

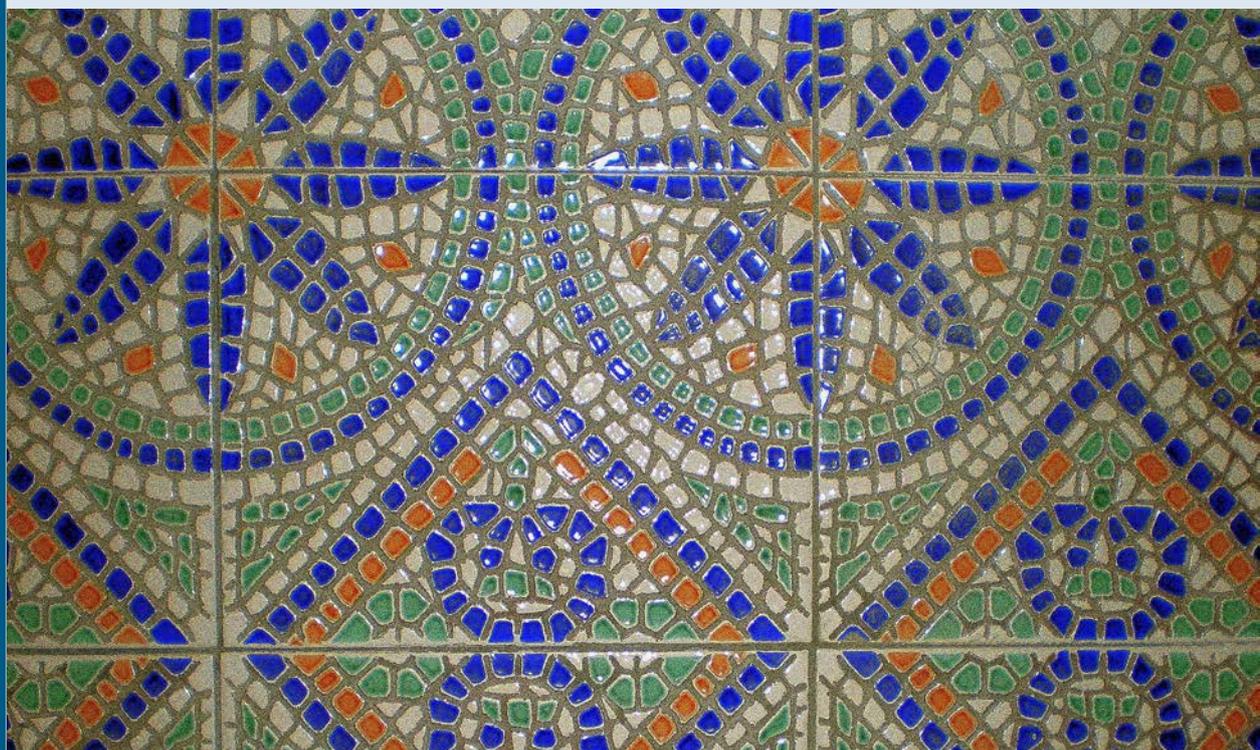


Lac Ayata dans la Vallée d'Oued Righ

Quick-scan of options
and preliminary recommendations
for the Management of Lake Ayata
in the Valley of Oued Righ

Esther Koopmanschap
Melike Hemmami
Chris Klok

Project Report



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May, 2011 (earlier editions: August 2009 and April 2010)

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Wageningen UR Centre for Development Innovation

Lac Ayata dans la Vallée d'Oued Righ

Quick-scan of options and preliminary recommendations for the Management of Lake Ayata in the Valley of Oued Righ

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Centre for Development Innovation, Wageningen University & Research centre

L'utilisation rationnelle et la gestion intégrée des zones humides dans les régions sahariennes est indispensable pour assurer la durabilité des zones humides sahariennes. Celles-ci sont d'une importance vitale pour le soutien du réseau écologique de la région (et même au niveau global pour les oiseaux migrateurs) et pour la durabilité de la subsistance de la population locale.

Le CDI a effectué une recherche préliminaire sur la situation actuelle des zones humides et des ressources en eau en Algérie et spécifiquement sur le lac Ayata situé dans la Wilaya d'El Oued. Cette recherche a été effectuée à la demande de la Wilaya d'El Oued à travers le Conseiller pour l'Agriculture, la Nature et la Qualité des Aliments basé à l'Ambassade des Pays Bas à Paris (France) qui jadis couvrait également l'Algérie.

Cette recherche a développé des recommandations sur la gestion, la conservation et les options pour l'utilisation durable du Lac Ayata, en incluant des recommandations préliminaires pour le développement d'un tourisme à petite échelle.

The rational use and integrated management of wetlands in the Sahara is essential to ensure the sustainability of the Saharan wetlands. These wetlands are of vital importance to sustain the ecological network of the area, (even worldwide considering e.g. important bird migration routes) and to sustain the livelihood of local people. CDI has completed a quick scan about the actual situation of Algeria's wetlands and water resources but more specifically on Lake Ayata located in the region of the Wilaya of El Oued in Algeria. This quick scan has been initiated by a request from the Wilaya of El Oued through the Councilor for Agriculture, Nature & Food Quality based at the Embassy of the Kingdom of the Netherlands in Paris (France), at the time that Algeria was included in her area of jurisdiction. This quick scan developed recommendations on the management, conservation and options for the sustainable use of the Lac Ayata, e.g. by preliminary recommendations for small-scale tourism development.

Translation in French (executive summary, short summary, some final remarks and acknowledgement)

Melike Hemmami (supported by Mr. Khaled Benchaalal)

Photos

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Préface

Je tiens d'abord à remercier Monsieur M. Layadi, le Wali d'El Oued, pour tout l'intérêt qu'il porte aux zones humides qui constituent un maillon vital dans la chaîne biologique et l'équilibre des écosystèmes. Je le remercie surtout pour l'enthousiasme qu'il a manifesté pour assurer la réussite de ce projet en mettant à la disposition des trois expertes durant leur séjour à El Oued tous les moyens logistiques nécessaires. Son apport a été décisif pour la concrétisation de ce projet car il en fut l'initiateur et le soutien durant toutes les phases de sa réalisation.

Je remercie ensuite Monsieur A. Bouzertit, le Chef de Cabinet de la Wilaya d'El Oued, pour sa disponibilité et son appui total afin d'assurer un séjour agréable aux trois expertes. Je remercie aussi Monsieur S. Houari, le Conservateur des Forêts de la wilaya d'El Oued, pour avoir accompagné et aidé les expertes dans leur travail sur le terrain et pour avoir facilité les contacts avec les différents responsables concernés par le lac Ayata et la société civile. Et pour toutes les autres personnes qui ont contribué de près ou de loin à la réussite de ce projet, qu'elles trouvent ici toute ma gratitude.

Je n'oublie pas de remercier les trois expertes, Mmes E. Koopmanschap, C. Klok et M. Hemmami, pour avoir accepté d'effectuer l'étude et d'avoir mis toutes leurs énergies et leur enthousiasme pour la réussite du projet. Leur satisfaction au terme de leur séjour à El Oued est un gage pour les Pays Bas pour pouvoir continuer la coopération avec l'Algérie avec beaucoup de sérénité. Mon souhait est de voir cette étude concrétisée sur le terrain pour le bénéfice de la population de la wilaya d'El Oued.

J'espère enfin que ce projet de coopération entre les Pays-Bas et l'Algérie pour la protection et la valorisation des ressources naturelles en Algérie s'ajoutera aux autres jalons qui pérennisent la relation amicale qui existe entre nos deux pays.

Mme. Marianne Vaes
Conseiller pour l'Agriculture, la Nature et la Qualité des Aliments
Paris, le 24 février 2009

Mrs. Marianne Vaes
Counsellor for Agriculture, Nature and Food Quality of the Embassy of the Kingdom of the Netherlands

Remerciements

Nous remercions M. Mostefa Layadi, Wali de la Wilaya d'El Oued, M. Bouzertit, Chef de Cabinet de la Wilaya d'El Oued, et M. Salah El Houari, Conservateur de la Direction des Forêts de la Wilaya d'El Oued pour leur hospitalité pendant notre séjour à El Oued. Nous voudrions également remercier la Direction de l'Hydraulique de la Wilaya d'El Oued, l'Office National de l'Assainissement (ONA), le chef de la Daira de Djamaa, le Chef de la Daira Mghair, la Direction de la Culture de la Wilaya d'El Oued, les gardiens de la Direction des Forêts et les fermiers que nous avons rencontrés lors de notre visite du Lac Ayata. Nous aimerions aussi remercier toutes les personnes qui ont participé à l'atelier organisé en Décembre 2009 qui fut une importante aide pour finaliser ce rapport. Nous remercions finalement Mme Marianne Vaes et M. Khaled Benchaalal de l'Ambassade des Pays-Bas qui nous ont soutenues durant la mise en œuvre de ce projet et pour la finalisation de ce rapport.

Notre souhait est que ce rapport contribuera à une meilleure connaissance du Lac Ayata pour son utilisation rationnelle et qu'il servira d'exemple pour la gestion intégrée des autres zones humides Algériennes et particulièrement celles se trouvant en zones arides.

Chris Klok, Melike Hemmami et Esther Koopmanschap

Acknowledgements

We especially would like to thank warmly Mr. Mostefa Layadi, Governor of the Wilaya of El Oued, Mr. Bouzertit, Chef de Cabinet of the Wilaya of El Oued, Mr. Salah El Houari, Director of the Forestry Department of the Wilaya of El Oued for their very kind hospitality that we experienced in El Oued. We also would like to thank very much the Direction de Hydraulique de la Wilaya d'El Oued, the Office National de l'Assainissement (ONA), the Chef of the Daira of Djamaa, Chef of the Daira of Mghaier, Direction de la Culture de la Wilaya d'El Oued, the wardens of the DG of Forestry and the few farmers around Lake Ayata that we could shortly talk to. Additionally we would like to thank all the people that joined us in the workshop in December 2009 and in that way helped us to complete this report! A special thanks also goes to Ms. Marianne Vaes and Mr. Khaled Benchalaal of the Embassy of the Kingdom of the Netherlands who supported us throughout the project and the finalisation of this document.

We do hope that this first scan will stimulate further research on Lake Ayata and its options for sustainable use and for wetlands and their management in Algeria in general!

Chris Klok, Melike Hemmami and Esther Koopmanschap

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Sommaire

A propos de cette publication

Cette étude a été effectuée sur la requête de M. Mostefa Layadi, le Wali de la Wilaya d'El Oued, M. Bouzertit, Chef de Cabinet de la Wilaya d'El Oued et M. Salah El Houari, Conservateur des Forêts de la Direction des Forêts de la Wilaya d'El Oued. Conformément à cette requête, l'Attachée agricole de l'Ambassade du Pays Bas en France Mme. Marianne Vaes a commissionné une recherche au Centre du Développement et de l'Innovation (CDI) de l'Université de Wageningen (Wageningen UR) pour effectuer une étude rapide comme une première analyse sur la situation (gestion) des zones humides en Algérie et particulièrement sur la situation et les opportunités qui pourront se poser pour le Lac Ayata dans la région d'El Oued.

Ce rapport fournit une évaluation préliminaire sur la situation actuelle des zones humides et la gestion des ressources d'eau en Algérie. Ce rapport se focalise en particulier sur la région de la Wilaya d'El Oued et spécifiquement sur le lac Ayata.

Les objectifs de cette étude peuvent être décrits comme ci-dessous:

- Fournir une évaluation générale de la situation et de la gestion des zones humides en Algérie (comme décrit dans le Chapitre 1) ;
- Fournir une évaluation rapide de la situation actuelle du Lac Ayata (comme décrit dans le Chapitre 2) ;
- Fournir des recommandations sur la conservation et l'utilisation rationnelle du Lac Ayata, et particulièrement quelles pourront être les possibilités et les valeurs ajoutées des activités visant la récréation et le tourisme dans le contexte de l'utilisation durable du Lac Ayata (comme décrit dans le Chapitre 2).

La situation actuelle du Lac Ayata a été analysée dans le contexte de sa localisation dans la vallée d'Oued Righ en tenant compte de sa connexion avec la vallée d'Oued Souf et de la zone des Chotts de la Wilaya d'El Oued.

Première mise à jour de cette publication – Avril 2010

Cette publication a été mise à jour après une seconde visite de Melike Hemmami et Esther Koopmanschap en Algérie en Décembre 2009. En Décembre 2009 la région a été visitée une seconde fois et les résultats du rapport ont été partagés à travers un atelier où les acteurs principaux consultés dans la première mission furent invités. La liste des participants se trouve dans l'annexe 7 de cette publication. Dans notre seconde visite en Décembre, nous avons eu l'occasion de faire une autre réunion avec M. Mostefa Layadi, Wali de la Wilaya d'El Oued. M. Layadi nous a fait part de son objectif en ce qui concerne notre étude et la description des résultats dans ce rapport avec plus de détails. Dans cette seconde version du rapport nous avons essayé de répondre aux questions posées par M. le Wali ou essayé de fournir des recommandations pour les études au futur:

1. La Wilaya a pour objectif de gérer le bilan hydrologique du lac Ayata artificiellement (en autres par l'intermédiaire d'une digue) et avoir une hauteur constante du niveau d'eau dans le lac. Quelles seront les conséquences écologiques de cette intervention?
2. Le lac Ayata est une location importante pour les populations d'oiseaux migrateurs. Quelles devront être les mesures à mettre en place pour conserver un statut favorable du lac Ayata en tant qu'important habitat pour les oiseaux migrateurs et spécialement le flamant rose. Actuellement le nombre de flamant rose est en diminution, quelles mesures renforceront le retour du flamant rose au Lac Ayata?
3. Qu'est-ce qui pourrait être suggéré pour le Lac Ayata quant à son utilisation visant des activités de loisirs? La zone ne devrait pas être largement exploitée; l'idée sera d'explorer les occasions pour un tourisme de petite ampleur dans la région.

Une importante information fournie par M. le Wali a été sur la volonté de la Wilaya d'utiliser les eaux

traitées pour nourrir le lac Ayata (actuellement les eaux provenant des usages domestiques et les eaux irrigant les palmerais drainent directement sans traitement dans le lac Ayata). De plus, la Wilaya vise à restaurer le Lac El Halloufa (localisé entre le Chott Mérouane et le Chott Melghir) qui est actuellement asséché de façon permanente.

Seconde mise à jour de cette publication – Mai 2011

En Février 2011, Wageningen UR CDI a reçu les commentaires de M. Mostefa Layadi, Le Wali de la Wilaya d'El Oued, de M. Bouzertit, Chef de Cabinet de la Wilaya d'El Oued, de M. Salah el Houari, Conservateur des Forêts de la Direction des Forêts de la Wilaya d'El Oued à travers la facilitation aimable de M. Khaled Benchalaal de l'Ambassade du Pays-Bas à Alger. Comme l'équipe formée (Mme. Chris Klok, Mme. Melike Hemmami et Mme. Esther Koopmanschap) ne possédait pas l'expertise à répondre en détails aux questions posées par la Wilaya, nous avons fait de notre mieux pour donner des recommandations additionnelles qui seront nécessaires pour les études visant à donner les réponses détaillées aux trois questions qui ont été demandées lors de notre mission en 2010 pour cette mise à jour.

Nous regrettons de ne pas pouvoir comme prévu répondre aux questions posées dans une visite de deux jours et demi au Lac Ayata.

Méthodologie

L'étude rapide effectuée a été effectuée en Décembre 2008 (du 13 au 20 Septembre). Lors de cette mission l'équipe a visité les sites et a réalisé des entretiens avec les différents acteurs principaux dans la région. Les entretiens ont été d'abord faits avec les autorités locales. Un compte-rendu sur les entretiens est fourni dans le Chapitre 2. Les entretiens et les visites sur les sites ont été très importants pour les auteurs afin de se familiariser avec la région. En outre, les auteurs ont utilisé les informations littéraires fournies par différentes autorités comme le Secrétariat de Ramsar en Suisse pour les informations à propos du contexte général des zones humides en Algérie, et des articles fournis par la Tour du Valat. Pour plus d'information, veuillez aussi consulter les autres documents cités dans la liste des références.

Durant les entretiens on a essayé d'obtenir la vision des personnes visitées pour le futur de la région; cette démarche a été effectuée pour obtenir un meilleur aperçu de la vue des différents acteurs pour le Lac Ayata (la gestion du Lac Ayata).

En Décembre 2009, nous avons aussi reçu des documents additionnels et des résultats de recherches fournies par l'ONG Association Ecologia pour la Conservation des Zones Humides et l'Environnement. Les extraits utilisés à partir de leurs résultats sont précisés dans les textes. Nous avons aussi consulté la publication bien réussie de la Wilaya d'El Oued (El Oued, patrimoine et civilisation) qui nous a été fournie. Cette publication nous a aidé à développer le texte existant. Les éléments pris de la publication sont référés comme « Zaid (2009) et aussi cité dans la liste des références.

Contenu

Une bonne série de recommandations sur une zone humide et sa gestion nécessite une analyse profonde: une analyse de la situation, une analyse institutionnelle et encore plus important une analyse détaillée des acteurs. Evidemment, compte tenu des contraintes et des limites vis à vis du temps et des ressources alloués et des données disponibles, l'analyse effectuée par les auteurs ne donnent pas une profonde analyse de la situation. Cette analyse fournit seulement un premier aperçu et des recommandations préliminaires pour le statut du Lac Ayata mais aussi un aperçu général de la situation actuelle (en termes de gestion) des zones humides en Algérie.

En Décembre 2009 la première édition (draft) de ce rapport a été contrôlée avec une multitude d'acteurs de la région (veuillez svp consulter l'annexe 7 de ce rapport pour la liste des participants). Comme précisé auparavant l'analyse qui a été effectuée a été basée sur la littérature obtenue et sur un nombre d'entretiens réalisés dans la Province d'El Oued. Nous vous recommandons de lire ce document comme un document à élargir selon les recherches effectuées dans le futur. Ce document a été initié dans le

cadre des informations existantes et nécessite des recherches additionnelles pour permettre d'avoir un bon aperçu sur la situation écologique, économique et sociale (institutionnelle incluse). Veuillez s'il vous plait trouver ci-dessous notre analyse préliminaire et notre série de recommandations qui ont été réparties dans les différents chapitres.

- Le Chapitre 1 donne un aperçu sur l'Algérie et ses ressources d'eau mais se focalise sur la gestion des zones humides et la mise en œuvre de la Convention de Ramsar;
- Le Chapitre 2 (Partie A) présente brièvement le site étudié, le Lac Ayata et ses environs et essaye d'inclure les aspects écologiques et socio-économique dans les limites des documents fournis. Chapitre 2 (Partie B) donne aussi un aperçu des entretiens réalisés en Décembre 2008.
- Le Chapitre 3 conclut le document avec des recommandations du point de vue des auteurs. La période de Janvier à Avril 2010 s'est spécialement focalisée sur les réponses et recommandations visant les questions de M. Mostefa Layadi, Le Wali de la Wilaya d'El Oued.

Des recommandations additionnelles ont été ajoutées suite aux commentaires reçus de la Wilaya qui nous sont parvenus à Wageningen UR CDI en Février 2011 à travers l'Ambassade des Pays-Bas. La dernière mise à jour a été effectuée en Mai 2011.

Nous avons essayé de garder le rapport précis et clair et les auteurs espèrent que cela créera des occasions qui stimuleront des recherches plus détaillées sur les questions qui ont émergé durant la mise en œuvre de cette étude préliminaire mais aussi pour des recherches diversifiées visant le Lac Ayata et ses options pour une utilisation durable et généralement pour la gestion des zones humides de l'Algérie.

Executive summary

About this publication

This study has been carried out on request of the 'Wali' (Governor) of the Wilaya of El Oued, Mr. Mostefa Layadi, of Mr. Bouzertit, Chef de Cabinet of the Wilaya of El Oued, and of Mr. Salah El Houari, Director of the Forestry Department (*official term of position: 'Conservateur des Forêts de la Direction des Forêts'*) of the Wilaya of El Oued. On the basis of this request the Agricultural Counsellor of the Embassy of the Kingdom of the Netherlands in France and Algeria, Mrs. Marianne Vaes, commissioned a research from Wageningen-UR to carry out a 'quick scan' or first situation analysis on the wetland (management) situation in Algeria and in particular on the status and future options for 'Lac Ayata' or 'Lake Ayata' in the Wilaya of El Oued.

This report will provide a short/preliminary overview of the current wetland and water resources management situation in Algeria. The report focuses in particular on the Wilaya of El Oued and more specifically on 'Lac Ayata'.

The objective(s) of the study or quick scan can be described as follows:

- To provide a general overview of the status of wetlands and wetland management in Algeria (described in Chapter 1);
- To provide a 'quick scan' on the current status of Lake Ayata (described in Chapter 2);
- To provide recommendations on the conservation and wise use of Lake Ayata; and in particular, what are the possibilities and what is the added value of recreation and tourism for the sustainable use of the lake; In addition to provide options and recommendations for the management of Lake Ayata (described in Chapter 3).

The current status of Lake Ayata has been analysed in the context of its location in the Valley of Oued Righ in close connection with the Valley of Oued Souf and the 'Zone des Chotts' of the Wilaya of El Oued.

Update of the publication April 2010

The publication has been updated from January to April 2010, after a second visit of Melike Hemmami and Esther Koopmanschap to Algeria in December 2009. In December 2009 the area was visited and the report results were shared during a stakeholder workshop. The workshop's participants' list has been shared in Appendix 7 of this publication. During the visit in December, another meeting with the 'Wali', Mr. Mostefa Layadi, of the Wilaya of El Oued was held. Mr. Layadi informed us in a bit more detail about his objective regarding our study and description of the results in the report. In this second updated version we therefore aim to answer the following questions of the Wali or provide recommendations for further research:

1. The Wilaya has the objective to manage the water balance of Lake Ayata artificially (amongst others through dike construction) and have a constant height of the water table in the lake. What would be the ecologic consequences of that intervention?
2. Lake Ayata is important for migratory birds. What measures should be implemented towards a favourable status of Lake Ayata as a habitat for migratory birds and specifically for the flamingo? Currently the number of flamingos is decreasing. What measures will support the return of the flamingo?
3. What could be recommended for Lake Ayata concerning recreational purposes? The area should not be largely exploited; the idea is to develop small-scale tourism opportunities in the area.

Important additional information provided by the Wali was that the Wilaya aims to treat the water that will feed Lake Ayata (now the waste water from households and the used irrigation water from the palmiers

drains directly, without treatment in Lake Ayata). Furthermore the Wilaya aims to restore Lake El Halloufa (located between Chott Merouane and Chott Melghir) that at the moment has permanently dried out.

Second update of the publication May 2011

In February 2011, Wageningen UR CDI, received feedback on the report from the Wali (Governor) of the Wilaya of El Oued, Mr. Mostefa Layadi, from Mr. Bouzertit, Chef de Cabinet of the Wilaya of El Oued, and from Mr. Salah El Houari, Director of the Forestry Department (*official term of position: 'Conservateur des Forêts de la Direction des Forêts'*) of the Wilaya of El Oued, through the kind facilitation of Mr. Khaled Benchalaal, of the Embassy of the Kingdom of the Netherlands in Algiers, Algeria. As our team (Ms. Chris Klok, Ms. Melike Hemmami and Ms. Esther Koopmanschap) was not able to answer the questions posed by the Wilaya in detail, we have still tried our best to give additional recommendations regarding the research that would be necessary to provide a proper answer to the three questions that were posed in the mission of 2010 in this update. We regret that we have not been able to answer the questions as expected in the two half day visits we made to lake Ayata.

Definitions used in this publication

In the report some specific terms will occur. A short list of terms is provided below:

- *Wilaya*: administrative boundary, comparable with province. Algeria includes in total 48 Wilayas.
- *Chott*: the vegetated (mainly by halophytes) boundaries of sebkhas.
- *Sebkha*: salty 'depression' in the landscape or (sometimes temporary) salt lake in the North of Africa.
- *Erg*: literally a big sand dune; 'Le Grand Erg' is mostly referred to as the Sahara.

Methodology

The quick scan took place in the month December 2008 (13 to 20 December) and included site visits and interviews. Interviews have been carried out primarily at the level of the local authorities. Short interview reports are provided in Chapter 2.

The interviews and site visits have been very important for the authors to get to know the area. In addition the authors used literature provided by different Authorities of the Wilaya, background information of the Ramsar Secretariat, Switzerland, some articles provided by Tour du Valat, about the wetlands of the Wilaya of El Oued and other documents as described in the text or added in the list of references.

During the interviews we aimed to obtain a description of the vision for the future of the interviewees; this to get a better insight in what different stakeholder groups aim for regarding (the management and use of) Lake Ayata.

In December 2009 we also received some additional documents and study results provided by the NGO *Association ECOLOGIA pour le Conservation des Zones Humides et l'Environnement*. Their results have been used in the text and indicated when used. In addition we received a beautiful publication on the Wilaya of El Oued (*El Oued, patrimoine et civilisation*). Also this publication helped to enhance the already exiting text. Elements in the text that are taken from the publication are referred to as 'Zaid (2009)' and can be found in the reference list.

Content

A good set of recommendations on a wetland and its management needs a profound situation analysis: problem analysis, institutional analysis and more importantly a detailed stakeholder analysis. Evidently, given time, resources and data availability constraints, the analysis carried out by the authors does not give a profound situation analysis. It just gives a first overview and some preliminary recommendations for the status of Lake Ayata and its management, as well as a short general overview of the wetland

(management) situation in Algeria. In December 2009 the first draft edition of the report was checked with a multitude of stakeholders (please see Appendix 7 for the participants' list of the workshop).

The analysis is carried out, as mentioned above, on the basis of a literature review and a number of interviews in the Province of El Oued. As such, we would recommend reading this document as a growing document. A document that has been initiated on the basis of existing information but needs further research to be able to give a good overview of what is happening in the area, ecologically, economically and socially (including institutionally). Please find below how our preliminary analysis and set of recommendations has been divided into Chapters:

- Chapter 1 gives an initial overview of Algeria and its water resources, but focuses on wetland management and the implementation of the Ramsar Convention;
- Chapter 2 (Part A) shortly presents 'the study site' Lake Ayata and its surroundings and tried to include ecological as well as socio-economic aspects (taking into account the limited literature sources available). Chapter 2 (Part B) also gives an overview of the interviews held in December 2008.
- Chapter 3 concludes the document with recommendations from the authors' point of view. In the period January to April 2010 especially answers and recommendations have been added in reply to the issues raised by Mr. Mostefa Layadi, the Wali of the Wilaya of El Oued. Further recommendations were added after the review of the Wilaya was sent to Wageningen UR CDI in February 2011 through the Embassy of the Kingdom of the Netherlands. The last update was made in May 2011.

We tried to keep the report as to the point and concise as possible and hope that there will be an opportunity to work out some of the issues raised in more detail. The authors do hope that this first scan will stimulate further research on Lake Ayata and its options for sustainable use and for wetlands and their management in Algeria in general!

1 Algeria and its water resources

1.1 Introduction

The People's Democratic Republic of Algeria has a surface area of 2.4 million km² and as such it is the largest country of Northern Africa (Boucekima, 2008). After Sudan, Algeria is the largest country of Africa. The largest part of Algeria is formed by the Sahara, unfit to agriculture, but rich in mineral resources. More than 90% of the population (according to the 'Statut des Inventaires des Zones Humides en Région Méditerranéenne' the number of inhabitants in Algeria was 33 million in July 2007) lives in the northern part of the country, that includes a coastal band along the Mediterranean Sea, plains, mountains and high lands as visible in the map below. Apart from the narrow, discontinuous coastal plain, Algeria's terrain mostly consists of high plateau and desert with some mountains. The highest point is Mountain Tahat at 3,003 m above sea level (near Tamanrasset, see map below). The lowest point is Chott Melghir: 40 m below sea level. Chott Melghir is located not far from Lake Ayata, the study area of this publication.



Figure 1. Map of Algeria

Source (April, 2009): <http://www.worldatlas.com/webimage/countrys/africa/1gcolor/dzcolor.htm>

1.2 The ecological importance of Algeria's water resources

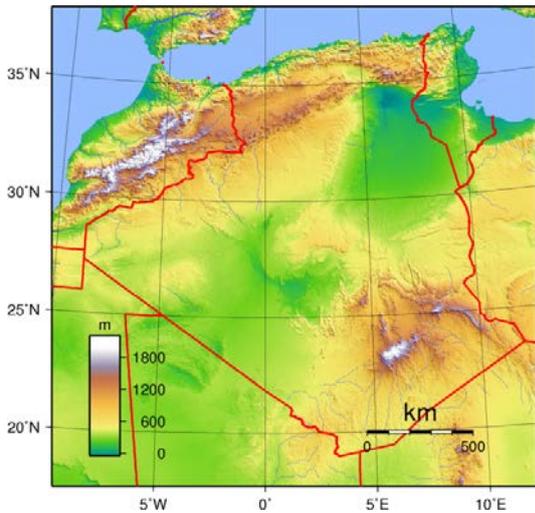


Figure 2. Elevation map of Algeria

Source: <http://www.wikipedia.com> (April, 2009)

Geographically, the country can be divided into four distinct regions of topography and climate in parallel bands running roughly south-west to north-east, which is visible also in the elevation map on the left. From the Mediterranean southwards, these are as follows: the Tell region, including the coastal strip and the Tell Atlas mountains; the 'Hauts Plateaux'; the Saharan Atlas mountains; the Sahara desert, the latter covering more than 85% of the country (Source, 29 April 2009: The CIA World Factbook at <https://www.cia.gov/library/publications/the-world-factbook/>)

Algeria has a 998 km border to the Mediterranean Sea in the North. The Tell Atlas enjoys a typical Mediterranean climate (warm, dry summers and mild, rainy winters with snow at upper elevations). As a consequence, the northern slopes of the Tell Atlas are forested with cedar, pine, and cork oak. In the summer the Sirocco, a hot, dry, dust and sand-laden wind especially common in summer, blows north from the Sahara across the Tell Atlas, causing dusty, dry conditions along the northern coast of Africa. The Chiffa gorge is situated within the Tell Atlas; this location is one of the few remaining habitats for the endangered primate, the Barbary Macaque (*Macaca sylvanus*), which only occurs in Morocco and Algeria.

South of the Tell Atlas is a high plateau or, better, high plateaus, known as the 'Hauts Plateaux' (approximately 1000 metres in elevation) with level terrain where water collects during the wet season, forming large shallow salt lakes and as they dry, salt flats. These depressions or salty wetlands are called *sebkhas* and create the richness of Algerian wetlands. The 'Hauts Plateaux' (high plateaus) have drier and more hot summers than the Mediterranean climate occurring further north and are characterised by cold winters.

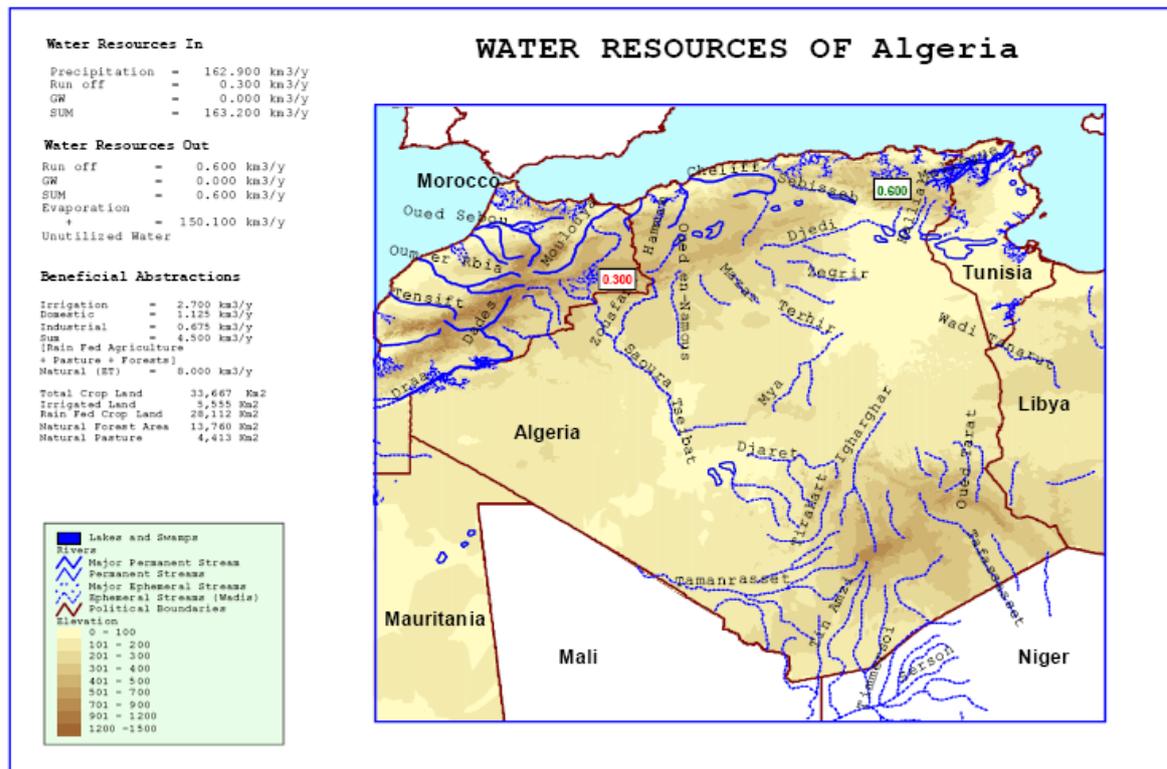
The Saharan Atlas forms a natural barrier between the Mediterranean area and the Sahara. Its highest summit lies 2,308 meters above sea level. Between the two natural barriers (the first against the Mediterranean and the second against the Sahara) lies the valley of the Chelif and various lesser rivers.

The Chelif is a 725 km long river with headwaters in the Tell Atlas to its discharge into the Mediterranean. The Chelif is characterized by an extremely fertile valley. Agriculture in the area includes grazing of sheep and goats on grass in better-watered high plateau areas and some farming. In addition dry-land barley is grown in the area. Only seasonal streams are found flowing south from the Tell Atlas.



Picture 1. The Barbary Macaque (*Macaca sylvanus*)

Source: <http://www.animalpicturesarchive.com> (05 April 2010)



Source: Boucekima (2008)

The Sahara is formed by *ergs* (large sand dunes), oases and mountainous massifs and covers nearly 85% of Algeria. As indicated above the climate of the northern part of the country reflects a Mediterranean climate, meanwhile the south is a desert climate.

The annual amount of rain, in the North, varies between 300 and 1000 mm. In the Sahara and south of the Saharan Atlas, the annual rainfall amount is lower than 100 mm. The annual amount of rain is 100 billion m³, of which 80% evaporates into the atmosphere (Boucekima, 2008).

The water resources of Algeria are estimated at 19.3 billion m³/year, of which 12.4 billion m³/year is surface water and 6.9 billion m³/year of underground water (Boucekima, 2008). The figure below describes the water balance of Algeria, but did not take into account the figures for groundwater as mentioned above.

Regarding the water demand, Algeria is a water-scarce country. Per capita renewable water resources are estimated at 470 m³ per year for a population of more than 33 million. The water scarcity *threshold*, however, equals 1,000 m³ per capita annually (Boucekima, 2008).

Agricultural irrigation is the primary water consuming sector followed by the domestic and industrial sectors. Water allocated for irrigation has dropped from 80% in 1960 to around 60% in 2002, for reasons that are, unfortunately, not further described.

Most water resources in Algeria are polluted by uncontrolled and untreated municipal wastewater. 87% of the urban population is connected to a sewage network, but most wastewater treatment plants are out of service so untreated sewage is being discharged into natural water bodies.

About 200 million m³ per year of untreated industrial wastewater is directly discharged into the environment. Uncontrolled and improperly monitored leaching practices and agricultural drainage that includes nitrates and phosphorus from fertilizers pollute water. Pesticide residues can also be detected in some of Algeria's surface water bodies (Bouchekima, 2008).

Algeria has 17 major hydrographical basins and shares the Medjerda basin with Tunisia and Tafna, Draa, Guir and Daoura basins with Morocco.

Algeria's water resources are not well distributed, in space, quantity and depth (surface or underground). The major part of the country (87%) forms a desert, where precipitation is nearly zero, but which conceals important (and huge amounts) of *fossil underground water resources*.

Algeria's importance for flora and fauna

Given its extensive surface area including different eco-regions, geology and climate, Algeria harbours many different plant and animal species. Algeria's wetlands, in particular those along the coast and on the plateau south of Constantine, are of huge importance, especially for migratory and resident water birds including three globally threatened species Marbled Teal (*Marmaronetta angustirostris*), Ferruginous Duck (*Aythya nyroca*) and White-headed Duck (*Oxyura leucocephala*). The coastline and offshore islands are significant for breeding seabirds notably Audouin's Gull (*Larus audouinii*).

Next to water birds and migrant wintering species Algeria is an important country for raptors and large steppe birds. It has one endemic species, the Algerian Nuthatch (*Sitta ledanti*) which is a restricted range species, the distribution of which defines the North Algerian mountains secondary Endemic Bird Area. The Algerian Nuthatch is known from four sites all within 30 km of each other on forested slopes above 1,000 m in the Petite Kabylie mountain range in the Tell region.

