OKAVANGO INTEGRATED RIVER BASIN MANAGEMENT PROJECT

CONSERVATION OF BIODIVERSITY IN KUANDO KUBANO PROVINCE

REPORT ON PRELIMINARY RECONNAISSANCE MISSION INTO THE MUCUSSO GAME RESERVE

Luís Veríssimo and Brenda Gail Bergman

Overview

The inventory of medium and large mammal species in the Mucusso Reserve is a fundamental component of the program for Conservation of Biodiversity in Kuando Kubango. This inventory seeks to provide information that will be useful for the Government of Angola to make decisions about management planning and zoning of the Reserve. On 12-24 March 2007, a technical team of the Okavango Integrated River Basin Management Project[1] conducted a preliminary reconnaissance into the Mucusso Reserve as an initial step in detailed planning of the mammal inventory.

Purpose

The objectives of this preliminary reconnaissance were to:

- Acquire indications of mammal presence;
- Assess the accessibility and the tracks of select main roads in the reserve, taking land mines and road conditions into consideration;
- Assess water availability points for wildlife;
- Assess human presence and disturbance;
- Assess vegetation and habitat structure;
- Acquire colloquial place names and their geographic coordinates; and
- Conduct on-the-job training of team members from Mucusso in GPS and mammal transects.

Summary of Key Findings

The technical team stresses that the findings of this initial reconnaissance provide preliminary indications only. Nevertheless, they offer an important first step in understanding conditions of the Mucusso Reserve, since no official information on mammals of the area has been collected in more than three decades.

- Indications suggest that species richness in Mucusso remains high. Most mammal species that once existed in the Reserve may still be found there, other than the black

[1] Team members included Luis Verissimo, International Consultant; Alberto Kavinga, Temwange Mucusso Resident; Amos Kandere, Katunda Mucusso Resident; Eusébio dos Santos, Mucusso Resident; Brenda Gail Bergman, IRBM Project Biodiversity and Hydrology Coordinator. The technical team was also joined by Antonio Mwenyo, Divundu Resident, and Albert Helder, Mucusso Police Agent.

U.S. Agency for International Development
1300 Pennsylvania Avenue, NW
Washington, DC 20523
www.usaid.gov

rhino which seems to have been exterminated.

- Indicia of mammal numbers are low, indicating that central Mucusso has a low abundance of most mammal species. However, elephant and roan indicia are abundant in select areas in the eastern block of the Reserve.
- Ground assessment and satellite imagery suggest that habitat is largely intact for regeneration of wildlife populations in the Mucusso Reserve. However, fires and logging operations have significantly altered habitat in certain areas. Conservation measures must be taken in order to prevent further habitat destruction, and to enable regeneration of wildlife populations.
- Through the course of the reconnaissance, the three team members from Mucusso showed dedication toward active participation. Their skills in using GPS and in conducting walking transects improved. The training and involvement of local data gatherers is proving to be an important cornerstone of the program.

Description of the Area

The Mucusso Game Reserve (21,300 km^2) is located in the South-East corner of the Kuando Kubango province, Angola (figure 1).[2] The Mucusso Reserve was once a hotspot of mammal richness and abundance. Through the 1960s, the Mucusso and Luiana areas contained some of the greatest density and diversity of mammals in all of Angola (Crawford & Verissimo, 2005), namely with some of the highest densities of Black Rhino (*Diceros bicornis*) in the region. Mammal population declined dramatically due to heavy poaching during Angola's Civil War. However, conditions for regeneration of mammal populations exist. Much of the reserve's habitat remains intact, and human population density within the reserve is relatively low.

The largest human settlements occur in two areas of the reserve: in the South, where a series of small villages line the banks of the Kubango and Cuito Rivers, and in the North, where the Likua settlement aligns the Lumuna River. Most agricultural activity occurs along the Kubango and Cuito Rivers (figure 2), Other human settlements appear to be small in scale.[3] The reserve overlaps with two municipalities, Dirico and Rivungu, and five communas Xamavera, Dirico, Mucusso, Luiana and Galangue (figure 3). Only the Mucusso communa is wholly within the boundaries of the Mucusso Reserve.

No perennial rivers occur within Mucusso's boundaries, only small drainage systems with ephemeral rivers or streams. This is the case for the Tondo, Nota and Iava streams (figure 4). In the Central and South-Eastern sections, numerous temporary lagoons exist, of which the Uambafuca complex is the most predominant.

Approach

The reconnaissance team recorded all direct mammal observations as well as all observations of mammal tracks by geographic location and species, and conducted focus group sessions and interviews with select community members living within the reserve regarding the presence of mammals by species, particularly in the Wandumbi area. The team also collected data on basic vegetation characterization for the areas covered.

