

Rapid cultural inventories of wetlands in Arab states

including Ramsar Sites and World Heritage Properties

Building greater understanding of cultural values
and practices as a contribution to conservation success

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Executive summary

The Ramsar and World Heritage Conventions collect large amounts of information on sites, for example through the *Ramsar Information Sheets* and the *World Heritage State of Conservation Reports*. However, information on how cultural values and practices contribute to the conservation of Ramsar Sites and World Heritage Properties (and the conservation of wetlands more generally) is often either lacking or is not organized in a useable form.

This report represents the output of the cooperation between the Ramsar Secretariat and the IUCN Tabe'a Programme¹ on the preparation of the rapid cultural inventories in a selected number of Ramsar Sites and other wetlands in the Arab States Region.

The main objectives of the assessment were

- Identifying and documenting the cultural values and practices related to particular Ramsar Sites / World Heritage Properties or wetland areas.
- Bringing to light the powerful role that these values and practices can play in wetland conservation and wise use.
- Empowering wetland managers and other stakeholders to integrate cultural values and practices more strongly in day-to-day wetland management.

This rapid assessment applied the methodology suggested by the Ramsar Convention Secretariat and revolved around the application of the Ramsar *“Guidance on Rapid Cultural Inventories for Wetlands”* (Pritchard, Ali & Papayannis, 2016).

Furthermore, the assessment is fundamentally linked to the global Sustainable Development Agenda and its Sustainable Development Goals (SDGs). Wetlands contribute towards a very broad range of the aspirations set out in these goals. The implementation of the 4th Ramsar Strategic Plan 2016-2024 aims to support the achievement of many of the SDGs and states in paragraph 15 : *“...all wetlands and the Ramsar Sites network will have a direct relevance for any Sustainable Development Goals which are related to water quality and supply, food and water security, adaptation to climate change, energy supply, healthy living, biodiversity and sustainable use of ecosystems, sustainable human settlements, poverty eradication, innovation and the development of appropriate infrastructure.”*

The Rapid Cultural Assessment was undertaken for six Arab states, namely Algeria, Egypt, Mauritania and Tunisia (Africa); and Iraq and Yemen (Asia). The selected countries were

¹ Tabe'a Programme is the Natural World Heritage Programme in the Arab states and represents cooperation between the IUCN World Heritage Programme and the UNESCO Arab Regional Centre for World Heritage in Bahrain.

identified by the Ramsar Secretariat, IUCN and the UNESCO Arab Regional Centre for World Heritage (ARC-WH) as they were highly representative for the Ramsar and World Heritage Conventions in general terms and relevant for the assessment scope specifically.

The assessment was designed to promote the complementary relationship between the objectives and principles of the two Conventions in a regional setting.

A set of selection criteria was adopted for the sites included in the assessment from the six countries, including: the conservation significance of the wetland, the level of threats (human-induced and natural) facing the Site, the cultural significance of the Site, the challenges facing the cultural values and practices of the Site, and finally, the availability of information on the cultural values and practices in the wetland.

For each Site, information was first gathered from the Ramsar Sites Information Service (RSIS) and Ramsar Information Sheet (RIS). Ramsar Sites have three possible categories of cultural services listed in the RSIS (recreation and tourism, scientific and educational, spiritual and inspirational), and these were noted. Further information was gathered from the internet and a personal library. Sources used included the Ramsar Culture Network, World Heritage State of Conservation (SOC) reports (IUCN & UNESCO World Heritage Centre), World Heritage Outlook documents (IUCN), UNESCO intangible cultural heritage (ICH) programme documents, MedWetCoast programme documents, MedWet Culture documents, United Nations Development Programme (UNDP) libraries, Convention on Biological Diversity (CBD) reports, national reports by Ramsar Contracting Parties, and research documents.

As a result of the application of the criteria, the sites selected for the assessment were as follows:

Country	No	Ramsar Site or Wetland Name
	1	La Vallée d'Iherir
Algeria	2	Oasis de Tamantit et Sid Ahmed Timmi
	3	Réserve Intégrale du Lac Tonga
	4	Lake Bardawil
Egypt	5	Lake Burullus
	6	Wadi El Rayan Protected Area
	7	Central Marshes
Iraq	8	Hammar Marsh
	9	Hawizeh Marsh
	10	Lac Gabou et le réseau hydrographique du Plateau du Tagant
Mauritania	11	Parc National du Banc d'Arguin
	12	Parc National du Diawling



Transporting the date harvest at Lake Burullus, Egypt. *Gabriel Mikhail*

	13	Ichkeul
Tunisia	14	Iles Kerkennah ou l'archipel de Kerkennah
	15	Lagune de Ghar el Melh et Delta de la Mejerda
	16	Aden Wetlands (not a Ramsar Site)
Yemen	17	Detwah Lagoon
	18	Sharma/Jethmun Coastal Area (not a Ramsar Site)

For each Site, a set of recommendations was made according to the results of its assessment, with focus on the improvement of governance, planning, management, monitoring and stakeholder participation.

Key lessons learned from the assessment

The key lessons learned from undertaking this pilot assessment mainly address the methodology as a tool, the process in which the assessment was conducted, the stakeholders' involvement in the application of the assessment, the outcomes of the assessment on a site and country basis, and finally the overall effectiveness of the assessment as a tool for enhancing knowledge related to cultural values and practices and ultimately the conservation of Ramsar Sites as a global biodiversity protection programme.

Before elaborating the lessons learned from the assessment, it is imperative to recommend action for the majority of sites included in the assessment, in addition to many Ramsar Sites from the Arab Region. There is an urgent need to update the existing RIS datasheets. Some of the datasheets have not been updated for more than ten years. Another related recommendation is to encourage all Contracting Parties from the Region to develop and update the management plans for all Ramsar Sites, with particular focus on planning to review and improve the decision making processes and structures – giving particular importance to the engagement and empowerment of local stakeholders in the strategic and day-to-day planning and management of the Ramsar Sites.

The assessment as a tool is a well-developed instrument designed to capture, document, and advocate for the cultural values and practices of wetlands. It seems, however, to be best designed for regions, countries and sites where an active knowledge management programme is taking place. As a rapid inventory, it excels in reporting on sites where a systematic approach is adopted in integrating cultural values in the overall planning, management, and monitoring of sites. In the Arab region, it seems, cultural values and practices do not represent an integral aspect of the strategic or day-to-day management of the sites. Rather, they are being addressed as part of a relic heritage which does not necessarily contribute effectively to the ongoing management of the sites or the sustainable development of communities associated with them. Cultural values and practices in the Arab Region are more likely perceived as artisan heritage suitable for tourism and history rather than a functioning component of wetland conservation and sustainable use.

To achieve a satisfactory level of involvement of stakeholders in the assessment was a major challenge for the exercise, especially in regard to national and site-based entities. The assessment team supported by the Ramsar Secretariat applied several approaches to motivate input from national stakeholders, but were not fully successful in achieving the intended involvement. This is a general comment, and must not undermine the fact that a significant and useful response was received from some national focal points. The varying participation level could be due to several factors including:

- As a regional assessment, it leaned more towards a centralized top-down approach of reporting and documentation, which did not necessarily trigger adequate levels of interest and motivation for involvement at the site and country levels.
- The assessment communicated mainly with national level focal points who have nature conservation backgrounds, and thus do not necessarily always have up-to-date information of the various aspects of wetlands, especially in regard to cultural values and practices. Furthermore, the official design of the assessment did not promote direct communication with site managers and other academic or project personnel who would have substantial knowledge and initiatives related to the sites' cultural values and practices.
- The challenging socio-political conditions of some of the region's countries definitely represented an obstacle facing the ability of national entities and individuals to engage and respond in a timely and effective manner.
- As a rapid assessment, its scope and timeframe did not allow undertaking comprehensive review and research of all academic and non-academic information and knowledge available on the target sites.

On the other hand, the feedback and contribution which were received from the programme and experts' network of the Ramsar Secretariat were elaborate and constructive and contributed significantly to shaping the assessment report. This confirms the vital role acquired by the various knowledge platforms established by the Ramsar Secretariat in enhancing knowledge and monitoring of the cultural values and practices in the region's wetlands.

The outcomes of the assessments varied significantly across countries and sites due to the various levels of available information and the level of responses and contributions received from the different stakeholders. As a result, the assessment would function as an excellent

basis for the development and application of a series of in-depth site-based assessments involving national experts and interest groups. Such follow-up would help to fill the knowledge gaps identified in the assessment, and would enable a more constructive approach for the documentation, promotion, and monitoring of cultural values and practices of wetlands as a functioning component in the effective management and long-term sustainability of the wetlands and their ecosystems.

An important message received from the assessment is related to the alarming level of outdated information. A significant part of the information used in the assessment was based on early reports developed during the wetland designation as a Ramsar Site. Only a systematic nationally led follow up on the assessment would yield the proper update on the status of the cultural values and practices for wetlands along with their role in the conservation and sustainability of the sites. Finally, the outcomes of the assessment revealed a great need for a more systematic approach in building the capacities of the national teams on the application of effective tools and mechanisms for integrating cultural values and practices in the sites' conservation. This is particularly critical for countries facing the hurdles of conflict and drought. For the assessment to be effective, it needs to be part of a more comprehensive approach addressing the documentation, promotion and monitoring of the cultural values and practices in wetlands in the Arab Region. The approach needs to include:

- An active knowledge platform on the regional level using the region's Arabic language in addition to English and French.
- A continuous capacity building programme designed on the thematic and sub-regional specificities of the regions, thus addressing the language aspects as well the priority issues, challenges and opportunities which characterize each sub-region. An initial categorization would include North African French speaking countries, the Middle Eastern countries, and the Arabian Peninsula sub-region including Yemen.
- An extensive literature review of all academic, programmatic and organizational reports and documentation addressing cultural values and practices related to wetlands in particular, and to biodiversity conservation in general, in the Arab Region.
- The adoption of a more systematic collaborative approach with other UN and international conventions and programmes addressing the integration of cultural and natural heritage at the regional level.

Overall, the assessment was a great learning opportunity for all those involved in it and should form the foundation for the improvement of future assessments undertaken for the region. It also highlights the need for the Ramsar and World Heritage Conventions to continue to seek to integrate wetland cultural services into all relevant national and regional policies, including in Poverty Reduction Strategies, National Climate Change Strategies, SDGs, taking into account the need to base such strategies on an understanding of specific wetlands' current and projected future productivity, particularly where such wetland services may change over time. The translation of the assessment report to French and Arabic would contribute greatly to enhancing its benefit to regional stakeholders and interest groups. A web-based sharing of the reports versions through the various portals associated with the Ramsar Convention and its partners is also highly recommended.

Introduction

Wetlands are central to the lives and livelihoods of more than a billion people around the world, including many local communities in the Arab states living in arid and semi-arid environments, as well as wetland environments, where water management is crucial for survival.

The Ramsar and World Heritage Conventions collect large amounts of information on Sites, for example through the *Ramsar Information Sheets* and the *World Heritage State of Conservation Reports*. However, information on how cultural values and practices contribute to the conservation of Ramsar Sites and World Heritage Properties (and the conservation of wetlands more generally) is often either lacking or is not organized in a useable form.

This report represents the output of the cooperation between the Ramsar Secretariat² and the IUCN Tabe'a Programme³ on the preparation of the rapid cultural inventories in a selected number of Ramsar Sites and other wetlands in six Arab states, namely Algeria, Egypt, Iraq, Mauritania, Tunisia, and Yemen.

Objectives of the Assessment

- Identifying and documenting the cultural values and practices related to particular Ramsar Sites / World Heritage Properties or wetland areas.
- Bringing to light the powerful role that these values and practices can play in wetland conservation and wise use.
- Empowering wetland managers and other stakeholders to integrate cultural values and practices more strongly in day-to-day wetland management.

Definition of Cultural Practices

Cultural practices and traditions can play a powerful role in wetland conservation and wise use. According to Ramsar, culture is interpreted as “a property of human groups or societies which expresses aspects of their identity, shared values, attitudes, beliefs, knowledge systems, creativity, and other practices”. It conditions the ways in which people interact with each other and with their environment. Culture can be exhibited in both material and non-material ways, and is constantly evolving. Material examples would include: protection and management of wetland habitats in ways designed to maintain a particular human social structure or uphold faith-based principles; use of wetland products for purposes that maintain cultural identities and represent

2 Ramsar Secretariat is represented by the Culture and Livelihood Division in Gland Switzerland.

3 Tabe'a Programme is the Natural World Heritage Programme in the Arab states and represents cooperation between IUCN World Heritage Programme and the UNESCO Arab Regional Centre for World Heritage in Bahrain.

place-specific skills; and heritage values associated with the co-evolution of particular societies and the ecosystems with which they have interacted. Non-material examples would include: sense of belonging; sense of continuity; aesthetic inspirations; and ecological ethics.

Cultural Values vs. Services

Nurturing rich and vibrant cultural sensibilities with regard to wetlands' place in evolving everyday contemporary life is a crucial part of the currency of values and services. The broader notion of ecosystem services, including cultural services, is a way of expressing the tangible and intangible benefits which ecosystems provide to human beings. The distinction between cultural values and services is not always clear-cut, but it may be helpful to recognize both dimensions in analyzing the overall importance of culture in relation to wetlands; for example, by considering services as properties of the ecosystem, and values as the expression of their high or low significance in a given context (Papayannis and Pritchard 2011).

Table 1: Wetland ecosystem services and values

Value or Service	Example
Habitation	<ul style="list-style-type: none"> • Settlements and structures • Cultural landscapes
Primary use of wetland resources	<ul style="list-style-type: none"> • Agriculture and stockbreeding • Fishing and aquaculture • Hunting • Salt extraction • Water supply and use
Secondary use of wetland resources	<ul style="list-style-type: none"> • Food processing • Craftsmanship • Traditional building and construction • Tourism, leisure, and sport • Social practices and methods • Festivals and celebrations
Knowledge belief systems and the arts	<ul style="list-style-type: none"> • Scientific research and education • Traditional knowledge • Spirituality and belief systems • Aesthetics and artistic expression

Rapid cultural inventories and the Ramsar Convention

Rapid cultural inventories support the implementation of a number of Resolutions on cultural issues, including taking the cultural values of wetlands into account in policy, strategies and management (Resolutions VIII.19 and IX.21), and on strengthening local communities and indigenous people's participation in the management of wetlands (Resolution VII.8).

These inventories also support the implementation of Target 10 in Ramsar's Strategic Plan 2016-2024, which promotes the documentation and full integration of the traditional knowledge and practices of indigenous peoples and local communities in wetland management.

Ramsar and World Heritage

In 1999, a Memorandum of Understanding (MOU) was signed between the Ramsar Secretariat and the World Heritage Centre. This MOU, which remains in force, was established with a view to promote the nominations of wetland sites under the two Conventions and share expertise about them, coordinating the reporting about Sites listed under both Conventions, and in some cases collaborating on advisory missions to those Sites to help them solve management problems.

There are currently 63 Wetlands of International Importance (Ramsar Sites) that are also inscribed within 48 World Heritage Properties. Of these, ten are located in the Arab Region. Over the years, the two Conventions have sent joint advisory missions of Ramsar and World Heritage experts to investigate and make recommendations on a number of joint sites, such as Ichkeul in Tunisia, Djoudj and Diawling in Senegal and Mauritania respectively, and Lake Srebarna in Bulgaria.

A new initiative to benefit from this close relationship has been the recent and rapid development of the Ramsar Culture Network (RCN), which is developing an extensive programme of activities increasing cooperation with World Heritage as well as other parts of UNESCO. As the programme develops it will be led to focus as much as possible on the site level, by means of case studies for example, and the exchange of lessons learned and knowledge among site managers.

A number of attributes of World Heritage cultural as well as natural properties offer exciting opportunities for further development, such as the traditional uses of wetland products, the evolution and functioning of rice terraces, *qanat* and *fouggara* irrigation systems, traditional water supply systems, networks of inland waterways for navigation, *salinas* (salt lakes), cities developed in deltas and around arterial rivers, and so on. The Ramsar Culture Network focuses particularly within five thematic areas:

- Bio-Cultural Diversity,
- Agriculture and Food Heritage,
- Youth Engagement,
- Tourism,
- Art.

Cultural Values of Wetlands and the SDGs

The Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development, comprise seventeen aspirational “Global Goals” with 169 targets between them. The SDGs cover a broad range of sustainable development issues, including ending poverty and hunger, improving health and education, making cities more sustainable, combating climate change, and protecting oceans and forests.

The Ramsar Convention on Wetlands works directly in support of the achievement of all the SDGs, since wetlands contribute towards a very broad range of the aspirations set out in these

goals. Specifically, the 4th Ramsar Strategic Plan 2016-2024 notes the reference to water and wetlands in the proposals for the Sustainable Development Goals, and also recalls (Resolution XII.2, paragraph 4) the Rio+20 outcome, that water is at the core of sustainable development.

In SDG 6 which focuses on water and sanitation, for the first time in history the world has a coherent policy framework for water issues, ranging from drinking water supply and sanitation, to integrated water resources management, and the importance of water-related ecosystems. Wetlands are specifically mentioned under target 6.6, and the structure of the goal links wetlands directly with the increasingly urgent questions of water allocation, water risks and water scarcity, while opening the door to the other 16 SDGs.

Biodiversity issues arise within Goal 14 on oceans, seas and marine resources, and in Goal 15 on terrestrial ecosystems. Target 14.2 calls for the management and protection of coastal and marine ecosystems, while wetlands are once again specifically mentioned within target 15.1. Thus wetlands have a direct relevance to three of the SDGs, and indirect links to many more.

The 4th Ramsar Strategic Plan was finalized just before the SDGs themselves were agreed; however, the broad shape of the SDGs was already visible. Hence the Ramsar Strategic Plan states in paragraph 15: “*..all wetlands and the Ramsar Sites network will have a direct relevance for any Sustainable Development Goals which are related to water quality and supply, food and water security, adaptation to climate change, energy supply, healthy living, biodiversity and sustainable use of ecosystems, sustainable human settlements, poverty eradication, innovation and the development of appropriate infrastructure.*” The implementation of the 4th Ramsar Strategic Plan will therefore support the achievement of many of the Sustainable Development Goals.

Since 1900, the world has lost 64% of its wetlands through drainage and conversion, and much of those that remain are under growing pressure from development. There is a dire need to safeguard and restore wetlands in order to reduce CO₂ emissions, protect cities and shores, maintain biodiversity, combat desertification, and provide clean water and food; all issues that are included in the SDGs (Madgwick 2015). Indeed, it is believed that progress on the other goals – education, health, inequality, and poverty – all depends on forward progress in water and sanitation (Rao Gupta 2015).

Partnerships, dialogue, and capacity building with local communities will catalyze action for wetlands linked to SDGs globally, regionally, and nationally.

Several of the target sites presented in this assessment have a history of community participation in sustainable use. These include: Oasis de Tamantit et Sid Ahmed Timmi, where there has traditionally been an intricate social organization based around the sustainable use of the *fouggara* system; the Mesopotamian Marshlands, where the local inhabitants present an example of wetland wise use and application of traditional knowledge practices to maintain the ecological character of their wetland; Parc National du Banc d’Arguin, where traditional use agreements with local fishermen are an example of a generally successful reconciliation of traditional use interests inside the property with conservation objectives; Parc National du Diawling, where the local people are very knowledgeable about the natural systems in the Park, and have much input to add to its management; Iles Kerkennah ou L’archipel de Kerkennah, where traditional water management systems and fishing methods have been carried out for centuries; and Detwah Lagoon, where local communities are responsible for the management decisions and regulation of sustainable fishing activities.

Methodology

This rapid assessment applied the methodology suggested by the Ramsar Convention Secretariat and revolved around the application of the Ramsar “*Guidance on Rapid Cultural Inventories for Wetlands*” (Pritchard, Ali & Papayannis 2016).

What is a rapid cultural inventory for wetlands?

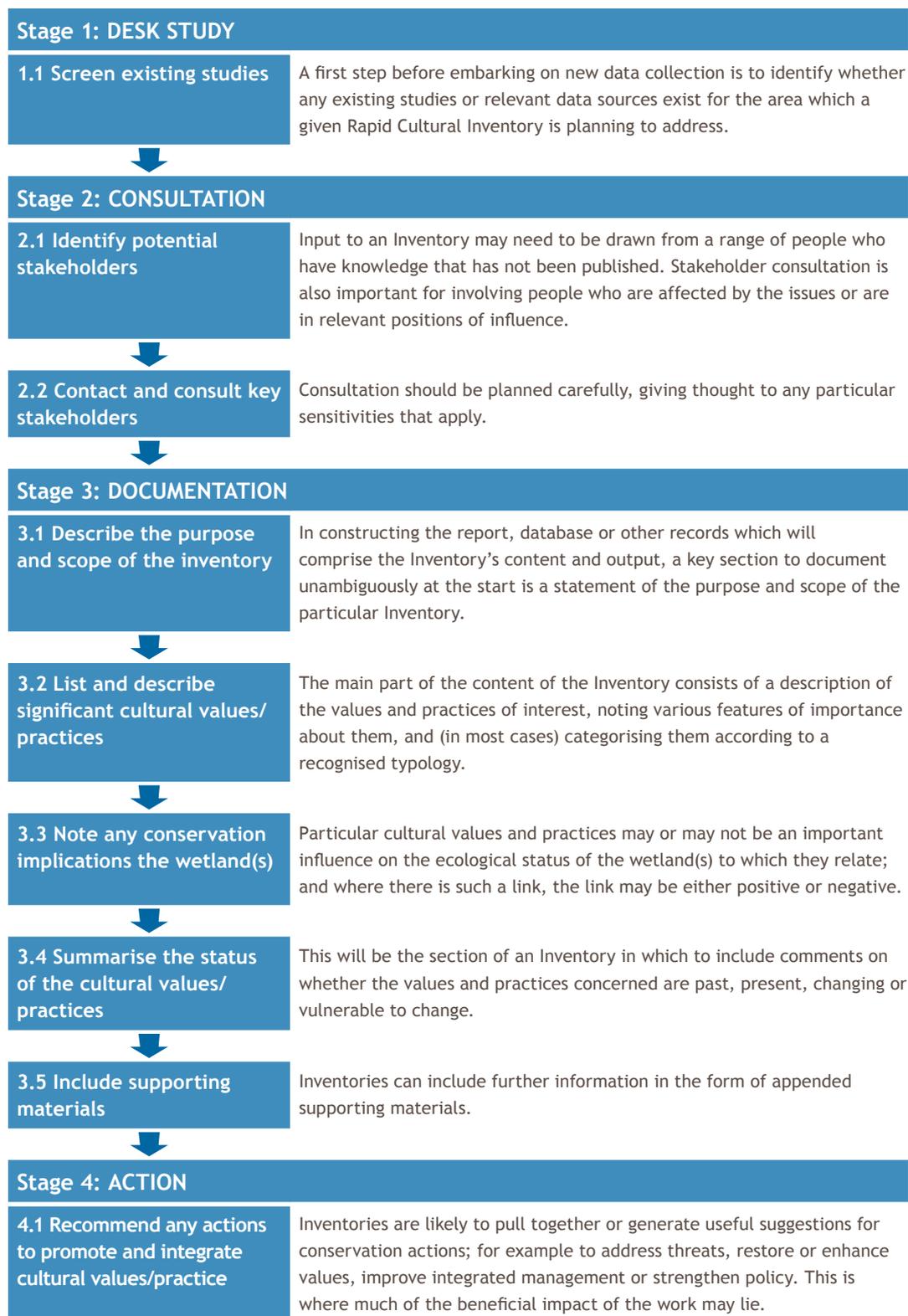
A rapid cultural inventory for wetlands is a simple and practical way to identify, document and make available information about notable cultural values and practices associated with identified wetland areas. The information it provides supports both the conservation of cultural heritage and the Ramsar Convention’s aim of integrating cultural aspects in the management of Ramsar Sites and other wetlands. As per the title, it should be “rapid”; collating information that is readily available, and doing it in an uncomplicated way to produce fast and easy-to-use results. The quality and completeness of the data might be variable, but the focus is to build a better picture of what is at stake, and to bring this to the attention of everyone in a position to influence its fate.

Small springs allow for irrigation of terrace crops in the Vallée d’Iherir Ramsar Site in Algeria,, which is also part of Tassili n’Ajjjer, a World Heritage property. *Haifaa Abdulhalim*



For this rapid assessment process and method, a simple step-wise approach was adopted⁴:

Table 2: The rapid assessment approach used



⁴ Extracted from Pritchard, Ali & Papayannis, 2016

Target Countries

A rapid cultural assessment was undertaken for wetlands in six Arab states, namely Algeria, Egypt, Mauritania, and Tunisia (Africa); and Iraq and Yemen (Asia). The selected countries were identified by the Ramsar Secretariat, IUCN and the Arab Regional Centre for World Heritage (ARC-WH) as they were highly representative for the Ramsar and World Heritage Convention in general terms as well as their relevance for the assignment scope specifically. The assignment is designed to promote the complementary relationship between the objectives and principles of the two Conventions in a regional setting.

It is important to note that the number of sites inscribed to the Ramsar Convention is much higher for the North African Arab states than for the West Asian ones. This was reflected in the approach and results adopted for the selection of the pilot sites included in the assessment. It reflected the amount of knowledge available for each sub-region, and thus the level of understanding and comprehension of the cultural values in the target countries and sites.



M'adan woman in Iraq weaving reeds, which can be made into mats of various sizes known as *Albariya*, as well as houses, fences, livestock sheds, and floor coverings.
Jassim Alasadi

World Heritage and Ramsar Conventions in the target Arab states

Before detailing the target countries (and beginning to determine which three sites for each country will be focused on), the following tables summarize the status of the target Arab states under the World Heritage and the Ramsar Conventions as an entry point to the assignment scope.

Table 3: World Heritage Properties in the target Arab states

No	Country	Year	Total Number of WH Properties	Number of Cultural Properties	Number of Natural Properties	Number of Mixed Properties
1	Algeria	1974	7	6	0	1
2	Egypt	1974	7	6	1	0
3	Iraq	1974	5	4	0	1
4	Mauritania	1981	2	1	1	0
5	Tunisia	1975	8	7	1	0
6	Yemen	1980	4	3	1	0
Totals			33	27	4	2

Table 4: World Heritage Tentative Properties in the Target Arab States

No	Country	Total Number of Tentative Properties	Number of Cultural Tentative Properties	Number of Natural Tentative Properties	Number of Mixed Tentative Properties
1	Algeria	6	5	0	1
2	Egypt	33	24	7	2
3	Iraq	9	9	0	0
4	Mauritania	3	3	0	0
5	Tunisia	10	6	3	1
6	Yemen	10	5	2	3
Totals		71	52	12	7

Table 5: Ramsar Sites in target member states from the Arab Region

No.	Country	Year	Number of Ramsar Sites
1	Algeria	1984	50
2	Egypt	1988	4
3	Iraq	2008	4
4	Mauritania	1983	4
5	Tunisia	1981	41
6	Yemen	2008	1
Totals			104

It is important to note that all Arab states targeted by the assignment are party to both the World Heritage and the Ramsar Conventions.

M'adan women navigate the Iraqi marshes. At one time, these marshes were the largest wetlands in Western Eurasia, but prior to 2003 had been drained and reduced to 10 percent of their original size. *Jassim Alasadi*





Sunset in the western Hammar Marshes, Iraq. *Mudhafar Salim*

Overlap between the Ramsar and World Heritage Conventions in the Arab states

The following table summarizes the relationship between the sites inscribed/nominated or tentatively listed under the World Heritage Convention and those designated under the Ramsar Convention. The table helps in first-hand identification of sites which are relevant to the assignment scope.