A total of 31 Important Bird Areas (IBAs) have been identified in Algeria which cover 130,000 km² or some 5.5% of the land surface (although the exact boundaries of some sites remain undefined). The sites are clustered in the northern part of the country with 23 in the Tell region. (Source, African Bird Club, 29 April 2009: <http://www.africanbirdclub.org/countries/Algeria/ibas.html>)

The wetlands and water resources of Algeria are of course not only important for bird species. Although a lot of research is needed still on the impact of changing water balances¹ on the biodiversity in Algeria, it is clear that Algeria has habitats sustaining many other flora and fauna species. Appendix 3 and 4 provide a list of species of Algeria that are on IUCN's red list (IUCN's Red List accessed on the 30th of April 2009). It includes 697 plant and animal species. Of those species categorized, the Scimitar-horned Oryx (*Oryx dammah*) is extinct in the wild, 86 species fall into the category of threatened species. IUCN's Red List distinguishes 3 sub-categories within the category of threatened species, i.e. critically endangered, endangered and vulnerable (please, see figure 3).

Among the 26 endangered species are the Barbary Macaque (as mentioned earlier), the Two-fingered Skink (a reptile), the Great Hammerhead and the Saharan Cypress.

¹ During the stakeholder workshop held in December 2009 in the City of El Oued, some stakeholders mentioned that a change could be observed in the location of species; presumably due to changes in water availability. No further details on possible impact could yet be given.

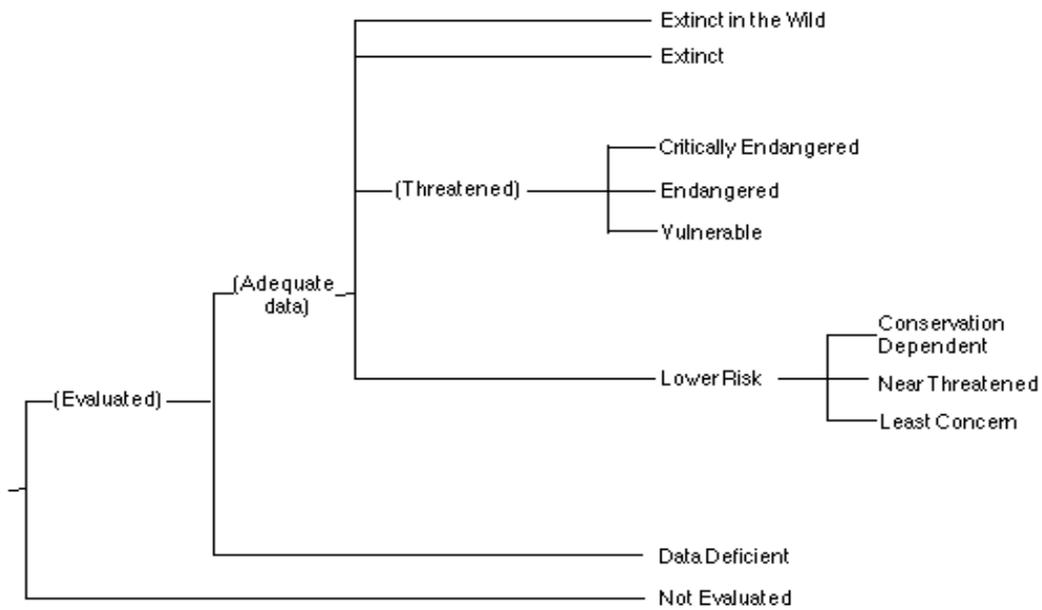


Figure 3. IUCN's Red List Species List categories

43 species are indicated as vulnerable, among which the Algerian Silver Fir, the African Lion, some shark species (e.g. the Great White Shark and Basking Shark) and the Lappet-faced Vulture (*Torgos tracheliotos*).

The Dorcas gazelle

Also the Dorcas Gazelle (*Gazella dorcas*), also known as Ariel Gazelle, is marked as vulnerable on IUCN's Red List. The Dorcas Gazelle is a small and common gazelle and stands approximately 53 cm tall. The numerous subspecies of the Dorcas Gazelle survive on vegetation in grassland, steppe, wadis, mountain desert and in semi-desert climates of Africa, Arabia and into Iran and northern India. About 35,000 - 40,000 exist in the wild.



Picture 2. The Dorcas Gazelle

Photo credits: www.wikipedia.org, 16 January 2009

Of 31 species listed on the Red List there is a lack of data which hinders a correct assessment of their status. Among these species are the Pygmy Killer Whale, Long-finned Pilot Whale and the Killer Whale (or Orca). Among these 'data deficient species' we also find *Ctenodactylus vali* or the Val's Gundi, a species of rodent in the Ctenodactylidae family. It is found in Algeria, Libya, and Morocco. Its natural habitats are subtropical or tropical dry shrub land and rocky areas.

Critically endangered species (17 species in total) are outlined in the list below:

Fish species	
<i>Acipenser sturio</i>	Common Sturgeon
<i>Anguilla anguilla</i>	European Eel (2008, population decreasing)
<i>Dipturus batis</i>	Blue Skate, Flapper Skate, Grey Skate (2006, population decreasing)
<i>Lamna nasus</i>	Lamna nasus Mediterranean subpopulation Porbeagle (2006, population decreasing)
<i>Leucoraja melitensis</i>	Maltese Skate or Ray (2006, population decreasing)
<i>Squatina aculeate</i>	Monkfish, Sawback Angelshark, Spiny Angelshark (2007, population decreasing)
<i>Squatina oculata</i>	Monkfish, Smoothback Angel Shark (2007, population decreasing)
<i>Squatina squatina</i>	Angel Shark (2006, population decreasing)
Birds species	
<i>Geronticus eremite</i>	Bald Ibis (2008, population decreasing)
<i>Numenius tenuirostris</i>	Slender-billed Curlew (2008, population decreasing)
<i>Puffinus mauretanicus</i>	Balearic Shearwater (2008, population decreasing)
Mammals	
<i>Addax nasomaculatus</i>	Addax (Antilope Blanche) (2008, population decreasing)
<i>Monachus monachus</i>	Mediterranean Monk Seal (2008, population decreasing)
<i>Nanger dama</i>	Gazella dama (2008, population decreasing)
Reptiles	
<i>Acanthodactylus spinicauda</i>	Doumergue's Fringe-fingered Lizard (2006, population decreasing)
Plants	
<i>Cupressus dupreziana</i>	
<i>Carum foetidum</i>	Drude (2006, population decreasing)

Des Moulin's Snail (*Vertigo moulinsiana*) is marked as conservation dependant and, although also at a lower risk, still 53 species are indicated as 'near threatened'. One of these near threatened species is the Sand Cat or the Sand Dune Cat (*Felis margarita*) of which some background information is provided in the box below.

Felis margarita

The Sand Cat is a small wild cat distributed over African and Asian deserts. The name 'desert cat' is reserved for a subspecies of the true wildcat (*Felis silvestris*), but it would be appropriate for this species. It lives in those arid areas that are too hot and dry even for the desert cat: the Sahara, the Arabian Desert, and the deserts of Iran and Pakistan.

The length averages almost 50 cm, plus a 30 cm tail. The paws are covered with long hairs which protect the skin against hot sand. The sand cat can survive in temperatures ranging from -5°C (23°F) to 52°C (126°F).

In the daytime the sand cat hides under rocks. At night it hunts for rodents, lizards and insects. Since the Sand Cat obtains all the water it needs from eating its prey, it mostly stays far away from watering points. Sand cats congregate only for mating so monitoring to assess their population density is a difficult task. It seems however that its numbers have been declining in the Arabian desert following a decline of its prey. In 2007, the first four kittens born in captivity are being raised at the Al Ain Zoo in the United Arab Emirates as an effort to preserve the local fauna. In captivity the *Felis margarita* lives for around 13 years

Source: www.wikipedia.org accessed on 16 January 2009.



Picture 3. The Sand Cat

Photo credits: www.wikipedia.org, 16 January 2009

1.3 The socio-economic importance of Algeria's water resources

Algeria's wetlands provide important habitats, as well as a huge diversity in habitats, for many of Algeria's animal and plant species. Next to that wetlands provide services well beyond those related to habitats for animal or plant species only. As described in the Millennium Ecosystem Assessment wetlands provide amongst others provisioning services (fish, game, fresh water, fuel and medicine), regulating services (carbon sequestration, groundwater recharge, water purification, flood control etc.) and cultural services (spiritual, recreational, aesthetic and educational). The services provided by wetlands return huge benefits to the country in economic terms. For Algeria valuation studies are unfortunately absent, but think of the economic value of a wetland regarding its ability to purify water and what the costs would be for the country to obtain the same water quality without this service provided by the wetland.

At the same time wetlands attract people (maybe as tourists); many wetlands provide high economic benefits for countries thanks to (eco)tourism activities. Algeria's water resources are currently mainly used for drinking water, industry and agriculture. The touristic sector in Algeria is said to be increasing (Pers. Comm. Provincial Directorate of Tourism of El Oued).

The fossil fuels energy sector is the backbone of Algeria's economy, accounting for roughly 60% of budget revenues, 30% of GDP, and over 95% of export earnings (www.wikipedia.org accessed on 29 April 2009).

EarthTrends' Country Profile of Algeria shows that Agriculture is the biggest user of surface water in Algeria (52%). Please, find EarthTrend Country Profile attached as Appendix 1. Industry and households are responsible for surface water use of 14% and 34% respectively. (<http://earthtrends.wri.org>). Especially domestic water use is high when compared to agriculture and industry.

Agriculture

25% of the Algerian population is employed in the agricultural sector (CIA Factbook). The following information was retrieved from Wikipedia (www.wikipedia.org accessed on 28 April 2009). A considerable amount of cotton was grown from around 1860, but the industry declined afterwards. In the early years of the twentieth century efforts to extend the cultivation of the plant were renewed. A small amount of cotton is also grown in the southern oases. Large quantities of a vegetable that resembles horsehair, an excellent fibre, are made from the leaves of the dwarf palm. The olive (both for its fruit and oil) and tobacco are cultivated with great success.

More than 7,500,000 acres (30,000 km²) are devoted to the cultivation of cereal grains. The Tell is the grain-growing land. During the time of French rule its productivity was increased substantially by the sinking of artesian wells in districts which only required water to make them fertile. Of the crops grown, wheat, barley and oats are the principal cereals. A great variety of vegetables and fruits, especially citrus products, are exported. Algeria also exports figs, dates, esparto grass, and cork. It is the largest oat market in Africa.

More specific information on agriculture, especially the date palm plantations in the Wilaya of El Oued is provided in Chapter 2 and 3.

1.4 The wetlands of Algeria

Until 1995 hardly any broad inventories on Algerian wetlands have been carried out. Inventories were focused on ornithological issues (Statut des Inventaires des Zones Humides en Région Méditerranéenne). In December 2008 Ramsar published its article '*African Wetlands of International Importance: Assessment of Benefits Associated with Designations under the Ramsar Convention*'

Also the Millennium Ecosystem Assessment reported on wetlands although not on Algeria specifically. What has been mentioned in general is that 'Worldwide the primary direct drivers of wetland degradation and loss include infrastructure development, land conversion, water withdrawal, pollution, overharvesting and overexploitation and the introduction of alien invasive species. Also African wetlands are facing all these challenges.'

The **Convention on Wetlands**, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are presently 159 Contracting Parties to the Convention, with 1838 wetland sites, and a total of 173 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance.

As of February 2009, African nations had designated more than 280 sites as Wetlands of International Importance under the Ramsar Convention and more African sites are in the application process. Algeria has (www.ramsar.org, February 2009) designated 42 Ramsar Sites and is a contracting Party to the Convention since 1984.

The inventory of wetlands important for avifauna that has been carried out for North Algeria covered 26 sites which included useful information on the vegetation but also local human activities (Chown & Linsley, 1994). For our study site in the Wilaya of El Oued the survey of Boudjéma Samraoui and Farrah Samraoui (2008) turned out to be more useful. See reference list for publication details.

An important step for wetlands conservation and their management in Algeria is that in 1995 the Directorate General of Forestry has been set up, which is the authority responsible for the implementation of the Ramsar Convention at national and site level. Starting from 1997 the first real national inventory on Algerian wetlands has been carried out. This study has been based on the Medwet Inventory documents but mostly the data on biodiversity needed further elaboration. The Medwet inventory aimed to add the water courses, oases, artificial sites, dams and reservoirs which were not included in earlier inventories. Finally, 17 river basins and 224 basins without considering the Sahara region and 1475 wetlands have been listed for Algeria as indicated in the table below. This number includes a large number of *temporary* wetlands, as was stated during the stakeholder workshop in 2009.

Table 1. Number of wetlands determined by DG Forestry

Wetlands Types	Wetlands Numbers
Marine Wetlands	70
Marine and continental wetlands	3
Continental wetlands	721
Continental and artificial wetlands	324
Artificial wetlands	340
Non characterised wetlands	17
TOTAL	1475

Another important survey that increased knowledge and awareness on the importance of Algerian wetlands was 'An ornithological survey of Algerian wetlands: Important Bird Areas, Ramsar sites and threatened species' by Boudjéma Samraoui and Farrah Samraoui. Surveys were undertaken of 100 major wetlands across ten distinct regions of Algeria in the period 2002 – 2008. These surveys aimed at determining the numbers of wetland birds using these sites, to provide new data on wetlands of international importance, and thus to indicate priorities for conservation action. Ninety-nine wetland bird species were recorded and 41 sites met one or more of the criteria required for an Important Bird Area (IBA). This brought the total number of sites qualifying as IBAs in Algeria to 53 of which 21 are not currently listed as part of the IBA network.

Fourteen of Algeria's current IBAs qualify as Ramsar sites, and all 21 of the potential IBAs also qualify for designation as wetlands of international importance under the Ramsar Convention.

Algeria includes an array of under-represented (especially in the Ramsar list) wetland types typical of arid lands, including salt-bed chotts ('chott' means 'border' in Arabic, referring to the vegetated ring surrounding the salt flat itself, which is properly called a 'sebkha'; the name chott, whereas it should refer to the vegetated border of the sebkhas, is often used for temporary salt lakes), oases, and 'gueltas'. A guelta is a peculiar type of wetland, typical of desert regions. They are formed when underground water in lowland

depressions spills to the surface and creates permanent pools and reservoirs. They are an important addition to their key geographical position for migratory birds seeking support for their daunting journeys across the Sahara, the gueltas are, so far, not yet to be found in the Ramsar classification system. Other important wetland types for bird migration and of course also for many other species, are the human-made below-ground hydrological systems in the ancient 'fouggara' irrigation system. These are rich evolutionary adaptations to the harsh arid conditions in isolated circumstances, and unique cultural significance in the ancestral social water distribution organization.

1.5 Institutional setting and Wetland Management in Algeria

Within the 'new' institutional framework, the Ministry of Water Resources and the Ministry of Land Use Planning and Environment are responsible for water, wastewater and irrigation planning, management, monitoring, and pollution control.

The two most important instruments in the legal and regulatory framework are:

1. Environmental Protection Law No. 83 – 03 of 1983. This law specifically mentions water pollution.
2. Water Law No. 83-17 "Le Code des Eaux" (revised in 1996 under law No. 96-13). This code includes several articles related to wastewater discharge, pollution abatement, the protection and preservation of water bodies and wastewater reuse for agricultural and industrial purposes.

The government is actively restructuring the water sector and grouping water, wastewater and irrigation activities under one ministry. A water quality monitoring programme including some 100 stations along major watercourses and dams was established several years ago to monitor surface water.

The Ministry of Agriculture and Rural Development and within that Ministry the *Directorate General of Forestry* is the administrative authority for the implementation of the Ramsar Convention at national level in Algeria.

In many documents, but also in the interviews as will be provided later in Chapter 2, it is mentioned that there is a need for intersectoral cooperation for the successful implementation of the Ramsar Convention. Even the need for an intersectoral body (an Intersectoral Wetland Committee), which is understandable knowing that the Ministry of Water Resources and the Ministry of Land Use Planning, Environment and Tourism are responsible for water, wastewater and irrigation planning, management, monitoring, and pollution control. But clearly, also other Ministries have to be involved, like e.g. the Ministry of Fisheries and Aquaculture, the Ministry of Health, the Ministry of Transport and the Ministry of Education.

1.6 The Ramsar National Implementation Report for Algeria

The National Report of Algeria (regarding the progress on the Ramsar Convention implementation) submitted for Ramsar COP10, held in Korea 2008, lists (apart from describing the progress) some of the difficulties regarding the implementation of the Ramsar Convention. The document is available at: http://ramsar.org/cop10/cop10_natlrpts_index.htm. Below an overview has been provided of the problems and opportunities regarding the implementation of the Convention as well as a short overview of the responsible

Authorities regarding the implementation

- *Ramsar Administrative Authority*: Ministry of Agriculture and Rural Development, Directorate General of Forestry;
- *Governmental Focal Point and for focal point for Ramsar's Scientific and Technical Review Panel*: Sub-Directorate of National Parks and Natural Vegetated Areas;
- *Ramsar's Communication, Education, Participation and Awareness (CEPA, in French CESP) Programme - Governmental Focal Point*: Bureau des Zones Humides (Wetlands Bureau);
- *CEPA NGO Focal Point*: Association de Réflexion, d'Echanges et d'Action pour l'Environnement et Développement AREA/ED.

Problems faced regarding the implementation of the Convention

- Difficulty to apply a multi-sectoral approach for wetland management;
- Lack of capacity in Wetland Management Planning;
- Legislation on National Areas and Protected Areas is not finalised;
- Strategy for 2025 for National Areas and Protected Areas, not finalised and not adopted yet;
- National strategies for sustainable development are to be integrated into the to-be-developed National Wetland Policy e.g. poverty reduction, protection of natural resources etc.
- National inventory on wetlands not yet fully established, data not up-to-date and data are only partly shared; Little information is available regarding ecological characteristics; *In addition (by the authors of this publication): also little information is available on the economic and social characteristics of sites.*
- Ramsar sites with data are more 'affected' (it is measurable), Ramsar sites without data seem 'not' affected, it is a problem regarding policy development and developing measures;
- Environmental Impact Assessments (EIAs) are only considered until a certain level.

What new steps have been taken in the implementation of the Convention?

- Legislation and adaptation of policies;
- An Intersectoral Wetlands Committee has been established but is not yet working;
- A National Wetland Policy is in the process of preparation;
- Algeria is working on a National Wetland Strategy (WWF, Wetlands International and IUCN helped with the start of the development of the wetland strategy);
- Poverty alleviation and protection of natural resources is considered in wetland policy development (and projects are developed according to the World Summit criteria);
- Ecosystem benefits evaluation carried out by the Centre Cynégétique de Reghaia
- Ministry of Agriculture and Rural Development – DG of Forestry and the Ministry of Water Resources are cooperating on the management and valuation of wetlands
- A start has been made with the development of a wetlands database to determine the features and threats in Algeria's wetlands (in progress);
- Development of 3 wetland management plans (Added by the authors: mentioned in the National Report, Section 2A, although later under Objective 1, Strategy 1.2B, 4 Wetlands Management Plans are mentioned to have been developed, i.e. for the sites Guerbes (Skikda), Oglet Eddaira (Naama), Taghit (Bechar) and Réghaia (Alger));
'These plans helped the formulation of concrete actions towards the conservation and the

sustainable use of ecosystems, such as a pasture rehabilitation project that improved the biological status of the wetland area' it is stated later in the document.

- Six studies on the development of Wetland Management Plans have been carried out (Comment by the authors: no further details are provided);
- The establishment of two education centres to raise awareness at Lake Réghaia and at Tipasa (Note by the authors: the centres are called Centre d'Éducation et de Sensibilisation du Public (CESP), which might cause some confusion with Ramsar's abbreviation used for CEPA in French, i.e. CESP)
- Development of new projects in the field of wetlands (Comment by the authors: no further details are provided);
- Lessons learned from management planning in arid zones can be applied for wetland management planning (Comment by the authors: no further details are provided).

Most successful aspects of the implementation of the Convention

- Inter-sectorial meetings have been organised to discuss the urgent measures to be taken;
- Relevant sectors have determined their representative for the wetlands intersectoral committee. This committee is in the process of being legalised by the Constitution;
- Participatory workshops have been organised at local level with decision makers and water users on the valuation and sustainable conservation issues.

The greatest difficulties in implementing the Convention

- Biggest difficulty is to coordinate the actions to be taken by using a multi-sectoral approach, that is why there is a need to set up a intersectoral wetlands committee.

Proposals and priorities are there for future implementation of the Convention

- Develop the legal instruments for a better conservation and management of wetlands;
- Progressively develop management and action plans for the coming 5 years for wetlands in Algeria in general and for Ramsar Sites specifically.

Recommendations (of the contracting party) concerning implementation assistance from the Ramsar Secretariat?

- Support in improving capacity on monitoring and management plan development.

Recommendations (of the contracting party) concerning implementation assistance from the Convention's International Organisation Partners (IOPs)?

- Continued support on the National Wetland Strategy (WWF, Wetlands International and IUCN helped with the start of the development of the wetland strategy).

Recommendations (of the contracting party) concerning the national implementation of the Ramsar Convention and the link with the implementation of other multilateral environmental agreements (MEAs), especially those in the "Biodiversity cluster" (Ramsar, Convention on Biological Diversity (CBD), Convention on Migratory Species (CMS), CITES, and World Heritage Convention), and UNCCD and UNFCCC.

- Start a multi-sectoral discussion involving the different Focal Points of the different conventions.

Recommendations (of the contracting party) concerning a better link between the Ramsar Convention implementation and the implementation of the water policy/strategy and other strategies in the country (e.g., sustainable development, energy, extractive industry, poverty reduction, sanitation, food security, biodiversity)?

- On the one hand a continuation of the consolidation of an institutional framework of laws and regulations, on the other hand to finalise the Vision for 2025 for Natural and Protected Areas.

General recommendations (of the contracting party) concerning the implementation of the Ramsar Convention

- More actively involve the Secretariat for the implementation of the recommendations and resolutions resulting from the CoP meetings;
- To ease the process of removing Ramsar sites from the Montreux list;
- Assistance of the Ramsar Secretariat in taking care of the problems related to the Ramsar site and avoid the inscription of the site in the Montreux list;
- Improve relations with the administrative authority of the convention to get (updated) information more easily (*Comment by the authors: most of the information is easily accessible from the renewed website from Ramsar, also in French*);
- To benefit from the outcomes of the international midwinter countings which is coordinated by (*Comment by the authors: amongst others*) Wetlands International.

During the meeting in December 2009, it was stated that Algeria designated 5 additional wetlands of international importance to be added nationally as Ramsar Sites.

2 Lake Ayata: an initial situation analysis

Part A: Background information from Literature

2.1 The Wilaya of El Oued

Algeria is divided into 48 provinces (wilayas), 553 districts (dairas) and 1,541 municipalities (baladiyahs). Each province, district, and municipality is named after its seat, which is mostly also the largest city. The People's Provincial Assembly is the political entity governing a province, which has a 'president', who is elected by the members of the assembly. They are in turn elected every five years. The 'Wali' (Prefect or governor) directs each province. This person is chosen by the Algerian President to handle the PPA's decisions.

The map (left) below shows the location of the Wilaya of El Oued. The map (right) shows the location of Lake Ayata in the Wilaya of El Oued.



Figure 4. Location of the Wilaya of El Oued (left) and location of lake Ayata (right)

The Wilaya or Province of El Oued includes 12 Districts or Dairas and 30 Communes or Municipalities

The districts are: Bayadha, Debila, Djamaâ, El Meghaier, El Oued, Guemar, Hassi Khelifa, Magrane, Mih Ouensa, Reguiba, Robbah and Taleb Larbi.

Our field study focused mainly on the districts of El Oued, Djamaa and El Meghaier. The study area is located near the Province of Ouargla. Therefore also the district of Touggourt was visited in the Province of Ouargla. In the map obtained from Google Earth the province boundaries cannot be trusted fully (figure 8), as Lake Ayata there seems to be located in the province of Ouargla. Lake Ayata is definitely part of the Wilaya of El Oued as is also indicated by the map (figure 4, right) taken from the publication *El Oued, patrimoine et civilisation* (Zaid, 2009).

The Wilaya of El Oued is characterised by three geo-morphological distinctions: the region of Souf which occupies the biggest area of the Wilaya, the region of the Oued Righ and the Chott region. Lake Ayata is located in the region Oued Righ. Oued Righ is located in the West of the Wilaya, on the line Biskra –

Touggourt, on which also the dairas of Djamaa and El Mghaier are located. The name Oued Righ is mainly derived from the river valley Oued Righ. The region Oued Souf is located in the South East of the Wilaya. The Souf is characterised by sand. The geomorphologic formation, known as *Grand Erg Oriental*, represents the sandy regions (also referred to as the *Dunes de Sables*, the sand dunes) which cover $\frac{3}{4}$ of the Souf. The altitude of the area varies between 80 and 120 metres. The region Oued Righ is located in the western part of the Wilaya. The Chott region is located in the north of the Wilaya. Chotts are the vegetated boundaries of sebkhas. Sebkhas are salt lakes or salty depressions. The altitude in the area varies between 10 and 40 metres below sea level. Most well known are Chott Melghir and Chott Merouane. With its point of 40 m below sea level Chott Melghir therefore forms at the same time the lowest point of Algeria.

El Oued is also the name of the capital of El Oued province. The Wilaya has over 665.000 inhabitants (estimation of 2007; 560,000 inhabitants were estimated in 2005) and an area of 54,573 km². The city is an oasis in Central-Eastern Algeria with approximately 110,000 inhabitants (estimations of 2005), north of the Grand Erg Oriental in the Sahara desert. The oasis of Souf, in which the city of El Oued is located, is 40 km long.

The economy benefits from the products of the oasis, especially high-quality dates, the manufacturing of carpets and woven cloth. El Oued also serves as a hub for transport in its part of the Sahara. El Oued is well-connected with other urban centres as well as with Tozeur in Tunisia by road. El Oued is a very attractive city with large quarters of traditional oasis architecture. Houses have the shape of cubes and domed roofs, streets are narrow and winding. El Oued is also called the 'City of Thousand Domes'.

2.2 The use of water resources in the region

The Wilaya of El Oued is characterised by a typical aride Sahara climate with cold winters and hot summers. In the Souf region a maximum temperature of 45°C can be measured while the lowest temperature in winter is measured in the region of El Meghaier (1°C). Precipitation is low in the Wilaya, on average between 80 and 100 mm. Rain mainly occurs from October to February (Zaid, 2009).

Many well-known civilizations existed respectively on the two edges (sides) of the lower Sahara Rivers: Oued Souf and Oued Righ. In fact, they do not currently represent rivers by their geomorphological conception, but reflecting names of geographic regions. Nevertheless, one could not deny the fact that they are inherited rivers; in that the region has seen very rainy periods, especially during Pleistocene 4th geological age. Oued Righ for example, is generally situated in a lower region; its peak is 103 m high, it is located in the south (Goug). The river flows towards the north and drains in Oued Khrouf which is located 130 km further up north. The Oued Khrouf drains into the lake of Merouane or Chott Merouane and from there into lake (or chott) Melghir (Merabet, 2006).

It is important to mention that the basis of the ancient civilizations was the use of traditional irrigation means in hard and draughty environmental circumstances. Despite the fragile environmental system, mankind was able to keep the use of water resources in balance with natural environment, by using only the upper water layer (phreatic zone), which is found at a maximum depth of 60 m. Thus the water extracted from that layer used in agriculture and other human uses was turned back to the same layer (of course reduced by the amount of consumed or vaporized water). The last century has seen an increase in digging and drilling for water wells in deeper layers. In addition the first groundwater layer started to be overexploited. For instance, in 1956 the number of wells did not exceed 300. This number increased to 1,033 in 1922 for the irrigation of 300,000 and 600,000 palm trees in the region of Oued Righ (Merabet, 2006).

The increased exploitation of water from the deeper layers in the northeast of the Algerian Sahara for the purpose of drinking and irrigation water supply has resulted in a very unhealthy (to say the least) hydrological and environmental situation. Water from the upper layer (phreatic zone) is separated by an impermeable layer from the deeper aquifers. The water used for drinking water and irrigation is extracted from the deeper aquifers but drained into the phreatic zone, creating a rise of the upper water table. This negatively affects agriculture, the environment, infrastructure and even the city of El Oued a lot. In the Oued Souf and Oued Righ regions the increase in land cultivation projects were often practiced without prior hydrological analyses, including without a proper research on the consideration of irrigation water drainage. This has in turn created other problems, such as a significant increase of the amount of salt in soil, which has resulted in the desertification of large (formerly fertile) areas of land.

The figure below provides an overview of the different aquifers.

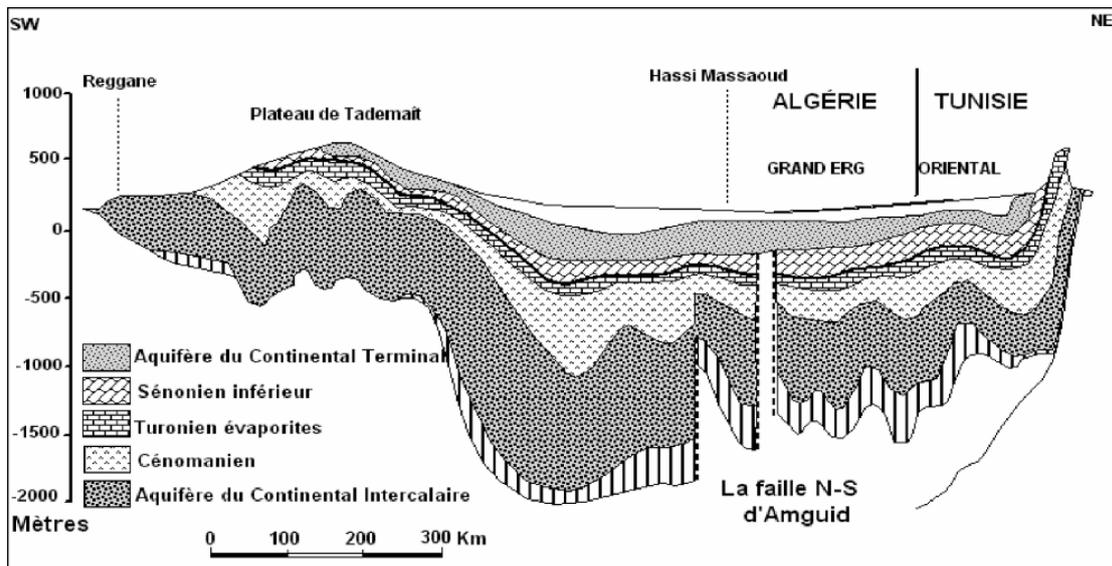


Figure 5. Hydro geological section towards NW/NE (UNESCO 1972)

The continental intercalary aquifer is the biggest water layer in the lower Sahara. It is formed of stone, clay, and grain, its depth changes from one region to another.

The hydro-geological features of the region

Generally, the lower Sahara region is situated in a big sedimentary basin, which constitutes a vast hydrological basin too; its surface covers 780,000 km², its thickness is between 4,000 and 6,000 m according to an UNESCO study. Therefore, it assimilates one of the biggest underground water resources in the world. The basin stretches to 700,000 km² in Algeria and 800,000 km² in Tunisia.

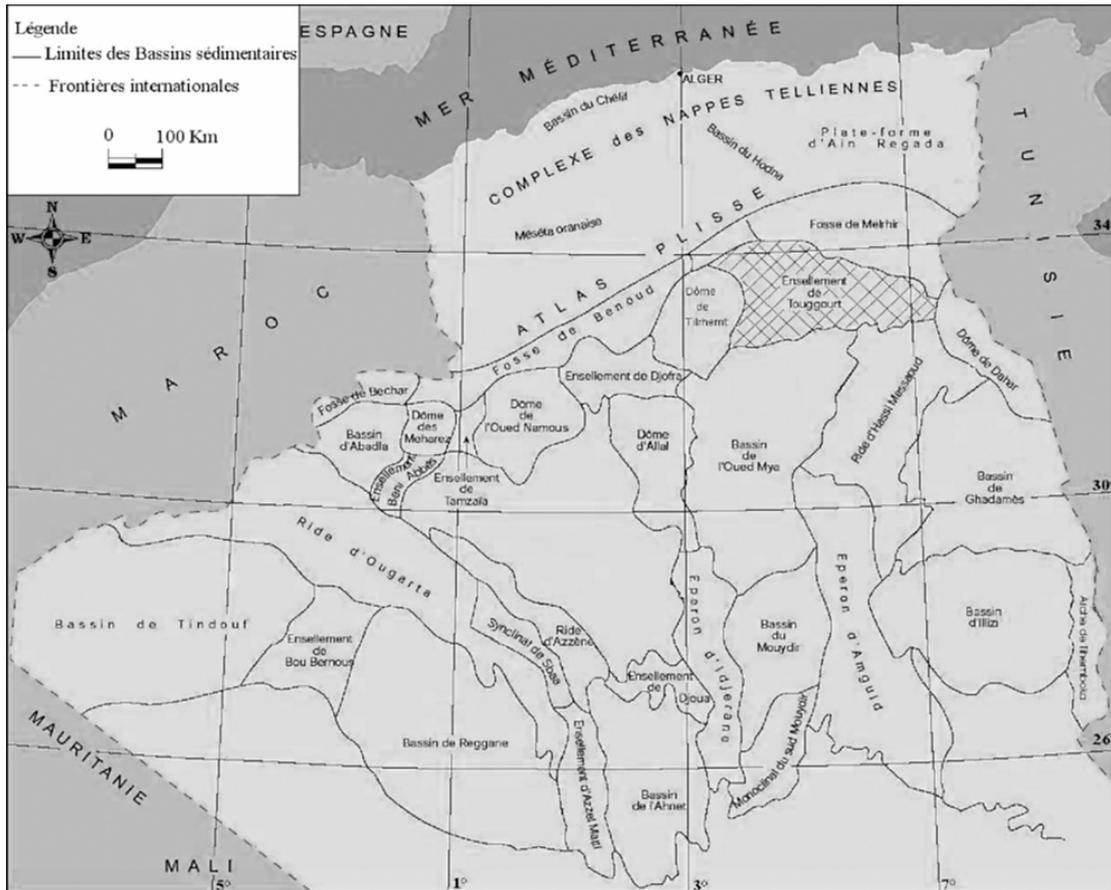


Figure 6. The sedimentary basins of Algeria

Location and geography

The lower Sahara Region is bounded by the Aures Series Mountains from the north, the Great Erg from the east, the hill of Tadmata from the south, and the heights (platform) of M'zab from the west. As the region is divided geographically into Oued Souf and Oued Righ, it is also divided administratively between the Province Ouargla, the Province of Biskra and the Province of El Oued.

With regard to elevation, the Oued Souf and the Oued Righ belong to the lowest areas of Algeria. Please find the elevation map of Algeria below.

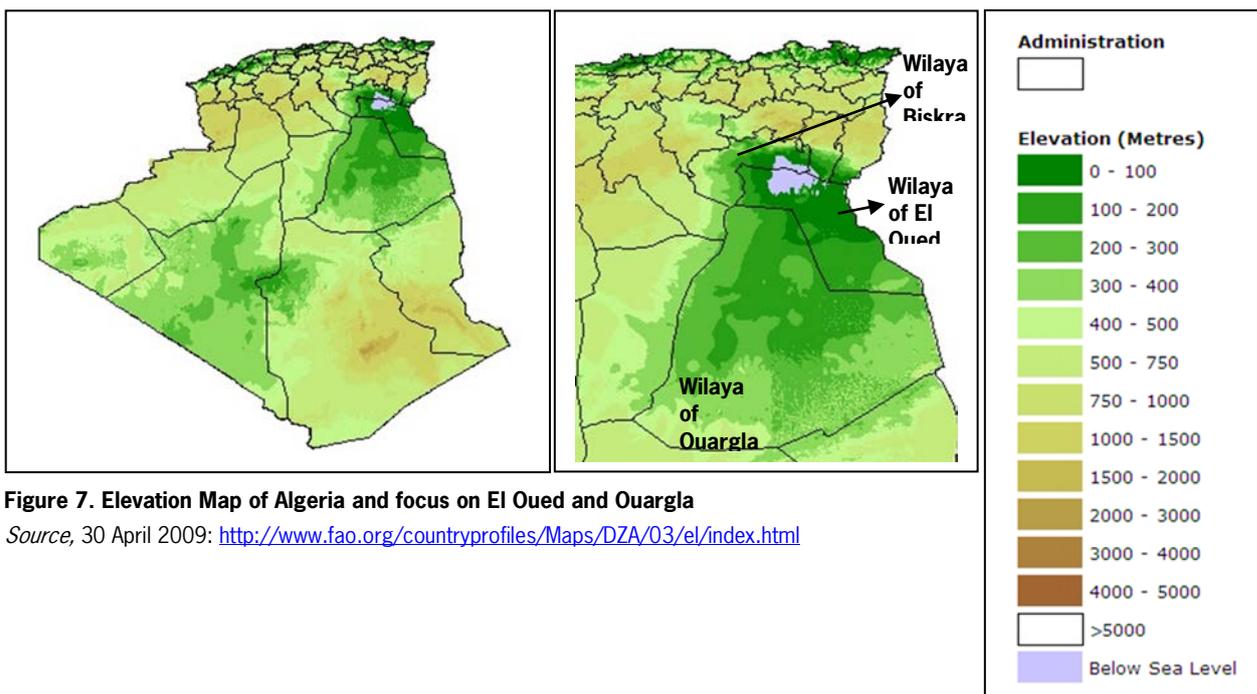


Figure 7. Elevation Map of Algeria and focus on El Oued and Ouargla

Source, 30 April 2009: <http://www.fao.org/countryprofiles/Maps/DZA/03/el/index.html>

The unwise use of water is one of the causes of desertification. Other causes in this region are mainly intensive agriculture, industry and lack of waste water treatment and to some extent tourism (Merabet, 2006). The unwise use of resources transforms the stable sandy dunes into movable sands in case of storms. Another cause of desertification is overgrazing. Grazing traditionally occurred in the region causing a rich biological diversity. Today the area is overgrazed by the Bedouin camels and livestock (especially goats but also sheep and cows).

