Putting People First

Sustainable Use of Natural Resources in the Dinder National Park (Biosphere Reserve)

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1. Objectives

This paper will give a brief description of the Dinder National Park (Map 1) and the main threats facing it. The plight of the pastoralists living in the vicinity of the Park will also be elucidated, in addition to the efforts exerted to conserve the Park while extending benefits to the communities as well.

Map 1. Location of Dinder National Park

2. Introduction

The Dinder National Park (DNP) was established in 1935 following the London Convention of 1933, and in 1979 it was designated as Biosphere Reserve, one of only two in the Sudan. The global significance of the DNP is that it falls between two important ecological zones the (Sudano–Sahelian and the Ethiopian). The Park has important wetland areas (*mayas)* and it is located in the flyway of migratory bird species from Eurasia to Africa. The DNP will be designated as a Ramsar site.

The annual rainfall in the Park ranges between 600-800mm and there are three major ecosystems: the riverine (*Hyphaena thebaica*, *Acacia nilotica*), the woodland (*Acacia seyal*, *Balanites aegyptiaca*), and the *mayas* and depressions. The *mayas* are oxbow lakes along the meandering rivers. They are subject to floods and contain green fodder and water up to the end of the dry season. The Park supports 27 large mammal species, bats and small mammals, more than 160 species of birds, 32 fish species, reptiles and amphibians. In addition there are about 58 species of shrubs and trees (Higher Council for Environment and Natural Resources, 2001).

3. Threats

The main threats facing the park could be summarized as follows: the absence of proper land use plans in the three states surrounding the Park; ever increasing size of populations in the Dinder area; the absence of a management plan for the Park; and the trespassing of pastoralists. The pastoralists are forced to enter the Park in spite of the present law protecting the Park. That law allows the court to confiscate half the number of any herd caught inside the Park. Current policies in the Sudan as a whole favor crop cultivation at the expense of other land uses, especially pastoralist. The last decades have witnessed a large expansion in mechanized rain-fed agriculture, with a devastating effect on rangeland, forests and wildlife areas. A lot of conflicts have ensued between the farmers and the pastoralists, who were even denied adequate stock routes to facilitate their trekking between the dry and the wet season ranges. Conflicts also occur between the pastoralists and the Park authorities, resulting sometimes in violent confrontations.

4. Dinder National Park Development Project

Due to the threats facing the DNP, the Government of the Sudan has requested and received assistance from the United Nations Development Programme (UNDP) (US $590,000) and the Global Environment Facility (GEF) (US $750,000) to implement a project which is titled "*Conservation & Management of Habitats & Species & Sustainable Land Use of Biodiversity In the Dinder National Park*" (Dinder National Park Project, DNPP). The DNPP began its activities in June 2000 and is expected to end in December 2003. A consolidation phase is now being discussed to assure the sustainability of positive impacts of the project. The implementing agencies of the DNPP are The Higher Council for Environment and Natural Resources (HCENR) and the Wildlife Conservation General Administration (WCGA). The overall goal of the

DNPP is the preservation of biodiversity in the park by encouraging species conservation and the sustainable use of resources through the integration of local communities in the utilization and management of the natural resources of the park.

The project aims at improving the standards of living of the communities neighboring the park, in addition to building the capacities of the WCGA in the park.

5. Achievements of the DNPP

5.1 In the Core Zone:

- Assessment of water resources
- Ecological baseline studies
- Training of wildlife personnel officers and scouts in basic wildlife management, wildlife census, meteorological data recording, camp management, camel riding, conflict resolution, environmental concepts, use of GPS, computer skills, etc.
- Demarcation of the park boundaries
- Permanent buildings constructed in the main camp of the park.
- Solar energy, improved water supplies
- Rehabilitation of 3 *mayas* (wetland sites)
- Meteorological station constructed in the main camp
- 6 wells equipped with hand-pumps

5.2 In the Transitional Zone:

- Socio-economic surveys were conducted in 38 villages, including the ten villages that fell within the boundaries of the Park when the Park's boundaries were extended in 1984 and other villages around the Park in the three states. Twenty-five Village Development Committees (VDCs) were established. Environmental awareness campaigns were conducted in the three states to sensitise the communities about the importance of the Park and the activities of the DNPP. The awareness activities also included the pastoralists.
- Training workshops were held to build the capacities of the VDCs. Topics included: local leaders training, bee keeping, aforestation and agro-forestry, project management, women and child health, strategic planning, revolving fund procedures and book keeping, etc.
- A revolving fund was established and more than 60 sub-projects were financed.
- Other community activities included: 13 wells drilled and fitted with hand-pumps, butane gas cookers introduced through the provision of 350 cylinders on credit basis, plant nursery created, community forests established and solar energy installed in schools and health centres.

