

## MALAWI - LAKE CHILWA

1MW001

**Location:** Situated between Latitudes 15°00'S and 15°30'S and Longitude 35°30'E and 35°55'E in the centre of the low-lying Chilwa-Phalombe plain in Southern Malawi.

**Area:** 2248 km<sup>2</sup> (224800 ha)

### Degree of Protection

The open waters of Lake Chilwa and the land under Government irrigated rice cultivation are designated as public land, directly under the control of the government. The rest of the land in the Chilwa wetland is customary, under the control of local chiefs.

### Site description

Lake Chilwa is a shallow, enclosed endorheic saline lake. It is surrounded by an area of dense *Typha* swamps and marshes. The seasonally inundated grassland floodplain forms a belt around the marshes of the lake. Lake Chilwa has a number of Islands, two of which, namely Chisi (Chilwa) and Tongwe, are permanently inhabited.

The lake measures some 40 km from north to south and 30 km from east to west. It has an altitude of 622 meters above sea level, with maximum depth of less than 5 meters. In addition to seasonal changes in lake level of about 0.8 - 1.0 meters, the level of Lake Chilwa fluctuates at regular intervals of about 6 years by 2-3 meters, which sometimes has led to the partial or complete drying of the lake.

The main perennial rivers which drain into Lake Chilwa, within Malawi, from north to south are: Domase, Naizi, Likangala, Thondwe, Namazi, Phalombe and Sombani. Both perennial and seasonally influent rivers carry a high suspended load during the rainy season, which contribute to the greyish and turbid nature of Lake Chilwa.

### Criteria for inclusion: International and National importance

Lake Chilwa annually supports about 153 species of resident and 30 species of palearctic (migratory) waterbirds respectively. The varied habitats of Lake Chilwa wetland provide food, shelter and breeding areas for the waterfowl. To date, the lake has about 23 species which attain the Ramsar criterion of 1% level of individuals per population. Among the species that score highest, are Pinkbacked Pelican *Pelecanus rufescens* (13%), Blackheaded Heron *Ardea melanocephala* (39%), Grey-headed Gull *Larus cirrocephalus* (38%), African Skimmer *Rynchops flavirostris* (26%) and Marsh Owl *Asio capensis* (18%). The most abundant species include: Fulvous Whistling Duck *Dendrocygna bicolor*, Black Crane *Amaurornis flavirostra*, Lesser Moorhen *Gallinula angulata*, Allen's or Lesser Gallinule *Gallinula alleni*, and Great Snipe *Gallinago media*, with numbers ranging from 27,000 to 130,000. The total waterfowl population of Lake Chilwa is estimated at a conservative figure of about 354,000.

The socio-economically useful land use practices of Lake Chilwa include: fishing, agriculture (wetland rice cultivation, dimba cultivation, irrigated rice cultivation and livestock) and human settlements. Lake Chilwa annually contributes about 25-30% of total fish production in Malawi.

Ecologically Lake Chilwa's characteristic shallow, endorheic saline nature, coupled with its annually fluctuating lake levels, cyclical periodic drying, diverse habitat types and flora and fauna, make it a good site (natural laboratory) for studies on wetland resources management and sustainable utilisation. Lake Chilwa is internationally important because it is a shared wetland, with Mozambique.

### Changes in ecological character

Lake Chilwa is characterised by marked seasonal and annual fluctuations in water levels which are at times amplified by periodic recessions, ultimate drying of the lake. These changes affect the distribution and dynamics of flora and fauna of the Lake Chilwa wetland. The effects however, are not adverse as these periodic recessions, drying and filling of the lake are cyclical in nature.

### **Management practices**

There are no prescribed systematic practices on the management of natural resources in Lake Chilwa.

### **Scientific Research**

Extensive botanical, zoological and ecological studies and survey/expeditions have been carried out in the Lake Chilwa wetland. These include: the Lake Chilwa Co-ordinated Research Project by the Biology Department of Chancellor College, University of Malawi (1968), The University of Bristol Lake Chilwa Expedition (1989), and the Lake Chilwa Ramsar Site Study Project, by the Biology Department at Chancellor College (1996)

### **Principle Reference Materials**

Kalk, M., McLachlan, A.J. and Howard-Williams, C. (1979) (Eds.). Lake Chilwa: studies of change in a tropical ecosystem. The Hague Publishers, London.

Taylor, V. and Rose, P.M. (1994). African Waterfowl Census 1994. IWRB, Slimbridge, UK. 184 pp.

The University of Bristol: Lake Chilwa Expedition Malawi (1989). Report: Various unpublished and published records in the Malawian Collection of Chancellor College Library, Zomba, Malawi, and in other Libraries/Collections in Malawi.