Table 6: Ramsar Sites Located within World Heritage Properties in target Arab states

No	Country	Ramsar Sites	World Heritage Properties	Notes
1	Algeria	La Vallée d'Iherir (size: 6,500 ha)	Parc National du Tassili (size: 72,000 km ²)	-
2	Egypt	Wadi El Rayan Protected Area (size: 175,790 ha)	Wadi Al-Hitan (size: 20,015 ha)	-
3	Iraq	Central Marshes (size: 219,700 ha) Hammar Marsh (size: 180,000 ha) Hawizeh Marsh (size: 137,700 ha)	The Marshlands of Mesopotamia (size: 211,544 ha)	World Heritage Property includes all three Ramsar Sites.
4	Mauritania	Parc National du Banc d'Arguin (size: 1,200,000 ha)	Banc d'Arguin National Park (size: 1,200,000 ha)	-
5	Tunisia	Ichkeul (size: 12,600 ha)	Ichkeul National Park (size: 12,600 ha)	-
6	Yemen	Detwah Lagoon (size: 580 ha)	Socotra Archipelago (size: 410,460 ha)	-

As shown in the above tables, the number of Ramsar Sites varies tremendously across the Arab states. On the other hand, there is only a small number of World Heritage Properties in the Region, however, these are also variable in terms of size and values.

In addition to the above, it was important to examine the list of Ramsar Sites which are of cultural significance (as defined in the Ramsar Sites Information Service/RSIS) in that they are associated with cultural ecosystem services. Out of 104 Ramsar Sites in the target Arab states, 72 have listed cultural values, as summarized in the following table.

Table 7: Ramsar Sites of cultural significance

No.	Country	Total Number of Ramsar Sites	No of sites with Documented Cultural Values
1	Algeria	50	34
2	Egypt	4	4
3	Iraq	4	4
4	Mauritania	4	3
5	Tunisia	41	26
6	Yemen	1	1

Target wetland sites

The assignment undertook the assessment for 18 wetland sites - three sites from each of the six target countries. The site selection was based a set of specific criteria, as follows:

1. Conservation significance of the wetland. This includes the site's importance and recognition at the national, regional and international levels. This would entail including Ramsar Sites associated with World Heritage Status (inscribed, nominated and tentative list sites) in addition to other conservation statuses recognized under other international, regional and national categorizations (i.e., Biosphere Reserve, National Park, etc).
2. Level of threats (human-induced or natural) on the site's conservation. This is a sub-criterion stemming from criterion number 1. It reflects the change processes taking place in wetland sites which may lead to the deterioration of their biophysical environments as well as their ecosystem functions.
3. Cultural significance of the wetland. This is a primary criterion. It includes the site's importance and recognition at the national, regional and international level in relationship to cultural values and practices. This would entail including Ramsar Sites which are recognized for their cultural ecosystem services or for their intangible heritage.
4. Level of threats to the site's cultural values. (Includes past and current responses for threat mitigation.) This is a sub-criterion stemming from criterion 3. It reflects the change



Local reed-based crafts in Ghar el Melh, Algeria. *Faouzi Maamouri*

processes taking place in wetland sites which may lead to the deterioration of cultural values and practices, which in turn contribute to the conservation of the natural values of the sites. It also examines the socio-economic implications of the destruction of cultural values for local communities and other interest groups.

5. Availability of information on cultural values in wetlands. This is a sub-criterion which supports the successful modeling of the rapid cultural assessment. It would include the presence of demonstrated good practices in wetland management in relation to integrating cultural values in conservation efforts. It would also comprise past and current research and assessment, relevant projects and initiatives, as well as documented traditional knowledge and practices.

The application of the above criteria (especially 1 and 3) resulted in the following selection of target sites:

Table 8: Selected target sites

No	Country	Ramsar Site or Wetland Name
1		La Vallée d'Iherir
2	Algeria	Oasis de Tamantit et Sid Ahmed Timmi
3		Réserve Intégrale du Lac Tonga
4		Lake Bardawil
5	Egypt	Lake Burullus
6		Wadi El Rayan Protected Area
7		Central Marshes
8	Iraq	Hammar Marsh
9		Hawizeh Marsh

10		Lac Gabou et le réseau hydrographique du Plateau du Tagant
11	Mauritania	Parc National du Banc d'Arguin
12		Parc National du Diawling
13		Ichkeul
14	Tunisia	Iles Kerkennah ou L'archipel de Kerkennah
15		Lagune de Ghar el Melh et Delta de la Mejerda
16		Aden Wetlands (not a Ramsar Site)
17	Yemen	Detwah Lagoon
18		Sharma/Jethmun Coastal Area (not a Ramsar Site)

It is important to note that the screening process did not include Ramsar Sites which are associated with the World Heritage Tentative Lists of Target Countries. This is justified considering the unsystematic and usually superficial approach adopted by the countries to identify tentative list sites especially in regard to cultural values.

Further, the assessment intended to highlight any existing cultural inventories or assessments already carried out in the target wetlands in the target countries.

All target sites are Ramsar Sites, with the exception of two sites in Yemen, namely, the Aden Wetlands and the Sharma-Jethmun Coastal Area.

Assessment Results

For each wetland selected, information was first gathered from the Ramsar Sites Information Service (RSIS) and Ramsar Information Sheet (RIS). Ramsar Sites have three possible categories of cultural services listed in the RSIS (recreation and tourism, scientific and educational, spiritual and inspirational), and these were noted. Further information was gathered from the internet and a personal library. Sources used included Ramsar Culture Network, State of Conservation (SOC) reports, World Heritage Outlook documents, UNESCO intangible cultural heritage programme documents, MedWetCoast Programme documents, MedWet Culture documents, United Nations Development Programme (UNDP) libraries, Convention on Biological Diversity (CBD) reports, Ramsar Contracting Party national reports, and research documents. This is intended to be a rapid survey, so exhaustive research was not carried out. General cultural information for countries was not included, rather, only site-specific information for each wetland. Wetland-related cultural information and human activities were organized under the following subjects:

- Settlements and structures
- Natural heritage resources
- Social practices and methods
- Social values
- Agriculture
- Stockbreeding and grazing
- Fishing and aquaculture
- Hunting

Kingfisher alighting on the prow of a traditional boat in the eastern Hammar Marshes, Iraq.
Mudhafar Salim





M'adan woman practicing traditional embroidery, Iraq.
Jassim Alasadi

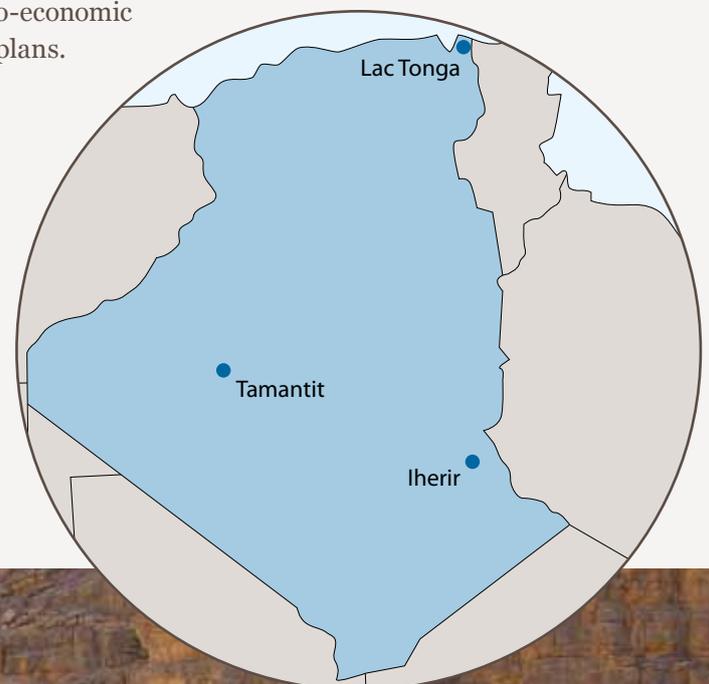
- Economic opportunities
- Natural resource extraction (e.g. salt, oil)
- Water supply and use
- Food processing
- Craftsmanship
- Traditional building and construction
- Tourism, leisure and sport
- Festivals and celebrations
- Scientific research
- Education and outreach
- Traditional knowledge
- Spirituality and belief systems
- Aesthetics and artistic expression
- Land tenure/ownership
- Threats to the site as a result of human use

This organization was adapted from *Guidance: Rapid Cultural Inventories for Wetlands* (2016) by Pritchard et al. If one of these subjects is not included for a site, it was because information was not found for it. Generally, no existing cultural inventories or assessments were found for the target sites, aside from a few regional assessments that included information on Egypt or Tunisia. Available information varied greatly from site to site, and several sites were difficult to find any information for – this is especially the case for wetlands in Yemen. It is also important to note that most of the information available for Algeria, Mauritania, and Tunisia was available only in French, so as far as these countries are concerned, there may not have been a lack of information, but a language barrier. The assessment results are summarized in the following sections following the alphabetical order of the target countries.

Algeria

The Ramsar Convention entered into force in Algeria on 4 March 1984, and it currently has 50 sites designated as Wetlands of International Importance (Ramsar Sites), covering a surface area of 2,991,013 hectares. Algeria is now rated eighth of all countries in terms of the wetland area under protection, and first of all countries in Northern Africa. Many of the wetland areas in Algeria are considered precious due to the lack of freshwater in the country and because of their high biodiversity which can include over ten ecosystems within one wetland area.

Our target sites are not specifically focused on by the State Party National Report on the Implementation of the Ramsar Convention (COP12). However, the report does state that surveys have been conducted to test indicators of recreation and wetlands in four Algerian wetland sites. The report also notes that socio-economic values have been taken into account in site management plans.



Fishing in La Vallée d'Iherir Ramsar Site, a fertile oasis, which has *gueltas* (pockets of water that form in drainage canals or wadis in the Sahara) and rich vegetation where date palms are abundant. *Haifaa Abdulhalim*



La Vallée d'Iherir

(Designated a Ramsar Site in 2001)

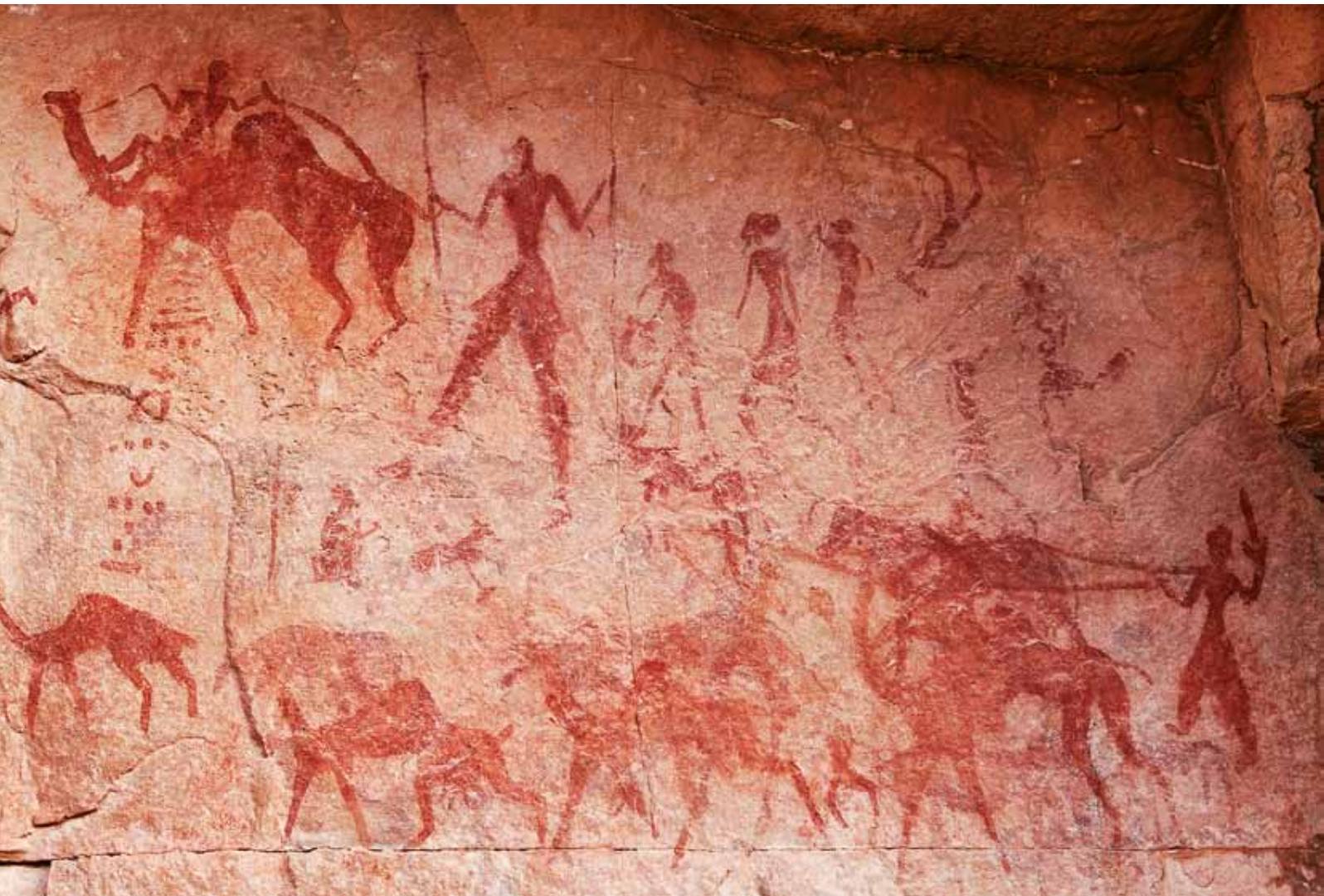
A high valley (1100m-1400m) in the center of a limestone Saharan plateau characterized by intermittent streams, lakes, and marshes, freshwater springs, and subterranean karst hydrological systems. Iherir is an unusually fertile oasis, which has *gueltas* (pockets of water that form in drainage canals or wadis in the Sahara) and rich vegetation where date palms are very abundant. For this reason, the primitive inhabitants of the Sahara came here to live when the fertile savannah started to desertize, and presently, the resident population has generally fluctuated around several thousand, with more than 1,000 along the Oued Dierir alone. The Site is also a National Park, and part of the World Heritage Property Parc National du Tassili.

The area has a long history of habitation, but little information on present cultural practices or conservation. Therefore, key recommendations include a detailed pilot study of cultural values and practices, the development of education and monitoring programmes, and an update of Site information.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- spiritual and inspirational

The Tassili n'Ajjer World Heritage Property, which includes La Vallée d'Iherir Ramsar Site, hosts one of the most numerous collections of perhistoric rock paintings in the Sahara, dating back to 9,000 BC. *DPK-Photo / Alamy Stock Photo*



Box 1: Rapid cultural inventory summary for La Vallée d'Iherir

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 28/2/2001, unless otherwise noted)

Cultural Values, Practices, or Services

Natural heritage resources Archaeologically, Iherir hosts one of the most numerous collections of rock paintings in the Sahara.

Agriculture Small springs allow for irrigation of terrace crops in most valleys and basic agriculture is practiced by the Tuareg community on terraces above the valley floor. Date palm is dominantly grown, followed by fig and grape vines. Vegetable crops are grown under the tree canopy and consist of carrots, onions, and tomatoes, and barley is harvested in April.

Stockbreeding and Grazing The products of the agricultural crops, supplemented by breeding goats and cattle, has until very recently, allowed the local people to live independently, in contrast to other Saharan populations which utilize trade of goods (salt, grains, cereal, or dates). Additionally, fish are taken from the *gueltas*, and camels are grazed.

Water Supply and Use A number of wells have been dug in the Oued Tadjerdjeri system, and together with irrigation canals, have been used to lead water to the village of Arharhar. This irrigation system, however, has fallen into disuse since the development of oil fields at In Amenas. This development has probably contributed to the reduction in population throughout the region in recent years (Hughes & Hughes 1992).

Craftsmanship *Typha* is used for thatching and making mats (and part of the stem is eaten as a vegetable) (Hughes & Hughes 1992).

Tourism The frescoes have encouraged a fairly significant number of visitors; however, tourism drastically diminished between 1992 and 2000, and is only recently beginning to recover. This area is remote, which means that there is no paved road to the valley, and it has to be accessed through stony and sandy tracks.

Education and Outreach Any educational activities fall under the responsibility of Tassili National Park.

Aesthetics and Artistic Expression The area has certainly been continuously inhabited since Neolithic times, and prehistoric art can be found here, including carved drawings depicting long horned buffalos, known as bubalus, which have been dated to around 9000 BC. Also represented are ostrich, Hartebeest, Roan antelope, gazelle, oryx, and Barbary sheep (Hughes & Hughes 1992).

Pressures on wetland and cultural values/practices

No reports were found on the pressures or threats facing the cultural values and practices of the area specifically. In general, there is little information on the Site's values status as part of the larger Tassili World Heritage Property.

Recommendations on cultural values/practices linked to the wetland

- A detailed pilot study is proposed to assess the cultural values and practices of the Site in particular, and Tassili in general, to help better understand the interaction between the living heritage of the sites in terms of cultural practices and their associated environment.
- The development of the Site's educational programme for key target groups including local communities and visitors would further its understanding and support by stakeholders.
- The current and potential impacts of extractive industries such as oil need to be better assessed and monitored through an integrated monitoring programme which addresses key ecosystem services related to culture such as water and associated traditional irrigation systems.
- The Site suffers from a major lack of updated information related to its cultural values and practices. Specific efforts need to be given priority to update the Site information not only as relates to cultural values and practices but also in terms of assessment of pressures and threats associated with them.

Oasis de Tamantit et Sid Ahmed Timmi

(Designated a Ramsar Site in 2001)

Oasis de Tamantit et Sid Ahmed Timmi consists of a succession of several oases. The Oasis is a perfect model of sustainable natural resource management; despite the fact that there is no rain, the locals have continued with the traditional method of distribution of water for irrigation by means of *fouggara*, a human-made hydraulic system which captures underground water and distributes it in the oases. The Site is classed as having probably the first human-made subterranean hydrological system in the Ramsar List, and is also a National Heritage Monument.

The area has a rich cultural history, particularly in regard to the *fouggara* system, which even includes a well-documented intricate social organization. However, this system is falling out of favor with newer generations who seek more modern agriculture methods.

Recommendations for the Site include a detailed case study as a regional model for sustainable management of natural resources linked to cultural practices, and promotion of the *fouggara* system as a good practice for sustainability. There is also a need for an update of information on cultural practices, and documentation and translation of traditional knowledge. Additionally, there should be promotion of scientific research, investment in income generating initiatives, and improvement of visitor education and facilities.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- spiritual and inspirational

Wherever an aquifer can be accessed, an oasis can emerge from the Sahara. The *fouggara* is a traditional method of distributing water for irrigation and is managed to ensure equitable access and distribution to the entire population of the village, as well as preservation of water quality (Timimoun, Algeria). Bernd Mellmann / Alamy Stock Photo



Box 2: Rapid cultural inventory summary for Oasis de Tamantit et Sid Ahmed Timmi

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 28/1/2001, unless otherwise noted)

Cultural Values, Practices, or Services

Settlements and structures Local architecture utilizes trunks of the date palm tree and bricks made of local clay. The region has long been an important West African trading center with caravans arriving here from Egypt and Timbuktu. Each oasis is dominated by a fortress (*ksar*) which encloses the village and part of the oasis. There are palm groves located further down the slope (MedWet accessed 2016).

Social practices and methods The oases are not a creation of nature, but rather, the result of man's presence. Wherever an aquifer can be accessed, an oasis has emerged from the Sahara. According to ancient manuscripts, Oasis Tamentit is very old and dates to seven years before the "*hegira*", and the area was inhabited even before that during the Pharaonic era. The Oasis was described by Antonio Malfante in 1445 as being "surrounded by walls and divided into eighteen districts", and being "geographically located in the center of West Africa, 20 to 25 days by horse from various Muslim kingdoms, involved in conducting exchanges with the caravans from Egypt".

Fouqqara: The *fouggara* system is said to have originated in Persia and been introduced to the Maghreb during the Arab conquest of the 7th century, and the original *fouggara* in Oasis de Tamantit et Sid Ahmed Timmi are said to have been built by Copts. To build *fouggara*, it is necessary that the water table be located above the area to be cultivated, which usually occurs where there is a flat area drained by a system of depressions, rivers, or *sebkhas*, which allow a drawdown. Water from the *fouggara* system is available throughout the year; flow is constant, and can be increased when needed by extending the underground tunnels. There are currently a total of 42 *fouggaras* at the Oasis, 20 of which are still functional.

Social values There is an intricate social organization based around the *fouggara* system, which is to ensure sustainable management, equitable access and distribution to the entire population of the village, and preservation of water quality. The actors in this social organization are: the *Djemaa* (a general group of owners who decide on repairs or maintenance, resolve disputes, and approve changes, sales, rentals or water shares by owners), the Chahed (a witness who is chosen for wisdom and good reputation - usually the Imam of the mosque. He is the General Secretary of the *Djemaa* who holds the *fouggara* registry in which is recorded a list of owners and their share, and water transactions. In return, he receives benefits of free water), the *Kial el my* (is responsible for the measurement of water using a calibration instrument called *chegfa* which uses a bi-duo-decimal calculation whose basic unit is el *habba z'rig*-equivalent to the Middle Eastern carat. Gross measurement is recorded immediately on clay tablets that are stored after drying), and *El Hassab* (specializes in the calculation of quota shares and shares of inheritance). Although shares of water from the *fouggaras* are owned, people of the village have free access to water for home use, as is guaranteed at the main canal that runs through the village. In return, the entire population participates in maintenance and repair of the structure.

The *fouggara* organization contributes to maintaining community support links (*touzia*) and strong solidarity. In fact, the system has had an extraordinary influence on the existence of oases in the region, so much so, that the society itself depends on this special hydraulic organization.

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Agriculture The isolation of the Oasis in the middle of a hostile desert environment has facilitated a very interesting agricultural diversity for the Sahara. One species of economic interest is the date palm, which, through voluntary and involuntary selection, the locals have cultivated into 25 new varieties. Two of these are of great interest for scientific research, as they are resistant to *Fusarium oxysporum albidius*, which is a disease that has ravaged many palm varieties. Fruit trees include: almond, lemon, grape, fig, orange, olive, pomegranate, and apricot. Forage species such as Acacia are also present. In addition, there are two local cultivars of lentils and peas, as well as many cultivars of Saharan wheat and barley, and oats. Also grown are vegetables such as tomato, potato, beet, turnip, and others. Cotton, which was first introduced to the area by the Jewish people of Cyrenaica, still exists today and has developed interesting genetic traits which allow it to be perfectly adapted to the local drought conditions, and as such, is currently a focus of agricultural research. Henna and peanuts are grown and are sold for favorable prices.

Oasis planting space is used wisely, with date palms acting as a shade from the harsh sun to protect crops. Ground cover is used for protection and to promote regeneration, and creates a microclimate that retains moisture and condensation.

Stockbreeding and grazing There are a number of local chicken breeds which have very short legs, and are attracting interest for research due to their unique genetic characteristics and ability to adapt to the environment. There are also many races of locally bred sheep.

Water supply and use The locals have continued with the traditional method of distribution of water for irrigation by means of "*fouggara*". These consist of a succession of wells spaced 10 to 20m apart, with connecting tunnels which vary in length from 100m to several kilometers. In 1963, the area was noted to have 1,377km worth of *fouggara* made of 572 tunnels

Craftsmanship Local crafts are highly sought after by tourists, including Tamentit pottery, basketry, silver products, locally made shoes, and leather products.

Tourism, leisure, and sport Many eco-tourism tours and camel treks visit the area. These include guided tours of the old fortresses, and local architecture, in addition to the *fouggaras*.

Festivals and celebrations Popular traditional activities include visiting mausoleums where revered religious persons (*marabout*) are buried. These occur throughout the year, and inhabitants from the region and other countries come to these sites for pilgrimage.

Scientific research Research is being carried out by the National Institute for Agricultural Research on the date palm tree disease (*Fusarium*). The National School of Architecture also is doing research on the local architecture and building materials.

Traditional knowledge A traditional medical practice *erredim* is used as a natural treatment for arthritis, and consists of burying the afflicted person in the sand of the dunes.

Spirituality and belief systems People of the Tamentit Oasis periodically perform an important religious ritual, the *ziarettes*. They visit the mausoleums where the *marabouts* (important spiritual leaders) are buried. The residents of the oases and of other neighboring regions meet there on pilgrimage (MedWet accessed 2016).

Land tenure/ownership The oasis is a collective private property, and the sebkha is part of the public water resources. Land ownership rules are dictated by the fact that land does not constitute true capital, but gains value according to the irrigation rights attached to it. Furthermore, although religion normally has a role in land rights in this region, local customs have shaped the rules of ownership and water use. Water property is owned by one who has contributed labor or money to it; each person owns a share of property in relation to expenses incurred in the construction or extension of *fouggaras*. Ownership of individual water properties or rights can diminish over time.

Pressures on wetland and cultural values/practices

- Silting of the *fouggara* system due to a decrease in efforts by locals to fix the sand dunes with dry palm.
- Loss of heritage (ecological, biological, social, and cultural) if the *fouggara* system is not maintained in favor of modern agriculture methods, or because of lack of interest from younger generations.
- Depletion of groundwater reserves or reduction of water flow from the *fouggara* as a result of the development of modern agriculture methods (monoculture exploitation and powerful pump irrigation).

Recommendations on cultural values/practices linked to the wetland

- A detailed case study on this Site is proposed as a regional model for sustainable management of natural resources linked to cultural values and practices and backed up by tremendous knowledge and experience.
- The promotion of the *fouggara* water management system as a good practice for sustainable utilization of natural resources with their associated cultural values, knowledge and practices. A detailed case study is proposed on this system.
- The promotion of the scientific research efforts addressing the important genetic resources in the Site including the date palms and their disease resistance, the special cotton variety, and the adapted varieties of chicken and sheep.

Réserve Intégrale du Lac Tonga

(Designated a Ramsar Site in 1983)

Located in El Kala National Park/UNESCO Biosphere Reserve (which also includes Lake Oubeira and Mellah Lagoon Ramsar Sites), Reserve Intégrale du Lac Tonga is an extensive wetland complex, including wooded hills, wet forest, and an important sand dune system. The El Kala complex is generally recognized to be one of the four major wetland complexes in the Western Mediterranean. Tonga Lake is a seasonal freshwater lake that is linked to the Mediterranean Sea and provides important habitat for extensive beds of aquatic plants and nesting sites for rare and threatened waterbirds.

The Lake was added to the Montreux Record in 1993 due to the challenges it faced from the period of dryness faced by the country during a period of over 10 years, exacerbated by anthropogenic influences through excessive hunting, discharge of sewage leading to congestion of water channels by vegetation, excessive extraction of water when flow is low, and repeated fires in the catchment, leading to further exposure of bare soils. Following the end of the ten-year period of drought, the ecosystem's natural functions returned to their optimum levels and the anthropogenic threats were addressed through implementation of the recommendations from the Ramsar Advisory Mission carried out in 1990, and through the development of a management plan for the El Kala National Park and wetlands supported by the GEF/FEM project (Kibata 2009). Lake Tonga was removed from the Montreux Record in 2009.

Little cultural information is available for the Site, therefore, recommendations include a detailed study on the traditional wetland knowledge and uses, and an update of information related to cultural values and practices. There also needs to be an integrated monitoring system of the impacts of new water management systems, and a participative stakeholders dialogue programme.

Lac Tonga, a seasonal freshwater lake, is the main source of fish and eel stocks on which local communities depend. *Elkala Wilaya el Taref*



Cultural Services listed in Ramsar Site Information Service (RSIS)

- recreation and tourism
- scientific and educational
- spiritual and inspirational

Box 3: Rapid cultural inventory summary for Réserve Intégrale du Lac Tonga

(Information came from the Information Sheet on Ramsar Wetlands (RIS) June 2003, unless otherwise noted)

Cultural Values, Practices, or Services

Natural heritage resources There is a prehistorical archaeological site including dolmens (a type of single-chamber megalithic tomb, usually dating from the early Neolithic period).

Agriculture Seasonal cultivation is carried out. Agricultural irrigation is strictly regulated and presently only permitted for the nearby riverine populations (initial inhabitants).

Fishing and aquaculture Lake Tonga is the main source of fish and eel stocks on which local communities are dependent. Eel fishing is carried out utilizing nets placed across the water courses. It has been regulated to a definite surface area (2.5 ha), and accompanied by strict book-keeping.

