

WAZA NATIONAL PARK, CAMEROON



LAKE CHAD



INTRODUCTION

*“Knowledge is
the only treasure
you can give entirely
without running
short of it.”*

[African proverb]

The superficial impression of the Lake Chad Basin is of a desperate and desolate region that appears to hold little promise for the future. The region suffers from irregular and insufficient rainfall, poor soils and high temperatures. It is totally landlocked, far from the sea and from major markets and transport routes. In short, the area has all the classic indicators of poverty, deprivation and chronic food insecurity.

Nevertheless, a closer look reveals that there is considerable potential in this ecosystem. A mosaic of people with their different cultures, a rich flora and fauna, large spaces, the sun and the freshwater fluctuations have generated many different strategies and technologies for exploiting this richness. Central to the use of these strategies has been the notion of balance, an understanding that everything is connected and each component of the

ecosystem has a specific function. Farmers, pastoralists and fishermen understand their environment and are able to manage it. They manage genes by their decisions on crop varieties, species by their selection of animals and the ecosystem by their decisions on pastoral mobility, fallow systems and crop rotations, irrigation, fishing methods and harvesting of wild crops.

Currently, an expanding population with increasing social and economic needs is challenging policy-makers, researchers, industry, farmers, pastoralists and fishermen to increase productivity in the Lake Chad Basin.

This book aims to show that a middle way exists; that it is possible to increase food security and still preserve the environment by combining traditional knowledge with new technologies. It is the authors' belief



A CLOSER LOOK REVEALS THAT THE LAKE CHAD BASIN HAS CONSIDERABLE POTENTIAL IN TERMS OF LAND, WATER AND NATURAL RESOURCES

>> RIGHT: BY COMBINING TRADITIONAL KNOWLEDGE WITH NEW TECHNOLOGIES, IT IS POSSIBLE TO INCREASE FOOD SECURITY AND STILL PRESERVE THE ENVIRONMENT

that local communities should be made to feel proud of the practices on which their traditional production systems are founded and that, once adapted to changing needs and pressures, many of these skills and techniques can continue to serve them in the future.

This is all the more important because much of the precious traditional knowledge held by people in the Lake Chad Basin is now at serious risk. In some cases, traditional methods are being abandoned in favour of more intensive systems. Traditional ideas and practices are becoming tainted by negative connotations.

Many are being discarded as they become associated with poverty and everything that is outdated. Often, scientists and policy-makers know very little of these traditions, and even local people themselves are losing this heritage. Much of the knowledge has been lost in the span of just one or two generations. If the process is not halted quickly, it could prove irreversible, particularly because these are oral traditions that have never been recorded for posterity.

This book does not claim to have all the answers. Nor does it seek to offer a definitive recipe for the advancement of

people in the Lake Chad Basin. It is not an exhaustive study of the region, nor is it intended to be. Instead, it puts forward a collection of concrete examples showing how the livelihoods and prospects of the people can be improved and assured in a sustainable manner without sacrificing the prosperity of future generations. More than anything else, it is intended to stimulate further debate, research and study in the hope that bridges can be built between traditional technologies, traditional ways of life and the new demands of today's society.



DURBA VILLAGE (BAGHI, NIGERIA)

ABOUT THIS BOOK

CHAPTER 1 – THE LAKE AND ITS

ECOSYSTEMS describes the unique lake ecosystem and the rhythm of life as determined by the periodical fluctuations of the lakewater. Unpredictable rainfall patterns, high evaporation rates and the shallowness of the lake are all obstacles to a precise definition of Lake Chad. The presence of prehistoric humans in the basin is well documented and present populations are a mosaic of pastoralists, fishermen, farmers and traders, all with different cultures, habits, skills and needs. A definition of the basin is also given; this book refers mainly to the area covered by the four riparian countries, i.e. Cameroon, Chad, the Niger and Nigeria.

CHAPTER 2 – **GRASSLANDS** describes the natural grassland ecosystems and the close link between arid, semi-arid and wet ecosystems that allows the survival of wildlife, livestock and vegetation. Pastoralists move their animals according to the availability of fodder and water. Their knowledge of the different ecosystems is an example of timely, flexible and sustainable use of the natural resource. Combining traditional knowledge with new technologies will allow pastoralists to maintain their mobility while improving their living conditions.



