

Reference Manual

Lake Tana Biosphere Reserve Day

Prepared for Schools in the Lake Tana Biosphere Reserve

as part of the NABU project

'Community-Based Climate Adaptation and Biodiversity Conservation in the

Model Area of Lake Tana Biosphere Reserve, Ethiopia'

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1. Background information about Lake Tana

1.1. Introduction

Lake Tana is located in north-east of Ethiopia and is the largest lake in the country. The lake is situated 1830m above mean sea level (a.m.s.l) with its highest point at Ararat Plateau,which is 1994m above mean sea level. The lowest point of the lake is located near Bahir Dar, at the outlet of Blue Nile River from Lake Tana, which is 786m above mean sea level. According to various sources, many years back, the total area of the lake had been 6,602 sq km while now it has shrunk to 3156 sq km. The total area of the catchment measures over 15,000 sq km. The width of the lake (from East to West) is 68 km while its length (North to South) is 73 km. The lake measures 14m at its deepest point while the average depth is estimated to be 8m. Lake Tana and its surroundings are rich of rivers, wetlands, religious and historical monasteries and churches. In addition to that, Lake Tana region is characterized by a high degree of biodiversity because of its unique landscapes and natural resources. The Blue Nile River, the major tributary to Nile River, the longest river of the world, starts its journey from Lake Tana. Due to its natural and cultural attractions, Lake Tana region also serves as an international tourist destination.



Figure 1: Topography of Lake Tana

The catchment of Lake Tana encompasses the region from Guna to Sekela and from Armachiho to Enjibara and parts of four zonal administrations, 10 Woreda a total of 117 Kebele and Bahir Dar city administration.

Lake Tana region is home to 28 fish species, 300 different birds, 16 different mammals, 179 plant species and many other species of high importance for the local as well as the international community. The monasteries and churches on the islands of Lake Tana are of high architectural value. They serve as tourist attractions due to their paintings, church service serving materials, manuscripts, dress of former Empresses and annual religious celebrations.

1.2. Natural and cultural resources of Lake Tana

As indicated by various studies, Lake Tana and its surroundings are endowed with artificial, natural and historical resources. Among these resources are the water body, wetlands, islands, historical and religious monasteries and churches as well as the composition and number of flora and fauna.

1.2.1. Water Resource

The main water sources of Lake Tana are ground water, surrounding springs, rivers and rain water. More than 60 springs and five big rivers (Gilgel Abay, Rib, Gumara, Megech and Arno Garno) tribute to Lake Tana. Blue Nile(also named River Abay) is the only river springing from Lake Tana andrunning 35 km in South-East direction, before it forms a wonderful tourist attraction called Tis Issat Falls. The water of Lake Tana is used for irrigation, fish production, transportation, tourism, hydro-electric power generation and as a source and home for many plants and animal species. It is a fundamental source of living for communities living around the lake. Because of that the area is considered to be one of the growth corridors at a federal and regional level.



Figure 2: Water Sources of Lake Tana



Figure 3: Tributaries of Lake Tana and outgoing rivers

1.2.2. Wetlands

Wetlands are lands which can hold water temporarily or permanently. They are located at the side of lakes, next to rivers and at ditches far from other water sources. The wetlands in Lake Tana region are of importance because of the following reasons:

- Functions Wetlands prevent floods, soil erosion and the entrance of waste, e.g. from towns.. They also purify water, support the nutrient cycle and thwart carbon dioxid output and climate change.
- Products Wetlands provide fish, firewood, lumber and animal food. The reed that grows
 near the lake is used to build roofs. Papyrus, a grass available in wetlands around the lake, is
 used to produce household goods, souvenirs, reed boats (*tankua*), to build fences and to
 decorate the house during celebrations.
- Attributes Lake Tana region is attractive for tourists because of its impressive and diverse landscapes and biodiversity.

There are many wetlands in and around Lake Tana including Fogera (Wellala, Shesher), Delgi, Dembia (Robit), Kunzila, Dengel Ber, Yiganda, Astumit, and wetlands around Bair Dar.





Figure 4: Views of wetlands in Lake Tana









Figure 5: Some benefits of Papyrus

a.	Wetlands	found	around	Lake	Tana
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Name	Wetland name				
Woreda					
Bahir Dar	Latamba, lijome, Wenjeta, Sekelet, Ambo Bahir, Dek, Enfranz, Daki and Tomet				
Zuria					
North	Legidiya, Estumit (inlet of Gilgel Abay), Chimba, Kunzila, Kunzila town,				
Achefer	Wenberia eyesus area				
Dembia	Megech river area, Achera, Seraba area, Gorgora, Dirma river area, Robit area				
Gondar <i>Zuria</i>	Agid Kirigna, Arno Garno river area				
Takusa	Asratie tokaw, Konso toka, Kechinit, Chegera toka, bergen toka, goja toka,				
	achera area, sensay toka, ginza toka				
Alefa	Beles mesk, Kentie jonka, Esey debir area, Azo bahir, Birr wuha area, Dengel				
	ber area, Dengel shewa area.				
Fogera	ela, Shesher, Kiristos Semmira area, Gumara river area, Woreta plain				
	area.				

Libo kemkem	Rib river area, Daga tokaw				
Dera	Korata area, Tana kirkos, Geldaw river area, Gumara, Kiristos Semira area,				
	Ahunweta area, from Fiseash to Lam Maderia, Bosit, Dengecha.				
Bahir Dar	Gami Mesk, Debre Mariam area, Gedero, Selchen, Gudo bahir, Aba Gerima,				
	Enfranz river, Bahir Dar University Abbay area, Chere chera Wier area, Wereb,				
	Weramt area.				

Table 1. Some of the wetlands of Lake Tana.

1.2.3. Islands

There are 37 islands in Lake Tana while the number fluctuates as a result of the increasing and decreasing water level during dry and rainy seasons. Among these islands, 19 have historical and religious monasteries and churches. Some islands are rocky and they serve as nesting places for birds while others are covered by trees.



Figure 6: Kibran Gebriel: One of the islands of Lake Tana

1.2.4. Churches and monasteries

In Lake Tana, there are more than 19 ancient and historical monasteries and churches most of which are found on islands while the others are situated at the shore of the lake. The monasteries are rich of private goods of former emperors, burial places of former kings, wall paintings, architectural features and writings on parchment (*Birana*). In addition, monastery life plays a pivotal role to preserve endemic trees, wildlife and other natural resource, e.g. for thousands of years they have

protected the last remaining forests in the region and are promoting the protection of wildlife and nature.



Figure 7: Partial View of monasteries in Lake Tana



1.3. Biodiversity

Lake Tana and its suroundings are home to a vast variety of different species. Some of them are endemic, others are migratory species only staying for some months every year - but all are in desperate need for protection

1.3.1. Fish

There are more than 200 fish species in Ethiopia,40 of which are endemic. In Lake Tana region there are 28 fish species of which 19 are endemic in Ethiopia, mainly of the following categories:

No.	Amharic	English
1	Kereso	Tilapia
2	Ambaza	Catfish
3.	Nech asa	Barbus
4	Bezo	Varicorhinus beso



Figure 8: Fishes of Lake Tana: Catfish and Barbus respectively

While 1,454 tons of fish are annually produced in the Lake Tana region using traditional methods, it is possible to produce up to 15,000 tons a year by using modern methods.



Figure 9: Fish produced and stored using modern methods



Figure 10: Fish produced using the traditional method

Although the fish production in Lake Tana region decreases more and more, the species "barbus" and "varicorhinus" are currently seriously endangered.

1.3.2. Mammals

284 species of mammals are domiciled in Ethiopia, of which 29 are endemic. Many mammals can be found in and around Lake Tana, such as different monkey species, the hippopotamusand the common hyena.For more informationplease see annex five.



Figure 11: Mammals in Lake Tana: Vervet monkey and hippopotamus

1.3.3. Reptiles and Amphibians

There are 201 species of reptiles and amphibians in Ethiopia including ten endemic ones. Reptiles that can be found in Lake Tana region are crocodiles, water snakes and pythons; toads and frogs are examples for amphibians domiciled in this area.



Figure 12: Nile Monitoring of Lake Tana

1.3.4. Birds

Ethiopia is home to 861 different bird species, of which 18 are endemic. According to studies conducted in 2009 by the Ministry of Water Resource and other professionals, more than 300 types of birds inhibit the region around Lake Tana, of which 50 are ecologically crucial for preserving biodiversity, while they also attract international attention for their rarity.

Migratory birds, such as the Eurasion or Common Crane are sheltered in this area during the winter in the northern hemisphere. These migratory birds come to Lake Tana from West Europe to escape from the snow and the cold during winter season and return to their home countries at the beginning of March every year.



African spoonbill (ማንኪያአፍ)

African Jacana(ትልቁ ስንዝራት)



Hadada Ibis (たぷ?ቁር シンኖ)

Greater blue-eared starling (ጆሮ ሰማያዊ ወማይ)



Great white Pelican (ትልቁ ነጭ ሻላ)



African fish eagle/አሳ አውጪ ንስር



Black crown Crane (ሎን*ጋ* ሽመላ)

Pied kingfisher (ቡሬ አሳ ዓመቴ

Figure 13: Some birds in and around Lake Tana

1.3.5. Plants

There are over 6,000 species of big plants in Ethiopia, out of which 10 percent are endemic. As indicated in various studies, there are 181 species of trees and shrubs in and around Lake Tana.



Figure 14: Some of the old trees in Lake Tana Area

1.4. Local culture and annual celebrations

Among the many annual celebrations in Lake Tana and its surroundings are *Meskel* (commemoration of the Finding of the True Cross), Epiphany and Eid-Al Fetir.





Figure 15: Annual religious celebration at Saint George Church, Bahir Dar

2. For People and Nature

2.1. Significances of the natural and cultural resources of Lake Tana

Lake Tana and the surrounding wetlands are of high value for the local communities. Among the major services are:

a. Buffering service

Lake Tana region serves as a buffer zone between potentially harmful substances and the water, it e.g. purifies the lake water by naturally filtering it through wetlands and plants, e.g. from harmful liquid waste, siltation and chemical fertilizers or pesticides.





Figure 16: Birds laying eggs taking papyrus and branches of trees in Lake Tana

- b. Home and reproduction area for birds, fish and other animals
- c. Source for traditional medicine
- d. Source for water for irrigation and human consumption
- e. Providing local and modern transportation service for people and goods

There are eight ports in the lake, which offer transportation service (Bahir Dar, Afafa, Ura, Gurer, Kunzila, Esey Debir, Delgi and Gorgora).



Figure 17: Some of the traditional and modern ways of transportation in Lake Tana

f. Water and water-related attractions

The different activities you can do because of the water access are motivating tourists to visit the region, which makes tourism an important income source for boat owners, hotels, tour operators and monasteries.

- g. Providing food (fish production)
- h. Providing income (selling of fish, papyrus, etc.)
- i. Source of fuel wood, coffee, fruit and fodder
- j. Agricultural utilization at Lake Tana

Lake Tana region is blessed with high yields and good agricultural outputs. The major agricultural products are teff, maize, rice, finger millet, sorghum, chickpea, sunflower, lentils, vetch wildfire, garlic, onion, black cumin, white cumin, tomato, fenugreek, faba bean, pepper, mango, avokado, papaya, potato, hopp tree, coffee, lemon, cabbage and sugar cane.

k. Electric power

The water from the Lake Tana dams, such as Tis Abay 1 (11mw), Tiss Abay 2 (75 mw) and Tana Beles (460 mw), produce electricity and are the main source of electricity in the region. Likewise, water from Lake Tana partially contributes to the Renaissance Dam which is expected to produce 6000MW.