Tourism, leisure, and sport Nature trails have been developed around the Lake, and a camp-site and open air-activities center has been established.

Scientific research A socio-economic study was conducted by a Masters student in 2003 on Tonga Lake, and biological and socio-economic studies are carried out in El Kala Biosphere Reserve.

Education and outreach Guided tours are conducted for school children and official delegations to Tonga Lake. El Kala is well-advertised with signs, and there is an eco-museum and mini-zoo, and an information and interpretation Center in the town of El Rala.

Pressures on wetland and cultural values/practices

- Wastewater discharge from surrounding cities.
- Repeated fires.
- Pumping of water for irrigation purposes.
- Eel nets sometimes trap otters and waterfowl.
- Poaching.

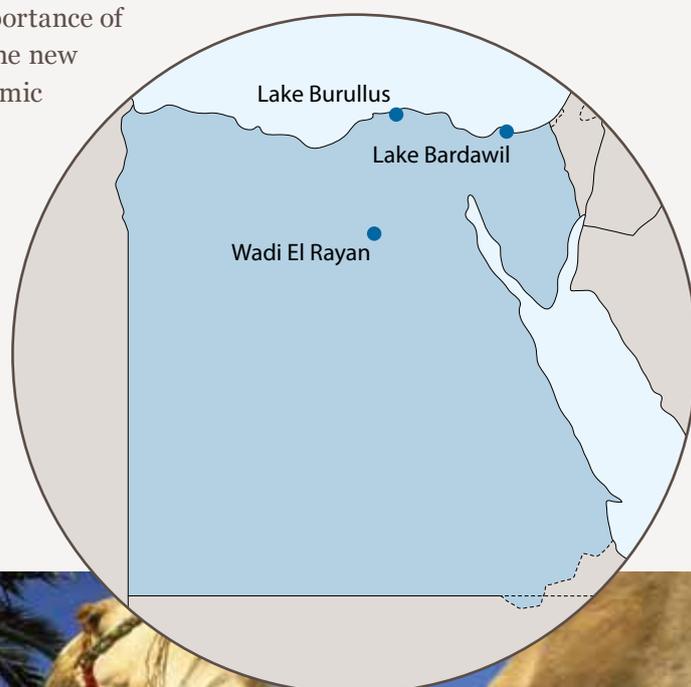
Recommendations on cultural values/practices linked to the wetland

- A detailed study on the traditional wetland knowledge and uses would uncover the level of cultural values and practices which are still intact.
- An integrated monitoring system of the impacts of the new water management systems in the traditional uses and knowledge needs to be put in place for the Site to avoid the total erosion of the cultural values and practices.
- A participative stakeholders dialogue programme including community-based actions needs to be promoted to support the wetland conservation and sustainable use, promote traditional practices and promote socioeconomic alternatives to local communities based on their traditional knowledge and experience.
- The Site suffers from a major lack of updated information related to its cultural values and practices. Specific efforts need to be given priority to update the Site information not only as relates to cultural values and practices but also in terms of assessment of pressures and threats associated with them.

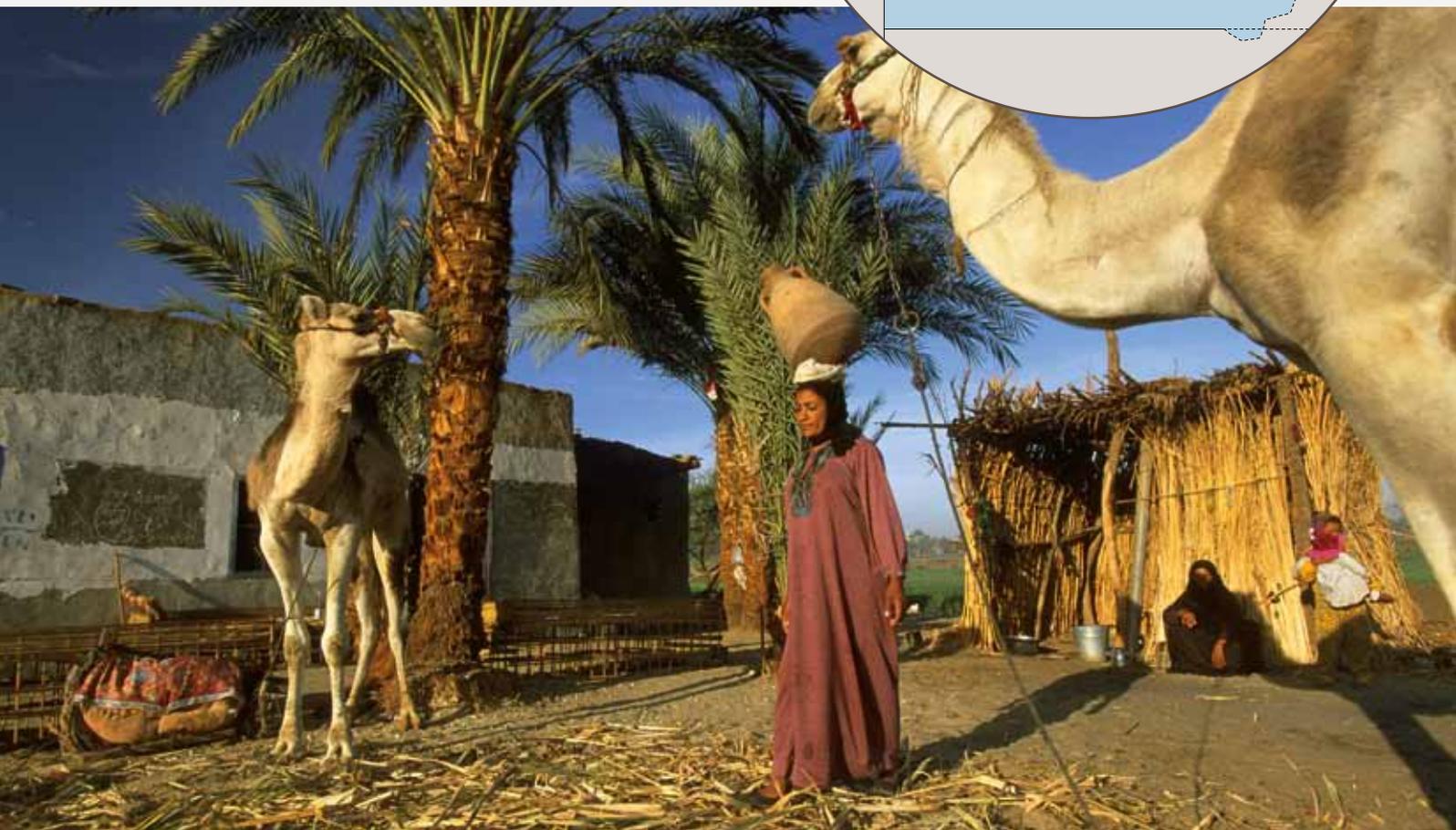
Egypt

The Ramsar Convention entered into force in Egypt on 9 September 1988, and it currently it has four sites designated as Wetlands of International Importance (Ramsar Sites), covering a surface area of 415,532 hectares. Most of Egypt's wetlands occur in the Nile Basin, and include a variety of swamps, marshes, seasonally inundated grasslands and sedgeland, swamp forests, floodplains, and the wetland edges of lakes and rivers.

The National Report on the Implementation of the Ramsar Convention (COP12) states that an assessment has been made of ecosystem benefits and services, and economic uses have been classified into categories including grazing, fuel, medicinal use, food, and timber. According to the report, this information is considered in the national land-use plan, and is being used to convince decision makers on the importance of wetlands to human well-being. It is further stated that the new NBSAP will hopefully include information on socio-economic and cultural values of wetlands.



Woman leaving home to collect water from the Nile river near Luxor. *Frans Lemmens / Alamy Stock Photo*



Lake Bardawil

(Designated a Ramsar Site in 1988)

Lake Bardawil Protected Area consists of two shallow interconnected hyper-saline lagoons made of islands and peninsulas separated from the Mediterranean Sea by a sandbar. The Site is an important spawning area for fish, supports commercially important fish populations, and is an important wintering and staging area for about 500,000 birds. Technically, although the whole of the Protected Area (covering some 595 km²) is designated as a Ramsar Site, the Lake essentially consists of two lagoons, Bardawil (595 km²) and Zaranik (9 km²) of which, under Egyptian law, only the latter is designated as a protected area. This area is also “Site Numbers 1 & 2” of the “Bird Migration Routes” Tentative Site Listing for the UNESCO World Heritage List.

Natural resources are heavily exploited in the area, especially as regards to aquaculture, and most cultural practices also relate to fishing. The Site was added to the Montreux Record in 1990, as considerable ecological changes have occurred due to the extension of salt extraction and the constant formation of sand bars (siltation), which close the channels connecting the lagoons with the sea. The Site was the subject of a Ramsar Advisory Mission in 1991.

Key recommendations include undertaking an in-depth analysis of traditional land rights as an introduction to engaging in a participative stakeholders dialogue based on recognizing traditional practices, and assessing cultural impacts of ongoing development projects. There is also a need to develop socioeconomic initiatives which promote sustainable use of resources.

Fishing is the main source of livelihoods in Lake Bardawil, and is intertwined with local culture and customs. For example traditional festivities, such as weddings, intentionally coincide with the fishing season (Dahab, Sinai). *Egypt_Simo-Images Alamy Stock Photo*



Cultural Services listed in Ramsar Site Information Service (RSIS)

- scientific and educational
- spiritual and inspirational

Box 4: Rapid cultural inventory summary for Lake Bardawil

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 28/6/1998, unless otherwise noted)

Cultural Values, Practices, or Services

Natural heritage resources There are a number of archaeological sites in and around the wetland, mostly from the Roman period. Historically, it was part of a very important trading route that crossed the entire region linking Egypt with the East. Numerous pottery shards found scattered around the Site provide evidence on its history. The site of Ostarkine, a Roman settlement located on Felusyat Island, lies within the boundaries of the protected area. The name of the island is derived from the Arabic word *felus*, meaning money, and derives from the coins which locals have found in large numbers around the Site. The remains of two Byzantine churches also stand on the island (MedWet accessed 2016).

Settlements and Structures There are scattered towns and human settlements in the Protected area. In 1999, it was estimated that there were about 2000 households around the Bardawil lake area (Nada et al 2013).

The North Sinai Agricultural Development Project is a large-scale land reclamation project on the northwest side of the Lake. As of 1991, the project planned to divert Nile water through a tunnel underneath the Suez canal to irrigate reclaimed areas south of Lake Bardawil. 200,000-300,000 people were planned to be settled in the area (Mission Report 1991). As of February 2012, the Minister of Water Resources & Irrigation stated that 94.4% of the project was complete, however, due to legal and institutional challenges, indicators suggest that the government of Egypt will not be able to meet its target of resettling around 3 million inhabitants by 2017 (Nada et al 2013).

Social practices and methods Bedouin tribal laws are in force among the population along with gender-oriented tasks (women, for example, are the shepherds of the community) (MedWet accessed 2016).

Social values Fishing is the main source of livelihood in the area, and is intertwined with their culture and customs, e.g. certain traditional festivities, such as weddings, intentionally coincide with the fishing season (Nada et al 2013).

Stockbreeding and grazing Bedouins graze livestock around the lakeshore, and on accessible islands.

Fishing and aquaculture The Lake provides fisheries resources of substantial regional socioeconomic importance, producing over 2,500 tons annually; mostly of high value saltwater fish species, mainly mullet. As of 2013, there were 1,229 licensed fishing boats and 2,645 fishing permits, and Bardawil Lake provided for the livelihoods of 3,684 fishermen, supporting approximately 5,000 households (Nada et al 2013).

Trammel nets, trawling, purse seines, veranda nets, line fishing and artificial fish trap objects are the main fishing methods used in the Lake (Nada et al 2013). (In-depth detail on fishing methods can be found in the Nada et al 2013 report)

Fishing is regulated by a fisheries management plan which limits the number of fishing boats and the horsepower of their outboard engines (introduced by the Israeli administration). Fishing in Lake Bardawil is halted for four months of the year (late winter to early spring) to allow for the spawning activities of Gilthead Seabream (El Gamal 2014). Still the environmental officers of El Arish have expressed a wish to enforce the fishing ban within the Zaranik Protected Area to avoid disturbance to resting birds and sea turtles created by the 15 boats of fishermen that are fishing within the Protected Area, despite the fact that their license only mentions «Lake Bardawil» which would (sensu strictu) exclude the Zaranik Lagoon (Mission Report 1991).

There are five fishermen cooperatives in Bardawil Lake. These cooperatives channel governmental subsidies and provide fishermen with fishing equipment, motors, spare parts and fishing nets, through loans with no interest rate. They also market the fish production on behalf of the fishermen and assist fishermen to meet their essential needs during closed seasons. The cooperatives also collect license fees and fines, and run an insurance scheme through which fishermen are insured against economic loss in case of accidents, loss of vessels, or death during fishing activity (Nada et al 2013).

A lack of pro-fishermen policies in Egypt has resulted in an escalating feeling among the fishermen that they are not dealt with as stakeholders in the Lake Management. This has led to overfishing, lack of resources to encourage recovery of the fishery, use of illegal fishing methods, and lack of human and financial resources to enforce existing regulations in Bardawil Lake (Nada et al 2013).

Hunting Bird hunting, particularly of quail, takes place in autumn along the coastline of the Lake, although the environmental officers of El Arish have been enforcing the ban on bird (mainly quail) catching within the Reserve since the 1990 season (Mission Report 1991). A considerable portion of the birds caught are consumed by the hunters, and the rest are sold to middlemen that sell them to local retailers in Arish city. Bird hunting techniques include using coastal trapping nets and dummy birds (Nada et al 2013).

Natural resource extraction Salt is produced from the lake, and is considered to be the highest quality salt in the country. Saline workers live in settlements on the border of the Reserve. There are five salt ponds, with six more planned to have been established after 2013.

Tourism, leisure and sport There is little tourism to Lake Bardawil except along the coast near the wetland. Some tourist villages and private vacation homes have been established along the coasts east and west of the Lake, and are mainly busy during summer months (June-August).

Scientific research There is a field research station/ecolodge at the Zaranik Protected Area, biological and fisheries research is carried out for the wetland, and bird hides are erected around the salt marsh at the Lagoon.

Education and outreach There is a Visitor Center at Zaranik Protected Area, which includes a museum, library, auditorium, and exhibits.

Regular conservation education programmes are carried out for schools, university students, government officials, journalists, etc. The Reserve has hosted training and education programmes for nationals and foreigners. Audio-visual and printed materials (stickers, booklets, posters) are available for the Reserve's education programmes.

Land tenure/ownership Most of the land belongs to the government, although the Bedouins claim traditional ownership.

Pressures on wetland and cultural values/practices

- The closing of the channels (called *bhugaz*) connecting the lagoons with the sea creates a danger of drying up of the Lagoon and subsequent loss of its biological and economic value (habitat for resting migratory birds, and spawning grounds for fish that are commercially exploited in Lake Bardawil) (Mission Report 1991).
- As a result of the North Sinai Agricultural Development Project, most of the industrial, domestic and agricultural run-off waters planned to drain from the eastern section of the development were planned to flow into the Bardawil Lagoon. It is argued that the inflow of freshwater from the new reclamation lands will change Bardawil from a saline to brackish lake, leading to deterioration of water quality, and hence alter the composition of marine fauna and flora (Nada et al 2013).
- There is a possibility of illegal grazing, fishing and hunting.
- According to the Ramsar Advisory Mission (1991), "There reigns some confusion about the obligations of Contracting Parties to the Ramsar Convention (as) both sites, Lake Burullus and Lake Bardawil, provide fisheries resources of substantial regional socioeconomic importance. Legally, it seems yet unclear how to accommodate the concept of wise use of Ramsar Sites (and all other wetlands) with the concept of strictly protected areas in Egypt."
- The creation of evaporation ponds, salt washing, drying and storage facilities, access roads for large trucks, and a large pumping station to pump seawater into newly created concentration ponds surrounded by artificial embankments has clearly created substantial ecological change to the area and will create further change in the near future (Mission Report 1991).
- There is concern that tourism development may generate pollution and human disturbance.

Recommendations on cultural values/practices linked to the wetland

- Undertake in-depth analysis of the traditional land rights in terms of tenure and uses as an introduction to engaging in a participative stakeholders dialogue based on recognizing traditional practices, especially in regard to fishing but also for hunting and grazing, thus promoting more local support for the Site conservation and improved understanding and utilization of traditional knowledge and experiences.
- The cultural impacts of the north Sinai Agriculture Project need to be assessed, especially in regard to local right holders and users.
- Develop socioeconomic initiatives based on the cultural/natural tourism which promote sustainable use of resources in the confines of protected areas using sound integrated planning approaches.
- Adopt a stakeholders' dialogue mechanism targeting the improved involvement of local communities in Site decision making along with the enhancement of quality of life.

Lake Burullus

(Designated a Ramsar Site in 1988)

Lake Burullus is a shallow, saline lagoon containing numerous islands and islets connected with the sea by a narrow channel. The area provides an important wintering, staging and breeding habitat for birds.

Fishing and aquaculture here are of substantial regional socio-economic importance. Traditional practices are still partly utilized, including the types of watercraft and fishing techniques used. The Site is subject to a strong salinity gradient and suffers from the inflow of large amounts of water contaminated with fertilizers and pesticides causing nutrient-enrichment. The Site was added to the Montreux Record in 1990, and was the subject of a Ramsar Advisory Mission in 1991.

Key recommendations include detailing impacts on cultural heritage in a strategic assessment of major development projects, identification of the rights of traditional users of the wetland, and the promotion of traditional fishing practices and techniques as the basis for a more sustainable utilization of lake resources. There is also a need to assess the impacts of the changing hydro and ecological systems, adopt a tourism master plan, and expand on the sustainable reed harvesting practices.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- recreation and tourism
- scientific and educational
- spiritual and inspirational

A fisherman at Lake Burullus. *Fayed El-Geziry / Pacific Press / Alamy Stock Photo*



Box 5: Rapid cultural inventory summary for Lake Burullus

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 28/6/1998, unless otherwise noted)

Cultural Values, Practices, or Services

Social practices and methods Social studies revealed that approximately 185,000 people interact with the lake on a daily basis (MedWet accessed 2016).

Stockbreeding and grazing Some grazing occurs in the reedbeds around the lakeshore, and reeds are collected for fodder. The reed beds (mainly *Phragmites* and *Juncus*) cover large parts of the Lake, creating a rich habitat for many different breeding birds and other animals. However, fishermen complain that the extent of the reed beds is increasing (currently covering about 25 per cent of the lake surface), thus reducing the open water surface which allows easy access and installation of fishing nets. Thus, they try to reduce the reed growth by letting domestic buffalos graze the more accessible parts (Mission Report 1991).

Fishing and aquaculture Lake Burullus provides fisheries resources of substantial regional socioeconomic importance. 31,000 to 46,000 fishermen exploit the Lake, which yields 60,000 tons of fish. Aquaculture facilities around the Lake yield an additional 146,000 tons of fish. Thus, fish production is estimated annually to be about 300 million US\$ (COP12 2015).

Fishermen utilize traditional sailing boats (*markebs* and *feluccas*) due to the shallowness of the lake and abundant submerged vegetation which makes travel with motor propellers difficult. (Only the water police force has inflatable and rigid boats with outboard motors.) Fishing occurs throughout the year, but different mesh sizes for fishing nets are prescribed during different seasons (Mission Report 1991). Fishermen use traditional techniques (various kinds of nets) as well as taking advantage of the reeds. Unfortunately, many illegal fishing methods are also currently practiced. In the past, local fishermen would make their own fishing nets as well as ropes out of their old nets (MedWet accessed 2016).

There is a fisheries institute in Baltim on the northeastern shore of the Lake which manages the extent of fishing.

Hunting Hunting of quail and songbirds takes place in autumn, with waterbird hunting occurring in the winter.

Craftsmanship Reeds are harvested from the lakeshore to make mats and building materials which are sold commercially.

Tourism, leisure and sport There is little to no tourism at the Lake, although large-scale leisure and eco-tourism development had been proposed.

Scientific research There is a field station at Burg Al Arab which carries out fisheries research. There is also biological research and water quality monitoring being conducted.

Spirituality and belief systems Burullus occupies the northern part of the Kafr El-Sheikh district, which was the center of worship for the god Amun-Re. The ancient city of Xoïs, which stood on the site of what is now the village of Sakha, was capital of the 6th Lower Egyptian nome (an administrative area). The Sanctuary of the Church of the Virgin Mary is located there. It is alleged that the child Jesus left his footprint as a bas-relief in a rock during a journey through the Delta with the Holy Family. The rock was kept hidden for many centuries to protect it from theft and was unearthed again around the end of the 20th century (MedWet accessed 2016).

Pressures on wetland and cultural values/practices

- A coastal highway was being built on the sandbar in 1998, with the potential to increase pollution and human disturbance to the Site as a result of agricultural reclamation and tourism development.
- Several drainage channels on the southern shore bring large masses of drainage water containing heavy fertilizer and pesticide loads into the Lake. This contributes significantly to the eutrophication and pollution of the Lake, and decreases the salinity. This is leading to a serious decline in numbers of fish being caught (Mission Report 1991).
- Land reclamation for agriculture and fish farms has greatly reduced the size of the Wetland. Although reclamation projects have been halted by Governors decree, some projects have continued.
- Illegal fishing and hunting also occur.

Recommendations on cultural values/practices linked to the wetland

- Include the impacts on the cultural heritage in a strategic assessment of major development projects currently implemented or planned for the Site. This includes the highway, agricultural expansion and water management systems.
- Undertake a stakeholder mapping exercise for the Site to identify and promote the rights of traditional right owners and users of the wetland.
- Promote better understanding of the traditional fishing practices and techniques as the basis for a more sustainable utilization of Lake resources.
- Assess the impacts of the changing hydro and ecological systems resulting from the management approaches and decisions on the cultural values and practices associated with the Lake use. This is particularly important for fishing activity.
- Adopt a tourism master plan for the Site using small scale community based models rather than the current large scale private sector driven mega plans.
- Expand on the sustainable reed harvesting practices for socioeconomic, cultural and ecological benefits.

Wadi El Rayan Protected Area

(Designated a Ramsar Site in 2012)

The Site comprises two main lakes, at different elevations, connected by a swampy channel. It is one of the most important habitats for several bird species of national, regional and international importance. The lakes and springs play a critical role in the life cycles of a remarkable diversity of species. Wadi Rayan is also a Nature Reserve, and Wadi al-Hitan (“Whale Valley”), within the Ramsar Site, was designated as a World Heritage Property in 2005.

Fishing and agriculture are the major sources of livelihood for the resident population (12,000 residents), and the annual fish catch has been increasing markedly. The Site is known for its ancient water wheels, which are popular with tourists who are drawn by the strong tourism industry here. Production of handicrafts is also well-established, and features a wide variety of items made with local raw materials, however, there has been a significant decline in production due to a decrease in demand. Many of the handicrafts are expressive of the history and traditions of local people.

Key recommendations include a long term vision for the Site as a model for environmentally and culturally sensitive development. There is also a need for an in-depth case study on the Site as a model for community based management, with particular focus on the enormous amount of knowledge related to handicrafts and their associated skills, nature and culture based tourism, and community involvement and empowerment.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- recreation and tourism
- spiritual and inspirational

Wadi El Rayan comprises two main lakes connected by swampy channels and is a major source of livelihoods for local communities. *Haifaa Abdulhalim*



Box 6: Rapid cultural inventory summary for Wadi El Rayan Protected Area

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 26/3/2012, unless otherwise noted)

Cultural Values, Practices, or Services

Natural heritage resources Paleontology: Fayoum contains some of Egypt's best fossil deposits laid down 30-40 million years ago, and marine sedimentary cretaceous period 70 million years ago, including some of international importance.

Fossils: Wadi Al-Hitan "Whales Valley" is a paleontological site. It was designated a UNESCO World Heritage Property in July 2005 for its hundreds of fossils of some of the earliest forms of whale, the archaeoceti.

Archaeological sites: The area has been inhabited since Neolithic times (5500 to 4000BC), when the first known agricultural communities flourished. During the Old Kingdom (c. 2686- 2181 B.C.) Fayoum was known as Ta-she, or She-resy. The Middle Kingdom saw an enormous bloom of life in the area, and efforts to control the swampy area resulted in some magnificent buildings and statuarities. During the 12th Dynasty, King Amenemhet I developed a scheme to regulate the Nile floods using Fayoum as a regulator reservoir. There had been a natural canal between the Nile and the lake of Qarun (northeast of Wadi el Rayan), and Muslims believe that it was Prophet Joseph who widened the canal (Joseph's Canal or Bahr Youssef), and built the world's first dam at El Lahun to regulate the flow of water. In addition to the El Lahun dam, another dam extends over 8km between Itsa and Shidmuh in the southeast part of the Fayoum Depression (Hassan 2015). It was during this time that Fayoum became Egypt's most fertile agricultural area. During Greek times (332- 30 B.C.) Fayoum was known as "the Marsh", and new settlements grew throughout the area until there were 114 villages (only sixty existed in 1809). There was rivalry and open hostility between villages, and they stole crops, good soil, and water rights from each other. By the time of Ptolemy Euergetes II, Fayoum was in decline, and the land was being reclaimed by the desert as canals clogged and the population diminished. However, under Ptolemy II, the Greeks populated Fayoum and began to systematically improve irrigation methods, using Greek inventions such as the Archimedes's screw and the *sakiya* to irrigate the farmlands. During the Roman Period (30 B.C.-A.D. 323), Egypt had to produce one third of the grain needed by Rome each year and Fayoum, with nearly ten percent of the cultivable total, earned the epithet "breadbasket of the Roman empire." Eventually, in 165, a plague descended on Egypt and the major villages in Fayoum suffered considerably, so that by the third and fourth centuries, many communities stood abandoned. By the middle of the third century (323- 642) there was a large Christian community in Fayoum, and thirty-five monasteries existed during the middle Ages. During the Islamic era (642-1798), many ancient mosques and water constructions (i.e. bridges) were built in Fayoum. More than 55 ancient heritage sites have been recorded in the area, and Fayoum has made a significant contribution to our understanding of the history of ancient empires - Pharos, Greek-Roman, Coptic and Islamic.

Water wheels: These unique, large black wooden wheels were first introduced by Ptolemaic engineers and are capable of lifting water between four and five meters to fill channels which serve to irrigate the region. There are around two hundred of these unique water-powered wheels throughout Fayoum, and they are not found anywhere else in Egypt (Hassan 2015).

Social practices and methods The Fayoum area (includes Wadi El Rayan and also Lake Qarun, which is not in the Protected Area) has complex ethnic cultural groups, with farmers, Bedouins, and fishermen living together in the same region.

Agriculture The agriculture land of the Fayoum Governorate covers an area of about 330,000 acres. The agricultural production based on fruit trees represents 8.6% of the cultivated fruit land of Egypt. The fruit trees include figs, olive, palm trees as well as the other traditional crops such as vegetables, cotton, and wheat which are produced mostly for local consumption.

Fishing and aquaculture The total annual catch of Wadi El-Rayan Lakes averages 1606.9 tons per year. The dominant species is Tilapia, then Mullet, Grass carp, and other species.

Craftsmanship Local products and activities of the Fayoum (including Wadi El Rayan and Lake Qarun) include poetry, traditional storytelling, basketry (coiled baskets using rice straw and date palm leaves, made by women working at home), pottery (spherical pots formed using very old and traditional methods combining wheel-work and a hammer-and-anvil technique), handmade textiles (using plant, animal, or synthetic fibers to make traditional carpets “*Seggad*”, mats “*Haseer*” and rugs “*Keleem*” that are mainly used in the rural areas), mat and local cheese-container making (using the *Samar* plant which grows along the banks of water canals, swamps and ponds), rope making (using flax fiber), falconry exhibitions, and traditional fishing. Many of the handicrafts are expressive of the history and traditions of local people.