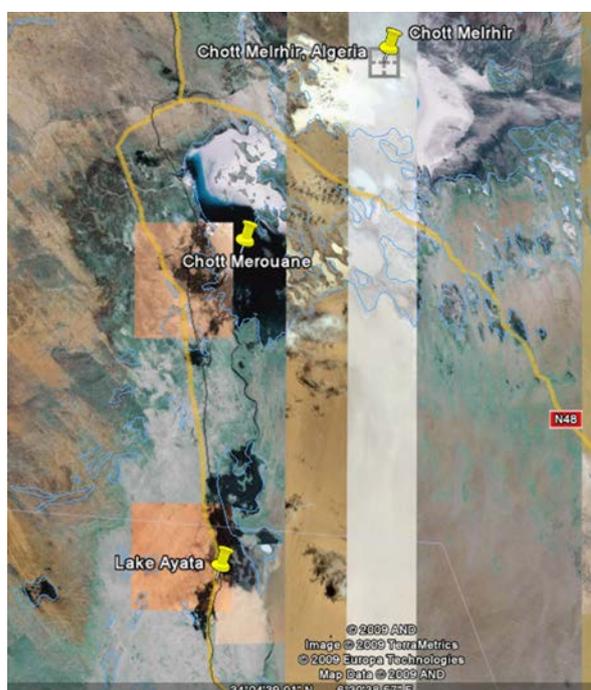


Figure 8. Location of Lac Ayata

2.3 Lac Ayata in the Valley of Oued Righ

Please, find a cut of the satellite image provided by Google Earth in figure 8, showing the location of Lake Ayata, Chott Merouane and Chott Melghir. Chott Melghir and Chott Merouane are both Ramsar sites. The natural part of the river the Oued Khrouf that connects Lake Ayata with Chott Merouane is also part of the Ramsar site. Another part of the connection between Lake Ayata and Chott Merouane is canalised (and not part of the Ramsar Site).

Historical maps showing the Lake Ayata area of 1926-1930 survey and updated by aerial photography 1952 are available at <http://www.lib.utexas.edu/maps/ams/north-africa/txu-oclc-6949452-ni31-12.jpg> and

<http://www.lib.utexas.edu/maps/ams/north-africa/txu-oclc-6949452-ni32-9.jpg> respectively. It would be interesting to check the change of the lake

overtime by using GIS. Figure 10, shows in fact the same area as the satellite image above but includes some of the surrounding villages of Lake Ayata as also indicated in figure 9 below.



Figure 9. Location of Lac Ayata and the surrounding villages



Figure 10. Location of Lac Ayata and the surrounding villages on Google Earth

The Valley of Oued Righ, in which Lake Ayata is located, stretches from the village Goug (Touggourt municipality, Daira of Touggourt, Wilaya of Ouargla) to Chott Melghir (the transboundary wetland between the Wilaya of El Oued and the Wilaya of Biskra and Kehnchela).

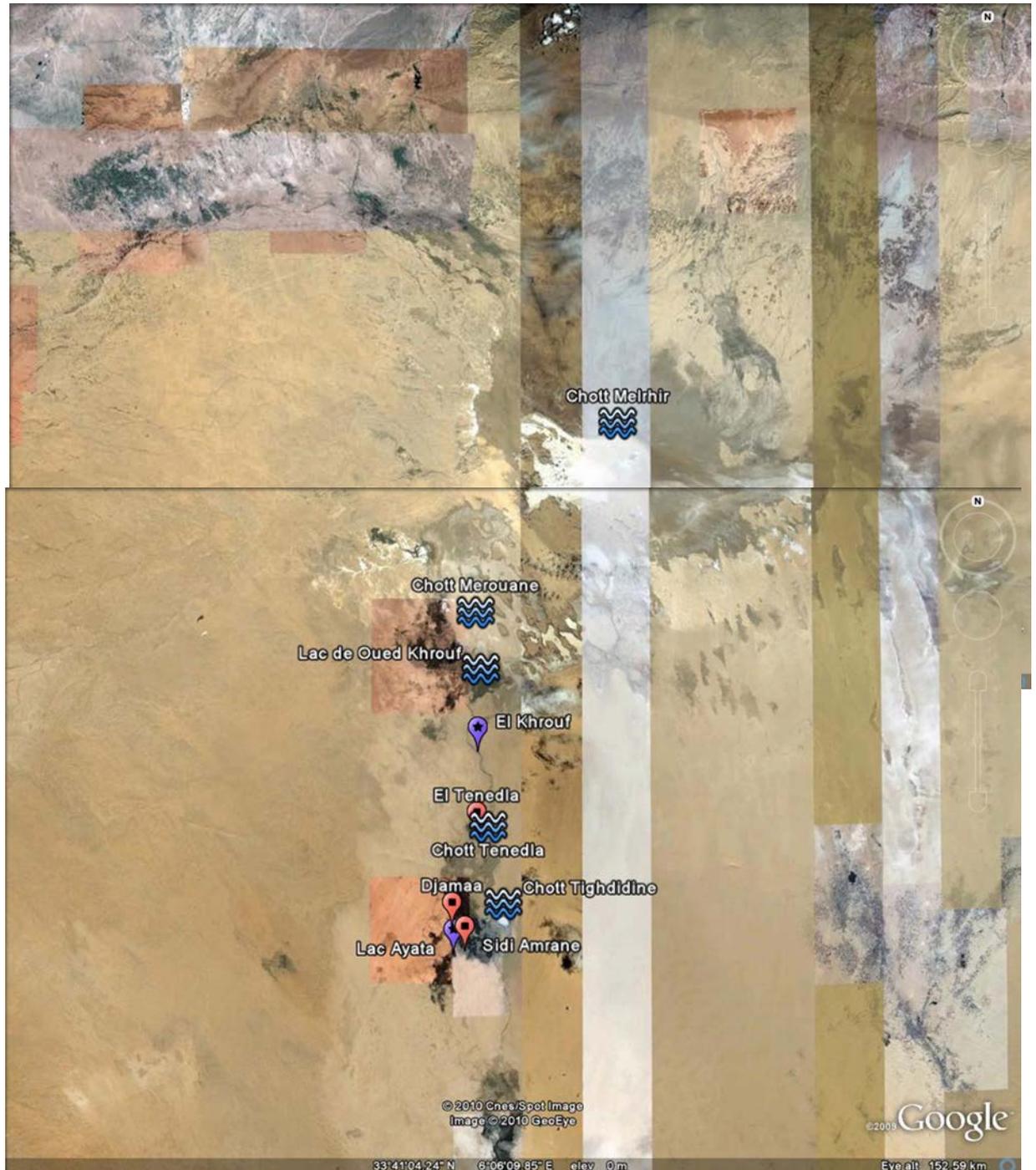


Figure 11. The Valley of Oued Righ on Google Earth

The stream 'El Khrouf' (figure 11) is partly canalised and originates from an ancient French project which aimed at drainage of used household water and water from irrigation through an open canal. This canal (130 km) would drain the water from Touggourt (Wilaya of Ouargla) towards Chott Merouane (Wilaya of El

Oued). The canal has been renovated by the Algerian Government in the 70's. The canal merges with the natural river El Khrouf and part of the El Khrouf just before it drains into 'Lac de El Khrouf' is also part of the Ramsar site 'Chott Merouane and Oued Krouf' (paragraph 2.4).

Lake Ayata is a relatively small brackish water lake situated next to National Road 3 (N3) and Sidi Amrane Municipality, part of the Daira of Djamaa. The area of the lake is a natural depression fed by 'Channel 21' (constructed in 1958) and groundwater from the first aquifer. The lake is used by migratory birds.

Lake Ayata covers a surface of 40 hectares and has an average depth of 80 cm and is practically wet the whole year. Between 2004-2005 39 bird species (including 13 different families) were recorded in the lake. In general the mainly the families of Anatidae (Shoveler - *Anas clypeata*, Pintail - *Anas acuta*, Marbled Teal - *Marmaronetta angustirostris*, Common Teal - *Anas crecca*) and Ardeidae (Grey Heron - *Ardea cinerea*, Cattle Egret - *Bubulcus ibis*, Little Egret - *Egretta garzetta*) are occurring. Lake Ayata is less frequently used as habitat compared to the surrounding lakes (chotts), mainly because of the disturbance caused by the national highway N3 (Bensaci, 2010).

Figure 12 (below) shows Lake Ayata in more detail. Next to the Lake the village Sidi Amrane is visible as well as the date palm plantation including around 3 million palm trees. The plantation is not following the famous 'ghott' system as practiced in Oued Souf. The land is owned by the State, but the trees are owned by farmers (the smallest plots include around 100 trees).

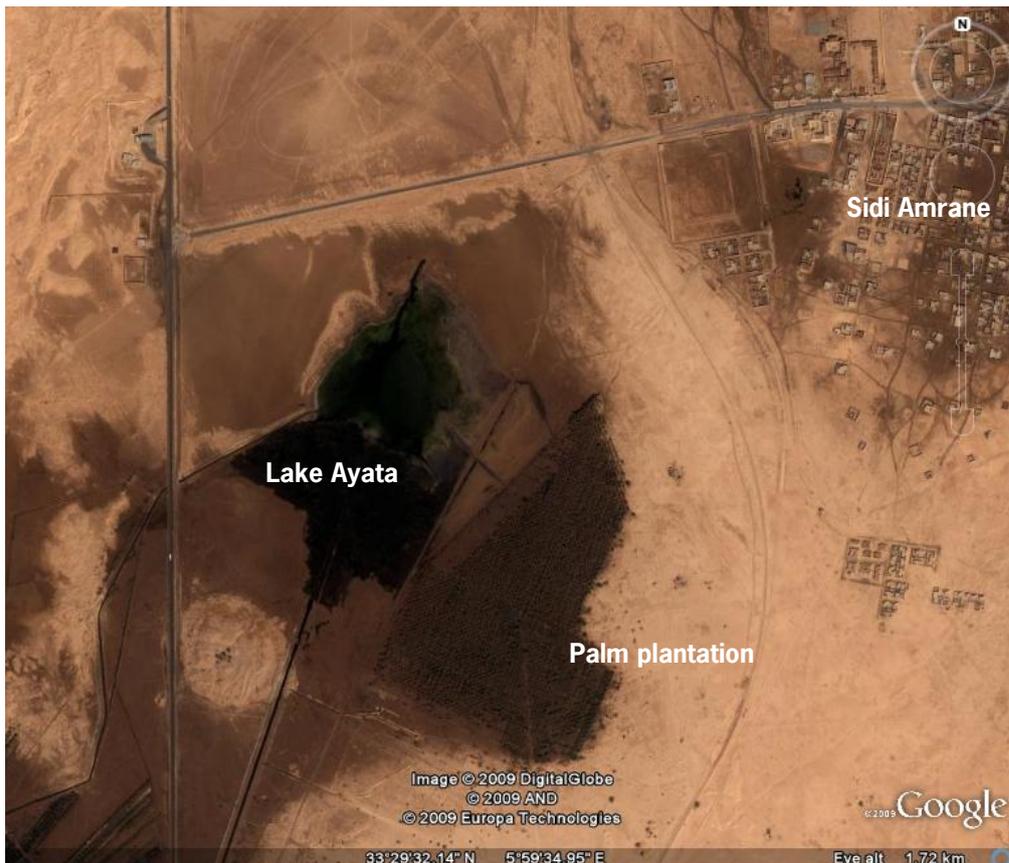


Figure 12. A closer look at Lac Ayata

2.4 The Ramsar Convention around Lake Ayata

Two Ramsar sites can be found in the region, i.e. **Chott Merouane et Oued Khrouf** (taken as one Ramsar site) and **Chott Melghir**. Chott Merouane and Oued Khrouf, are also grouped as a single IBA site (Coulthard, 2001) but were judged sufficiently distinct to warrant treating them separately.

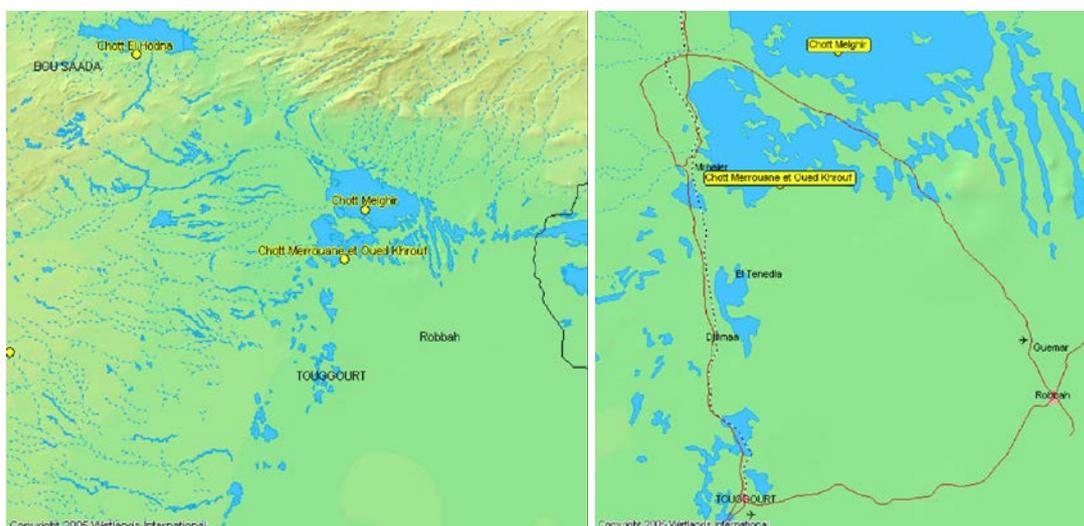


Figure 13. Overview of the water resources in the Valley of Oued Righ

Chott Merouane et Oued Khrouf

Chott Merouane et Oued Khrouf are a Ramsar site since the 2nd of February 2001 (Comment: the 2nd of February is World Wetlands Day, each year many countries try to declare Wetlands of International Importance as Ramsar Sites on this day); Province of El Oued; 337,700 ha; 33°55'N 006°10'E. The chott is characterized by saline ponds and lakes that are permanent by virtue of the flow of the Wadi Khrouf, containing continuous runoff of excess irrigation for cultivation of palms and waste water from neighbouring communes. Located in a region of arid steppe, the site is internationally important for passing migratory birds, some of which are classed by IUCN as vulnerable, as well as for several indigenous fish species. Other wetland types listed as present include freshwater springs/oases, irrigation channels, salt exploitation sites, and drainage canals. Human uses include livestock raising (principally sheep), salt extraction, and recreational hunting and fishing. Water pollution and over-grazing are seen as potential threats to the ecological character of the site. (Ramsar site no. 1054. Most recent RIS information: 2001, www.wetlands.org).

Chott Melghir

Chott Melghir, classified as Ramsar site since the 4th of June 2003; Province of El Oued and Biskra, Khenchela; 551,500 ha; 34°15'N 006°19'E. A large complex of seasonal salt lakes and pools and freshwater pools, representative of arid and hyper-arid saharan environments. Of the characteristic type of vegetated chott surrounding sebkha, or salt lake, entirely devoid of vegetation, the site is remarkable for lying at the lowest point in the Sahara desert, 35 meters below sea level. It shelters vulnerable and threatened flora species, and the number of endemic species reaches 14, the most notable of which are *Fagonia microphylla* and *Oudneya africana*, found only in Algeria, and the particularly interesting *Ammosperma cinerea*. The area is currently used for grazing. Ramsar site no. 1296. Most recent RIS information: 2003, www.wetlands.org).

Part B: Background information on Lake Ayata from interviews, discussions and site visits

The sections below are mainly based on information obtained during site visits, short discussions with people and some interviews. Sometimes information from literature is added for clarification. The authors tried to provide the information obtained as structured as possible so that the link with the recommendations provided in Chapter 3 can be easily followed.

This part B ends with an overview of visions for the future given by some of the government officers or experts interviewed.

2.5 Hydrologic situation of the Valley of Oued Souf and Oued Righ

Interview with the Directorate General of Hydrology of de Province of El Oued (Direction de l'Hydraulique de la Wilaya d'El Oued)

Water quantity and use

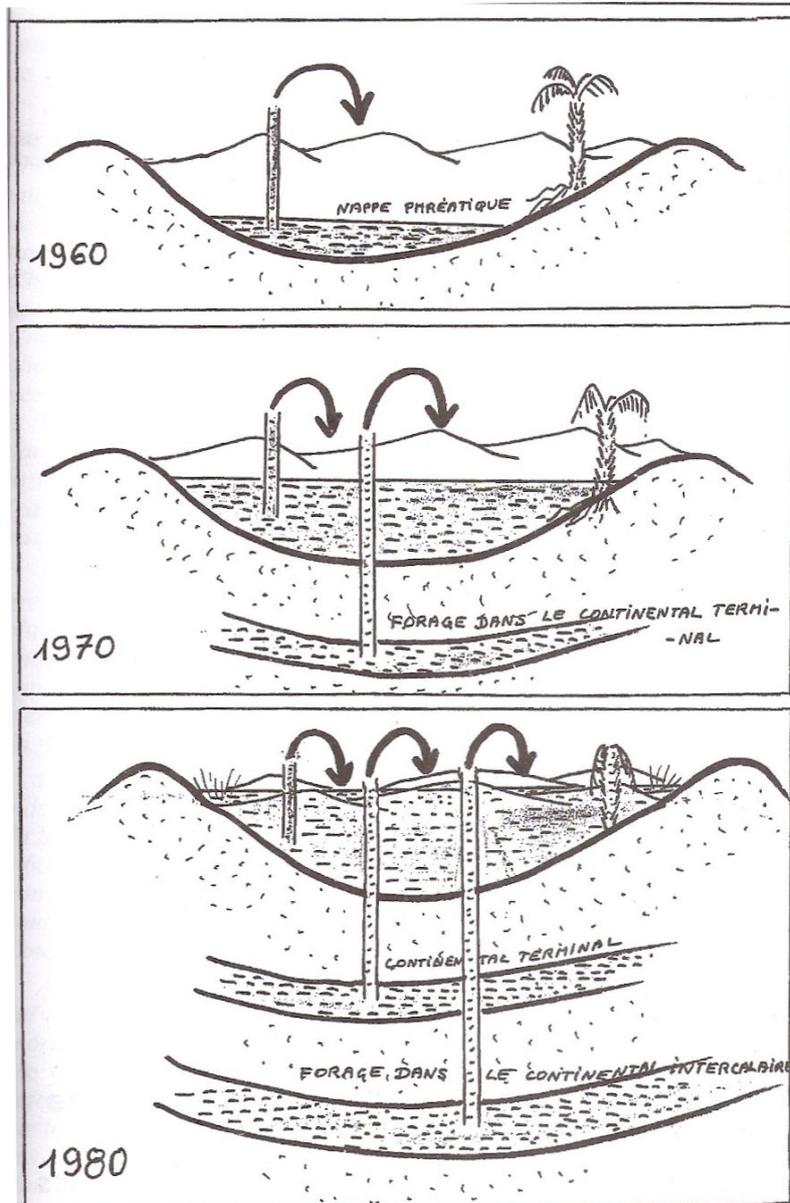
The geo-hydrological system of the Wilaya of El Oued is part of a larger system that includes parts of Algeria, Libya and Tunisia. This is quite a unique geo-hydrological system. It has a total surface of 350.000 km² and the depth of the groundwater layers vary in depth from 0 to approximately 2000 m depending on the geographical position and depending on the aquifer (several are present under the Sahara as mentioned earlier). There is an international agreement between Algeria, Libya and Tunisia on the exploitation of ground water layers. 70% of the underground water is said to be located under Algeria. The total amount of water is estimated at 60,000 billion m³ (*Comment: good scientific source is needed because different figures were found. Most important conclusion: A huge amount of groundwater is located under the Sahara.*)

The most important layers of the geo-hydrological system exists of 2 layers: the 'Nappe du Complexe Terminal' which is situated at 200- 500 m deep and the 'Nappe du Continentale Intercalaire' at a depth of 1900 m with a water temperature of 60°C. This layer is part of the continental depositions formed at the end of the Quartair. Please, find in figure 15 the different layers under Algeria, Tunisia and Libya. The layer is fed by the Atlas Mountains in Algeria, the Dahar in Tunisia, the plateau of Tadmait in Tihert and by rainfall in 'les grands ergs', which seldom occurs.

The 'Nappe du Complexe Terminal' 'Nappe du Continentale Intercalaire' is fed by the deepest layer the 'Nappe du Continentale Intercalaire' (see fig 14). The deepest layer is used more and more both for drinking water supply and irrigation; this can also be observed from the increasing number of wells in the area. In 1975 364 wells were used, in 1984 418 wells, in 1991 545 wells, in 1998 747 and 653 wells were used in 2004.

The phreatic zone (Nappe des Sables, as shown in figure 14 and 15) has been exploited by 21.000 traditional wells with an average depth of 40 m. Water extraction from the deeper layers resulted in a rise of water table currently threatening 60.000 date palm trees due to anaerobic conditions caused by a constant water saturation of the soil. Especially in the Valley of the Oued Souf, with no natural outflow or drainage the indirect 'transport' of the deeper aquifers to the phreatic zone causes problems. Even in the city of El Oued (at places humidity of walls is visible).

Figures on rainfall and exploitation of the wells can be found at <http://www.abhs.dz/>.



Croquis expliquant la cause de la montée des eaux

Figure 14. The rising water table explained (Voisin, 2004)

Unité stratigraphique		Aquifères & Aquitards		
		ALGERIE	TUNISIE	LIBYE
Plioquaternaire	Moi-Pliocène	2ème nappe des sables	Toit Imperméable	aquifère local
Miocène		semiperméable		semiperméable
Aquitanién		1ère nappe des SABLES	Nappe des SABLES du Djerid	aquifère
Oligocène		semiperméable		aquifère local
Eocène Moyen		Semi perméable		aquifère médiocre
Eocène Inférieur			aquifère non reconnu	
Paléocène			Semi perméable	
Senonien Sup	Maestrichtien	Nappe des CALCAIRES	Nappe des Calcaires Sup de Netzaoua	Upper Cretaceous- Paleocene : MIZDA Aquifer
	Campanien			
	Santonien			
Senonien Inférieur		Imperméable	Nappe Calcaires Inf/Netzaoua	semiperméable
			Semi perméable	
Turonien		Nappe du TURONIEN	Nappe du TURONIEN	NALUT Aquifer
Cénomanién		Imperméable	Imperméable	imperméable
Albien		Nappe du CONTINENTAL INTERCALAIRE	Nappe du CONTINENTAL INTERCALAIRE	Jurassic - Lower Cretaceous : KIKLAH Aquifer
Aptien				
Barremien				
Néocomien	eau salée			
Malm	Kimmeridgien	Nappe du Jurassique	semi-perméable	
	Callovo-Oxfordien		Nappe du JURASSIQUE	
Dogger	Bathonien			
Lias		Toit imperméable	Imperméable	imperméable
Keuper				
Muschelkalk				
Bundstandstein		Nappe salée du Trias	Nappe du TRIAS	Trias : AZIZIA Aquifer

Figure 15. Hydro stratigraphic correlations through the Northern Sahara (Besbes et al, 2002)

Water quality

Lake Ayata drains into 'Channel 21'. Channel 21 (that is connected later on with the river El Khrouf) is fed by untreated domestic water and untreated water from irrigation. Eventually all water will drain into the Ramsar sites Chott Merouane and Chott Melghir. The water quality of Lake Ayata and in Channel 21 is not analysed. It is, however, expected that Channel 21 has little impact on the water quality of the Chotts given the small quantity of water flowing into the Chotts from Channel 21 compared to the large amount of water from the deeper aquifers that are feeding the lakes.

During many interviews it was mentioned that the water quality will deteriorate rapidly with the expected increase of the population. A waste water treatment plant would therefore be essential downstream of Lake Ayata.

2.6 Ecological features of the Valley of Oued Souf and Oued Righ

Ecological features like plants and animals are sparsely described for the study area. Data on species incidence for some groups are known, however, data on species density and change in density over time is virtually absent. Appendix 7 provides an overview of the data on flora and fauna provided by the DG of Forestry of El Oued. It includes data on species occurring in the Wilaya as a whole, but some data focus on Oued Souf, Oued Righ or the district of Djamaa. Additional research is definitely needed as there is little overlap between e.g. the species list of Djamaa and the list of species developed for the Wilaya as a whole.

Around Lake Ayata inventories on vegetation and plant species composition have been conducted by field visits. Some interesting species were found during the field visit in the wild, e.g. *Bendreg*, a local species (succulent) used for couscous dishes, but definitely a detailed analysis is needed, especially if there is a wish for developing the area for ecotourism activities.

An inventory on fish species living in Lake Ayata by German fish researchers showed the presence of *Tilapia Zili*, an African species, which was always present and *Tilapia Nilotica*, an introduced species to the area. *Aquarien Altimia Tunisia*, was mentioned to be an important food source for some of the occurring bird species. German fish researchers made a study and recommended fish production for Lake Ayata. The authors of this publication would clearly recommend to first take care of the water quantity and quality problem in the region of Oued Souf and the Valley of Oued Righ.

The list below was discussed with the wardens of the DG Forestry of El Oued. It includes a list of birds that occur(red) in and/or around Lake Ayata, as well as some mammal and reptile species.

It has to be added, that the Greater Flamingo, is one of the species that was mentioned by the Wali of El Oued, as a species that is aimed for in Lake Ayata. Currently flamingos do find their habitat in Chott Merouane and in Chot Melghir, but not in Lake Ayata.

(Very) short checklist of bird species occurring in the area*

English name	French name	Latin name	IUCN status
Greater Flamingo	Flamant rose	<i>Phoenicopterus roseus</i>	LC
Common Shelduck	Tadorne de belon	<i>Tadorna tadorna</i>	LC
Ruddy Shelduck	Tadorne casarca	<i>Tadorna ferruginea</i>	LC
Mallard	Canard colvert	<i>Anas platyrhynchos</i>	LC
Gadwall	Canard chapeau	<i>Anas strepera</i>	LC
Eurasian Wigeon	Canard siffleur	<i>Anas penelope</i>	LC
Northern Shoveler	Canard souchet	<i>Anas clypeata</i>	LC
Northern Pintail	Canard pilet	<i>Anas acuta</i>	LC
Eurasian Teal	Sarcelle d'hiver	<i>Anas crecca</i>	LC
Marbled Teal	Marmaronette marbrée	<i>Marmaronetta angustirostris</i>	VU
Common Pochard	Fuligule milouin	<i>Aythya farina</i>	LC
Ferruginous Pochard	Fuligule nyroca	<i>Aythya nyroca</i>	NT
Eurasian Coot	Foulque macroule	<i>Fulica atra</i>	LC
Pied Avocet	Avocette élégante	<i>Recurvirostra avosetta</i>	LC
Black-winged Stilt	Echasse blanche	<i>Himantopus himantopus</i>	LC
Audouin's Gull	Goeland d'audouin	<i>Larus audouinii</i>	NT
Black-headed Gull	Mouette rieuse	<i>Larus ridibundus</i>	LC
Great Egret	Grande aigrette	<i>Ardea alba</i>	LC
White Stork	Cigogne blanche	<i>Ciconia ciconia</i>	LC

*-source of occurring birds in Algeria (http://en.wikipedia.org/wiki/List_of_birds_of_Algeria)

(Very) short checklist of mammal species occurring in the area

Wild boar	Sanglier	<i>Sus scrofa</i>	LC
Fennec Fox	Fennec	<i>Vulpus zerda</i>	LC
Striped hyena	Hyène rayée	<i>Hyena hyena barbara</i>	EN

(Very) short checklist of reptile species occurring in the area

Desert Monitor	Varan du desert	<i>Varanus griseus</i>	EN
Bell's dab Lizard	Fouette ueue	<i>Uronastyx acanthinurus</i>	LC
Pale Agame	Agame variable	<i>Agama mutabilis</i>	DD

IUCN status: LC-Least concern, NT-Nearly threatened, DD-Data deficient, VU-Vulnerable, EN-Endangered

Discussion with the wardens of the DG of Forestry

The wardens of the DG of Forestry clearly indicated that they need to enhance their capacity in terms of skills and knowledge regarding carrying out biodiversity inventories in the area. Also they mentioned that they like to improve capacity with regard to biodiversity management and planning of biodiversity management, especially for the wetlands in the area.

The authors of this publication realised that there is first of all a need for better equipment for the wardens (*especially good binoculars and guides to identify species*). Since good guide books of species occurring in the area have not yet been developed, such a development seems one of the first activities to further extend knowledge of the biodiversity of the area.

2.7 Socio economic features of the Valley of Oued Souf and Oued Righ

Most of the available information (on paper) of the area around Lake Ayata (and that is already very little) focuses on hydrology and to some extent on ecological features and land use for agriculture in the area. It seems that most data on socio-economic features will initially have to be obtained through interviews.

Agriculture

The areas of Oued Souf and Oued Righ and their surroundings are areas where naturally oases were formed since water from deeper layers surfaced which resulted in a large wetland system in the Sahara. This wetland system is extremely important for migratory birds, as mentioned in earlier paragraphs. Figure 13 shows this system of wetlands. Currently some of the wetlands are said to be dried out (like Chott Halouffa).

People used to live and survive here by digging out the soil to reach the first ground water layer and cultivate date palms. Especially in the Oued Souf area where the phreatic zone is near to the surface people started to develop small date palm plantations, by digging out the sand in large circles until the level where palms would reach the phreatic zone. This specific agri-hydrological system for date production is known as the system 'ghot'. The area (Oued Souf) has 9000 of these so-called ghot systems, whereas the plantations of Oued Righ are managed by, mainly, wild or flood irrigation.

Unfortunately the ghot system was mainly replaced by huge irrigated plantation plots, which need much more water and on top of that it needs a good drainage system. Since the use of the deeper aquifers to irrigate the plantations, the area, as mentioned earlier, suffers from siltation and nearly continuous water logging, even in the city of El Oued.

Due to 'modernization' of the hydrologic system old systems were left and since there was and is little written information on how they are operating (only narrative information), these systems are bound to disappear. The system ghot should be treated as a national cultural heritage.



Figure 16. The system 'ghot' of the Souf, a landscape resembling the skin of a panther (Voisin, 2004)

Office National de l'Assainissement (ONA)

This office is responsible for implementing a national project to solve the water problem of the city of El Oued in the Valley of Oued Souf. The problem is not only the water level rise in the city but also the quality of water is deteriorating because of the lack of a waste water treatment system. If no action would be taken the situation will further deteriorate: 1. because of the increase of water used for agriculture; 2. due to the development of the region resulting in a higher quantity of water used per capita; and 3. due to the lack of a waste water treatment system.

Suggested strategies to stop the rise of the water level as mentioned by the DG of Hydrology and the Office National de l'Assainissement (ONA) are:

- A better management of the distribution network for drinking water;
- Closing of the non-used or old wells;
- Finalisation and rehabilitation of the drainage network;
- Stop the realisation of new wells and encourage the use of the phreatic zone for irrigation.

The Valley of Oued Souf has 9000 'ghots' of which 470 have been lost due to the increasing water level, but also because of farmers leaving the traditional practice. To cure this problem a project was started financed by the government of Algeria and the World Bank aiming to lower the water level.

The project aims to develop a drainage system for the Valley of Oued Souf, including 18 communes, with a length of 750 km. This is based on the assumption that in the year 2030 the Valley of Oued Souf will include a number of 630.000 inhabitants (currently Oued Souf has 330.000 inhabitants). A second component of the project is to lower the water table in the city of El Oued by creating a system of 'vertical drains' in addition to the horizontal draining system.

The first system aims at draining all waste water, from households and from palm plantations, to Lake (Chott) Halouffa (51 km away from the city of El Oued). Chott Halouffa belongs to another basin and is as such geologically separated from the Valley of Oued Souf and Oued Righ. In this way drained water (which is as planned treated, i.e. cleaned) will no longer add to the Oued Souf hydrological system. Secondly a

system is set up to lower the current water table. This system includes vertical drains that are used to both monitor and manage the water level. These drains are spaced 500 m apart, which, given the occurring geographical and soil conditions, is the spacing needed to lower the water table with 50 cm. These drains (a total number of 58 tubes) are only placed in the city area and collected water is brought to the 'horizontal' drainage system of water that will be treated before being drained into Lake Halouffa. The Wali of El Oued additionally hopes that the formerly dried out Lake Hallouffa can also take back its place in the system of wetlands.

Dates of El Oued

The Daira of Mghaier and the Daira of Djamaa, both El Oued, have the largest population working in the date agriculture. In the Daira of Djamaa 90% of the population is depending on the date cultivation and in the Daira of Mghaier 70% (*Comment: also these data are obtained solely from interviews*).

Harvesting of the dates starts in September. The whole process of selection and packing occurs from September to February.

The Valley of Oued Righ counts 1.500.000 trees of which 800.000 are located in the Daira of Mghaier. In the plantations as well as in the ghot system only 5 to 7% of the farmers uses chemical manure but in general animal manure (mainly from camels, sheep and chicken) is applied. 10 tons of animal manure costs 5000 to 7000 Algerian Dinar.

20 to 30 different varieties of dates exist (but not all of these varieties can be found in El Oued).

Irrigation

With pumps water from the 3rd aquifer is pumped up for irrigation. For the palm plantations 3,000 litre of water **per second** of the 3rd aquifer is used for irrigation. Not clear is whether the pumps are working the whole year round. A date plantation (not the system ghot) needs 18,000 m³ per ha per year. **A lot** of extra water is used to 'wash out' the soil to reduce its salt level. With an amount of 3000 l/s there is enough water pumped up in less than 2 hours for 1 ha!

Soil

The soil of the plantation is changed every 5 years by organically enriched soil

Gender

According to our interviewees (men and women), women are only involved in selection and packing of the dates, definitely not in the task of harvesting. Next to the household tasks, women are involved in husbandry, cultivation of carrots, potatoes, beet, tomatoes, 'nave' and 'bendreg'. The nave and bendreg are important spices for cooking. It is currently not clear, however, whether these species are just searched and picked ('in the wild') or are also cultivated. Nowadays traditional varieties are, unfortunately, more replaced by commercial varieties. At the same time there is a clear wish for mechanisation and modernisation in the area.

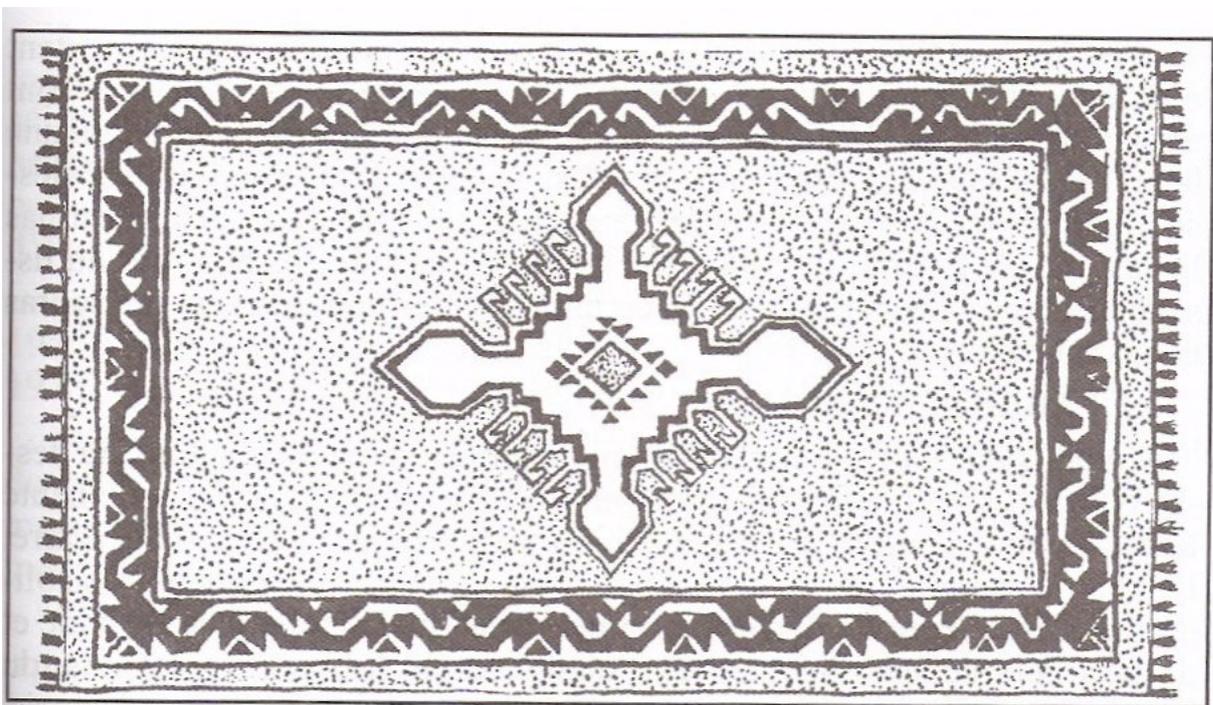
Tourism (Chef de Daira de Djamaa)

It seems that in the past the area was used for tourism, but tourism seriously declined in the period of 1990-1998 when Algeria closed its borders for foreigners. The 'chef' of the Daira of Djamaa also mentioned that the two hotels in Djamaa closed their doors in that period. The Daira now only has a youth hostel and a tourist office. It was shortly discussed, whether there was interest and capacity among the population of the daira to host visitors and tourists. This was said to need further research, not only for the Daira of Djamaa but for the region of Oued Souf and Oued Righ in general. According to the head of the Daira, tourists would come here to enjoy the palm plantations, especially the system 'ghot' and the Sahara. The idea exists that only scientists, researchers and their students would visit the area to enjoy the richness of the area in biodiversity. The authors of this publication however strongly believe that e.g.

many birdwatchers would visit the area if opportunities were offered. *(Additional comment by authors: For this reason, however, the policy of not allowing binoculars upon arrival into the country has to change!)*

Fishing is seen as a potential tourist attraction but the authors would like to stress that before tourism can flourish, water quantity and quality need to be dealt with. Besides also great care has to be taken not to just introduce non indigenous species into Lake Ayata for the then (very short) benefit of tourism, because introduced species may have a detrimental effect on local species as illustrated by the introduction of the perch in Lake Victoria.

