



# Conservation Action Plan for Mafinga Hills



Revised Copy for 2016 – 2025



This publication was first published in 2015 as an output from a research project funded by the Critical Ecosystem Partnership Fund (CEPF). The 2018 reprint is a revision of the document following a stakeholder’s consultative meeting. The views expressed herein are not necessarily those of CEPF or WECSZ, but of the communities in Mafinga and various stakeholders engaged in the formulation of this Conservation Action Plan.

*Photo credit: Gift Mwandila & David Ngwenyama*

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## FOREWORD



At the Wildlife and Environmental Conservation Society of Zambia (WECSZ) *“we champion the harmonious co-existence of humans and nature through knowledge and practical conservation of Zambia’s ecosystems”*.

We uphold the above mission statement because of the high value that natural resources, particularly ecosystems, have on mankind’s socio-economic development.

Among the ecosystems that are of great importance to Zambia are the Mafinga Mountains and the Luangwa watershed. This watershed continues to face a number of challenges arising from unsustainable anthropogenic Key Actions that are detrimental.

At national level, government via the Ministry of Lands and Natural Resources’ National Biodiversity Strategy and Action Plan (NBSAP2) has categorically stated the need to take deliberate actions to protect the Luangwa watershed.

The Luangwa watershed, which is housed by the Mafinga Hills, is also recognized by WECSZ’s international partner institutions in sustainable development. Among WECSZ’s partners and supporters is the Critical Ecosystem Partnership Fund (CEPF). CEPF identifies the Mafinga Hills as an area that is globally significant for biodiversity conservation.

This document is the first of its kind; highlighting key threats of biodiversity conservation in the Mafinga Hills and local interventions suggested by communities living in the Mafinga Hills. The document also highlights research needs in and around the Mafinga Hills.

As President of WECSZ, I speak on behalf of the members of the society in saying that we are proud of WECSZ’s intervention in ensuring protection of the Mafinga Hills biodiversity and the Luangwa watershed. This document empowers WECSZ and like-minded institutions to initiate informed conservation projects based on information gathered in the field. We are also proud because this document is not only a contribution towards the implementation of NBSAP2, but also a contribution towards CEPF’s goal of conserving biodiversity in the Mafinga Hills. As WECSZ, we hope the information contained herein, will be used to further the conservation agenda in the Mafinga Hills.

We hope you enjoy reading it!

A handwritten signature in black ink, appearing to read 'Joseph M Chikolwa'.

Joseph M Chikolwa  
**WECSZ President**

## ACKNOWLEDGEMENTS

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- Royal Highness Chief Mweniwisi
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**Chief Mweniwisi**

With over 170 villages in his Chiefdom

**Chief Mwenichifungwe**

With over 247 villages in his Chiefdom has



## WORKING DEFINITIONS

### *Anthropogenic*

Relating to, or resulting from the influence of human beings.

### *Biodiversity*

The total variety of all living things, including their genetic constituents, inter-relationships and habitats together with ecosystems and landscapes of which they are a part.

### *Ecosystem*

A dynamic complex of living communities of organisms and their non-living environment interacting as a self-sustaining entity of its own.

### *Conservation*

The sustainable management and use of nature and natural resources for their inherent value and for the benefit of society, bearing in mind that future generation have as much right to these resources as our own.

### *Critical Ecosystem*

Earth's biological rich yet threaten areas.

### *Endemic*

Limited to a particular area

### *Natural Resources*

Materials or substances that found in nature and are useful to humans; these exist without actions of mankind.

### *Riparian*

Related to, or situated or dwelling on the bank of a river or other body of water.

### *Saurian*

Belonging or pertaining to the Sauria, a taxonomic group of reptiles that include lizards and crocodiles.

### *Watershed*

A watershed describes an area of land that contains a common set of streams and rivers that all drain into a single larger body of water, such as a larger river or lake.