In the village of Kahk (which is not actually in Wadi El Rayan, but close to Lake Qarun which is northeast of the Protected Area), rowboat construction is carried out by only three families. Each ship takes one to two months to build, using approximately 2 tons of wood from berry trees which costs about 600LE/ton. These families suffer from lack of demand for their products due to poor fish production from Lake Qarun in the last decade.

Also in Kahk, the fishermen manufacture their own nets, using raw materials obtained from Cairo or Fayoum. Women and children also participate in this process in their houses.

There has been a significant decline in the production of crafts during the last century due to a decrease in local demand. This decrease is due to lack of capital, quality assurance, knowledge and skills to access new markets. As a result, many of the crafts’ producers have abandoned their profession, which has led to the loss of job opportunities. Most of the craftsman are poor, low skilled, and live in rural areas, with women and children representing a large percentage (El Khatib 2006).

Tourism, leisure, and sport Multiple forms of touristic activities exist in Wadi El Rayan. These include environmental, natural and touristic desert safaris, sports tourism and medical tourism, ecotourism and cultural tourism. Fayoum is a representative example of the Oases of the great North African Sahara desert in its form, origin, geologic formation, culture and ecosystem.

A Dutch-funded specialist study has identified the Fayoum Governorate as a region with high potential for the development of ecotourism. Wadi El Rayan has the highest number of visitors than any Protected Area in Egypt outside South Sinai and the highest number of Egyptian visitors than any Protected Area in the country. Current estimates, based on Protected Area monitoring data, indicate the visitor numbers to be over 250,000 per year. The vast majority of visitors are Egyptians (probably over 95%) and demand for the WRPA as a recreational destination is likely to continue to rise.

Wadi El Rayan is popular for tourism due to a unique combination of several important assets:

World class fossil areas of Wadi Hitan and Jebel El Qatrani,

Rural environment with authentic living crafts,

Spectacular desert landscapes in the Wadi El -Rayan area supporting a unique bird population and other rare fauna such as Fennec and Dorcas gazelles,

Well preserved monuments from the different periods of Egypt's history, including Palaeolithic, Neolithic, Pharaonic, Graeco-Roman, Coptic and Islamic,

Migratory birds on the mud flats of Wadi El-Rayan,

Beaches, pleasure boats and waterfalls as well as good fishing and a large cafeteria area on the shores of the southern lake.

The main visitor area in the WRPA, widely known as the Waterfall Area, covers a stretch of beach of about one km along the northern shore of the Lower Lake. Existing infrastructures included three cafeterias, a tourist camp, a public WC unit, a small police station and a mosque. Overall, the environmental impact of this tourism infrastructure and activities was considered to be mild (IUCN 1998). The PAMU has redesigned the area in an attempt to transform it into a recreational area with a strong eco-tourism and educational vocation. A Visitor Center has been constructed, offering interpretation and educational services to the visiting public as well as providing a hub for local tour operators.

Pressures on wetland and cultural values/practices

- Production of large amounts of garbage and solid wastes.
- Illegal occupation of one of the main four springs of the Protected Area by the Coptic Monastery. Includes construction activities, removal of vegetation, and planting of exotic species (Shahd et al 2007).
- Increased salinity due to agricultural and wastewater drainage water from El-Wadi Drain (RIS 2012).
- Introduction of livestock and other species (rats, dogs, etc) by farmers and others (Shahd et al 2007).
- The growing number of fishermen and fish-farms causes increased disturbance to wintering waterbirds (RIS 2012).
- Establishment of new fish farms despite the disapproval of Protected Area management. Includes removal of water from the upper lake and discharge into the lower lake, removal of vegetation for fodder, and introduction of heavy equipment (Shahd et al 2007).
- Illegal hunting, especially with falcons, is still evident, despite the efforts of the EEAA to control the problem. The recently established tarmac road, encircling the two lakes of Wadi El Rayan, has made the area more accessible, drastically increasing the opportunities for illegal hunting and habitat destruction (RIS 2012).
- Unauthorized oil exploration activities by the Quarun Oil Extraction Company (Shahd et al 2007).
- Reduction in water supply caused by increasing reduction in water discharge (RIS 2012).

Recommendations on cultural values/practices linked to the wetland

- A long term vision for the Site as a model for environmentally and culturally sensitive development needs to be put in place and supported by a set of government policies, law enforcement mechanisms, capacity building programmes and awareness raising and education campaigns.
- An in-depth case study on the Site as a model for community based management of Ramsar Sites needs to be developed and shared at the national and international levels. A particular focus should be given to the enormous knowledge related to handicrafts and their associated skills, nature and culture based tourism, as well as community involvement and empowerment.
- Specific efforts for the revival and promotion of the rowboat construction knowledge and experience needs to be implemented with focus on improving access to new markets and technologies.

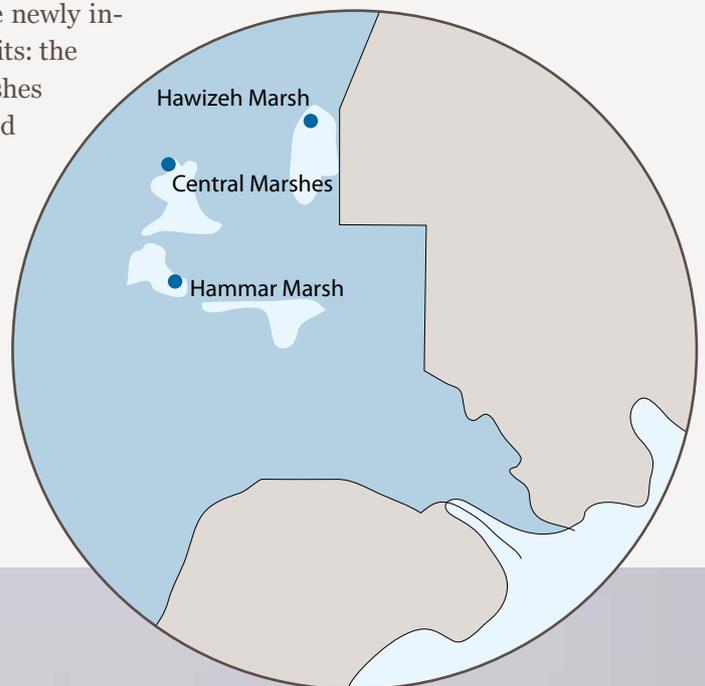
Iraq

The Ramsar Convention entered into force in Iraq on 17 February 2008, and it currently has four sites designated as Wetlands of International Importance (Ramsar Sites), covering a surface area of 537,900 hectares.

The National Report on the Implementation of the Ramsar Convention (COP12) states that socio-economic and cultural values of wetlands have been included in the management planning for Ramsar Sites and other wetlands, but other than mentioning Hawizeh Marsh, gives no other details.

Three of Iraq's four Ramsar Sites are parts of what is known as the Mesopotamian Marshes, or Marshlands of Southern Iraq. The newly inscribed World Heritage Property (2016) includes three units: the Hammar Marsh to the south, the Central (or Qurnah) Marshes toward the top of the Euphrates and west of the Tigris, and the Hawizeh Marsh to the east and straddling the border with Iran.

The Mesopotamian Marshes, also referred to as the "Garden of Eden," or the "Cradle of Civilization," were once entirely populated by the M'adan, who constructed floating islands and reed houses in the marshes, developing wetland villages built in the reeds and linked by a network of channels. *Haifaa Abdulhalim*





The women of the M'adan people in the Mesopotamian Marshes are custodians of wetland-based livelihoods and crafts that date back more than 5,000 years to Sumerian times. *Haifaa Abdulhalim*

The Marshes, before the drainage, were entirely populated by the Marsh Arabs (M'adan), who used to build their floating islands and reed houses in the marshes, developing entire villages linked by a network of main and minor channels. In fact, the plants of the Marshes are a basis of the well-being, economy and culture of the Marsh inhabitants. Historically, Marsh inhabitants were dependent on reeds to construct their dwellings, sleeping mats, and simple furniture. Most notable among these reed structures are the Mudhifs - the traditional guest houses of the M'adan. Water buffalos and other domestic animals in the Marshes also use reeds for food (Garstecki & Amr 2011). Thus, in addition to providing a number of provisioning and regulating ecosystem services the marshes are of extraordinary historical and cultural value.

The Marshes were particularly impacted in the wake of the civil unrest in southern Iraq, and in the aftermath of the war, the government began a massive programme to drain the Marshes. Massive levees and hundreds of kilometers of drainage channels were constructed in the area, leading to the loss of nearly 90% of the wetlands by 1999, and untold hardships for the Marsh dwellers, who were forced to flee the area. A major portion of the natural hydrological functions of these important wetlands and river system, on which the people of many cities and towns depended, was lost. This is one of the most severe examples of intentional destruction of a natural ecosystem in the world's history.

By 2002, the Marshes had dwindled to only 10% of their original size. In March 2003, a rehabilitation project began, and the Ministry of Water Resources administered a programme for the restoration of the marshes. The local communities also breached dykes and levees to allow water to flood more areas of the former marshes, initially often in an uncontrolled and haphazard fashion (Lawler 2005), and refugees began to return. In August 2005, UNEP reported that up to 40% of the original marsh areas had been re-flooded, and biological resources were being revived. Since the re-flooding and up to the year 2008, the water levels and related Marsh ecosystems and wildlife increased in quantity and quality. However, after two years of drought in 2008-2009, in addition to policies of upstream countries, the lack of water revenue, the establishment and operation of dams and projects implemented in higher Mesopotamia, the effect of natural factors of climate change, and

the completion of a dike along the Iraq-Iran border, the ecological status of the Marshes has again been degraded to such an extent that the most of the areas re-flooded in 2005-2006 have dried again.

Culturally, the region has retained many characteristics of ancient civilizations, some of which are still visible in the local population's cultural customs and traditions as well as daily lives. In his book, *The Marsh Arabs*, W. Thesiger described the marshes as a place where; "You will see how the Madan live; nothing but buffaloes, reeds and water. You can only go about in a canoe. There is no dry ground anywhere." At present, the inhabited villages are located along the edges of the re-flooded areas, mostly along the Euphrates River, but also on the northern and western edges of the marshland. The typical features that characterize the M'adan culture and villages are the numerous channels with well maintained mud banks that wind through the marshes. The M'adan people move around using *Mashufhs*, or traditional boats, which enable women, young people and those who do not possess other means of transport to travel around. Herds of water buffalo travel up to 10 kilometers from the villages, and with their day by day walking, they contribute to keeping the minor channels free from vegetation over-growth. Grass and reeds are harvested daily to regulate their growth, preserving ponds and lakes that are used for fishing and are populated by waterfowl. For these reasons the presence of the Marsh Arabs in this area is an excellent example of wetland wise-use and application of traditional knowledge practices to maintain the ecological character of the wetland.

In the 1950s, there were an estimated 500,000 Marsh Arabs throughout the Mesopotamian Marshes collectively. This population shrank to about 20,000 following the draining, with between 80,000 and 120,000 having fled to neighboring Iran. They have begun to gradually return to the marshes since 2003.

Central Marshes

(Designated a Ramsar Site in 2014)

The Central Marshes are one of the three areas that make up the once extensive and bio-diverse Mesopotamian marshlands. The Site provides a range of important regulating services such as flood control, water storage and purification, and climate regulation, and is of extraordinary historical and cultural value. The Site is also a National Park, and part of a World Heritage Properties.

The Central Marshes have been historically used by locals for reed harvesting, fishing and buffalo rearing. These activities can be considered to be a form of local management and a way in which the ecological character of the marshlands are shaped by human presence and use, thereby ensuring local livelihoods and sustainability. However, just as the Hammar Marsh practically disappeared between 1992 and 1994 as a result of the draining activities, a similar rate of wetland loss was observed in the Central Marshes (Mitchell 2002).

Cultural Services listed in Ramsar Site Information Service (RSIS)

- recreation and tourism
- scientific and educational
- spiritual and inspirational

The Central Marshes, and other Mesopotamian Marshes, are an example of wetland wise-use and the application of traditional knowledge practices to maintain the ecological character of a wetland. *Mudhafar Salim*



Box 7: Rapid cultural inventory summary for Central Marshes

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 24/9/2015, unless otherwise noted)

Cultural Values, Practices, or Services

Natural heritage resources Historical and archaeological cultural heritage are of high importance.

Agriculture Grain cultivation is an important source of food.

Fishing and aquaculture Fish and molluscs are an important source of food.

Hunting Hunting is carried out as a recreational sport.

Natural resource extraction Wood is collected for fuel and fiber.

Wild foods are gathered.

Water supply and use Fresh water is important for drinking, cleaning, cooling, and transportation.

Tourism, leisure, and sport Recreational activities include hunting, fishing, water sports and activities, and nature-based tourism.

Education and outreach In order to promote the proper integration of the Ramsar Convention values into the socio-economic context of the Marshes, various education activities need to be planned and drawn to the attention of the public. Several initiatives to this effect were carried out, including a celebration of the 40th anniversary of the founding of the Ramsar Convention held in the Central Marshes in 2011, and a celebration and workshop held on World Wetland Day 2012 in Baghdad. There have also been several photographic exhibitions held by MedWet in 2006 and 2010 (albeit, in Greece) titled "Eden: Marshlands of Mesopotamia" highlighting portraits of Marsh Arabs, village life, wildlife and landscapes.

Land tenure/ownership The lands of the Central Marshes were previously controlled by local communities but this customary rights system was disrupted by the displacement of local people in the 1990s. Some of these people have since returned, but ongoing land tenure conflicts exist between local communities. The general rule is that flooded areas are for common use, and some lands are owned by the government. Up-to-date data on land tenure in this area is not available, and conflicts and displacement of people caused by oil concessions have to be taken into account.

Pressures on wetland and cultural values/practices

- Industrial and military effluents are of high concern.
- Archaeological sites are used as dwellings.
- There is a high incidence of tribal conflicts.
- Land conversion for agricultural use by burning reeds is regularly practiced (Al-Hilli 1977).
- Agricultural and forestry effluents are of high concern.
- Overfishing and over-harvest of aquatic resources is of high concern.
- Hunting and collection of terrestrial animals is of some concern.
- There is a lack of water revenue.

Recommendations on cultural values/practices linked to the wetland

- An in-depth assessment of the impacts of the water drainage on the cultural values and practices of the Marsh Arabs represents a top priority scientific research effort needed to guide the long term development vision of the whole of the Marshlands area as a prime national site with World class recognition.
- The living cultural aspects of the Site need to be well studied, documented and integrated in the Protected Area management plan.
- Specific efforts need to be implemented to promote the fact that the Marsh Arabs in this area are an excellent example of wetland wise-use and application of traditional knowledge practices to maintain the ecological character of the wetland.
- A participative stakeholders' dialogue needs to address the tenure and use rights of the Marsh Arabs in their respective areas. The dialogue should help reinstate such rights as they were before the drainage period.
- A programme on the documentation of the traditional knowledge and experience of the Marsh Arabs in the utilization and management of the wetland resources would represent a first step in a long term strategy for the revival of the unique case of interaction between people and their living environment.
- A full assessment of the archeological remains on the Site needs to contribute to better understand the long established human interaction with the wetland systems.

Hammar Marshes

(Designated a Ramsar Site in 2014)

Hammar Marsh is one of the three marshes that make up the once extensive and biodiverse Mesopotamian Marshlands. The Site provides regionally important regulating services such as flood control, water storage and purification, and climate regulation, and supports globally threatened species. Hammar is part of a World Heritage Property.

The Site is important for the local Marsh Arab communities as they rely on the marsh environment to support the local rural economy. The main economic activities in and around the area are: agriculture (date palms and rice), hunting and fishing (often unregulated and illegal), and oil exploration (outside of the Site at West Qurna and Rumaila).

Cultural Services listed in Ramsar Site Information Service (RSIS)

- recreation and tourism
- scientific and educational

The Hammar Marshes are used by local communities for reed harvesting, fishing and buffalo rearing. *Haifaa Abdulhalim*



Box 8: Rapid cultural inventory summary for Hammar Marsh

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 24/9/2015, unless otherwise noted)

Cultural Values, Practices, or Services

Settlements and structures During the drainage programme, Hammar Marsh, including the once 120 km long Lake Hammar, practically disappeared between 1992 and 1994 (Munro & Touron 1997), and most of the Marsh Arabs who lived here were forced to leave. After the re-flooding, new settlements (of reed and mud houses) were established on numerous embankments. However, during the period of 2008-2010, the Marsh was not receiving a sufficient water supply and was drying up again, so most of the residents were forced to leave the area once more. Subsequently, a large canal was dug near Al-Khamissiya to bring water from the MOD (Main Outfall Drain) northwards to flood the north-western parts of the Site.

Presently, the villages are scattered mainly along the northern edge where the Euphrates flows, with numerous villages also found on the western side of the Marsh (near Suq Ash Shuyukh) and in the south-eastern end of the Marsh (on the Shatt Al Arab). Very few villages are present in the southern end along the MOD canal.

Agriculture Grain cultivation is an important source of food.

Fishing and aquaculture Fish and molluscs are an important source of food.

Economic opportunities In the villages on the northern side of the Marsh, the main economic activities of the inhabitants are dependent mostly on fishing, subsisted by buffalo rearing and agriculture. On the western side, the prevailing economic activity is agriculture, subsisted by fishing. On the other hand, the villages on the south-eastern end are characterized by a prevalence of economic activities which are not related to the Marsh. It is assumed that the villages that are closer to Basrah City have more opportunities for livelihood diversification, and thus are less dependent on the wetland environment.

Tourism, leisure, and sport Tourism and picnic-outings occur moderately.

Scientific research The Site is of medium importance for research.

Education and outreach In order to promote the proper integration of the Ramsar Convention values into the socio-economic context of the Marshes, various education activities need to be planned and drawn to the attention of the public. Several initiatives to this effect were carried out, including a celebration of the 40th anniversary of the founding of the Ramsar Convention held in the Central Marshes in 2011, and a celebration and workshop held on World Wetland Day 2012 in Baghdad. There have also been several photographic exhibitions held by MedWet in 2006 and 2010 (albeit, in Greece) titled "Eden: Marshlands of Mesopotamia" highlighting portraits of Marsh Arabs, village life, wildlife and landscapes.

Pressures on wetland and cultural values/practices

- Industrial and military effluents are of high concern.
- Drainage is still of low concern.
- Invasive non-native/alien species are of high concern.
- Household sewage and urban waste water are of medium concern.
- Annual and perennial non-timber crops are of medium concern.
- Land conversion for agricultural use by burning reed is occasionally practiced. (Al-Hilli 1977)
- Hunting and collection of terrestrial animals is of high concern.
- Oil and gas drilling is of high concern.
- Dams and water management/use are of high concern.
- There is a scarcity of water revenue.

Recommendations on cultural values/practices linked to the wetland

- See points under Site number 8 above.

Hawizeh Marshes

(Designated a Ramsar Site in 2007)

A trans-boundary wetland, part of the Mesopotamian marshlands complex centered at the confluence of the Tigris and Euphrates rivers, the marshes are ca.75-80% located in Iraq with the remaining area extending into the Islamic Republic of Iran. The only significant area to have survived drainage in the 1990s and the most intact part of the original Mesopotamian system, the Site is a biodiversity reservoir of priority importance for conservation. Hawizeh Marsh has a population of 25,960 residents, comprised of 3,655 families. Currently the area of the Marshes is only 50% of their extent in 2008, and the Site was placed on the Montreux Record in April 2010. The Site is part of a World Heritage Property.

Mounds here that rise above the marsh waters are believed to be sites of ancient cities, and are used as platforms upon which modern-day marsh inhabitants have built their homes and communities. Locals still rear water buffalo for milk, butter, yoghurt, meat and dung, and fishing occurs throughout the wetland even though traditional spear-fishing has been largely replaced by nets.

Recommendations for the Site are the same as for Central and Hammar Marshes, above, with the addition of the need for an assessment of the impacts of the oil industry on living cultural values and practices.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- recreation and tourism
- scientific and educational
- spiritual and inspirational

A traditional reed house, or *mudhif*, made by the M'adan people and considered masterpieces of architectural heritage. *Jassim Alasadi*



Box 9: Rapid cultural inventory summary for Hawizeh Marsh

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 2/6/2012, unless otherwise noted)

Cultural Values, Practices, or Services

Settlements and structures There are nine schools and four health centers located here.

Natural heritage resources Archaeological significance of Hawizeh Marsh includes sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland: some of the world's first records of civilization are on the fringes of the Marshlands. Further, mounds, known as tells, rising above the Marsh waters are believed to be sites of ancient cities. These areas were used as platforms upon which modern-day Marsh inhabitants built their homes and communities. Artifacts in Tell Al Abid (8 km north of Ur) date back to 4500BC. These include earthen wares, flint-stone tools, and pottery with papyrus. Due to the fact that reeds were found with the artifacts, and were indicated in home construction for these civilizations, it is likely that the Marshes existed at that time.

Ancient evidence of existence of the Marshes: In the Iraqi Museum, there are artifacts representing Gilgamesh with water buffaloes in the Tigris and Euphrates, and the boats used by Marsh dwellers today are almost identical to those found at the Royal Cemetery of Ur. Clay tablets from the Sumerian period document the Marsh environment alive with wildlife. The Assyrians (whose empire followed that of the Sumerians) also documented the Marshes, and called them "the land covered with torrents". In 703 B.C., it was written that the King of Babylon "fled like a bird to the swampland" and the King of Assyria "sent ... warriors into the midst of the swamps...and they searched for five days" but the King of Babylon could not be found. Eventually, the Marshes were documented by the Greek empire, and it has been hypothesized that Alexander the Great died from a disease he caught while traversing the Marshlands. Finally, the Romans defined the Marshes as "Chaldaicus Lacus" (New Eden Master Plan 2006).

Agriculture Cultivated crops include paddy rice, great millet, dates, vegetables, and fruits.

Stockbreeding and grazing Livestock raised include Asian water buffalo, cattle, and sheep.

Water buffalo rearing provides milk, butter, yoghurt, meat and dung. For most of the year, they graze in the reed-beds, but in winter they remain tethered on platforms and are fed with cut reed shoots.

Fishing and aquaculture Capture fisheries yield shrimp, yellowfin, seabream, and khishni. Aquaculture yields cyprinids, grass carp, and shellfish.

Fishing occurs throughout the wetlands. Spear-fishing was a widespread technique, but this has largely been replaced by netting with various types of nets.

Hawizeh is a critical nursery area for freshwater fish species and is a water source area for marine fish stocks of the Gulf used for basic human survival in the region. Coastal fisheries in the northern Gulf have traditionally been dependent on the Marsh as a spawning and nursery ground, and these fisheries have declined significantly following the destruction of the Marshes.

Hunting Waterfowl hunting was historically very important in the local economy, with enormous numbers of waterfowl being harvested on a commercial basis each year. However, it is now a secondary source of income, and practiced mainly for domestic purposes. This change could possibly be the result of a reduction in waterfowl numbers in the Marshes.

Hunting also occurs for wild boar and desert monitor.

Natural resource extraction (e.g. salt, oil) Reeds and date-palm are harvested for housing and mats.

Reeds, crude oil, and cattle dung are used as sources of fuel.

Water supply and use Historically, the wetland was a main source of freshwater for human consumption for those communities in and around the Marsh. Destruction of the Marshes has had severe human health consequences as a result of the loss of clean water and degradation of sanitation standards.

Water is used for drinking, cleaning, cooling, and transportation.

Craftsmanship Reeds are used to weave mats and for other handicrafts.

Tourism, leisure, and sport In the 1980's, the Marshes had a significant tourism industry, however, due to the current security situation, tourism initiatives are not possible. There is potential to be developed as a touristic attraction in the framework of internationally recognized principles on conservation of cultural values and traditional knowledge.

The Site is currently used for canoeing, wild-life/bird watching, recreational fishing, archaeological and cultural visitation, and natural beauty.

Education and outreach In order to promote the proper integration of the Ramsar Convention values into the socio-economic context of the Marshes, various education activities need to be planned and drawn to the attention of the public. Several initiatives to this effect were carried out, including a celebration of the 40th anniversary of the founding of the Ramsar Convention held in the Central Marshes in 2011, and a celebration and workshop held on World Wetland Day 2012 in Baghdad. There have also been several photographic exhibitions held by MedWet in 2006 and 2010 (albeit, in Greece) titled "Eden: Marshlands of Mesopotamia" highlighting portraits of Marsh Arabs, village life, wildlife and landscapes.

Traditional knowledge Marsh flora extracts and native herbs are used for pharmaceuticals and pest control.

Spirituality and belief systems Ethical values, customs, oral traditions, knowledge, and rituals are attached to the use of the land and rivers.

Aesthetics and artistic expression In The Epic of Gilgamesh, the world's first epic poem to be written, makes mention of the Marshlands: "Ever the river has risen and brought us the flood" and "A reed has not come forth... all the lands were sea, then Eridu was made."

Land tenure/ownership The lands of the Hawizeh Marsh were previously controlled by local communities but this customary rights system was disrupted by the displacement of local people in the 1990s. Some of these people have since returned, but ongoing land tenure conflicts exist between local communities. The general rule is that flooded areas are for common use, and some lands are owned by the government. Current data on land tenure in this area is not available, and conflicts and displacement of people caused by oil concessions (especially affecting the southern Hawizeh Marsh) have to be taken into account.

Pressures on wetland and cultural values/practices

- Warfare destruction of the landscape is possible, in addition to danger of land mines along the border.
- Overfishing and over-hunting are threats.
- Oil development: Hawizeh Marsh and, in general terms, all of the Mesopotamian Marshes, are in the middle of many existing and planned oil fields. New developments are planned for the near future, posing consistent threats to the natural environment and to Marsh restoration.
- Completion of construction of a dyke along the Iranian border threatens natural water flows to the wetland and would lead to habitat fragmentation.
- There is a threat of water shortage and pollution, and increased salinity of waters and soils.
- Extensive drainage: In the 1990s, drainage of portions of the permanent lakes and reed-beds of the Hawizeh Marsh constituted an ecological catastrophe of unprecedented proportions in Western Eurasia. Several bird and mammal species were brought to the verge of extinction, migratory populations of waterfowl were affected, and reduction of the vegetation extension and of the water bodies was remarkable.

- Water management has been a feature of the Tigris-Euphrates basin and the Mesopotamian Marshes for millennia. Since the middle of the 20th century, however, the nature of water management of the Tigris-Euphrates basin has changed significantly, most notably with the construction of water storage and hydroelectric projects in the upper parts of the basin. While these developments have had a significant effect on the quantity, quality and timing of water flows into the Marshes, the action that led to the wholesale destruction of the marshes was the Iraq-Iran war and the subsequent war as a result of the Iraqi invasion of Kuwait. The Marshes were particularly impacted in the wake of the civil unrest in southern Iraq and in the aftermath of the war the government began a massive programme to drain the marshes. Massive levees, and hundreds of kilometers of drainage channels were constructed in the area, leading to the loss of nearly 90% of the wetlands by 1999, and untold hardships for Marsh dwellers, who were forced to flee the area. A major portion of the natural hydrological functions of these important wetlands and river system, on which the people of many cities and towns depend, was thus lost. This is one of the most severe examples of intentional destruction of a natural ecosystem in the world's history.