I. Climate Change Mitigation

Intact Ecosystems, especially wetlands, contribute to the gloabal fight against climate change by storing green house gasses.

2.2. Challenges of the natural and cultural resources of Lake Tana

Even though Lake Tana and its surroundings are naturally endowed with various resources, nowadays, they are highly exposed to man-made and natural challenges.

The major ones are:

a. Uncontrolled agricultural expansion

Due to the increasing population growth, most of the wetlands are used for agriculture, which leads to a loss of wetlands in Lake Tana region. With the wetlands lost, the lake cannot fulfill its beneficial functions any longer.



Figure 18: Destructions caused by humans in Lake Tana region and its surroundings

b. Deforestation

Free cattle grazing and the increasing demand for fuel wood leads to a loss of natural forests. This deforestation has impacts on the soil quality and leads to erosion, but also to a loss of biodiversity as their habitats are lost forever.





Figure 19: Fuel wood being taken to town from Zege and its surroundings

c. Unregulated Overfishing

Laws exist to protect the rich fish resources of Lake Tana from overfishing, e.g. during the spawning season, when the fish lay eggs, fishing is prohibited. Only if the fish can reproduce, a continous supply of fresh fish from Lake Tana is possible.



Figure 20: Unaware people going fishing while the fish are about to lay eggs

d. Increasing rate of overgrazing in and around Lake Tana

As there is a huge cattle traffic in the area that increases, overgrazing has become a great challenge. The grass cannot grow fast enough, resulting in a degradation of the area.



Figure 21: Uncontrolled grazing

e. Environmental pollution due to rapid urbanization

As there is no proper waste management, the waste is thrown into the river. The amount of waste increases because of the rapid urbanization. As plastic and chemicals cannot be absorbed by plants etc., they pollute the water and cause sickness.



Figure 22: Picture showing careless and random waste disposal

f. Expansion of various exotic/invasive weeds

Among the exotic or so called invasive weeds, the water hyacinth has been noted as the type of alien weed posing the biggest challenge to the lake. As it forms a cover on the water surface, it prevents the oxygen intake of the lake, decreasing water quality resulting in fish loss.



Without fish, e.g. mosquitoes can reproduce faster and spread diseases such as Malaria.

Figure 23: The community is mobilized to remove the water hyacinth

g. Siltation

Due to farming activities in higher regions, soil ends up in tributaries that flow into the lake. As a result of this change of land use systems, the lake suffers from an increasing siltation.



Figure 3. Expansion of Gilgel Abay delta during the period 1973–2010 based on the analysis of Landsat imagery (available from http://earthexplorer.usgs.gov).



Figure 24: Delta of Gilgel Abay: How land is formed in the lake due to increasing siltation

Figure 25: process of soil erosion

h. Degradation of cultural and historical resources

Due to a lack of knowledge and awareness among local communities, cultural and historical places are being damaged and robbed.

2.3. Consequences for the people of Lake Tana

In general, the size of the lake as well as the variety of fauna and flora are sharply decreasing. <u>This</u> decline has consequences on several aspects of the life of the local population.

One example is the decreasing fish production, the type of fish which is known as *varicorhinus beso* is rarely found any longer in Lake Tana.

The wetland grasses *filla* and papyrus have become rare and the use of papyrus is restricted only at the western shore of the Lake.

To ensure the transfer of not only historical knowledge but also natural resources it is important to do everything that is possible to conserve the lake and wetlands and implement a sustainable use of the available resources.



Figure 26: Another example of siltaion - changes in Lake Chad area(1963-2010)

To permanently alleviate these problems and use the potential resources of the area, a major step has been the registration of Lake Tana and its surrounding area as a UNESCO biosphere reserve in 2015. The Lake Tana Biosphere Reserve provides the space for sustainable implementation of social and economic development schemes which are compatible with natural resource conservation.

3. Concept of a Biosphere Reserve

Biosphere Reserves are areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use. Potential sites are nominated by national governments, and approved by UNESCO and become part of the worldwide network of biosphere reserves. Still, the sites remain under sovereign jurisdiction of the states they are located in for further protection.

This approach enables a sustainable and integrated resource management and thus contributes to a peaceful coexistence of humans and nature. In a well established biosphere reserve natural and social science researchers, environmental conservation and development teams, the local community and government leaders act in a coordinated manner to solve the complex problems infrastructure development, fighting climate change and ensuring the conservation of biodiversity.

UNESCO has prepared a strategic document, which offers guidelines on how to achieve a sustainable development in biosphere reserves. The strategic document is known as "Seville Strategic Document". It contains detailed criteria which each biosphere reserve site shall fulfill to qualify for a registration.

According to UNESCO, general criteria for establishing a biosphere reserve are:

- a) It should encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions.
- b) It should be of significance for biological diversity conservation.
- c) It should provide an opportunity to explore and demonstrate approaches in sustainable development on a regional scale.
- d) It should have an appropriate size to support the three functions of biosphere reserves: conservation, development and logistics support.
- e) It should promote the three functions of biosphere reserve functions (conservation, development and logistics support) through appropriate land-use planning and zonation, recognizing legally constituted core areas, buffer zones and transition areas.

- f) Public authorities, local communities and private interest groups should be involved and participate in the management of the biosphere reserve.
- g) In addition, provisions should be made for:
 - Mechanisms to manage human use and activities in the buffer zones,
 - A management policy and management plan for the area as a biosphere reserve,
 - A designated authority or mechanism to implement this policy and plan,
 - Programs for research, monitoring, education and training.

3.1. Three functions of a UNESCO Biosphere Reserve

The main aim of a biosphere reserve is to implement a better land administration and to develop measures to solve present administration and land use problems. Three major functions were identified as necessary to achieve a sustainable development in the biosphere reserve. These three are:



(UNESCO 2003)

Figure 27: Three functions of the Biosphere Reserve

3.1.1. Conservation Function

Due to high pressure, exerted by humans on land and water resources, various plants, animals and ecosystems are deteriorating. This development can not be in the interest of any party, as the nature is the source of raw material for food, medicine and building materials.

Taking care of the environment, conserving biodiversities and sustainably using resources in the biosphere reserve ensures that the community can benefit from it not only now, but also in the future. The activities of natural resource conservation include:

- ensuring the conservation of landscapes, ecosystems, species and genetic variations, e.g. through the establishment of protected areas, community management, reforestation, etc.
- encouraging the traditional use systems, e.g. small-scale fishing, traditional agriculture
- understanding the patterns and processes in ecosystems through research and monitoring
- understanding the significance of environmental services
- awareness creation for decision makers, local communities and children.

3.1.2. Development

As biosphere reserves are meant to be model areas for sustainable development, it is of utmost importance that the development of the region is supported - while keeping conservation in mind.

Pilot activities for alternative land use systems, alternative income generation measures, ecotourism development and the promotion of sustainable regional products are just some examples of what a biosphere reserve can do to promote sustainable development. In addition, the community in the biosphere reserve should work on:

- developing strategies leading to improvement and sustainable management of natural resources,
- promoting the local level economic development, which is culturally, socially and ecologically sustainable,
- enabling the conservation of natural resources through new strategies and systems.

3.1.3. Logistic function

The third function ensures that both areas are linked and receive the necessary support. The logistic function combines the support of input, local education, studies and research, in specific the administration and all actors in the area should:

- provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development,
- > sharing of knowledge generated by research through site specific training and education,
- creating awareness among the community, children, students etc.
- motivate the society's action on conservation of natural resources.



Figure 28: Three goals of the Biosphere Reserve

3.2. Zonation

To carry out the complementary activities of biodiversity conservation and sustainable use of natural resources, biosphere reserves are organized in three interrelated zones: the core zone, the buffer zone, and a transition zone. The zones ensure the conservation goals are achieved, while defining the area where sustainable development shall be supported and leave space for cities, streets and other legal human activities.



Figure 29: Zonation designating Land Use of the Biosphere Reserve

3.2.1. Core Zone

The core zone covers at least 3-10 % of the overall biosphere reserve site and ensures the conservation function of the biosphere reserve. It includes the most intact part of the biodiversity where until now only little human interaction took place.

These zones will be legally protected from further human interaction as part of the biosphere reserve proclamation.

Core zones need to be decided upon together with the local communities, who agree on protecting the area in the future. Only monitoring and scientific research may be conducted in these places.

3.2.2. Buffer Zone

The buffer zone is ideally the area that surrounds the core zone. In buffer zone activities focus on protecting and securing the core zone, while offering sustainable use of natural resources to the communities. The major purpose of the buffer zone is to keep the core zone intact and prevent harmful interaction.

Activities, which do not compromise the integrity of the core zone are strongly promoted in the buffer zone, e.g. organic farming, ecotourism, sustainable community management of natural resources. Examples for such activities are: Scientific education and studies, community based ecotourism activities, traditionall fishery, improved, non-industrial agro-processing activities, other

agricultural activities that do not have a negative impact on natural resources, monitoring and evaluation, and awareness creation trainings.

3.2.3. Transition Zone

The transition zone is the third and usually the largest part of the biosphere reserve. Here all legal development activities are allowed. Still, nature friendly activities, which do not contradict with the natural and cultural resources shall always be given the priority. The transition zone is the area where the community, researchers, governmental and non-governmental organizations and other stakeholders cooperate and pilot activities to achieve the common goal: the conservation and sustainable use of resources.

Transition zones usually include:

- Tourism and recreation facilities
- Human settlement (including urban centers)
- Economic activities
- o Infrastructure

The size of each zone in the biosphere reserve varies from biosphere reserve to biosphere reserve. Some biosphere reserves may have dispersed zones, or they have more than one core or buffer zones in different places.



Figure 30: Zonation of the Biosphere Reserve

The concept of biosphere reserves was developed in the early 1970s when the UNESCO recognized 57 biosphere reserves for the first time. Currently there are 668 biosphere reserves including transboundaries, in 120 countries. In Ethiopia, there are 4 biosphere reserves, namely: Kafa Biosphere Reserve (2010), Yayu Biosphere Reserve (2010), Sheka Biosphere Reserve (2012) and Lake Tana Biosphere Reserve (2015).

Currently there are the following biosphere reserves worldwide:

- Africa: 70 biosphere reserves in 28 countries
- Arab and Middle East: 30 biospheres reserves in 11 countries
- Asia and Pacific: 142 biosphere reserves in 24 countries
- Europe and North America: 302 biosphere reserves in 36 countries
- South America and Caribbean: 125 biosphere reserves in 22 countries

4. Lake Tana Biosphere Reserve

4.1. NABU

In 2012 the German non-governmental organization The Nature and Biodiversity Conservation Union (NABU) started a project to establish a biosphere reserve at Lake Tana in collaboration with Amahara National Regional State.

For over a hundred years, The Nature and Biodiversity Conservation Union (NABU) has been promoting the interests of people and nature, drawing on its unwavering commitment, specialized know-how and the backing of 620,000 members and supporters. Africa, Asia and Caucasus form the geographical focus of NABU's international commitment. In respect of content, NABU's work connects ecologic and social aspects ranging from climate protection, conservation of habitat and species diversity, ecotourism and environmental education to capacity building, support to protected areas and biosphere reserves, poverty alleviation and strengthening of civil society.

