

INTRODUCTION

In the development of an effective conservation programme for wetlands, one of the first steps is the compilation of an inventory of the most important wetland sites. Such wetland inventories already exist for most of North America, Europe, Africa, the Neotropical Realm, south and east Asia, and Australia and the Pacific. *A Directory of Wetlands in the Middle East* seeks to continue this global coverage by providing a comprehensive review of existing knowledge of the most important wetlands in thirteen nations in the Middle East, from Syria and Lebanon in the west to Afghanistan in the east and the Republic of Yemen in the south.

The *Directory* has been produced as the culmination of a two-year project - the Middle East Wetland Inventory - sponsored jointly by IUCN-The World Conservation Union, the World Wide Fund For Nature (WWF), the International Waterfowl and Wetlands Research Bureau (IWRB), BirdLife International and the Ramsar Convention Bureau. Emphasis was given to obtaining maximum participation by conservation bodies and academic institutions in the countries concerned. However, the project was also able to take advantage of the extensive information already available on wetland ecosystems in the Middle East, notably at IWRB headquarters in the U.K., and has benefitted greatly from BirdLife International's Important Bird Areas Project in the Middle East, completed in early 1994.

The main objectives of the Middle East Wetland Inventory were:

- to prepare a directory of wetlands of international importance in the Middle East;
- to identify organizations and individuals knowledgeable about wetlands in the Middle East;
- to encourage the countries under consideration to compile their own detailed national wetland inventories as a basis for the development of national wetland policies;
- to identify future priorities for action in wetland conservation and research in the Middle East;
- to promote active participation in the Convention on Wetlands of International

Importance especially as Waterfowl Habitat (the Ramsar Convention) by states throughout the region.

The project was initiated in November 1993, and was coordinated jointly by Mr Francis Parakatil, Coordinator of IUCN's North Africa, Central and West Asia Programme, and Dr Derek A. Scott, the Project Technical Coordinator. The methodology closely followed that adopted by the Technical Coordinator in the Neotropical Wetlands Project completed in 1985, Asian Wetlands Inventory completed in 1988, and Oceania Wetland Inventory completed in 1992. Funding was provided by WWF.

A Directory of Wetlands in the Middle East follows a format similar to that of earlier wetland directories; thus the greater part of the *Directory* consists of a series of national reports. Each begins with an introduction which summarizes the general situation of the wetlands and provides information on the institutional and legal base for wetland conservation and research. Then follows a series of accounts of those wetlands which are known or thought to be of greatest importance from the point of view of nature conservation. The site descriptions include basic

information on size and location, physical features, ecological features, ownership, degree of protection, land use, threats and conservation values.

The term "wetland" is used in the sense defined in the text of the Rainsar Convention. Thus, wetlands are "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres". Coral reefs and other exclusively marine systems are, however, generally excluded from this definition, and have not been considered in the *Directory* except in so far as they form an integral part of a site containing more typical wetland habitats. The principal reef systems of the Indian Ocean, Red Sea and Gulf have been described in volume two of *Coral Reefs of the World*, published jointly by UNEP and IUCN in 1988.

Each country report includes an outline map showing the location of the sites described in the *Directory*. For reasons of space, it has not been possible to include detailed maps of each site. However, the many individual site maps which have been provided by contributors are on file at IWRB headquarters in the United Kingdom, and constitute an important reference source.

Methodology

The compilation of *A Directory of Wetlands in the Middle East* has involved the collection of data through three main channels:

- national networks of contacts, each with a "national coordinator" responsible for the compilation of data in his or her country and preparation of a national report.
- direct contact with individuals or institutions with expertise on particular sites or species.
- a review of the recent literature.

In many cases, compilation of a national inventory was coordinated by a single individual (national coordinator) or institution in the country or territory concerned, and a comprehensive report was submitted. However, in several countries it proved impossible to coordinate the collection of information through a single person or institution, and material was received from several independent sources. In the case of Afghanistan, Syria and Yemen, no local contact could be established, and the material presented in the *Directory* is based entirely on expatriate sources and the literature. Emphasis was given throughout to obtaining recent information from individuals currently working on wetlands, and little attention was given to the older literature. *Important Bird Areas in the Middle East* (Evans, 1994), the report of BirdLife International's Important Bird Areas Project in the Middle East, has been a particularly valuable source of information, as virtually all of the sites identified as wetlands of international importance in the present *Directory* were identified as "Important Bird Areas" by BirdLife International and have been described in Evans (1994).

Site Descriptions

Contributors were requested to submit their information on standard wetland data sheets of a type used in similar wetland inventories in the Palearctic Region, Neotropical Region, southern and eastern Asia and Oceania. These data sheets were very similar in design to the information sheet currently being used by the Ramsar Convention Bureau in the presentation of information on sites listed under the Ramsar Convention. Information presented on the completed data sheets has been reproduced in this *Directory* in a slightly modified form, and in many cases with additional information from other sources.

