Amhara National Regional State Parks Development and Protection Authority in Collaboration with Nile Basin Initiative and Organization for Rehabilitation and Development in Amhara

Ground survey of Wildlife, cattle and human distribution, and

Wildlife Movement and Their Home Ranges of Alatish National Park, Quara Woreda

Field Study Report

By

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Contents

Title **Page**

1. Introduction 1
2. Description of the study Area 6
   2.1. Location and Topography of the study Area 6
   2.2. Climate and Agro ecology 9
3. Objectives of the Study 12
4. Materials and Methods 12
   4.1. Methods 12
   4.2. Materials 13
5. Significance of the Field Study 13
6. Results and Sequence of the Field Survey 14
   6.1. Sequence of the Field Survey 14
   6.2 Key wildlife areas surveying and ecological status of different habitats 18
   6.3 Determine movements and home ranges of key wildlife species (Elephants) 29
   6.4 The limits of the ethnic group's territories and the main pattern of land use 33
   6.5 Community based Tourism Development 35
   6.6 Cross-border Awareness creation 40
7. Discussion 41
   7.1 Human Induced Threats 42
   7.2 Livestock Induced Threats 44
8. Recommendations 45
9. Conclusions 46
10. Appendices 48
11. References 74

1. Introduction

Currently, the biodiversity of the Amhara National Regional state (ANRS) is protected both in Simien Mountain and Alatish National Parks. Alatish is a newly established National Park in North Gondar, Quara woreda, along Ethio-Sudan boarder after a series of endeavours to provide legal status and facilities required. It is one of the few most important lowland biodiversity areas of ANRS known to contain various forms of large mammalian, avian and other vertebrate species.

It is located in the south-western part of Quara Woreda, North Gondar Zone of ANRS. It has an area of 2665 km^2 (33% of Quara woreda) at a distance of 309 km and 34 km from Gondar and Gelegu (Quara) towns, respectively and extended between $11^0$47'5.4" to 12^0 31'3.6"N latitude and 35^0 15'48" to 35^0 48'51" E longitude. The Altitude of the area varies from 500 to 900 m above sea level.

Quara Woreda has a dry weather road, which helps to connect the Woreda to Gondar and Bahir dar (from Gendawuha to Gelegu, which is 125 km long. This road is not yet accomplished). The new road under construction from Durbetie to Gelegu, 350 km, will create alternative and less cost travel route. Currently, 388 km road planned for internal park management and access that joins with Gelegu of which 238.6 km has been designed and surveyed by high level engineering work that could be constructed in the next three years.

The Bermel River which separates Alatish National Park from Mehadid Kebele (where Gumz people live) and together with Bermel and Marwuha Kebeles forms the Northern boundary while Hyma river from Bambaho to Omedla boarders to Benishangul Gumuz Regional State makes the southern boundary. To the west the Alimetani and Amdok

mountains, and Sudan's' Dinder National Park (100 km Aerial distance) border the area. Zobator and Nigilla mountains (in Bambaho and Gelegu Kebeles) on the other hand form the eastern boundary of Alatish (Fig. 1).

The three most important water sources of the area are Alatish (seasonal), Gelegu and Hyma (Permanent) rivers. Two types of soils (reddish sandy soil or Eutric vertisol and Black cottony soil or Regosol) are known to exist in the Alatish area. There is one rainy season with five raining months extending from May to September with highest concentration in July to August.

Four types of Vegetation are reported for the area. These are Riverine woodland, seasonal wetland, wooded grassland, and woodland. With increasing in human population as a result of the resettlement and allocating of previously virgin lands surrounding the ANP to investors, will greatly increase pressure on the vegetation of the area. Further more, the nomads called 'Felatas' and domestic herds men who have used the area for grazing for the last three to four decades have degraded the vegetation extensively.

On the other hand, vegetation is not only used as sources of food for animals, but also provides cover from predators and protects them from harsh environmental conditions (e.g. high temperature). The destruction of this vegetation threatens species and habitats to changes in ecological balance, loss of genetic diversity and extinction. The vegetation of ANP is known to act as 'Green guard' due to its function in protecting not only the region but also the whole country against desert expansion from the neighbouring Sudan and Sahel region. However, one of the problems in the conservation of biological

diversity is lack of information of the relative importance of the different habitats, ecosystems in terms of biological resources.

Since the conservation of biological diversity and other natural resources provide economical, social, educational, cultural and aesthetic values to the region, effective conservation and management program for sustainable development must be planned. Hence, the successful accomplishment of ground surveys of wildlife, cattle and Human distribution of ANP is expected to provide information on seasonal movements, home ranges and distribution zones of key mammalian species of the park, and territorial limits of key ethnic groups that interact with the park which are vital for proper park management

2. Description of the study Area

The dry season ground surveys of wildlife, cattle and human distribution was carried out in Alatish National Park in ANRS, North Gondar Administrative zone, bordered by Quara Woreda kebeles such as Bambaho, Gelegu (Derehasen), Mehadid, Bermil, Musa badima /Marwha/, Dubaba (Mirt gelegu), and by the Hyma river (Fig. 1).