NABU is currently implementing the project '*Community based Climate Adaptation and Biodiversity Conservation in the model area of Lake Tana Biosphere Reserve in Ethiopia*' which is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ).

4.2. The beginning of the NABU Lake Tana project

To assess the potential of the Lake Tana region as a biosphere reserve, a feasibility study was undertaken in 2011 by the Michael Soccow Foundation in collaboration with NABU. According to the study, Lake Tana and its surroundings had a very high potential to fulfill the criteria of UNESCO and to get recognized as a biosphere reserve.

In 2012 the first NABU office opened in Bahir Dar. The organization signed a four-year contract - (2012 to 2015) with various offices of the Federal and Amhara National Regional Governments. The project received financial support from the German Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (BMZ), which ist the German federal ministry for economic cooperation and development.

4.3. Project implementation

4.3.1. Awareness creation

Since the concept of a biosphere reserve is new to the region in particular and the country in general, awareness creation workshops, trainings and domestic and international experience share visits were conducted accommodating the concerned bodies. Various leaflets and training manuals were prepared and disseminated for the concerned stakeholders/ participants.



Figure 31: Awareness creation: leaflets and manuals

4.3.2. Establishment of an Administration

Pursuant to the Amahara National Regional State Council Regulation No.126/2015, the administration of the Lake Tana Biosphere Reserve ws assigned to the Amahara National Regional State Bureau of Culture, Tourism and Parks Development. In the course of the latest changes, the administration was assigned in 2016 to the Environmental Protection, Forest, Wildlife, Parks Conservation and Development Authority.

In addition, the Lake Tana Biosphere Reserve Council, consisting of 43 representatives of communities, religious institutions, organisations and government institutions, has been established. The council holds bi-annual meetings to discuss the development, conservation and other issues concerning Lake Tana Biosphere Reserve. It is the decision making body of the Lake Tana Biosphere Reserve.



Figure 32: Front page of the legalization document for Lake Tana Biosphere Reserve endorsed by the Amhara National Regional State Council

4.3.3. Lake Tana Biosphere Reserve Management Plan

A management plan, which helps the administration to implement the necessary activities in the Lake Tana Biosphere Reserve in a coordinated manner, was prepared and sent to concerned bodies. In addition, 500 copies of a community movie explaining the current state of the Lake Tana Biosphere Reserve were prepared and distributed within the community. A new Monitoring Scheme ensures that a better understanding of the impacts and changes in the Lake Tana region are recognized early.



Figure 33: Audio-Video CD

4.3.4. Participatory Zonation

The zonation of the biosphere reserve contributes to a more efficient land use management and sustainable co-existence of human and nature. The participatory zonation has been performed before the recognition of Lake Tana as a biosphere reserve. More than 1,700 people were involved in deciding which area would become which zone. The participatory zonation was conducted with the following structure:

- Zonation committees comprising 16 members from each kebele was established (see the composition of zonation committee in Annex);
- Training of trainers training was conducted for 1661 zonation committee members;
- The Zonation Committee memebers shared their knowledge to the wider community and together the decisions for the zonation were taken;
- The Zonation Committee members and experts from the region took GPS readings in the field, based on which the proclamation for the biosphere reserve was written.

Overall, 697,200.99 hectares of land were registered and included as biosphere reserve in the 3 administrative zones (South Gondar, North Gondar and West Gojjam). Next to the Bahir Dar City Administration, 9 Woredas namely: Bahir Dar Zuria, Dera, Fogera, Libokekem, Gondar Zuria, Dembia, Alefa, Takusa, North Achefer are included in the biosphere reserve. The Lake Tana Biosphere Reserve included 137 kebeles with the usual zonation comprising three land use zones: Core, buffer and development zones. The Core Zone comprises of 3.3 % of the total Biosphere Reserve area. It shall be totally free from reach of humans for its value for conservation of biodiversity. (For detailed zonation of core zone, please refer annex 2). Only restricted activities, pertaining research and scientific studies, are allowed.

The buffer zones are mostly found around the core zone while sometimes they can be delineated independently. Buffer zones comprises 27% of the total area of the Lake Tana Biosphere Reserve. Activities, such as ecotourism, agricultural activities and fishery are practiced.

The Development or Transition zone is the largest zone that comprises 69.7 % of the total area. In this zone activities are possible that do not have any negative impact neither on the natural resources development nor on the sustainable use of them.

Lake	Tana	Biosphere	Dry	Land	in	Water	Body	in	Total area in hectare
Reserv	ve Zones	i	hectai	e		hectare			
Core zone				7,699	,619		15,141	,965	22,841
Buffer zone			30,968	,976		156,597	,689	187,566,66	
Т	ransitio	n zone		353,297	,400		131,179	,400	485, 476,806
Tota	al area ir	n Hectare							695,885,056

Table 2. Lake Tana Biosphere Reserve Zones

A biosphere reserve differs from other protected areas in the sense that it is owned and conserved by the community. Many national parks are keeping people outside with fences and and guards, while the biosphere reserve is protected by the community itself and their behaviour. As the community is aware of the benefits of the biosphere reserve, they are accepting the necessary infringements, e.g. non disturbance of core zones.



Figure 34: Map of the Lake Tana biosphere Reserve boundaries

4.3.5. Eco-tourism

Ecotourism was promoted as an alternative income source. Furthermore, with increasing numbers of tourists in the Lake Tana region its important to ensure a nature friendly tourism prevails. The measures taken include capacity training of local guides and boat captains, community based camp site services, handcraft selling and production center and restaurant services. New workplaces as well as signboards and sanitary facilities have been established to support the communities initiatives and maps have been created to guide tourists to these new places.



Figure 35: Tourist map of Zege and signboards indicating tourist attractions

4.3.6. Lake Tana Biosphere Reserve regional products

Since Lake Tana and its surroundings are rich of natural resources and agricultural commodities, 43 community members at Gedro, near Bahir Dar, have started to produce herbs and spices for fragrant oils, such as Hibiscus and Rosemary. The cooperative is marketing the organic produce as regional product of the Lake Tana Biosphere Reserve.

Another 81 people from Derbanta kebele (Bahir Dar Zuria) and Tana Mistili (Dera) are producing organic honey by organizing themselves into two cooperatives. They also developed a branding for their products.



Figure 36: Rosemary plants at farm land, honey produced by the local cooperative

4.3.7. Conservation of Wetlands

In Ethiopia, Lake Tana has the largest proportion of wetlands. NABU has been working extensively to conserve and use the wetlands of Lake Tana biosphere reserve appropriately and to transfer it to the next generation. A participatory management plan has been prepared for 5 wetlands. Among these Wetlands, various environmental conservation and income generating measures were conducted. For better land use, 218 improved farming tools were provided to farmers and 120 households have participated in various income generating activities.

The communities have now taken over the right to use the wetland resources, but they also are responsible to protect the wetland from overuse and harmful activities.

4.3.8. Church forests and reforestation

Even though forest resources are declining in the Lake Tana area, some are preserved around churches. In order to keep these church forests intact as habitats for wildlife, but also as a source of seed, participatory natural resource management plans were prepared for five churches. Together with the church communities, walls have been erected around the forests to protect the trees from free roaming cattle. Indigenous seeds were raised and enrichment planting took place to enlarge the forests.

More than 300,000 seedlings were planted near churches and to avoid further destruction of forest for fuelwood, energy saving stoves were produced by local ladies and distributed to 1000 households in Dera Woreda.



Figure 37: Cultivation of nursery and distribution of energy saving stoves

4.3.9. Conservation Agriculture

To promote soil conservating agriculture, information packages for the implementation of these concept for different soils and the use of newly developed tools were created.

12 model farmers from Gondar Zuria, Bahir Dar Zuria and Semen Achefer Woreda participated and revealed encouraging results, which is being scaled up among other farmers through field day held on farm plots.



Figure 38: Improved agricultural tool distributed to farmers during field day

4.4. Promoting Lake Tana Biosphere Reserve

Lake Tana becoming part of the global network of biosphere reserves offers a great potential in promoting it as a tourist destination, but also as a model area for sustainable development.

Various activities have introduced the Lake Tana Biosphere Reserve to a large audience.

- Preparation, publication and distribution of Amharic and English leaflets;
- Development of Lake Tana Biosphere Reserve Logo;
- Establishing www.laketana.biosphere.com as an online information pool about the area;
- Participation in various conferences, forums and fairs to promote the Lake Tana Biosphere Reserve.



Figure 39: Logo of Lake Tana Biosphere Reserve and leaflet

4.4.1. Inauguration

Following all these endeavors aiming at sustainable development and conservation of resources in the area, the regional and federal government with the support from NABU applied to have the area registered by UNESCO as a Biosphere Reserve.

The application was filed in September 2014, registration formalities were met and ultimately the Lake Tana Biosphere Reserve was recognized as a UNESCO Biosphere Reserve on the 27th UNESCO meeting held in Paris on the 10th of June 2016.



Figure 40: Inauguration Celebration for Lake Tana Biosphere Reserve



5. Benefits of Lake Tana being a UNESCO Biosphere Reserve

The recognition of the Lake Tana Biosphere Reserve as UNESCO biosphere reserve in 2015 offered the area special status - it is one of 668 biosphere reserves in the world.

Preliminary studies of the project indicated that the recognition of Lake Tana biosphere reserve helps to ensure a sustainable development of the surrounding using the natural, social and economic values enshrined in the locality. Lake Tana and its vicinity accommodate various rivers, wetlands, residence areas, monastries, churches, forests, historical and cultural antiquities as well as other natural resources. The establishment of the biosphere reserve is crucial to bring about sustainable development in the area and to conserve the natural resources for future generations.

The recognition helps to bring about economic development in the Lake Tana catchment, foster a more effective conservation of natural resources and biodiversity, as well as integrates conservation endevours in the area. The establishment of the Lake Tana Biosphere Reserve will have the following detailed significances:

- Sustainable conservation of the ecosystems of Lake Tana and its surroundings;
- Minimizing threats to biodiversity and ecosystems of the Lake Tana region as well as natural and cultural antiquities;
- Enabling the community to benefit lastingly from the natural and cultural resources;
- Creating various new job opportunities for the local community using the great potentials of natural resources in the area, such as ecotourism, fishery and the manunfacturing of agricultural products, thereby helping the society to enhance its quality of life;
- Coordinating stakeholders to create a better future for the area;
- Undertaking awareness creation activities in local communities for nature conservation, sustainable development and on various technical topics;
- Facilitating an immediate benefit for local communities from micro and small enterprises through cooperative systems;

- Attracting domestic and foreign donors and researchers to bring about solutions for various local problems;
- Sharing information and attracting research;
- Working on the basis of a good administrative structure and a coordinated development plan;
- Contributing to the realization of a governmental strategic plan on green economy, (i.e: ecotourism, fish production on ponds, wetland management and agroprocessing among other)

6. Celebrating the Lake Tana Biosphere Reserve Day

The Lake Tana Biosphere Reserve was recognized by UNESCO on 9th of June 2015. In order to celebrate the new status and spread the idea within the region, the Lake Tana Biosphere Reserve Day shall be celebrated in schools across the region, starting in 2017.