## ACRONYMS

|               |  |
|---------------|--|
| <b>CAP</b>    | Conservation Action Plan                                     |
| <b>CDC</b>    | Curriculum Development Centre                                |
| <b>CEPF</b>   | Critical Ecosystem Partnership Fund                          |
| <b>DNPW</b>   | Department of National Parks & Wildlife                      |
| <b>EE</b>     | Environmental Education                                      |
| <b>IUCN</b>   | International Union for Conservation of Nature               |
| <b>KBA</b>    | Key Biodiversity Area  |
| <b>LT</b>     | Long Term  |
| <b>MT</b>     | Medium Term  |
| <b>NBSAP2</b> | Second National Biodiversity Strategy and Action Plan        |
| <b>NHCC</b>   | National Heritage Conservation Commission                    |
| <b>REDD</b>   | Reducing Emissions from Deforestation and Forest Degradation |
| <b>RIT</b>    | Regional Implementation Team                                 |
| <b>ST</b>     | Short Term   |
| <b>WARMA</b>  | Water Resource Management Authority                          |
| <b>WECSZ</b>  | Wildlife and Environmental Conservation Society of Zambia    |
| <b>ZEMA</b>   | Zambia Environmental Management Authority                    |

## INTRODUCTION

Located astride the Zambia – Malawi border in north-eastern Zambia, the Mafinga Hills are a plateau covered by hills. The Hills are part of the Northern Lake Nyassa Catchment; and boast of not only being a botanically rich area, but also houses the source of the Luangwa River.

The Luangwa River flows 800 kilometers in the South-western direction before joining the Zambezi River between the Luangwa District (in Zambia) and Zumbo (in Mozambique). Its river valley is a site of several game parks including the North Luangwa National Park and South Luangwa National Park. The Mafinga Hills being a catchment area of the Luangwa River, are thus of significant ecological and economic value to Zambia.

The Mafinga Hills are a botanically rich area, hosting at least eleven known endemic plant species namely *Buchnera crassifolia*, *Buchnera nitida*, *Cyphia mafingensis*, *Cyphostemma vollesenii*, *Dissotis lanata*, *Ocimum obovatum*, *Phyllanthus mafingensis*, *Polystachya mafingensis*, *Protea kibarensis*, *Protea mafingensis* and *Rytigynia adenodonta*. They are also home to an interesting saurian endemic, the Nyika Dwarf Chameleon (*Chamaeleo goetzei nyikae*) and the Nyika Dwarf Toad (*Bufo loennbergi*). More plant and animal species are yet to be discovered and/or documented.

However, biodiversity in the Mafinga Hills is increasingly facing a number of threats that include expanding agriculture into the fragile riparian buffer zones, rapid deforestation, and frequent bush fires among others. The Wildlife and Environmental Conservation Society of Zambia (WECSZ) thus embarked on developing a Conservation Action Plan (CAP) for the Mafinga Hills. This was through an informative research that identified local communities' and other stakeholders' perspectives on the key threats of biodiversity in the Mafinga Hills and environmental interventions that would address the identified key threats.

This document, hereafter referred to as Mafinga Hills Conservation Action Plan is a product of a wide consultative process among stakeholders (both from government and Civil Society) at national, provincial and district levels. Primarily driven by what the local communities and local government considered the highest priorities, the document provides strategic direction on Conservation Key Actions that will contribute towards biodiversity conservation in the Mafinga Hills.

Not only does the Mafinga Hills CAP contribute towards achieving results under the Critical Ecosystem Partnership Fund (CEPF) Eastern Afromontane Profile, but it also contributes towards achieving results in Zambia's Second National Biodiversity Strategy and Action Plan (NBSAP2) (2015 – 2025, the Nationally Determined Contribution (NDC) (2015 – 2030) Programme and the REDD+ Strategy (2015 – 2030).

## SCOPE AND VISION OF THE CAP

This CAP focuses on the Mafinga mountains biodiversity, the Luangwa River headwaters and the villages straddling them. Its scope includes the Mafinga Hills, Luangwa River, Musipizi River, and Ntonga; the associated riparian buffer zones and riverine forests, and the Mafinga Hills National Forest Reserve no. 296. The purpose of the CAP is to identify the most urgent threats to biodiversity in the area and provide the associated priority conservation interventions.

The CAP thus provides a blueprint to implementing a conservation programme that will contribute to biodiversity conservation in Mafinga.

## BIOPHYSICAL DESCRIPTION

### Location and Characteristics of the Mafinga Mountains

Table 1. Location of the Mafinga Mountain

| Location                      | Zambia, Northern   |
|-------------------------------|--|
| <b>Central coordinates</b>    | <b>33<sup>o</sup> 17.58' East 10<sup>o</sup> 0.00' South</b> |
| <b>Area of Mountain Range</b> | <b>23,000 ha</b>   |
| <b>Altitude</b>               | <b>1,200 - 2,200m</b>  |

Source: BirdLife International (2005)

The Mafinga Hills are the most northerly block of mountains within Zambia eastern highlands, they straddle the international boundary with Malawi as well as Mafinga National Forest (No. 296) in the South of the area, and the site encompasses all the land above the 1,500m contour, with some parts which are largely uninhabited and rarely visited.