FERTILITY PUPPETS
USED BY ATI PEOPLE IN THE LAKE CHAD BASIN

CHAPTER 3 – LIVESTOCK BREEDS

discusses how livestock breeds evolve on the basis of human needs, as well as the close relationship between humans, animals, plants and the environment. Conserving animal genetic resources is guided by environmental, economic, social and cultural choices. The breeds are not necessarily selected in order to maximize milk or meat production; non-food products, such as dung, skins and wool, are also an important consideration when creating and maintaining different animal breeds. Kouri cattle, which graze the vegetation of the floating islands, occasionally swimming from one island to another, form an interesting example of successful adaptation to the ecosystem: a breed in evolution.

CHAPTER 4 – **KREB** is dedicated to a food resource that has been used for centuries in the Sahel. It is a mixture of non-domesticated grass species that people harvest from the natural grasslands. The harvesting of *kreb* is a sustainable pastoral practice that makes the best use of the potential of the environment to produce food for both humans and animals, while at the same time protecting soils against erosion. Samples of *kreb* have been analysed and its high nutritional potential has been confirmed. However, the practice is under threat because the area of grasslands is being reduced as a result of expanding cultivation, overgrazing and narrowly based, specialized pastoral systems.



CHAPTER 5 – FARMING SYSTEMS describes a selection of agricultural systems as an example of the huge number of combinations of cropping systems existing in the Lake Chad Basin. Traditional selection techniques of local genetic resources of sorghum are discussed, as well as the narrow distinction between cultivated and collected vegetables and fruit. Examples are given of economic practices used by local pastoralists that could be introduced in many other regions of Africa. These include the use of *Calotropis* to coagulate milk for cheese production and the various uses of the dum palm and other trees.

CHAPTER 6 – WATER AND LAND is dedicated to water management techniques. Lake-level fluctuations are exploited to create polders, which are a type of dammed inlet that enables the cultivation of crops during the dry season. Other simple, locally adapted and locally managed water-harvesting systems are also presented and discussed, such as the use of pastoral wells, wadis and irrigation systems.



CHAPTER 7 – FISHERIES provides a wealth of data collected by the authors in over ten years of work and describes fish, fishing activities and fish consumption. Commercial trade in fish originating from the Lake Chad Basin is very important in West Africa. In 2001 total marketed fish products amounted to more than 57 000 tonnes, with an estimated value of over US\$24 million. These figures do not take into account fish directly consumed within households. The relationship between economics, livelihood impacts and poverty is discussed, as well as how fisheries are dominated by traditional management systems.

CHAPTER 8 – WILDLIFE describes the unique ecosystem that supports a large variety of species, including mammals, birds and reptiles. The main protected areas of the Lake Chad Basin are described. Options for wildlife conservation and wise use are also discussed, such as tourism, the ranching of the Nile monitor (a large lizard that is hunted for its excellent meat and skin) and the control of the red-billed quelea (a grain-eating bird that is considered to be a pest by farmers but as excellent meat by the Hadjerai people).



CHAPTER 9 – ATROUN AND DIHÉ presents two natural products that have formed the basis of trade for centuries. *Atroun*, or natron, is a sodium carbonate complex that is extracted from wadis in the proximity of the lake and used as salt. *Dihé* is the local name for desiccated chips of an alga with extraordinary nutritional powers. The alga grows naturally in the wadis and is harvested by Kanembu women. Both products represent an important source of income for the impoverished local population.

CHAPTER 10 – THE ECOSYSTEM APPROACH AND THE LAKE CHAD BASIN shows how the 12 principles of the ecosystem approach, as identified by the Convention on Biological Diversity (CBD) for the integrated management of land, water and living resources, can be applied to the Lake Chad Basin. Each principle is summarized and connections are made with subjects developed in this book.