6.1. Reasons for celebrating

With the official recognition of the Lake Tana Biosphere Reserve, the main goal of the first NABU project at Lake Tana was achieved. A second project started in 2016 to boost the earlier endeavors and to further strengthen conservation measures and the benefits for the community.

One of the activities, which will be carried out over the next project period is the celebration of the Lake Tana Biosphere Reserve Day among schools in the Lake Tana region. The Lake Tana Biosphere Reserve Day is celebrated annually on Sene 2 (9 June) referring to the day the Lake Tana Biosphere Reserve has been officially recognized. The reason for celebrating this day at schools is to raise awareness for the ecological importance of Lake Tana region not only within the pupils but also their families and friends.

Every school can participate by organizing some nature friendly activities, discussing topics of nature conservation and/or the biosphere reserve or showing the community movie of Lake Tana Biosphere Reserve.

6.2. Major activities to be done in the course of the celebration

Many different activities can be performed prior to, on the date of and after the date of celebration to create awareness amoung the school and surrounding communities.

Below some possible activities are listed, but each school and/or teacher may add further activities and ideas where possible. Lets use this opportunity to celebrate Lake Tana and the Lake Tana Biosphere Reserve!

For example you may:

- Explore what happens to solid and liquid waste, how to avoid it and how best to dispose of it.
- Arrange a waste collection around the school, the nearest river or Lake shore and ensure the rubbish is disposed of properly.
- Use existing material, such as the Lake Tana leaflet, the 10 frequently asked questions on the Lake Tana Biosphere Reserve, the homepage or the community movie to create awareness among the school's community on the current situation.
- Plant indigenous trees around the school compound or on communcal land and teach the students how to take care of the development of the seedling.
- Conduct question and answer sessions about trees and wildlife in and around Lake Tana.
- Display the logo of the Lake Tana Biosphere Reserve on the wall of the school.
- Organize a drawing competition between students on wildlife, natural habitats and manmade resources or develop competitive games on biodiversity and related themes.
- Install additional dust bins in the area and inform the community about proper waste disposal. Please remember the waste bins need to be emptied regularly and the waste

should either be handed over to professional waste handlers, or burned outside of the village.

Though it is our common duty and responsibility to use Lake Tana appropriately and transfer it to the next generation, an annual recognition and awarding ceremony shall be held in the Woreda Education Office to award one school in each woreda, which had shown the best performances in celebrating the annual Lake Tana Biosphere Reserve Day. Their celebration should also contain documented data and a information transfer to other involved parties.

7. Second NABU project on Community based Climate Change Action

Climate change is the name for the current situation in which the recorded climate differs profoundly for more than a decade from expectations based on previous periods, e.g. the rainfall has alway occured in two seasons, but for the last 10 years it came later than expected and was shorter/heavier/etc. These perceived changes in climate have been proved by scientific research. The world will have to deal with a different climate in the years to come.

The current changes in climate have been caused by human activities, e.g. because of the industrialization and increased use of fossil fuels. The negative impacts of the changing climate have become widely visible especially in farming communities, on small islands and in under-developed countries.

The gases which were emitted by human activity and which are the cause for the climate change, are carbon dioxide (CO2), methane (CH4), nitrogen dioxide (N2O), hydroflorocarbons (HFCs), perflorocarbos(PFCs) and sulpha hexa floride(SF6). Among key features of climate change are the decline of rain, changing rain seasons and a change of temperature. In the following you see other serious consequences of the increasing climate change:

- Loss or decrease of biodiversity
- Diminishing productivity and potable water sources
- Natural disasters such as droughts happen more often

Lake Tana and its surroundings are highly affected by this problem. The following list includes some of the activities the second NABU project at Lake Tana will implement to minimize the harmful consequences of climate change:

- "Green your garden campaign": Reintroducing 2,000,000 trees (indigenous, multipurpose) in private home gardens in the biosphere reserve
- Awareness creation activities on climate change, natural resource and biodiversity conservation to enable the community to actively participate and promote the goals of the biosphere reserve, e.g. by celebrating the Lake Tana Biosphere Reserve Day at schools, experience sharing visits, and various other trainings.

- Climate smart agriculture: showing farmers agricultural methods to prevent soil erosion, reintroduce old varieties which have a high climate resilience.
- Rehabilitation of 100 erosion gullies
- Support of community management and rehabilitation of six wetlands
- Contributing to the protect of the lake from the invasive water hyacinth.

This project aims at strengthening the ownership of the people of Lake Tana for their biosphere reserve, of initiating active nature conservation and of creating awareness among children, students and the whole population.

Lake Tana is our life - lets do our part and protect it!

8. Annexes

8.1. Annex1. Zonation Committee Members from each Kebele

- 1. A representative of the Woreda administration---chair person
- 2. The kebele Administrator
- 3. The Deputy Administrator of the *kebele*
- 4. The kebele Security administration head
- 5. Kebele Manager
- 6. Natural Resource Expert, Development Agent (DA)
- 7. Surveyor (Environmental protection Staff) Secretary
- 8. Kebele Police Representative
- 9. Land Administration and use committee chair person
- 10. Social Court Presiding Judge
- 11. A representative of the youth
- 12. Religious leader, Christian
- 13. A representative of Women
- 14. Religious leader, Muslim
- 15. Communal Land Committee chair person
- 16. Arbitrary elder chair person

8.2. Annex 2. The areal Coverage of Core zones and their respective kebels

No.	Core Zone/ Reserves	Area/ha	Woreda	Kwbele
1	Aba Gerima Island	155.9987	Bahir Dar City	Shimibit
2	Millennium park Abay River Island	6.050541	""	Shum Abo
3	Beles mesk	8.436828	Alefa	Dengel Ber
4	Warkawesen Kuante Jankaw	10.65739	Alefa	"
5	Menekuse Dinday	54.99657	Alefa	"
6	Ahcha mangur, Wenbera Eyesus	98.50416	Alefa	Dengel Ber & Ahcha Mangur
7	Yigoma Huletu	16.581229	Bahir Dar Zuria	Yigoma huletu
8	Daki Sanctuary	62.557336	""	Dahana Mesenta
9	Tomit Sanctuary	13.13578	""	""
10	Millennium park, Sebatamit	65.919193	""	Sebatamit
11	Lijome drekuna wuhaw	6155.483693	""	Lijome
12	Lata Amba 1	101.323895	""	Lata Amba
13	Deq-Goza	27.821685	""	Deq
14	Deq-Gurer	5.459437	""	"
15	Deq -Leketa	25.90507	""	"
16	Deq menast Tetiy	19,00631	""	"
17	Gorgora sanctuary	82.442525	Dembia	Gorgora
18	Gurgara to Chemera-	8133.635193	Dembia nad	Chemera, Tezeba, Genbara,
	Derekuna wuha		Takusa	Aberjiha, Dahina wawa,
				Mange, Fantayu Narchacha,
				GurandiWenbaba
19	Jarjer sarye 1	122.212001	Denbia	Jarjer Abanova
20	Megech River enterance	122.637254	""	Tana woyina and Adisge
21	Bebirbira-Tana woyna	25.708146	""	Tana woyina
22	Jarjer Sarye 2	1.719992	""	Jarjer Abanova
23	Nedadit- Achera	65.797928	""	Seraba dablo and Achera
24	Dirma River Mouth	143.4816	""	Seraba Dablo and Abrhajira
				Dahna wawa
25	Abalay-Achera	43.960121	""	Achera
26	Kuli Forest	20.299139	Alefa	Amchaho
27	Aba Bailo Forest	27.09179	Libo kemkem	Agid Kirgna
28	Jinjero Mountain	4.757619	""	Kab
29	Kolelat-Sendo Forest	55.965623	""	Wusha Tirs

30	Gimajer Forest	1.983771	""	Yifag
31	Silkesa	3.293764	""	Ginaza Silkisa
32	Aba Mata Kala Yohannes	18.720962	""	Tara Gedam
33	Awstatiwos	4.638048	""	""
34	Ezkias	1.480897	""	""
35	Wenbera	36.079119	""	""
36	Ararat	25.948095	Bahir Dar city	Urra
37	Gami Mesk	19.939237	""	""
38	Lumami	104.1482	<i>u </i>	Weramit
39	Enfranz sanctuary	165.23392	<i>u n</i>	Weramit, wegelsa and Yibab
40	Millennium Park- Addis Alem	31.748162	<i>u n</i>	Addis Alem
41	Legidiya 1	431.504696	North Achefer	Legidia
42	Legidiya 2	266.824997	<i>u n</i>	<i>u n</i>
43	Bête Menzo Island	3.048614	Dera	Korata
44	Mitsli Fasiledes	8.370984	<i>u n</i>	Tana Metsli
45	Tinshu Ginjaba Deset	2.394509	""	Mirafit
46	Abay River Mouth sanctuary	12,23373	Bahir dar city	Shum Abo
47	Lata Amba 2	158.920325	Bahir Dar Zuria	Lelata Amba andDahina
				Mesenta
48	Yiganda sanctuary 2	167.899839	Bahir Dar city	Yiganda
49	Debranta-Wenjeta sanctuary	25.667337	Bahi Dar Zuia	Debranta and Wenjeta
50	Debranta sanctuary	268.491057	<i>u n</i>	Debranta
51	Sekelet lijome bushy area	54.189176	u n	Sekelet and lijome
52	Sekelet sanctuary, including	143.877767	<i>u n</i>	Sekelet
F 2	Actumit construction	60 197962	North Achafor	Actumit
55	Astumit sanctuaryz	69.187862 52.724601	North Acherer	Astumit
54	body 2	52.734001	Banir Dar Zuria	Sekelt
55	Astumit sanctuary	1674.517395	North Achefer	Astumit
56	Yitem Forest	21.592869	Dera	Mirafit
57	Tana Kirkos sanctuary	2.776852	Dera	Tana mitsli
58	Goy	19.9131	Takusa	Goy
59	Mendeaba Forest	85.773241	Libo kemkem	Aaaaberjeha
60	From Dengecha fisash to	14.313936	Dera	Mirafit
<u> </u>	Lam maderia	2 640555	Dava	""
61		3.018555	Dera Deba Dea Zuria	
62	Lata Amba 3	129.969913	Bahr Dar Zuria	Lata Amba
63	Astumit water body	2315.254144	North Achefer	Astumit
64	Abebayehu Forest	21.931482	Libo kemkem	Angot
65	Amba Mountain	50.87497	Libo kemkem	Agela

66	Millennium Park-Dasera	61.723427	Bahir Dar city	Dasera
67	Enfranz-Yibab	1.811684	<i>u n</i>	Yibab
68	Dana Mesenta	4.726501	Bahr Dar Zuria	Dahina Mesenta
69	Yiganda sanctuary	29.615655	Bahr Dar City	Yiganda
70	Gelda river mouth and Bosit	149.08903	Dera	Korata
71	Gubgube Forest and Water	251.61717	u n	Tana Mitsli
	Воу			
72	Ahun Weta	143.935625	Dera and	Wagetera and Tana Mitsli
			Fogera	
73	Tana kirkos Water body	37.20811	Dera	Tana mitsli
74	MirafitAbara	23.523606	u n	Mirafit
75	Kunzila zuria sankta	3.487723	North Achfer	Kunzila zuria
76	Kunzila zuria St. George	10.308146	North Achefer	Kunzila zuia
	Church Area			
77	Kunzila zuria, mouth of the	16.911221	u n	<i>u n</i>
	hydro electric power dam			
78	Korata sanctuary	11.129201	Dera	Korata
	Lumpsum Totol	22841.58		