According to Geological Survey Department of Zambia, the Mafinga Hills are composed of quartzites, phyllites, and field spathic sandstones of sedimentary origin.

## Biodiversity

Scanty documentation is available in this area. However, the following were seen, reported or documented to occur.

## Vegetation



Figure 1. High Altitude Miombo Forest towards Malungule Hot Spring

The vegetation in the area consists mainly of hill Miombo; where the forest cover and woodland has been cleared, the miombo is inter-spaced with riverine forests and grassland.

The largely inaccessible hillsides and higher altitude areas consist mainly of undisturbed Miombo woodland dominated by *Brachystegia* and *Jubernadia* species.

While previously cleared areas and valley bottom comprise a larger mix of tree species including *Pterocarpus angolensis* (Mukwa), *Parinari curatellifolia* (Mpundu), *Albizia gummifera*, *Prunus africana*, *Nuxia congesta*, *Uapaca kirkiana*, and some remnant *Colophospermum mopane* (Mopane).

The remnant riverine forests (Mushitu) are dominated by *Syzygium* and *Ficus* species with key species such as *Ficus lutea*, *Prunus africana*, *Syzygium guineense ssp. Afromontanum*, and *Syzygium cordatum*.

Some cleared and floodplain areas along the streams are dominated by shrubs and grassland with the main species comprising *Hyparrhenia rufa*, *Diheteropogon ampelactens*, *Londetia simplex* and *Cymbopogon excavatus* with some areas of scattered bushes, trees and shrubs.

The Mafinga Hills are known to host eleven known endemic plant species namely *Buchnera crassifolia*, *Buchnera nitida*, *Cyphia mafingensis*, *Cyphostemma vollesenii*, *Dissotis lanata*, *Ocimum obovatum*, *Phyllanthus mafingensis*, *Polystachya mafingensis*, *Protea kibarensis*, *Protea mafingensis* and *Rytigynia adenodonta*.

## *Mammals*

Primates such as the yellow baboons were seen along the hills by the WECSZ's survey team. Already documented mammals include Chequered Elephant Shrew, and Giant Mastiff Bat, Smith's Red Rock Hare, Lesser Pouched Rat and Nyika Bush-rat (BirdLife International, 2005). Klipspringers were reported to be found in the area; mainly in the rain season.

## *Amphibians, Reptiles and Fishes*

The Mafinga Hills are home to an interesting saurian endemic, the Nyika Dwarf Chameleon (*Chamaeleo goetzei nyikae*) and the Nyika Dwarf Toad (*Bufo loennbergi*). The Hills are said to be a habitat of diverse snake species; these remain unidentified and undocumented. At the time of this publication, there were no reports on aquatic studies that may have been conducted.

## *Birds*

Birds seen during the survey included the little bee-eater, Sun bird, Black backed Barbet, Violet-backed Starling, Yellow Billed Kite and the Long Eared Glossy Starling.



Figure 2. A Black backed barbet in the Mafinga Hills

include the possibly endemic *lolaus stewartii*, an isolated population of *Pilodeudorix zelomima*, and the very local *Lolaus pamelae* (BirdLife International, 2005). No literature was found on other invertebrates.

Other birds reported to be found in the Mafinga include Yellow-throated Warbler, Silvery-cheeked Hornbills, Cabanis' Greenbul, Rameron Pigeon, Cinnamon Dove, Bar-tailed Trogon, Moustached Green Tinkerbird, Eastern Mountain Greenbul, Yellow-streaked Bulbul, Olive Thrush, White-chested alethe, Chestnut-headed Apalis (BirdLife International, 2005).

## *Invertebrates*

Butterflies have both been documented and were seen during the field survey. Documented butterflies

## CONSERVATION TARGETS FOR MAFINGA HILLS

The agriculture Key Actions along the Headwaters of the Luangwa River are expanding into the marginal and fragile riverine forests at the headwaters of the Luangwa River and its major tributary drainages that include the Musipizi and Ntonga Rivers.