PRESERVING BIODIVERSITY HELPS PEOPLE TO DEVELOP A SUSTAINABLE LIVELIHOOD BASED ON THEIR OWN RESOURCES

BIODIVERSITY, GENETIC RESOURCES AND FAO

The erosion of agricultural diversity is a consequence of the abuse of the Earth's natural resources, producing rapid and deep-seated degradation of the environment and generally impoverishing conditions of life in the biosphere, specially of rural people who depend on diversity to support their daily lives.

The conservation of genetic resources is essential if we are to ensure that any processes unleashed into the environment remain as manageable and reversible as possible. An enduring solution will require a fresh perception of our relationship with

the different ecosystems of the planet, accepting and recognizing the planet's limitations and the vulnerability of its natural balances.

FAO is committed to preserving biodiversity as a means of helping people to develop a sustainable livelihood based on their own resources. FAO's goal is to alleviate poverty and hunger by promoting sustainable agricultural development, improved nutrition and food security- the access of all people at all time to the food they need for an active and healthy life. The importance of biological diversity for food

security has been recognized by FAO and the Organization is working to promote its conservation and sustainable use in an agricultural context. FAO assistance is channelled through various avenues including for example programmes and activities such as Participatory Training for Integrated Pest Management and Advice on Soil and Water Conservation. FAO provides intergovernmental fora where biodiversity-related policy is discussed and relevant agreements negotiated and adopted by member countries. One such forum is the Commission on Genetic Resources for Food and Agriculture



FROM LICHEN TO WHEAT, WHETHER HARVESTED FROM NATURAL GRASSLANDS OR CULTIVATED, A MOSAIC OF SPECIES CONTRIBUTES TO THE DAILY SUBSISTENCE OF LAKE CHAD'S INHABITANTS

(CGRFA), which was established in 1983 and now includes 165 countries and the European Union.

Agreements negotiated in FAO include the International Plant Protection Convention,

the Code of Conduct for Responsible Fisheries, the Global Strategy on the Management of Farm Animal Genetic Resources and the International Treaty on Plant Genetic Resources for Food and Agriculture. This is a legally binding

agreement, adopted in 2001 at the FAO Conference, which recognizes farmers' rights and highlights the role and importance of cultural and identity values for the maintenance and sustainable use of biodiversity.

The International Treaty on Plant Genetic Resources for Food and Agriculture (PGRFA)

PGRFA are crucial in feeding the world's population. They are the raw material that farmers and breeders need to improve the quality and productivity of crops. No country is sufficient in itself in these resources. International cooperation is vital to ensure global food security and sustainable agriculture.

The International Treaty is the first ever legally binding agreement on biodiversity for food and agriculture.

The Treaty's objectives are the conservation and sustainable use of plant genetic resources for food and agriculture, and the fair and equitable sharing of benefits derived from their use to promote sustainable agriculture and food security.

The main beneficiaries of the Treaty will be farmers, especially those in developing countries. This treaty includes farmers' rights, in recognition of the enormous contribution that farmers and farming communities have made, and continue to make, in conserving and developing plant genetic resources. The Treaty gives governments the responsibility for promoting and protecting these rights, adopting measures to protect traditional knowledge and

giving farmers the right to participate equitably in benefit-sharing and in national decision-making about plant genetic resources.

In fact, all of society will benefit when the Treaty comes into effect: consumers, because of the greater variety of foods and agricultural products that it promotes, underwriting their food security; the scientific community, through access to plant genetic resources that are crucial for research and plant breeding; international agricultural research centres, whose collections the Treaty places on a long-term legal footing; and both the public and private sectors, which are assured access to a wide range of genetic diversity for improved agricultural development.

KOURNADI VILLAGE (DIFFAI), THE NIGER



THE TREATY RECOGNIZES THE ENORMOUS CONTRIBUTION OF FARMERS TO THE CONSERVATION AND DEVELOPMENT OF PLANT GENETIC RESOURCES



NEAR KABELWA VILLAGE IN GUDUMI, THE NIGER



ABOVE: COUNTRIES AROUND LAKE CHAD

>> RIGHT: A CLOSER VIEW OF THE LAKE WITH ITS NATURAL ZONES [A BLACK AND WHITE COPY OF THE SAME MAP CAN BE FOUND ON THE BACK COVER FLAP].