8.3. Annex 3. List of the Lake Tana Biosphere Reserve Council Members

1.	Representative of the Amhara National Regional State President (Head of State)			
2	Amhara National Regional State Finance and Economic Development Bureau			
3	Amhara National Regional State Culture, Tourism and Parks Development Bureau (secretary)			
4	Amhara National Regional State Agriculture Bureau			
5	Amhara National Regional State Water Resource Development Bureau			
6	Amhara National Regional State Education Bureau			
7	Amhara National Regional State Environmental Protection, Land Administration and Use			
	Bureau			
8	Bahir Dar University Vice President for Research and Community Service			
9	University of Gondar Vice President for Community Service			
10	Debretabor University Vice President for Community Service			
11	Amhara National Regional State Institute of Agricultural Research			
12	Organization for Rehabilitation and Development of Amhara (ORDA)			
13	North Gondar Zone Administrator			
14	South Gondar Zone Administrator			
15	West Gojjam Zone Administrator			
16	Bahir Dar City Administration			
17	Dera Woreda Administrator			
18	Fogera Woreda Administrator			
19	Libo Woreda Administrator			
20	Gondar Zuria Woreda Administration			
21	Dembia Woreda Administration			
22	Alefa Woreda Administration			
23	Takusa Woreda Administration			
24	North Achefer Woreda Administration			
25	Bahir Dar Zuria Woreda Administration			
26	North Gondar Zone Area Community representative			
27	South Gondar Zone Area Community representative			
28	West Gojjam Zone Area Community representative			
29	GIZ (German Cooperation Organization)			
30	Abbay Basin Authority			
31	Amhara Region Islamic Affair			
32	Ethiopian Orthodox Tewahido Church North Gondar Diocese			
33	Ethiopian Orthodox Tewahido Church South Gondar Diocese			
34	Ethiopian Orthodox Tewahido Church West Gojjam Diocese			
35	Ethiopian Orthodox Tewahido Church Bahir Dar C. Diocese			
36	Tana Haik No.1 Fish Producers Association			
37	Merkeb Union Cooperative Association			
38	Bahir Dar Hotels Association			

39	Lake Tana Transport Association
40	Tana Sub-Basin Organization
41	Local Tour Operators Association (Bahir Dar, Zeghie)
42	Bahir Dar Jibba Renters Association
43	NABU, Bahir Dar Office

8.4. Annex 4. Kebele and Woreda comprising the Lake Tana Biosphere Reserve

Name of Woreda	Kebeles in the Woreda			
Dera	Tana Mitsli, Korata, Zara, Mirafit, Jigna, Wenchet, and Hamusit Town.			
Fogera	Nabega, Shena, Kidist Hanna, Shaga, Wagetera, Woreta Town, Woreta Zuria, Kohar Michael, Kohar Abo, and Abuhana kokit			
Libo Kemkem	Kab. Teza Amba, Tara Gedam, Yifag Zuria, Ginaz and Selkisa, Wush Tirs, Agid Kirgna, Angot, Agolahana mantogera, Tibaga, Bura, Shina Tsion, Gendawuha, Banbiko sendeye, Yifag Town, Addis Zemen Town.			
Gondar Zuria Mitra Aba Warka, Sihor Sar Wuha, Chehra Mantero, Lanba Arbaytu, Shaha Gor Frika Danguri, Maksegnit Town, Enfiranz Town, Tach Tedda, Minchir Gebriel, Fejid, minziro, Tsion Sagewach, Debre Selam, Jijibahiri ginb, Zengaj, Lay Y debesanina Tikara, Sebha Gebriel, Sendaba, Gubaye Mariam.				
Dembia Abrihajira Dahina Wawa, Seraba Dablo, Achera, Gorgora Town, Ma Narchacha, Tezaba, Tana Woyina, Adisge, Jarjar Abanova, Guran Wekerako, Arabia Diba, Gur amaba Michael, Guramba Bata, Gobaba Chilo Kola Diba Town, Atakilt Telefot, Jangua, Meskele Kiristos, Chuahit Town, C Gwarno, Garhe Jibiiba, Sufan kara				
Takusa	Chachna Alwa, Chemara Banberwa, Mekonta Ayviga, Delgi Town, Goyrob Gebaya, Chankie Bergen, Sevi Serako, Achera, Kurabas			
Alefa	Acha Mangur, Atuga, Essey Debir, Amchaho, Dengel Ber, Tara kezen			
Semen Achefer	Degel ber Town, Kunzila Zuria, Chimba, Estumit, Ligdia, Kunzila Town, Wenberia Eyesus			
Bahir Dar Zuria	Lijome, Sekelet, Debranta, Wenjeta, Dek, Dehina Mesenta, Latamba, Robit, Wegelsa, Yibab, Yemoshet, Yigoma Huletu, Sebatamit, Gombat, Yigodi Tentela, Yinesa Sostu			
Bahir Dar	Urra, Weramit, Shimbit, Sefene Selam, Addis Alem, Maji Debre Nigist, Dasira, Hidar 11, Belay Zeleke, Shum Abo, Wereb, Zenzelima Town, Yiganda, Zege Town, Tiss Abbay, Fasilo Kebele, Ginbot 20 Kebele, Gish Abay Kebele, Tana Kebele, Werkmisa			

8.5. Annex 5: List of Trees and Shrubs, Birds, Mammals and Reptiles of Lake Tana

#	Species Name	Family name	Category	Endemics
1	Acacia abyssinica Hochst. ex Benth.	Fabaceae	Tree	NE
2	Acacia albida Delile	Fabaceae	Tree	NE
3	Acacia brevispica Harms	Fabaceae	Scrambler	NE
4	Acacia hockii De Willd.	Fabaceae	Shrub	NE
5	Acacia seyal Del. var. Seyal Delile	Fabaceae	Tree	NE
6	Acanthus arboreus Forssk. var. ruber Engl.	Acanthaceae	Shrub	NE
7	Acanthus polystachyus Delile	Acanthaceae	Shrub	NE
8	Acanthus senni Chiov.	Acanthaceae	Shrub	NE
9	Acokanthera schimperi (A. DC.) Schweinf	Apocynaceae	Shrub	NE
10	Albizia gummifera (J.F. Gmel.) C.A.Sm.	Fabaceae	Tree	NE
11	Albizia malacophylla (A. Rich.) Walp.	Fabaceae	Tree	NE
12	Albizia schimperiana Oliv.	Fabaceae	Tree	NE
13	Alisma plantago-aquatica L.	Alismataceae	Herb	NE
14	Allophylus abyssinicus (Hochst.)	Sapindaceae	Tree	NE
15	Apodytes dimidiata Arn.	Icacinaceae	Tree	NE
16	Bersama abyssinica Fresen.	Melinthaceae	Tree	NE
17	Bridelia micrantha (Hochst.) Baill.	Euphorbiaceae	Tree	NE
18	Buddleja polystachya Fresen.	Loganiaceae	Tree	NE
19	Calpurnea aurea (Ait.) Benth.	Fabaceae	Shrub	NE
20	Carex peregrine Link	Cyperaceae	Herb	NE
21	Carissa edulis	Apocynaceae	Tree	NE
22	Carissa spinarum L.	Apocynaceae	Shrub	NE
23	Cassia petersiana Bolle in Peters	Fabaceae	Shrub	NE
24	Celtis africana Burm. f	Ulmaceae	Tree	NE
25	Centella asiatica (Linn.) Urb.	Apiaceae	Herb	NE
26	Chionanthus mildbraedii	Oleaceae	Tree	NE
27	Citrus auranteus L.	Rutaceae	Shrub	NE
28	Clausena anisata (Willd.) Benth.	Rutaceae	Shrub	NE
29	Clerodendrum myricoides (Hochst.)	Lamiaceae	Shrub	NE
30	Clutia abyssinica Jaub. and Spach.	Euphorbiaceae	Shrub	NE
31	Coffea arabica L.	Rubiaceae	Tree	NE
32	Croton macrostachyus Del	Euphorbiaceae	Tree	NE
33	Dichrostachys cinerea L.	Fabaceae	Shrub	NE

List of Common Tree and Shrub Species of Lake Tana Area

34	Diospyros abyssinica (Hiern) P. White	Ebenaceae	Tree	NE
35	Diospyros mespiliformis A. DC.	Ebenaceae	Tree	NE
36	Dodonaea angustifolia L.f.	Sapindaceae	Shrub	NE
37	Dombeya torrida (J.F. Gmel.) Bamps	Sterculaceae	Tree	NE
38	Dovyalis abyssinica (A. Rich.) Warb.	Flacourtiaceae	Shrub	NE
39	Ehretia cymosa Thonn	Boraginaceae	Tree	NE
40	Embelia schimpri Vatke	Myrsinaceae	Shrub	NE
41	Erythrina abyssinica Lam. ex DC.	Fabaceae	Tree	NE
42	Erythrina brucei Schweinf	Fabaceae	Tree	E
43	Eucalvptus camaldulensis Dehnh	Myrtaceae	Tree	NE
44	Eucalyptus globulus Labill.	Myrtaceae	Tree	NE
45	Euclea racemosa subsp. schimperi (A.	Ebenaceae	Shrub	NE
	DC.) P. White			
46	Euphorbia ampliphylla Pax	Euphorbiaceae	Tree	NE
47	Euphorbia tirucalli L.	Euphorbiaceae	Tree	NE
48	Ficus ovata Vahl	Moraceae	Tree	NE
49	Ficus sur Forssk.	Moraceae	Tree	NE
50	Ficus sycomorus L.	Moraceae	Tree	NE
51	Ficus thonningii Blume	Moraceae	Tree	NE
52	Ficus vasta Forssk.	Moraceae	Tree	NE
53	Flacourtia indica (Burm. f) Merrill	Flacourtiaeae	Shrub	NE
54	Fluggea virosa (Willd.) Voigt.	Euphorbiaceae	Shrub	NE
55	Galiniera saxifraga (Hochst.) Bridson	Rubiaceae	Shrub	NE
56	Gardenia volkensii K. Schum	Rubiaceae	Shrub	NE
57	Grewia bicolor Juss.	Tiliaceae	Shrub	NE
58	Grewia vilosa Willd.	Tiliaceae	Shrub	NE
59	Guineense	Piperaceae	Tree	NE
60	Hagenia abyssinica (Bruce) J.F. Gmel.	Rosaceae	Tree	NE
61	Heteromorpha trifoliata (Wendl.)	Apiaceae	Shrub	NE
62	Hypericum revolutum Vahl	Hypericaceae	Shrub	NE
63	Juniperus procera Hochst. ex Endl.	Cupressaceae	Tree	NE
64	Justicia flava (Forssk.) Vahl	Acanthaceae	Herb	NE
65	Justicia ladanoides Lam.	Acanthaceae	Shrub	NE
66	Lantana camara L.	Verbenaceae	Shrub	NE
67	Lepidotrochilia volkensii (Guerke)	Meliaceae	Tree	NE
68	Maesa lanceolata Forssk.	Anacardiaceae	Tree	NE
69	Maytenus arbutifolia (A. Rich.) Wilczek	Celastraceae	Shrub	NE
70	Maytenus obscura (A. Rich.) Cufod.	Celastraceae	Shrub	NE
71	Maytenus serrata (Thunb.)	Celastraceae	Shrub	NE
72	Microchloa kunthii Desv.	Poaceae	Tree	NE