### *The Mafinga Hills*

The Mafinga Hills or Mountains are rich in Biodiversity Heritage. Part of the Mafinga Mountains are a National Forest Reserve. This Reserve is designated for the management of the Luangwa watershed and for the conservation of Mafinga afro-montane ecosystem and associated biodiversity. The Reserve borders the Mafinga Hills and is 15,500 hectares.

Heritage sites at the Mafinga Hills include Malungule Hot Spring. The hot spring is located close to Chief Mwiniwisi's palace in Kalao Village. Malungule loosely translated means "to burn", which is a reference to the supposed heating of the earth resulting in the hot spring. The area around the hot spring has closed canopy riverine forest and hill Miombo forest. The top of the hill over the hot spring has some escarpment Miombo with various succulents.

The area around the hot spring is largely protected mainly due to its reverence as a sacred area. A strong mythical belief permeates the community that there is a 'seven-headed snake' that lives in the area and that the hot spring is where the snake's 'active head and eye' are located. This belief largely stops a majority of community members from visiting the area or to have potentially damaging actions within the area.

### *The Luangwa River and Associated Riparian Zone*

The Luangwa River starts from the heart of the Mafinga Hills at an altitude of about 1,800m. The source of Luangwa has for a long time been preserved due to the high altitude and the roughness of the surrounding ridges. Luangwa is the main watershed that drains Mafinga District. There are three tributaries which together with the Luangwa River forms the lifeline of the communities in Mafinga. The three tributaries are Musipizi, Ntonga and Inzinza Rivers.

Downstream, the Luangwa River and its major tributaries are significantly degraded. Some of the major causes of the degradation include cultivation along the riverine area, and deforestation of riparian forests. This situation has resulted in sedimentation and consequent drying up of water bodies thus resulting in limited water availability.



Figure 3. Community member walking long distance to fetch water

## **FACTORS DEGRADING MAFINGA HILLS CONSERVATION TARGETS**

This section identifies the problem(s) in the conservation target(s) and the associated threat(s). Sources of these problems include:

### ***Problem 1. Degradation of riverine forests and riparian buffer zones at the headwaters of the Luangwa River, Ntonga River and Musipizi River.***

The threat(s) attributed to the above problem include:

- Expanding agriculture Key Actions into the marginal and fragile riverine forests at the headwaters of the Luangwa River and all its tributary drainages that include the Musipizi and Ntonga Rivers. Pressure to find more fertile soils has pushed farmers away from depleted, exhausted farmland into more sensitive riverine forests and riparian buffer zones.
- Low and declining water flow on the Luangwa, Ntonga and Musipizi Rivers;
- A lack of awareness on the value of biodiversity supported by the ecosystem by stakeholders including the local community; and steps to conserve it;
- Knowledge gap on species composition and uniqueness.

### ***Problem 2. Encroachment in the Mafinga Hills Forest Reserve No. 296***



Figure 4. Clearing of forest area for subsistence agriculture

The threats attributed to the above problem include:

- New and extensive Chitemene (cut and burn system of agriculture) fields;
- Illegal off-take of high value timber (i.e. *Pterocarpus chrysothrix*);
- A lack of awareness on the value of biodiversity supported by the ecosystem by stakeholders including the local community; and steps to conserve it;
- Knowledge gap on species composition and uniqueness.
- Degradation of the Riparian Buffer Zones of the Musipizi and Ntonga rivers
- Charcoal production and wood collection
- Frequent bush fires.



Figure 7: Declining water levels and/or flow of the Luangwa River.



## STRATEGIC CONSERVATION ACTION PLAN (2016 – 2025)

### Core Investment Priority No. 1: Governance & Policy

Outcome: Strengthened governance, management structures and systems of Mafinga Hills by 2025.

#### Objective

- To ensure that the Mafinga National Forest Reserve and its immediate surrounding areas are sustainably managed for biodiversity conservation.

#### Conservation Targets

- Luangwa River headwaters and associated riparian and riverine forests are protected.
- The Mafinga National Forest Reserve No. 296 and its immediate surrounding areas are protected.

#### Threats Addressed

- Expanding agriculture Key Actions into the marginal and fragile riverine forests at the headwaters of the Luangwa River and all its tributary drainages that include the Musipizi, Inzinza and Ntonga Rivers.
- New and extensive Chitemene (cut and burn system of agriculture) fields.
- Illegal off-take of high value timber (i.e. *Pterocarpus chrysothrix*).
- Charcoal production and wood collection.