Recommendations on cultural values/practices linked to the wetland

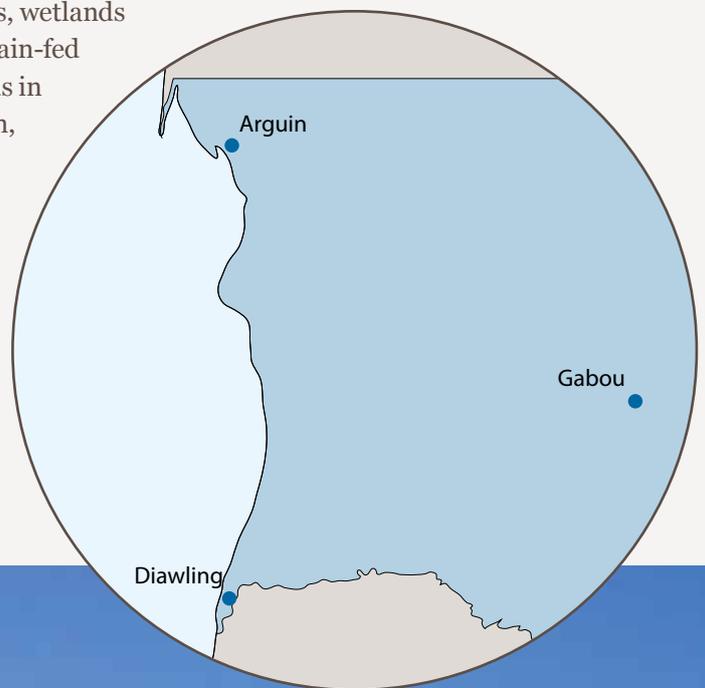
- In addition to points elaborated under Site number 8 above;
- The impacts of the oil industry on the living cultural values and practices needs to be carefully assessed. Local communities' rights to land use and benefit sharing need to form a basis for the long term development of the oil industry.

Mauritania

The Ramsar Convention entered into force in Mauritania on 22 February 1983, and currently has four sites designated as Wetlands of International Importance (Ramsar Sites), covering a surface area of 1,240,600 hectares. Seventy percent of the surface area of Mauritania is Saharan desert as defined by the less than 150 mm annual rainfall zone. Just under five percent is in the Soudanian zone with over 600 mm rainfall, and the remaining part is Sahel. With an evaporation rate of over 2m per year, there should theoretically be virtually no permanent surface water. The Senegal River is entirely exogenous, being fed by rainfall on the Fouta Djallon Mountains in Guinea. Two dams have been built on the Senegal river to aid in cereal production, and a myriad of projects have been carried out to try to convert the former floodplain into irrigated rice agriculture, so far with little success. Mauritanian wetlands can be divided into three main categories: coastal wetlands, wetlands associated with the Senegal River floodplain and Sahelian rain-fed lakes. There are also a number of small permanent wetlands in the rocky central areas with an interesting relict fauna (fish, crocodiles) but of lesser importance for migrating waterfowl (Hamerlynck & Samba 1995).

The National Report on the Implementation of the Ramsar Convention (COP12) states that socio-economic and cultural values of wetlands have been included in the management planning for Ramsar Sites and other wetlands, but gives no specific details.

Imraguen fishermen, Banc d'Arguin. *Michael Runkel, SuperStock / Alamy Stock Photo*



Lac Gabou et le réseau hydrographique du Plateau du Tagant

(Designated a Ramsar Site in 2009)

The Site is composed of a network of rivers that flow from the mountainous region at the limit of the Sahel and Sahara to form Lac Gabou, with several temporary lagoons and ponds as well as freshwater springs and oases. The presence of this water resource is important as it supports a diverse range of flora and fauna, largely indigenous to the region and of global conservation concern. Of particular note are two species of palms that are of great economic value, and baobabs found typically in the Sahelian savanna. The estimated population of Lac Gabou is 40,000 people.

Although the area has been inhabited since Neolithic times, there is little cultural or social information available. Presently, the Site is mainly used for agriculture, with the river system in the valley bottoms being intensively used for cultivation.

Key recommendations include efforts to promote the cultural values, practices and traditional knowledge associated with the highly economic palm varieties, and further development of culture and nature-based tourism programmes to support the sustainable use of the Site resources. There needs to be a concerted effort to update the information available on the Site not only as relates to cultural values and practices but also in terms of assessment of pressures and threats facing them.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- spiritual and inspirational

A network of rivers that flow from the mountainous region at the limit of the Sahel and Sahara to form Lac Gabou Ramsar Site, with several temporary lagoons and ponds as well as freshwater springs and oases. ImageBROKER / Alamy Photo Stock



Box 10: Rapid cultural inventory summary for Lac Gabou et le réseau hydrographique du Plateau du Tagant

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 1/5/2007, unless otherwise noted)

Cultural Values, Practices, or Services

Natural heritage resources The area has been inhabited since Neolithic times. Remains of lithic industries, and a necropolis and numerous petroglyphs have been found. There are also the ruins of *Ksar el Barkha* which was a stop for caravan trade, and is now a cultural attraction. The Tagant Plateau was part of the empire of Ghana, Mali, and Songay, and the French occupation left traumatic scars on the area.

Agriculture The Tagant Plateau is home to a large population of farmers, in addition to several populations dedicated to farming the fertile lands of the valley bottoms, where the river system is intensively used for the cultivation of legumes and other plants. Apart from this extensive farming and small-scale agriculture, the cultivation of date palms occurs in valleys, river beds, and *gueltas* (mountain rock pools).

Stockbreeding and grazing Nomadic shepherds take advantage of the area when pasture and water are available, and ponds are a key element for the survival of livestock.

Fishing and aquaculture There is a rudimentary use of the lagoons and *gueltas* for fishing.

Tourism, leisure, and sport The most accessible *gueltas*, especially Matmata, receive regular nature tour groups, and there is a small hotel accommodation in Dar es Salam (Matmata Hostel).

Scientific research As of 2007, there was no scientific infrastructure or ongoing research.

Education and outreach As of 2007, there was no educational outreach.

Land tenure/ownership The land is a mixture of private and public property, but it is difficult to estimate percentages due to lack of information.

Pressures on wetland and cultural values/practices

- Limited resources lead to overexploitation and continued desertification typical of the Sahel.
- The loss of wetlands to crops is one of the main problems of the area, and agricultural use of the Lake shorelines is sometimes excessively intensive.
- *Gueltas*, particularly those located upstream, are overused to the point that they dry up. When this occurs, direct human pressure increases as shepherds dig wells to provide water for their flocks. Further, livestock concentration here pollutes the water with fecal residue, affecting the survival of species dependent on these areas (i.e. crocodiles).

Recommendations on cultural values/practices linked to the wetland

- Specific efforts to promote the cultural values, practices and traditional knowledge associated with the farming of the highly economic palm varieties.
- Encourage the further development of culture and nature-based tourism programmes to support the sustainable use of the Site resources, provide alternative sources of income, reduce pressures on the scarce resources, and promote the cultural values and practices as well traditional knowledge of local communities living in and around the Site.
- The Site suffers from a lack of updated information related to its cultural values and practices. Specific efforts need to be given priority to update the information available on the Site not only as relates to cultural values and practices but also in terms of assessment of pressures and threats facing them.

Parc National du Banc d'Arguin

(Designated a Ramsar Site in 1982)

On the western fringe of the Sahara, the Banc d'Arguin accounts for more than one third of the country's entire coastline and is one of the richest fishing grounds in the world, owing to the upwelling of cold, nutrient-rich waters. The wetlands are composed of extensive, shallow marine areas, scattered islands, intertidal sand banks, mudflats, channels, creeks and relict mangrove forest. Banc d'Arguin is also a World Heritage Property and National Park.

The resident inhabitants, the Imraguen, live in eight coastal villages, and are primarily fishermen. Park regulations guarantee them exclusive access to fishing resources (since 2000) in exchange for their respect of natural resource conservation and sustainable use (prohibition of the use of motors, and prior authorization for the introduction of any new fishing techniques). The survival of Imraguen has historically been intricately tied to mullet fishing: mullet is a staple food, and local women use traditional knowledge and techniques to process the mullet for consumption locally and abroad. In fact, villages on the beach are moved according to fish movements. Artisanal fishing methods are still used, but are threatened by overfishing by mostly foreign industrial fleets.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- recreation and tourism
- scientific and educational
- spiritual and inspirational

The survival of the Imraguen has traditionally been intricately tied to mullet fishing: mullet is a staple food in the fishermen's diet, and villages on the beach are moved according to fish movements. *Haifaa Abdulhalim*



Box 11: Rapid cultural inventory summary for Parc National du Banc d'Arguin

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 1/6/1999, unless otherwise noted)

Cultural Values, Practices, or Services

Natural heritage resources The National Park has many archaeological sites, mainly Neolithic, which were beginning to be surveyed in 1999. Arguin Island, in the north, and the surrounding coast (Côte de la Gomme) were historically the site of a series of European occupations since the end of the seventeenth century (Portuguese, Dutch, English, Prussian, French) of which the only remaining vestige are the ruins of Fort d'Arguin.

Social practices and methods The traditional use agreements with Imraguen fishermen are an example of a generally successful reconciliation of traditional use interests inside the property and conservation objectives (UNEP-WCMC 2012). However, it should be noted that the rules agreed concerning fishing inside the park are not adequately implemented. Further, many Imraguen employ non-Imraguen Mauritanians on their fishing vessels (IUCN WH Outlook). In 2010, Imraguen fishermen were questioning fisheries-related decision making by PNBA (Sidi Sheikh & Al Dhafer 2010), and the 2014 UNESCO / IUCN mission to the Site noted a feeling of distrust between local people and park administration, with not a single consultation meeting having had taken place in 2013.

Social values The survival of Imraguen has traditionally been intricately tied to mullet fishing: mullet is a staple food in the fishermen's diet, and villages on the beach are moved according to fish movements.

Stockbreeding and grazing Most grazing areas in the Parc are used by nomad herders coming from the East; however, more abundant rainfall since 1998 could lead to a significant increase in this movement.

Fishing and aquaculture PNBA protects not only local artisanal fisheries, but is also a key spawning and nursery area for a wide range of fish, which supplies recruitment to stocks in the wider upwelling area. These are a crucial global fisheries resource, including and particularly for EU countries (IUCN WH Outlook).

In the nineteenth century, the area's fisheries attracted many processors from the Canary Islands and France, who tried to establish processing plants. As for the local population, the mullet (*Mugil spp.*), was the traditional target for fishermen, but has been replaced by selachians (sharks and dogfish) since the beginning of the 1990s to accommodate the market for fins in Southeast Asia. As a result, in 1999, management measures were adopted in agreement with the fishermen to avoid overexploitation. Presently, there have been measures aimed at reducing fishing pressure, and there has been a decrease in the harvest numbers of 20 bottom-dwelling species, as well as a substantial reduction in the number of rays and sharks captured (UNESCO SOC Report 2016). Also, it should be noted that fishermen are economically dependent on local merchants (UNEP-WCMC 2012).

Water supply and use As of 1999, there had been an unfavorable climate since the long droughts of the 1970s with little rainfall. It is the total absence of freshwater here that is the main limiting factor for populations of the area. Local people are supplied with water either by the navy or by traders who often charge excessively. The National Park was to build two desalinization plants at Ten-Alloul, with a capacity each of 12 cubic meters per day.

Food processing The “Presidium” comprises three groups of Imraguen women who work in Nouadhibou and Nouakchott, the country’s main ports, and is assisted by a local NGO - Mauritanie 2000. Presidium producers buy mullet from fishermen, extract the eggs, rinse them, salt them and let them dry naturally, obtaining a traditional *botargo* (from the Arab *butarikh*, salted fish eggs). The women also prepare *tishtar* (dried and finely chopped mullet fillet) and mullet oil. Their work is currently underpaid, as the roe is bought for a ridiculously low price by an intermediary and sold abroad, and their production facilities are sub-standard. In collaboration with the Presidium producers and Mauritanie 2000, an organization called Slow Food is working with groups of women to try to preserve local knowledge, strengthen technical skills, improve hygiene conditions, improve production, directly manage the sale of their products and find alternative markets. A training course was conducted in 2006, with the objective to find alternative markets and directly manage the sale of products. The women have also acquired a vacuum-packing machine and a refrigerated room for storing the *botargo*, and a good practice guide for processing mullet has now been produced in Arabic and French. Further, thanks to support from the EU Commission, a project to create a local salt works has also been launched, in collaboration with the French association Univers Sel and the NGO Mauritanie 2000 (Moctar Nech 2000).

Tourism, leisure, and sport The National Park is not open to local tourism other than residents of Nouakchott who want to spend two or three days there. Camping is authorized only at Cap Tafarit, and recreational fishing is authorized for local personal consumption up to a maximum of five kilos per day per person. All forms of commercial tourism are prohibited. There has been an Ecotourism Development Strategy in place since 2006 (IUCN 2007), but there are still few visitors. Village Camps were constructed in 2008 to promote ecotourism, but are now falling in disrepair due to a lack of maintenance (UNESCO / IUCN Mission Report 2014).

Scientific research As of 1999, research was being carried out on fishing resources in the Park as an indirect survey through the sampling of fish caught by the Imraguen, based on a network of surveyors in each village. There was also a specific project for rays and sharks, a survey on colonies of nesting birds and Palaeartic waders, a project for monitoring the Monk Seal at Cap Blanc, and a survey of small whales in the park. Further, in 2007, a scientific observatory was built for the study of the functioning of the Banc d’Arguin ecosystem (IUCN WH Outlook).

Education and outreach Some information and educational materials are available from the PNBA and FIBA websites. Many training courses for PNBA staff have reportedly been conducted but an overall vision and strategy has been missing, and the proficiency of staff to perform their tasks has reportedly not risen in spite of training efforts. This has been true particularly for field staff (Sidi Sheikh & Al Dhafer 2010). Youth Centers constructed in 2006 appear not to be used by most villagers and are in an advanced state of disrepair. Interpretation panels with glass covers have been placed in the park but have filled up with sand and are now illegible (UNESCO / IUCN Mission Report 2014). In March 2016, the World Heritage Centre organized a workshop on local communities' involvement in the management and conservation of World Heritage Properties in the Arab Region in Nouakchott and Banc d'Arguin, with the active participation of the Imraguen local community. During the workshop, the PNBA demonstrated its efforts in engaging local communities in the management of the property. The Imraguen community representatives requested to further enhance their accessibility to the property and improve their housing conditions (UNESCO SOC Report 2016).

Traditional knowledge Only Imraguen are allowed to fish in the park with their *lanches* (wooden boats with sails and no motor) but in the season when large shoals of mullet are passing, from the end of October to early January, they still use a spectacular traditional method: the fishermen make profitable the sensitivity of dolphins to sound waves. A dozen or so men get into the water holding a long net, and as soon as a grey mullet shoal is announced by a lookout, the men rush to strike the surface of water with a kind of small plank. Attracted by the noise, the dolphins, which are offshore, rush in direction of the coast pushing in front of them the panic-stricken fish shoals, the fishermen surround the shoal of mullet with the net, and close it around them. "What we used to do was enough to sustain our families. With just three months of work we could have enough for the whole year," said Mohamed Ould Sidy, a traditional Imraguen chief who speaks for the 1,500 fishermen in the park (Ba 2004).

According to tradition, men carry out the net fishing, while women have always been involved in producing roe, *tishtar* (small pieces of dried and crumbled mullet), and mullet oil, using a particular technique passed on from mother to daughter. Unfortunately, traditional fishing methods are threatened: industrial fleets, mostly foreign, are plundering its fish-rich waters, causing serious problems for local communities. In 2006 Mauritania sold fishing rights to the European Union in exchange for a reduction in its public debt, giving up the fight against overfishing and encouraging a new form of colonialism. The industrial fishing boats hire and fund the local fishermen and the fish is frozen and taken to North Africa or Europe for processing (Moctar Nech 2000).

Pressures on wetland and cultural values/practices

- Unregulated construction activities. Pressures on terrestrial ecosystems may increase in the short term due to new urban developments which are under construction outside of the park's eastern boundary in Chami and in Mamghar, inside of the park.
- Accumulation of solid waste and water pollution are a problem (IUCN WH Outlook).
- Unsustainable fishing (including fishing for sharks and rays) is the main current pressure. Fishing effort and captures inside the park have steeply increased, but seem stable and are relatively well-controlled. The increasing commercialization of artisanal fishing is a real concern. Reduction in catch following overfishing by external poachers caused local fishermen to use unsustainable fishing methods (UNEP-WCMC 2012). Illegal fishing within PNBA was subsequently strongly reduced by 2009, owing to an agreement with local Imraguen fishermen. Illegal motorized fishing is effectively repressed but local fishing pressure has increased. Fisheries also affect Mediterranean Monk Seal (outside the Site), reduce habitat, and abandoned nets cause mortality (IUCN 2008).
- Accidental oil spills from oil platforms or tankers near PNBA are an increasing potential threat.
- Mining activities are likely to expand in the near future and may cause negative impacts on fresh water resources (IUCN WH Outlook).
- Tourism activities are poorly managed (IUCN WH Outlook).

Recommendations on cultural values/practices linked to the wetland

- A special programme to document, conserve and empower the traditional governance and management systems of the fisheries sector by the indigenous peoples needs to be addressed as a top priority using adequate right based approaches.
- An in-depth case study is needed on the decision making, administrative, technical and monitoring aspects of the cultural values and artisanal fishing practices with the aim to develop a long term approach to promote community based sustainability solutions for the Site resources.
- A special programme needs to be put in place to promote the artisanal practices of the local women groups with the aim to promote women participation and benefit sharing and strengthen the cultural integrity of the Site resources management.
- A study is needed to assess the impacts of market based strategies associated with the development of the fisheries sector on the cultural values and practices of indigenous peoples of the area.

Parc National du Diawling

(Designated a Ramsar Site in 1994)

Parc National du Diawling, which is also a National Park, is a unique example of the reconstruction of a natural environment in 16,000 hectares at the heart of the estuary of the Senegal River. Until the sixties, this lower delta of the Senegal River was an area of extraordinary ecological richness. Consisting of a mosaic of dunes, floodplains, coastal lagoons, marsh-pools, and estuarine zones of mangroves, the area was known for its rich birdlife and important fisheries.

Several thousand people found a livelihood in the area, but after the sixties, the environmental quality deteriorated; first by diminishing floods and rainfall, and later by the alterations brought about by large-scale hydraulic engineering works.

Key recommendations include the need for a participative dialogue process on the protected area planning, management, and monitoring, with focus on local communities' involvement, and there needs to be a closer look at the existing legal frameworks on land allocation with the aim to adapt them to suit traditional land reclamation practices. Cultural and social implications of the large hydraulic engineering projects need to be assessed, with a long term development vision developed and agreed upon by key stakeholders. Further, the sedentary trend of transhumant communities needs to be analyzed, and a case study on the local women organization systems in the handicrafts sector needs to be developed. The Site suffers from a lack of updated information related to its cultural values and practices, and specific efforts need to be given priority to update the information available.

The Wetland faces a particular case from which lessons can be derived. Two major dams were built: one in Mali, and the other at Diama. The dams were to permit continuous access to fresh water in the valley - mainly for irrigated agriculture on the former floodplain, to create hydropower, and to allow river navigation. Results were far below expectations, and much of the land was cultivated for a few years only, often because of increased soil salinity. The dams led to greatly diminished alternative floodplain use for recession agriculture, fisheries, pastoralism, forestry, and groundwater recharge, and caused serious social and health problems. As a corrective measure for the impacts of the Diama dam, it was decided

The objectives of the Parc National du Diawling provide a clear mandate to integrate conservation and development and to include all stakeholder groups of the lower delta, not only those whose traditional rangelands are inside the Protected Area. *Haifaa Abdulhalim*



to create an artificial estuary on the Mauritanian side of the river but this eventually had disastrous consequences for the biodiversity and productivity in the lower delta. In 1994, IUCN started a field project to restore the ecosystem for the whole of the Mauritanian lower delta in collaboration with stakeholders (Hamerlynck 2010).

In September 2000, there was a mission conducted to study the *Salvinia molesta* situation in the Parc National des Oiseaux du Djoudj (Senegal) and Parc National du Diawling. *Salvinia molesta* is an aquatic fern that appeared in the Senegal River delta in September 1999 and has spread, disturbing existing biological equilibrium and threatening human health as well as the overall ecological and economic characteristics of the delta. The spread of this fern has many effects, but in regards to human populations, *Salvinia molesta* has the following effects:

- Degradation of water quality, affecting aquatic fauna – especially fish.
- Blockage of irrigation pumps.
- Habitat increase for mosquitoes and gastropods, which are disease vectors.
- Risk of spreading to rice fields.
- Impossibility of river traffic.
- Risk of interference with potable water supply.
- Impossibility of fishing.
- Decrease of access for cattle to the water.

The mission called for the mechanical eradication of the species, and noted that the threat of *Salvinia molesta* to the ecosystems of the Senegal River basin and especially on the economy, human population, and ecology of Djoudj and Diawling was very serious and merits continuous attention by the local, national, and international community.

Links were being expanded between Djoudj and Diawling to facilitate communication across the two sides of the river and make it possible to carry out joint projects in order that the work of one party is not made useless by the non-intervention of the other. The mission also called for the creation of an intervention and monitoring unit which would be established in December 2000 and continue indefinitely. This would involve the training of guards and park wardens for field work in order to have staff trained in established field management operations and provide them with a minimum of knowledge about the functioning of aquatic ecosystems. It would also involve labor to clear the waters by manual and mechanical means (Triplet et al 2000). The Site was added to the Montreux Record in 2002.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- spiritual and inspirational

Box 12: Rapid cultural inventory summary for Parc National du Diawling

(Information came from the Information Sheet on Ramsar Wetlands (RIS) August 1994, unless otherwise noted)

Cultural Values, Practices, or Services

Natural heritage resources After more than ten years of controversy, the Diawling National Park was finally established in 1991. There was much opposition against the creation of Diawling from the local inhabitants who thought they would be subjected to a similar experience as their counterparts on the other bank in Senegal. Most villages on the Mauritanian side have close tribal and family links with groups on the other bank, and knew about the successive stages of the establishment of the Djoudj National Park, with the forced removal of villages and repressive measures against grazing and fishing within its boundaries. However, from the outset the concept was different as can be seen from the objectives of the Diawling National Park, as stated in the presidential decree of 1991:

- the conservation and sustainable use of the natural resources of a sample of the lower delta ecosystem;
- the permanent and harmonious development of the range of activities of the local population;
- the co-ordination of the pastoral and fishing activities within its boundaries (Hamerlynck 2010).

The Park's objectives provide a clear mandate to integrate conservation and development and to include all stakeholder groups of the lower delta, not only those whose traditional rangelands are inside the Protected Area.

Social practices and methods Originally a Wolof stronghold, Moors of Haratin descent are now the dominant ethnic group of Diawling. Most of these Moors used to come to the area with the herds during the dry season only, but have progressively become sedentary since the sixties. Before the drought, the economy depended on fishing, small-scale recession agriculture, and livestock. It was essentially a subsistence economy, except for the fishery products and dried grass sold mainly at St. Louis. The drought caused an important rural exodus. The Moorish population mostly became small shop keepers in Senegal until 1989 (when a conflict between Mauritania and Senegal caused massive repatriation). Subsequently the Moors moved to Nouakchott, predominantly becoming construction workers. The Wolof left for the industrial and artisanal fishery in Nouadhibou and Nouakchott. In 1994 the permanent inhabitants of the area were virtually exclusively women, children and old people. The main income of the permanent residents came from selling mats made from *Sporobolus robustus* stalks interwoven with leather. For the confection of a large mat the women form temporary co-operative associations called Tweez that, for example, have an elaborate system of fines for unexplained absences from work. Vegetable gardens on the edge of the reservoir supplemented the income (Hamerlynck 2010).

Human activities in the Park include controlled traditional exploitation (gathering, harvesting, fishing, grazing), and thanks to the artificial flooding carried out by the park management project (sponsored by IUCN), local inhabitants returned to their traditional activities (handicrafts, fishing and livestock husbandry). However, when no flooding is occurring, few activities are carried out.

Natural resource extraction (ie salt, oil...) Harvesting is of *Sporobolus robustus* for handicraft work, *Nymphaea lotus* for consumption, and *Typha*.

Tourism, leisure, and sport As of 1994, the Park was not yet officially open to tourism, so there was little or no activity. There was a possibility of developing an ecotourism rustic village.

Scientific Research In 1994, there were little or no scientific facilities, although some research projects (hydrology, botany, ichthyology, ornithology) were in preparation in the framework of the management plan.

Education and outreach Apart from the viewpoint on the bank/shore of the Bassin du Diawling, in 1994 there were no educational infrastructures, brochures, or activities.

Traditional knowledge The local people are very knowledgeable about the natural systems in the Park, and have much input to add to its management (specific examples can be found in Hamerlynck 2010).

Land tenure/ownership Within the Site, land is state-owned, under direct administration of the Park. However, anyone who undertakes management (i.e. settles, cultivates, exploits, etc.) of surrounding land can become owner after five years. In principle the law states that the land belongs to the person exploiting it, but only intensive forms of exploitation qualify (i.e., with visible infrastructure such as embankments, enclosures, and houses) (Hamerlynck 2010).

Pressures on wetland and cultural values/practices

- There was a project for an international tarmacked road (in 1994) which would cross the park.
- There is strong pressure by herders who seasonally move their livestock to find new land for grazing.
- Insufficient control over the land leads to over-exploitation of resources (i.e. poaching).
- The Diama dam has had a negative effect on habitats, leading to the development and expansion of *Typha australis*, considerably reducing fisheries and transportation, and increasing health problems.
- The water-admitting dams are not large enough, the implication of which is that the time needed to refill the lagoons becomes longer, increasing the risk of spreading of *Typha*.
- Programmes to prevent the invasion *Typha* have been unsuccessful, and another even more invasive species, *Salvinia molesta*, has appeared, the spread of which risks undoing the success of the program for rehabilitation of the natural environment.

- Over-exploitation by outside investors: When it is the local population itself that progressively moves into more intensive exploitation (i.e., the shrimp fishery, the gathering of *Sporobolus* and of *Acacia nilotica* seedpods, or the development of market gardening), the Park managers have always had a knowledge base and understanding of the ecosystem to fall back on in discussions on how to limit potentially negative impacts or over-exploitation. For example, when the risks are explained, very quickly people pick up the point and relate back to past events or bad seasons, or make links between the different components of the ecosystem. Once the discussion amongst themselves starts, it is relatively easy to kindle it with technical arguments and scientific explanations of what they themselves perceive as the way the ecosystem functions and how its productivity can be exploited and maintained at the same time. In contrast, outside investors motivated by short-term profits are rarely persuaded to alter behavior on the basis of ecosystem considerations (Hamerlynck 2010).

