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**AN OVERVIEW OF THE EASTERN CAPRIVI WETLANDS  
HYDROLOGY AND ECOLOGY 1998 UPDATE**

**AN INTRODUCTORY PAPER PRESENTED AT THE WORKSHOP  
ON TRANS-BOUNDARY APPROACHES TO THE CONSERVATION  
AND UTILISATION OF THE CHOBE-CAPRIVI WETLANDS**

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# AN OVERVIEW OF THE EASTERN CAPRIVI WETLANDS – HYDROLOGY AND ECOLOGY 1998 UPDATE

## INTRODUCTION

The fauna, flora and hydrology of the eastern Caprivi area has been extensively studied and well described. Much of this paper is based upon that of Schlettwein *et al* (1991).

The Caprivi region covers an area of approximately 19,532km<sup>2</sup>, of which 11,600km<sup>2</sup> forms the eastern Caprivi. This eastern part of the Caprivi Region i.e. the area east of the Kwando river, is richer in wetlands than the rest of Namibia combined. The rivers, lakes and swamps in this area comprise a major series of wetlands in the subcontinent and represent the only permanent water features within the borders of Namibia. The area is topographically featureless and almost completely flat which leads, in part, to its interesting and complex hydrology. The area averages 930m above sea level with a maximum rise and fall of about 30m from east to west. It is almost entirely bounded by rivers, the perennial Zambezi and Kwando in the north-east and west respectively and the semi-permanent Linyanti-Chobe systems along the entire Botswana border. About 5000km<sup>2</sup> of the entire area can be classified as true wetland and about 1000km<sup>2</sup> of this is open water.

In years of high rainfall and good floods, the Kwando basically acts as a tributary of the Zambezi river, with water flowing from the Kwando into the Linyanti swamps and then through to Lake Liambezi. When full, the Lake has an outlet into the Chobe River which subsequently joins the Zambezi at Kazangula. The Kwando-Linyanti systems are then linked directly to the Chobe-Zambezi systems forming a single, continuous wetland area. The amount of water flowing into the lake from the Kwando-Linyanti system is, however, insufficient to prevent the Lake from drying under normal conditions and it requires additional input from the Bukalo channel and the Chobe to remain full. Reduction of flow and flooding in the Kwando and Zambezi rivers, due to consecutive years of low rainfall in their catchments upstream of

in the main channel. Water follows a network of shallow depressions, deep channels and permanent backwaters south and east across the floodplain and eventually spills out of these and across open grassland. Eventually the flood subsides back into these channels but the far eastern area can remain inundated for very long periods and thus supports vast beds of papyrus and reeds.

Rising water levels in the Zambezi also cause water to begin to flow into the Chobe River, both directly from its junction with the Zambezi along the Kasai channel, and indirectly by water flowing across the floodplain from the north and east. The normally static, or very gently eastward flow, of the river is reversed and water starts to flow upstream in a westward direction causing flooding in the Chobe valley itself and along the southern parts of the eastern Caprivi. In years when the Zambezi rises to 5m or more in Katima nearly the whole of the eastern part of the floodplain area can be inundated, with just a few islands left above the water e.g. Schuckmannsberg, Mbalasinte and Muzee.

### **The Chobe Marsh and Lake Liambezi**

In addition to flooding the eastern floodplain area, water pushing up the Chobe River fills the Chobe Marsh, the area between Ngoma and Lake Liambezi. The marsh has an estimated area of approximately 311km<sup>2</sup> but is often dry and relies on big floods to fill it, although not as large as those required to fill Lake Liambezi. This area was filled in 1989 and has been again this year. In very high floods, water can reach Lake Liambezi itself which appears to be cyclical in its appearance. Reports dating back to those of Selous in 1879 stating "the presence of a large inundated lake" are interspersed with sightings of "a dry or burning area" in the same location. The most recent complete drying of the Lake was in 1985, although a small area of some 200ha was wetted by a big flood in 1989 – this lasted for only 8 months before disappearing. A small section of the Lake has been inundated again this year but it remains to be seen exactly how much has been wetted and how long this will last. The Lake, when completely full for any extended period, is a very important fishery and used to produce as much as 1 ton of