**Table 1.** Core Investment Priority No. 1

| Strategy  | Key Actions   | Timeframe |    |    | Responsibility                             | Stakeholders  |
|---|---|-----------|----|----|--|---|
|   |   | ST        | MT | LT |  |   |
| Disseminate policies, guidelines and agreements for the protection of riverine forests, stream banks and surface water in headwater catchment areas at community level. | Development of community sensitization materials.   | X         |    |    | Project Manager, Consultant (to be hired). | District Local Council, District Forestry Department, District Fisheries Department, District Agriculture Department.   |
|   | Sensitization of traditional leadership.  | X         |    |    | Project Manager, Project Officer.          | Ministry of Lands & Natural Resources, National Heritage Conservation Commission (NHCC), Forestry Department, Agriculture Department, Mafinga District Local Council. |
|   | Sensitization of community members.   | X         |    |    | Project Officer.                           | Traditional leaders, District Local Council, District Forestry Department, District Fisheries Department, District Agriculture Department.                            |
|   | Facilitation of community meetings to develop or disseminate policies, guidelines and agreements such as Forest Act No. 4 2015, National Land policy 2006, CFM regulation 2018, Water Resources Regulation 2018, National Agriculture policy 2016 and National Water Policy 2010. |           |    | X  | Project Officer.                           | Local Community   |
|   | Documentation of developed local policies, guidelines and agreements.   |           |    | X  | Project Officer.                           | District Local Council, District Forestry Department, District Fisheries Department, District Agriculture Department.   |

|  |  |  |  |   |  |   |
|--|--|--|--|---|--|---|
| Develop and implement a participatory Mafinga National Forest Reserve Management Plan. | Facilitation of stakeholder meetings.  |  |  | X | Project Manager, Consultant (to be hired). | Forestry Department, Ministry of Lands & Natural Resources,, Traditional leadership, Local Community, Mafinga District Local Council. |
|  | Compilation of forest maps.            |  |  | X | Project Officer, Consultant (to be hired). | Forestry Department, Ministry of Lands & Natural Resources, Traditional leadership, Local Community, Mafinga District Local Council.  |
|  | Integrated Forest Resources Inventory. |  |  | X | Project Officer, Consultant (to be hired). | Forestry Department, Ministry of Lands & Natural Resources, Traditional leadership, Local Community,                                  |
|  | Development of Management Plan.        |  |  | X | Project Manager, Consultant (to be hired). | Forestry Department, Ministry of Lands & Natural Resources, Traditional leadership, Local Community,                                  |

## **Core Investment Priority No. 2: Livelihood, Ecotourism and Climate Change**

Outcome: Local communities' sustainable livelihoods and enterprises developed and facilitated by 2025.

Objectives:

- To promote economically viable and sustainable livelihood options.
- To facilitate promotion of ecotourism development among local communities.
- To promote climate resilient enterprises.

Conservation Targets

- Luangwa River headwaters and associated riparian and riverine forests are protected.
- At least 20% of the target population (Households) involved in alternative and sustainable livelihood.
- Viable climate resilient enterprises developed.

Threats Addressed

- Expanding agriculture Key Actions into the marginal and fragile riverine forests at the headwaters of the Luangwa River and all its tributary drainages that include the Musipizi, Inzinza and Ntonga River.
- New and extensive Chitemene (cut and burn system of agriculture) fields.
- Illegal off-take of high value timber (i.e. *Pterocarpus chrysothrix*).
- Forest degradation.
- Climate change vulnerability.