In the discussions we agreed that the date plantations, the sand dunes of the Sahara, the Bedouins with their camels and the ancient villages of Tamerna and Oughlena could be a true attraction for tourists. Often shopping was mentioned as a tourist attraction in addition. The carpets with 'the cross of El Oued' could be seen in that respect as a nice characteristic of the area attracting tourists as well as many other products made of camel wool.



Tapis orné de la croix d'El-Oued

Figure 17. An example of a woollen carpet with the 'Cross of El-Oued'

Lake Ayata was also mentioned as tourist attraction, but the authors seriously believe that this would at this moment in time not be the case. In Chapter 3 this will be discussed in a bit more detail.

One of the things that came up during the discussion: Tourism brings interaction with different cultures. That is on the one hand positive but it might also impact the area negatively and this is something that needs to be discussed with a wide range of stakeholders (e.g. tourists might want to go out in the night, they want to have places to drink and eat and have options to eat traditional food. Depending on the cultural background, they want to drink or not drink alcohol, what will be the policy in that respect? Many tourists, depending on the cultural background again, are used to dress themselves in ways that might be

appropriate in their culture, but not be appropriate for the region of El Oued, what should be the provincial or even national policy in that regard?)

Tourism (additional information provided by the brochure Pays de Lumières, Mer de Dunes)

For Oued Righ the following touristic attractions are mentioned:

- Lac Ayata
- Lac Tendla
- Oued Khrouf
- The ancient village of Tamerna
- The ancient village of Oughlana
- Périmètre de Merara
- The tomb of Sid Yahia

For Oued Souf the following touristic attractions were indicated (although we cannot inform about the meaning of all of them):

- Museum of El Oued
- Zaouia Tidjania de Bayadha
- Zaouia Tidjania de Guemar
- Vue Panoramique de la Minaret de l'hôtel Souf
- Vieille ville d'El Oued
- El Haeachach
- Mosquée de Sidi Moussa
- Palmeraie et Ghitane de Mih Bahi
- Zaouia Sidi Salem
- Village Traditionelle de Kettf
- Dunes et Grand Erg Orientale route de Touggourt
- Résidence Dhaouia
- Palmeraie et domaine agricole Dhaouia
- Musée des Arts populaire de Guemar
- Chott El Merouane
- Chott El Melghir
- Bordj Hamraia
- Palmeraies et Ghitane de Amiche, Oglâ, Nakhla
- Site Romain de Sendrouss
- Dunes et coucher de soleil route de Touggourt
- Cimetière de kouinine
- Zaouia Tidjania

Population and Labour

Like in many other rural regions worldwide the area of the Oued Souf and Oued Righ suffers from land abandonment since the younger population prefers to seek for employment opportunities in the urban areas. Under young people there is a considerable rate of unemployment.

The region of El Oued has 3 programmes to tackle unemployment in the area:

1. An agricultural programme: Unemployed persons can apply to obtain 4 ha of land; priority is given to those persons with an agricultural education but non-educated, though skilled persons can also apply.
2. Specific job programme: Education for specific jobs, e.g. hair dresser training;
3. Labour programme: Provision of labour especially for non-educated people; people have to sign for 2 years and they will work mainly on maintenance and the construction roads.

2.8 Visions for the future for the Valley of Oued Souf and Oued Righ

Below, the visions for the future are collected from government officials or experts whom have been interviewed or with whom a discussion was held. Sometimes, these visions were directly asked for, sometimes their vision for the future just came up spontaneously. We tried to describe these visions as short and to the point as possible and they are linked as much as possible to the recommendations provided in Chapter 3.

Direction de Hydraulique de la Wilaya d'El Oued

1. A lower water table and less use of the deeper aquifers to avoid the creation of anaerobic conditions for the roots of the date palm trees to safeguard the traditional 'ghot' system;
2. A good water quality;

Office National de l'Assainissement (ONA)

Maybe following a different strategy as the DG Hydrology (see above) but definitely having the same vision for the future;

1. A lower water table and less use of the deeper aquifers to avoid the creation of anaerobic conditions for the roots of the date palm trees table in order to safe the traditional 'ghot' system;
2. A good water quality;

Chef of the Daira of Djamaa

1. First priority: unemployment in the area is decreased (with the youth a specific target group)
2. Very important for the Wilaya of El Oued: 'Palm trees are a necessary asset of El Oued' (*Comment: i.e. the conditions for date production need to be, of course sustainably, optimised, especially for the traditional ghot system*)

Other objectives for the Oued Souf and Oued Righ mentioned:

- To diversify income opportunities;
- To address land abandonment;
- To decrease the level of unemployment;
- To protect the ecosystem;
- To value and advertise the area;
- To conserve cultural traditions.

The area should be developed holistically (including historical values, natural and culture values) and options for recreation need to be created.

How does this place look 25 years from now?

- It is a place for recreation and a place to rest and enjoy the sunset ("there is no better sunset than the sunset of El Oued");
- It has facilities for bird watching (tower, binoculars, telescopes, booklets, brochures, information boards and signs) and possibilities to enjoy the vegetation and the sand dunes of the Sahara;
- Fishing is a source of income (for recreation, for food);
- It has walking trails through the palm plantations;
- Options for: donkey riding, camel tours, trails with nomads;
- Population benefits from handicrafts.

Which opportunities does the area have to reach that vision and the underlying objectives?

- airport in Guemar;
- interest in nature;
- interest in culture;
- historical monuments (ancient villages);
- specific (even endemic?) vegetation (needs to be identified);
- hospitality and open to examples from other countries.

What are obstacles of developing the area?

- Lack of research (data and knowledge);
- Lack of awareness on wetlands, valuation of nature;
- Lack of experience;
- Lack of money to develop and implement research (problem of allocation of money, argumentation needed to convince government);
- Lack of advertisement publicity of the area, the place is unknown, needed to attract investors (in tourism);
- Lack of tourism infrastructure, local people do not feel the need to have other income sources;
- Youth does not want to work as farmer (besides agriculture cannot provide a living for everybody inhabiting the area) it does not bring 'quick money';
- Monitoring systems need to be developed;
- Safety of tourists cannot be guaranteed;
- Visa process does not support an easy access to the country;
- Bird watching equipment not allowed into the country (binoculars).

Chef of the Daira of Mghaier

- Important objectives for the development of the area of El Oued (Oued Souf and Oued Righ);
- To address housing issue (there is a shortage of houses);
- To decrease the level of unemployment;
- To increase the living standard of the population in general;
- The development of the area really has to be based on the whole area of Oued Righ, especially because they form one geographical and hydrological unit and moreover a sociological unit in close connection with Oued Souf.

The vision for the region is easily formulated: 'the status of well-being for everyone'.

The opportunities for tourism in the area: 'Could tourism support the development of the area?'

- Palm plantation, especially the traditional ghot systems;
- Biodiversity;
- Steppe-Sahara transition;
- Ramsar sites (Chott Merouane and Oued Khrouf);
- Fishing;
- Water and sand sports;
- Hunting (only on wild boar);
- Salt extractions;
- Handicraft.

From the viewpoint of women of the Daira of Mghaier (Comment: actually all interviewed were men with the exception of one woman present during the meeting with the head of the Daira of Mghaier who gave some feedback on the women's point of view)

- Handcrafts in terms of: carpets, pots, traditional clothes, baskets, mats. This will help to conserve the traditional knowledge of the area;
- Medical plant collection which also keeps alive the 'traditional healing';
- Sablo-therapy;
- Hamam.

The obstacles of developing the area:

- Lack of profound study and research;
- Lack of monitoring on water quality that enters the water system (basin);
- Lack of knowledge what is the impact of bad water quality to the Ramsar site;
- In Oued Righ water is pumped up from the 3rd water layer, there is an overexploitation of the 3rd layer, which leads to too much water on the surface due to no proper drainage system and what is the impact to the Ramsar Sites;
- At the moment only one waste water treatment plant is in function (1 to 2 yrs) located in Toughourt;

- There are no wetland management plans developed (*Comment: indeed no wetland management plans are developed for the wetland sites of international importance in this area*).

Vision of the Direction de la Culture de la Wilaya d'El Oued

Why are people visiting the area of El Oued?

- Shopping;
- Nature and the wetlands;
- Sand;
- The traditional ghot system;
- Typical architecture (coupole);
- Culture and folklore (dances);
- Tamarne (ancient village);
- Mosques and religious tourism (sektes);
- Conferences.

According to the head of the DG of Tourism (which is part of the Ministry of Land Use Planning, Environment and Tourism), investments to develop tourism are necessary. 'Local investors would not be the first priority, especially large investors (also from abroad) are needed'. 'The local population is only involved by the spin off brought by tourism e.g. bakery, restaurants, guides, shops, travel agency guides. A stakeholder from outside needs to take the lead in this development....' (*Comment: Our recommendations mention amongst others to especially involve local people and go for small and local investors*).

During the discussion we also touched upon the wish for large investors who may exploit the area too much and in that way destroy the traditional character of the area. According to the head of the DG this would not happen because of the involvement of the government.

'Agreements have to be made between the Ministry of Land Use Planning, Environment and Tourism and travel agencies to set boundaries or ethic criteria (sensitive issues) for tourism. This is planned to be done at national level, involvement of local population is not necessary in that regard'.

The wardens of the DG of Forestry

- They especially wish to see a healthy ecological system for the future and for them to have the equipment and skills to do inventories for birds, plants, mammals etc.

Few farmers around Lake Ayata

- No more wild boar in the area that destroy their crops.

The Wali of the Wilaya of El Oued (added in the second and updated version of this publication)

In December 2009 the vision of the Wali of the Wilaya of El Oued was more clearly expressed and should as such not be forgotten in the second edition of this publication. The Wali clearly outlined that he would like to see Lake Ayata as a healthy lake, as well as a lake with a constant water table; a lake that serves as a habitat for many different bird species and in particular the 'flamant rose' or the greater flamingo. Lake Ayata should in addition be used as an area to relax, and area to enjoy in the weekend or in the evening hours. The Wali prefers to see small scale opportunities for people to eat, to enjoy, to relax. As such the Wali thinks more from the viewpoint of the inhabitants from the surrounding villages. He does not aim for an area exploited by large hotels and an area for mass-tourism.

In chapter 3 we will further discuss the different visions.

3 Discussion and preliminary recommendations for Lake Ayata

3.1 Introduction

As has been stressed in 'About this publication' and as the title of the publication already indicates the recommendations are preliminary recommendations as the analysis of the Valley of Oued Souf and Oued Righ is just a 'quick-scan'. On top of that the discussions during the study visit have been quite 'one sided' and focused on governmental point of view.

Still, some valid points can be raised with regard to the initial request of the Wali of El Oued, which was mainly focused on the third point mentioned below. The 4 points below are just to reflect again the objectives mentioned in the section 'about this publication'

- To provide a general overview of the status of wetlands and wetland management in Algeria;
- To provide a 'quick scan' on the current status of Lake Ayata;
- To provide recommendations on the conservation and wise use of Lake Ayata; and in particular, what are the possibilities and what is the added value of recreation and tourism for the sustainable use of the lake;
- To provide options and recommendations for the management of Lake Ayata.

As said the current status of Lake Ayata has been analysed in the context of its location in the Valley of Oued Righ in close connection with the Valley of Oued Souf and the 'Zone des Chotts' (Merouane and Melghir) of the Wilaya of El Oued.

In this second updated version we also aim to provide recommendations for answering the following questions of the Wali of El Oued:

1. The Wilaya has the objective to manage the water balance of Lake Ayata artificially (amongst others through dike construction) and have a constant height of the water table in the lake. What would be the ecologic consequences of that intervention?
2. Lake Ayata is important for migratory birds. What measures should be implemented towards a favourable status of Lake Ayata as a habitat for migratory birds and specifically for the flamingo? Currently the number of flamingos is decreasing. What measures will support the return of the flamingo?
3. What could be recommended for Lake Ayata concerning recreational purposes? The area should not be largely exploited; the idea is to develop small scale tourism opportunities in the area.

To be able to discuss the content of Chapter 1 and Chapter 2 and to be able to provide recommendations in a structured way, we have used the framework for wetland management planning as used by the Secretariat of the Ramsar Convention and as used by many of the Contracting Parties to the Convention.

3.2 A framework for discussion

The framework used for wetland management planning is not more than a planning cycle as most of us know. The difference is that it focuses on the wetland management planning or planning process aiming at healthy and the wise use of wetlands. Figure 18 below shows the framework or wetland management planning cycle based on which we would like to provide recommendations. First some points for

discussion followed by recommendations regarding the status of wetlands and wetland management in Algeria in general will be given, and then we will focus on Lake Ayata in particular.

The Wetland Management Planning Cycle

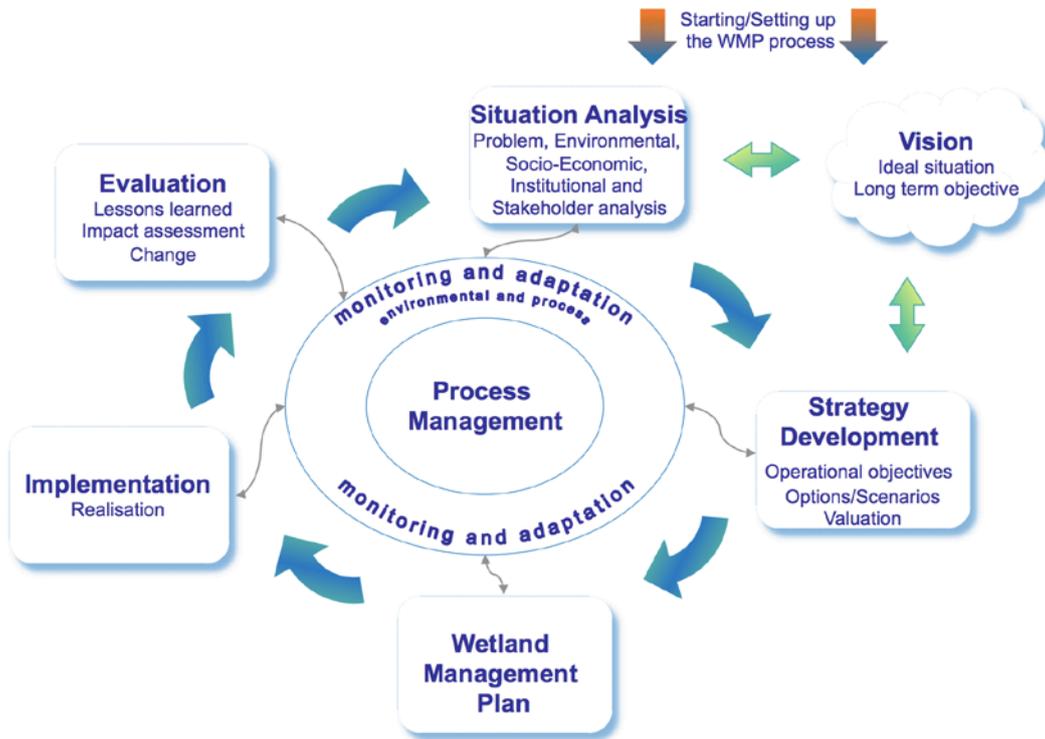


Figure 18. Wageningen UR – CDI's Wetland Management Planning Cycle

The planning cycle shows the steps that have to be addressed to come up with a wetland management plan:

- **Step 1.** is simply an answer to the question ‘what is the current situation?’ what is happening in the area: the situation analysis. The situation analysis includes **stakeholder analysis**.
- **Step 2.** addresses where do we like to go, what is the vision for the area. These visions of some stakeholder groups have been outlined already in the former Chapter. Step 2 also includes the deal or long term objective for your area. Knowing that a vision might be vague and maybe a bit unrealistic. The ideal objective is more concrete. It is the translation of the vision in words.
- **Step 3.** outlines the road towards your vision and how to choose the best strategy from going from current situation to vision. It includes also the setting of Specific, Measurable, Achievable, Realistic and Time-bound objectives: these are the short term or specific objectives, formulated in a ‘SMART’ way.
- **Step 4.** is the result of the former steps: a management plan. This management plan includes the descriptions and visualisations of the former steps and in addition has a concrete plan of activities.
- **Step 5.** includes the implementation of the plan; and
- **Step 6.** the evaluation of the whole process and the detailed description of lessons learnt during the process;
- **Step 7.** is actually not step 7, it is a cross cutting issue that comes back in steps 1 to 6: it includes the facilitation of the wetland management planning process and the adapting and monitoring of all steps based what do we have (current situation, step 1), where do we want to go vision, step 2, how do we get there (strategy development, step 3), developing a concrete action plan (step 4), and do we have the right enabling environment to implement the plan (step 5). All steps of course include of course the participation of different stakeholders.

Based on this framework we will discuss the former chapters and give recommendations for the wetland management situation in Algeria as a whole and for lake Ayata in particular.

3.3 Issues that need attention for assessing the status of wetlands and wetland management in Algeria

1. Lack of data

Algeria's wetlands are extremely important for the world's ecological network, e.g. the bird migration routes. We know that there are 42 wetlands indicated as Wetlands of International Importance under the Ramsar Convention, but in fact little is known on the current status of these wetlands. Leave alone for the wetlands that are not part of the Convention. (In December 2009 an additional 5 Wetlands of International Importance were mentioned as aimed to be added under the framework of the Ramsar Convention).

To be able to gather data and carry out inventories, experts and wetland wardens/managers also need appropriate equipment.

In summary:

1. There is a need for baseline data on animal and plant species (species composition, densities and, for migrating species, especially birds, the period during the year they stay in the area);
2. There is a need for equipment to support the gathering of data;
3. There is a need for skills and knowledge to carry out inventories and to carry out data analysis.

Related to step 1 of the framework:

Related to the framework there is not yet a good overview of the current situation for Algeria's wetlands and the management of the wetlands.

2. Lack of a multi-sectoral approach

With regard to wetland management the biggest difficulty is a multi-sectoral approach, not in the last place because general water issues (including irrigation and waste water treatment) are under the responsibility of the Ministry of Water Resources and biodiversity protection belongs to the tasks of the Ministry of Land Use Planning, Environment and Tourism. The Ministry of Agriculture and Rural Development is in turn responsible for the implementation of the Ramsar Convention and thus for the management of wetlands of international importance.

At the same time we feel that the perception existing in Algeria on multi-sectoral approach is too much focused on governmental level only. A multi-sectoral approach, however, means the involvement of all relevant sectors in planning processes and implementation. These sectors also include huge companies, but at the same time small scale farmers, fishermen, local NGOs, small local enterprises etc.

Related to step 1 of the framework:

A profound stakeholder analysis is necessary to see who does what and who is responsible in what way for the management of water resources in Algeria. This will create a good basis for further cooperation.

3. Lack of management plans for wetlands.

What is the way forward if wetland management plans are lacking? What are the objectives for the area (also regarding socio-economic development, because a wetland management plan is not only about biodiversity protection)? And then, without objectives, how to select the measures that have to be implemented? Having wetland management plans will force actually to integrated water resources

management in Algeria. As such, this is **related to step 2, 3 and 4 of the framework** shown in figure 18.

4. An enabling environment for wetland management

Even if everybody knows how to develop management plans it is essential to have a supportive institutional setting to make sure that wetland management plans can also be implemented.

3.4 What can be recommended for wetlands and wetland management in general for Algeria?

The lack of data indeed makes it, in the first place, extremely difficult to protect and manage wetlands. The right equipment is needed, starting with binoculars and telescopes for the wardens.

Secondly, we believe there is a strong need to build capacity in wetland management planning and that the different steps that have to be followed are clear. These steps for participatory wetland management planning are already discussed in paragraph 3.2 and are also the steps as provided by Ramsar (figure 18).

A wetland management planning process is by definition a multi-sectoral and even a multi-stakeholder process. Such a process needs facilitation. It would be logical that the DG Forestry takes care of this facilitation of wetland management planning processes as they are the Administrative Authority for the Ramsar Convention. Preferably these planning processes are occurring at site level facilitated by the Direction des Forêts at Provincial level.

How to facilitate wetland management planning processes needs training and we strongly advice to organise a training on *participatory wetland management planning* in Algeria, preferably carried out at Provincial level. These trainings should address the steps of wetland management planning (figure 18) and focus on the facilitation of the step. The training also needs to include how to involve different stakeholders in planning and how to agree on the suitable level of participation, i.e. some stakeholders simply will participate more than other stakeholders.

As this planning process (like any other planning process) is a process involving many different stakeholder groups, stakeholder analysis is one of the most important parts of the planning process. So a detailed stakeholder analysis is pivotal. Improvement of communication skills is a very essential part, therefore, of a wetland management planning training.

Regarding the enabling environment, an exchange with other Ramsar Contracting Parties could be arranged and especially to discuss informally about lessons learned regarding institutional development and institutional settings that support the implementation of the Ramsar Convention on Wetlands or the protection of wetlands in general.

In summary, at national level the authors of this publication recommend

1. Data gathering and analysis;
2. Right equipment and field guides;
3. Training of trainers on wetland management (so that the trained trainers train throughout Algeria on participatory wetland management planning)
4. An exchange between Algeria and another Contracting party of the Ramsar Convention on the development of a supportive institutional setting for wetland management (we see opportunities for and exchange between e.g. Turkey and Algeria: different countries but then again very comparable, especially because Algeria is in the process of setting up an Intersectoral Wetland Committee (see National Ramsar Implementation Report) and Turkey already set up its National Wetland Commission. Also lessons learned from Netherlands' side could be shared).

3.5 The status of Lake Ayata, what is the current situation (step 1 of the framework)

It is hard to provide recommendations for Lake Ayata, especially because little to no data are available on water quality. Therefore it is also difficult to outline what the status of Lake Ayata currently is.

The interviews/discussions involved mainly hydrology experts and government officials (and in addition one business man that opened a holiday resort). For the management of Lake Ayata a detailed stakeholder analysis is necessary to answer question like: Who is making use of the lake? Who would be affected by the management of the lake? What interests do different stakeholder groups have? What is the task division of men and women and what the impact (positive or negative) of their activities on the lake?

Many examples in other countries have shown that without a proper stakeholder analysis and without the involvement of the relevant stakeholder groups in the planning process, a management plan will not be effective. Measures proposed regarding the protection or use of wetlands, using a top down approach, usually fail to be implemented due to the lack of support of stakeholders that have not been consulted nor involved. A stakeholder analysis will give a much better overview on who should be targeted for measures (e.g. maybe an important first step would be an awareness campaign for citizens (women and men) on domestic water use).

Regarding the framework that is used for discussion (paragraph 3.2, figure 18): For lake Ayata the current situation (**Step 1**) needs to be analysed in all its aspects (ecologically, hydrologically, socio-economically, institutionally). Appendices 3, 4, 5 and 6 give, e.g. an overview of the availability of data regarding some plant species, mammals, insects etc. Different sources give different information. This information needs to be put together and needs to be analysed. A lot of information is available, but it simply needs to be gathered and analysed and updated.

Step 2 of the framework has been partly covered during the interviews we had with different stakeholders (for an overview of different visions expressed, please see Chapter 2, paragraph 2.9). A Wetland Management Planning meeting, together with stakeholders, is necessary to come to an agreed vision. What is the vision of the e.g. Ministry of Water Resources, what would be the vision of ecologists (e.g. represented by NGOs), what does the tourism sector have as a vision, and more importantly the people living in the area, who make use of the lake. The Wali of El Oued expressed a very nice vision for the area. This vision has to be shared with a broad group of stakeholders making sure that everybody understands. Does everybody see the importance of having a healthy habitat for e.g. the great flamingo, the flamant rose? Having and agreed vision is of utmost importance. Like the Chinese already outlined: 'a vision without action is a daydream but action without vision a nightmare'.

3.6 What could be recommended for Lake Ayata regarding its management?

1. *Situation analysis in all its aspects, step 1 of the framework*

- a. Hydrological assessment (focused on water quantity) seems to be done but definitely data gathering and analysis on water quality is necessary;
- b. Ecological and biological assessment: Baseline data are absent. Data should be assembled possibly in cooperation with foreign groups or organisations to share experience on data protocols and assessment tools (e.g. Exchange with 'Birdlife International' or neighbouring countries, Tunisia, e.g. '*les amis des oiseaux*', or birding groups in other countries that recently developed good baseline data for birds e.g. 'Birdlife Turkey'). Lessons learned from the Netherlands can be shared, especially regarding the long involvement of NGOs and volunteers in biodiversity data assessment and monitoring. Requirement in that respect, we

can not stress it too often, equipment for the wardens of Lake Ayata (amongst others guidebooks, binoculars, telescopes). Moreover, monitoring and inventories should not only focus on IUCN's red list species, but on all species, and their habitats.

- c. **Livelihood assessment:** analysis of the current ghot system is needed, as this date cultivation practice has not been described in any literature, and traditional knowledge on the cultivation system should not be lost. The system 'ghot' is undoubtedly a tourist attraction, and may generate income for the area (i.e. for the Oued Souf).
Another issue which needs further attention is the influence of tourism on local communities and the role of gender in local tourism development
 - d. **Stakeholder analysis:** 'Who has an impact on and who is affected by the management of Lake Ayata?' needs to be analysed;
 - e. **Institutional analysis:** provide a clear overview on legal aspects and who is responsible for implementation. This will at the same time contribute to a better multi-sectoral cooperation and will support the implementation of the Ramsar Convention.
2. **Monitoring and a monitoring plan for the situation analysis (step 1 and 7 of the framework).** Situations change and monitoring of the above mentioned data is needed.
 3. **A workshop with DG Forestry,** from national level policy makers to the warden in the field on wetland management planning; it would be good if these exchanges between national level and local level occur in each Wilaya, but why not start in the Wilaya of El Oued? It will contribute to a better overview on 'who does what and why?' It will stimulate cooperation, communication and, very important, information exchange. The wardens and the DG Forestry at provincial level know what is needed in the field and National level policy makers can adapt and make necessary changes at higher level and stimulate the discussion with other sectors. This is also in support of **step 1** of the wetland management planning framework
 4. Regarding **step 2** of the framework. A **workshop** with the primary stakeholders (and if possible a broader group) of Lake Ayata with the aim of coming to an **agreed vision** for the future for the lake. Often people do not realise that they live in a very interesting and very valuable environment and that there is more benefit from protecting this environment (also financially) than transferring it for other purposes. It will help to stimulate a bottom approach, e.g. farmers need to see themselves the benefits of nature conservation, besides small scale farmers are the custodians of biodiversity, they can greatly support wardens in their management tasks.
 5. **Integration of Step 1 and 2 of the framework:** Some visions of stakeholders have already been expressed, e.g. by the Wali of El Oued: A constant water balance, a healthy wetland for the flamant rose, tourism development... The preliminary visions that are expressed need to be checked again with step 1 of the framework. Measures are needed if you wish to see a constant water balance in Lake Ayata. A healthy wetland area might however need a fluctuating water table, which as such functions as the heartbeat of the system.
Untreated household water and untreated water from irrigation is currently directly released into the lake. Also that needs further attention. And probably needs to be part of the vision for the future. Step1 and step 2 are very closely related and need to be tuned together. So first have an agreed vision and discuss the implications of the vision. For that a multi-stakeholder workshop would be good as mentioned under 4. Come to an agreed vision and go back to the analysis phase with experts to see what the impact would be of the measures to implement the vision. Adapt the visions based on that. And only then continue to step 3 of the framework. The authors of this publication would like to provide relevant feedback on some of the visions raised but for that a thorough analysis of the current situation is necessary...
 6. **Waste water treatment and solid waste treatment;** it remains on the list of recommendations because it is an extremely important issue. If polluted water from agriculture and domestic use will keep on being discharged without treatment, the whole area of Oued Souf and Oued Righ will be affected;

7. *Campaigns/awareness raising activities* on the value of wetlands and nature for the population in lake Ayata;
8. *Campaigns* against the dumping of plastic bags (near villages and cities and along roads, but even in the desert some areas are littered with colourful plastic bags) as garbage scares tourists off;

3.7 What could be recommended for Lake Ayata regarding tourism development?

In December 2008 a special request was made regarding tourism development in Lake Ayata. Therefore we would like to give some specific attention to our recommendations with regard to tourism development.

1. First of all an agreement is needed on the meaning of sustainable tourism and other terms used (e.g. ecotourism, rural tourism, mass tourism, agro tourism). The interviewed government officials, local authorities and others hold different views on how tourism for the area should be developed, however, since they all name it sustainable tourism these differences are not made explicit. Therefore we recommend a stakeholder meeting with the aim to exchange visions and develop a shared one. An explanation of the different definitions provided will also support vision development and agree on what fits the area of Oued Souf and Oued Righ.
2. The areas of Oued Souf and Oued Righ do have a lot of potential in terms of tourism development; we would like to refer here to the lists provided on page 41 of this publication. A serious analysis is needed for Lake Ayata and in what way this Lake needs to be managed to contribute to the tourism potential. Therefore it is very important to know what the views are of different stakeholder groups in the area regarding tourism. Does it mean huge hotels or will it mean something that really fits the character of the Oued Souf and Oued Righ? What type of tourists is wished for in the area? Even if Lake Ayata might become a Ramsar Site in the future (and that is the wish of the DG Forestry), tourism is possible but of course within certain boundaries. These are issues that have to become clear. Especially the representative of the Ministry of Land Use, Environment and Tourism was mentioning 'big investors' to develop the area in touristic terms. Great care has to be taken that the area will not be harmed by mass tourism (there are many examples worldwide that can show the negative impact of mass tourism and the loss of the traditional character of the area).
3. If an agreed vision has been realised, then there is a need for an analysis on what are the options are to develop Lake Ayata: will Ayata really have the potential to offer what is wished for or would there be too many measures needed which would in turn be not cost-effective?
4. If an agreed vision exists (and that means not only under government officials but an agreed vision developed with the stakeholders of the area) and in addition a realistic strategy has been developed, there will be a need for training on how to deal with tourists (by the hosts in the area) and a legal framework needs to contribute also to the safety of tourists on the one hand and rules to be applied by tourists on the other hand.
5. A strong recommendation we have for the area is to keep tourism really in the boundaries of the culture and traditions as set by the Oued Souf and the Oued Righ Valley. For alternative income generation we recommend to explore opportunities such as 'geographical indications' (products that are specific to a geographical location or origin, a town, a region or a country. The use of geographical indications (GIs) may act as a certification that the product possesses certain qualities or enjoys a certain reputation due to its geographical origin). A great variety of dates

exist in the region of El Oued and we believe the same diversity must/could be present in the other crops cultivated or that could be cultivated. A study would be recommendable to stimulate the production of local crop varieties (preferable as GIs). These GIs could be an alternative source of income. Also a study on animal husbandry is needed to stimulate the 'production' of local breeds. Local breeds and crop varieties can serve as a tourist attraction. Especially when there is an agreed vision for small scale tourism, ecotourism, rural tourism or sustainable tourism (... a definition is needed ...). In Europe the use of traditional crops and breeds are subsidised in agri-environmental programmes because they contribute to biological diversity in the area. Moreover, it will be a contribution to halt 'genetic erosion'.

6. The traditional date production (ghot system) and their former processing facilities (constructed and used by the French) are a huge touristic attraction. The system ghot needs to be conserved but also the old processing facilities that are no longer in use, is of great historical value.

3.8 Opportunities or factors that support the development of Lake Ayata

Last but not least we came across some general facts, issues and factors that might support the development of Lake Ayata. These are shared below.

- Oases and Chotts are important for bird migration (Trans-Saharan migratory birds), the quantities of birds that take this route is, however, relatively unknown (no scientific data or publications available). There will therefore be interest from donors and larger NGOs and international organisations (UNESCO, UNDP, WWF) to support projects in the field of Biodiversity Conservation; Condition for investment would be that biodiversity protection includes the sustainability concept and goes hand in hand with the empowerment of local communities;
- Anthropogenic biodiversity (dates and small scale agriculture, especially the system ghot) are enhancing biodiversity in general; supporting the system ghot for its traditional value therefore also supports biodiversity conservation;
- Since unemployment in the cities is increasing, young people are returning to, often abandoned, agricultural lands. The government is also supporting this return to agriculture through National plans and programmes; this could in turn be of support again biodiversity conservation;
- Agriculture in the area of El Oued is de facto entirely biological, chemicals are sparsely used and fertilizers used are generally natural (from husbandry); *In addition this brings us to another recommendation: to use the area as a pilot site for organic farming.*
- There is an interest for small scale tourism development, but professional evaluation of these initiatives is needed; this is an important opportunity to keep the youth in the area. (*Recommendation in that respect could be: raising awareness activities have to support sustainable tourism development*)
- Tourism development activities are likely to be more sustainable in character in the area of Oued Souf and Oued Righ compared to the coastal areas. Probably (and hopefully) only a more environmental friendly type of tourism is attracted to visit the area.

Factors that might limit the development of the area

There seems to be an attitude in Algeria that everything is in control and can 'easily' be taken care of by the government. This pride could therefore be changed into a supporting factor, which will increase the ownership of different stakeholders about the valuable features of the area and can lead to action at local level (benefiting at the same time biodiversity protection).

4 Quelques remarques finales

Avec ce rapport, les auteurs de cette publication ont établi un cadre pour les recherches qui pourront être réalisées dans le futur. Les étapes qui sont décrites et suggérées dans le cycle de la planification des plans de gestion pour les zones humides nécessitent des recherches plus avancées pour pouvoir répondre à des questions comme : Comment créer un habitat approprié pour le flamant rose dans le lac Ayata? La voie suggérée peut aussi servir de base pour répondre aux questions comme: Est-ce que l'éco-tourisme pourrait former une base solide en terme d'écologie et d'économie, voire socialement et quelle sera la meilleure stratégie pour continuer?

Comme précisé dans le paragraphe 3.5 et les paragraphes suivants, la capacité sur la planification des plans de gestion intégrée et participative a besoin d'être améliorée dans les périodes à venir. Bien que les auteurs de cette publication aient fait un début pour collecter et réunir les données provenant de différentes sources, du temps et des efforts devront être alloués pour réunir toutes les données disponibles pour continuer à analyser le statut du Lac Ayata et des zones humides Algériennes en général. Ceci nécessite en même temps d'allouer plus d'investissement dans les matériels et les équipements nécessaires.

Les auteurs ont essayé de garder le rapport précis et clair et espèrent que cela créera des occasions qui stimuleront des recherches plus détaillées sur les questions qui ont émergé durant la mise en œuvre de cette étude préliminaire, mais aussi pour des recherches diversifiées visant le Lac Ayata et ses options pour une utilisation durable et généralement pour la gestion des zones humides de l'Algérie.

4 Some final remarks

The authors of this publication have hereby established a framework for further research. The steps as shown and suggested by the Wetland Management Planning Cycle need further research and study to be able to answer questions like: How do we make Lake Ayata a suitable habitat for the 'flamant rose'? Also the pathway suggested serves as a basis to provide an answer to the question: Would eco-tourism form a secure basis in terms of ecology and economy, even socially, and what would be the best strategy to move forward?

As mentioned in paragraph 3.5 and the following paragraphs, capacity on *integrated* and *participatory wetland management planning* needs to be enhanced. Although the authors have tried to make a start with collecting and gathering data from different literature sources, time and effort is needed to gather all data currently available from across different sectors and time and effort is needed to continue to analyse the status of Lake Ayata and of wetlands in Algeria in general. This requires at the same time further investment in material and equipment.

We tried to keep the report as to the point and concise as possible and hope that there will be an opportunity to work out some of the issues raised in more detail. The authors do hope that this very preliminary and first scan will stimulate further research on Lake Ayata and its options for sustainable use and for wetlands and their management in Algeria in general!