Recommendations on cultural values/practices linked to the wetland

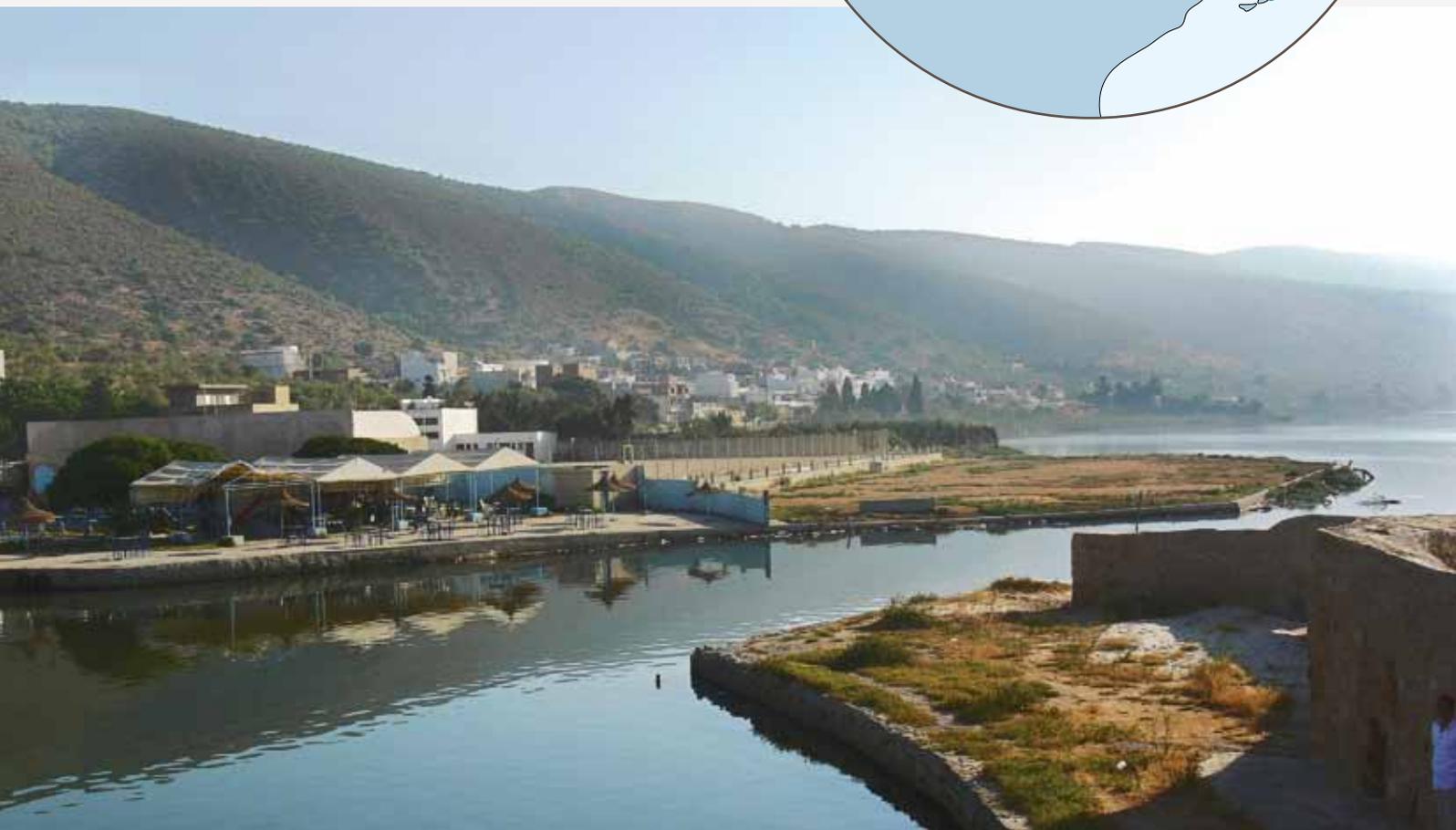
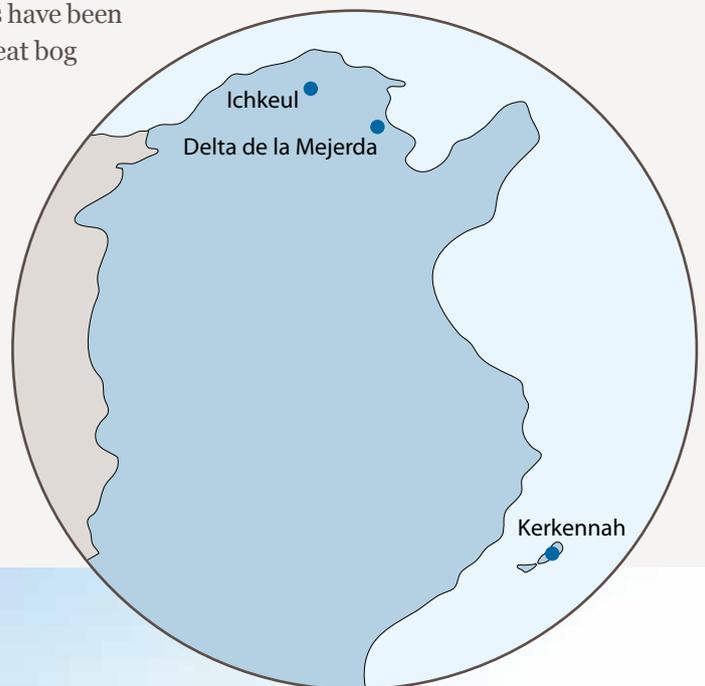
- A participative dialogue process needs to be designed and initiated on the protected area planning, management and monitoring, with focus on local communities' involvement in decision making, benefit sharing, and strategies for the sustainable development for area users and interest groups.
- The cultural and social implications of the large hydraulic engineering projects, especially in regard to local users' rights and traditional knowledge, needs to be assessed and a long term development vision needs to be developed and agreed upon by key stakeholders.
- The sedentary trend of transhumant communities needs to be analyzed and its impacts on social and cultural transformation integrated in the overall assessment.
- A case study on the local women organization systems in the handicrafts sector needs to be developed with emphasis on lessons learned, potential for replication, and socioeconomic benefits and risk.
- A closer look needs to be given to the existing legal frameworks on land allocation with the aim to adapt them to suit traditional land reclamation practices and experiences, leading to their proper recognition and legalization.
- The Site suffers from a lack of updated information related to its cultural values and practices. Specific efforts need to be given priority to update the information available on the Site not only as relates to cultural values and practices but also in terms of assessment of pressures and threats facing them.

Tunisia

The Ramsar Convention entered into force in Tunisia on 24 March 1981, and currently has 41 sites designated as Wetlands of International Importance (Ramsar Sites), covering a surface area of 840,363 hectares. Tunisia's landscape hosts a broad coastal plain, mountains, undulating steppes, plateau, sand desert, and a great depression containing salt pans. The principal river is Oued Mejerda, which is perennial and traverses a series of fossil lake basins until it reaches the sea at the Gulf of Tunis. There are some important coastal wetlands including the marshes of the delta of the Mejerda River in the Gulf of Tunis, and several lakes, lagoons and pans. Tidal rise and fall, unusual along the Mediterranean coast, is most marked on the Gulf of Gabes and here there are some tidal habitats. The vast pans of the central basin provide large wetland areas in winter and there are oases in the far south. Some intermittent watercourses in the northern mountains have been impounded to form small reservoirs and there is a small peat bog in the extreme northwest of Tunisia.

The National Report on the Implementation of the Ramsar Convention (COP12) states that socio-economic and cultural values of wetlands have been included in the management planning for Ramsar Sites and other wetlands for the sake of sustainability, but gives no specific details.

View over the Lagune de Ghar el Melh et Delta de la Mejerda Ramsar Site. *DGF Tunisia*



Ichkeul

(Designated a Ramsar Site in 1980)

Ichkeul is an extensive, seasonally variable lake with associated marshes of varying salinity. Vegetation consists of reedbeds, scrub, and halophytic (salt tolerant) plants. Ichkeul National Park underwent a severe crisis starting in the early 1990s due to critically reduced water supply. Since 2004, these values have partially recovered, partly due to increased precipitation and partly thanks to the improved hydrological management (IUCN WH Outlook). Ichkeul was designated as a Montreux Record Site in 1990 because of possible changes to its ecological character resulting from dam construction on the inflowing oueds (rivers) outside the Ramsar Site, for the purpose of supplying water for irrigation. The Site was subject of Ramsar Advisory Missions in 1988, 1989, and 2000. The Site is also a UNESCO Biosphere Reserve, World Heritage Property, and National Park.

Human activities include fishing, with production reaching 200,000 kg per year, livestock grazing, and tourism. The population inside the Park was 1,000 until 2004, and decreased to 400 in 2008 (IUCN WH Outlook). Ichkeul is a popular tourist destination, with approximately 50,000 visitors a year.

The Site suffers from a lack of detailed cultural inventories, and this gap needs to be on top of the research priorities for the upcoming planning period. There is also need for an updated and revised management plan to better address the cultural values and practices of the local communities. Its preparation should be intertwined with a participative dialogue process to be based on a more comprehensive stakeholders mapping exercise and aiming adopting a more collaborative governance system of the protected area. The impact of tourism activities on local culture and traditions also needs to be assessed and socio-cultural transformations need to be identified.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- recreation and tourism
- scientific and educational

View over Ichkeul, a popular tourist destination with approximately 50,000 visitors a year. *Haifaa Abdulhalim*



Box 13: Rapid cultural inventory summary for Ichkeul

(Unless otherwise noted, most information came from a Ramsar Case Study on Tourism and Wetlands presented at COP 11 July 2012. The Information Sheet on Ramsar Wetlands (RIS) 28/5/1992 is outdated and does not include cultural information)

Cultural Values, Practices, or Services

Natural Heritage The area has been settled by people since pre-Roman times and has been used extensively for hunting and fishing at various stages in its history, and archaeological and palaeontological remains can be found here.

Social practices and methods The new (2010-2014) management plan includes a community development plan with measures to support sustainable alternative livelihoods (e.g. beekeeping, agricultural improvement outside the property, microcredit) of the local population (IUCN WH Outlook).

Locals reportedly felt disenfranchised after the creation of Ichkeul National Park because of loss of economic opportunities and livelihoods (grazing, timber, fish). Poor communication with farmers around the park and little involvement was noted in 2008 (IUCN WH Outlook).

Economic Opportunities By attracting large numbers of visitors to the region, Lake Ichkeul makes an important contribution to employment and the local tourism economy in the villages and towns around it. For example, local people frequently organize open days to sell the agricultural produce from the surrounding areas. The Park also has a programme of support, including basic training and credit schemes, to increase the involvement of local businesses and communities in tourism activities, in order to expand local employment and economic benefits from tourism.

Agriculture The Ichkeul National Park Management Committee has been formed with representatives from local inhabitants and the Ichkeul Agricultural Development Group (an association of local farmers and inhabitants), in addition to other stakeholders. 800 ha (ca. 6%) of land within the Park was cultivated in 2007 (IUCN WH Outlook). The Park is surrounded by areas of intensive arable farming, orchards including olive groves, and pasture.

Stockbreeding and Grazing There were 2,500 head of livestock within Ichkeul in 1988 (IUCN WH Outlook).

Fishing and Aquaculture The Lake is used legally for fishing by one concession holder, and production reaches 200,000 kg per year.

Water Supply and Use A Community Development Plan (CDP) is in place, and one of its main features is management of water resources through consultation with the authorities responsible for the dams and through use of mathematical models. A project concerning integrated management of water resources began in 2009 to engage civil society in the preservation of Mediterranean wetlands through participatory management and dialogue between various water users (UNESCO SOC Report 2010).

Tourism Lake Ichkeul National Park now receives around 50,000 visitors each year, double the number in 2005 when the park's ecosystems were still recovering. The majority of visitors are Tunisians, who also visit and stay in neighboring towns. The Park offers many attractions for tourists, including nature trails and guided excursions, an eco-museum, sightseeing in the *douars* (tented camps) and local villages, bird-watching, mountain biking, caving, hiking and sports trekking on Djebel Ichkeul, which rises 500 meters above the Lake and offers panoramic views of the marshes. The park also includes Roman remains and natural hot springs close to the Lake which feed traditional *hammams* (hot baths). Some longer horse or camel trekking excursions around the edges of the Lake are also available, with visitors camping overnight by the Lake shore.

The Park authorities actively promote tourism to Lake Ichkeul and its surrounding areas through tour operators, travel agents, and the Tunisian National Tourist Organization. It is included in travel guides and brochures, and has been the subject of several television programmes, which have also helped to encourage tourists to visit the Park.

Impacts from tourism are kept low by prohibiting general access to the marshes and the Lake, by creating special circuits, with observation towers and lookout points offering views of all the ecosystems in the Park and well-signed trails for visitors, and by the use of trained guides.

Scientific Research Considerable ornithological and ecological research has been carried out at Ichkeul. A hydrological model was developed in 1996 and is in need of updating, in order to guide hydrological management in a sustainable way. There are also ongoing ecological monitoring programmes (IUCN WH Outlook).

Education and outreach Various community outreach activities and community livelihood projects targeted at both the local population and the wider public have also been undertaken, including school visits to the Park, and an information center.

Spirituality and Belief Systems The presence of traditional baths fed by hot springs are still used by the local population, and visited as a pilgrimage destination (Focal point report 2016).

A popular story features *ommek derb*, which is the name attributed to the turtle common to the Wetland. It is thought to possess remarkable powers, and is an ancestral symbol of abundance and fertility. The women of the area who have not borne children come to ask help from *ommek derb*, with prayers and a local song (Focal point report 2016).

Pressures on wetland and cultural values/practices

- Agricultural encroachment (IUCN WH Outlook).
- Despite enforcement efforts, unsustainable grazing, illegal hunting/poaching, and illegal quarrying pose continuing management problems for the Park.
- By far the greatest pressure on Ichkeul National Park has been insufficient water supply due to dam construction, with salinization, partial desiccation and shifts in the vegetation to halophytic forms of low food value to waterbirds (IUCN WH Outlook).
- Litter and wastes left behind by tourists, particularly over weekends.

Recommendations on cultural values/practices linked to the wetland

- The management plan of the Site needs to be updated and revised to better address the cultural values and practices of the local communities. The plan needs to address local communities from a rights point of view in addition to the existing socioeconomic development approach.
- The preparation of the new management plan should be intertwined with a participative dialogue process to be based on a more comprehensive stakeholders mapping exercise and aiming to adopt a more collaborative governance system of the Protected Area.
- The impact of tourism activities on local culture and traditions needs to be assessed and socio-cultural transformations need to be identified, their impacts mitigated, and their potential for sustainable economic transformation promoted.
- The Site suffers from a lack of detailed cultural inventories as part of the overall Site baseline developed for management plan purposes. This gap needs to be on top of the research priorities for the upcoming planning period.

Iles Kerkennah ou L'archipel de Kerkennah

(Designated as a Ramsar Site in 2012)

A flat archipelago of several islets and permanent shallow marine water at the northeastern end of the Kerkennah Islands. The tufts of Neptune Grass, covering the area play an important role in maintaining biodiversity as they supply oxygen and shelter for many vertebrate and invertebrate species. The Site is also a Natural Reserve, and part of it is a Marine Protected Area.

The Site and surroundings are an important fishing and agricultural area with a moderately developed tourism sector. Coastal fishing has been the main economic activity for centuries, and artisanal fishing is best represented by a famous, local traditional method called *charfias*, which utilizes traps made of palm leaves. Other traditional fishing practices passed from generation to generation include octopus fishing using clay pots, a local technique for catching mullet, and fishing for sea sponges using a type of harpoon. Traditional water management systems are also utilized to retain and store rainwater.

An in-depth case study of the traditional fishery practices should be developed, and a rights-based approach should be adopted for the governance of fishing areas. A case study should also be carried out on traditional water management knowledge and skills as a sustainable alternative for contemporary approaches and techniques. Further, an educational programme targeting communities and visitors based on the traditional rituals and arts should address the importance of cultural values and practices in wetland conservation.

Cultural Services listed in Ramsar Site Information Service (RSIS)

(none listed)

A traditional *felucca* at Gharbi Island. Coastal fishing has been the main economic activity for centuries in the Iles de Kerkenneah Ramsar Site. *Hemis Alamy Stock Photo*



Box 14: Rapid cultural inventory summary for Iles Kerkennah ou L'archipel de Kerkennah

(Information came from the Information Sheet on Ramsar Wetlands (RIS) November 2010, unless otherwise noted)

Cultural Values, Practices, or Services

Natural heritage resources Recent excavations have highlighted the superposition of different Phoenician, Carthaginian, Roman, Arab-Muslim, Spanish, and Ottoman civilizations, including the archaeological site of Borj El H'sar which is a fort of Turkish origin (Focal point report 2016).

The Roman city of Cercina contains frescoes, mosaics, sculptures, ceramics, and an antique port and submerged lighthouse. There are also unique examples here of salting and creations tanks, ovens, and fish tanks (Chelbi 1995).

The remains of a Punic and Roman city can be found on the east façade of the peninsula of Sidi Founkhal (Oueslati 1995).

Agriculture There is cultivation of date palms. In 2005, a group was organized to be in charge of palm species strains in order to protect genetic diversity. A major awareness programme has also been launched to provide information and training to technicians, farmers, and extension schools to save and rehabilitate date palms in the archipelago.

Due to water scarcity and the presence of poor and highly saline soils, palm trees produce poor quality fruit, and are mainly used as feed for livestock and to make traditional fishing gear (Focal point report 2016).

Women grow barley, olive, lavigne, and lefiguier in the fields (National focal point report 2016).

Fishing and Aquaculture Coastal fishing has been the main economic activity for the region's inhabitants for centuries. In 2003, Kerkennah had 7,166 fishermen, with a gradually increasing population yearly.

The governorate of Sfax accounts for 61% of the area's coastal fishing boats, with the most active fleets being concentrated in Mellita, Atataya, and Kraten. Coastal fishery production from Kerkennah islands represents approximately 29% of the total production for Sfax.

Fishing is carried out using straight nets including the trammel net and gillnet.

There are also quite a few traditional fishing methods utilized in Kerkennah (see "Traditional Knowledge", below).

Food Processing Specialties of Kerkennah utilize local fish such as mule or sea bream, crushed barley, dates and raisins, and octopus caught and dried on the spot (National focal point report 2016).

Tourism, leisure, and sport There is a moderately developed tourism programme, in addition to the festivals of octopus, siren, and dates (National focal point report 2016).

Traditional knowledge Fishermen in Kerkennah still utilize quite a few traditional fishing methods that have been passed from generation to generation:

Charfias is a capture system where fish are caught in arrays of traps that use palm leaves shaped in a “V” or arrow shaped line. Fish follow the path that is formed by the palm leaves into capture rooms, or *drinas*, where they are harvested selectively and appropriately. *Charfia* is practiced exclusively in the Gulf of Gabes, and represents the identity of the Site. There are over 400 *charfias* in the Kerkennah archipelago. The use of natural materials (palm trees) is safe for ecosystem balance and the preservation of fish stocks. *Charfias* is only used for part of the year, to allow for a rest to the fish stocks, and then *zroub* is used. This is similar to *charfias*, but is dragged by the fishermen instead of being stationary.

Since the 17th century, the seabed of Kerkennah Island has been divided into parcels, the leases of which are auctioned every year at the beginning of the fishing season, and then become the legal property of local fishermen. The practice is still carried out because local fishermen are attached to it.

Octopus fishing using pottery or stone (la *massaa* or el *karour*) is another traditional activity that has occurred in the area since Roman times. Fishermen cast into the water a long rope with 500 small clay pots strung together. Octopus, which usually hide in small crevices to watch for prey, confuse the dark interior of the jug (or hollowed stone) for natural hiding places. Fishermen then haul up the jugs or stones. This method has no negative impact on the seabed, and although eighty percent of Tunisia’s octopus are caught from the Gulf of Gabes, no shortage has been recorded.

Demessa is a technique used in the village of Lataya in Kerkennah to fish for mullet. Fishermen spread 200 meter nets attached to floating reeds in a big circle, and then beat the surface of the water, causing the fish to jump out of the water into the nets. This is a seasonal method which respects the marine environment while providing for the nutritional needs of the local population, in addition to providing income.

Sea sponge fishing using harpoons and mirrors was first carried out in Kerkennah by the Greeks. Fishermen use a harpoon with five barbs that can reach a depth of 6 to 8 meters. Beyond this depth, several poles are tied together with rope to reach 15 to 18 meters. Along with the harpoon, a mirror is used, which is a cylinder 50cm high and 30cm in diameter and has a window at the bottom. This technique

Aside from fishing techniques, traditional water management systems of el *mege*l and el *faskia* are also used in Kerkennah and throughout Tunisia where water is scarce. These are various forms of underground tanks used for retaining and storing water runoff from roofs. The *megels* and *faskiyas* have the shape of a bottle or vase, and are coated with hydraulic lime and covered with a vaulted or flat surface. This system dates to Roman times, although it was developed further from the 16th century on. Household presence of a *mege*l or *faskiya* has a direct impact on the quantity of available water, and is used for agriculture, self-sufficiency, or watering animals. Although modern pumping systems are beginning to replace this traditional method, importance of the practice is acknowledged by municipalities, and grants are given to those who wish to construct a *mege*l (Zogib 2013).

Aesthetics and Artistic Expression The folklore troupe of Kerkennah consists of four musicians and singers, dressed in traditional white and red dress, strongly reminiscent of a Greek and Balkan origin. Troupes perform during baptism ceremonies (*touhour*) and weddings. They present group choreography and also religious repertoire (*madh*). Instruments used include the *T'bal*, *Zokra*, and *Derbouka* (National focal point report 2016).

Pressures on wetland and cultural values/practices

- There is a high level of industrial activity around the Protected Area in Sfax and the Gulf of Gabes: mainly phosphate; and to a lesser extent chemical, textile, tanneries, food, metallurgical, etc. This adversely impacts the entire region, particularly manifesting as a nuisance to benthic and fish communities.
- There is a proliferation of unsustainable fishing techniques at the expense of traditional fishing methods; including illegal trawling, use of drift nets, explosives, etc.
- Disputes occur due to private ownership of fishing areas, and in 1989, the Tunisian authority granted private operators a 39 year concession period. Publicly owned *charfias* are now operated by an annual call operation of offers made by Fishing Services (National focal point 2016).
- Even supporters of *charfias* are turning to other fishing techniques, such as using plastic fishing rods, to be economically viable and increase profitability (Zogib 2013).

Recommendations on cultural values/practices linked to the wetland

- An in-depth case study needs to be developed on the traditional fishery practices of fish, octopus and sponge as they represent a living good practice of traditional knowledge for the sustainable utilization of marine resources.
- Another case study could document and promote the traditional water management knowledge and skills as a sustainable alternative for contemporary approaches and techniques.
- A rights-based approach needs to be adopted for the governance of the fishing areas safeguarding local communities' user rights and benefit sharing.
- A special educational programme targeting communities and visitors based on the traditional rituals and arts should address the importance of cultural values and practices in the conservation of important wetlands and their associated resources.

Lagune de Ghar el Melh et Delta de la Mejerda

(Designated as a Ramsar Site in 2007)

Lagune de Ghar el Melh et Delta de la Mejerda is an ancient sea bay now almost totally laden with sediments. It includes the delta of the most important river in the north of the country, a lagoon rich in fish species, and several secondary lagoons and floodplains. Migratory fish use the Site for feeding, especially during the winter period before reaching the sea.

During the past 50 years the Site has seen many changes, from water diversion for human uses to the building of a series of large dams to reduce sediment and minimize the risk of floods. Artisanal fishing is still practiced by the local population, and is the main economic activity. The locals are proud of their city's history, and the intangible heritage of the Site, including traditional architectural techniques and cultural practices, is being safeguarded and revitalized by local institutions.

Archived results of the assessment of intangible heritage need to be translated into user friendly educational and interpretation materials and products, and there should be a special programme to enhance local communities' participation in the Site planning and management, especially in regard to tourism development.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- spiritual and inspirational

Artisanal fishing is still practiced by the local population in Lagune de Ghar el Melh, and is the main economic activity. The intangible heritage of the site, including traditional architectural techniques and cultural practices, is being safeguarded and revitalized by local institutions. *Faouzi Maamouri*



Box 15: Rapid cultural inventory summary for Lagune de Ghar el Melh et Delta de la Mejerda

(Information came from the Information Sheet on Ramsar Wetlands (RIS) January 2007, unless otherwise noted)

Cultural Values, Practices, or Services

Natural Heritage History has left a strong imprint on the region. The ruins of the Roman port of Utica are a few kilometers upstream, in addition to the small walled city of Kalaat El Andalous (“Andalusian fortress”) which can be seen on a cliff as a testament to the return of the Moriscos of Andalusia in the early seventeenth century. Above all, the picturesque town of Ghar al Melh in the northern edge of the Lagoon recalls the heyday of the seventeenth to eighteenth century, when the city was the main arsenal of the Beys (monarchs) of Tunis and here is where the military fleet would spend the winter.

The city was founded in 1638 to create a port close to the capital for deep-draft vessels. It was actually an important base for Barbary pirates until it was destroyed by Admiral Robert Blake in 1655. However the harbor and defenses were soon rebuilt and it became a base for British and Maltese pirates. In 1834 a huge arsenal belonging to a Maltese pirate exploded and destroyed part of the town. Ahmed Bey, the last *Bey* of Constantine, decided to clamp down on piracy and attempted to turn the port over to legitimate trade. He invested in new jetties and fortresses but the estuary then began to silt up.

Social Values The intangible heritage of the Site is being safeguarded by being recorded in an inventory and revitalized by local institutions. Traditional architectural techniques and traditional cultural practices are being revitalized, and the *maraboutic* cult of Sidi Ali el Mekki and Sidi el Haj M’barek is being rehabilitated. Writings, soundtracks, and videos connected to the natural, archaeological, and traditional heritage are being archived (National focal point report 2016).

Agriculture Orchards and potatoes are cultivated on the hillslopes. *Gtacias* have been developed, which allow for cultivation in an unfavorable environment. These produce crops throughout the year without active irrigation, even during the peak of summer. The thin layer of highly saline soil is heavily covered with manure and sand, and vegetables can be grown with extreme attention, utilizing stored rainwater and the supernatant of sea water (National focal point report 2016).

Fishing and Aquaculture The main activity in the Site is lagoon fishing, mainly practiced by the local inhabitants of Ghar el Melh at an artisanal scale, so that overfishing is not a threat. In the past, corrals (consisting of a series of three nested traps) were used to catch fish and eels that passed between the sea and the lagoon, but that activity ceased after the great flood of 1973. Currently fishing is practiced from small boats, using the trammel net, longline, or the hawk. Sea fishing is practiced from large boats that make berth from one of the two fishing ports built outside the lagoon, directly on the side of the sea: Sidi Ali el Mekki and Kalaat El Andalous.

Hunting Hunting activities are practiced, but limitedly.

Craftsmanship Craftsmanship is practiced by the local women (National focal point report 2016).

Tourism, leisure, and sport Local people are so proud of the history of their city that they rejected a 1980 referendum proposing a large tourist resort, preferring instead to maintain its fishing and agriculture tradition. However, the beaches, especially at Sidi Ali el Mekki, are experiencing a growing popularity during the summer.

Education and outreach The Wetlands National Centre of Ghar el Melh Ecomuseum was inaugurated in 2013 in the framework of the project "Wetlands in Tunisia: a Habitat for man and nature". The new center is located around the Ghar El Melh lagoon, inside the lagoon Fort (Bordj El Bhira)- a beautiful, renovated historical monument that dates back to the 17th century. The Center is made up of several stations which present the wetlands in Tunisia including the ones that are Ramsar designated, the social and economic activities of the people and the relationship between these activities and wetlands. It also has a Hall of Pirates which traces the history of piracy in the region, a flying station for the identification of waterbirds, and other activities. The main objective of the center is to raise awareness to the public and to educate them on the importance of wetlands and their conservation. The center was built with the work of local technicians and artisans and features local products, something that contributed to its better acceptance by the local communities, authorities, and associations. It is hoped that this prototype wetland center will not only be successful in attracting and educating visitors but will also inspire the creation of others all across North Africa (MedWet 2013).

A festival of photography is utilized as a meeting place and communication of the rehabilitation of cultural and natural heritage (national focal point report, 2016).

Spirituality and Belief Systems "Sidi Ali El Mekki" and "Sidi Haj M'barek" were *marabouts* in this area. *Maraboutism* was a pre-Islamic phenomenon, where *marabouts* were usually saints venerated by local communities, and their graves have become places of pilgrimage and centers of community life - be it for religious, therapeutic or other social reasons. People regarded them as expressions of their religious sentiment and considered them as intermediaries between them and God. During their travels, the *marabouts* were supposedly transferring the blessing to the places through which they passed, such as forests, mountains, oasis, or the trees below which they rested. Also, there are forests that have only one *marabout* that holds symbolic power over the entire population, such as the "Sidi Ali El Mekki" in Ghar El Melh. *Marabouts* subsequently preserved ecosystem biodiversity indirectly, as they represented a form of symbolic and religious deterrence for the population. For example, people would be wary of carrying out activities like stealing water, or overexploiting resources, or polluting areas where *marabouts* existed (Zogib 2013).

Aesthetics and Artistic Expression The port is the most comprehensive architectural complex representative of the military architecture of Ottoman Tunisia. The historical monuments, which are currently under restoration, have appeared as a backdrop in many historical films.

Pressures on wetland and cultural values/practices

No records on pressures were found in all literature reviewed for the Site.

Recommendations on cultural values/practices linked to the wetland

- The archived results of the assessment of the intangible heritage in the Site needs to be translated into user friendly educational and interpretation materials and products with the aim to enhance stakeholders' recognition of cultural values, knowledge, and practices in the long term conservation of the Site.
- A special programme on enhancing local communities' involvement and participation in the Site planning, decision making, and management, especially in regard to tourism development - noting their actions against mega tourism projects in the 1980s.