**Table 2.** Core Investment Priority No. 2

| Strategy   | Key Actions  | Timeframe |    |    | Responsibility                                | Stakeholders to work with                                    |
|--|--|-----------|----|----|---|--|
|  |  | ST        | MT | LT |   |  |
| Promote alternative sustainable livelihood options | Development of modules for training local community members on beekeeping. | X         |    |    | Project Manager, Consultant (to be hired).    | Forestry Department  |
|  | Training of local community members on beekeeping.                         | X         |    |    | Project Manager, Consultant                   | Forestry Department, Agriculture Department                  |
|  | Identification of beekeeping sites in Riverine forests.                    |           | X  |    | Project Officer.                              | Mafinga District Forestry Officer.                           |
|  | Acquisition and supply of bee keeping equipment to trained beekeepers.     |           | X  |    | Project Manager, WECSZ National Administrator | Forestry Department  |
|  | Setting up of apiaries.  |           | X  |    | Project Officer.                              | Mafinga District Forestry Officer.                           |
|  | Provision of technical support.  |           | X  |    | Project Officer                               | Mafinga District Forestry Officer.                           |
|  | Processing honey (value addition).   |           | X  |    | Project Officer                               | Mafinga Beekeeping farmers.                                  |
|  | Establishment of groups or associations to enhance marketing of produced   |           | X  |    | Project Officer                               | Mafinga District Forestry Officer.                           |
|  | Linking of beekeepers to honey market.                                     |           | X  |    | Project Officer, Project Manager.             | Mafinga District Forestry Officer.                           |
| Promote value addition across product chains       | Conduct training for improving value chains                                |           |    | X  | Consultant                                    | Project coordinator  |
| Promote market linkages for viable commodities     | Conduct market research  |           |    | X  | Consultant                                    | Project coordinator  |
| Promote ecotourism and cultural heritage           | Training of bird guides; tour guides.                                      |           |    | X  | Project Officer, Consultant (to be hired).    | Bird Watch Zambia, Department of National Parks and Wildlife |

|   |   |  |   |  |   |
|---|---|--|---|--|---|
|   | Creation of tourist facilities by communities and improved community livelihoods. |  | X | Project Manager, Consultant (to be hired). | Ministry of Tourism & Arts, National Heritage Conservation Commission, Forestry Department Ministry of Lands & Natural Resources, Traditional leadership, Local Community |
|   | Marketing the Mafinga Hills as a tourism destination by different stakeholders.   |  | X | Project Officer, Consultant (to be hired). | Zambia Tourism Board, Traditional leadership, Mafinga District Local Council  |
| Promote climate resilient road infrastructure | Conduct climate risk assessment   |  | X | Consultant                                 | Project manager, Ministry of Lands and Natural Resources, Ministry of National Development planning, Road Development Agency.   |
|   | Identify target road infrastructure   |  | X | Consultant                                 | Project manager, Road Development Agency  |

### **Investment Priority No. 3: Water and Forestry**

Outcome: Enhanced habitat restoration and regeneration in the Mafinga Hills Forest Reserve and its immediate surrounding areas by 2025.

Objective:

- To increase vegetation cover in riparian buffer zones or riverine forests along the Luangwa River, Ntonga River, and Musipizi by 25% (from current level) within 100m of rivers and streams.

Conservation Targets

- Luangwa River headwaters and associated riparian and riverine forests.
- Musipizi River, Ntonga River and associated Riparian Zone.

Threats Addressed

- Expanding agriculture Key Actions into the marginal and fragile riverine forests at the headwaters of the Luangwa River and all its tributary drainages that include the Musipizi, Inzinza Stream and Ntonga River.
- Low and declining water flow on the Musipizi and Ntonga Rivers.
- Forest fires.
- Human settlements.

**Table 3.** Core Investment Priority No. 3

| Strategy   | Key Actions   | Timeframe |    |    | Responsibility  | Stakeholders to work with                                      |
|--|---|-----------|----|----|---|--|
|  |   | ST        | MT | LT |   |  |
| Carry out afforestation, reforestation and restoration (ARR) in the riparian buffer zones and Luangwa river watershed. | Establishment of local community youth groups.  | X         |    |    | Project Officer.  | District Agriculture Department, District Forestry Department. |
|  | Training on tree nursery establishment and management.  | X         |    |    | Project Manager, Project Officer                        | District Agriculture Department, District Forestry Department  |
|  | Acquisition of polythene bags for the tree nurseries.   | X         |    |    | Project Manager, WECSZ National Administration Officer. | Forestry Department  |
|  | Supply of polythene bags for nursery establishment to youth groups.   | X         |    |    | Project Officer.  | Forestry Department  |
|  | Implement Assisted Natural Regeneration (ANR) in the riparian buffer zones of Musipizi and Ntonga streams, Luangwa river watershed and associated tributaries.<br><br>Implement integrated land Use Planning (ILUP) and fire management in the Luangwa river watershed. |           |    | X  |   | Project Officer  |