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Appendix 2. The contracting parties of the Ramsar Convention

Appendix 3. IUCN's Red List – Plantae – Algeria

Appendix 4. IUCN's Red List – Animalia – Algeria

Appendix 5. Checklist of the birds of Algeria

Appendix 6. Overview of plant surveys from available literature in El Oued

Appendix 7. Participants' list of the stakeholder workshop of December 2009

Appendix 1 – Country profile Algeria

Internal Renewable Water Resources (IRWR), 1977-2001, in cubic km	Middle East & North Africa	
	Algeria	Africa
Surface water produced internally	13	374
Groundwater recharge	2	149
Overlap (shared by groundwater and surface water)	1	60
Total internal renewable water resources (surface water + groundwater - overlap)	14	518
Per capita IRWR, 2001 (cubic meters)	443	1,223

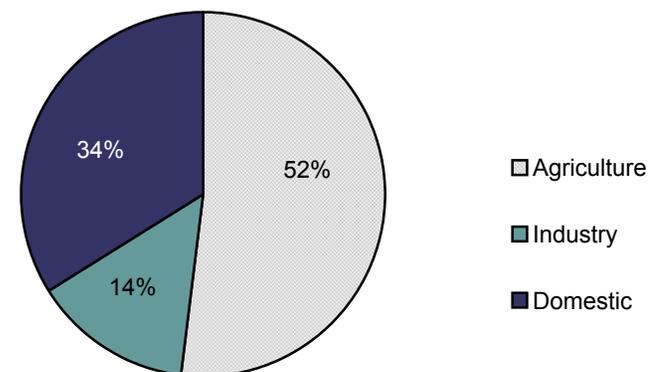
Natural Renewable Water Resources (includes flows from other countries)		
Total, 1977-2001 (cubic km)	14	X
Per capita, 2002 (cubic meters per person)	460	X
Annual river flows:		
From other countries (cubic km)	0	X
To other countries (cubic km)	0	X

Water Withdrawals		
Year of withdrawal data	1995	
Total withdrawals (cubic km)	5.0	X
Withdrawals per capita (cubic m)	181	X
Withdrawals as a percentage of actual renewable water resources	39.3%	X
Withdrawals by sector (as a percent of total) {a}		
Agriculture	52%	X
Industry	14%	X
Domestic	34%	X

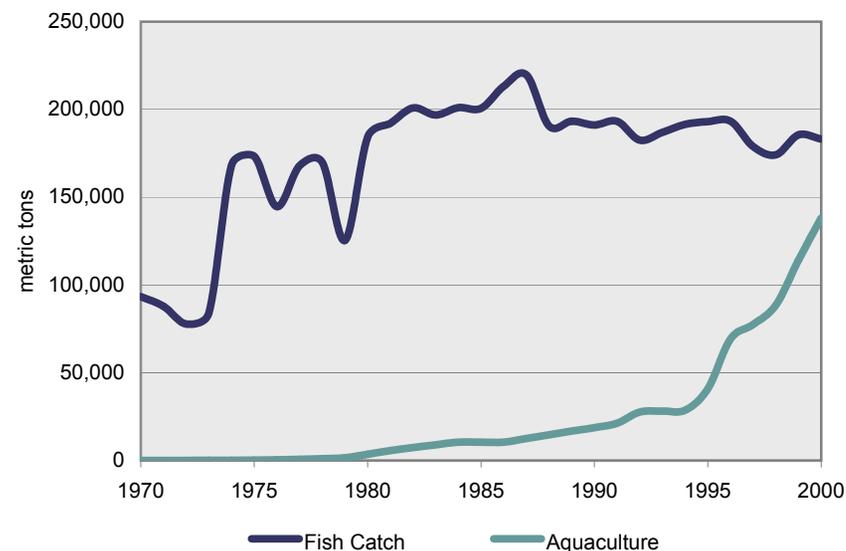
Desalination (various years)		
Desalinated water production (million m ³)	64	X

Freshwater Fish Species, 1990s		
Total number of species	X	X
Number of threatened species	1	X

Surface Water Withdrawals by Sector, Algeria, 1995



Freshwater Fish Catch & Aquaculture Production, Algeria, 1970-2000



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Water Resources and Freshwater Ecosystems-- Algeria

	Algeria	Middle East & North Africa
Freshwater Seafood Production		
Freshwater fish catch {b}		
1990 (metric tons)	1	252,334
2000 (metric tons)	1	416,938
Freshwater aquaculture production		
1987 (metric tons)	64	91,697
1997 (metric tons)	244	105,964

Other Resources:

Water and Food Security Country Profiles of the Food and Agriculture Organization of the United Nations:

<http://www.fao.org/countryProfiles/water/default.asp?search=search&iso3=DZA>

AQUASTAT Information System on Water and Agriculture Country Profiles

<http://www.fao.org/waicent/faoinfo/agricult/agl/aglw/aquastat/countries/index.stm>

Footnotes:

- a. Totals may exceed 100 percent due to groundwater drawdowns, withdrawals from river inflows, and the operation of desalinization plants
- b. Freshwater fish production data refer to freshwater fish caught or cultivated for commercial, industrial, and subsistence use (catches from recreational activities are included where available).

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Water Resources and Freshwater Ecosystems—Sources and Definitions

Most Freshwater resources data were provided by AQUASTAT, a global database of water statistics maintained by the Food and Agriculture Organization of the United Nations (FAO). AQUASTAT collects its information from a number of sources--national water resources and irrigation master plans; national yearbooks, statistics and reports; FAO reports and project documents; international surveys; and, results from surveys done by national or international research centers. In most cases, a critical analysis of the information was necessary to ensure consistency among the different data collected for a given country.

AQUASTAT was developed by FAO in 1993; data have been available on-line since 2001. Most freshwater data are not available in a time series, and the global data set contains data collected over a time span of up to 30 years. AQUASTAT updates their website as new data become available, or when FAO conducts special regional studies. Studies were conducted in Africa in 1994, the Near East in 1995-96, the former Soviet republics in 1997, selected Asian countries in 1998-99, and Latin America & the Caribbean in 2000. Data from the Blue Plan on Mediterranean water withdrawals were last updated in 2002. Most data updates include revisions of past data.

When possible, cross-checking of information among countries was used to improve assessment in countries where information was limited. When several sources gave different or contradictory figures, preference was always given to information collected at the national or sub-national level. This preference is based on the assumption by FAO that no regional information can be more accurate than studies carried out at the country level. Unless proven to be wrong, official rather than unofficial sources were used. In the case of shared water resources, a comparison among countries was made to ensure consistency at river-basin level.

For more information on the methodology used to collect these data, please refer to the original source or: Food and Agriculture Organization of the United Nations (FAO): Water Resources, Development and Management Service. October, 2001. *Statistics on Water Resources by Country in FAO's AQUASTAT Programme* (available on-line at http://www.fao.org/ag/agl/aglw/aquastat/water_res/index.stm). Rome: FAO.

Water Resources

Internal renewable water resources (IRWR) include the average annual flow of rivers and the recharge of groundwater (aquifers) generated from endogenous precipitation--precipitation occurring within a country's borders. IRWR are measured in cubic kilometers per year (km³/year). Since data were collected in different years for different countries, they may not be directly comparable.

Surface water produced internally includes the average annual flow of rivers generated from endogenous precipitation and base flow generated by aquifers. Surface water resources are usually computed by measuring or assessing total river flow occurring in a country on a yearly basis.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=691&themeid=2

Groundwater recharge is the total volume of water entering aquifers within a country's borders from endogenous precipitation and surface water flow. Groundwater resources are estimated by measuring rainfall in arid areas where rainfall is assumed to infiltrate into aquifers. Where data are available, groundwater resources in humid areas have been considered as equivalent to the base flow of rivers.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=11&themeid=2

Overlap is the volume of water resources common to both surface and groundwater. It is subtracted when calculating IRWR to avoid double counting. Two types of exchanges create overlap: contribution of aquifers to surface flow, and recharge of aquifers by surface run-off. In humid temperate or tropical regions, the entire volume of groundwater recharge typically contributes to surface water flow. In karstic domains (regions with porous limestone rock formations), a portion of groundwater resources are assumed to contribute to surface water flow. In arid and semi-arid countries, surface water flows

recharge groundwater by infiltrating through the soil during floods. This recharge is either directly measured or inferred by characteristics of the aquifers and piezometric levels.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=734&themeid=2

Total internal renewable water resources is the sum of surface and groundwater resources minus overlap; in other words, IRWR = Surface Water Resources + Groundwater Recharge – Overlap. Natural incoming flow originating outside a country's borders are not included in the total.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=1&themeid=2

Per capita internal renewable water resources (IRWR) are measured in cubic meters per person per year (m³/person/year). Per capita values were calculated by using national population data for 2001. For more information about the collection methodology and reliability of the UN data, please refer to the technical notes in the population data table at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=363&themeid=4

Natural renewable water resources, also known as Actual Renewable Water Resources, is the sum of internal renewable water resources and natural flow originating outside of the country. Natural Renewable Water Resources are computed by adding together both internal renewable water resources (IRWR—see above) and natural flows (flow to and from other countries). Natural incoming flow is the average amount of water which would flow into the country without human influence. In some arid and semi-arid countries, actual water resources are presented instead of natural renewable water resources. These actual totals, labeled with a footnote in the freshwater data table, include the quantity of flows reserved to upstream and downstream countries through formal and informal agreements or treaties. The actual flows are often much lower than natural flow due to water scarcity in arid and semi-arid regions.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=693&themeid=2

Per capita natural renewable water resources are measured in cubic meters per person per year (m³/person/year). Per capita values were calculated by using national population data for 2002. For more information about the collection methodology and reliability of the UN data, please refer to the technical notes in the population data table. View full technical notes on-line at

http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=694&themeid=2

Annual river flows from other countries is the total volume of surface water that would flow into a country under natural conditions, i.e. without human influence.

Annual river flows to other countries is the total volume of surface water that would flow out of a country under natural conditions, i.e. without human influence.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=3&themeid=2

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Population Data (for per capita calculations): Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. 2002. *World Population Prospects: The 2000 Revision*. New York: United Nations. Data set on CD-ROM.

Water Withdrawals and Desalination

Water withdrawals (annual), measured in million cubic meters, refers to total water removed for human uses in a single year, not counting evaporative losses from storage basins. Water withdrawals also include water from nonrenewable groundwater sources, river flows from other countries, and desalination plants.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=5&themeid=2

Per capita annual Withdrawals were calculated using national population data for the year the withdrawal data were collected.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=7&themeid=2

Water Withdrawals as a Percent of Renewable Water Resources is the proportion of renewable water resources withdrawn on a per capita basis, expressed in cubic meters per person per year (m³/person/year). The value is calculated by dividing water withdrawals per capita by actual renewable water resources per capita; data are usually from different years. While this ratio can indicate that some countries are depleting their water resources, it does not accurately reflect localized over-extraction from aquifers and streams. In addition, the calculation does not distinguish between ground and surface water.

Sectoral Share of water withdrawals, expressed as a percentage, refers to the proportion of water used for one of three purposes: agriculture, industry, and domestic uses. Sectoral Withdrawal Data may not add to 100 because of rounding. Evaporative losses from storage basins are not considered; users should keep in mind, however, that in some parts of the world up to 25 percent of water that is withdrawn and placed in reservoirs evaporates before it is used by any sector.

All water withdrawals are allocated to one of these three categories.

Agricultural uses of water primarily include irrigation and, to a lesser extent, livestock maintenance.

Domestic uses include drinking water plus water withdrawn for homes, municipalities, commercial establishments, and public services (e.g. hospitals).

Industrial uses include cooling machinery and equipment, producing energy, cleaning and washing goods produced as ingredients in manufactured items, and as a solvent.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=8&themeid=2

Desalinated Water Production, expressed in million cubic meters, refers to the amount of water produced by the removal of salt from saline waters--usually seawater--using a variety of techniques including reverse osmosis. Most desalinated water is used for domestic purposes.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=19&themeid=2

Sources

Food and Agriculture Organization of the United Nations (FAO): Water Resources, Development and Management Service. 2002. *AQUASTAT Information System on Water in Agriculture*. Rome: FAO. Available on-line at <http://www.fao.org/waicent/faoinfo/agricult/agl/aglw/aquastat/dbase/index.htm>.

Data for Mediterranean countries were provided directly to WRI from: J. Margat, 2002. *Present Water Withdrawals in Mediterranean Countries*. Paris: Blue Plan.

Population Data (for per capita calculations): Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. 2002. *World Population Prospects: The 2000 Revision*. New York: United Nations. Data set on CD-ROM.

Freshwater Fish Species

Total number of freshwater fish species includes all fish catalogued by the World Conservation Monitoring Center (WCMC). The total number of known species may include introductions in some instances. Most marine fish are excluded from country totals. Figures are not necessarily comparable among

countries because taxonomic concepts and the extent of knowledge vary (for the latter reason, country totals of species and endemics may be underestimates). In general, numbers of freshwater fish are not as well known compared to other taxonomic groups such as birds and mammals. The world total for the number of known fish species includes marine species. Of this total, around 40-45% are estimated to be freshwater species. View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=139&themeid=7

Total number of threatened freshwater species includes only fish catalogued by the World Conservation Union (IUCN) in their "Red List" publication. Figures reported here are in all likelihood smaller than the actual number of threatened species; in many regions of the world, freshwater fish species have not been assessed. Other estimates place the proportion of threatened freshwater fish as high as 20 percent for all countries combined. View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=140&themeid=7

Sources

World Conservation Monitoring Center (WCMC). April 1997. Unpublished data. Cambridge, U.K: WCMC

World Conservation Union (IUCN). 1996. *1996 IUCN Red List of Threatened Animals*. Gland, Switzerland: IUCN, 1996.

Freshwater Seafood Production

Freshwater seafood production includes freshwater fish caught in inland waters and in low salinity seas (cyprinids, cichlids, miscellaneous freshwater fishes), freshwater molluscs, freshwater crustaceans, and diadromous fish caught in inland waters. For a more detailed listing of the species mentioned above, please refer to the original source or FAO's classification of fish species, on line at <http://www.fao.org/waicent/faostat/agricult/fishitems-e-e.html>. Production is expressed in live weight--the nominal weight of the aquatic organisms at the time of capture. Data exclude discards.

Freshwater Fish Catch. Fish catch (capture) is defined by FAO as "the nominal catch of fish, crustaceans and molluscs, the production of other aquatic animals, residues and plants and catches of aquatic mammals, taken for commercial, industrial, recreational and subsistence purposes from marine waters." Freshwater capture totals exclude harvest totals from mariculture and aquaculture. Figures are national totals which include fish caught by a country's fleet anywhere in the world.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=38&themeid=1

Freshwater Aquaculture Production. Aquaculture is defined by FAO as "the farming of aquatic organisms, including fish, molluscs, crustaceans, and aquatic plants. Farming implies some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. [It] also implies ownership of the stock being cultivated." Aquaculture production of freshwater fish includes all freshwater fish cultivated in marine and inland waters; and in freshwater and brackish environments.

Source

Fishery Information, Data and Statistics Unit, Food and Agriculture Organization of the United Nations (FAO). 2002. *FISHSTAT Plus: Universal software for fishery statistical time series, Version 2.3* (available on-line at <http://www.fao.org/fi/statist/FISOFT/FISHPLUS.asp>). Aquaculture Production dataset. Rome: FAO.

Appendix 2

The contracting parties of the Ramsar Convention

Please always check the latest version of the list at www.ramsar.org

Country	Entry into force	Ramsar sites	Surface area in ha
Albania	29.02.96	3	83,062
Algeria	04.03.84	42	2,959,615
Antigua and Barbuda	02.10.05	1	3,600
Argentina	04.09.92	17	4,087,201
Armenia	06.11.93	2	492,239
Australia	21.12.75	65	7,510,177
Austria	16.04.83	19	119,962
Azerbaijan	21.05.01	2	99,560
Bahamas	07.06.97	1	32,600
Bahrain	27.02.98	2	6,810
Bangladesh	21.09.92	2	611,200
Barbados	12.04.06	1	33
Belarus	25.08.91	8	285,807
Belgium	04.07.86	9	42,938
Belize	22.08.98	2	23,592
Benin	24.05.00	4	1,179,354
Bolivia	27.10.90	8	6,518,073
Bosnia and Herzegovina	01.03.92	3	56,779
Botswana	09.04.97	1	5,537,400
Brazil	24.09.93	8	6,434,086
Bulgaria	24.01.76	10	20,306
Burkina Faso	27.10.90	3	299,200
Burundi	05.10.02	1	1,000
Cambodia	23.10.99	3	54,600
Cameroon	20.07.06	3	606,615
Canada	15.05.81	37	13,066,675
Cape Verde	18.11.05	3	...
Central African Republic	05.04.06	1	101,300
Chad	13.10.90	6	12,405,068
Chile	27.11.81	9	159,154
China	31.07.92	36	3,168,210
Colombia	18.10.98	5	458,525
Comoros	09.06.95	3	16,030
Congo	18.10.98	7	8,454,259
Costa Rica	27.04.92	11	510,050
Côte d'Ivoire	27.06.96	6	127,344
Croatia	25.06.91	4	86,579
Cuba	12.08.01	6	1,188,411
Cyprus	11.11.01	1	1,107
Czech Republic	01.01.93	12	54,656
Democratic Republic of Congo	18.05.96	3	7,435,624
Denmark	02.01.78	38	2,078,823
Djibouti	22.03.03	1	3,000
Dominican Republic	15.09.02	1	20,000

Ecuador	07.01.91	13	201,126
Egypt	09.09.88	2	105,700
El Salvador	22.05.99	3	125,769
Equatorial Guinea	02.10.03	3	136,000
Estonia	29.07.94	12	225,960
Fiji	11.08.06	1	615
Finland	21.12.75	49	799,518
France	01.12.86	36	3,314,275
Gabon	30.04.87	9	2,818,469
Gambia	16.01.97	3	31,244
Georgia	07.06.97	2	34,480
Germany	26.06.76	34	868,226
Ghana	22.06.88	6	178,410
Greece	21.12.75	10	163,501
Guatemala	26.10.90	7	628,592
Guinea	18.03.93	16	6,422,361
Guinea-Bissau	14.05.90	1	39,098
Honduras	23.10.93	6	223,320
Hungary	11.08.79	28	235,430
Iceland	02.04.78	3	58,970
India	01.02.82	25	677,131
Indonesia	08.08.92	3	656,510
Iran, Islamic Republic of	21.12.75	22	1,481,147
Iraq	17.02.08	1	137,700
Ireland	15.03.85	45	66,994
Israel	12.03.97	2	366
Italy	14.04.77	51	60,052
Jamaica	07.02.98	3	37,765
Japan	17.10.80	37	131,027
Jordan	10.05.77	1	7,372
Kazakhstan	02.05.07	2	464,841
Kenya	05.10.90	5	101,849
Kyrgyz Republic	12.03.03	2	639,700
Latvia	25.11.95	6	148,718
Lebanon	16.08.99	4	71,075
Lesotho	01.11.04	1	434
Liberia	02.11.03	5	95,879
Libyan Arab Jamahiriya	05.08.00	2	83
Liechtenstein	06.12.91	1	101
Lithuania	20.12.93	5	50,451
Luxembourg	15.08.98	2	17,213
Madagascar	25.01.99	6	787,555
Malawi	14.03.97	1	224,800
Malaysia	10.03.95	6	134,158
Mali	25.09.87	1	4,119,500
Malta	30.01.89	2	16
Marshall Islands	13.11.04	1	69,000
Mauritania	22.02.83	4	1,240,600
Mauritius	30.09.01	2	379
Mexico	04.11.86	112	8,118,927
Moldova	20.10.00	3	94,705
Monaco	20.12.97	1	23

Mongolia	08.04.98	11	1,439,530
Montenegro	03.06.06	1	20,000
Morocco	20.10.80	24	272,010
Mozambique	03.12.04	1	688,000
Myanmar	17.03.05	1	256
Namibia	23.12.95	4	629,600
Nepal	17.04.88	9	34,455
Netherlands	23.09.80	49	818,908
New Zealand	13.12.76	6	55,512
Nicaragua	30.11.97	8	405,691
Niger	30.08.87	12	4,317,869
Nigeria	02.02.01	11	1,076,728
Norway	21.12.75	37	116,369
Pakistan	23.11.76	19	1,343,627
Palau	18.02.03	1	493
Panama	26.11.90	4	159,903
Papua New Guinea	16.07.93	2	594,924
Paraguay	07.10.95	6	785,970
Peru	30.03.92	13	6,784,042
Philippines	08.11.94	4	68,404
Poland	22.03.78	13	145,075
Portugal	24.03.81	28	86,581
Republic of Korea	28.07.97	8	8,149
Romania	21.09.91	4	682,166
Russian Federation	11.02.77	35	10,323,767
Rwanda	01.04.06	1	...
Saint Lucia	19.06.02	2	85
Samoa	06.02.05	1	...
Sao Tome and Principe	21.12.06	1	23
Senegal	11.11.77	4	99,720
Serbia	27.04.92	9	55,627
Seychelles	22.03.05	1	121
Sierra Leone	13.04.00	1	295,000
Slovakia	01.01.93	14	40,697
Slovenia	25.06.91	3	8,205
South Africa	21.12.75	19	543,978
Spain	04.09.82	63	281,768
Sri Lanka	15.10.90	3	8,522
Sudan	07.05.05	4	8,189,600
Suriname	22.11.85	1	12,000
Sweden	21.12.75	51	514,506
Switzerland	16.05.76	11	8,676
Syrian Arab Republic	05.07.98	1	10,000
Tajikistan	18.11.01	5	94,600
Thailand	13.09.98	10	370,600
The FYR of Macedonia	08.09.91	2	21,616
Togo	04.11.95	4	1,210,400
Trinidad & Tobago	21.04.93	3	15,919
Tunisia	24.03.81	20	726,541
Turkey	13.11.94	12	179,482
Turkmenistan	03.07.09	1	267,124
Uganda	04.07.88	11	354,803

Ukraine	01.12.91	33	744,651
United Arab Emirates	29.12.07	1	620
United Kingdom	05.05.76	166	917,988
nUnited Republic of Tanzania	13.08.00	4	4,868,424
United States of America	18.04.87	24	1,312,319
Uruguay	22.09.84	2	424,904
Uzbekistan	08.02.02	2	558,400
Venezuela	23.11.88	5	263,636
Viet Nam	20.01.89	2	25,759
Yemen	08.02.08	1	???
Zambia	28.12.91	8	4,030,500
former USSR		3	669,200
Total all Parties		159	1847
Total African Parties		47	82,731,487

Appendix 3

IUCN's Red List – Plantae – Algeria

Class	Genus	Species	Common names (Eng)	Common names (Fre)	Red List status	Year assessed	Population trend
CONIFEROPSIDA (Conifers)	Abies	numidica	Algerian Fir, Algerian Silver Fir	Sapin D'Algerie, Sapin De Babors, Sapin De Numidie	VU	1998	
CONIFEROPSIDA (Conifers)	Cedrus	atlantica			LR/lc	1998	
CONIFEROPSIDA (Conifers)	Cupressus	dupreziana	Saharan Cypress		EN	2000	
CONIFEROPSIDA (Conifers)	Cupressus	dupreziana			CR	1998	
CONIFEROPSIDA (Conifers)	Juniperus	oxycedrus			LR/lc	1998	
CONIFEROPSIDA (Conifers)	Juniperus	phoenicea			LR/lc	1998	
CONIFEROPSIDA (Conifers)	Juniperus	thurifera			LR/lc	1998	
CONIFEROPSIDA (Conifers)	Pinus	halepensis			LR/lc	1998	
CONIFEROPSIDA (Conifers)	Pinus	nigra			LR/lc	1998	
CONIFEROPSIDA (Conifers)	Pinus	pinaster	Maritime Pine		LR/lc	1998	
CONIFEROPSIDA (Conifers)	Pinus	pinaster			EN	2007	decreasing
CONIFEROPSIDA (Conifers)	Taxus	baccata			LR/lc	1998	
CONIFEROPSIDA (Conifers)	Tetraclinis	articulata	Sandarac Gum Tree		LR/nt	1998	
MAGNOLIOPSIDA (Magnoliaceae)	Carum	foetidum			CR	2006	decreasing

Appendix 4

IUCN's Red List – Animalia – Algeria

Class	Genus	Species	Common names (Eng)	Common names (Fre)	Red List status	Year assessed	Population trend
ACTINOPTERYGII (Ray-finned fish)	Acipenser	sturio	Baltic Sturgeon, Common Sturgeon	Esturgeon Commun	CR	1996	
ACTINOPTERYGII (Ray-finned fish)	Alosa	algeriensis	North African Shad		DD	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Anguilla	anguilla	European Eel		CR	2008	decreasing
ACTINOPTERYGII (Ray-finned fish)	Aphanius	apodus			DD	2006	unknown
ACTINOPTERYGII (Ray-finned fish)	Aphanius	fasciatus	Mediterranean Killifish, South European Toothcarp	Apahnius De Corse	LC	2006	stable
ACTINOPTERYGII (Ray-finned fish)	Aphanius	iberus	Spanish Toothcarp		EN	2006	decreasing
ACTINOPTERYGII (Ray-finned fish)	Atherina	boyeri			LC	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Barbus	callensis			LC	2006	unknown
ACTINOPTERYGII (Ray-finned fish)	Barbus	figuiguensis			LC	2006	unknown
ACTINOPTERYGII (Ray-finned fish)	Barbus	pallaryi			LC	2006	unknown
ACTINOPTERYGII (Ray-finned fish)	Barbus	setivimensis			LC	2006	unknown
ACTINOPTERYGII (Ray-finned fish)	Chelon	labrosus	Thicklip Mullet		LC	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Dicentrarchus	labrax	Sea Bass		LC	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Epinephelus	aeneus	White Grouper	Mérou Blanc	NT	2008	decreasing
ACTINOPTERYGII (Ray-finned fish)	Epinephelus	caninus	Dogtooth Grouper	Merou Gris, Merou Nior	DD	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Epinephelus	costae	Goldblotch Grouper, Golden Grouper	Badeche, Merou Badeche	DD	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Epinephelus	haifensis	Haifa Grouper	Mérou D'haifa	DD	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Epinephelus	marginatus	Dusky Grouper	Merou Brun	EN	2004	decreasing
ACTINOPTERYGII (Ray-finned fish)	Gasterosteus	gymnurus	Western Threespine Stickleback		LC	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Haplochromis	desfontainii			EN	2006	unknown
ACTINOPTERYGII (Ray-finned fish)	Hippocampus	algericus	West African Seahorse		DD	2002	unknown
ACTINOPTERYGII (Ray-finned fish)	Hippocampus	hippocampus	Short-snouted Seahorse		DD	2003	unknown
ACTINOPTERYGII (Ray-finned fish)	Liza	aurata	Golden Mullet		LC	2008	unknown

ACTINOPTERYGII (Ray-finned fish)	Liza	ramada	Thinlip Mullet		LC	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Liza	saliens	Sharpnose Mullet		LC	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Mugil	cephalus	Striped Mullet		LC	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Mycteroperca	rubra	Comb Grouper, Mottled Grouper, Rockfish	Badeche Peigne, Badeche Rouge	LC	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Pagrus	pagrus	Red Porgy		EN	1996	
ACTINOPTERYGII (Ray-finned fish)	Pseudophoxinus	callensis			DD	2006	unknown
ACTINOPTERYGII (Ray-finned fish)	Salaria	fluviatilis			LC	2006	stable
ACTINOPTERYGII (Ray-finned fish)	Salmo	macrostigma			DD	2006	unknown
ACTINOPTERYGII (Ray-finned fish)	Syngnathus	abaster	Black-striped Pipefish		LC	2008	unknown
ACTINOPTERYGII (Ray-finned fish)	Thunnus	alalunga	Albacore Tuna		DD	1996	
ACTINOPTERYGII (Ray-finned fish)	Thunnus	thynnus	Northern Bluefin Tuna		DD	1996	
ACTINOPTERYGII (Ray-finned fish)	Xiphias	gladius	Swordfish		DD	1996	
ACTINOPTERYGII (Ray-finned fish)	Zosterisessor	ophiocephalus			DD	1996	
AMPHIBIA (Amphibians)	Amietophrynus	xeros	Subdesert Toad		LC	2006	stable
AMPHIBIA (Amphibians)	Bufo	bufo	Common Toad	Crapaud Commun, Crapaud Vulgaire	LC	2006	stable
AMPHIBIA (Amphibians)	Bufo	mauritanicus	Berber Toad, Mauritanian Toad	Crapaud De Maurétanie, Crapaud Pantherin	LC	2006	stable
AMPHIBIA (Amphibians)	Discoglossus	pictus	Painted Frog	Discoglosse Peint	LC	2006	stable
AMPHIBIA (Amphibians)	Discoglossus	scovazzi		Discoglosse Peint, Discoglosse À Ventre Blanc	LC	2006	stable
AMPHIBIA (Amphibians)	Hoplobatrachus	occipitalis	Crowned Bullfrog		LC	2006	decreasing
AMPHIBIA (Amphibians)	Hyla	meridionalis	Mediterranean Tree Frog, Stripeless Tree Frog	Rainette Meridionale, Rainette Verte	LC	2006	stable
AMPHIBIA (Amphibians)	Pelophylax	saharicus	Sahara Frog	Grenouille Verte D'afrique Du Nord	LC	2006	stable
AMPHIBIA (Amphibians)	Pleurodeles	nebulosus	Algerian Ribbed Newt	Triton D'Algerie	VU	2006	decreasing
AMPHIBIA (Amphibians)	Pleurodeles	poireti	Edough Ribbed Newt, Poiret's Newt	Triton De Poiret	EN	2006	decreasing
AMPHIBIA (Amphibians)	Pseudepidalea	brongersmai	Brongersma's Toad	Crapaud De Brongersma	NT	2006	decreasing
AMPHIBIA (Amphibians)	Pseudepidalea	viridis	Green Toad	Crapaud Vert	LC	2006	stable

AMPHIBIA (Amphibians)	Salamandra	algira	North African Fire Salamander	Salamandre Algire, Salamandre Tachetée	VU	2006	decreasing
ANTHOZOA (Sea Anemones and Corals)	Balanophyllia	europaea			DD	2008	unknown
ANTHOZOA (Sea Anemones and Corals)	Cladocora	caespitosa			DD	2008	unknown
ANTHOZOA (Sea Anemones and Corals)	Eunicella	verrucosa	Broad Sea Fan, Pink Sea Fan		VU	1996	
ANTHOZOA (Sea Anemones and Corals)	Madracis	pharensis	Star Coral		LC	2008	stable
ANTHOZOA (Sea Anemones and Corals)	Oculina	patagonica			LC	2008	unknown
AVES (Birds)	Accipiter	gentilis	Northern Goshawk, Eurasian Goshawk, Goshawk	Autour Des Palombes	LC	2008	
AVES (Birds)	Accipiter	nisus	Eurasian Sparrowhawk, European Sparrowhawk, Sparrowhawk	Epervier D'Europe	LC	2008	
AVES (Birds)	Acrocephalus	arundinaceus	Great Reed-warbler, Great Reed Warbler	Rousserolle Turdoïde	LC	2008	
AVES (Birds)	Acrocephalus	melanopogon	Moustached Warbler		LC	2008	
AVES (Birds)	Acrocephalus	paludicola	Aquatic Warbler	Phragmite Aquatique	VU	2008	decreasing
AVES (Birds)	Acrocephalus	palustris	Marsh Warbler	Rousserolle Verderolle	LC	2008	
AVES (Birds)	Acrocephalus	schoenobaenus	Sedge Warbler	Phragmite Des Joncs	LC	2008	
AVES (Birds)	Acrocephalus	scirpaceus	Eurasian Reed-warbler, Eurasian Reed Warbler, European Reed Warbler, Reed Warbler	Rousserolle Effarvate	LC	2008	
AVES (Birds)	Actitis	hypoleucos	Common Sandpiper	Chevalier Guignette	LC	2008	
AVES (Birds)	Aenigmatolimnas	marginalis	Striped Crake	Marouette Rayée	LC	2008	
AVES (Birds)	Alaemon	alaudipes	Greater Hoopoe-lark, Greater Hoopoe Lark, Hoopoe Lark, Hoopoe-lark	Sirli Du Désert	LC	2008	
AVES (Birds)	Alauda	arvensis	Eurasian Skylark, Sky Lark, Skylark	Alouette Des Champs	LC	2008	
AVES (Birds)	Alca	torda	Razorbill	Petit Pingouin	LC	2008	
AVES (Birds)	Alcedo	atthis	Common Kingfisher, European Kingfisher, Kingfisher	Martin-pêcheur D'Europe	LC	2008	
AVES (Birds)	Alectoris	barbara	Barbary Partridge	Perdrix Gamba	LC	2008	
AVES (Birds)	Alectoris	rufa	Red-legged Partridge		LC	2008	
AVES (Birds)	Alopochen	aegyptiaca	Egyptian Goose	Oie D'Egypte	LC	2008	
AVES (Birds)	Ammomanes	cinctura	Bar-tailed Lark, Bar-tailed Desert Lark	Ammomane Élégante	LC	2008	

AVES (Birds)	Ammomanes	deserti	Desert Lark	Ammomane Du Désert	LC	2008	
AVES (Birds)	Anas	acuta	Northern Pintail, Pintail	Canard Pilet	LC	2008	
AVES (Birds)	Anas	clypeata	Northern Shoveler, Shoveler	Canard Souchet	LC	2008	
AVES (Birds)	Anas	crecca	Common Teal, Eurasian Teal, Green-winged Teal, Teal	Sarcelle D'Hiver	LC	2008	
AVES (Birds)	Anas	discors	Blue-winged Teal	Sarcelle À Ailes Bleues	LC	2008	
AVES (Birds)	Anas	penelope	Eurasian Wigeon, European Wigeon, Wigeon	Canard Siffleur	LC	2008	
AVES (Birds)	Anas	platyrhynchos	Mallard, Common Mallard	Canard Colvert	LC	2008	
AVES (Birds)	Anas	querquedula	Garganey	Sarcelle D'été	LC	2008	
AVES (Birds)	Anas	strepera	Gadwall	Canard Chipeau	LC	2008	
AVES (Birds)	Anser	anser	Greylag Goose		LC	2008	
AVES (Birds)	Anser	fabalis	Bean Goose	Oie Des Moissons	LC	2008	
AVES (Birds)	Anthus	campestris	Tawny Pipit	Pipit Rousseline	LC	2008	
AVES (Birds)	Anthus	cervinus	Red-throated Pipit	Pipit À Gorge Rousse	LC	2008	
AVES (Birds)	Anthus	pratensis	Meadow Pipit	Pipit Des Prés	LC	2008	
AVES (Birds)	Anthus	richardi	Richard's Pipit	Pipit De Richard	LC	2008	
AVES (Birds)	Anthus	spinoletta	Water Pipit, Rock Pipit And Water Pipit		LC	2008	
AVES (Birds)	Anthus	trivialis	Tree Pipit	Pipit Des Arbres	LC	2008	
AVES (Birds)	Apus	affinis	Little Swift, House Swift	Martinet Des Maisons	LC	2008	
AVES (Birds)	Apus	apus	Common Swift, European Swift, Swift	Martinet Noir	LC	2008	
AVES (Birds)	Apus	pallidus	Pallid Swift	Martinet Pâle	LC	2008	
AVES (Birds)	Aquila	adalberti	Spanish Imperial Eagle, Adalbert's Eagle, Spanish Eagle		VU	2008	increasing
AVES (Birds)	Aquila	chrysaetos	Golden Eagle	Aigle Royal	LC	2008	
AVES (Birds)	Aquila	pomarina	Lesser Spotted Eagle		LC	2008	unknown
AVES (Birds)	Aquila	rapax	Tawny Eagle, Tawny Eagle And Steppe Eagle	Aigle Ravisneur	LC	2008	
AVES (Birds)	Ardea	cinerea	Grey Heron, Gray Heron	Héron Cendré	LC	2008	
AVES (Birds)	Ardea	purpurea	Purple Heron	Héron Pourpré	LC	2008	
AVES (Birds)	Ardeola	ralloides	Squacco Heron, Common Squacco Heron	Héron Crabier	LC	2008	
AVES (Birds)	Ardeotis	arabs	Arabian Bustard	Outarde Arabe	LC	2008	
AVES (Birds)	Arenaria	interpres	Ruddy Turnstone, Turnstone	Tournepieire À Collier	LC	2008	
AVES (Birds)	Asio	capensis	Marsh Owl	Hibou Des Marais Africain	LC	2008	
AVES (Birds)	Asio	flammeus	Short-eared Owl	Hibou Des Marais	LC	2008	

AVES (Birds)	Asio	otus	Long-eared Owl		LC	2008	
AVES (Birds)	Athene	noctua	Little Owl	Chouette Chevêche	LC	2008	
AVES (Birds)	Aythya	collaris	Ring-necked Duck		LC	2008	
AVES (Birds)	Aythya	ferina	Common Pochard, Northern Pochard, Pochard	Fuligule Milouin	LC	2008	
AVES (Birds)	Aythya	fuligula	Tufted Duck	Fuligule Morillon	LC	2008	
AVES (Birds)	Aythya	marila	Greater Scaup, Scaup		LC	2008	
AVES (Birds)	Aythya	nyroca	Ferruginous Duck, Ferruginous Pochard, White-eyed Pochard	Fuligule Nyroca	NT	2008	decreasing
AVES (Birds)	Bombycilla	garrulus	Bohemian Waxwing, Waxwing		LC	2008	
AVES (Birds)	Botaurus	stellaris	Great Bittern, Bittern, Common Bittern, Eurasian Bittern	Butor Étoilé	LC	2008	
AVES (Birds)	Branta	bernicla	Brent Goose, Brant, Brant Goose	Bernache Cravant	LC	2008	
AVES (Birds)	Branta	leucopsis	Barnacle Goose		LC	2008	
AVES (Birds)	Bubo	ascalaphus	Pharaoh Eagle-owl		LC	2008	
AVES (Birds)	Bubulcus	ibis	Cattle Egret	Héron Garde-boeufs	LC	2008	
AVES (Birds)	Bucanetes	githagineus	Trumpeter Finch	Bouvreuil À Ailes Roses	LC	2008	
AVES (Birds)	Bucephala	clangula	Common Goldeneye, Goldeneye		LC	2008	
AVES (Birds)	Burhinus	oedicnemus	Eurasian Thick-knee, Eurasian Stone-curlew, Stone Curlew, Stone-curlew	Oedicnème Criard	LC	2008	
AVES (Birds)	Buteo	buteo	Common Buzzard, Buzzard	Buse Variable	LC	2008	
AVES (Birds)	Buteo	rufinus	Long-legged Buzzard	Buse Féroce	LC	2008	
AVES (Birds)	Calandrella	brachydactyla	Greater Short-toed Lark, Short-toed Lark	Alouette Calandrelle	LC	2008	
AVES (Birds)	Calandrella	rufescens	Lesser Short-toed Lark	Alouette Pispolette	LC	2008	
AVES (Birds)	Calcarius	lapponicus	Lapland Longspur, Lapland Bunting		LC	2008	
AVES (Birds)	Calidris	alba	Sanderling	Bécasseau Sanderling	LC	2008	
AVES (Birds)	Calidris	alpina	Dunlin	Bécasseau Variable	LC	2008	
AVES (Birds)	Calidris	canutus	Red Knot, Knot, Lesser Knot	Bécasseau Maubèche	LC	2008	
AVES (Birds)	Calidris	ferruginea	Curlew Sandpiper	Bécasseau Cocorli	LC	2008	
AVES (Birds)	Calidris	minuta	Little Stint	Bécasseau Minute	LC	2008	
AVES (Birds)	Calidris	temminckii	Temminck's Stint	Bécasseau De Temminck	LC	2008	
AVES (Birds)	Calonectris	diomedea	Cory's Shearwater		LC	2008	
AVES (Birds)	Caprimulgus	aegyptius	Egyptian Nightjar	Engoulevent Du	LC	2008	