Yemen

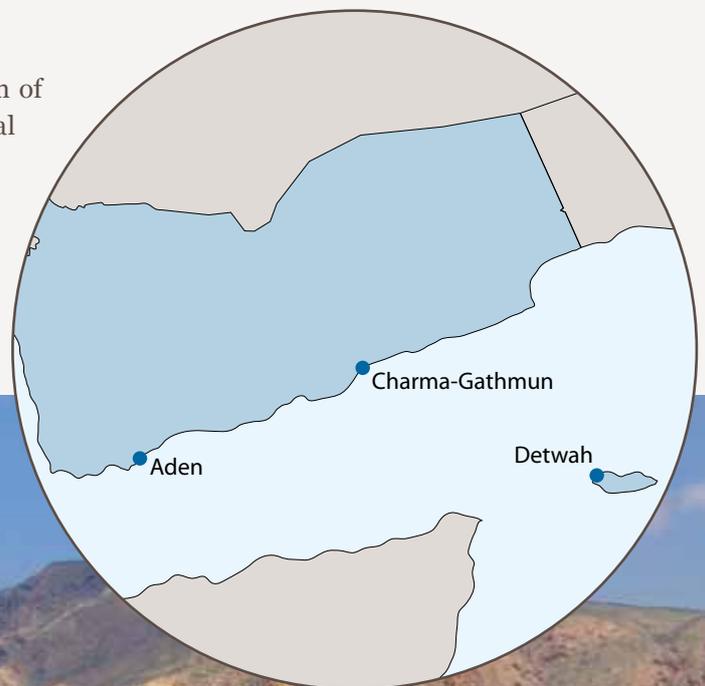
The Ramsar Convention entered into force in Yemen on 8 February 2008, and currently has one wetland designated as a Wetland of International Importance (Ramsar Site), covering a surface area of 580 hectares. The relatively high annual rainfall in the Yemeni highlands feeds a large number of rivers and streams which descend in wadis towards the coastal plains. Many of these have permanently flowing water in their upper reaches, and retain water throughout the year in deep pools along their middle and lower reaches, but in most cases, surface flow only reaches the sea during periods of exceptionally heavy rainfall. There are seven main wadi systems in Yemen, one of which, Wadi Hadramawt, is the largest natural permanent river in Arabia. There are no natural freshwater lakes in Yemen and few permanent freshwater marshes of any size. Much of Yemen's coastline is sandy or gravelly beaches, and inter-tidal flats of mud or sand occur widely along the Red Sea coast, and to a lesser extent along the Gulf of Aden coast. The richest coastal mudflats are found at the mouths of the main wadis, and mangroves are widespread on the Red Sea coast and on some islands. Locally, there are coastal lagoons and large areas of intermittently inundated salt flats (sabkha) (IWMI Accessed 2016).

Detwah Lagoon, a coastal lagoon on the northwestern side of Socotra Island, famously known as "a jewel of biodiversity" in the Arabian Sea. It is very important for local people who use it as a recreation area, for small-scale net fishing, and as a safe harbor for fishing boats during storms.
Haifaa Abdulhalim



The cultural heritage of coastal Aden and other Yemeni cities was mentioned by Yemen's ambassador to UNESCO in July 2015, when he made a passionate call for the world to unite behind Yemen's heritage: "Sana'a, Aden, Taz, Zabid, Saa'da and Marib are all my cities and they are all your cities," said Ambassador Sayyad. "They are the past and present for all Yemenis. They are the past and present for every Arab, every Muslim. They are the past and present for every man and woman, whatever their religion or their identity. For this reason, the work to stop the destruction and to preserve is the duty of every Yemeni, every Arab, every Muslim and every man and woman." In February 2015, a violent conflict erupted in Yemen causing terrible human suffering and loss of life. Cultural Heritage Sites have been heavily affected, mostly through col-lateral damage (UNESCO 2015).

The most recent National Report on the Implementation of the Ramsar Convention (COP 11) does not include cultural information.



Aden Wetlands

(Not a designated Ramsar Site)

The Aden wetlands are amongst the most important wetlands in Yemen and the region, and support unique marine biodiversity and host a large number of waterbird species, sea grasses, crustaceans, mollusks, and fish, and are considered an important wintering area for migratory waterfowl. The Wetlands consists of lagoons, khors, sabkhas, salt pans, and sand and silt mud flats. Aden Wetlands were declared as a Protected Area in August 2006.

Fishing is the most common economic activity carried out in the area, on both small and large scale. Unsustainable fishing methods are often used, and some species are subjected to uncontrolled exploitation.

Regarding recommendations, the ongoing conflict in Yemen does not allow for the proposition of on-the-ground recommendations for the site, and an assessment of the current conflict impacts on the cultural values, knowledge and practices should be part of any effort to document the ongoing changes. An attempt should be made to communicate with national experts and resource persons to report on the challenges facing the site under the current conditions, especially targeting Yemeni nationals in distant learning training and capacity building programmes. Perhaps financial resources could be channeled to Yemeni environmental activists associated with the site to undertake emergency measures to protect natural and cultural values.

Yemeni woman herding goats, Detwah. *Amira Al Sharif / Le Pictorium/ Alamy Stock Photo*



Box 16: Rapid cultural inventory summary for Aden Wetlands

(This is not a Ramsar Site. Unless otherwise noted, information was obtained from Marine Biodiversity of Aden Wetlands Protected Areas by G. Bawazir July 2009.)

Cultural Values, Practices, or Services

Fishing and Aquaculture The Gulf of Aden is a highly productive fishery, due to the tropical upwelling phenomenon which sustains a rich biodiversity. About 600 fish species have been identified in the Gulf area, including mackerel, grouper, mullet, and snapper. As for the Aden Wetlands, 31 species have been identified, including mullet, emperor, snapper, and snub-nose pompano.

The most common fishing methods use gill nets and hand lines from *huris* (traditional wooden boats) and small fiberglass boats, especially in Tawahe Bay. In Khor Bir Ahmed, fish are generally taken with hand lines by local inhabitants, and with gill nets by fishermen who are not from the area.

Commercial quantities of Swimming Crab are fished in Aden Lagoons and Khor Bir Ahmed, and these areas are further regarded as significant nurseries, spawning habitats, and feeding grounds for small fish and crustaceans. Shrimp and small fish are also taken in Caltex Al Heswa using *mqdaha* nets.

Sport fishing using a hand line is popular near the Aden Bridge, Al Memlah Channel, Al Bureka Bridge in Khor Bir Ahmed, and in the lagoons of the causeway.

The gastropods *Strombus tricornis* and *Chicoreus ramosus* are hunted in Khor Bir Ahmed and Aden lagoons by locals who eat them and use the operculum to make a form of incense.

Natural resource extraction A high quality sea salt is produced from Al-Memlah (salt pans) of Aden wetlands, where old windmills are used to pump sea water to the evaporation pans.

Education and outreach Field visits, training courses, and workshops have been conducted. Also, a local media campaign was conducted to help increase visibility of the Aden Wetlands and draw attention to important wetland locations, protected areas, vulnerable bird species, wetland threats and the efforts carried out by government agencies and NGOs to conserve this critical ecosystem. Major workshops were filmed and broadcasted on national television, while both radio and print materials on the important values of the Aden wetlands have been circulated widely (WOW 2009).

Pressures on wetland and cultural values/practices

- Since the 1990 reunification of Yemen, significant social, political and economic changes have taken place across Yemen in general and Aden in particular. These changes have induced serious threats to the serenity and integrity of the Aden Wetlands. These pressures are a result of the location of the site, with rapid economic development and increased demand for building land in the Aden area. The site comes under use by different government and public sub-sector (stakeholders) that have suboptimal or no coordination experience or actively implemented management plan to ensure preservation of the site's natural values (WOW Accessed 2016).
- The Aden Lagoons are subject to pollution by windblown domestic waste and plastic bags.
- Raw sewage is discharged into Al Heswa and Khor Bir Ahmed from adjoining unplanned settlements.
- Illegal expansion of settlements occurs in Khor Bir Ahmed.
- Fishing laws are not effectively enforced.
- Over fishing occurs, and unsustainable fishing methods are used, such as the utilization of bottom gill nets (salaliq). Also used are very small-meshed nets, which are banned in Yemen, as they catch even juvenile fish.
- In Aden Lagoons, Khor Bir Ahmed, and Caltex Al Heswa, snails and clams are heavily harvested and subjected to uncontrolled exploitation.
- Unsustainable sea cucumber collection is a more recent threat to the Aden wetlands, as they have been depleted in many other Yemeni coastal areas.
- Fishing laws are not effectively enforced
- The Aden Lagoons are subject to oil contamination from the oil pipe line.
- Oil spills have occurred at Aden port, and occasionally tar balls can be found at Caltex Al Heswa.

Recommendations on cultural values/practices linked to the wetland

- The ongoing conflict in Yemen does not allow for the proposition of any on-the-ground recommendations for the site.
- An assessment of the current conflict impacts on the cultural values, knowledge and practices should be part of any effort to document the ongoing changes faced by Yemen as a whole and wetlands in particular.
- An attempt should be made on communicating with national experts and resource persons to report on the challenges facing the site under the current conditions.
- An attempt needs to be made to target Yemeni nationals in distant learning training and capacity building programmes with focus on the aspects related to the protection of cultural values and practices, and documentation of traditional knowledge in times of armed conflict, drawing from other international experiences.
- The attempt should be made to find mechanisms to channel financial resources to Yemeni environmental activists associated with the site to undertake emergency measures to protect its natural and cultural values.

Detwah Lagoon

(Designated as a Ramsar Site in 2007)

Detwah is a coastal lagoon on the northwestern side of Socotra Island, an island famously known as “a jewel of biodiversity” in the Arabian Sea. There is a tidal inlet open to the sea, and the Lagoon is surrounded by sand dunes and 400m high limestone and granite cliffs. The Site is also an Important Bird Area and part of a World Heritage Property.

Recommendations are the same as for Aden wetlands: the ongoing conflict in Yemen does not allow for the proposition of on the ground recommendations for the Site, although the situation in the Socotra Islands is not as severe as the case in Aden.

Success Story: Detwah Lagoon was saved from destruction in 2003 by road building. There was to be a road constructed linking Hadiboh and Qalansiya which would pass through the Lagoon. Despite the fact that the Socotra Environment Protection Authority (EPA) insisted that road construction would be a clear violation of Presidential Decree 275 (Conservation Zoning Plan), permission was given by the Chief Engineer of the Yemen Ministry of Public Works and Urban Development (MPWUD). Eventually, all 70 EPA and UNDP staff on the island offered their resignation, a petition was written by all 31 settlements (over 1,200 local people) involved, and a group of Socotran representatives concerned about their island’s future booked all the seats on the next flight to Sana’a to plead their case there. After a few weeks of frenetic activity and lobbying, President Saleh personally intervened, and the road works were stopped. The Qalansiya road was completed in 2006 according to a new route, leaving Detwah Lagoon untouched (Zandri 2006).

Local inhabitants in Detwah are mostly full-time or seasonal fishermen. Fishing cooperatives using traditional methods and management practices have brought increased financial benefits, altering the economic situation of local people drastically. *Amira Al Sharif / Le Pictorium/ Alamy Stock Photo*



Detwah lagoon is very important for local people who use it as a recreation area, for small-scale net fishing, and as a safe harbor for fishing boats during storms. The Site provides one of the best landscape views on the island and is an important site for ecotourism, camping, and diving activities. Local inhabitants are generally all full-time or seasonal fishermen. Traditional fishing methods are still employed, and traditional management practices are also used. Fishing cooperatives have brought increased financial benefits, altering the economic situation of local people drastically.

Cultural Services listed in Ramsar Site Information Service (RSIS)

- recreation and tourism
- scientific and educational
- spiritual and inspirational

Box 17: Rapid cultural inventory summary for Detwah Lagoon

(Information came from the Information Sheet on Ramsar Wetlands (RIS) 31/10/2012, unless otherwise noted)

Cultural Values, Practices, or Services

Settlements and Structures There are a small number of buildings constructed.

Social practices and methods Regarding the coastal area of Socotra, not limited to Detwah: The inhabitants have been a mixture of people with diverse linguistic, ethnic and cultural backgrounds, being described as “descendants of Arabs, African slaves, Portuguese, and several other nations”. Today, people from the coastal areas are a mixture of Arabian and African folk from East Africa (mainly from Somalia) who are either engaged full time or seasonally as fishermen. Full time fishermen are mainly of overseas origin - immigrants from Africa and Arabia who have come to settle in Socotra. Seasonal fishermen are normally those inhabitants of Socotra who were initially herders and became involved in fishing to supplement their income during periods that they could leave their herds. Full time fishermen were considered to be the poorest people, having only rudimentary dwellings and not being allowed to own land.

The economic situation of fishermen was altered radically with changes brought by fishing cooperatives, and with increased financial benefits came an increase in social standing which, together with intermarriage with the herding families of the interior, allowed fishermen to own land. Fishermen subsequently became increasingly wealthy, and able to afford better boats. A direct result of this was the decline of *huris* (traditionally used wooden boats, typically made from made from local naturally-grown wood such as *Ziziphus spina-christi* or *Tamarindus indica* (Morris 2003)) in favor of fiberglass vessels with their low maintenance, increased size-to-weight ratio and ease of use. This led to the wide-spread loss of the *huris*, many of which were broken up to fuel the lime pits used in making mortar. Despite

the transition to more modern boats, little change has occurred with regard to fishing methods employed. Hand line and net fishing is still undertaken using traditional methods, although monofilament, as opposed to cotton line, is now used.

Many *huris* that had not been relegated to the lime pits were regularly maintained even after fiberglass vessels had been purchased. An elderly fisherman was quoted to say that this was in order to have *huris* available should they no longer be able to use the fiberglass vessels. However, a number of people communicated personal stories related to *huris*, whether they be that of a father who had used it and passed it down, or a particular fishing story, and thus it appeared that perhaps those that were maintained were kept more due to an attachment to the past than as a utilitarian use as a replacement vessel. Indeed, several owners that had been given a *huri* by their father subsequently used it solely for recreational fishing and to play on. Unfortunately, on 26 December 2004, many of the remaining *huris* were destroyed when Socotra was struck by the Indian Ocean tsunami, and today very few line the coastline (Van Rensburg 2013).

Stockbreeding and Grazing Limited goat grazing occurs.

Tourism Due its natural scenic beauty and unique white sand dunes, the area is very popular with tourists and birdwatchers. There is a tourist campsite which contains traditional shelters, a camping area, bathroom and kitchen run by a local association.

In Detwah, seagrasses form expansive patches on the sandy bottom of the lagoon, providing nursery grounds and shelter for species such as crabs, shrimp, and sting rays. The Lagoon also supports numerous wading birds, and is a valuable asset for ecotourism development (Cheung and DeVantier 2006).

Education and outreach Occasionally, local schools visit Detwah, however there are no structured education or communication programmes. The Environment Protection Authority endeavors to consult and involve the local residents and communities to raise awareness about the concept and benefits of a protected area.

Community awareness remains very low. In the past, local residents mostly disregarded the area as it is not useful for livestock or agriculture, although, it may have been intentionally avoided because they recognized the importance of the Lagoon for juvenile fish.

Traditional knowledge Not exclusive to Detwah, examples of the traditional management practices used in the region are still evident in Socotra where local communities or cooperatives have maintained traditional rights over different fishing areas. The local communities around Socotra are responsible for the management decisions and regulation of fishing activities in their area. Spatial and temporal access and gear type restrictions are regulated and enforced by the local communities and there is a high level of compliance. Communities may fish within each others' areas under certain conditions and when given specific permission (Krupp & Klaus 2000).

Land tenure/ownership The Wetland is common land (not owned by any one) but the actual land within the Site is owned by two tribal families (Bani Yasaf and Bani Hamoud).

Pressures on wetland and cultural values/practices

- Unregulated construction activities.
- Boat activity inside the lagoon may have some negative impacts, although this is not currently monitored or regulated.
- Unregulated tourism activities (litter, off road driving). There is an increase in interest from tour companies to develop the area; however, until now the Site remains relatively pristine.
- Management of the area faces difficulties, as there are several different groups who claim ownership of the land in order to benefit from the tourism activities taking place.

Recommendations on cultural values/practices linked to the wetland

- The ongoing conflict in Yemen does not allow for the proposition of any on-the-ground recommendations for the Site. Nonetheless, the situation in the Socotra Islands is not as severe as the case in Aden and Hadramout.
- An assessment of the current conflict impacts on the cultural values, knowledge and practices should be part of any effort to document the ongoing changes faced by Yemen as a whole and Wetlands in particular.
- An attempt to be made on communicating with national experts and resource persons to report on the challenges facing the Site under the current conditions.
- An attempt needs to be made to target Yemeni nationals in distant learning training and capacity building programmes, focusing on the aspects related to the protection of cultural values and practices, and documentation of traditional knowledge in the times of armed conflict drawing from other international experiences.
- The attempt needs to be made to find mechanisms to channel financial resources to Yemeni environmental activists associated with the Site to undertake emergency measures to protect its natural and cultural values.

Sharma/Jethmun Coastal Area

(Not a designated Ramsar Site)

The Sharma/Jethmun Coastal Area lies east of Mukalla and extends along 60km of coastline, encompassing about 569km² of land and sea. This area is a major Green Turtle and Loggerhead nesting site, and is considered to be nationally significant with regard to certain environmental, socio-economic and cultural features, and economically important with regard to living marine resources (Zajonz & Klaus 2007). Sharma/Jethmun is a Tentative Site Listing for the UNESCO World Heritage List, but it has not officially been declared as a Protected Area, as noted in the 5th National CBD Report.

The majority of the local people are reliant upon artisanal fishing, due to a lack of alternative livelihoods, and poverty is a serious issue here. Over centuries, people in this region have sustainably used the sea's resources, often employing traditional management practices. However, this tradition is threatened by overfishing, uncontrolled coastal developments and unmanaged land use, and has become unsustainable.

Recommendations are the same as for Aden Wetlands.

View of Sharma harbour. Artisanal fishing is the primary form of employment and income generation in the Sharma/Jethmun areas. *Federico Meneghetti / REDA &CO srl / Alamy Stock Photo*



Box 18: Rapid cultural inventory summary for Sharma/Jethmun Coastal Area

(This is not a Ramsar Site. Unless otherwise noted, information was obtained from Coastal Zone Management Plan for Bir Ali-Burum and Sharma-Jethmun by Zajonz & Klaus 2007.)

Cultural Values, Practices, or Services

Settlements and Structures The Sharma/Jethmun area was previously used as a temporary residence for Socotran islanders during the monsoon and as a site for salt production. It is rather sparsely settled and there are relatively few communities. There are few small “pseudo-settlements” dotted along the coast and inland inhabited temporarily by Bedouin tribes and herdsmen descending on the coast during the rainy season for the “sardine catching time”, or by herdsmen with pastoral care for grazing animals.

Most settlements in the area are permanent stone structures that typically consist of 2-4 rooms. The vast majority own their houses. Almost all households receive water from a piped source. Electricity is permanently available in the larger urban areas, and only intermittently in the smaller settlements. The most important sources of household fuel (primarily for cooking) are wood and butane gas. Firewood is either bought from a market or gathered locally (usually by women). Of the houses surveyed, firewood was the primary fuel source in 8% of households, with the remainder relying on butane.

Natural heritage resources Known as “Shihr” in antiquity, the two old city doors have been restored, but little else is left of the previous architecture, which was a mix of Yemeni, Arab, and Hindu (UNESCO). There are also important archaeological remains at the ancient port of Qana, near Sharma/Jethmun: both terrestrial and underwater the area contains archaeological sites and artifacts of a pre-historic civilization, including an ancient anchorage. In ancient times, the land in the east was used to grow *Ollibanum*, which was an important and expensive commodity that was sought after in the capitals of the ancient world for its uses in religious rites, funerals, presents, and medical purposes. *Ollibanum* was transported along the incense route via the ancient port of Qana.

Social practices and methods The ethnicity of the population is predominantly Yemeni and the remainder originates from Somalia and Ethiopia. As for the social structure, included are *Sada/Mashaikh* tribal people and *Abeed-Sumr*. In the past, Sada tribes of southern Yemen typically did not fish. However, this situation has changed and the majority of *Sada/Mashaikh* people are now reliant upon fishing. This change has occurred principally due to the lack of alternative livelihoods. Bedouins also use the area and principally follow a pastoral lifestyle with herds of grazing animals.

Over centuries, the people inhabiting the coastal settlements and trade ports in this region have sustainably used the sea's resources, often employing traditional management practices. Currently, however, the marine and coastal resource wealth of Yemen, which forms a major pillar of the local and national economy and food security, is threatened by uncontrolled coastal developments and unmanaged land use (Zajonz & Akester 2005).

Fisheries co-operatives are an important component of the coastal communities in the Sharma/Jethmun area, as they organize the local marine resource based economy. There are also a growing number of other NGOs in the region, some of which address conservation and environmental issues such as "Friends of the Environment" in Al-Dis. Women's NGOs are also beginning to become more prevalent here.

Social Values Poverty remains a serious issue in Yemen particularly in rural and coastal regions. The average income in the Sharma/Jethmun area is below the national average. The 1999 National Poverty Survey found that 70% of households in this coastal region were poor, with 39% classified as very poor. The fundamental reasons for such high levels of poverty is related to the low level of human resources development and high levels of illiteracy, especially amongst women, low income, unstable economic growth, rapid population growth, lack of jobs, poor water resources, rising goods prices and weak social protection.

Economic Opportunities There are few employment opportunities outside of the fisheries sector. However, many households need some other form of supplementary income, such as livestock farming, as the fishing sector does not provide enough to meet basic requirements. There are limited opportunities, and the majority of people who complete higher education relocate to seek work. Most males remaining here become fishermen. Women are key players in the community in terms of maintaining services and family structures, and are responsible for the household, caring for all family members. They also contribute to the family income by raising animals and participating in other community activities.

Fishing and Aquaculture Artisanal fishing is the primary form of employment and income generation in the Sharma/Jethmun areas. Most industrial fishing, especially of foreign vessels, was halted in the Gulf area following a ban by the Ministry of Fish Wealth in 2003. Fisheries resources are now primarily exploited by artisanal subsistence fishermen and local commercial fisheries.. The number of people employed in the fisheries in Sharma-Jethmun area is not known as cooperatives operating from nearby areas also fish here.

Artisanal fishing is conducted on the continental shelf as far out as the dropoff, but typically within some 40km maximum offshore. A typical fishing day for the artisanal fishermen in the area lasts between 8 and 12 hours and requires a minimum of 30 liters of fuel. The average daily landing is between 30-50 kg. Due to the different oceanographic and physiographic nature of the area, which favors large pelagics over inshore demersal and reef associated species, the fisheries in Sharma/Jethmun is more focused on these target species, and on cuttlefish and rock lobsters.

Fishing is conducted from four types of locally and partly traditional built boats:

- The *hour* is a traditional wooden canoe between 7-10m in length, powered by outboard engines and crewed by 1-3 on the smaller *houris* and up to 12 on bigger boats.
- *Gelba* are a fiberglass version of the *hour* built according to a modified traditional design, with lengths between 7-10m, and powered by outboard engines. The crew is usually 4-6 persons. In the Gulf of Aden they are known as *Qadifa* and are valued for their seaworthiness in rough conditions.
- *Fibres* are 5-9m long and powered by outboard engines. These have a flatter bottom and a relatively low side-board, providing more deck space. This boat type is popular in the Yemen Red Sea.
- *Sambouk* are large wooden boats varying in overall length between 12-26m, fitted with inboard engines, and crewed by 8-15 people depending on the fishing technique used, trip duration and target area.

There is a wide range of fishing gear and methods in use in the Gulf of Aden. The most common method is hook and line for large pelagic species and high value demersals. Other methods include surface and bottom long-lines, trolling, vertical drop-gear, traps, cast nets, beach seine nets, surface and bottom gill nets, drift nets, round-haul nets, and surface and bottom trawling (simple otter-trawls). Trolling and drop-lines with live bait are used for Yellowfin tuna. Some fishers use entangling drift nets for tuna, kingfish and carangids. Lobsters and cuttlefish are caught in traps and cages. Other methods include spears, spear-guns, and hand-collecting, partly combined with snorkel gear.

Hunting Adult turtles and turtle eggs have been hunted and consumed in Yemen for many years, as the meat and eggs are believed to have medical benefits, such as relieving asthma, especially amongst children. In 1980 a decree was issued by the Ministry of Fisheries banning the consumption of turtle meat. This decree has not been adhered to, and the killing of turtles continues due to lack of enforcement and possibly lack of awareness of the decree by local communities. Slaughtered turtles are found on all beaches throughout Sharma/Jethmun.

Food Processing Value-added processing and marketing for export capacities in Yemen are mainly concentrated in the Gulf of Aden for historic reasons, especially around the Sharma/Jethmun and adjacent areas. Processing plants have been established and a range of products has developed since the 1970s. These comprised of a number of frozen products such as cuttlefish, deep sea lobster, prawns, demersal fishes, and a range of value-added products including Individually Quick Frozen (IQF) lobster tails, pelagic and demersal fishes, shrimp, dried shark fins, and dried sea cucumber. Fish for the domestic markets is generally not processed (apart from canning). The fish is cooled on ice (often inadequately) and transported inland where it is sold in pieces or whole. Fishermen are not presently involved in fish processing, and typically sell whole fish directly at the landing site. Value-added processing is principally used for export markets.

Tourism The town of Bada is a beautiful village located in the area which features hot-spring baths that draw tourists. Al Hami, on the port, also attracts spa-goers (UNESCO).

The numbers of tourists visiting the Sharma/Jethmun area is not currently known but it is thought to still be relatively low. There are occasional visitors to the turtle nesting beaches. There are very few tourism companies operating within the vicinity of the area and the choice of accommodation is somewhat limited.

Traditional knowledge Traditional management practices developed by the local communities are based upon the local understanding of the stocks and historical trends and this knowledge is transferred through the generations.

Land tenure/ownership The majority of land lying within the area is "common-use land", whereby the inhabitants of the region share use of the resources with total freedom in accordance with traditional tribal laws, that have governed and regulated ownership for many hundreds of years.

Pressures on wetland and cultural values/practices

- The site suffers from uncontrolled coastal developments and unmanaged land use, which ruin coastal and island habitats and ecosystem integrity.
- The overly unmanaged and unsustainable operation of artisanal fisheries poses a problem of advanced degree, which is documented by generally declining catch and catch-per-unit-effort. Certain target populations are on the verge of collapse, and destructive fishing methods cause ecologically detrimental effects.
- Over-fishing is a major threat. Unrestricted access to fisheries occurs by foreign fishing boats and other “outsiders”, and is combined with poor law enforcement. Illegal fishing includes the use of unsustainable techniques such as dynamite and indiscriminate fishing of young fish stocks. These issues are currently not being monitored, and irreversible damage may occur without being detected (Vidaeus 1999).
- Killing of turtles and damage to nests by feral dogs, and illegal poaching of both adult turtles and eggs by humans, are very serious threats. Although guards have been introduced at Sharma and Jethmun beaches, a high number of turtles are still being killed.
- To the west of the area is the large off-shore oil loading terminal located near Mukulla. A major incident occurred in 2002 following a terrorist attack on an oil tanker, the Limbourg, which resulted in a major oil spill.
- Quarry sites exist in the area. “Wild” salt mining and quarrying for extraction of construction materials by road contractors is a common violation of the environmental legislation, and severely impact landscape integrity and esthetic values.

Recommendations on cultural values/practices linked to the wetland

- The same points proposed for the Aden Wetland apply here.

Key lessons learned from the assessment

This section summarizes the key lessons learned from undertaking this pilot assessment. The lessons mainly address the methodology as a tool, the process in which the assessment was conducted, the stakeholders' involvement in the application of the assessment, the outcomes of the assessment on the site and country basis, and finally the overall effectiveness of the assessment as a tool for enhancing knowledge related to cultural values and practices, and ultimately, the conservation of Ramsar Sites as a global biodiversity protection programme.