|   |   |  |   |   |   |   |
|---|---|--|---|---|---|---|
| Promote agroforestry practices and other sustainable farming methods. | Training of Agriculture Extension Officers and Lead Farmers in Agroforestry   |  |   | X | Project Manager, Project Officer, Consultant (to be hired). | Mafinga District Agriculture Department.  |
|   | Train local farmers in Agroforestry technologies implementation and other climate-smart agricultural (CSA) practices. |  |   | X | Project Officer.  | Mafinga District Agriculture Department, Mafinga District Local Council, Traditional Leadership |
|   | Sensitizing of local farmers on newly established agroforestry and CSA practices.                                     |  |   | X | Project Officer.  | Mafinga District Agriculture Department   |
| Promote natural regeneration  | Adopt at least 50km <sup>2</sup> of deforested land for regeneration  |  | X |   | Project manager   | Mafinga District Agriculture Department, Mafinga District Local Council, Traditional Leadership |

## **Core Investment Priority No. 4: Ecological Research and Environment Education**

Outcome 1: Additional knowledge on the Mafinga Hills biodiversity and conservation challenges generated by 2025.

Objectives:

- To assess and document the composition, status and trend of biodiversity in the terrestrial and aquatic ecosystems of the Mafinga Hills and consequences of its loss widely shared.

Conservation Targets

- Additional knowledge on the Mafinga National Forest Reserve 296.
- Additional knowledge on the ecological and cultural heritage sites in and around the Mafinga Hills.
- Additional knowledge on the Headwaters of the Luangwa River and associated Riparian and Riverine Forests.
- Additional knowledge on the Musipizi, Ntonga and associated Riparian Zone.

Threats Addressed

- Illegal off-take of high value timber (i.e. *Pterocarpus chrysothrix*).
- Knowledge gap on species composition and uniqueness.
- A lack of awareness on the value of biodiversity supported by the ecosystem by stakeholders including the local community; and steps to conserve it.
- New and extensive Chitemene (cut and burn system of agriculture) fields.
- Charcoal production and wood collection.
- Frequent bush fires.

**Table 4.** Core Investment Priority No. 4

| Strategy  | Key Actions   | Timeframe |    |    | Responsibility                    | Stakeholders to work with   |
|---|---|-----------|----|----|-----------------------------------|---|
|   |   | ST        | MT | LT |                                   |   |
| Study the illegal trade route of Pterocarpus chrysothrix and other high value timber species. | Hire of consultant to conduct investigation.  |           |    | X  | Project Manager,                  | Ministry of Lands & Natural Resources, Forestry Department and Zambia Police.   |
|   | Publication of results.   |           |    | X  | Project Manager.                  | Ministry of Lands & Natural Resources and Forestry Department.  |
| Monitor illegal logging and wood collection in the forest reserve.                            | Development and enforcement of local community by-laws.                                     |           |    | X  | Project Manager, Project Officer. | Ministry of Lands & Natural Resources, Mafinga District Council, Traditional leaders Forestry Department and Local Community. |
|   | Conduct joint blitz patrols by Community Forest Management Groups (CFMGs) and Forestry Dept |           |    | X  | Project Officer.                  | Forestry Department, Traditional leaders, Local community and Zambia Police.  |

|  |  |  |  |   |  |   |
|--|--|--|--|---|--|---|
| Conduct biodiversity (fauna and flora) assessment of terrestrial and aquatic ecosystems. | Mapping and identification of biodiversity hotspots.                     |  |  | X | Project Officer, Consultant (to be hired). | Ministry of Lands & Natural Resources, Forestry Department, Forestry Department, BirdWatch Zambia and Department of National Parks & Wildlife                       |
|  | Detailed assessment of species distribution, richness and abundance.     |  |  | X | Project Officer, Consultant (to be hired). | Ministry of Lands & Natural Resources, Forestry Department, Bird Watch Zambia and Department of National Parks & Wildlife (DNPW).                                   |
|  | Publication and dissemination of results to inform conservation efforts. |  |  |   | Project Manager                            | Ministry of Lands & Natural Resources, Bird Watch Zambia, Forestry Department and DNPW.   |
| Biodiversity assessment of the aquatic ecosystem.  | Mapping and identification of biodiversity hotspots.                     |  |  | X | Project Officer, Consultant (to be hired). | Ministry of Lands & Natural Resources, Forestry Department,, BirdWatch Zambia, Department of National Parks & Wildlife, Fisheries Department, Fisheries Department. |
|  | Detailed assessment of species distribution, richness and abundance.     |  |  | X | Project Officer, Consultant (to be hired). | Ministry of Lands & Natural Resources, Forestry Department, BirdWatch Zambia, Department of National Parks & Wildlife, Fisheries Department.                        |