The team traveled three roads during the survey:

- The Mucusso-Likua road which is the main north/south road through the center of the reserve,

[2] Mucusso's limits are, to the north, the Lumuna, Luengue and Luiana Rivers; to the East, the Luiana partial Reserve; to the South, the Angola-Namibia border and the Dirico-Mucusso road; and to the West, the Cuito River.

[3] Additional settlements in the reserve include Chatoma and Wandumbi.

- The Mucusso-Dirico road, which runs parallel to the Kavango River forming the southern border of the reserve, and
- A logging road which connects the Namibia/Angola border to the Chatoma settlement of Eastern Mucusso.

Figure 1: Location of Mucusso Game Reserve in Angola

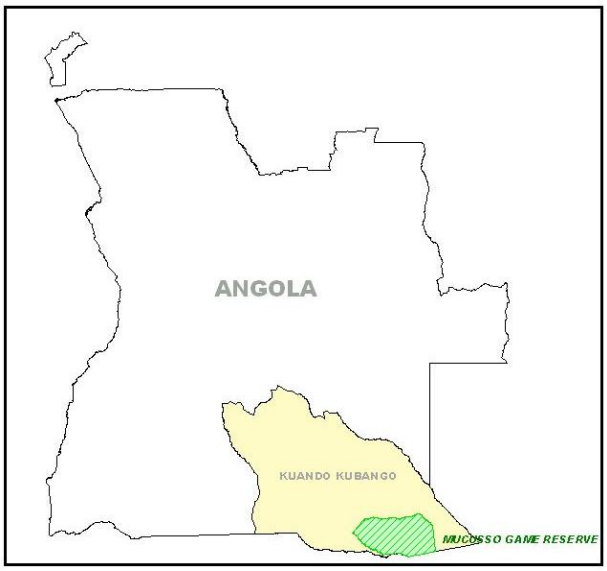


Figure 2: Crop land in the Mucusso Reserve, 2003

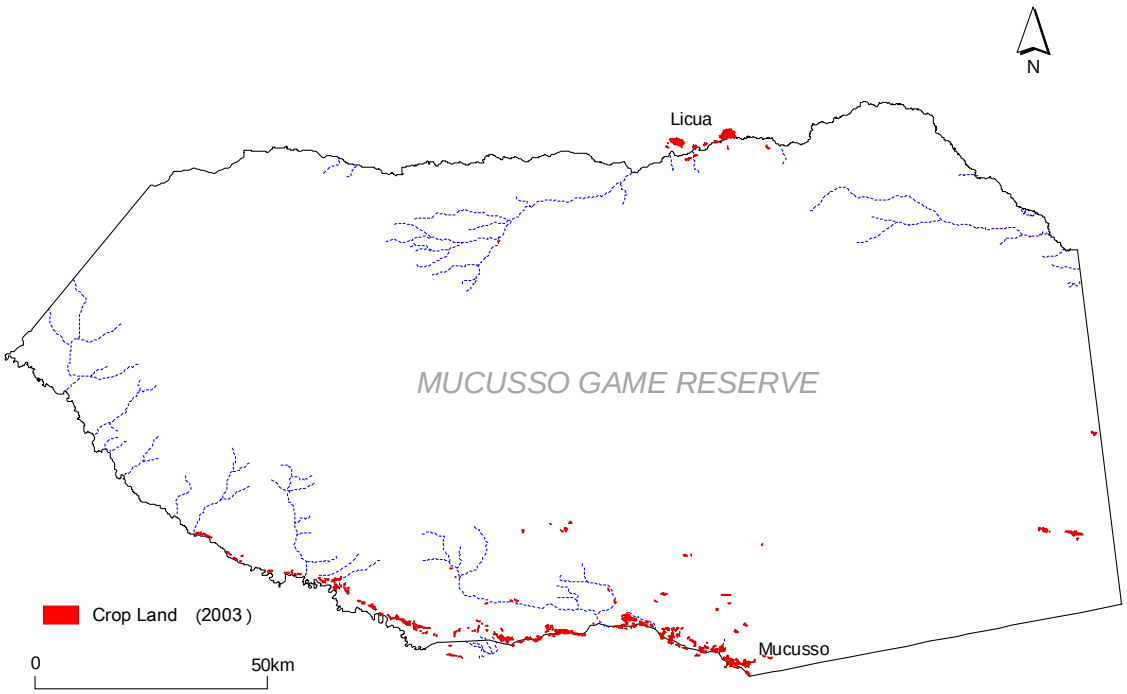


Figure 3: Boundaries of Municipalities, Communas, and the Mucusso Reserve

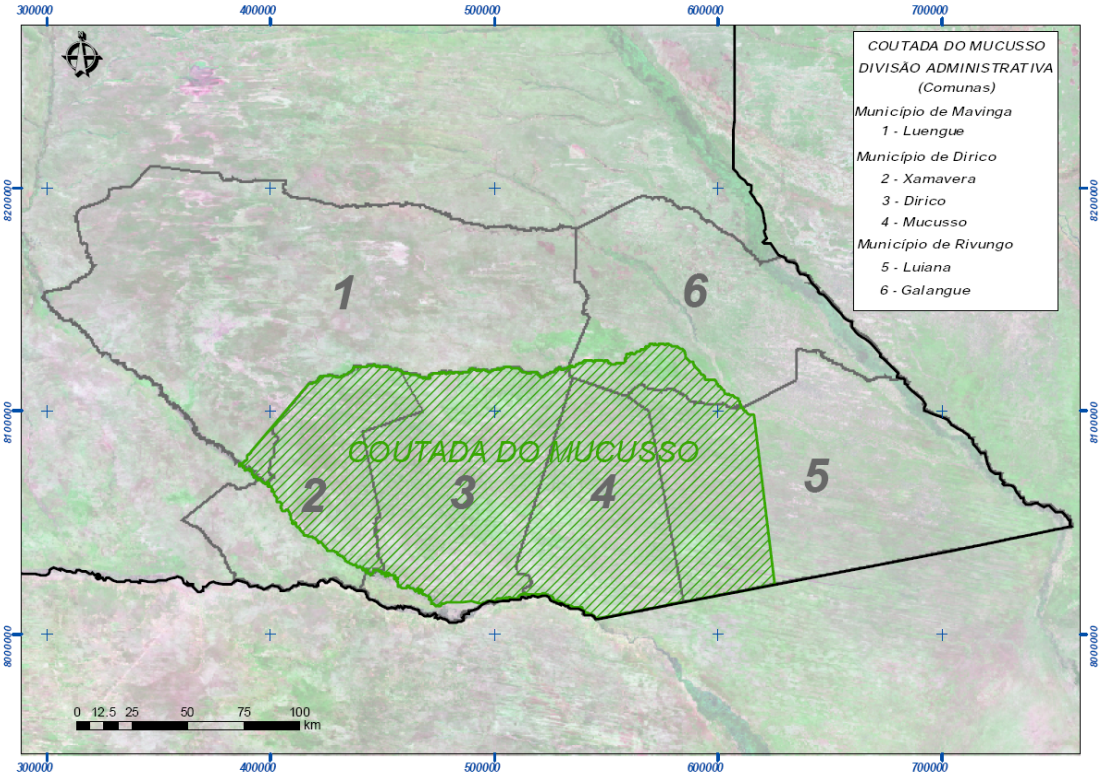
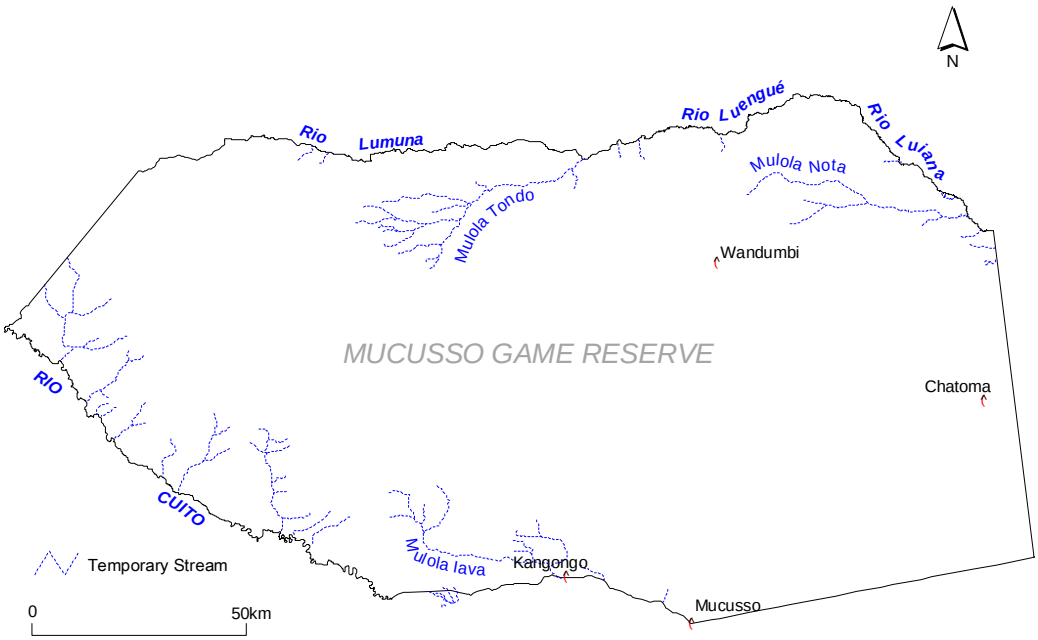


Figure 4: Ephemeral Rivers and Streams of the Mucusso Reserve



General Findings

Indications with respect to wildlife include:

- Signs of a relatively high rate of mammal crossings between the Angola-Namibia border;
- Confirmed presence of certain mammal species, including wild dog (*Lycaon pictus*), spotted hyena (*Crocuta crocuta*), honey badger (*Mellivora capensis*), elephant (*Loxodonta africana*), buffalo (*Syncerus caffer*), giraffe (*Giraffa camerlopardalis*), kudu (*Tragelaphus strepsiceros*), sable (*Hippotragus niger*), roan (*Hippotragus equinus*), steenbuck (*Raphicerus campestris*), oribi (*Ourebia ourebi*) and common duiker (*Sylvicapra grimmia*);
- Relatively low overall mammal density in areas traveled, particularly along the Mucusso-Likua road.[4] Exceptions include an abundant indicia presence of elephant and roan activity in select areas;
- Evidence of a recent elephant raid of crops along the Kubango River;
- Tertiary indication (through interviews with local community members) that elephants and antelope drink from the Kubango River, particularly during the dry season. Crop fields and human settlement along the river banks may overlap with elephant and antelope pathways to the river, intensifying human-wildlife conflict; and
- Local market for bush meat continues to encourage hunting in the reserve.

Indications with respect to habitat include:

- In areas of Mucusso, the vegetation is a mosaic of woodland and tree/shrubbed savannah with *Burkea africana*, *Baikiaea plurijuga, Burkea africana, Erithropleum africanum, Ricinodendron rautanenii, Dialium engleranu* and *Guibourtia coleosperma*. Grassy savannah predominates in the low lying areas which correspond to ancient interdune valleys with *Aristida spp., Digitaria spp., Poganarthria spp.* and *Typha capensis*. Pockets of thickets composed of *Acacia spp., Capacia violaceas, Phoenix reclinata* and *Ziziphus spp* occur through central and eastern portions of the Reserve. Along the flood plains of the Kubango and Cuito Rivers, aquatic vegetation communities exist, dominated by *Phragmites mauritianus, Vitivera nigritana* e *Cyperus papyrus,*
- Heavy habitat degradation in certain locations due to logging and uncontrolled burning,
  - The vegetation structure has been significantly altered along an irregular band that borders the first 50km of the Mucusso-Likua road by logging activities.
  - Fires have also impacted large tracks of vegetation along both the Mucusso-Likua road and the Border-Chatoma road.
- Indications that during dry season, few areas exist where water can be permanently found, thus making river access critical to many mammal species survival,
- Vegetation structures of interspersed low-lying grassy savannahs and dry forest may allow for preferential path movement of mammals, particularly on the eastern side of the reserve,
- Basic conditions exist for mammals to repopulate the area, if habitat degradation does not continue to progress and if hunting pressure is controlled and regulated.

Accessibility:

- The roads traveled are accessible with a good, high-clearance 4x4 vehicle. However they could be problematic during the dry

[4] As evidenced by sparse tracks, few sightings and the fact that in apparently suitable areas for grazing, vegetation did not show signs of heavy grazing.

season due to deep sands in some locations. Great care must be taken with respect to land mines, through the use of local guides.

- The geographic tracks of the roads differ from the tracks that existing maps indicate. The Border-Chatoma road does not appear on any existing maps.

Recommendations

- It is vital that the ground mammal inventory program in the Mucusso Reserve continues, not only to assess the overall presence of species in the area, but also as a tool to plan for the aerial census on mega herbivores to take place in September.
- The program should continue to identify and train local field teams of trackers and data collectors from each of the main population centers in the Reserve. The continued involvement of local residents in training and data collection will build human capacity for managing the Mucusso Reserve in the long term.
- Field survey leaders should identify priority target areas for conducting the mammal survey based on habitat, historical data on former animal abundance, and indicative information gathered through interviews with local people.

Next Steps

April

- Gather information from sightings within the Mucusso communa.
- Review data gathered during March reconnaissance.
- Communicate with local and national authorities regarding findings and proposed next steps

May

- Obtain authorization to proceed with detailed implementation. Continue on-the-job training of local data collectors.
- Conduct focus group sessions in the Chatoma and Licua areas, and identify local field team members in those areas.
- Begin inventory field work in the Central and Eastern Blocks of the Reserve.

June

- Conduct focus group sessions in the Dirico area; and identify local field team members from the area.
- Continue the inventory field work in the Central and Eastern Blocks of the Reserve.

July

- Conduct inventory field work in the Western block of the Reserve.
- Begin planning the aerial survey.

August

- Continue inventory field work in the Reserve.
- Finalize the programming and organization of the aerial survey.
- Analyze the land survey inventory data.

September

- Conduct aerial survey.
- Process the aerial survey data.

October

- Collate and analyze the information, prepare findings and recommendations.

November

- Conduct sessions to review findings and make recommendations for a management plan.