Before elaborating the lessons learned from the assessment, it is imperative to recommend action for the majority of sites included in the assessment, in addition to many Ramsar Sites from the Arab Region. There is an urgent need to update the existing RIS datasheets. Some of the datasheets have not been updated for more than ten years. Another related recommendation is to encourage all State Parties from the Region to develop and update the management plans for all Ramsar Sites, with particular focus on planning to review and improve the decision making processes and structures - giving particular importance to the engagement and empowerment of local stakeholders in the strategic and day-to-day planning and management of the Ramsar Sites.

Navigating the Hawizeh Marshes, Iraq. *Mudhafar Salim*



The assessment as a tool is a well developed instrument designed to capture, document, and advocate for the cultural values and practices of wetlands. It seems, however, to be best designed for regions, countries and sites where an active knowledge management programme is taking place. As a rapid inventory, it excels in reporting on sites where a systematic approach is adopted in integrating cultural values in the overall planning, management and monitoring of sites. In the Arab Region, it seems, cultural values and practices do not represent an integral aspect of the strategic, as well as day-to-day, management of the sites. Rather, they are being addressed as part of a relic heritage which does not necessarily contribute effectively to the ongoing management of the sites or the sustainable development of communities associated with them. Cultural values and practices – in the Arab Region – are more likely perceived as artisan heritage suitable for tourism and history rather than a functioning component of wetland conservation and sustainable use.

To achieve a satisfactory level of involvement of stakeholders in the assessment was a major challenge for the exercise, especially in regard to national and site-based entities. The assessment team supported by the Ramsar Secretariat applied several approaches to motivate input from national stakeholders, however, were not fully successful in achieving the intended involvement. This is a general comment, and must not undermine the fact that a significant and useful response was received from some national focal points. The varying participation level could be due to several factors including:

- As a regional assessment, it leaned more towards a centralized top-down approach of reporting and documentation, which did not necessarily trigger adequate levels of interest and motivation for involvement at the site and country levels.
- The assessment communicated mainly with national level focal points who have nature conservation backgrounds, and thus do not necessarily always have up-to-date information on the various aspects of wetlands, especially in regard to cultural values and practices. Furthermore, the official design of the assessment did not promote direct communication with site managers and other academic or project personnel who would have substantial knowledge and initiatives related to the sites' cultural values and practices.
- The challenging socio-political conditions of some of the region's countries definitely represented an obstacle facing the ability of national entities and individuals to engage and respond in a timely and effective manner.
- As a rapid assessment, its scope and timeframe did not allow for comprehensive review and research of all academic and non-academic information and knowledge available on the target sites.

On the other hand, the feedback and contribution which were received from the programme and experts' network of the Ramsar Secretariat were elaborate and constructive and contributed significantly to shaping the assessment report. This confirms the vital role acquired by the various knowledge platforms established by the Ramsar Secretariat in enhancing knowledge and monitoring of the cultural values and practices in the region's wetlands.

The outcomes of the assessments varied significantly between countries and sites due to the various levels of available information and the level of responses and contributions received from the different stakeholders. As a result, the assessment would function as an excellent basis for the development and application of a series of in-depth site based assessments

involving national experts and interest groups. Such follow up would contribute to filling the knowledge gaps identified in the assessment, and would enhance a more constructive approach for the documentation, promotion, and monitoring of cultural values and practices of wetlands as a functioning component in the effective management and long term sustainability of the wetlands and their ecosystems.

An important message received from the assessment is related to the alarming level of information outdate. A significant part of the information used in the assessment was based on early reports developed during the wetland designation as a Ramsar Site. Only a systematic nationally led follow up on the assessment would yield the proper update on the status of the cultural values and practices for wetlands along with their role in the conservation and sustainability of the sites. Finally, the outcomes of the assessment revealed a great need for a more systematic approach in building the capacities of the national teams on the application of effective tools and mechanisms for integrating cultural values and practices in the sites' conservation. This is particularly critical for countries facing the hurdles of conflict and drought. For the assessment to be effective, it needs to be part of a more comprehensive approach addressing the documentation, promotion and monitoring of the cultural values and practices in wetlands in the Arab Region. The approach needs to include:

- An active knowledge platform on the regional level using the region's Arabic language in addition to English and French.
- A continuous capacity building programme designed on the thematic and sub-regional specificities of the regions, thus addressing the language aspects as well the priority issues, challenges and opportunities which characterize each sub-region. An initial categorization would include North African French speaking countries, the Middle Eastern countries, and the Arabian Peninsula sub-region including Yemen.
- An extensive literature review of all academic, programmatic and organizational reports and documentations addressing cultural values and practices related to wetlands in particular, and to biodiversity conservation in general, in the Arab Region.
- The adoption of a more systematic collaborative approach with other UN and international conventions and programmes addressing the integration of cultural and natural heritage at the regional level.

Overall, the assessment was a great learning opportunity for all those involved in it and should form the foundation for the improvement of future assessments undertaken for the region. It highlighted the need for the Ramsar and World Heritage Conventions to continue to seek to integrate wetland cultural services into all relevant national and regional policies, including in Poverty Reduction Strategies, National Climate Change Strategies, SDGs, taking into account the need to base such strategies on an understanding of specific wetlands' current and projected future productivity, particularly where such wetland services may change over time. The translation of the assessment report to French and Arabic would contribute greatly to enhancing its benefit to regional stakeholders and interest groups. A web-based sharing of the reports versions through the various portals associated with the Ramsar Convention and its partners is also highly recommended.

References

Unless otherwise noted, internet sites were accessed July 2016.

- Abulhawa, T., Abdulhalim, H., Osipova, E., Cummings, T. (2014) *Tabe'a II Report: Enhancing Regional Capacities for World Heritage*. 2014.
- Al-Gunaid, H. (May 2005) *Country Report of Yemen*, Central Asian Flyway Action Plan Meeting.
- Baha El Din, S. *Important Bird Areas in Africa and associated islands*.
<http://www.birdlife.org/datazone/userfiles/file/IBAs/AfricaCntryPDFs/Egypt.pdf>
- Briggs, Christopher. (5 February 2014) The Ramsar and World Heritage conventions and Slovenia's Škocjan Caves. UNESCO World Heritage magazine, n. 70.
- Madgwick, J., & Dickens, C. (2015). Could the SDGs help save the wetlands? Presented 4/6/2015 at Ramsar COP12.
- Papayannis, T. and Pritchard, D. E. (2011), Culture and Wetlands in the Mediterranean: an Evolving Story, Athens, Med-INA.
- Pritchard, D., Ali, M., Papayannis, T. (2016) Guidance: Rapid Cultural Inventories for Wetlands. Ramsar Culture Network.
- Rao Gupta, G. (2015). Opinion: "Sanitation, Water & Hygiene for All" Cannot Wait for 2030. InterPress October 2015. Retrieved 18 December 2016.
- Samraoui, B, Samraoui, F. (2008) An ornithological survey of Algerian wetlands: Important Bird Areas, *Ramsar sites and threatened species*. *Wildfowl* 58: 71-96
- Shine, T. (2003) *The Conservation Status of Eastern Mauritania's ephemeral wetlands and their role in the Migration and Wintering of Black Storks (Ciconia nigra)*. *Aves*, 40 (1-4): 228 - 240

Algeria

- Rapport National Sur L'Application de la Convention de Ramsar sur les Zones Humides, Uruguay, 2015. http://www.ramsar.org/sites/default/files/documents/2014/national-reports/COP12/cop12_nr_algeria.pdf.

La Vallee d'iherrir

- <https://rsis.ramsar.org/RISapp/files/RISrep/DZ1057RIS.pdf>
- Hughes, R. & Hughes, J. (1992). A Directory of African Wetlands. IUCN, Gland, Switzerland and Cambridge, UK / UNEP, Nairobi, Kenya / WCMC, Cambridge, UK.

Oasis de Tamantit et Sid Ahmed Timmi

- <https://rsis.ramsar.org/RISapp/files/RISrep/DZ1061RIS.pdf>
- http://www.medwetculture.org/wetland_items/tamentit-and-sid-ahmed-timmi-oases-algeria/ (Accessed August 2016)
- Arou, N. (2014). *Traditional qanat related jurisprudence in Algeria*. Water Science & Technology Water Supply 14(6) July 2014 pp 1142-1149.

Réserve Intégrale du Lac Tonga

- <https://rsis.ramsar.org/RISapp/files/RISrep/DZ281RIS.pdf>
- Kibata, C. (September 2009) “Removal of Two Algerian Ramsar Sites from the Montreux Record” <http://www.ramsar.org/news/removal-of-two-algerian-ramsar-sites-from-the-montreux-record>
- Smart, M. & Hollis, G.E. (November 1990). Ramsar Conventions Monitoring Procedure. Report No. 22. Lac Oubeira and Lac Tonga, Algeria.

Egypt

- Hassan, F. (2015). *Water Heritage of Egypt and Nile Region*. Cultural Heritages of Water: The cultural heritages of water in the Middle East and Maghreb. ICOMOS Thematic Study.
- National Report on the Implementation of the Ramsar Convention of Wetlands (2015). Submitted to the 12th Meeting of the Conference of the Contracting Parties, Uruguay.
- http://www.ramsar.org/sites/default/files/documents/2014/national-reports/COP12/cop12_nr_egypt.pdf

Lake Bardawil

- <https://rsis.ramsar.org/RISapp/files/RISrep/EG407RIS.pdf>
- http://www.medwetculture.org/wetland_items/zaranik-lake-bardawil-egypt/ (accessed August 2016)
- El Gamal, A. (June 2014) Ready-to-fish boats in Lake Bardawil (Egypt) <http://fishconsult.org/?p=11037&>
- Nada, M.A., L. Boura, K. Grimanis, G. Schofield, M. A. El-Alwany, N. Noor, M. M.
- Ommeran, B. Rabia. 2013. *Egypt's Bardawil Lake: safe haven or deadly trap for sea turtles in the Mediterranean?* A report by MEDASSET, Suez Canal University and

- Nature Conservation Egypt. 79pp.
- Report No. 26. Ramsar Convention Monitoring Procedure. Preliminary mission to Egypt (4-15 October 1991) https://rsis.ramsar.org/RISapp/files/RAM/RAM_o26_EG_en.pdf

Lake Burullus

- <https://rsis.ramsar.org/RISapp/files/RISrep/EG408RIS.pdf>
- http://www.medwetculture.org/wetland_items/burullus/ (accessed August 2016)
- Report No. 26. Ramsar Convention Monitoring Procedure. Preliminary mission to Egypt (4-15 October 1991) https://rsis.ramsar.org/RISapp/files/RAM/RAM_o26_EG_en.pdf

Wadi El Rayan Protected Area

- <https://rsis.ramsar.org/RISapp/files/RISrep/EG2041RIS.pdf> (RIS 4/6/12)
- El Khatib, M., El Khatib, M., et al. (December 2006) *Fayoum Ecotourism Development Plan 2005-2015*. <http://www.cissong.org/it/press/news/il-piano-ecoturistico-del-fayoum>
- Shahd, L., Soncini, G., Saleh, M. (March 2007) *Wadi El-Rayan Protected Area Mid-Term Evaluation Part II, UNDP Project Evaluation Reports*.

Iraq

- Al-Hilli, M. R. (1977). Studies on the plant ecology of the Ahwar region in southern Iraq. Cairo, University of Cairo. Ph. D.
- Garstecki, T. and Amr Z. (2011). Biodiversity and Ecosystem Management in the
- Iraqi Marshlands – Screening Study on Potential World Heritage Nomination. Amman,
- Jordan: IUCN.
- Lawler, A. (2005). “Ecology - Reviving Iraq’s wetlands.” *Science* 307(5713): 1186-1189
- Mitchell, C. (2002). Assault on the Marshlands. *The Iraqi Marshlands: a Human and Environmental Study*. E. Nicholson and P. Clark. London, Politico’s Publishing: 64-100.
- Munro, D. C. and H. Touron (1997). “The estimation of marshland degradation in southern Iraq using multitemporal Landsat TM images.” *International Journal of Remote Sensing* 18(7): 1597-1606.
- <http://medwet.org/?s=iraq>

Central Marshes

- https://rsis.ramsar.org/RISapp/files/RISrep/IQ2241RIS_1509_en.pdf

Hammar Marsh

- https://rsis.ramsar.org/RISapp/files/RISrep/IQ2242RIS_1509_en.pdf

Hawizeh Marsh

- <https://rsis.ramsar.org/RISapp/files/RISrep/IQ1718RIS.pdf>

Mauritania

- Hamerlynck, O., Samba, E. (1995). Management of Mauritanian Coastal Wetlands. Conference paper. November 1995. [Electronic reference] <https://www.researchgate.net/publication/263003631_Management_of_Mauritanian_coastal_wetlands> Accessed 10 December 2016.

Lac Gabou et le réseau hydrographique du Plateau du Tagant

- <https://rsis.ramsar.org/RISapp/files/RISrep/MR1854RIS.pdf>

Banc du Arguin

- <https://rsis.ramsar.org/RISapp/files/RISrep/MR250RISformer.pdf>
- <http://whc.unesco.org/en/soc/3460/> (UNESCO SOC report 2016)
- http://www.worldheritageoutlook.iucn.org/search-sites/-/wdpaid/en/20388?p_p_auth=x11oKXjS (IUCN WH Outlook)
- UNEP-WCMC (2012). 'Banc d'Arguin national Park, Mauritania'. UNEP-WCMC World Heritage Information Sheets.
- Ba, D. (2004). *Fishermen who "walk on water" burn their nets*. WWF Global. http://wwf.panda.org/wwf_news/?12984/Fishermen-who-walk-on-water-burn-their-nets
- Sidi Cheikh, M. A. and Al Dhafer, A. A. M. (2010). 'Assessment of a modernization reform in a public administration in Mauritania: The National Park of Banc d'Arguin'. Dubai: Dubai School of Government.
- Moctar Nech, N. (2000) *Imraguen Women's Mullet Bottarga (Mauritania)* NGO Mauritanie. http://slowfood.com/slowfish/pagine/eng/pagina.lasso?-id_pg=210

Parc National du Diawling

- <https://rsis.ramsar.org/RISapp/files/RISrep/MR666RISformer.pdf>

- Hamerlynck, O. (2010) *The Diawling National Park: Joint Management for the Rehabilitation of a Degraded Coastal Wetland*. IUCN. <http://www.ramsar.org/sites/default/files/documents/pdf/lib/hbk4-07cs12.pdf>
- Triplet, P., Tiega, A., Pritchard, D. (2000). Ramsar Advisory Mission No. 42: Senegal and Mauritania Mission Report: Parc National des Oiseaux du Djoudj (Senegal) and Parc National du Diawling (Mauritania). September 2000.
- https://rsis.ramsar.org/RISapp/files/RAM/RAM_042_SN_en.pdf

Tunisia

- Zogib, L. (October 2013). *A Rapid Assessment of Cultural Conservation Practices in the Mediterranean*. The Mediterranean Consortium for Nature and Culture. DiversEarth.
- National focal point report, sent December 2016.

Ichkeul

- A Ramsar Case Study on Tourism and Wetlands Wetland Tourism: Tunisia - Lake Ichkeul. Presented at COP 11 July 2012. http://www.ramsar.org/sites/default/files/documents/pdf/case_studies_tourism/Tunisia/Tunisia_Ichkeul_EN.pdf
- <http://whc.unesco.org/en/soc/482> (SOC report 2010)
- http://www.worldheritageoutlook.iucn.org/search-sites/-/wdpaid/en/4322?p_p_auth=mB1J3fgY

Iles Kerkennah ou L'archipel de Kerkennah

- <https://rsis.ramsar.org/RISapp/files/RISrep/TN2012RIS.pdf>

Lagune de Ghar el Melh et Delta de la Mejerda

- <https://rsis.ramsar.org/RISapp/files/RISrep/TN1706RIS.pdf>
- Inauguration of the Ghar El Melh Wetlands National Centre, 06 June 2013. MedWet.
- <http://medwet.org/2013/06/inauguration-of-the-ghar-el-melh-wetlands-national-centre/>

Yemen

- UNESCO World Heritage Centre. (July 2015) *Emergency Action Plan for the Safeguarding of Yemen's Cultural Heritage announced*. <http://whc.unesco.org/en/news/1325>

- IWMI. International Water Management Institute. [Electronic reference] <http://webmap.iwmi.org/wetlands/pdf/Middle_East/YEMEN.pdf> Accessed 14 December 2016.

Aden Wetlands

- Bawazir, G. (July 2009) *Marine Biodiversity of Aden Wetlands Protected Areas*. Aden Wetlands Conservation Project, Wings Over Wetlands.
- *WOW Demonstration Project: Aden Wetlands, Yemen*. Wings over Wetlands, A UNEP-GEF Project. <http://wow.wetlands.org/HANDSon/Yemen/tabid/135/language/en-US/Default.aspx> (accessed August 2016)
- *WOW Demonstration Project: Aden Wetlands, Yemen*. (February 2009) Project Progress Update. Prepared by the WOW Project Coordination Unit (PCU) http://wow.wetlands.org/Portals/1/documents/demoprojects/yemen/yemen_project_progr

Detwah Lagoon

- <https://rsis.ramsar.org/RISapp/files/RISrep/YE1736RIS.pdf>
- Cheung, C. & DeVantier, L. (2006) *Socotra – A Natural History of the Islands and their People*.
- Krupp, F. & Klaus, R. (2000). Contributions to a zoning plan for coastal and marine areas of Socotra. In: *Marine Habitat, Biodiversity and Fisheries Surveys and Management, Progress Report of Phase III (UNOPS YEM/96/G32, C-972248)*. Apel, M. & Hariri, K.I. (eds): 137-148. Senckenberg Research Institute; Frankfurt a.M., Germany. Cited in Zajonz, U. & Klaus, R. (2007). *Coastal Zone Management Plan for Bir Ali-Burum and Sharma-Jethmun*. 256 pp. + XVIII Appendices (2 vols.). Environment Protection Authority; Sana'a, Yemen.
- Morris, M. (2003) Manual of Traditional land use in the Soqotrian Archipelago, for GEF (Global Environmental Facility) cited in van Rensburg, J. (2010) *The Hawari of Socotra, Yemen*. The International Journal of Nautical Archaeology 39.1: 99–109.
- van Rensburg, J. “The Hawari of Socotra: Cultural Treasure or Coastal Trash”. (2013) in: T. Gambin, H. Nash, (Eds.), *Ships, Saints and Sea lore: Maritime Ethnography of the Mediterranean and the Red Sea*, Valetta: Midsea Books Ltd.
- Zandri, E. *Case Study: Hadiboh-Qalansiya Road and Ditwah Lagoon* (2006) in: Cheung, C. & DeVantier, L. *Socotra – A Natural History of the Islands and their People*.

Sharma/Jethmun Coastal Area

- Fifth National Report to the Convention on Biological Diversity (2010-2014). Yemen. <https://www.cbd.int/doc/world/ye/ye-nr-05-en.pdf>
- Vidaeus, L. (5 March 1999) World Bank Office Memorandum to Mr. K. King. Subject: Yemen, Coastal Zone Management (CZM) GEF Medium-Sized Project. http://beta.thegef.org/sites/default/files/project_documents/Project%2520Brief_46.pdf

- Zajonz, U. & Akester, S. (June 2005) *Guidelines to Participatory Livelihood-Centered Fisheries Management of the Coastal Zone Management Project in the Gulf of Aden (WB-GEF EPA): The Pilot CZM Areas of Bir Ali-Burum and Sharma-Jethmun*
- Zajonz, U. & Klaus, R. (2007). *Coastal Zone Management Plan for Bir Ali-Burum and Sharma-Jethmun*. 256 pp. + XVIII Appendices (2 vols.). Environment Protection Authority; Sana'a, Yemen.
- <http://whc.unesco.org/en/tentativelists/1727/>

Also, the following websites were accessed 8 June 2016:

- <http://www.chm-biodiv.nat.tn/ar>
- <http://ramsar.rgis.ch/pdf/mtg/LAS/IRAQ.pdf>
- <http://www.ramsar.org/about/wetlands-of-international-importance-ramsar-sites>
- <http://whc.unesco.org/en/criteria/>
- <http://whc.unesco.org/en/convention/>
- <http://whc.unesco.org/en/statesparties/?region=4>
- <http://www.ramsar.org/country-profiles>
- http://www.ramsar.org/sites/default/files/documents/library/brief_-_rapid_cultural_inventories_for_wetlands.pdf
- <http://whc.unesco.org/en/list/565> (Casbah)
- <http://whc.unesco.org/en/list/1446> (Al Mahtas)
- <http://whc.unesco.org/en/list/295> (Byblos)
- <http://whc.unesco.org/en/list/362> (Ghadames)
- <http://whc.unesco.org/en/list/506> (Banc d'Arguin)
- <http://whc.unesco.org/en/list/753> (Essaouira)
- <http://whc.unesco.org/en/list/1207> (Aflaj)
- <http://whc.unesco.org/en/list/1492> (Battir)
- <http://whc.unesco.org/en/list/1402> (Al Zubarah)
- <http://whc.unesco.org/en/list/8> (Ichkeul)
- <http://whc.unesco.org/en/list/498> (Sousse)
- <http://whc.unesco.org/en/list/1343> (Al Ain)
- <http://whc.unesco.org/en/list/1263> (Socotra)
- <http://whc.unesco.org/en/tentativelists/5156/> (Azraq)
- <http://whc.unesco.org/en/tentativelists/1838/> (Marshlands of Mesopotamia)
- <http://whc.unesco.org/en/tentativelists/1950/> (Dinder National Park)
- <http://whc.unesco.org/en/tentativelists/1951/> (Wadi Howar)
- <https://rsis.ramsar.org/ris/1293> (Aulnaie de Aïn Khiar)
- <https://rsis.ramsar.org/ris/1294> (Chott de Zehrez Chergui)
- <https://rsis.ramsar.org/ris/1295> (Chott de Zehrez Gharbi)
- <https://rsis.ramsar.org/ris/1052> (Chott Ech Chergui)
- <https://rsis.ramsar.org/ris/1053> (Chott El Hodna)
- <https://rsis.ramsar.org/ris/1296> (Chott Melghir)
- <https://rsis.ramsar.org/ris/1056> (Complexe de zones humides de la plaine de Guerbes-Sanhadja)
- <https://rsis.ramsar.org/ris/1297> (Grotte karstique de Ghar Boumâaza)

- <https://rsis Ramsar.org/ris/1298> (Gueltates Afilal)
- <https://rsis Ramsar.org/ris/1961> (Ile de Rachgoun)
- <https://rsis Ramsar.org/ris/1299> (Lac de Fetzara)
- <https://rsis Ramsar.org/ris/975> (La Réserve Naturelle du Lac des Oiseaux)
- <https://rsis Ramsar.org/ris/1057> (La Vallée d'Iherir)
- <https://rsis Ramsar.org/ris/1058> (Les Gueltates d'Issakarassene)
- <https://rsis Ramsar.org/ris/1895> (Marais de Bourdim)
- <https://rsis Ramsar.org/ris/1059> (Marais de la Macta)
- <https://rsis Ramsar.org/ris/1301> (Marais de la Mekhada)
- <https://rsis Ramsar.org/ris/1302> (Oasis de Moghrar et de Tiout)
- <https://rsis Ramsar.org/ris/1060> (Oasis de Ouled Saïd)
- <https://rsis Ramsar.org/ris/1426> (Oglat Ed Daïra)
- <https://rsis Ramsar.org/ris/1959> (Oum Lâagareb)
- <https://rsis Ramsar.org/ris/1424> (Réserve Intégrale du Lac El Mellah)
- <https://rsis Ramsar.org/ris/280> (Réserve Intégrale du Lac Oubeïra)
- <https://rsis Ramsar.org/ris/281> (Réserve Intégrale du Lac Tonga)
- <https://rsis Ramsar.org/ris/1303> (Réserve Naturelle du Lac de Béni-Bélaïd)
- <https://rsis Ramsar.org/ris/1304> (Réserve Naturelle du Lac de Réghaïa)
- <https://rsis Ramsar.org/ris/1305> (Tourbière du Lac Noir)
- <https://rsis Ramsar.org/ris/1898> (Vallée de l'oued Soummam)
- <https://rsis Ramsar.org/ris/1414> (Chott Aïn El Beïda)
- <https://rsis Ramsar.org/ris/1415> (Chott El Beïdha-Hammam Essoukhna)
- <https://rsis Ramsar.org/ris/1054> (Chott Merrouane et Oued Khrouf)
- <https://rsis Ramsar.org/ris/1416> (Chott Oum El Raneb)
- <https://rsis Ramsar.org/ris/1417> (Chott Sidi Slimane)
- <https://rsis Ramsar.org/ris/1418> (Chott Tinsilt)
- <https://rsis Ramsar.org/ris/1419> (Dayet El Ferd)
- <https://rsis Ramsar.org/ris/1420> (Garaet Annk Djemel et El Merhsel)
- <https://rsis Ramsar.org/ris/1421> (Garaet El Taref)
- <https://rsis Ramsar.org/ris/1422> (Garaet Guellif)
- <https://rsis Ramsar.org/ris/1894> (Garaet Timerganine)
- <https://rsis Ramsar.org/ris/1423> (Lac de Télamine)
- <https://rsis Ramsar.org/ris/1960> (Lac du barrage de Boughezoul)
- <https://rsis Ramsar.org/ris/1425> (Les Salines d'Arzew)
- <https://rsis Ramsar.org/ris/1061> (Oasis de Tamantit et Sid Ahmed Timmi)
- <https://rsis Ramsar.org/ris/1055> (Sebkha d'Oran)
- <https://rsis Ramsar.org/ris/1427> (Sebkhet Bazer)
- <https://rsis Ramsar.org/ris/1428> (Sebkhet El Hamiet)
- <https://rsis Ramsar.org/ris/1429> (Sebkhet El Melah)
- <https://rsis Ramsar.org/ris/1896> (Site classé Sebkhet Ezzmoul)
- <https://rsis Ramsar.org/ris/1897> (Site Ramsar du Lac Boulhilet)
- <https://rsis Ramsar.org/ris/920> (Hawar Islands)
- <https://rsis Ramsar.org/ris/921> (Tubli Bay)
- <https://rsis Ramsar.org/ris/717> (Lake Dziani Boundouni)
- <https://rsis Ramsar.org/ris/1649> (Le Karthala)
- <https://rsis Ramsar.org/ris/1650> (Le Mont Ntringui)
- <https://rsis Ramsar.org/ris/1239> (Haramous-Loyada)
- <https://rsis Ramsar.org/ris/407> (Lake Bardawil)
- <https://rsis Ramsar.org/ris/408> (Lake Burullus)

- <https://rsis Ramsar.org/ris/2040> (Lake Qarun Protected Area)
- <https://rsis Ramsar.org/ris/2041> (Wadi El Rayan Protected Area)
- <https://rsis Ramsar.org/ris/2241> (Central Marshes)
- <https://rsis Ramsar.org/ris/2242> (Hammar Marsh)
- <https://rsis Ramsar.org/ris/1718> (Hawizeh Marsh)
- <https://rsis Ramsar.org/ris/2240> (Sawa Lake)
- <https://rsis Ramsar.org/ris/135> (Azraq Oasis)
- <https://rsis Ramsar.org/ris/2239> (Mubarak Al-Kabeer Reserve)
- <https://rsis Ramsar.org/ris/978> (Ammiq Wetland)
- <https://rsis Ramsar.org/ris/979> (Deir el Nouriyeh cliffs of Ras Chekaa)
- <https://rsis Ramsar.org/ris/1079> (Palm Islands Nature Reserve)
- <https://rsis Ramsar.org/ris/980> (Tyre Beach)
- <http://whc.unesco.org/en/list/299> (Tyre)
- <https://rsis Ramsar.org/ris/1026> (Ain Elshakika)
- <https://rsis Ramsar.org/ris/1027> (Ain Elzarga)
- <https://rsis Ramsar.org/ris/1044> (Chat Tboul)
- <https://rsis Ramsar.org/ris/1854> (Lac Gabou et le réseau hydrographique du Plateau du Tagant)
- <https://rsis Ramsar.org/ris/250> (Parc National du Banc d'Arguin)
- <https://rsis Ramsar.org/ris/666> (Parc National du Diawling)