				Désert			
AVES (Birds)	Caprimulgus	europaeus	Eurasian Nightjar, European Nightjar, Nightjar	Engoulevent D'Europe	LC	2008	
AVES (Birds)	Caprimulgus	ruficollis	Red-necked Nightjar	Engoulevent À Collier Roux	LC	2008	
AVES (Birds)	Carduelis	cannabina	Eurasian Linnet, Common Linnet, Linnet	Martin Triste	LC	2008	
AVES (Birds)	Carduelis	carduelis	European Goldfinch, Goldfinch		LC	2008	
AVES (Birds)	Carduelis	chloris	European Greenfinch, Greenfinch	Verdier	LC	2008	
AVES (Birds)	Carduelis	spinus	Eurasian Siskin, European Siskin, Siskin		LC	2008	
AVES (Birds)	Casmerodius	albus	Great Egret, Great White Egret, Great White Heron	Grande Aigrette	LC	2008	
AVES (Birds)	Catharacta	skua	Great Skua	Grand Labbe	LC	2008	
AVES (Birds)	Certhia	brachydactyla	Short-toed Trecreeper, Short-toed Tree- creeper		LC	2008	
AVES (Birds)	Cettia	cetti	Cetti's Warbler		LC	2008	
AVES (Birds)	Charadrius	alexandrinus	Kentish Plover, Snowy Plover	Gravelot À Collier Interrompu	LC	2008	
AVES (Birds)	Charadrius	dubius	Little Ringed Plover	Petit Gravelot	LC	2008	
AVES (Birds)	Charadrius	hiaticula	Common Ringed Plover, Ringed Plover	Grand Gravelot	LC	2008	
AVES (Birds)	Chersophilus	duponti	Dupont's Lark		NT	2008	decreasing
AVES (Birds)	Chlamydotis	undulata	Houbara Bustard, Houbara	Houbara Ondulé, Outarde Houbara	VU	2008	decreasing
AVES (Birds)	Chlidonias	hybrida	Whiskered Tern	Guifette Moustac	LC	2008	
AVES (Birds)	Chlidonias	leucopterus	White-winged Tern, White- winged Black Tern	Guifette Leucoptère	LC	2008	
AVES (Birds)	Chlidonias	niger	Black Tern	Guifette Noire	LC	2008	
AVES (Birds)	Ciconia	ciconia	White Stork	Cigogne Blanche	LC	2008	
AVES (Birds)	Ciconia	nigra	Black Stork	Cigogne Noire	LC	2008	
AVES (Birds)	Cinclus	cinclus	White-throated Dipper, Dipper		LC	2008	
AVES (Birds)	Circaetus	gallicus	Short-toed Snake- eagle, Short-toed Snake Eagle		LC	2008	
AVES (Birds)	Circus	aeruginosus	Western Marsh- harrier, Eurasian Marsh Harrier, Marsh Harrier, Western Marsh Harrier	Busard Des Roseaux	LC	2008	
AVES (Birds)	Circus	cyaneus	Northern Harrier, Hen Harrier	Busard Saint- martin	LC	2008	
AVES (Birds)	Circus	macrourus	Pallid Harrier, Pale Harrier	Busard Pâle	NT	2008	decreasing

AVES (Birds)	Circus	pygargus	Montagu's Harrier	Busard Cendré	LC	2008	
AVES (Birds)	Cisticola	juncidis	Zitting Cisticola, Fan-tailed Cisticola, Fan- tailed Warbler	Cisticole Des Joncs	LC	2008	
AVES (Birds)	Clamator	glandarius	Great Spotted Cuckoo	Coucou-geai	LC	2008	
AVES (Birds)	Coccothraustes	coccothraustes	Hawfinch		LC	2008	
AVES (Birds)	Columba	livia	Rock Pigeon, Common Pigeon, Rock Dove, Rock Dovei	Pigeon Biset	LC	2008	
AVES (Birds)	Columba	oenas	Stock Dove, Stock Pigeon		LC	2008	
AVES (Birds)	Columba	palumbus	Common Wood- pigeon, Common Wood Pigeon, Common Woodpigeon, Wood Pigeon, Woodpigeon	Pigeon Ramier	LC	2008	
AVES (Birds)	Coracias	garrulus	European Roller, Roller	Rollier D'Europe	NT	2008	decreasing
AVES (Birds)	Corvus	corax	Common Raven, Northern Raven, Raven		LC	2008	
AVES (Birds)	Corvus	corone	Carrion Crow		LC	2008	
AVES (Birds)	Corvus	frugilegus	Rook		LC	2008	
AVES (Birds)	Corvus	monedula	Eurasian Jackdaw, Jackdaw, Western Jackdaw	Choucas Des Tours	LC	2008	
AVES (Birds)	Corvus	ruficollis	Brown-necked Raven	Corbeau Brun	LC	2008	
AVES (Birds)	Coturnix	coturnix	Common Quail, Quail	Caille Des Blés	LC	2008	
AVES (Birds)	Crex	crex	Corncrake, Corn Crake	Râle Des Genêts	NT	2008	decreasing
AVES (Birds)	Cuculus	canorus	Common Cuckoo, Cuckoo, European Cuckoo	Coucou Gris	LC	2008	
AVES (Birds)	Cursorius	cursor	Cream-coloured Courser, Cream- colored Courser	Courvite Isabelle	LC	2008	
AVES (Birds)	Cygnus	columbianus	Tundra Swan, Bewick's Swan		LC	2008	
AVES (Birds)	Cygnus	cygnus	Whooper Swan		LC	2008	
AVES (Birds)	Delichon	urbicum	Northern House- martin, Common House Martin, Common House- martin, House Martin	Hirondelle De Fenêtre	LC	2008	
AVES (Birds)	Dendrocopos	major	Great Spotted Woodpecker		LC	2008	
AVES (Birds)	Dendrocopos	minor	Lesser Spotted Woodpecker		LC	2008	
AVES (Birds)	Egretta	garzetta	Little Egret	Aigrette Garzette	LC	2008	
AVES (Birds)	Elanus	caeruleus	Black-winged Kite, Black- shouldered Kite	Elanion Blanc	LC	2008	
AVES (Birds)	Emberiza	caesia	Cretzschmar's Bunting	Bruant Cendrillard	LC	2008	

AVES (Birds)	Emberiza	cia	Rock Bunting, European Rock Bunting	Bruant Fou	LC	2008	
AVES (Birds)	Emberiza	cirlus	Cirl Bunting		LC	2008	
AVES (Birds)	Emberiza	citrinella	Yellowhammer		LC	2008	
AVES (Birds)	Emberiza	hortulana	Ortolan Bunting	Bruant Ortolan	LC	2008	
AVES (Birds)	Emberiza	melanocephala	Black-headed Bunting		LC	2008	
AVES (Birds)	Emberiza	schoeniclus	Reed Bunting, Common Reed Bunting		LC	2008	
AVES (Birds)	Emberiza	striolata	House Bunting	Bruant Striolé	LC	2008	
AVES (Birds)	Eremophila	bilopha	Temminck's Lark, Temminck's Horned Lark	Alouette Hausse-col Du Désert	LC	2008	
AVES (Birds)	Erithacus	rubecula	European Robin, Robin	Rougegorge	LC	2008	
AVES (Birds)	Erythropgia	galactotes	Rufous-tailed Scrub-robin, Rufous Bush Chat, Rufous Bush Robin, Rufous-tailed Scrub Robin	Agrobate Roux	LC	2008	
AVES (Birds)	Eudromias	morinellus	Eurasian Dotterel, Dotterel	Pluvier Guignard	LC	2008	
AVES (Birds)	Falco	biarmicus	Lanner Falcon, Lanner	Faucon Lanier	LC	2008	
AVES (Birds)	Falco	columbarius	Merlin	Faucon Émerillon	LC	2008	
AVES (Birds)	Falco	eleonora	Eleonora's Falcon	Faucon D'Eléonore	LC	2008	
AVES (Birds)	Falco	naumanni	Lesser Kestrel	Faucon Crécerellette	VU	2008	decreasing
AVES (Birds)	Falco	pegrinoides	Barbary Falcon	Faucon De Barbarie	LC	2008	
AVES (Birds)	Falco	peregrinus	Peregrine Falcon, Peregrine	Faucon Pèlerin	LC	2008	
AVES (Birds)	Falco	subbuteo	Eurasian Hobby, European Hobby, Hobby	Faucon Hobereau	LC	2008	
AVES (Birds)	Falco	tinnunculus	Common Kestrel, Eurasian Kestrel, Kestrel	Faucon Crécerelle	LC	2008	
AVES (Birds)	Falco	vespertinus	Red-footed Falcon, Western Red-footed Falcon	Faucon Kobez	NT	2008	
AVES (Birds)	Ficedula	albicollis	Collared Flycatcher	Gobemouche À Collier	LC	2008	
AVES (Birds)	Ficedula	hypoleuca	European Pied Flycatcher, Pied Flycatcher	Gobemouche Noir	LC	2008	
AVES (Birds)	Ficedula	parva	Red-breasted Flycatcher	Gobemouche Nain	LC	2008	
AVES (Birds)	Fratercula	arctica	Atlantic Puffin, Puffin		LC	2008	
AVES (Birds)	Fringilla	coelebs	Eurasian Chaffinch, Chaffinch, Common Chaffinch	Pinson Des Arbres	LC	2008	
AVES (Birds)	Fringilla	montifringilla	Brambling	Pinson Du Nord	LC	2008	

AVES (Birds)	Fulica	atra	Common Coot, Coot, Eurasian Coot, European Coot	Foulque Macroule	LC	2008	
AVES (Birds)	Fulica	cristata	Red-knobbed Coot, Crested Coot	Foulque À Crête	LC	2008	
AVES (Birds)	Galerida	cristata	Crested Lark	Cochevis Huppé	LC	2008	
AVES (Birds)	Galerida	theklae	Thekla Lark	Cochevis De Thékla	LC	2008	
AVES (Birds)	Gallinago	gallinago	Common Snipe, Snipe	Bécassine Des Marais	LC	2008	
AVES (Birds)	Gallinago	media	Great Snipe	Bécassine Double	NT	2008	
AVES (Birds)	Gallinula	chloropus	Common Moorhen, Moorhen	Poule D'Eau Commune	LC	2008	
AVES (Birds)	Garrulus	glandarius	Eurasian Jay, Jay		LC	2008	
AVES (Birds)	Gavia	arctica	Arctic Loon, Black-throated Diver, Black-throated Loon		LC	2008	
AVES (Birds)	Gavia	immer	Common Loon, Great Northern Diver, Great Northern Loon		LC	2008	
AVES (Birds)	Gavia	stellata	Red-throated Loon, Red-throated Diver	Plongeon Catmarin	LC	2008	
AVES (Birds)	Geronticus	eremita	Northern Bald Ibis, Bald Ibis, Hermit Ibis, Waldrapp	Ibis Chauve	CR	2008	decreasing
AVES (Birds)	Glaucopis	pratricula	Collared Pratincole, Common Pratincole	Glaréole À Collier	LC	2008	
AVES (Birds)	Grus	grus	Common Crane, Crane	Grue Cendrée	LC	2008	
AVES (Birds)	Gypaetus	barbatus	Lammergeier, Bearded Vulture, Lammergeyer	Gypaète Barbu	LC	2008	
AVES (Birds)	Gyps	fulvus	Griffon Vulture, Eurasian Griffon, Eurasian Griffon Vulture	Vautour Fauve	LC	2008	
AVES (Birds)	Gyps	rueppellii	Rueppell's Vulture, Rueppell's Griffon, Ruppell's Vulture, Rüppell's Griffon Vulture, Rüppell's Vulture	Vautour De Rüppell	NT	2008	decreasing
AVES (Birds)	Haematopus	ostralegus	Eurasian Oystercatcher, European Oystercatcher, Oystercatcher	Huitrier-pie	LC	2008	
AVES (Birds)	Haliaeetus	albicilla	White-tailed Eagle, Grey Sea Eagle		LC	2008	
AVES (Birds)	Hieraetus	fasciatus	Bonelli's Eagle	Aigle De Bonelli	LC	2008	
AVES (Birds)	Hieraetus	pennatus	Booted Eagle	Aigle Botté	LC	2008	
AVES (Birds)	Himantopus	himantopus	Black-winged Stilt	Echasse Blanche	LC	2008	
AVES (Birds)	Hippolais	icterina	Icterine Warbler	Hypolaïs Ictérine	LC	2008	
AVES (Birds)	Hippolais	olivetorum	Olive-tree Warbler	Hypolaïs Des	LC	2008	

				Oliviers			
AVES (Birds)	Hippolais	opaca	Western Olivaceous Warbler		LC	2008	
AVES (Birds)	Hippolais	pallida	Eastern Olivaceous Warbler		LC	2008	
AVES (Birds)	Hippolais	polyglotta	Melodious Warbler	Hypolais Polyglotte	LC	2008	
AVES (Birds)	Hirundo	daurica	Red-rumped Swallow	Hirondelle Rousseline	LC	2008	
AVES (Birds)	Hirundo	obsoleta	Pale Crag-martin		LC	2008	
AVES (Birds)	Hirundo	rupestris	Eurasian Crag-martin, Crag Martin, Eurasian Crag Martin, European Crag Martin	Hirondelle De Rochers	LC	2008	
AVES (Birds)	Hirundo	rustica	Barn Swallow, European Swallow, Swallow	Hirondelle De Cheminée	LC	2008	
AVES (Birds)	Hydrobates	pelagicus	European Storm-petrel, British Storm Petrel, European Storm Petrel, Storm Petrel	Pétrel Tempête	LC	2008	
AVES (Birds)	Ixobrychus	minutus	Little Bittern	Blongios Nain	LC	2008	
AVES (Birds)	Jynx	torquilla	Eurasian Wryneck, European Wryneck, Wryneck	Torcol	LC	2008	
AVES (Birds)	Lagonosticta	senegala	Red-billed Firefinch	Amaranthe	LC	2008	
AVES (Birds)	Lanius	collurio	Red-backed Shrike	Pie-grièche Écorcheur	LC	2008	
AVES (Birds)	Lanius	excubitor	Great Grey Shrike, Northern Grey Shrike, Northern Shrike	Pie-grièche Grise	LC	2008	
AVES (Birds)	Lanius	nubicus	Masked Shrike	Pie-grièche Masqué	LC	2008	
AVES (Birds)	Lanius	senator	Woodchat Shrike	Pie-grièche À Tête Rousse	LC	2008	
AVES (Birds)	Larus	audouinii	Audouin's Gull	Goéland D'Audouin	NT	2008	decreasing
AVES (Birds)	Larus	cachinnans	Yellow-legged Gull, Caspian Gull, Yellow-legged Herring Gull	Goéland Leucophée	LC	2008	
AVES (Birds)	Larus	canus	Mew Gull, Common Gull	Goéland Cendré	LC	2008	
AVES (Birds)	Larus	cirrocephalus	Grey-headed Gull, Gray-hooded Gull, Grey-hooded Gull	Mouette À Tête Grise	LC	2008	
AVES (Birds)	Larus	fuscus	Lesser Black-backed Gull	Goéland Brun	LC	2008	
AVES (Birds)	Larus	genei	Slender-billed Gull	Goéland Railleur	LC	2008	
AVES (Birds)	Larus	marinus	Great Black-backed Gull, Greater Black-backed Gull	Goéland Marin	LC	2008	
AVES (Birds)	Larus	melanocephalus	Mediterranean Gull	Mouette Mélanocéphale	LC	2008	
AVES (Birds)	Larus	minutus	Little Gull	Mouette	LC	2008	

				Pygmée			
AVES (Birds)	Larus	ridibundus	Black-headed Gull, Common Black-headed Gull	Mouette Rieuse	LC	2008	
AVES (Birds)	Limicola	falcinellus	Broad-billed Sandpiper	Bécasseau Falcinelle	LC	2008	
AVES (Birds)	Limosa	lapponica	Bar-tailed Godwit	Barge Rousse	LC	2008	
AVES (Birds)	Limosa	limosa	Black-tailed Godwit	Barge À Queue Noire	NT	2008	decreasing
AVES (Birds)	Locustella	fluviatilis	Eurasian River Warbler, River Warbler	Locustelle Fluviale	LC	2008	
AVES (Birds)	Locustella	luscinioides	Savi's Warbler	Locustelle Luscinoïde	LC	2008	
AVES (Birds)	Locustella	naevia	Common Grasshopper-warbler, Common Grasshopper Warbler, Grasshopper Warbler	Locustelle Tachetée	LC	2008	
AVES (Birds)	Loxia	curvirostra	Red Crossbill, Common Crossbill, Crossbill		LC	2008	
AVES (Birds)	Lullula	arborea	Wood Lark, Woodlark		LC	2008	
AVES (Birds)	Luscinia	megarhynchos	Common Nightingale, Nightingale	Rossignol Philomèle	LC	2008	
AVES (Birds)	Luscinia	svecica	Bluethroat	Gorgebleue	LC	2008	
AVES (Birds)	Lymnocyptes	minimus	Jack Snipe	Bécassine Sourde	LC	2008	
AVES (Birds)	Marmaronetta	angustirostris	Marbled Teal, Marbled Duck	Sarcelle Marbrée	VU	2008	decreasing
AVES (Birds)	Melanitta	fusca	White-winged Scoter, Velvet Scoter		LC	2008	
AVES (Birds)	Melanitta	nigra	Black Scoter, Common Scoter	Macreuse Noire	LC	2008	
AVES (Birds)	Melanocorypha	calandra	Calandra Lark		LC	2008	
AVES (Birds)	Mergellus	albellus	Smew		LC	2008	
AVES (Birds)	Mergus	merganser	Common Merganser, Goosander		LC	2008	
AVES (Birds)	Mergus	serrator	Red-breasted Merganser		LC	2008	
AVES (Birds)	Merops	apiaster	European Bee-eater, Bee-eater	Guêpier D'Europe	LC	2008	
AVES (Birds)	Merops	persicus	Blue-cheeked Bee-eater	Guêpier De Perse	LC	2008	
AVES (Birds)	Miliaria	calandra	Corn Bunting	Bruant Proyer	LC	2008	
AVES (Birds)	Milvus	migrans	Black Kite, Black (yellow-billed) Kite	Milan Noir	LC	2008	
AVES (Birds)	Milvus	milvus	Red Kite	Milan Royal	NT	2008	
AVES (Birds)	Monticola	saxatilis	Rufous-tailed Rock-thrush, European Rock Thrush, Rock Thrush, Rufous-tailed Rock Thrush	Merle De Roche	LC	2008	
AVES (Birds)	Monticola	solitarius	Blue Rock-thrush, Blue Rock Thrush	Merle Bleu	LC	2008	
AVES (Birds)	Morus	bassanus	Northern Gannet, Gannet	Fou De Bassan	LC	2008	

AVES (Birds)	Motacilla	alba	White Wagtail, Pied Wagtail And White Wagtail	Bergeronnette Grise	LC	2008	
AVES (Birds)	Motacilla	cinerea	Grey Wagtail, Gray Wagtail	Bergeronnette Des Ruisseaux	LC	2008	
AVES (Birds)	Motacilla	flava	Yellow Wagtail, Western Yellow Wagtail	Bergeronnette Printanière	LC	2008	
AVES (Birds)	Muscicapa	striata	Spotted Flycatcher	Gobemouche Gris	LC	2008	
AVES (Birds)	Neophron	percnopterus	Egyptian Vulture, Egyptian Eagle	Vautour Percnoptère	EN	2008	decreasing
AVES (Birds)	Netta	rufina	Red-crested Pochard		LC	2008	
AVES (Birds)	Numenius	arquata	Eurasian Curlew, Curlew	Courlis Cendré	NT	2008	decreasing
AVES (Birds)	Numenius	phaeopus	Whimbrel	Courlis Corlieu	LC	2008	
AVES (Birds)	Numenius	tenuirostris	Slender-billed Curlew	Courlis À Bec Grêle	CR	2008	decreasing
AVES (Birds)	Nycticorax	nycticorax	Black-crowned Night-heron, Black-crowned Night Heron, Black-crowned Night-heron., Night Heron	Héron Bihoreau	LC	2008	
AVES (Birds)	Oceanodroma	leucorhoa	Leach's Storm- petrel, Leach's Storm Petrel	Pétrel Cul-blanc	LC	2008	
AVES (Birds)	Oena	capensis	Namaqua Dove	Tourterelle À Masque De Fer	LC	2008	
AVES (Birds)	Oenanthe	deserti	Desert Wheatear	Traquet Du Désert	LC	2008	
AVES (Birds)	Oenanthe	hispanica	Black-eared Wheatear	Traquet Oreillard	LC	2008	
AVES (Birds)	Oenanthe	isabellina	Isabelline Wheatear	Traquet Isabelle	LC	2008	
AVES (Birds)	Oenanthe	leucopyga	White-tailed Wheatear, White- crowned Black Wheatear, White- crowned Wheatear	Traquet À Tête Blanche	LC	2008	
AVES (Birds)	Oenanthe	leucura	Black Wheatear	Traquet Rieur	LC	2008	
AVES (Birds)	Oenanthe	lugens	Mourning Wheatear	Traquet Deuil	LC	2008	
AVES (Birds)	Oenanthe	moesta	Red-rumped Wheatear		LC	2008	
AVES (Birds)	Oenanthe	oenanthe	Northern Wheatear, European Wheatear, Wheatear	Traquet Motteux	LC	2008	
AVES (Birds)	Oriolus	oriolus	Eurasian Golden Oriole, Eurasian Golden-oriole, European Golden Oriole, Golden Oriole	Loriot D'Europe	LC	2008	
AVES (Birds)	Otis	tarda	Great Bustard		VU	2008	decreasing
AVES (Birds)	Otus	scops	Common Scops- owl, Eurasian Scops Owl, European Scops Owl	Hibou Petit-duc	LC	2008	
AVES (Birds)	Oxyura	jamaicensis	Ruddy Duck		LC	2008	
AVES (Birds)	Oxyura	leucocephala	White-headed Duck		EN	2008	decreasing

AVES (Birds)	Pandion	haliaetus	Osprey	Balazard Pêcheur	LC	2008	
AVES (Birds)	Panurus	biarmicus	Bearded Parrotbill, Bearded Reedling, Bearded Tit		LC	2008	
AVES (Birds)	Parus	ater	Coal Tit		LC	2008	
AVES (Birds)	Parus	caeruleus	Blue Tit		LC	2008	
AVES (Birds)	Parus	major	Great Tit		LC	2008	
AVES (Birds)	Passer	domesticus	House Sparrow	Moineau Domestique	LC	2008	
AVES (Birds)	Passer	hispaniolensis	Spanish Sparrow	Moineau Espagnol	LC	2008	
AVES (Birds)	Passer	montanus	Eurasian Tree Sparrow, Tree Sparrow	Moineau Friquet	LC	2008	
AVES (Birds)	Passer	simplex	Desert Sparrow	Moineau Blanc	LC	2008	
AVES (Birds)	Pelecanus	crispus	Dalmatian Pelican		VU	2008	decreasing
AVES (Birds)	Pelecanus	onocrotalus	Great White Pelican, White Pelican	Pélican Blanc	LC	2008	
AVES (Birds)	Pernis	apivorus	European Honey- buzzard, European Honey Buzzard, Honey Buzzard	Bondrée Apivore	LC	2008	
AVES (Birds)	Petronia	petronia	Rock Sparrow		LC	2008	
AVES (Birds)	Phalacrocorax	aristotelis	European Shag, Shag		LC	2008	
AVES (Birds)	Phalacrocorax	carbo	Great Cormorant, Black Shag, Cormorant, White-breasted Cormorant	Grand Cormoran	LC	2008	
AVES (Birds)	Phalacrocorax	pygmeus	Pygmy Cormorant		LC	2008	
AVES (Birds)	Phalaropus	lobatus	Red-necked Phalarope	Phalarope À Bec Étroit	LC	2008	
AVES (Birds)	Phasianus	colchicus	Common Pheasant, Pheasant, Ring- necked Pheasant		LC	2008	
AVES (Birds)	Philomachus	pugnax	Ruff	Chevalier Combattant	LC	2008	
AVES (Birds)	Phoenicurus	moussieri	Moussier's Redstart		LC	2008	
AVES (Birds)	Phoenicurus	ochruros	Black Redstart	Rougequeue Noir	LC	2008	
AVES (Birds)	Phoenicurus	phoenicurus	Common Redstart, Redstart	Rougequeue À Front Blanc	LC	2008	
AVES (Birds)	Phylloscopus	bonelli	Bonelli's Warbler, Western Bonelli's Warbler	Pouillot De Bonelli	LC	2008	
AVES (Birds)	Phylloscopus	collybita	Common Chiffchaff		LC	2008	
AVES (Birds)	Phylloscopus	ibericus	Iberian Chiffchaff		LC	2008	
AVES (Birds)	Phylloscopus	inornatus	Inornate Warbler, Yellow-browed Warbler		LC	2008	
AVES (Birds)	Phylloscopus	sibilatrix	Wood Warbler	Pouillot Siffleur	LC	2008	
AVES (Birds)	Phylloscopus	trochilus	Willow Warbler	Pouillot Fitis	LC	2008	
AVES (Birds)	Pica	pica	Black-billed Magpie, Common Magpie, Eurasian Magpie, Magpie		LC	2008	

AVES (Birds)	Picus	vallantii	Levaillant's Woodpecker, Levaillant's Green Woodpecker		LC	2008	
AVES (Birds)	Platalea	leucorodia	Eurasian Spoonbill, European Spoonbill, Spoonbill	Spatule Blanche	LC	2008	
AVES (Birds)	Plectrophenax	nivalis	Snow Bunting		LC	2008	
AVES (Birds)	Plegadis	falcinellus	Glossy Ibis	Ibis Falcinelle	LC	2008	
AVES (Birds)	Pluvialis	apricaria	Eurasian Golden Plover, Eurasian Golden-plover, European Golden Plover, European Golden-plover, Golden Plover	Pluvier Doré	LC	2008	
AVES (Birds)	Pluvialis	fulva	Pacific Golden Plover, Pacific Golden-plover	Pluvier Doré Oriental	LC	2008	
AVES (Birds)	Pluvialis	squatarola	Grey Plover, Black-bellied Plover	Pluvier Argenté	LC	2008	
AVES (Birds)	Podiceps	auritus	Horned Grebe, Slavonian Grebe		LC	2008	
AVES (Birds)	Podiceps	cristatus	Great Crested Grebe	Grèbe Huppé	LC	2008	
AVES (Birds)	Podiceps	griseogen	Red-necked Grebe		LC	2008	
AVES (Birds)	Podiceps	nigricollis	Black-necked Grebe, Eared Grebe	Grèbe À Cou Noir	LC	2008	
AVES (Birds)	Porphyrio	alleni	Allen's Gallinule, Lesser Gallinule	Poule Sultane D'Allen	LC	2008	
AVES (Birds)	Porphyrio	porphyrio	Purple Swamphen, Purple Gallinule, Purple Swamp-hen	Poule Sultane	LC	2008	
AVES (Birds)	Porzana	parva	Little Crake	Marouette Poussin	LC	2008	
AVES (Birds)	Porzana	porzana	Spotted Crake	Marouette Ponctué	LC	2008	
AVES (Birds)	Porzana	pusilla	Baillon's Crake, Marsh Crake	Marouette De Baillon	LC	2008	
AVES (Birds)	Prunella	collaris	Alpine Accentor		LC	2008	
AVES (Birds)	Prunella	modularis	Hedge Accentor, Dunnock, Hedge Sparrow		LC	2008	
AVES (Birds)	Pterocles	alchata	Pin-tailed Sandgrouse		LC	2008	
AVES (Birds)	Pterocles	coronatus	Crowned Sandgrouse	Ganga Couronné	LC	2008	
AVES (Birds)	Pterocles	lichtensteinii	Lichtenstein's Sandgrouse	Ganga De Lichtenstein	LC	2008	
AVES (Birds)	Pterocles	orientalis	Black-bellied Sandgrouse		LC	2008	
AVES (Birds)	Pterocles	senegallus	Spotted Sandgrouse	Ganga Tacheté	LC	2008	
AVES (Birds)	Puffinus	gravis	Great Shearwater, Greater Shearwater	Puffin Majeur	LC	2008	
AVES (Birds)	Puffinus	griseus	Sooty Shearwater	Puffin	NT	2008	decreasing

				Fulgineux			
AVES (Birds)	Puffinus	mauretanicus	Balearic Shearwater		CR	2008	decreasing
AVES (Birds)	Puffinus	yelkouan	Yelkouan Shearwater		NT	2008	decreasing
AVES (Birds)	Pycnonotus	barbatus	Common Bulbul	Bulbul Aux Lunettes	LC	2008	
AVES (Birds)	Pyrrhocorax	pyrrhocorax	Red-billed Chough, Chough	Crave À Bec Rouge	LC	2008	
AVES (Birds)	Pyrrhula	pyrrhula	Eurasian Bullfinch		LC	2008	
AVES (Birds)	Rallus	aquaticus	Water Rail, European Water Rail	Râle D'Eau	LC	2008	
AVES (Birds)	Recurvirostra	avosetta	Pied Avocet, Avocet	Avocette À Tête Noire	LC	2008	
AVES (Birds)	Regulus	ignicapilla	Firecrest		LC	2008	
AVES (Birds)	Regulus	regulus	Goldcrest		LC	2008	
AVES (Birds)	Rhamphocoris	clotbey	Thick-billed Lark, Clot-bey's Lark	Alouette De Clot-bey	LC	2008	
AVES (Birds)	Rhodopechys	sanguineus	Crimson-winged Finch		LC	2008	
AVES (Birds)	Riparia	riparia	Sand Martin, Bank Swallow, European Sand Martin	Hirondelle De Rivage	LC	2008	
AVES (Birds)	Rissa	tridactyla	Black-legged Kittiwake, Kittiwake	Mouette Tridactyle	LC	2008	
AVES (Birds)	Saxicola	rubetra	Whinchat	Traquet Tarier	LC	2008	
AVES (Birds)	Saxicola	torquatus	Common Stonechat, Eurasian Stonechat, Stonechat	Traquet Pâtre	LC	2008	
AVES (Birds)	Scolopax	rusticola	Eurasian Woodcock, Woodcock		LC	2008	
AVES (Birds)	Scotocerca	inquieta	Streaked Scrub-warbler, Scrub Warbler, Streaked Scrub Warbler	Dromoïque Du Désert	LC	2008	
AVES (Birds)	Serinus	serinus	European Serin, Serin		LC	2008	
AVES (Birds)	Sitta	ledanti	Algerian Nuthatch, Kabylie Nuthatch, Kabylie Nuthatch		EN	2008	decreasing
AVES (Birds)	Stercorarius	parasiticus	Parasitic Jaeger, Arctic Jaeger, Arctic Skua	Labbe Parasite	LC	2008	
AVES (Birds)	Stercorarius	pomarinus	Pomarine Jaeger, Pomarine Skua	Labbe Pomarin	LC	2008	
AVES (Birds)	Sterna	albifrons	Little Tern	Sterne Naine	LC	2008	
AVES (Birds)	Sterna	bengalensis	Lesser Crested Tern, Lesser Crested-tern	Sterne Voyageuse	LC	2008	
AVES (Birds)	Sterna	caspia	Caspian Tern	Sterne Caspienne	LC	2008	
AVES (Birds)	Sterna	hirundo	Common Tern	Sterne Pierregarin	LC	2008	
AVES (Birds)	Sterna	nilotica	Gull-billed Tern	Sterne Hansel	LC	2008	
AVES (Birds)	Sterna	paradisaea	Arctic Tern	Sterne Arctique	LC	2008	
AVES (Birds)	Sterna	sandvicensis	Sandwich Tern	Sterne Caugek	LC	2008	
AVES (Birds)	Stigmatopelia	senegalensis	Laughing Dove, Laughing Turtle-dove	Tourterelle Maillée	LC	2008	

AVES (Birds)	Streptopelia	turtur	European Turtle-dove, European Turtle Dove,	Tourterelle Des Bois	LC	2008	
AVES (Birds)	Strix	aluco	Tawny Owl		LC	2008	
AVES (Birds)	Struthio	camelus	Ostrich, Common Ostrich	Autruche	LC	2008	
AVES (Birds)	Sturnus	roseus	Rosy Starling, Rose-coloured Starling	Etourneau Roselin	LC	2008	
AVES (Birds)	Sturnus	unicolor	Spotless Starling		LC	2008	
AVES (Birds)	Sturnus	vulgaris	Common Starling, European Starling, Starling	Etourneau Sansonnet	LC	2008	
AVES (Birds)	Sylvia	atricapilla	Blackcap, Eurasian Blackcap	Fauvette À Tête Noire	LC	2008	
AVES (Birds)	Sylvia	borin	Garden Warbler	Fauvette Des Jardins	LC	2008	
AVES (Birds)	Sylvia	cantillans	Subalpine Warbler	Fauvette Passerinette	LC	2008	
AVES (Birds)	Sylvia	communis	Common Whitethroat, Whitethroat	Fauvette Grisette	LC	2008	
AVES (Birds)	Sylvia	conspicillata	Spectacled Warbler	Fauvette À Lunettes	LC	2008	
AVES (Birds)	Sylvia	curruca	Lesser Whitethroat	Fauvette Babillarde	LC	2008	
AVES (Birds)	Sylvia	deserticola	Tristram's Warbler	Fauvette Du Désert	LC	2008	
AVES (Birds)	Sylvia	hortensis	Orphean Warbler	Fauvette Orphée	LC	2008	
AVES (Birds)	Sylvia	melanocephala	Sardinian Warbler	Fauvette Mélanocéphale	LC	2008	
AVES (Birds)	Sylvia	nana	Desert Warbler, Asian Desert Warbler	Fauvette Naine	LC	2008	
AVES (Birds)	Sylvia	rueppelli	Rueppell's Warbler, Rüppell's Warbler	Fauvette Masquée	LC	2008	
AVES (Birds)	Sylvia	sarda	Marmora's Warbler		LC	2008	
AVES (Birds)	Sylvia	undata	Dartford Warbler		NT	2008	decreasing
AVES (Birds)	Tachybaptus	ruficollis	Little Grebe	Grèbe Castagneux	LC	2008	
AVES (Birds)	Tachymarptis	melba	Alpine Swift	Martinet Alpin	LC	2008	
AVES (Birds)	Tadorna	ferruginea	Ruddy Shelduck	Tadorne Casarca	LC	2008	
AVES (Birds)	Tadorna	tadorna	Common Shelduck, Shelduck	Tadorne De Belon	LC	2008	
AVES (Birds)	Tchagra	senegalus	Black-crowned Tchagra	Tchagra À Tête Noire	LC	2008	
AVES (Birds)	Tetrax	tetrax	Little Bustard		NT	2008	
AVES (Birds)	Tichodroma	muraria	Wallcreeper		LC	2008	
AVES (Birds)	Torgos	tracheliotos	Lappet-faced Vulture	Vautour Oricou	VU	2008	decreasing
AVES (Birds)	Tringa	erythropus	Spotted Redshank	Chevalier Arlequin	LC	2008	
AVES (Birds)	Tringa	glareola	Wood Sandpiper	Chevalier Sylvain	LC	2008	
AVES (Birds)	Tringa	nebularia	Common Greenshank, Greenshank	Chevalier Aboyeur	LC	2008	
AVES (Birds)	Tringa	ochropus	Green Sandpiper	Chevalier Cul-blanc	LC	2008	
AVES (Birds)	Tringa	stagnatilis	Marsh Sandpiper	Chevalier Stagnatille	LC	2008	