2.1. Location and Topography of the study Area

It is located between $11^0$47'5.4" to 12^0 31'3.6"N latitude and 35^0 15'48" to 35^0 48'51" E longitude in northwestern flat plain part of Ethiopia (Fig. 2). The general topography of the area ranges from flat to undulating plain with inclination from south to north interrupted by a number of valleys, streams, scattered hills, and seasonal wetlands (Sambri). According to Mesfin Wolde Mariam (1972), the geological formation processes, which divided Ethiopian landmass in to four

major physiognomic regions, places the area under associated low lands of the north western highlands.

ANP falls within Nile Basin found in east of Soudan's Dander National Park (DNP). It shares about 100 km (Aerial distance) of its western boarder with DNP with a possibility of forming new trans-boundary park. The area is commonly covered with Acacia, Combretum and Balanites species dominated by undifferentiated scattered wooded grasslands.

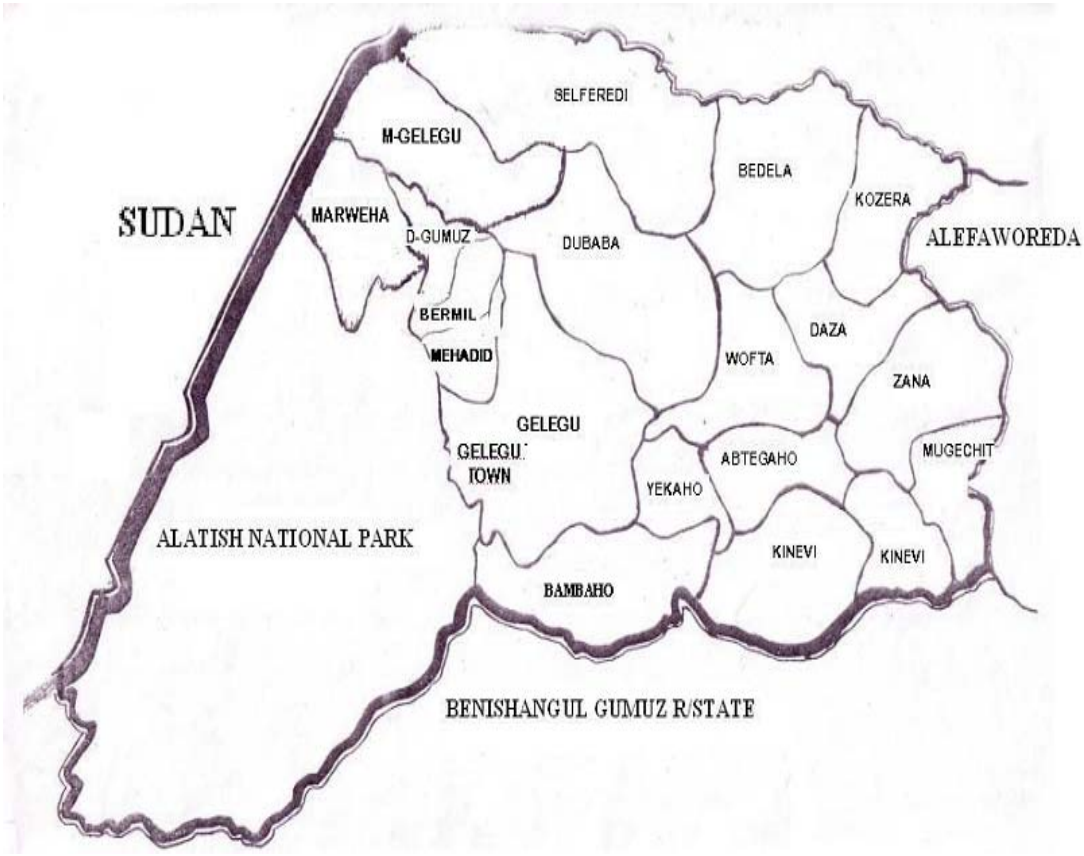


Figure 1. Alatish National Park and Quara Woreda kebeles

In the northerly direction, along Amijalie to Alga, the area is bordered by Gelegu River. Similarly, in the southern direction, Hyima River borded the area. Villages like Aybeza, Abunta, Aygumba, Kuslie,

Hymishmish, Balankur and Omedla to the direction of Benshangul Gumuz National Regional State (BGNRS), which are found along Hyima River, are inhibited by indigenous Gumuz ethnic group. Similarly, Gumuz villages are also found at Mehadid and Bambaho kebeles (Bayiwa and Abajilajil villages) in Quara Woreda. Moreover, in the eastern and north easterly direction, the Quara woreda kebeles like Bmabaho, Gelegu, Mehadid, Bermil, Marwuha and Dubaba are inhabited mainly by the Amhara ethnic group composed of early settlers from highlands of different parts of the region and Agew (Fig. 1).