73	Millettia ferruginea (Hochst.) Bak	Fabaceae	Tree	NE
74	Mimusops kummel A. DC.	Sapotaceae	Tree	NE
75	Myrsine africana L.	Myrsinaceae	Shrub	NE
76	Nuxia congesta R. Br. ex Fresen.	Loganiaceae	Tree	NE
77	Olea europaea (Wall. ex. DC) Cifferri	Oleaceae	Tree	NE
78	Olinia rochetiana Juss.	Olinaceae	Tree	NE
79	Osyris quadripartita Salzm. ex Decne.	Santalaceae	Shrub	NE
80	Otostegia integriflia Benth.	Lamiaceae	Shrub	NE
81	Oxyanthus speciosus DC.	Rubiaceae	Shrub	NE
82	Pavetta. Abyssinica Fresen.	Rubiaceae	Shrub	NE
83	Phoenix reclinata Jacq.	Palmaceae	Tree	NE
84	Phytolacca dodecandra L' Herit	Phytolaccaceae	Shrub	NE
85	Pittosporum viridiflorum Sims	pittosporaceae	Tree	NE
86	Podocarpus falcatus Thunb. R. Br. ex Mirb.	Podocarpaceae	Tree	NE
87	Premna schimperi Engl.	Lamiaceae	Shrub	NE
88	Procera	Apocynaceae	Tree	NE
89	Prunus africana Hook. f. Kalkm.	Rosaceae	Tree	NE
90	Rhamnus staddo A. Rich.	Rhamnaceae	Shrub	NE
91	Rhus glutinosa A. Rich.	Anacardiaceae	Shrub	NE
92	Rhus retinorrhea Steud ex Oliv.	Anacardiaceae	Shrub	NE
93	Ricinus communis L.	Euphorbiaceae	Tree	NE
94	Rosa abyssinica R. Br. ex Lindl	Rosaceae	Shrub	NE
95	Rothmannia urcelliformis (Hiern) Robyns	Rubiaceae	Tree	NE
96	Rumex nervosus Vahl.	Polygonaceae	Shrub	NE
97	Ruttya speciosa (Hochst.) Engl.	Acanthaceae	Shrub	NE
98	Salix subserrata Willd.	Salicaceae	Tree	NE
99	Sapium ellipticum (Hochst.) Pax (Schellenb.)	Euphorbiaceae	Tree	NE
100	Schefflera abyssinica A. Rich.	Araliaceae	Tree	NE
101	Scolopia theifolia Gilg,	Flacourtiaceae	Shrub	NE
102	Senna didymobotrya Fresen.	Fabaceae	Shrub	NE
103	Senna occidentalis (L.) Link	Fabaceae	Shrub	NE
104	Senna petersiana (Bolle) Lock	Fabaceae	Shrub	NE
105	Senna singueana (Del.) Lock	Fabaceae	Shrub	NE
106	Sesbania sesban (L.) Merr.	Fabaceae	Shrub	NE
107	Setaria atrata Hack.	Poaceae	Shrub	NE
108	Sideroxylon oxanthus Hutch.and Bruce	Sapotaceae	Shrub	E
109	Solanum giganteum Jacq.	Solanaceae	Shrub	

110	Stereospermum kunthianum Cham.	Bignoniaceae	Tree	
111	Syzygium guineense (Willd.) DC.	Myrtaceae	Tree	
112	Teclea nobilis Del.	Rutaceae	Tree	
113	Terminalia brownii Fresen.	Combretaceae	Tree	
114	Turraea holstii Guerke	Meliaceae	Tree	
115	Vepris dainellii (PichSerm.) kokwaro	Rutaceae	Tree	E
116	Verbena officinalis L.	Verbenaceae	Shrub	
117	Vernonia amygdalina Del.	Asteraceae	Tree	
118	Vernonia leopoldii Sch.Bip	Asteraceae	Shrub	E
119	Vernonia auriculifolia Hiern.V. sp.	Asteraceae	Shrub	
120	Ximenia americana L.	Olacaceae	Shrub	

No.	Amharic name	English name	Botanical Species	Family
1	ግራር	Acacia	Acacia spp.	Fabaceae
2	ከቭሽሌ		Acanthus senni	Acanthaceae
3	ሰሳ		Albizia spp.	Fabaceae
4	ሽንኩርት	Onion	Allium cepa	Liliaceae/Alliaceae
5	አለማ		Amaranthus spinosus	Amaramthaceae
6	ለወዝ	Ground nut	Arachis hypogaea	Fabaceae
7	አርክቶትስ		Arctotis	Asteraceae
			stoechadifolia	
8	ነ ጭእሸፀ		Argemone mexicana	Papaveraceae
9	ኒም	Nym	Azadirachta indica	Meliaceae
10	ዳያሲ		Bellis perennis	Asteraceae
11	<u> </u>	Cabbage	Brassica oleracea	Brassicaceae
12	<i>ገ ጣ</i> ሮ		Capparis tomentosa	Capparidaceae
13	በርበሬ	Pepper	Capsicum annum	Solanaceae
14	ፓፓያ	Рарауа	Carica papaya	Caricaceae
15	አ <i>ጋ</i> ም		Carissa spp.	Apocynaceae
16	ያበሻ ሱፍ		Carthamus tinctorius	Asteraceae
17	አርዘሊባኖስ		Casuarina	Casuarinaceae
			equisetifolia	
18	ஷ்	Khat	Catha edulis	Celastraceae
19	ሽምበራ	Chickpea	Cicer arietinum	Fabaceae
20	ያህያ እሾህ		Cirsium vulgare	Asteraceae
21	ለሚ	Lemmon	Citris limon	Rutaceae
22	ትርንጎ		Citrus medica	Rutaceae
23	ብር ቱካን	Ornage	Citrus sinensis	Rutaceae
24	ልምም		Clausena anisata	Rutaceae
25	በና	Coffee	Coffee spp.	Rubiaceae
26	ጥንጅት		Combretum collinum	Comberetaceae
27	አቫሎ		Combretum molle	Comberetaceae
28	የወሃ አንጉር		Commelina	Commelinaceae
			benghalensis	
29	ዋንዛ		Cordia africana	Boraginaceae
30			Coreopsis spp.	Asteraceae
31	ምሳና		Croton	Euphorbiaceae
			macrostachyus	
32	የፈረንጅ ተድ	Junipres	Cupress lustinica	Cyperaceae
33	ደንነል	Papayrus	Cyperus Cyprus	Cyperaceae
			papyrus	

List of Common Botanical Species of Lake Tana Area

34	እፀ ፋሪስ		Datura stramonium	Solanaceae
35	የ ድሬደዋ ዛፍ		Delonix regia	Fabaceae
36	ክትክታ		Dodonaea	Sapindaceae
			angustifolia	
37	ለንቋጣ		Dombeya torrida	Sterculiaceae
38	ቀይ ባህር ዛፍ	Eucalyptus	E. Camaldulensis	Myrtaceae
39	የሽቶ ባህር ዛፍ	Red Eucalyptus	E. Citriodora	Myrtaceae
40	ቀን ዋፍዋፋ		Entada abyssinica	
41	ቁልቋል	Cactus	Euphorbia	Euphorbiaceae
			abyssinica	
42	ቅንጫ		Euphorbia tirucalli	Euphorbiaceae
43	በለስ		Ficus carica	Moraceae
45	የጎጣዛፍ	Rubber Tree	Ficus elastica	Moraceae
46	ሸላ	Fig tree	Ficus sur	Moraceae
47	ባንባ		Ficus sycomorus	Moraceae
48	ዋርካ		Ficus vasta	Moraceae
49	<i>ግራ</i> ቪሊያ		Gravilla robusta	Proteaceae
50	<i>ኑባ</i>	Lean seed	Guizotia abyssinica	Asteraceae
51	ከርባ/አ <i>ሜ</i> ኬላ		Hygropahila schulli	Acanthaceae
52			Indigofera sp.	Fabaceae
53			Ipomoea purpurea	Convolvulaceae
54	የጠንጃዛፍ		Jacaranda	Bignoniaceae
			mimosifolia	
55	ጃትሮፋ	Jatrofa	Jatropha curcas	Euphorbiaceae
56	ተድ	Junipres	Juniperus procera	Cupressaceae
57	ስሚ		Justitia schimperana	Acanthaceae
58	<i>२,९</i>		Lathyrus sativus	Leguminosae
59	ምስር	Lentill	Lens culinaris	Fabaceae
60	ሉኪና		Leucaena	Fabaceae
			leucocephala	
61	ማንጎ	Mangoe	Magnifera indica	Rubiaceae
62	አጣዮ		Maytenus gracilipes	Celasteraceae
63	The P		Melia azedarach	Meliaceae
64	ብር ብራ		Milletia ferruginea	Fabaceae
65	እሺህ		Mimusops kummel	Sapotaceae
66	እንጆሪ	Strawberry	Morus alba	Moraceae
67	መዝ	Bannana	Musa sapientum	Musaceae
68	አደስ		Mytenus communis	
69	ጥቁር አዝማድ	Black Cummon	Nigella sativa	Ranunculaceaec
70			Nymphaea caerulea	Nymphaeaceae

71			Nymphoides indica	Poaceae
72	ዳማካሲን		Ocimum lamiifolium	Lamiaceae
73	ቔራ	Olive	Olea spp.	Oleaceae
74	በለስ ቁልቋል		Opuntia cylindrica	Cactaceae
75	ሩዝ	Rice	Oryza glaberrima	Poaceae
76	አቮካዶ	Avoccado	Persea americana	Lauraceae
77	ዘንባባ/ሰሌን	Palm Tree	Phoenix reclinata	Arecaceae
78	หๆด	Zigba	Podocarpus falcatus	Podocarpaceae
79	ፕቁር እንጨ		Prunus africana	Rosaceae
80	ዘይቱን	Guava	Psidium guajava	Myrtaceae
81	ጌሾ	Hobbs Tree	Rhamnus prinoides	Rhamnaceae
82	ቀጋ		Rosa abyssinica	Rosaceae
83	ፅጌረዳ		Rosa spp.	Rosaceae
84	ሳስባን <i>ያ</i>		Sasbania sesban	Leguminaseae
85	ጠፍ አዳም		Satereja paradoxa	Lamiaceae
86	ቁንዶ በርበሬ		Schinus molle	Anacardiaceae
87	ሰርክ አበባ		Senna didymbotrya	Fabaceae
88			Sesbania sesban	Fabaceae
89	እንቧይ		Solanum indicum	Solanaceae
90	ድንቸ	Potatoes	Solanum tuberosum	Solanaceae
91	ዶክማ		Syzygium spp.	Myrtaceae
92			Trifolium acaule	Fabaceae
93	አብሽ		Trigonella foenum	Fabaceae
94	አቱዥ		Verbena officinalis	Verbenaceae
95	ግራዋ		Vernonia	Asteraceae
			amygdalina	
96	የሴት ምላስ		Xanthium spinosum	Asteraceae
97	እንኮይ		Ximenia americana	Tiliaceae
1	1		1	