The following data categories have been employed in the site accounts:

Title: The name of the wetland with a reference number used in the accompanying map.

Location: The geographical coordinates (Greenwich) and general location of the site.

Area: The area of the wetland habitat in hectares. In the case of some rivers and coastal zones, only the approximate length of the site is known.

Altitude: The altitude of the wetland in metres above sea level.

Overview: A brief description of the wetland, summarizing the principal physical and ecological features and highlighting the main conservation values.

Physical features: A brief description of the principal physical features of the site, including information on hydrology, soil type and chemistry, water quality, depth, fluctuations and permanence, as well as a note on climatic conditions.

Ecological features: A brief description of the main habitats and vegetation types present, with information on the dominant plant communities and species present.

Land tenure: Details of the ownership of the wetland and the ownership of surrounding areas.

Conservation measures taken: Details of any protected areas established at or around the wetland and any other conservation measures taken at the site.

Conservation measures proposed: Details of any proposals for the conservation of the wetland.

Land use: Details of the principal forms of land use and human activities at the wetland and in surrounding areas.

Possible changes in land use: Any information available on proposed changes in land use and development plans which might affect the ecological character of the wetland.

Disturbances and threats: Details of existing and possible future threats to the wetland and its wildlife.

Hydrological and biophysical values: Information on the principal hydrological and biophysical values of the wetland.

Social and cultural values: Information on the principal social and cultural values of the wetland.

Noteworthy fauna: The importance of the wetland for wildlife, including mammals, birds, reptiles, amphibians, fishes and invertebrates.

Noteworthy flora: Information on any plant species or communities for which the wetland is particularly important.

Scientific research and facilities: Information on major research activities at the wetland and any existing facilities for research.

Conservation education: Information on any existing programmes and facilities for conservation education and training.

Recreation and tourism: Information on the present and potential use of the wetland for recreation and tourism.

Management authority and jurisdiction: Details of the authority responsible for the conservation and management of the wetland, and the authority or authorities with territorial and functional jurisdiction over the wetland.

References: Abbreviated references to published literature and unpublished reports relevant to the site. The references are given in full at the end of each national section.

Reasons for inclusion: An indication of those features for which the site is considered to be internationally important, with a numerical reference to the criterion or criteria which justify the inclusion of the site in the Directory. The criteria used in the selection process are those developed for the identification of wetlands of international importance for designation under Article 2 of the Ramsar Convention. These criteria, as adopted by the Fourth Conference of the Contracting Parties in Montreux, Switzerland, in June 1990, are as follows:

(1.) Criteria for representative or unique wetlands.

A wetland should be considered internationally important if:

- (a) it is a particularly good representative example of a natural or near-natural wetland, characteristic of the appropriate biogeographical region;
- or (b) it is a particularly good representative example of a natural or near-natural wetland, common to more than one biogeographical region;
- or (c) it is a particularly good representative example of a wetland which plays a substantial hydrological, biological or ecological role in the natural functioning of a major river basin or coastal system, especially where it is located in a trans-border position;
- or (d) it is an example of a specific type of wetland, rare or unusual in the appropriate biogeographical region.

(2.) General criteria based on plants or animals.

A wetland should be considered internationally important if:

- (a) it supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant or animal, or an appreciable number of individuals of any one or more of these species;

- or (b) it is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna;
- or (c) it is of special value as the habitat of plants or animals at a critical stage of their biological cycle;
- or (d) it is of special value for one or more endemic plant or animal species or communities.

(3.) Specific criteria based on waterfowl.

A wetland should be considered internationally important if:

- (a) it regularly supports 20,000 waterfowl;
- or (b) it regularly supports substantial numbers of individuals from particular groups of waterfowl, indicative of wetland values, productivity or diversity;
- or (c) where data on populations are available, it regularly supports 1 % of the individuals in a population of one species or subspecies of waterfowl.

A wetland is suitable for inclusion in the Ramsar Convention "List of Wetlands of International Importance" and hence in this *Directory* if it meets any one of the criteria set out above.

For proper application of the Ramsar criteria, it is essential that a considerable body of information be available on the site in question. For many wetlands in the Middle East, the information is so scanty that no objective evaluation of the importance of the site can be made. If all such sites were to be ignored, the *Directory* would become little more than an inventory of wetlands which have been well studied and well documented, and would lose its value as a basis for the identification of priorities in future wetland surveys and research. In those cases where very little information is available, the selection of sites for inclusion in the *Directory* has been based almost entirely on the judgement of the contributors.

Source: Names of individuals and institutions providing information on the site.

Some headings, such as "Conservation measures proposed", "Possible changes in land use", "Scientific research and facilities", "Conservation education", "Recreation and tourism" and "References", have been omitted when no relevant information was available to the compiler. The heading "Overview" has been omitted when very little information was available on the site in question.

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