- Intensive awareness activities led the communities to realize the significance and the values of the DNP, and several groups were invited to visit the park.

6. The work with the Pastoralists

6.1 Introduction:

The DNPP carried out an extensive study of pastoralism in the three states surrounding the Park. The study covered the number of livestock in each state, the range condition, the pastoralists' tribes and the problems facing the pastoralists. In August and September 2003, workshops were held in the three states to discuss present uses of the land, problems and the perceived solutions. In these workshops, the problems of the pastoralists were emphasized and in two states areas were designated as rangeland. The state of Gedarif has already designated an area of 21,000 hectares and the state of Sennar has committed an area of 84,000 hectares. It is hoped that this process will eventually lead to alleviation of the pressures on both the pastoralists and the natural resources of the Park. A land use workshop was held inside the park in June 2003 to synchronize the efforts of the three states as regards the movement of the pastoralists, the ranges and the livestock routes. The workshop recommended the establishment of a consultative council for the Dinder Park that includes representatives of all the stakeholders and which will work as a platform for dialogue and problem solving. The Sudanese Environment Conservation Society (a leading environmental NGO in the Sudan that is concerned about Dinder National Park's promotion and development as well as promoting the pastoralists cause) took the initiative and with the help of the DNPP and the ministers of Agriculture in the three states the first meeting of the consultative council took place in August 2003.

6.2 Pastoralists Activities in the Vicinity of the Dinder National Park

The problems related to livestock presence, rangelands and their productivity and limitations were identified within each of the three states surrounding the park. In the state of Gedarif, there is gradual encroachment of the rain-fed mechanized farming on rangelands. The situation of the rangelands is aggravated by the overgrazing of palatable grass species such as *Blepharis spec*ies, an increase in the number and size of areas covered by invasive species, fires and successive droughts. Rangeland productivity declined to 0.13 tons/acre in the northern areas and to 0.75 tons/acre in the southern areas of the state of Gedarif. The total number of livestock in the state of Gedarif is estimated as follows: 538,000 cattle, 1,300,000 sheep, 410,000 camels and 780,000 goats (Sulaiman, 2002).

In the state of Sennar, 400 km of cattle routes of were identified. The width of these routes is less than 150 meters. Most of these traditional routes have been encroached upon by cultivation, which is causing serious conflict with the farmers. Estimated livestock numbers are as follows: 1,338,000 cattle, 1,983,000 sheep, 1,120,000 goats and 250,000 camels.

In the Blue Nile State, estimated livestock numbers are as follows: 1,000,000 cattle, 2,000,000 sheep, 1,000,000 goats and a negligible number of camels. Encroachment

of agricultural activities is identified as the main problem affecting pastoralists and blocking their traditional routes and their access to watering areas.

Range rehabilitation measures in the three states are proposed to include: opening of traditional routes, adoption of grazing systems, development of water points, increasing the extent of rangelands, usage of residual agricultural crops, range reseeding and control of invasive species.

The tribal groups in the 3 states are well studied and known and their seasonal calendars are known. Conflicts with the DNP are mainly due to limited access to water points and growth in livestock population sizes to the point that they exceed the productivity of the natural rangeland outside the park and. The park authorities are accusing the pastoralists who are trespassing into the park of negative competition with wildlife for fodder, space and water and of exposing wildlife to livestock diseases. Outbreaks of render pest in 1978 and anthrax in 1982 were reported (Mohamed, 1980). In both cases, the outbreak was considered to be initiated by livestock and to cause serious losses in the wildlife population. Armed-conflicts between the park's authorities and pastoralists caused several losses among both sides.

6.3 Accommodating Pastoralists' Needs in the Land Use Plans of the Three States

The DNPP contracted the Remote Sensing Centre (RSC) to produce multi-layered maps of the three states (Gedarif, Sennar and the Blue Nile) using available data bases in addition to recent satellite images from Landsat Thematic Mapper (Landsat 5 TM). The compiled maps depicted: soils, erosion hazards, rainfall, hydrology, vegetation and present land uses (Remote Sensing Centre, technical report, 2003). The states relied on these maps to produce current land use maps and maps indicating potential plans to reduce the problems associated with the current land uses. In the current land use maps, land use percentages are as follows: 30% irrigated and mechanised rainfed agriculture, 34% rangeland and traditional rainfed agriculture, 19% natural forest and 17% unclassified (Map 2). However, the technical report noted the following:

