAs according to the adopted criteria

Criteria	MPA									
	Embouchure Moulouya	Lagune de Nador	Cap des trois Fourches	P N d'Al Hoceima	Cirque de Jebha	Côte des Rhomara	Koudiat Taifour	Lagune de Smir	Jbel Moussa	Cap Spartel
Establishment and expansion of the MPA Network;	0	0	0	5	0	0	0	0	0	0
Zoning and Spatial Planning	0	3	3	5	0	0	0	0	5	0
The degree of integration and governance	1	3	3	4	1	0	0	0	3	1
The degree of collaboration (population / partners)	1	1	2	3	3	3	3	0	3	3
Degree of artificialization	-5	-5	-5	-2	-2	-1	-2	-5	-2	-3
Capacity Building	2	2	2	5	0	0	0	0	3	0
Application of the Regulations	2	2	2	4	3	3	2	1	4	4
Monitoring and control	3	2	2	4	3	3	0	1	4	1
Scientific Research and Monitoring	3	2	3	4	2	2	0	1	4	0
Technological Innovation	0	1	0	2	0	0	0	0	2	0
Sustainable Tourism	2	2	2	3	2	1	1	0	3	2
Education and Awareness	3	3	1	4	1	1	0	0	3	2
Climate Change	0	0	0	1	0	0	0	0	0	0
TOTAL	12	16	15	42	13	12	4	-2	32	10

PRELIMINARY RESULTS

Evaluation of MPAs according to the adopted criteria

Criteria	MPA	
	IBRM	MPA Alborane
Establishment and expansion of the MPA Network	5	5
Zoning and Spatial Planning	5	5
The degree of integration and governance	5	5
The degree of collaboration (population / partners)	4	4
Degree of artificialization	-3	-2
Capacity Building	3	3
Application of the Regulations	3	4
Monitoring and control	2	2
Scientific Research and Monitoring	3	4
Technological Innovation	0	0
Sustainable Tourism	2	3
Education and Awareness	2	2
Climate Change	3	2
Total	34	37



National Parc AL Hoceima. © Houssine Nibani



Nador lagoon. Crédit Marchica med

Classification of MPA and their contribution to the conservation of seabirds

MPA Category	keystone marine bird species
First category: <ul style="list-style-type: none"> • NP Al Hoceima • MPA ALBORAN • Biosphere Reserve (IBRM) • MPA Jbel Moussa 	<ul style="list-style-type: none"> • Ospreys <i>Pandion haliaetus</i>, • Audouin's gull, <i>Larus audouinii</i> • Pontine gulls <i>Larus cachinnans</i>
Second category: <ul style="list-style-type: none"> • Nador lagoon • MPA Cap des trois fourches • Cirque jebha • Rhomara Coast • Moulouya Estuary 	<ul style="list-style-type: none"> • Ospreys <i>Pandion haliaetus</i> • The greater flamingo <i>Phoenicopterus ruber</i> • Collared pratinola <i>Glareola pratincole</i> • Pontine gulls <i>Larus cachinnans</i>, • Traveling terns <i>Sterna bengalensis</i>, • Greater flamingos <i>Phoenicopterus roseus</i> • Audouin's gull <i>Larus audouinii</i>, • Black-legged kittiwake <i>Rissa tridactyla</i>
Third category: <ul style="list-style-type: none"> • Cap spartel • Kudiat Taifor • Smir lagoon 	



Pontine gull larus cachinnans by Sophie samian

CONCLUSION

The Mediterranean coast of Morocco is characterized by high biodiversity, represented by flagship species of global, regional or national interest. It is also a space subject to numerous artificial developments, some of which are more than necessary for the development of the country and others could have been managed differently. To preserve this wealth, 12 Marine Protected Areas have been identified. Two of which benefit from legal conservation status (Al Hoceima National Park and MPA Alborane) and the third one benefit from international recognition (UNESCO): IBRM.

The evaluation of the management effectiveness of these MPAs assessed through multiple criteria: ecological, governance, integration, zoning, monitoring, awareness raising, etc. allowed a classification of MPAs into three categories forming ecological continuum. The first and second ones contain priority sites for the conservation of seabirds of global or Mediterranean importance.

Some of the selected sites have been previously identified by international organizations. Nevertheless, the analysis of all these spaces in the entire network of MPA made it possible to examine the existing gaps.

Increasing the number of MPA as well as their effective management will help to satisfy the International commitments made by Morocco and to achieve conservation objectives for marine and coastal bird species.