AVES (Birds)	Tringa	totanus	Common Redshank, Redshank	Chevalier Gambette	LC	2008	
AVES (Birds)	Troglodytes	troglodytes	Winter Wren, Wren		LC	2008	
AVES (Birds)	Turdoides	fulva	Fulvous Chatterer, Fulvous Babbler	Cratérope Fauve	LC	2008	
AVES (Birds)	Turdus	iliacus	Redwing		LC	2008	
AVES (Birds)	Turdus	merula	Eurasian Blackbird, Blackbird, Common Blackbird		LC	2008	
AVES (Birds)	Turdus	philomelos	Song Thrush	Grive Musicienne	LC	2008	
AVES (Birds)	Turdus	pilaris	Fieldfare		LC	2008	
AVES (Birds)	Turdus	torquatus	Ring Ouzel	Merle À Plastron	LC	2008	
AVES (Birds)	Turdus	viscivorus	Mistle Thrush		LC	2008	
AVES (Birds)	Turnix	sylvaticus	Small Buttonquail, Andalusian Hemipode, Kurrichane Buttonquail	Turnix D'Andalousie	LC	2008	
AVES (Birds)	Tyto	alba	Barn Owl	Chouette Effraie	LC	2008	
AVES (Birds)	Upupa	epops	Eurasian Hoopoe, Hoopoe	Huppe Fasciée	LC	2008	
AVES (Birds)	Vanellus	leucurus	White-tailed Lapwing, White-tailed Plover	Vanneau À Queue Blanche	LC	2008	
AVES (Birds)	Vanellus	vanellus	Northern Lapwing, Lapwing	Vanneau Huppé	LC	2008	
CEPHALASPIDOMORPHI (Jawless fishes)	Petromyzon	marinus	Sea Lamprey		LC	2008	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Alopias	vulpinus	Thresher Shark		DD	2002	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Carcharhinus	brachyurus	Bronze Whaler, Cocktail Shark, Copper Shark, Narrowtooth Shark, New Zealand Whaler	Requin Cuivre	NT	2003	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Carcharhinus	brevipinna	Spinner Shark		LR/nt	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Carcharhinus	limbatus	Blacktip Shark		LR/nt	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Carcharhinus	obscurus	Dusky Shark		LR/nt	2000	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Carcharhinus	plumbeus	Sandbar Shark		LR/nt	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Carcharias	taurus	Grey Nurse Shark, Sand Tiger Shark, Spotted Ragged-tooth Shark	Requin Taureau	VU	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Carcharodon	carcharias	Great White Shark		VU	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Centrophorus	granulosus	Gulper Shark	Squale-chagrin Commun	VU	2006	decreasing

CHONDRICHTHYES (Cartilaginous fishes)	Cetorhinus	maximus	Basking Shark	Pelerin	VU	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Chimaera	monstrosa	Rabbitfish	Chimère Commun	NT	2007	stable
CHONDRICHTHYES (Cartilaginous fishes)	Dalatias	licha	Kitefin Shark		DD	2000	
CHONDRICHTHYES (Cartilaginous fishes)	Dasyatis	centroura	Roughtail Stingray		LC	2007	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Dipturus	batis	Blue Skate, Flapper Skate, Grey Skate	Flotte, Pocheteau Gris, Pochette	CR	2006	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Dipturus	oxyrinchus	Long-nosed Skate, Sharpnose Skate	Pocheteau Noir	NT	2007	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Echinorhinus	brucus	Bramble Shark, Spinous Shark, Spiny Shark		DD	2003	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Galeorhinus	galeus	Liver-oil Shark, Miller's Dog, Oil Shark, Penny Dog, Rig, School Shark, Snapper Shark, Soupfin, Soupie, Southern Tope, Sweet William, Tiburon, Tope, Tope Shark, Toper, Vitamin Shark, Whithound	Cagnot, Canicule, Chien De Mer, Haut, Milandré, Palloun, Requin- hâ, Tchi, Touille	VU	2006	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Gymnura	altavela			VU	2007	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Heptranchias	perlo	One-finned Shark, Perlon Shark, Sevengill Cow Shark, Sharpnose Sevengill Shark, Sharpsnouted Sevengill, Slender Sevengill		NT	2003	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Hexanchus	griseus	Bluntnose Sixgill Shark		LR/nt	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Isurus	oxyrinchus	Shortfin Mako		LR/nt	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Lamna	nasus	Porbeagle	Requin-taube Commun	CR	2006	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Leucoraja	melitensis	Maltese Skate Or Ray	Raie De Malte	CR	2006	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Mobula	mobular	Giant Devilray	Mante	EN	2006	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Mustelus	asterias	Starry Smoothhound		LR/lc	2000	
CHONDRICHTHYES (Cartilaginous fishes)	Mustelus	mustelus	Common Smoothhound		LR/lc	2000	
CHONDRICHTHYES (Cartilaginous fishes)	Odontaspis	ferox	Herbst's Nurse Shark, Ragged- tooth Shark, Smalltooth Sand Tiger Shark		DD	2003	decreasing

CHONDRICHTHYES (Cartilaginous fishes)	Oxynotus	centrina	Angular Rough Shark	Centrine Commune	VU	2007	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Prionace	glauca	Blue Shark		LR/nt	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Pteromylaeus	bovinus	Bullray, Duckbill		DD	2006	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Raja	asterias	Starry Ray	Raie Étoilée	LC	2007	stable
CHONDRICHTHYES (Cartilaginous fishes)	Raja	clavata	Thornback Skate		LR/nt	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Rhinobatos	cemiculus	Blackchin Guitarfish	Guitarre De Mer Fousseuse	EN	2007	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Rhinobatos	rhinobatos	Common Guitarfish, Violinfish	Guitare De Mer Commune	EN	2007	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Rostroraja	alba	Bottlenose Skate, Spearnose Skate, White Skate	Raie Blanche	EN	2006	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Sphyrna	lewini	Scalloped Hammerhead		LR/nt	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Sphyrna	mokarran	Great Hammerhead, Hammerhead Shark, Squat-headed Hammerhead Shark	Grand Requin-marteau, Marieau Millet, Poisson Pantoufflier, Sorosena	EN	2007	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Sphyrna	zygaena	Smooth Hammerhead		LR/nt	2000	unknown
CHONDRICHTHYES (Cartilaginous fishes)	Squalus	acanthias	Cape Shark, Piked Dogfish, Spurdog	Aiguillat Commun	VU	2006	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Squalus	acanthias	Cape Shark, Piked Dogfish, Spurdog	Aiguillat Commun	EN	2006	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Squatina	aculeata	Monkfish, Sawback Angelshark, Spiny Angelshark	Ange De Mer Épineux	CR	2007	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Squatina	oculata	Monkfish, Smoothback Angel Shark	Ange De Mer De Bonaparte, Ange De Mer Jaune, Ange De Mer Ocellé	CR	2007	decreasing
CHONDRICHTHYES (Cartilaginous fishes)	Squatina	squatina	Angel Shark	Ange, Ange De Mer, Angel, Antjou, Bourgeois, Bourget, L'anelot, L'ange, Martrame, Mordacle, Squatine Occelee	CR	2006	decreasing
CRUSTACEA (Crabs, Lobsters, Woodlice)	Potamon	algeriense			LC	2008	stable
GASTROPODA (Snails and slugs)	Theodoxus	maresi			DD	1996	
GASTROPODA (Snails and slugs)	Theodoxus	numidicus			DD	1996	

GASTROPODA (Snails and slugs)	Vertigo	moulinsiana	Des Moulin's Snail		LR/cd	1996	
HIRUDINOIDEA (Leeches)	Hirudo	medicinalis	Medicinal Leech	Sangsue Médicinale, Sangsue Officinale	LR/nt	1996	unknown
INSECTA (Insects)	Acilius	duvergeri			VU	1996	
INSECTA (Insects)	Acisoma	panoroides	Grizzled Pintail		LC	2006	unknown
INSECTA (Insects)	Anax	ephippiger	Vagrant Emperor		LC	2006	unknown
INSECTA (Insects)	Anax	imperator	Blue Emperor		LC	2006	unknown
INSECTA (Insects)	Brachythemis	leucosticta	Banded Groundling		LC	2006	unknown
INSECTA (Insects)	Calopteryx	exul			VU	2006	decreasing
INSECTA (Insects)	Cerambyx	cerdo	Cerambyx Longicorn		VU	1996	
INSECTA (Insects)	Chalepoxenus	brunneus			VU	1996	
INSECTA (Insects)	Coenagrion	mercuriale	Southern Damselfly		NT	2006	decreasing
INSECTA (Insects)	Crocothemis	erythraea	Common Scarlet- darter		LC	2006	unknown
INSECTA (Insects)	Diplacodes	lefebvrui	Black Percher		LC	2006	unknown
INSECTA (Insects)	Epimyrma	africana			VU	1996	
INSECTA (Insects)	Epimyrma	algeriana			VU	1996	
INSECTA (Insects)	Gomphus	lucasii			VU	2006	decreasing
INSECTA (Insects)	Ischnura	senegalensis	Marsh Bluetail		LC	2006	unknown
INSECTA (Insects)	Lestes	numidicus			DD	2006	unknown
INSECTA (Insects)	Monomorium	noualhieri			VU	1996	
INSECTA (Insects)	Myrmica	kabylica			VU	1996	
INSECTA (Insects)	Onychogomphus	costae			VU	2006	decreasing
INSECTA (Insects)	Orthetrum	chrysostigma	Epulet Skimmer		LC	2006	unknown
INSECTA (Insects)	Orthetrum	trinacria	Long Skimmer		LC	2006	unknown
INSECTA (Insects)	Pantala	flavescens	Globe Skimmer, Wandering Glider		LC	2006	unknown
INSECTA (Insects)	Paragomphus	genei	Common Hooktail		LC	2006	unknown
INSECTA (Insects)	Pseudagrion	hamoni	Maroon Sprite		LC	2006	unknown
INSECTA (Insects)	Rhyothemis	semihyalina	Phantom Flutterer		LC	2006	unknown
INSECTA (Insects)	Rosalia	alpina	Rosalia Longicorn		VU	1996	
INSECTA (Insects)	Strongylognathus	afer			VU	1996	
INSECTA (Insects)	Strongylognathus	foreli			VU	1996	
INSECTA (Insects)	Sympetrum	fonscolombii	Red-veined Darter		LC	2006	unknown
INSECTA (Insects)	Trithemis	annulata	Violet Dropwing		LC	2006	unknown
INSECTA (Insects)	Trithemis	arteriosa	Red-veined Dropwing		LC	2006	unknown
INSECTA (Insects)	Trithemis	kirbyi	Orange-winged Dropwing		LC	2006	unknown
INSECTA (Insects)	Urothemis	edwardsii	Blue Basker		LC	2006	unknown
INSECTA (Insects)	Zygonyx	torridus	Ringed Cascader		LC	2006	unknown
MAMMALIA (Mammals)	Acinonyx	jubatus	Cheetah, Hunting Leopard	Guépard	VU	2008	decreasing
MAMMALIA (Mammals)	Acomys	airensis	Western Saharan Spiny Mouse		LC	2008	stable
MAMMALIA (Mammals)	Acomys	seurati	Seurat's Spiny Mouse, Seurat's Spiny Mouse		LC	2008	stable
MAMMALIA (Mammals)	Addax	nasomaculatus	Addax	Antilope Blanche	CR	2008	decreasing
MAMMALIA (Mammals)	Alcelaphus	buselaphus	Hartebeest, Swayne's Hartebeest		LC	2008	decreasing

MAMMALIA (Mammals)	Ammotragus	lervia	Aoudad, Barbary Sheep, Uaddan	Mouflon À Manchettes	VU	2008	decreasing
MAMMALIA (Mammals)	Apodemus	sylvaticus	Long-tailed Field Mouse, Wood Mouse	Mulot Sylvestre	LC	2008	stable
MAMMALIA (Mammals)	Asellia	tridens	Geoffroy's Trident Leaf- nosed Bat, Trident Bat, Trident Leaf- nosed Bat		LC	2008	stable
MAMMALIA (Mammals)	Atelerix	algerus	Algerian Hedgehog, North African Hedgehog	Hérisson D'Algérie	LC	2008	unknown
MAMMALIA (Mammals)	Atlantoxerus	getulus	Barbary Ground Squirrel		LC	2008	stable
MAMMALIA (Mammals)	Balaenoptera	physalus	Fin Whale, Common Rorqual, Fin- backed Whale, Finback, Finner, Herring Whale, Razorback	Baleine Fin, Baleine À Nageoires, Baleinoptère Commune, Rorqual Commun	EN	2008	unknown
MAMMALIA (Mammals)	Canis	aureus	Golden Jackal, Asiatic Jackal, Common Jackal	Chacal Commun, Chacal Doré, Le Chacal Commun	LC	2008	increasing
MAMMALIA (Mammals)	Caracal	caracal	Caracal, African Caracal, Asian Caracal, Desert Lynx	Lynx Du Désert	LC	2008	unknown
MAMMALIA (Mammals)	Cervus	elaphus	Red Deer, Bactrian Deer, Bactrian Red Deer, Bactrian Wapiti, Bokharan Deer, Bukhara Red Deer, Elk, Wapiti	Cerf De Bactriane, Cerf Du Turkestan, Cerf Rouge Du Turkestan, Cerf Élaphe, Cerf Élaphe Du Turkestan	LC	2008	increasing
MAMMALIA (Mammals)	Crocidura	pachyura	North African White-toothed Shrew, Pantellerian Shrew		LC	2008	unknown
MAMMALIA (Mammals)	Crocidura	pasha	Pasha Shrew, Sahelian Tiny Shrew		LC	2008	unknown
MAMMALIA (Mammals)	Crocidura	russula	Greater White- toothed Shrew, White-toothed Shrew	Crocidure Commune, Crocidure Musette	LC	2008	stable
MAMMALIA (Mammals)	Crocidura	suaveolens	Lesser Shrew, Lesser White- toothed Shrew	Crocidure Des Jardins	LC	2008	stable
MAMMALIA (Mammals)	Crocidura	whitakeri	Whitaker's Shrew		LC	2008	unknown
MAMMALIA (Mammals)	Crocota	crocota	Spotted Hyaena		LC	2008	decreasing
MAMMALIA (Mammals)	Ctenodactylus	gundi	Gundi, North African Gundi		LC	2008	unknown
MAMMALIA (Mammals)	Ctenodactylus	vali	Val's Gundi		DD	2008	unknown
MAMMALIA (Mammals)	Cuniculus	paca	Spotted Paca	Agouti	LC	2008	stable

MAMMALIA (Mammals)	Delphinus	delphis	Short-beaked Common Dolphin, Atlantic Dolphin, Pacific Dolphin, Saddle-backed Dolphin, Short- beaked Saddleback Dolphin	Dauphin Commun	LC	2008	unknown
MAMMALIA (Mammals)	Delphinus	delphis	Short-beaked Common Dolphin	Dauphin Commun	EN	2003	decreasing
MAMMALIA (Mammals)	Elephantulus	rozeti	North African Elephant Shrew, North African Sengi		LC	2008	unknown
MAMMALIA (Mammals)	Eliomys	munbyanus			LC	2008	stable
MAMMALIA (Mammals)	Eptesicus	serotinus	Serotine	Grande Sérotine, Sérotine Commune	LC	2008	unknown
MAMMALIA (Mammals)	Eudorcas	rufina	Red Gazelle	Gazelle Rouge	DD	2008	unknown
MAMMALIA (Mammals)	Felis	margarita	Sand Cat, Sand Dune Cat	Chat Des Sables	NT	2008	unknown
MAMMALIA (Mammals)	Felis	silvestris	Wild Cat, Wildcat	Chat Orné, Chat Sauvage	LC	2008	decreasing
MAMMALIA (Mammals)	Feresa	attenuata	Pygmy Killer Whale, Slender Blackfish	Epaulard Pygmée, Orque Pygmée	DD	2008	unknown
MAMMALIA (Mammals)	Gazella	cuvieri	Cuvier's Gazelle, Edmi	Gazelle De Cuvier	EN	2008	unknown
MAMMALIA (Mammals)	Gazella	dorcas	Dorcas Gazelle	Gazelle Dorcas	VU	2008	decreasing
MAMMALIA (Mammals)	Gazella	leptoceros	Rhim, Slender- horned Gazelle	Gazelle Leptocère, Gazelle À Cornes Fines, Gazelle À Cornes Fines Des Dunes	EN	2008	decreasing
MAMMALIA (Mammals)	Genetta	genetta	Common Genet, Ibiza Common Genet, Ibiza Genet	Genette Commune	LC	2008	stable
MAMMALIA (Mammals)	Gerbillus	campestris	North African Gerbil		LC	2008	unknown
MAMMALIA (Mammals)	Gerbillus	gerbillus	Lesser Egyptian Gerbil		LC	2008	stable
MAMMALIA (Mammals)	Gerbillus	henleyi	Pygmy Gerbil		LC	2008	unknown
MAMMALIA (Mammals)	Gerbillus	nanus	Dwarf Gerbil, Baluchistan Gerbil		LC	2008	stable
MAMMALIA (Mammals)	Gerbillus	simoni	Lesser Short- tailed Gerbil		LC	2008	unknown
MAMMALIA (Mammals)	Gerbillus	tarabuli	Tarabul's Gerbil		LC	2008	stable
MAMMALIA (Mammals)	Globicephala	melas	Long-finned Pilot Whale	Globicéphale Commun	DD	2008	unknown
MAMMALIA (Mammals)	Grampus	griseus	Risso's Dolphin, Grey Dolphin	Dauphin De Risso, Grampus	LC	2008	unknown
MAMMALIA (Mammals)	Herpestes	ichneumon	Egyptian Mongoose, Ichneumon, Large Grey	Mangouste Ichneumon	LC	2008	stable

			Mongoose				
MAMMALIA (Mammals)	Hippopotamus	amphibus	Common Hippopotamus, Hippopotamus, Large Hippo	Hippopotame	VU	2008	decreasing
MAMMALIA (Mammals)	Hipposideros	caffer	Sundevall's Roundleaf Bat		LC	2008	decreasing
MAMMALIA (Mammals)	Homo	sapiens	Human		LC	2008	increasing
MAMMALIA (Mammals)	Hyaena	hyaena	Striped Hyaena	Hyène Rayée	NT	2008	decreasing
MAMMALIA (Mammals)	Hystrix	cristata	Crested Porcupine, North African Crested Porcupine	Porc-épic Du Nord De L'Afrique, Porc-épic À Crete	LC	2008	unknown
MAMMALIA (Mammals)	Ictonyx	libyca	Libyan Striped Weasel, Saharan Striped Polecat, Saharan Striped Weasel		LC	2008	unknown
MAMMALIA (Mammals)	Jaculus	jaculus	Lesser Egyptian Jerboa		LC	2008	unknown
MAMMALIA (Mammals)	Jaculus	orientalis	Greater Egyptian Jerboa		LC	2008	stable
MAMMALIA (Mammals)	Lemniscomys	barbarus	Barbary Lemniscomys, Barbary Striped Grass Mouse		LC	2008	stable
MAMMALIA (Mammals)	Leptailurus	serval	Serval	Chat-tigre	LC	2008	stable
MAMMALIA (Mammals)	Lepus	capensis	Cape Hare, Arabian Hare, Brown Hare, Desert Hare	Lievre Du Cap	LC	2008	decreasing
MAMMALIA (Mammals)	Lepus	microtis	African Savanna Hare	Lievre Des Savanes	LC	2008	unknown
MAMMALIA (Mammals)	Lutra	lutra	Eurasian Otter, Common Otter, European Otter, European River Otter, Old World Otter	Loutre Commune, Loutre D'Europe, Loutre De Rivière	NT	2008	decreasing
MAMMALIA (Mammals)	Lycaon	pictus	African Wild Dog, Cape Hunting Dog, Painted Hunting Dog, Wild Dog	Cynhyene, Loup-peint, Lycaon	EN	2008	decreasing
MAMMALIA (Mammals)	Macaca	sylvanus	Barbary Macaque, Barbary Ape	Macaque De Gibraltar, Magot, Magot Commun	EN	2008	decreasing
MAMMALIA (Mammals)	Massoutiera	mzabi	Mzab Gundi		LC	2008	unknown
MAMMALIA (Mammals)	Mellivora	capensis	Honey Badger		LC	2008	decreasing
MAMMALIA (Mammals)	Meriones	crassus	Sundevall's Jird		LC	2008	unknown
MAMMALIA (Mammals)	Meriones	libycus	Libyan Jird		LC	2008	stable

MAMMALIA (Mammals)	Meriones	shawi	Shaw's Jird		LC	2008	stable
MAMMALIA (Mammals)	Miniopterus	schreibersii	Common Bentwing Bat, Schreiber's Bentwinged Bat, Schreiber's Long-fingered Bat	Minioptère De Schreibers	NT	2008	decreasing
MAMMALIA (Mammals)	Monachus	monachus	Mediterranean Monk Seal	Phoque-moine Méditerranéen	CR	2008	decreasing
MAMMALIA (Mammals)	Mus	musculus	House Mouse	Souris Domestique	LC	2008	stable
MAMMALIA (Mammals)	Mus	spretus	Algerian Mouse, Western Mediterranean Mouse	Souris D'Afrique Du Nord	LC	2008	stable
MAMMALIA (Mammals)	Mustela	nivalis	Least Weasel, Weasel	Belette D'Europe	LC	2008	stable
MAMMALIA (Mammals)	Myotis	blythii	Lesser Mouse-eared Bat, Lesser Mouse-eared Myotis	Petit Murin	LC	2008	decreasing
MAMMALIA (Mammals)	Myotis	capaccinii	Long-fingered Bat	Murin De Capaccini	VU	2008	decreasing
MAMMALIA (Mammals)	Myotis	emarginatus	Geoffroy's Bat, Geoffroy's Myotis	Murin À Oreilles Échancrées	LC	2008	stable
MAMMALIA (Mammals)	Myotis	nattereri	Natterer's Bat	Murin De Natterer	LC	2008	stable
MAMMALIA (Mammals)	Myotis	punicus	Felten's Myotis, Maghrebian Myotis		NT	2008	decreasing
MAMMALIA (Mammals)	Nanger	dama	Dama Gazelle, Addra Gazelle	Gazelle Dama	CR	2008	decreasing
MAMMALIA (Mammals)	Nyctalus	lasiopterus	Giant Noctule, Greater Noctule Bat	Grande Noctule	NT	2008	decreasing
MAMMALIA (Mammals)	Nyctalus	leisleri	Lesser Noctule		LC	2008	unknown
MAMMALIA (Mammals)	Orcinus	orca	Killer Whale, Orca	Epaulard, Orque	DD	2008	unknown
MAMMALIA (Mammals)	Oryctolagus	cuniculus	European Rabbit		NT	2008	decreasing
MAMMALIA (Mammals)	Oryx	dammah	Scimitar-horned Oryx	Oryx Algazelle, Oryx De Libye	EW	2008	
MAMMALIA (Mammals)	Otonycteris	hemprichii	Desert Long-eared Bat, Hemprich's Long-eared Bat	Oreillard D'Hemprich	LC	2008	unknown
MAMMALIA (Mammals)	Pachyuromys	duprasi	Fat-tailed Gerbil		LC	2008	stable
MAMMALIA (Mammals)	Panthera	leo	Lion, African Lion	Lion D'Afrique	VU	2008	decreasing
MAMMALIA (Mammals)	Panthera	pardus	Leopard	Léopard, Panthère	NT	2008	decreasing
MAMMALIA (Mammals)	Paraechinus	aethiopicus	Desert Hedgehog		LC	2008	stable
MAMMALIA (Mammals)	Physeter	macrocephalus	Sperm Whale, Cachelot, Pot Whale, Spermacet Whale	Cachalot	VU	2008	unknown
MAMMALIA (Mammals)	Pipistrellus	deserti	Egyptian Pipistrelle		LC	2008	unknown

MAMMALIA (Mammals)	Pipistrellus	kuhlii	Kuhl's Pipistrelle	Pipistrelle De Kuhl	LC	2008	unknown
MAMMALIA (Mammals)	Pipistrellus	pipistrellus	Common Pipistrelle	Pipistrelle Commune	LC	2008	stable
MAMMALIA (Mammals)	Pipistrellus	rueppellii	Rüppel's Pipistrelle		LC	2008	unknown
MAMMALIA (Mammals)	Pipistrellus	savii	Savi's Pipistrelle	Pipistrelle De Savi, Vespère De Savi	LC	2008	stable
MAMMALIA (Mammals)	Plecotus	kolombatovici	Kolombatovic's Long-eared Bat, Mediterranean Long-eared Bat	Oreillard Des Balkans	LC	2008	decreasing
MAMMALIA (Mammals)	Procavia	capensis	Rock Hyrax, Rock Dassie	Daman De Rocher	LC	2008	unknown
MAMMALIA (Mammals)	Psammomys	obesus	Fat Sand Rat	Rat De Sable	LC	2008	stable
MAMMALIA (Mammals)	Psammomys	vexillaris	Thin Sand Rat		DD	2008	unknown
MAMMALIA (Mammals)	Rattus	rattus	Black Rat, House Rat, Roof Rat, Ship Rat	Rat Noir	LC	2008	stable
MAMMALIA (Mammals)	Rhinolophus	blasii	Blasius's Horseshoe Bat		LC	2008	decreasing
MAMMALIA (Mammals)	Rhinolophus	clivosus	Geoffroy's Horseshoe Bat		LC	2008	unknown
MAMMALIA (Mammals)	Rhinolophus	euryale	Mediterranean Horseshoe Bat	Rhinolophe Euryale	NT	2008	decreasing
MAMMALIA (Mammals)	Rhinolophus	ferrumequinum	Greater Horseshoe Bat	Grand Rhinolophe Fer À Cheval	LC	2008	decreasing
MAMMALIA (Mammals)	Rhinolophus	hipposideros	Lesser Horseshoe Bat		LC	2008	decreasing
MAMMALIA (Mammals)	Rhinolophus	mehelyi	Mehely's Horseshoe Bat	Rhinolophe De Mehely	VU	2008	decreasing
MAMMALIA (Mammals)	Rhinopoma	hardwickii	Lesser Mouse-tailed Bat		LC	2008	stable
MAMMALIA (Mammals)	Rhinopoma	microphyllum	Greater Mouse-tailed Bat		LC	2008	stable
MAMMALIA (Mammals)	Stenella	coeruleoalba	Striped Dolphin, Euphrosyne Dolphin	Dauphin Bleu Et Blanc, Dauphin Rayé	LC	2008	unknown
MAMMALIA (Mammals)	Steno	bredanensis	Rough-toothed Dolphin	Sténo	LC	2008	unknown
MAMMALIA (Mammals)	Suncus	etruscus	Etruscan Shrew, Pygmy White-toothed Shrew, Savi's Pygmy Shrew, White-toothed Pygmy Shrew	Pachyure Étrusque	LC	2008	unknown
MAMMALIA (Mammals)	Sus	scrofa	Eurasian Wild Pig, Wild Boar, Ryukyu Islands Wild Pig	Sanglier, Sanglier D'Eurasie	LC	2008	unknown
MAMMALIA (Mammals)	Tadarida	aegyptiaca	Egyptian Free-tailed Bat		LC	2008	unknown
MAMMALIA (Mammals)	Tadarida	teniotis	European Free-tailed Bat		LC	2008	unknown
MAMMALIA (Mammals)	Taphozous	nudiventris	Naked-rumped Tomb Bat		LC	2008	stable

MAMMALIA (Mammals)	Tursiops	truncatus	Common Bottlenose Dolphin, Bottle-nosed Dolphin, Bottlenose Dolphin, Bottlenosed Dolphin	Grand Dauphin, Souffleur, Tursiops	LC	2008	unknown
MAMMALIA (Mammals)	Ursus	arctos	Brown Bear, Grizzly Bear, Mexican Grizzly Bear		LC	2008	stable
MAMMALIA (Mammals)	Vulpes	rueppellii	Rüppell's Fox, Rueppell's Fox, Rüeppe's Fox, Rüppel's Fox, Rüppell's Sand Fox, Rüppell's Sand Fox, Sand Fox	Renard De Rüppell, Renard Famélique	LC	2008	unknown
MAMMALIA (Mammals)	Vulpes	vulpes	Red Fox, Cross Fox, Silver Fox	Renard Roux	LC	2008	stable
MAMMALIA (Mammals)	Vulpes	zerda	Fennec Fox	Fennec	LC	2008	unknown
MAMMALIA (Mammals)	Ziphius	cavirostris	Cuvier's Beaked Whale, Goose-beaked Whale, Goosebeak Whale	Ziphius	LC	2008	unknown
REPTILIA (Reptiles)	Acanthodactylus	bedriagai	Bedriaga's Fringe-fingered Lizard		NT	2006	unknown
REPTILIA (Reptiles)	Acanthodactylus	blanci	Blanc's Fringe-toed Lizard		EN	2006	decreasing
REPTILIA (Reptiles)	Acanthodactylus	erythrurus	Spiny-footed Lizard		LC	2006	stable
REPTILIA (Reptiles)	Acanthodactylus	maculatus	Spotted Fringe-fingered Lizard		LC	2006	unknown
REPTILIA (Reptiles)	Acanthodactylus	savignyi	Savigny's Fringe-fingered Lizard		NT	2006	unknown
REPTILIA (Reptiles)	Acanthodactylus	spinicauda	Doumergue's Fringe-fingered Lizard		CR	2006	decreasing
REPTILIA (Reptiles)	Caretta	caretta	Loggerhead	Caouanne, Tortue Caouanne	EN	1996	
REPTILIA (Reptiles)	Chalcides	chalcides	Italian Three-toed Skink, Three-toed Skink		LC	2006	decreasing
REPTILIA (Reptiles)	Chalcides	mauritanicus	Two-fingered Skink		EN	2006	decreasing
REPTILIA (Reptiles)	Chalcides	mertensi	Algerian Three-toed Skink	Seps Tridactyle De L'Algerie	LC	2006	unknown
REPTILIA (Reptiles)	Chalcides	minutus	Small Three-toed Skink	Petit Seps Tridactyle	VU	2006	decreasing
REPTILIA (Reptiles)	Chalcides	parallelus		Seps De Doumergue	EN	2006	decreasing
REPTILIA (Reptiles)	Coronella	gironnica	Southern Smooth Snake		LC	2006	decreasing
REPTILIA (Reptiles)	Daboia	deserti	Desert Viper	Vipere Du Desert	NT	2006	decreasing
REPTILIA (Reptiles)	Daboia	mauritanica	Moorish Viper	Vipere De Maurétanie	NT	2006	decreasing
REPTILIA (Reptiles)	Emys	orbicularis	European Pond Turtle	Cistude D'Europe	LR/nt	1996	

REPTILIA (Reptiles)	Eumeces	algeriensis	Algerian Orange-tailed Skink	Eumece D'Algerie	LC	2006	stable
REPTILIA (Reptiles)	Hemorrhois	hippocrepis	Horseshoe Whip Snake		LC	2006	stable
REPTILIA (Reptiles)	Hyalosaurus	koellikeri	Koelliker's Glass Lizard, Moroccan Glass Lizard		LC	2006	stable
REPTILIA (Reptiles)	Macroprotodon	abubakeri			DD	2006	unknown
REPTILIA (Reptiles)	Macroprotodon	brevis	False Smooth Snake		NT	2006	decreasing
REPTILIA (Reptiles)	Macroprotodon	cucullatus	False Smooth Snake		LC	2006	decreasing
REPTILIA (Reptiles)	Natrix	maura	Viperine Snake		LC	2006	stable
REPTILIA (Reptiles)	Natrix	natrix	Sardinian Grass Snake		LR/lc	1996	
REPTILIA (Reptiles)	Ophisops	occidentalis	Western Snake-eyed Lizard		LC	2006	decreasing
REPTILIA (Reptiles)	Podarcis	vaucheri			LC	2006	stable
REPTILIA (Reptiles)	Psammodromus	algius	Large Psammodromus		LC	2006	stable
REPTILIA (Reptiles)	Psammodromus	blanci	Blanc's Sand Racer		NT	2006	decreasing
REPTILIA (Reptiles)	Ptyodactylus	oudrii	Oudri's Fan-footed Gecko		LC	2006	stable
REPTILIA (Reptiles)	Saurodactylus	brosseti			LC	2006	stable
REPTILIA (Reptiles)	Saurodactylus	mauritanicus			LC	2006	stable
REPTILIA (Reptiles)	Spalerosophis	dolichospilus	Mograbini Diadem Snake	Couleuvre Diadème Du Maghreb	DD	2006	unknown
REPTILIA (Reptiles)	Tarentola	boehmei	Böhme's Gecko		LC	2006	stable
REPTILIA (Reptiles)	Tarentola	deserti	Desert Wall Gecko		LC	2006	stable
REPTILIA (Reptiles)	Tarentola	mauritanica	Common Wall Gecko, Moorish Gecko		LC	2006	stable
REPTILIA (Reptiles)	Tarentola	neglecta	Algerian Wall Gecko		LC	2006	stable
REPTILIA (Reptiles)	Teira	perspicillata	Moroccan Rock Lizard		LC	2006	stable
REPTILIA (Reptiles)	Testudo	graeca	Common Tortoise, Greek Tortoise, Moorish Tortoise, Spur-thighed Tortoise	Tortue Mauresque	VU	1996	
REPTILIA (Reptiles)	Timon	pater	North African Ocellated Lizard		LC	2006	decreasing
REPTILIA (Reptiles)	Timon	tangitanus		Lézard Ocellé Du Atlas	LC	2006	decreasing
REPTILIA (Reptiles)	Trachylepis	vittata	Bridled Skink		LC	2006	stable
REPTILIA (Reptiles)	Trapelus	tournevillei	Erg Agama		LC	2006	stable
REPTILIA (Reptiles)	Trogonophis	wiegmanni	Checkerboard Worm Lizard	Trogonophis	LC	2006	unknown
REPTILIA (Reptiles)	Uromastix	alfredschmidti			NT	2006	stable
REPTILIA (Reptiles)	Vipera	latastei	Lataste's Viper		NT	2006	decreasing

Appendix 5

Checklist of the birds of Algeria

Currently no Bird Guides for Algeria are available. Most recent and updated information is the Checklist of Birds found in Algeria (<http://avibase.bsc-eoc.org/checklist.jsp?lang=EN®ion=dz&list=clements>)

Number of bird species occurring: 397
Number of endemic species: 1
Number of globally threatened species: 12
Number of introduced species: 4

STRUTHIONIFORMES: *Struthionidae*

Ostrich *Struthio camelus* Extirpated

ANSERIFORMES: *Anatidae*

Taiga Bean-Goose *Anser fabalis*
Graylag Goose *Anser anser*
Brant *Branta bernicla*
Barnacle Goose *Branta leucopsis* Rare/Accidental
Mute Swan *Cygnus olor*
Tundra Swan *Cygnus columbianus*
Whooper Swan *Cygnus cygnus*
Egyptian Goose *Alopochen aegyptiaca*
Ruddy Shelduck *Tadorna ferruginea*
Common Shelduck *Tadorna tadorna*
Gadwall *Anas strepera*
Eurasian Wigeon *Anas penelope*
Mallard *Anas platyrhynchos*
Blue-winged Teal *Anas discors* Rare/Accidental
Northern Shoveler *Anas clypeata*
Northern Pintail *Anas acuta*
Garganey *Anas querquedula*
Green-winged Teal *Anas crecca*
Marbled Teal *Marmaronetta angustirostris* Vulnerable
Red-crested Pochard *Netta rufina* Extirpated
Common Pochard *Aythya farina*
Ring-necked Duck *Aythya collaris* Rare/Accidental
Ferruginous Pochard *Aythya nyroca* Near-threatened
Tufted Duck *Aythya fuligula*
Greater Scaup *Aythya marila*
White-winged Scoter *Melanitta fusca*

Black Scoter	<i>Melanitta nigra</i>	
Common Goldeneye	<i>Bucephala clangula</i>	
Smew	<i>Mergellus albellus</i>	
Common Merganser	<i>Mergus merganser</i>	
Red-breasted Merganser	<i>Mergus serrator</i>	
Ruddy Duck	<i>Oxyura jamaicensis</i>	Introduced species
White-headed Duck	<i>Oxyura leucocephala</i>	Endangered
GALLIFORMES: <i>Phasianidae</i>		
Red-legged Partridge	<i>Alectoris rufa</i>	Introduced species
Barbary Partridge	<i>Alectoris barbara</i>	
Common Quail	<i>Coturnix coturnix</i>	
Ring-necked Pheasant	<i>Phasianus colchicus</i>	Introduced species
GAVIIFORMES: <i>Gaviidae</i>		
Red-throated Loon	<i>Gavia stellata</i>	
Arctic Loon	<i>Gavia arctica</i>	
Common Loon	<i>Gavia immer</i>	
PODICEPIDIFORMES: <i>Podicipedidae</i>		
Little Grebe	<i>Tachybaptus ruficollis</i>	
Horned Grebe	<i>Podiceps auritus</i>	
Red-necked Grebe	<i>Podiceps grisegena</i>	
Great Crested Grebe	<i>Podiceps cristatus</i>	
Eared Grebe	<i>Podiceps nigricollis</i>	
PHOENICOPTERIFORMES: <i>Phoenicopteridae</i>		
Greater Flamingo	<i>Phoenicopterus roseus</i>	
PROCELLARIIFORMES: <i>Procellariidae</i>		
Cory's Shearwater	<i>Calonectris diomedea</i>	
Greater Shearwater	<i>Puffinus gravis</i>	
Sooty Shearwater	<i>Puffinus griseus</i>	Near-threatened
Manx Shearwater	<i>Puffinus puffinus</i>	
Balearic Shearwater	<i>Puffinus mauretanicus</i>	Critically endangered
PROCELLARIIFORMES: <i>Hydrobatidae</i>		
Wilson's Storm-Petrel	<i>Oceanites oceanicus</i>	
European Storm-Petrel	<i>Hydrobates pelagicus</i>	
Leach's Storm-Petrel	<i>Oceanodroma leucorhoa</i>	
PELECANIFORMES: <i>Sulidae</i>		
Northern Gannet	<i>Morus bassanus</i>	

PELECANIFORMES: *Pelecanidae*

Great White Pelican	<i>Pelecanus onocrotalus</i>	
Dalmatian Pelican	<i>Pelecanus crispus</i>	Vulnerable

PELECANIFORMES: *Phalacrocoracidae*

Great Cormorant	<i>Phalacrocorax carbo</i>	
European Shag	<i>Phalacrocorax aristotelis</i>	
Pygmy Cormorant	<i>Phalacrocorax pygmaeus</i>	