- Both cultivated and rangeland areas have very poor productivity.
- Cultivation encroached on rangelands and blocked nomadic routes.
- Shortage of water is a problem in the rangelands as most of the wells are confined to the villages.
- Limited capacity exists for range improvement.
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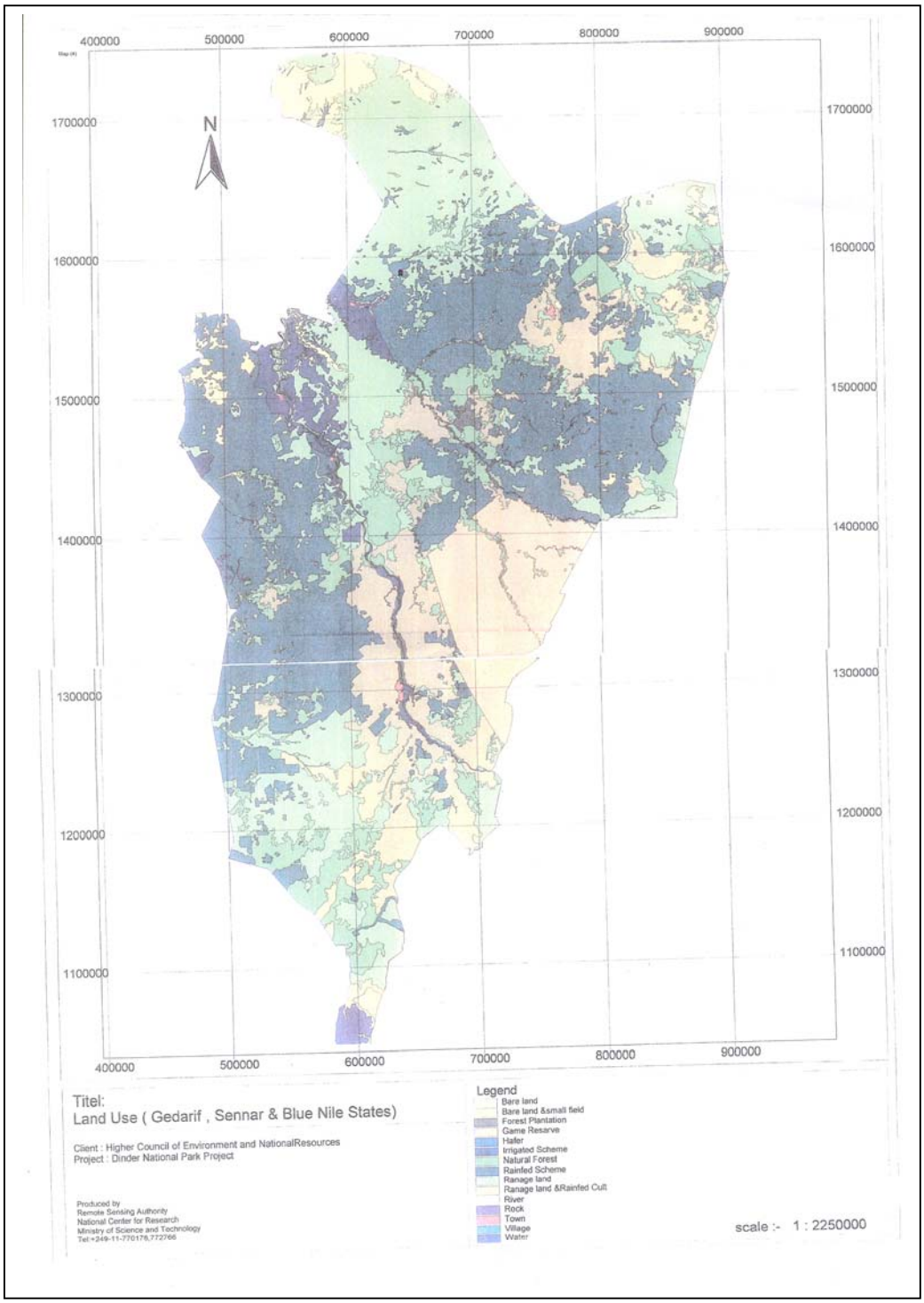
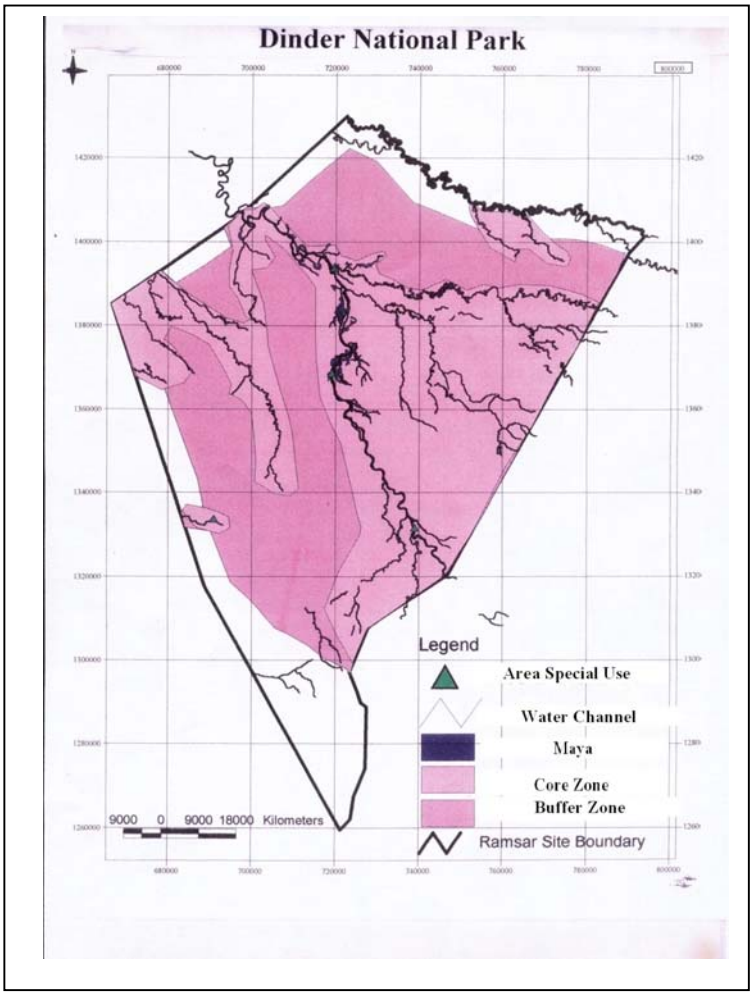
About 65% of the total area in the three states is prone to desertification. Almost all the rangelands are in locations characterized by low rainfall and high land degradation hazards.