S/N Local Name Scientific Name **Common Name** Nebir 1 Panthera pardus Leopard 2 Silvicopra grimmer Antelope Midako 3 Kebero Canis aureus Common jackal 4 Tera Jib Hyaena hyaena Striped hyaena 5 Tinchel Lopus starkii Rabbit Papio Anubis Anubis baboon 6 Zinjero 7 Sesa Oreothragus oreothragus Klippspringer Faro Ichneumia albicauda White-Tailed Mongoose Silemetimat Genetta Sp 8 Genet 9 Crested porcupine Jart Hystrix cristata 10 Aner Felis serval serval cat 11 Awuchi Orycteropus afer Aardvark 12 Dikula Sylvicapra Sp Bushbuck 13 Potamochoerus larvatus Asama Bushpig Bihor Redunka redunka 14 Bohr reedbuck Cercopithecus aethiops 15 Tera Tota Vervet monkey 16 Gureza Colobus polykomos Colobus monkey Shikoko Procavia capensis 17 Rock hyrax 18 Ebab Snakes Zendo Python 19 20 Arjano Veranus niloticus Nile monitor 21 Gumare Hypopotamus amphibies Hyppopotamus 22 Tirgn Civetictis civetta African Civet 23 Muchekay Orycteropus afer Ardvark Phacochoerus africanus 24 Kerkero/Riya Warthog 25 Filfel Trachytocytes spelender Mole 26 Ayt Rat 27 Enkurarit Frog 28 Toad Gurt 29 Kemer Jib Proteles cristatus Aardwolf 30 Crocodilus niloticus Crocodil Azo

List of Common Mammals and Reptiles of Lake Tana Area

Species or group				
name	#	Common name of birds	Amharic/ local Name	Remark
Avocet	1	Pied Avocet	አፈ ቁልምም አቮሴት	
Babbler	2	White rumped babbler	ነጭ ላእላይ ጅራተ ከድን መዘምር	
Barbet	3	Banded Barbet	ሽልምልም <i>ጋ</i> ርዴም	Endemic
	4	Blackbilled Barbet	<u> </u>	
	5	Double toothed Barbet	ድርብ ተርስ ጋርዴም	
Bateleur	6	Bateleur	መጦሎኒ	
Batis	7	Black headed	ራስ ጥቁር ባቲስ	
Bee eater	8	Blue breasted	ሰማይ ደረት ንበበል	
	9	Little	ትንሽ ንበበል	
	10	Northern Carmine	ኮክማ ንበበል	
Bishop	11	Black winged	እራሰ ብርቱካን ጨረባ	
	12	Northern red	ቀይ ጀርባ ጨረባ	
	13	Yellow crowned	ቢጫ ዘውድ ጨረባ	
Blackcap	14	Blackcap	<u> </u>	
Boubou	15	Tropical (Ethiopian)	የኢትዮጵያ ወፈ-ያሬድ	
Brubru	16	Brubru	ብርቡር	
Bulbul	17	Common	ተራ ጉትያ ወፍ	
Bunting	18	Ortolan	ስንዴሽት በንቲንግ	
	19	Cinnamon-breasted (rock)	የአለት በንቲንግ	
Bustard	20	Black bellid	<i>ፕቁር ሁ</i> ድ ኩርኩ <i>ሜ</i>	
Buzzard	21	Augur	<i>า</i> ዴ	
Camaroptera	22	Gray backed	ጅራቴ በጀርባ	
Canary	23	Yellow fronted	<i>ግን</i> ባረ ቢ <i>ጫ</i> ካነሪ	
Chat	24	Mockin gcliff	ክ <i>ንሌ ነጭ የ</i> ቋጥኝ ወፍ	
Chiffchaff	25	Common	፟፟፟ጙፍ፟፝፟፞ጙ	
Custicola	26	Stout	የደ,2 ሲሰቲኮላ	
Citril	27	Africn	<u> </u>	
Coot	28	Red knobbed	ቀይ አንፖል ግንባር የውሃ ደሮ	
Coucal	29	Blue headed	አንፀባራቅ ሰማያዊ ራስ ኩኩል	
Cordonbleu	30	Red checked	<i>ጉን</i> ጨ ቀይ ድንቢተ	
Cormorant	31	Reed	ጅራተ ረጅም አሳ ወጊ	
	32	White breasted	ደረተ ነጭ አሳ ወጊ	
Crake	33	Black	የሰይጣን ዶሮ	
Crane	34	Black crown	ሎ <i>ን,ጋ</i> ሽመላ	
	35	Common (Eurasian)	የደንቢያ ሽመላ	
	36	Wattled	ባለ እንተል ሽመላ (አባኪሾ	
Crombec	37	Northern	ጅ <i>ራተ ነማዲት</i> ከሮምቤክ	
Crow	38	Cape crow	ጥቁር ቁራ	

List of Common Bird Species of Lake Tana Area

	39	Pied	በሬ ቁራ
Cuckoo	40	African cuckoo	<i>ግራጫ</i> ኩኩ
Klaa's cuckoo	41	Klaa's cuckoo	አንፀባራቂ አረንጓዴ ኩኩ
Curlew	42	Eurasian	የአውሮፓ ረጅም አፌድፋት መንቁር
Darter	43	African	ለመሚት
Dove	44	African morning	የቆላ ዋኔ
	45	Blue spotted wood	ስማያዊ ነጠብጣብ ክንፍ ዋኔ
	46	Dusy Turtle	የደ,ጋ ዋኔ
	47	Laughing	ትንሻ ዋኔ
	48	Lemon	የጫካ ወለል ዋኔ
	49	Namaqua	ጥቁር ፊት ዋኔ
	50	Red eyed	ኩኩ መለኮቴ ዋኔ
	51	Vinaceous	ወይንጣ ዋኔ
Drongo	52	Fork-tailed	ሹካ ጅራት ድሮንን
Duck	53	African black	<u> ተቁር ዳክ</u> ዬ
	54	Comb duck	እንቡጥ መንቁር ዝይ
	56	Ferruginous	የፌርንስን ዳክዬ
	57	Fulous	ሽከላማ ዳክዬ
	58	White backed	ጀርባ ነጭ ዳክዬ
	59	White faced	ቦቃ ፊት ዳክዬ
	60	Yellow billed	ቢጫ መንቁር ዳክዬ
Eagle	61	African fish	አሳ አዉፔንስር
	62	Long crested	<i>ቁንጫ</i> ማስር
Egret	63	Cattle	የኩብትሳቢሳ
	64	Great white	የ ማዝውሳቢሳ
	65	Little	ትንሹሳቢሳ
	66	Yellow billed	ቢ <i>ጫማቁ</i> ር ሳቢሳ
Eremomela	67	Green-backed	<i>አረጉጋዬ</i> ጀር <i>ማ</i> አር ም ክ
Falcon	68	Lanner	በና ጉንጨማካሚ ሲላ
Finch,	69	cut-throat	ቀርጥአንንት ደንቢዮ
finfoot	70	African	ቀይእግር ለመ ዝ
Firefinch	71	Red –billed	ቀይማቁር የ ጋሮ ደንቢዮ
Fiscal	72	Common	ተራሸሻይ
	73	Gray backed	ግራጫጀርባ ሸሻይ
Flamingo	74	Greater	ቆል ማዊ
Flycatcher	75	Abyssinian slaty	የአበሲንያ ዝንበ በል
	76	African Paradise	የነነትጩ
	77	Northern black	ተቀር ዝንበ በል
	78	Pale	በላ ዝንበ በል
	79	Spotted	ነ ጠበማቢ ነንቢ በል
Francolin	80	Clapperton's	<i>ሬተ</i> ቀይ ቆ ቅ

Gallinule	81	Allen's (lesser)	ሰማያዊ ግንባር የ ረግረግ ዶሮ	
Garganey	82	Garganey	20.22	
Godwit	83	Black tailed	ሜ. ፕቁር ጀሪትምጒዒት	
Goose	84	African pygmy	ደንክዬ ዝይ	
	85	Blue winged	ክንፈ ሰማዊ ዝይ	Endemic
	86	Egypian	ይብራ (የ ግሞ ዝይ)	
	87	Spur winged	በፌ ዝይ (ዚብራ)	
Goshawk	88	Dark Chanting	አይጠማ ጥላ ቃሚመት	
	89	Gabar	ፊተ ብርቱካናማጭት	
Grebe	90	Greater crested	ትልቁ ባለ ቁንጮነ ርብ	
	91	Little	የወሃ ጫጩ	
Greenshank	92	Common	ተራየማዝፏ	
Guineafowl	93	Hemeted	ጅ 96	
Gull	94	Black headed	ሪስ ተቁር ንል	
	95	Great black headed	ትልቁ ጀርባ ፕቁር ንል	
	96	Lesser black headed	ትንሹጀርባ ፕቁር ነል	
Hamerkop	97	Hamerkop	የመንዝአመቴ	
Harrier	98	Eurasian Marsh	የደንገል መስሌ	
	99	Montagu's	ጉቁር ጣጣዊ ክንፈ ጨሌ	
	100	Pallid	ግሪጫብለሌ	
Herrier hawk	101	African	እን <i>ቁ</i> ላልለ <i>ቃ</i> ሚጭት	
Herons	102	Black headed	ተቁር እሪስ ሳቢ ሳ	
	103	Black crowned night	የለሊት ሳቢሳ	
	104	Goliath	<i>ጉ</i> ሊያድሳቢሳ	
	105	Green-backed	የ <i>ቀ</i> ፕር ሳቢሳ	
	106	Grey	<i>ગઢન્છ</i> ોલન	
	107	Purple	<i>አንገተ</i> ሰ <i>ጎግ</i> ቡና <i>ማ</i> ሳቢሳ	
	108	Squacco	የ <i>ረግረግ</i> ሳቢሷ	
Ноорое	109	Eurasian	የአመሮፓእ ማ ይ	
Hornbill	110	Abyssinian Ground	የአበሰኔያ እርከም	
	111	African gray	ቅሪማውአፈ ቀንድ	
	112	Hemprich's	የ ወንዜውአሬ ቀንድ	
	113	Silvery –cheeked	ዮንጨበራማአፈ ቀንድ	
Ibis	114	African sacred	ነ ጨንጋኖ	
	115	Glossy	ወይና / በርቅርቅ , ንጋኖ	
	116	Hadeda	አደንቁር <i>ጋጋ</i> ኖ	
	117	Wattled	የ ዲ <i>ጋ</i> ባለ እን ፕ ል <i>ጋጋ</i> ኖ	Endemic
Ingigobird	118	Village	ደንቢተየ <i>ጣ</i> ነቀል ወፍ	
Jacana	119	African	ትልቁ ስንዝራት	
	120	Lesser	ትንሹስንዝሪት	
Kestrel	121	Common	ጉንጨዋቅጣር ሲላ	