CICONIIFORMES: *Ardeidae*

Great Bittern	<i>Botaurus stellaris</i>	
Little Bittern	<i>Ixobrychus minutus</i>	
Gray Heron	<i>Ardea cinerea</i>	
Black-headed Heron	<i>Ardea melanocephala</i>	Rare/Accidental
Purple Heron	<i>Ardea purpurea</i>	
Great Egret	<i>Ardea alba</i>	
Little Egret	<i>Egretta garzetta</i>	
Cattle Egret	<i>Bubulcus ibis</i>	
Squacco Heron	<i>Ardeola ralloides</i>	
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	

CICONIIFORMES: *Threskiornithidae*

Glossy Ibis	<i>Plegadis falcinellus</i>	
Waldrapp	<i>Geronticus eremite</i>	Extirpated Critically endangered
Eurasian Spoonbill	<i>Platalea leucorodia</i>	

CICONIIFORMES: *Ciconiidae*

Black Stork	<i>Ciconia nigra</i>	
White Stork	<i>Ciconia ciconia</i>	
Yellow-billed Stork	<i>Mycteria ibis</i>	

FALCONIFORMES: *Pandionidae*

Osprey	<i>Pandion haliaetus</i>	
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FALCONIFORMES: *Accipitridae*

European Honey-buzzard	<i>Pernis apivorus</i>	
Black-shouldered Kite	<i>Elanus caeruleus</i>	
Red Kite	<i>Milvus milvus</i>	Near-threatened
Black Kite	<i>Milvus migrans</i>	
White-tailed Eagle	<i>Haliaeetus albicilla</i>	Extirpated
Lammergeier	<i>Gypaetus barbatus</i>	

Egyptian Vulture	<i>Neophron percnopterus</i>	
Eurasian Griffon	<i>Gyps fulvus</i>	
Lappet-faced Vulture	<i>Torgos tracheliotus</i>	
Short-toed Eagle	<i>Circaetus gallicus</i>	
Western Marsh-Harrier	<i>Circus aeruginosus</i>	
Northern Harrier	<i>Circus cyaneus</i>	
Pallid Harrier	<i>Circus macrourus</i>	Near-threatened
Montagu's Harrier	<i>Circus pygargus</i>	
Eurasian Sparrowhawk	<i>Accipiter nisus</i>	
Northern Goshawk	<i>Accipiter gentilis</i>	
Eurasian Buzzard	<i>Buteo buteo</i>	
Long-legged Buzzard	<i>Buteo rufinus</i>	
Lesser Spotted Eagle	<i>Aquila pomarina</i>	
Tawny Eagle	<i>Aquila rapax</i>	
Spanish Eagle	<i>Aquila adalberti</i>	Extirpated Vulnerable
Imperial Eagle	<i>Aquila heliaca</i>	Vulnerable
Golden Eagle	<i>Aquila chrysaetos</i>	
Bonelli's Eagle	<i>Aquila fasciata</i>	
Booted Eagle	<i>Aquila pennata</i>	
FALCONIFORMES: <i>Falconidae</i>		
Lesser Kestrel	<i>Falco naumanni</i>	Vulnerable
Eurasian Kestrel	<i>Falco tinnunculus</i>	
Red-footed Falcon	<i>Falco vespertinus</i>	Near-threatened
Eleonora's Falcon	<i>Falco eleonora</i>	
Merlin	<i>Falco columbarius</i>	
Eurasian Hobby	<i>Falco subbuteo</i>	
Lanner Falcon	<i>Falco biarmicus</i>	
Peregrine Falcon	<i>Falco peregrinus</i>	
Barbary Falcon	<i>Falco pelegrinoides</i>	
GRUIFORMES: <i>Turnicidae</i>		
Small Buttonquail	<i>Turnix sylvaticus</i>	
GRUIFORMES: <i>Rallidae</i>		
Corn Crake	<i>Crex crex</i>	Near-threatened
Water Rail	<i>Rallus aquaticus</i>	
Little Crake	<i>Porzana parva</i>	
Baillon's Crake	<i>Porzana pusilla</i>	
Spotted Crake	<i>Porzana porzana</i>	
Striped Crake	<i>Aenigmatolimnas marginalis</i>	Rare/Accidental
Purple Swamphen	<i>Porphyrio porphyrio</i>	

Allen's Gallinule	<i>Porphyrio alleni</i>	Rare/Accidental
Common Moorhen	<i>Gallinula chloropus</i>	
Red-knobbed Coot	<i>Fulica cristata</i>	
Eurasian Coot	<i>Fulica atra</i>	
GRUIFORMES: <i>Otididae</i>		
Great Bustard	<i>Otis tarda</i>	Extirpated Vulnerable
Arabian Bustard	<i>Ardeotis arabs</i>	
Houbara Bustard	<i>Chlamydotis undulata</i>	
Little Bustard	<i>Tetrax tetrax</i>	Near-threatened
GRUIFORMES: <i>Gruidae</i>		
Demoiselle Crane	<i>Anthropoides virgo</i>	Extirpated
Common Crane	<i>Grus grus</i>	
CHARADRIIFORMES: <i>Burhinidae</i>		
Eurasian Thick-knee	<i>Burhinus oediconemus</i>	
CHARADRIIFORMES: <i>Charadriidae</i>		
Northern Lapwing	<i>Vanellus vanellus</i>	
White-tailed Lapwing	<i>Vanellus leucurus</i>	
Black-bellied Plover	<i>Pluvialis squatarola</i>	
Eurasian Golden-Plover	<i>Pluvialis apricaria</i>	
Pacific Golden-Plover	<i>Pluvialis fulva</i>	Rare/Accidental
Snowy Plover	<i>Charadrius alexandrinus</i>	
Common Ringed Plover	<i>Charadrius hiaticula</i>	
Little Ringed Plover	<i>Charadrius dubius</i>	
Eurasian Dotterel	<i>Charadrius morinellus</i>	
CHARADRIIFORMES: <i>Haematopodidae</i>		
Eurasian Oystercatcher	<i>Haematopus ostralegus</i>	
CHARADRIIFORMES: <i>Recurvirostridae</i>		
Black-winged Stilt	<i>Himantopus himantopus</i>	
Pied Avocet	<i>Recurvirostra avosetta</i>	
CHARADRIIFORMES: <i>Scolopacidae</i>		
Common Sandpiper	<i>Actitis hypoleucos</i>	
Green Sandpiper	<i>Tringa ochropus</i>	
Spotted Redshank	<i>Tringa erythropus</i>	
Common Greenshank	<i>Tringa nebularia</i>	
Marsh Sandpiper	<i>Tringa stagnatilis</i>	
Wood Sandpiper	<i>Tringa glareola</i>	

Common Redshank	<i>Tringa tetanus</i>	
Whimbrel	<i>Numenius phaeopus</i>	
Slender-billed Curlew	<i>Numenius tenuirostris</i>	Critically endangered
Eurasian Curlew	<i>Numenius arquata</i>	
Black-tailed Godwit	<i>Limosa limosa</i>	Near-threatened
Bar-tailed Godwit	<i>Limosa lapponica</i>	
Ruddy Turnstone	<i>Arenaria interpres</i>	
Red Knot	<i>Calidris canutus</i>	
Sanderling	<i>Calidris alba</i>	
Little Stint	<i>Calidris minuta</i>	
Temminck's Stint	<i>Calidris temminckii</i>	
Dunlin	<i>Calidris alpina</i>	
Curlew Sandpiper	<i>Calidris ferruginea</i>	
Ruff	<i>Philomachus pugnax</i>	
Jack Snipe	<i>Lymnocyptes minimus</i>	
Great Snipe	<i>Gallinago media</i>	Near-threatened
Common Snipe	<i>Gallinago gallinago</i>	
Eurasian Woodcock	<i>Scolopax rusticola</i>	
Red-necked Phalarope	<i>Phalaropus lobatus</i>	

CHARADRIIFORMES: *Glareolidae*

Cream-colored Courser	<i>Cursorius cursor</i>	
Collared Pratincole	<i>Glareola pratincola</i>	

CHARADRIIFORMES: *Laridae*

Black-legged Kittiwake	<i>Rissa tridactyla</i>	
Slender-billed Gull	<i>Chroicocephalus genei</i>	
Gray-hooded Gull	<i>Chroicocephalus cirrocephalus</i>	
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	
Little Gull	<i>Hydrocoloeus minutus</i>	
Mediterranean Gull	<i>Ichthyaetus melanocephalus</i>	
Audouin's Gull	<i>Ichthyaetyus audouinii</i>	Near-threatened
Mew Gull	<i>Larus canus</i>	
Caspian Gull	<i>Larus cachinnans</i>	
Lesser Black-backed Gull	<i>Larus fuscus</i>	
Great Black-backed Gull	<i>Larus marinus</i>	
Little Tern	<i>Sternula albifrons</i>	
Gull-billed Tern	<i>Gelochelidon nilotica</i>	
Caspian Tern	<i>Hydroprogne caspia</i>	
Black Tern	<i>Chlidonias niger</i>	
White-winged Tern	<i>Chlidonias leucopterus</i>	
Whiskered Tern	<i>Chlidonias hybrida</i>	

Roseate Tern	<i>Sterna dougallii</i>
Common Tern	<i>Sterna hirundo</i>
Arctic Tern	<i>Sterna paradisaea</i>
Sandwich Tern	<i>Thalasseus sandvicensis</i>
Lesser Crested Tern	<i>Thalasseus bengalensis</i>

CHARADRIIFORMES: *Stercorariidae*

Great Skua	<i>Stercorarius skua</i>
Pomarine Jaeger	<i>Stercorarius pomarinus</i>
Parasitic Jaeger	<i>Stercorarius parasiticus</i>

CHARADRIIFORMES: *Alcidae*

Razorbill	<i>Alca torda</i>
Atlantic Puffin	<i>Fratercula arctica</i>

PTEROCLIFORMES: *Pteroclididae*

Pin-tailed Sandgrouse	<i>Pterocles alchata</i>
Spotted Sandgrouse	<i>Pterocles senegallus</i>
Black-bellied Sandgrouse	<i>Pterocles orientalis</i>
Crowned Sandgrouse	<i>Pterocles coronatus</i>
Lichtenstein's Sandgrouse	<i>Pterocles lichtensteinii</i>

COLUMBIFORMES: *Columbidae*

Rock Pigeon	<i>Columba livia</i>
Stock Dove	<i>Columba oenas</i>
Common Wood-Pigeon	<i>Columba palumbus</i>
Eurasian Turtle-Dove	<i>Streptopelia turtur</i>
Laughing Dove	<i>Streptopelia senegalensis</i>
Namaqua Dove	<i>Oena capensis</i>

CUCULIFORMES: *Cuculidae*

Great Spotted Cuckoo	<i>Clamator glandarius</i>
Common Cuckoo	<i>Cuculus canorus</i>

STRIGIFORMES: *Tytonidae*

Barn Owl	<i>Tyto alba</i>
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STRIGIFORMES: *Strigidae*

European Scops-Owl	<i>Otus scops</i>
Pharaoh Eagle-Owl	<i>Bubo ascalaphus</i>
Little Owl	<i>Athene noctua</i>
Tawny Owl	<i>Strix aluco</i>
Northern Long-eared Owl	<i>Asio otus</i>

Short-eared Owl	<i>Asio flammeus</i>	
Marsh Owl	<i>Asio capensis</i>	Extirpated
CAPRIMULGIFORMES: <i>Caprimulgidae</i>		
Red-necked Nightjar	<i>Caprimulgus ruficollis</i>	
Eurasian Nightjar	<i>Caprimulgus europaeus</i>	
Egyptian Nightjar	<i>Caprimulgus aegyptius</i>	
APODIFORMES: <i>Apodidae</i>		
Common Swift	<i>Apus apus</i>	
Pallid Swift	<i>Apus pallidus</i>	
Little Swift	<i>Apus affinis</i>	
Alpine Swift	<i>Tachymarptis melba</i>	
CORACIIFORMES: <i>Alcedinidae</i>		
Common Kingfisher	<i>Alcedo atthis</i>	
CORACIIFORMES: <i>Meropidae</i>		
Blue-cheeked Bee-eater	<i>Merops persicus</i>	
European Bee-eater	<i>Merops apiaster</i>	
CORACIIFORMES: <i>Coraciidae</i>		
European Roller	<i>Coracias garrulous</i>	Near-threatened
CORACIIFORMES: <i>Upupidae</i>		
Eurasian Hoopoe	<i>Upupa epops</i>	
PICIFORMES: <i>Picidae</i>		
Eurasian Wryneck	<i>Jynx torquilla</i>	
Lesser Spotted Woodpecker	<i>Dendrocopos minor</i>	
Great Spotted Woodpecker	<i>Dendrocopos major</i>	
Levaillant's Woodpecker	<i>Picus vaillantii</i>	
PASSERIFORMES: <i>Laniidae</i>		
Red-backed Shrike	<i>Lanius collurio</i>	
Southern Gray Shrike	<i>Lanius meridionalis</i>	
Masked Shrike	<i>Lanius nubicus</i>	
Woodchat Shrike	<i>Lanius senator</i>	
PASSERIFORMES: <i>Corvidae</i>		
Eurasian Jay	<i>Garrulus glandarius</i>	
Eurasian Magpie	<i>Pica pica</i>	
Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>	

Eurasian Jackdaw	<i>Corvus monedula</i>	
Rook	<i>Corvus frugilegus</i>	
Carrion Crow	<i>Corvus corone</i>	
Pied Crow	<i>Corvus albus</i>	Rare/Accidental
Brown-necked Raven	<i>Corvus ruficollis</i>	
Common Raven	<i>Corvus corax</i>	

PASSERIFORMES: *Alaudidae*

Greater Hoopoe-Lark	<i>Alaemon alaudipes</i>	
Dupont's Lark	<i>Chersophilus duponti</i>	Near-threatened
Black-crowned Sparrow-Lark	<i>Eremopterix nigriceps</i>	
Bar-tailed Lark	<i>Ammomanes cinctura</i>	
Desert Lark	<i>Ammomanes deserti</i>	
Thick-billed Lark	<i>Ramphocoris clotbey</i>	
Calandra Lark	<i>Melanocorypha calandra</i>	
Greater Short-toed Lark	<i>Calandrella brachydactyla</i>	
Lesser Short-toed Lark	<i>Calandrella rufescens</i>	
Crested Lark	<i>Galerida cristata</i>	
Thekla Lark	<i>Galerida theklae</i>	
Eurasian Skylark	<i>Alauda arvensis</i>	
Wood Lark	<i>Lullula arborea</i>	
Temminck's Lark	<i>Eremophila bilopha</i>	

PASSERIFORMES: *Hirundinidae*

Bank Swallow	<i>Riparia riparia</i>	
Eurasian Crag-Martin	<i>Ptyonoprogne rupestris</i>	
Rock Martin	<i>Ptyonoprogne fuligula</i>	
Barn Swallow	<i>Hirundo rustica</i>	
Red-rumped Swallow	<i>Cecropis daurica</i>	
House Martin	<i>Delichon urbicum</i>	

PASSERIFORMES: *Paridae*

Coal Tit	<i>Periparus ater</i>	
Great Tit	<i>Parus major</i>	
Eurasian Blue Tit	<i>Cyanistes caeruleus</i>	
African Blue Tit	<i>Cyanistes teneriffae</i>	

PASSERIFORMES: *Sittidae*

Algerian Nuthatch	<i>Sitta ledanti</i>	Endemic Endangered
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PASSERIFORMES: *Tichodromidae*

Wallcreeper	<i>Tichodroma muraria</i>	
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PASSERIFORMES: *Certhiidae*

Short-toed Treecreeper *Certhia brachydactyla*

PASSERIFORMES: *Troglodytidae*

Winter Wren *Troglodytes troglodytes*

PASSERIFORMES: *Cinclidae*

White-throated Dipper *Cinclus cinclus*

PASSERIFORMES: *Pycnonotidae*

Common Bulbul *Pycnonotus barbatus*

PASSERIFORMES: *Regulidae*

Goldcrest *Regulus regulus*

Firecrest *Regulus ignicapilla*

PASSERIFORMES: *Cisticolidae*

Zitting Cisticola *Cisticola juncidis*

Streaked Scrub-Warbler *Scotocerca inquieta*

PASSERIFORMES: *Sylviidae*

Cetti's Warbler *Cettia cetti*

Grasshopper Warbler *Locustella naevia*

Eurasian River Warbler *Locustella fluviatilis*

Savi's Warbler *Locustella luscinioides*

Moustached Warbler *Acrocephalus melanopogon*

Aquatic Warbler *Acrocephalus paludicola* Vulnerable

Sedge Warbler *Acrocephalus schoenobaenus*

Eurasian Reed-Warbler *Acrocephalus scirpaceus*

Marsh Warbler *Acrocephalus palustris*

Great Reed-Warbler *Acrocephalus arundinaceus*

Eastern Olivaceous Warbler *Hippolais pallida*

Western Olivaceous Warbler *Hippolais opaca*

Olive-tree Warbler *Hippolais olivetorum*

Melodious Warbler *Hippolais polyglotta*

Icterine Warbler *Hippolais icterina*

Willow Warbler *Phylloscopus trochilus*

Common Chiffchaff *Phylloscopus collybita*

Iberian Chiffchaff *Phylloscopus ibericus*

Western Bonelli's Warbler *Phylloscopus bonelli*

Wood Warbler *Phylloscopus sibilatrix*

Yellow-browed Warbler *Phylloscopus inornatus*

Blackcap *Sylvia atricapilla*

Garden Warbler	<i>Sylvia borin</i>
Western Orphean Warbler	<i>Sylvia hortensis</i>
Greater Whitethroat	<i>Sylvia communis</i>
Lesser Whitethroat	<i>Sylvia curruca</i>
African Desert Warbler	<i>Sylvia deserti</i>
Spectacled Warbler	<i>Sylvia conspicillata</i>
Tristram's Warbler	<i>Sylvia deserticola</i>
Dartford Warbler	<i>Sylvia undata</i>
Marmora's Warbler	<i>Sylvia sarda</i>
Rueppell's Warbler	<i>Sylvia rueppelli</i>
Subalpine Warbler	<i>Sylvia cantillans</i>
Sardinian Warbler	<i>Sylvia melanocephala</i>

PASSERIFORMES: *Muscicapidae*

Spotted Flycatcher	<i>Muscicapa striata</i>	
European Pied Flycatcher	<i>Ficedula hypoleuca</i>	
Atlas Flycatcher	<i>Ficedula speculigera</i>	
Collared Flycatcher	<i>Ficedula albicollis</i>	
Red-breasted Flycatcher	<i>Ficedula parva</i>	
European Robin	<i>Erithacus rubecula</i>	
Common Nightingale	<i>Luscinia megarhynchos</i>	
Bluethroat	<i>Luscinia svecica</i>	
Rufous-tailed Scrub-Robin	<i>Cercotrichas galactotes</i>	
Black Scrub-Robin	<i>Cercotrichas podobe</i>	Rare/Accidental
Black Redstart	<i>Phoenicurus ochruros</i>	
Common Redstart	<i>Phoenicurus phoenicurus</i>	
Moussier's Redstart	<i>Phoenicurus moussieri</i>	
White-tailed Wheatear	<i>Oenanthe leucopyga</i>	
Black Wheatear	<i>Oenanthe leucura</i>	
Northern Wheatear	<i>Oenanthe oenanthe</i>	
Mourning Wheatear	<i>Oenanthe lugens</i>	
Red-rumped Wheatear	<i>Oenanthe moesta</i>	
Black-eared Wheatear	<i>Oenanthe hispanica</i>	
Desert Wheatear	<i>Oenanthe deserti</i>	
Isabelline Wheatear	<i>Oenanthe isabellina</i>	
Whinchat	<i>Saxicola rubetra</i>	

PASSERIFORMES: *Turdidae*

Rufous-tailed Rock-Thrush	<i>Monticola saxatilis</i>
Blue Rock-Thrush	<i>Monticola solitarius</i>
Ring Ouzel	<i>Turdus torquatus</i>
Eurasian Blackbird	<i>Turdus merula</i>

Fieldfare	<i>Turdus pilaris</i>
Redwing	<i>Turdus iliacus</i>
Song Thrush	<i>Turdus philomelos</i>
Mistle Thrush	<i>Turdus viscivorus</i>

PASSERIFORMES: *Timaliidae*

Fulvous Chatterer	<i>Turdoides fulva</i>
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PASSERIFORMES: *Paradoxornithidae*

Bearded Reedling	<i>Panurus biarmicus</i>
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PASSERIFORMES: *Oriolidae*

Eurasian Golden Oriole	<i>Oriolus oriolus</i>
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PASSERIFORMES: *Malaconotidae*

Black-crowned Tchagra	<i>Tchagra senegalus</i>
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PASSERIFORMES: *Sturnidae*

Rosy Starling	<i>Pastor roseus</i>
European Starling	<i>Sturnus vulgaris</i>
Spotless Starling	<i>Sturnus unicolor</i>

PASSERIFORMES: *Prunellidae*

Alpine Accentor	<i>Prunella collaris</i>
Dunnock	<i>Prunella modularis</i>

PASSERIFORMES: *Motacillidae*

Western Yellow Wagtail	<i>Motacilla flava</i>
Gray Wagtail	<i>Motacilla cinerea</i>
White Wagtail	<i>Motacilla alba</i>
Tawny Pipit	<i>Anthus campestris</i>
Meadow Pipit	<i>Anthus pratensis</i>
Tree Pipit	<i>Anthus trivialis</i>
Red-throated Pipit	<i>Anthus cervinus</i>
Water Pipit	<i>Anthus spinoletta</i>
Rock Pipit	<i>Anthus petrosus</i>

PASSERIFORMES: *Bombycillidae*

Bohemian Waxwing	<i>Bombycilla garrulous</i>
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PASSERIFORMES: *Emberizidae*

Lapland Longspur	<i>Calcarius lapponicus</i>	Rare/Accidental
Yellowhammer	<i>Emberiza citrinella</i>	Rare/Accidental

Cirl Bunting	<i>Emberiza cirrus</i>	
Rock Bunting	<i>Emberiza cia</i>	
Ortolan Bunting	<i>Emberiza hortulana</i>	
Cretzschmar's Bunting	<i>Emberiza caesia</i>	
House Bunting	<i>Emberiza striolata</i>	
Little Bunting	<i>Emberiza pusilla</i>	
Black-headed Bunting	<i>Emberiza melanocephala</i>	
Reed Bunting	<i>Emberiza schoeniclus</i>	
Corn Bunting	<i>Emberiza calandra</i>	
Snow Bunting	<i>Plectrophenax nivalis</i>	Rare/Accidental

PASSERIFORMES: Fringillidae

Chaffinch	<i>Fringilla coelebs</i>	
Brambling	<i>Fringilla montifringilla</i>	
Red Crossbill	<i>Loxia curvirostra</i>	
European Greenfinch	<i>Carduelis chloris</i>	
Eurasian Siskin	<i>Carduelis spinus</i>	
European Goldfinch	<i>Carduelis carduelis</i>	
Eurasian Linnet	<i>Carduelis cannabina</i>	
European Serin	<i>Serinus serinus</i>	
Eurasian Bullfinch	<i>Pyrrhula pyrrhula</i>	
Hawfinch	<i>Coccothraustes coccothraustes</i>	
Crimson-winged Finch	<i>Rhodopechys sanguineus</i>	
Trumpeter Finch	<i>Bucanetes githagineus</i>	

PASSERIFORMES: Passeridae

House Sparrow	<i>Passer domesticus</i>	
Spanish Sparrow	<i>Passer hispaniolensis</i>	
Desert Sparrow	<i>Passer simplex</i>	
Eurasian Tree Sparrow	<i>Passer montanus</i>	
Sudan Golden Sparrow	<i>Passer luteus</i>	
Rock Petronia	<i>Petronia petronia</i>	

PASSERIFORMES: Estrildidae

Red-billed Firefinch	<i>Lagonosticta senegala</i>	
African Silverbill	<i>Euodice cantans</i>	Rare/Accidental
White-throated Munia	<i>Euodice malabarica</i>	Introduced species

Appendix 6

Overview of plant species in available literature *(made available by the Forestry Department of the Wilaya of El Oued)*

As mentioned in Chapter 3 there are not many data available currently to form a solid basis for the situation analysis regarding the ecological situation. The table below outlines that studies that have been done do not show coherence in the results of surveys.

La région du Souf

La région de Djamaa

Wilaya d'El Oued

		<i>Adonis dentata</i>
	<i>Aeluropus littoralis Gouan, 1850</i>	<i>Aeluropus littoralis</i>
		<i>Aizoon hispanicum</i>
<i>Ammodaucus leucotricus</i>		
<i>Amosperma cinereum</i>		<i>Ammosperma cinerum</i>
		<i>Anabasis articulata</i>
<i>Androcymbium punctatum</i>		
<i>Anthemis stiparium</i>		
		<i>Antirrhinum romosissimum</i>
		<i>Argyrobium uniflorum</i>
<i>Aristida acutiflora</i>		<i>Aristida acutiflora</i>
<i>Aristida obtusa</i>		
<i>Aristida plumosa</i>		<i>Aristida plumosa</i>
<i>Aristida pungens</i>		<i>Aristida pungens</i>
<i>Arnebia decumbens</i>		<i>Arthrocnemum indicum</i>
<i>Asphodelus refractus</i>		
<i>Asphodelus tenuifolius</i>		
	<i>Aster squamatus</i>	
<i>Astragalus cruciatus</i>		
<i>Astragalus gombiformis</i>		
		<i>Astragalus armatus</i>
<i>Astragalus gyzensis</i>		<i>Astragalus gyzensis</i>
<i>Actractylis flava</i>		
<i>Actractylis serratuloides</i>		<i>Atractylis serratuloides</i>
<i>Atriplex halimus</i>		<i>Atriplex halimus</i>
		<i>Atriplex sp.</i>
<i>Bassia muricata</i>	<i>Bassia muricata L.</i>	
<i>Battandiera amaena</i>		
<i>Brocchia cinerea</i>		<i>Brocchia cinerea</i>
<i>Calligonum azel</i>		<i>Calligonum azel</i>
<i>Calligonum comosum</i>		<i>Calligonum comosom</i>
		<i>Cenchrus ciliaris</i>
<i>Centaurea furfuraceae</i>		
	<i>Centaurium pulchellum Swartz</i>	
<i>Chenopodium murale</i>		
		<i>Chenopodium sp</i>
<i>Cistanche tinctoria</i>		
<i>Cistanche violaceae</i>		<i>Cistanche violacea</i>
<i>Cleom arabica</i>		
		<i>Colocynthis vulgaris</i>

	<i>Convolvulus arvensis L.</i>	
		<i>Convolvulus cantabrica</i>
	<i>Conyza canadensis Cranq</i>	
<i>Cornulaca monacantha</i>		<i>Cornulacea monacantha</i>
	<i>Cotula cinerea</i>	<i>Cotula cinerea</i>
<i>Cutandia dicotoma</i>		
<i>Cynodon dactylon</i>	<i>Cynodon dactylon L.</i>	<i>Cynodon dactylon</i>
<i>Cyperus conglomeratus</i>		
<i>Dantonía fragilis</i>		
<i>Dantonía forskahlii</i>		<i>Danthonia forskahlii</i>
	<i>Daucus carota</i>	
		<i>Diploaxis acris</i>
<i>Diploaxis harra</i>		<i>Diploaxis harra</i>
<i>Diploaxis pitardiana</i>		
		<i>Echinops spinosus</i>
<i>Echiochilon fruticosum</i>		
<i>Echium pycnanthum</i>		
<i>Emex spinosa</i>		
<i>Ephedra alata</i>		<i>Ephedra alata</i>
		<i>Ephedra altissima</i>
<i>Erodium glaucophyllum</i>		<i>Erodium glaucophyllum</i>
<i>Erodium laciniatum</i>		
		<i>Erodium triangulare</i>
<i>Euphorbia guyoniana</i>		<i>Euphorbia guyoniana</i>
<i>Fagonia latifolia</i>		
		<i>Fagonia microphylla</i>
<i>Farsetia aegyptiaca</i>		
		<i>Frankenia corymbosa</i>
<i>Frankenia florida</i>		
	<i>Frankenia pulverulenta</i>	<i>Frankenia pulverulenta</i>
		<i>Frankenia thymifolia</i>
<i>Genista saharae</i>		<i>Genista saharae</i>
<i>Gymnocarpos decanter</i>		<i>Gymnocarpos decanter</i>
		<i>Halocnemum strobilaceum</i>
<i>Haloxylon articulatum</i>		
<i>Helianthemum lipii</i>		<i>Helianthemum lipii</i>
<i>Herniaria fontanesii</i>		<i>Herniaria fontanesii</i>
		<i>Herniaria hirsuta</i>
	<i>Hordeum murinum</i>	<i>Hordeum murinum</i>
<i>Ifloga spicata</i>		
	<i>Juncus maritimus L.</i>	<i>Juncus sp.</i>
<i>Koelpenia liniaris</i>		
<i>Launaea glomerata</i>	<i>Launaea glomerata</i>	<i>Launaea glomerata</i>
		<i>Launaea nudicaulis</i>
<i>Launaea resedifolia</i>		<i>Launaea resedifolia</i>
		<i>Limoniastrum feei</i>
<i>Limoniastrum guyonianum</i>		<i>Limoniastrum guyonianum</i>
	<i>Limonium delicatum</i>	
	<i>Limonium guyonianum Dur.</i>	
		<i>Limonium pruinatum</i>
		<i>Limonium sinuatum</i>
		<i>Limonium tunetanum</i>
<i>Linaría peltieri</i>		
<i>Lobularia libyca</i>		
<i>Lotus halophylus</i>		
<i>Malcolmia aegyptiaca</i>		<i>Malcolmia aegyptiaca</i>

<i>Malva parviflora</i>			
<i>Marrubium deserti</i>			
			<i>Marrubium vulgare</i>
<i>Matthiola livida</i>			
<i>Matricaria pubescens</i>			
		<i>Megastoma pusillum</i>	
<i>Moltkia ciliata</i>			
			<i>Moricandia arvensis</i>
			<i>Nerium oleander</i>
<i>Neurada procumbens</i>			<i>Neurada procumbens</i>
			<i>Nitraria retusa</i>
<i>Nolletia chrysocomoides</i>			
<i>Onopordon macracanthum</i>			
<i>Oudneya africana</i>			<i>Oudneya africana</i>
			<i>Paronychia arabica</i>
<i>Peganum harmala</i>			<i>Peganum harmala</i>
<i>Pergularia tomentosa</i>			<i>Pergularia tomentosa</i>
			<i>Phalaris bulbosa</i>
<i>Phoenix dactylifera</i>			
<i>Phragmites communis</i>		<i>Phragmites communis Cav.</i>	<i>Phragmites communis</i>
			<i>Pistacia atlantica</i>
			<i>Pituranthos battandieri</i>
			<i>Pituranthos chloranthus</i>
<i>Plantago albicans</i>			<i>Plantago albicans</i>
<i>Plantago ciliata</i>			
			<i>Plantago ovata</i>
<i>Plantago psyllium</i>			
<i>Polycarpea repens</i>			
		<i>Polygonum convolvulus L.</i>	
<i>Polypogon monspeliensis</i>			
<i>Portulaca oleracea</i>			
		<i>Pseuderucaria tourneuxi clavata</i>	
<i>Reseda decursiva</i>			
<i>Reseda arabica</i>			
<i>Retama retam</i>			<i>Retama retam</i>
<i>Rhanterium suaveolens</i>			<i>Rhanterium suaveolens</i>
			<i>Ricinis communis</i>
			<i>Romulea bulbocadum</i>
		<i>Rumex simpliciflorus</i>	
			<i>Ruta sp.</i>
		<i>Salicornia sp</i>	
			<i>Salicornia arabica</i>
<i>Salsola foetida</i>			<i>Salsola foetida</i>
			<i>Salsola siebri</i>
			<i>Salsola sp.</i>
			<i>Salsola tetragona</i>
			<i>Salsola tetrandra</i>
			<i>Salsola titasagena</i>
			<i>Salsola vermiculata</i>
			<i>Salvia verbenaca</i>
<i>Schismus barbatus</i>			<i>Schismus barbatus</i>
			<i>Scirpus sp</i>
<i>Setaria verticillata</i>		<i>Setarie verticillata L.</i>	
		<i>Setarie viridis L.</i>	
<i>Silene villosa</i>			

<i>Sonchus asper</i>			
<i>Sonchus maritimus</i>		<i>Sonchus maritimus</i>	
		<i>Sonchus oleraceus L.</i>	
<i>Spergularia diandra</i>			
		<i>Spergularia salina</i>	
<i>Sporopolus spicatus</i>			
<i>Spitzelia coronopifolia</i>			
<i>Suaeda fruticosa</i>		<i>Suaeda fruticosa Forssk</i>	
<i>Suaeda mollis</i>			<i>Suaeda mollis</i>
<i>Tamarix boveana</i>			<i>Tamarix boveana</i>
			<i>Tamarix sp</i>
<i>Thymelaea microphylla</i>			<i>Thymelaea microphylla</i>
			<i>Thymelaea virescens</i>
<i>Traganum nudatum</i>		<i>Tragonum nudatum Del.</i>	<i>Traganum nudatum</i>
			<i>Trigonella anguina</i>
			<i>Typha elephantina</i>
<i>Urgenea noctiflora</i>			
			<i>Ziziphus lotus</i>
<i>Zygophyllum album</i>		<i>Zygophullum album</i>	<i>Zygophyllum album</i>
			<i>Zygophyllum cornutum</i>

Appendix 7

Liste des participants du workshop sur les zones humides

(Lac AYATA) au siège de la Wilaya d'El Oued,

le 22 décembre 2009

Nom et Prénom	Fonction	Organisation
ALI MENASSEUR	Maire	Commune Almagrane
HAFRI LAKHDAR	Maire	Commune Al-Hamraia
ABDELFATTAH BOUHIBA	Adjoint-Maire	Commune Djamaa
AROUK ABDELMAJID	Maire	Commune Al-Marrara
DOUACHI LAZHAR	Directeur d'unité d'exploitation	ONAD
CHERIFI ALAMINE	Maire	Commune El Oued
MAARAJ DHIF	Maire	Commune Ourmes
ABDELHAMID GAAID	Maire	Commune Reguiba
AWADI BELGACEM	Maire	Commune Taghzout
ALLAI SOUHAIB	Fonctionnaire	Direction du tourisme de la wilaya d'El Oued
AMARA LAZHAR	Ingénieur	Direction du tourisme de la wilaya d'El Oued
ADAIKA ASSAGHIR	Inspecteur principale vétérinaire	Direction des services agricoles à El Oued
OBEIRA NABIL	Inspecteur en tourisme	Direction du tourisme de la wilaya d'El Oued
ABDALLAH HARRAJ	Maire	Commune Tandla
BEN AMOR ABDELKARIM	Maire	Commune El Ogla
MOHAMED LAZHAR BEN SEBTI	Maire	Commune Sidi Amrane
MOHAMED LAKHDAR SAIDI	Maire	Commune Hassi Khalifa
NASRI BRAHIM	Directeur	Direction de l'environnement à la wilaya d'El Oued
ZOUZOU ALHADI	Chef de district de Djamaa	Conservation des forêts à El Oued
CHAFAI CHAOUKI	Inspecteur divisionnaire des forêts	Conservation des forêts à El Oued
BANE ALI	Chef de district de Guemar	Conservation des forêts à El Oued
MOHAMED SAID OUNISSI	Chef de circonscription de Taleb Al-Arbi	Conservation des forêts à El Oued
MALKI ABDELHAMID	Inspecteur divisionnaire des forêts	Conservation des forêts à El Oued
ABBASI ABDELAZIZ	Chef de triage à M'ghair	Conservation des forêts à El Oued
ASSAID CHAGAAR	Chef de district de M'ghair	Conservation des forêts à El Oued
BELARBI FETHI	Chef de service	Conservation des forêts à El Oued
ARBOUCHE ABDELHADI	Inspecteur divisionnaire des forêts	Conservation des forêts à El Oued

L'utilisation rationnelle et la gestion intégrée des zones humides dans les régions sahariennes est indispensable pour assurer la durabilité des zones humides sahariennes. Celles-ci sont d'une importance vitale pour le soutien du réseau écologique de la région (et même au niveau global pour les oiseaux migrateurs) et pour la durabilité de la subsistance de la population locale.

Le CDI a effectué une recherche préliminaire sur la situation actuelle des zones humides et des ressources en eau en Algérie et spécifiquement sur le lac Ayata situé dans la Wilaya d'El Oued. Cette recherche a été effectuée à la demande de la Wilaya d'El Oued à travers le Conseiller pour l'Agriculture, la Nature et la Qualité des Aliments basé à l'Ambassade des Pays Bas à Paris (France) qui jadis couvrait également l'Algérie.

Cette recherche a développé des recommandations sur la gestion, la conservation et les options pour l'utilisation durable du Lac Ayata, en incluant des recommandations préliminaires pour le développement d'un tourisme à petite échelle.

The rational use and integrated management of wetlands in the Sahara is essential to ensure the sustainability of the Saharan wetlands. These wetlands are of vital importance to sustain the ecological network of the area, (even worldwide considering e.g. important bird migration routes) and to sustain the livelihood of local people. CDI has completed a quick scan about the actual situation of Algeria's wetlands and water resources but more specifically on Lake Ayata located in the region of the Wilaya of El Oued in Algeria. This quick scan has been initiated by a request from the Wilaya of El Oued through the Counselor for Agriculture, Nature & Food Quality based at the Embassy of the Kingdom of the Netherlands in Paris (France), at the time that Algeria was included in her area of jurisdiction. This quick scan developed recommendations on the management, conservation and options for the sustainable use of the Lac Ayata, e.g. by preliminary recommendations for small-scale tourism development.

More information: www.cdi.wur.nl