|   |   |  |  |   |  |  |
|---|---|--|--|---|--|--|
|   | Publication and dissemination of results to inform conservation action.                           |  |  | X | Project Manager, Consultant (to be hired). | Ministry of Lands & Natural Resources, Forestry Department, BirdWatch Zambia, Department of National Parks & Wildlife, Fisheries Department.   |
| Conduct climate change vulnerability assessment of the Mafinga Hills KBA. | Vulnerability and risk assessment on agriculture, water, forests, Wildlife and livelihoods.       |  |  | X | Project Officer, Consultant (to be hired). | Ministry of Lands & Natural Resources, Forestry Department, Agriculture Department, Fisheries Department, Interim Climate Change Secretariat, Mafinga District Local Council.                                      |
|   | Publication and dissemination of results to inform conservation action.                           |  |  | X | Project Manager, Consultant (to be hired). | Ministry of Lands & Natural Resources, Forestry Department, Fisheries Department, Interim Climate Change Secretariat, Mafinga District Local Council Department for National Parks and Wildlife, Bird Watch Zambia |
|   | Conduct a study on the key drivers of deforestation and forest degradation in the Mafinga Forest. |  |  | X | Project Manager, Consultant                | Ministry of Lands & Natural Resources, Forestry Department, Zambia Environmental Management Agency   |

Outcome 2: 70% of the households in and around the Mafinga Hills are sensitized and educated on the importance of Biodiversity Conservation in the Mafinga Hills and its sustainable utilization by 2025.

Objectives:

- To promote awareness and education of local communities on the significance of biodiversity conservation and its sustainable utilization in the Mafinga Hills and immediate surrounding areas.
- To conduct awareness on the significance of biodiversity conservation and its sustainable utilization.

Conservation Targets

- The Headwaters of the Luangwa River and associated Riparian and Riverine Forests.
- Musipizi, Ntonga and associated Riparian Zone.

Threats Addressed

- A lack of awareness on the value of biodiversity supported by the ecosystem by stakeholders including the local communities; and steps to conserve it.

**Table 5.** Core Investment Priority No. 4

| Strategy  | Key Actions   | Timeframe |    |    | Responsibility                             | Stakeholders to work with  |
|---|---|-----------|----|----|--|--|
|   |   | ST        | MT | LT |  |  |
| Develop and implement an environmental awareness and education programme for communities and schools. | Development of Communication, Education and Public Awareness Strategy.  |           |    | X  | Project Manager, Consultant (to be hired). | Zambia Environmental Management Agency, Ministry of Lands & Natural Resources, Forestry Department, Fisheries Department, Agriculture Department, Department of National Parks and Wildlife, Ministry of Education, Local community, Bird Watch Zambia |
|   | Conduct public awareness and education campaigns on value of conserving biodiversity and using it sustainably.    |           |    | X  | Project Officer                            | Zambia Environmental Management Agency, Ministry of Lands & Natural Resources, Forestry Department, Fisheries Department, Agriculture Department, Department of National Parks and Wildlife, Ministry of Education, Local community, Bird Watch Zambia |
|   | Conduct surveys to assess change in behavior among local community members using the Biodiversity Barometer Tool. |           |    | X  | Project Manager, Consultant (to be hired). | Zambia Environmental Management Agency, Ministry of Lands & Natural Resources, Forestry Department, Fisheries Department, Agriculture Department, Department of National Parks and Wildlife, Ministry of Education, Local community, Bird Watch Zambia |
| Translate environmental and educational materials to local languages.                                 | Assess the status of the EE learning Materials  |           |    | X  | EE National Officer                        | CDC, Ministry of General Education, ZEMA, local community  |

## **CONCLUSION**

All in all, the revised Mafinga Hills Conservation Action Plan is a product that came from consultative meetings with stakeholders from community, government departments and civil society organizations at national, provincial and district level. Thus, the threats that were identified will be progressively addressed according to their Core Investment Priorities in short, mid and long term time frames. The implementation of the objectives in the four Core Investment Priorities is vital not only at the local, national, but also at international level and is largely dependent on the commitment and availability of resources from various stakeholders. With all our efforts and commitments, the Mafinga Hills will be a place to marvel by 2025.





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