	122	Gray	<i>ግሪጫ</i> ሲላ	
Kingfisher	123	African pygmy	ደዓክዬ አሳ አመቴ	
_	124	Giant	<i>ግዙ</i> ቃአሳ ዓመቴ	
	125	Gray headed	<i>ረብ ግራጫ</i> አሳ <i>ዓመ</i> ቴ	
	126	Malachite	<i>ዲ</i> ንቢዮአሳ ዓ መ ቴ	
	127	Pied	በፊ አሳ <i>ዓመ</i> ቴ	
	128	Striped	ንቅሴአሳ ዓመቴ	
	129	Woodland	የመንዜ አሳ <i>ዓመ</i> ቴ	
Kite	130	Black	የቁር ማቁር ሜሌት	
	131	Black shoulder	ተከሻ ተቁር <i>ጫ</i> ፊት	
	132	Yellow billed	ቢማማቀር ጭፊት	
Lark	133	Thekla	<i>ቹንጫ</i> ት ላርክ	
Lovebird	134	Black winged	ተቁር ከንፍ ብር<i>ቅ</i>ዬ በ<i>ቀቀ</i>ን	Endemic
Maninkin	135	Bronze	ነ ሀስ ማንኪን	
Martin	136	Brown throated	በናማአንንት ወንጨት	
	137	Common house	ተራማጩት	
	138	Rock	የቋጥኘ ወንጨት	
	139	Sand	የወንዜ አሸዋ ወንጨት	
Moorhen	140	Common	ቀይ ግንባር የ <i>ወት ዶ</i> ሮ	
	141	Lesser	ትንሻ የ <i>ረግረግ የወ</i> ሃ ዶሮ	
Mouthbird	142	Specked	ንቅሴ <i>ጣ</i> ት ጥወፍ	
Oriole	143	Abyssinian	የአቢሰኒያ ኦሪኦሌ	
Ospery	144	Ospery	እስፕረይ	
Owl	145	Abyssinaian long eared	የአበሰኒያ ጉጉት	
Oxpecker	146	Red billed	አፈ ቀ ይ አረጭ	
Parrot	147	Yellow fronted	ቢምራስ ብርቅዬ በቀቀን	Endemic
Pelican	148	Great white	<i>ት</i> ልቁ ነ <i>ሜ</i> ሻላ	
	149	Pink-back	ትንሹ <i>ር</i> ዝ ሻላ	
Petronia	150	Bush petronia	ቁፕቋጦጩባ	
Pigeon	151	Bruce's green pigeon	ቢ <i>ጫ</i> ሆድ እር <i>ግ</i> ብ	
	152	Spechled	የሙእርባብ	
	153	White collared	ባለነ <i>ጭ</i> ኳሌታእር <i>ግ</i> ብ	
Pintail	154	Northern	<i>መ</i> ርፌ ጅሪት ዳክዩ	
Pipite African	156	Pipite African	የሳር ምድር የሰንደዶ of	
	157	Plain –backed	ጀርባ ለ ተየሰንደዶ<i>ወ</i>ፍ	
	158	Red –throated	ቀይአንነትየሰንደዶቚ	
Plantain eater	159	Easter	ቢ <i>ጫማቀር ግራጫ</i> ስኮር	
Plover	160	African wattled	ባለ እንጥል ክልሊት	
	161	Black headed	ሪስ ጥቁር ከልሊት	
	162	Black winged	ክንፈ ጥቁር ከልሊት	
	163	Common ringed	ጥቁር አግደምደረት ከልሊት	

	164	Kittlitz's	ሽሮ ቀ ለምደረት ከልሊት	
	165	Little ringed	ትንሽ ከልሊት	
	166	Spur winged	ነ <i>ሜ</i> ጀሮማንድከልሊት	
	167	Three banded	ደርብ ፑቁር ደረት ከልሊት	
Pratincole	168	Collared	ባለ ከሪባት ፕፖቲያኮል	
prinia	169	Tawny flanked	የ ጓሮ ፕሪኒያ	
Puffback	170	Nothern	<i>ኤኒ ቀይ ፕ</i> ፍባክ	
Pytilla	171	Red billed	ቀይማቁርፒቲሲያ	
Quails	172	Harliguine	ከልሌ	
Rail African	173	Rail African	በናማየወሃ ዶሮ	
	174	Rouget's	ቂ ጠነ ም ረግረግ ዶ ሮ	
Raven	175	Fan tailed	<u> </u>	
Redhank	176	Spotted	ጠቃጠቇ ረጅምእ <i>ግ</i> ር ፋ ፋ ዬ	
Redstar	177	Common	ተራሬደስታርት	
Robin-chat				
Rueppell's	178	Robin-chat Rueppell's	የ ቁፕቋጦስር ሮቢን <i>ቻ</i> ት	
Roller	179	Abyssinian	የ አበሲንያ ምትግትግ ሮልር	
Ruff	180	Ruff	<i>ግ</i> ር የመንዝ ፋፋ ዬ	
Sandgrouse	181	Four banded	ደርብርብ ጣንምር የ አሸዋ ደር ጭ	
Sandpiper	182	Common	ትንሻ የመንዝ <i>ፏቀ</i> ዬ	
	183	Curlew	አፈደፋታየ መዝ <i>ፏ</i> ቀ ፍ	
	184	Green	<u>ተቁር ማ</u> ጀርባ የ ወንዝ <u>ፋ</u> ቀዬ	
	185	Marsh	<i>ረግረግ</i> የ መንዝ <u>ታ</u>ቶ ዬ	
	186	Wood	ጠቃጠቆ የ ወንዝ ሷታ ዬ	
Seedeater	187	Streaky	ን ብስማዘር በል	
Shikra	188	Little banded	አይነ ቀይየጨባ ቁለት	
Shoveler	189	Northern	አካፎ	
Shirke	190	Lesser grey	<i>ግራ</i> ምሽሻይ	
	191	Red backed	ቀይ ጀርባ ሸሻይ	
	192	Red tailed	<i>ጅሪተ ቀይ ሸሻይ</i>	
	193	Wood chat	እራስ ቸኮሴት ሸሻይ	
Snake –eagle	194	Western banded	እባበ በል ንስር	
Snipe	195	African	የኢትዮጵያ ረጀምማቁር ስናይፕ	
	196	Common	ተራስናይፕ	
Sparrow	197	Swainsons's	ደበሽ ጨባ	
Sparrowhawk	198	Little	ትንሽ የመርባ ማለት	
Sparrowlark	199	Chestnut-backed	ጀርባ በና <i>ግ</i> ጨባላርክ	
Spoonbill,	200	African	ማስያ አፍ	
Starling	201	Greater blue –eared	ጆሮ ሰማዊ መ宠	
	202	Red winged	ክንፈ ቀይ መንይ	
	203	Violet backed	ጀርባ ሀምራዊ መሜ	

Stilt	204	Back winged	<u>ተቁር</u> ክንፍ ረ ዥግ ስቲልት	
Stint	205	Little	ትንሻ አብዬ ስቲልት	
	206	Termminck's	ሲታታጀርባ ነ <i>ሜ</i> ስቲልት	
Stonechat	207	Common	ተራስቶን <i>ቻ</i> ት	
Storks	208	Abdim's	ሀምራዊ ሪዛ	
	209	African open billed	አይገ ጥሜማንቁር ሪዛ	
	210	Black	ፕቁር <i>ሪ</i> ዛ	
	211	Marabou	አባኮዳ/አባኪሾ	
	212	Saddled billed	ሽልምሪዛ	
	213	White	ો જ્ ય ્સ	
	214	Wooly –necked	ሸሽ አንባት ሪዛ	
	215	Yellow billed	ቢጫማቁር ሪዛ	
Sunbird	216	Copper	<i>ማ</i> ቶብአበባ <i>ቀ</i> ሳሚ	
	217	Scarlet –chested	ደማቅ ቀይ ደረት አበባ ቀሳሚ	
	218	Tacazze	ተከዜ አበባ ቀሳሚ	
	219	Variable	እስስ <i>ተ ቀ</i> ለምአበባ <i>ቀ</i> ሳ <i>ሚ</i>	
Swallow	220	Barn	የትምነሽ ወንጭት	
	221	Lesser striped	<i>ደረተ ሚት ማጭ</i> ት	
	222	Mosque	ሞስከ መሜት	
	223	Wire-tiailed	ቀይ ሪስ መጭት	
Swift	224	Nyanza	በናማመንመት	
Tcharge	225	Black crowned	የቁር ዘወድ ቻባራ	
Teal	226	Common	ተራየአወሮፓቲል	
Tern	227	Caspain	ቀይ <i>ማ</i> ቁር ነ ጭገል	
	228	Gull billed tern	አማማ ምንል	
	229	Whiskered	<i>ግራጫክ ጭነ</i> ል	
	230	White winged	ክንፍ <i>ነ ጭ</i> ነል	
Thick knee,	231	Sengel	የሰኔ ጋል ደጓሳ እግር	
Thrush	232	African	የቆላ ዋይ	
	233	Groundscraper	የመሬት ባይ	
	234	Olive	የዛፍሜ	
Tinkerbird	235	Yellow fronted	በምግንባር ቲንከርበርድ	
Tit	236	White backed	ጀርባ ነ <i>ጭ</i> ታ	Endemic
Trongon	237	Narina	ናትሪና ትሮንን	
Turaco	238	White cheeked	ነ መ ከንፈ ነ በልባል ዞሪት	
Vulture	239	Egyptian	ነ ሜጆፊ አሞራ	
	240	Hooded	በናማሪስ ጆፊ አዋው	
	241	Ruppell griffon	የ ንደል ጆፊ አሞራ	
	242	White backed	ጀርባ ነ <i>ጭጆፊ</i> አዋው	
Wagtail	243	African pied	የአፍረካ በሬ ጠቅጠሌ	
	244	Citrine	ትንን ሰልሰሌ	

	245	Gray	WARAA.
	246	Mountain	የመንዝጠልጠሉ
	247	White	ነ
	248	Yellow	ിഎൻൻ
Warbler	249	Buff-bellied	የ <i>ግ</i> ራር የ ጠር
	250	Eurasian reed	የአመሮፓየደንንል ዋጠር
	251	Olivaceous	<i>ማደራማ</i> ዋብነር
	252	Sedge	የ <i>ማ</i> ቆዋብለር
Wattle eye	253	Brown throated	በናማአንንት አይን እርንብ
Weaver	254	Baglafecht	አይነ ነጭ፲ፌባ
	255	Spectacled	ባለ ማፀር ጨባ
	256	Village	ፕ ቱ ር እሪስ <i>ጨ</i> ባ
Wheatear	257	Black eared	ጆሮ ተቁር ዊቴር
	258	Red breasted	<i>ደረተ ቀይ</i> ዊቴር
	259	Northern	ተራዊቴር
	260	Pied	በሬ ዊቴር
Whinchat	261	Whinchat	ዊንቻት
White eye	262	African yellow	የአፍሪካ ቢ <i>ጫ ሜ</i> አይን
	263	Abysinian	የአበስኒያን ነ መ አይን
	264	Montane	የ
whydah	265	Pin tailed	መደራ ጅራት ዖይድ
	266	Exlamtory paradise	<i>ደ</i> ዓቅ የ1ነት እጫት
widgeon	267	Eurasian	አመሮፓዊነን
Widowbird	268	Fan tailed	<u>ጅ</u> ሪተ <i>ማ</i> ስረፊት ዊዶ በርድ
	269	Yellow mantled	ተቁር ትክሻ ዊዳብረድ
Wood-hoope	270	Black billed	ፕቱር ማቁር ብቴሪ ወደች
Woodpecher	271	Bearded	በርደድማንደ ቆርቁር
	272	Cardinal	<i>ጉን</i> ጨንቅሴ ማንደ ቆርቁር
	273	Gray	ባራጫግንደ ቆርቁር
	274	Gray –headed	ባሪጫሪስ ግንደ ቆርቁር
	275	Nubian	ኑቢያን ማንደ ቆርቁር
Wryneck	276	Eurasian	የአመድፓሪይኔኮ

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