Linyanti system. This uniform *Phragmites / Cyperus* dominated reed swamp is approximately 3 287km<sup>2</sup> in area and was measured as less than one third open water (as compared to just over 50% for the upper Kwando) in 1985. This area has diminished, partly due to the successive years of low rainfall in Angola and perhaps also partly due to the effects of the Angolan floodplain upstream, and the area between Linyanti and Lake Liambezi is now dry. The Department of Water Affairs in Namibia are currently running a flow gauging and tracer project designed to assess where and how far the water from the Kwando river goes once it enters the Linyanti system. In previous measurements taken during wet years it was estimated that about 10% of the flow from the Linyanti-Kwando system made its way into Lake Liambezi.

With the Okavango and Zambezi systems both experiencing good floods this year it is expected that the Kwando River will also flood but it shows no signs of doing so at the time of writing.

## **BIOLOGY OF THE EASTERN CAPRIVI FLOODPLAINS**

The eastern Caprivi wetlands support a wide range of plants and animals. These range from large mammals, such as elephant, to small insects, such as dragonflies, from mature stands of native trees such, as the water fig (*Syzygium guineense*), to mats of the alien, invasive weed the floating water fern - *Salvinia molesta* (Bethune, 1996). It is impossible to cover the entire ecology of this area in detail here and so reference will only be made to the some of the most salient and interesting features.

### **Plants**

The areas of flowing and standing water support a common assemblage of water plants. In flowing water the submerged, so called oxygenating plants, such as *Potamogeton thumbergii* and *Lagarosiphon* spp. dominate, with *Ceratophyllum* spp. more common in still or slow flowing water. The stationary backwaters are dominated by lilies, such as *Nymphaea* and *Nymphoides* spp., water chestnut *Trappa natans* and the exotic *Salvinia molesta*; now controlled to a satisfactory level by the weevil beetle

Bilharzia, *Bulinus* spp. snails, are also common in the Chobe and Kwando rivers but not in the Zambezi.

### **Fish**

The rivers and floodplains are home to a wide variety of fish species, with 82 species being recorded in the Zambezi River alone (van der Waal, 1996). The floodplains associated with these rivers appear to play a very important role in the life cycle of many of these fish species. Migrations, both longitudinally within the main river channels and laterally between floodplains and channels, have been recorded in 63 species here. Many fish, mostly the cichlids and clariads, move from the main channel to flooded grassland to breed and thus regular and extensive flooding is vital to the continued survival of such species.

### **Birds**

The area holds the richest diversity of bird species anywhere in Namibia, largely due to the presence of its extensive wetlands (Schlettwein *et al*, 1991). The area provides outstanding habitat for breeding residents as well as for migrant passerines, raptors and waders. Of the 620 bird species recorded in Namibia, 430 species have been found in the eastern Caprivi alone and of the 110 species recorded in Namibia that are rare, endangered or need to be monitored, 73 have been found in the same area. Particularly interesting and endangered species found include the African finfoot (*Podica senegalensis*), the African skimmer (*Rynchops flavirostris*), rock pratincoles (*Glareola nuchalis*) and wattled cranes (*Grus carunculata*).

### **Large mammals**

The presence of large, wild mammals in the eastern Caprivi is restricted mainly to the areas along the Kwando River, including Mudumu and Mamili parks, south-east of the Ngoma road in the Salambala area and along the Chobe River opposite the Chobe National Park. The Caprivi used to be one of the richest areas for game in the whole of southern Africa but animal numbers dropped drastically due to unregulated poaching and wholesale killing of all kinds of species during the pre-independence years (Schlettwein

such as El Nino. For the eastern Caprivi wetlands to remain as a source of goods and services, a venue for tourism and an ecological entity in it's own right into the future will require the co-operation of all southern Africans as a whole. Hopefully this meeting will be a beginning step in that process.

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