Map 2. Land use in Gedarif, Sennar & Blue Nile States

7. The Management plan

Working through a national team led by an international ecologist (Professor W. van Houven from South Africa), the DNPP has produced a management plan for the park. The objectives of the management plan are biodiversity conservation through integration of the communities in the sustainable use of the park's natural resources. The concept of the Biosphere Reserve was followed in the formulation of the management plan. The Park is divided into three zones: core, buffer and transitional zones (Map 3). The management plan proposes that some parts of the transitional zone are to be provided with services (water and improved range) to be used by the pastoralists. The transitional zone area is more than 1,000 square km or about 10% of the total area of the park



Map 3. Core and Buffer Zones of the Dinder National Park

8. Pilot Projects

Continuous consultations between the DNPP and the pastorlists take place to determine suitable sites for *mayas* improvement within the transitional zone and/or within areas allocated by state authorities. Improvement will be undertaken through the removal of sediments to increase the water holding capacities of the *mayas*. Areas that were approved by the states will be under joint management between the states and the pastoralists to improve the rangeland around the mayas, plant trees along the feeder channels that allow flood water from the river to enter the mayas, and organize grazing. Areas within the transitional

9. Towards Establishing Partnership between the Pastoralists and the DNPP

The establishment of the transitional zone within the nanagement plan of the park represents an initial step in establishing partnership between the pastoralists and the park and ensures that benefits from the park extend beyond its boundaries. The

DNPP undertook an awareness and sensitization campaign in partnership with the Pastoralists Union in the state of Gedarif in August 2003. The campaign was held in the rainy season rangeland where all the pastoralist tribes from the three states gather. The campaign used various media (e.g. video shows, posters, exhibition) to achieve its goals and hosted group discussions led by representatives of the major pastoralist tribes in an effort to point out to the pastoralists the significance of the park, the management plan and to discuss the problems facing the pastorlists. The main problems as cited by the pastoralists include: limitations in the dry season range lands that leads to trespassing into the park, shortage of water resources, lack of education and health services and the inability of the Pastoralist Union to deal effectively with the problems facing the pastoralists. The pastoralists expressed their willingness to settle down if enough grazing resources are made available so that their children can benefit from social services, especially education.

The pastorlists also indicated the need for surveys of the potential range lands, implementation of the stock routes laws, establishment of water points, planting of trees within the cultivated areas and strengthening of the pastoralists' extension programmes.

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