## ANNEX

### A WETLAND OF MALAWI TO BE INCLUDED ON THE LIST OF WETLANDS OF INTERNATIONAL IMPORTANCE

**Name:** Lake Chilwa

**Area:** 2248 km<sup>2</sup>

**Location:** Between Latitudes 15°00'S and 15°30'S and Longitude 35°30'E and 35°55'E

#### **Description**

##### **1. Topography**

Lake Chilwa is a shallow, enclosed, endorheic and permanently saline lake situated in the southern part of a NE-SW trending tectonic depression east of the main Rift Valley in Southern Malawi. The lake lies at a mean altitude of 622 meters above sea level. It has an open water area of about 678 km<sup>2</sup>, which is surrounded by about 600 km<sup>2</sup> of *Typha* swamps, 390 km<sup>2</sup> of marshes and 580 km<sup>2</sup> of seasonally inundated grassland floodplain. The area varies with the level of the lake in any year. Lake Chilwa has islands such as Njalo, Nsatu and Chenjerani in the south, Chisi in the Centre and Thongwe in the north. The total area of the Lake Chilwa ecosystem, including islands, is about 2248 km<sup>2</sup>.

The lake is greyish and turbid. Its depth is less than 5 meters and seasonally fluctuates by 0.8 - 1 meters. Larger fluctuations of the order of 2 - 3 meters occur in good rainy years. Seven major rivers, namely Domasi, Naisi, Likangala, Thondwe, Namadzi, Phalombe and Sombani drain into Lake Chilwa. Other smaller but equally important inflowing rivers include Sumulu, Lingoni, Mnembo and Nalaua.

##### **2. Vegetation**

The 5 major natural vegetation types of the Lake Chilwa wetland are: the floodplain grassland, neutral to acid marsh, alkaline marsh, swamp transition and swamp which borders with the open water. The grassland floodplain located on the periphery of the Chilwa wetland, is a grass dominated habitat. The principal species include: *Hyparrhenia rufa*, *Cynodon dactylon* and *Sporobolus pyramidalis*. To date, the floodplain is partly under cultivation. The neutral to acid marshes vegetation occur opposite perennial river mouths where *Cyperus papyrus* (the dominant species) is surrounded by a zone of tall grasses such as *Phragmites mauritianus* and *Vossia cuspidata*. On the western side of the lake, between the rivers is the marsh habitat dominated by *Cyperus procerus*, which grows together with marsh grass *Leersia hexandra*. The alkaline marsh occurs widely at the southern end of Lake Chilwa, where *Vossia cuspidata* and *Cyperus longus* are interspaced with large clumps of *Aeshinomene phundii*.

The grasses *Diplachne fusca* and *Panicum repens* form the bulk of plant biomass of the swamp transition vegetation belt, which occurs in the northern half of Lake Chilwa.

Lake Chilwa open waters are surrounded by the swamp which is uniquely dominated by *Typha domingensis* (rather than *Cyperus papyrus* as is the case in similar lakes elsewhere). Free floating species such as *Pistia stratiotes*, *Ceratophyllum demersum* and *Utricularia* spp. are found on the lake edge of the swamp. The large sedge *Scirpus littoralis* and the aquatic grass *Paspalidium germinatum* commonly occur on open water. The vegetation of Lake Chilwa is greatly influenced by the seasonal fluctuations of water levels which in drier years has seen disappearance of some species and also by human activities such as farming.

##### **3. Birds**

Lake Chilwa has about 153 species of resident and 30 species of palearctic migrant waterbirds respectively. About 22 species of palearctic birds are regular visitors to Lake Chilwa between

September and April every year. The lake supports about 23 species which attain the Ramsar criterion of 1% level of individuals per population. These include the African Spoonbill *Platalea alba*, Fulvous Whistling Duck *Dendrocygna bicolor*, Blackheaded Heron *Ardea melanocephala* and secretive marsh birds like Lesser Moorhen *Gallinula angulata* and Lesser Gallinule *Gallinula alleni*. The total waterfowl population of Lake Chilwa is estimated at a conservative figure of about 354,000.

The predators such as the resident Pinkbacked Pelican *Pelecanus rufescens*, the Grey-headed Gull *Larus cirrocephalus* and the migrant White-winged Black Tern *Chlidonias leucoptera* are common in the open water, especially in Kachulu Bay, a major fishing centre. Birds of prey found at the Lake Chilwa wetland include the African Marsh Harrier *Circus aeruginosa* and the much less common Fish Eagle *Haliaeetus ranivorus*. The Yellow-billed Kite *Milvus aegypticus* and the Lesser Kestrel *Falco naumannii* represent the palearctic migrant birds of prey in the Lake Chilwa wetland.

#### **4. Fish**

Fish of Lake Chilwa mainly inhabit the open waters of the lake and swamps. The three important fish species are the caprinid *Barbus paludinosus*, the (catfish) clariid *Clarias gariepinus* and the only endemic fish of the lake, a mouth breeding cyclid, *Oreochromis shiranus chilwae*. Every year, an average fishing yield of 160 kg/ha/year is obtained. Lake Chilwa fishery contributes about 20,000 metric tonnes which account for about 25-30% of total annual fish production in Malawi.

#### **5. Legal Protection**

The open waters of Lake Chilwa and the land under government irrigated rice cultivation are designated as public land under the control of the government. The rest of the land in the Lake Chilwa wetland is customary land. This is the land allocated to villagers and controlled by local chiefs. The various land and natural resource stakeholders in the Lake Chila wetland include: Government Departments such as Fisheries, Wildlife, Agriculture, Waters and also the rural community, and conservationists such as the Wildlife Society of Malawi whose interests often conflict. To date, there is no established legal mechanism for conservation and sustainable utilisation of natural resources of Lake Chilwa wetland. Hence there is a clear need for a proper management plan, with well established protection.