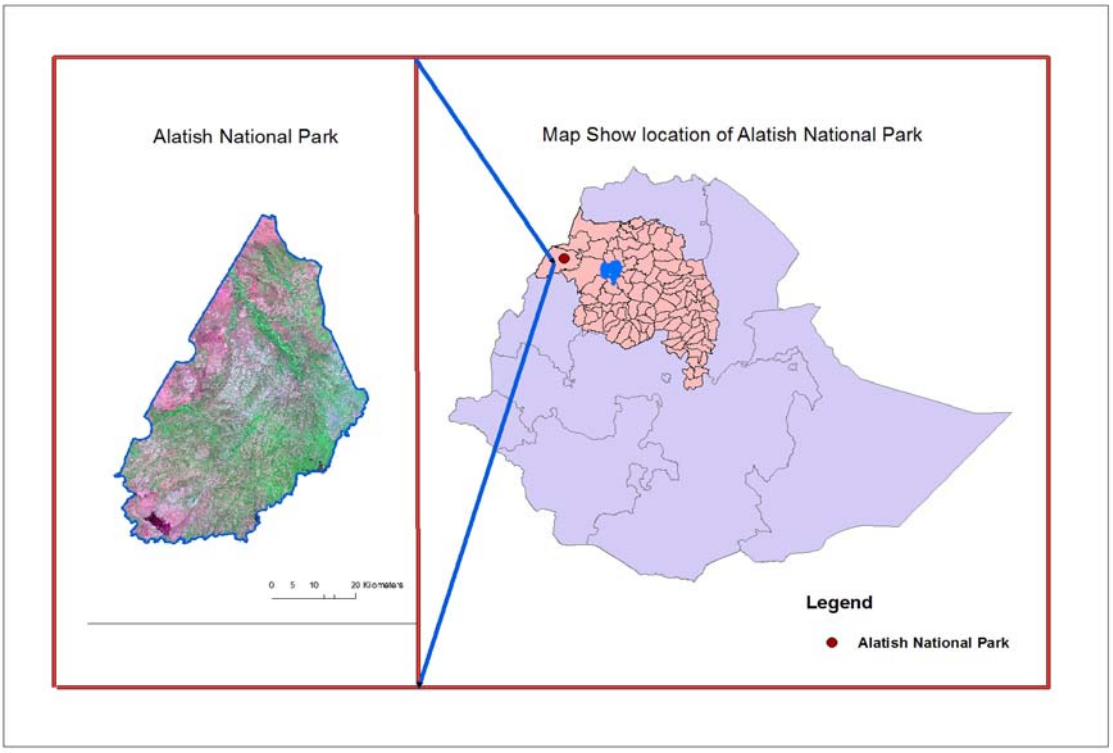


Figure 2. Location of the study area-Alatish National Park

Topographically, ANP falls within the flat endless plains interrupted by scattered rocky hills and multilayered wooded and shrub lands in Blue Nile Basin at the western foot of north western Ethiopian highlands.

ANP is known to have different soil types with partially decomposed parent material. The sandy and sandy loam soil dominates the eastern and drained part of the central, southern and south western part of the area. Similarly, the graveled sandy soil types as entisoils, on the other hand, dominate under the foot of scattered hills in different part of the park. Moreover, Vertisoils which are characterized by 'self ploughing' or black cottony soil, extensively covered the park from the central area to the north and westerly direction of Demir extending to the northerly direction along the Amitish hill to the Amijalie direction.

2.2. Climate and Agro ecology

The climate of Alatish is a major cause of wildlife change of habitats and regulates migration routes and distribution inside and outside the park in wet and dry seasons and variability of their number across the seasons. The climate of Alatish is characterized by two extreme seasons; moist cloudy wet (May to October) and hot dry (December to April) seasons. Effective rain starts in May and peaks in July. The wettest and driest months are July and April respectively. Unfortunately there is no weather station in Quara Woreda. Referring to the nearby weather station at Gendawuha, the capital city of Metema Woreda, the annual rainfall of the area goes up to 800 mm and mean monthly temperature is between 13.6 to 19.2^{o}c minimum and 34^{0}c to 41.1^{o}c maximum (Cherie Enawugaw *et al*, 2006).

The mean altitude of the area ranges from 500 m asl around Alga in the northern flat plain to 900m asl around Tsequa hills in southerly direction. According to Ethiopian agro climatic classification, the area falls within hot-to-warm sub moist zone (AFAP 1999). It represents the Sudan-Guinea Savanna Biome/ecological zone of Quara Woreda of

North Gondar administrative zone. Hence, Agro ecologically, Alatish falls in hot-to-warm sub moist agro ecology.

Monthly mean minimum and maximum temperature at Metema station ranges from 15.4 ^{0}C in December to 24.1 ^{0}C in April and 30.0 ^{0}C during August to 42.8 ^{0}C during April, respectively (Fig. 4). Mean monthly Rainfall at the same station ranges from 0.00 mm during December, January and February to 252.78 mm in August (Fig. 3).

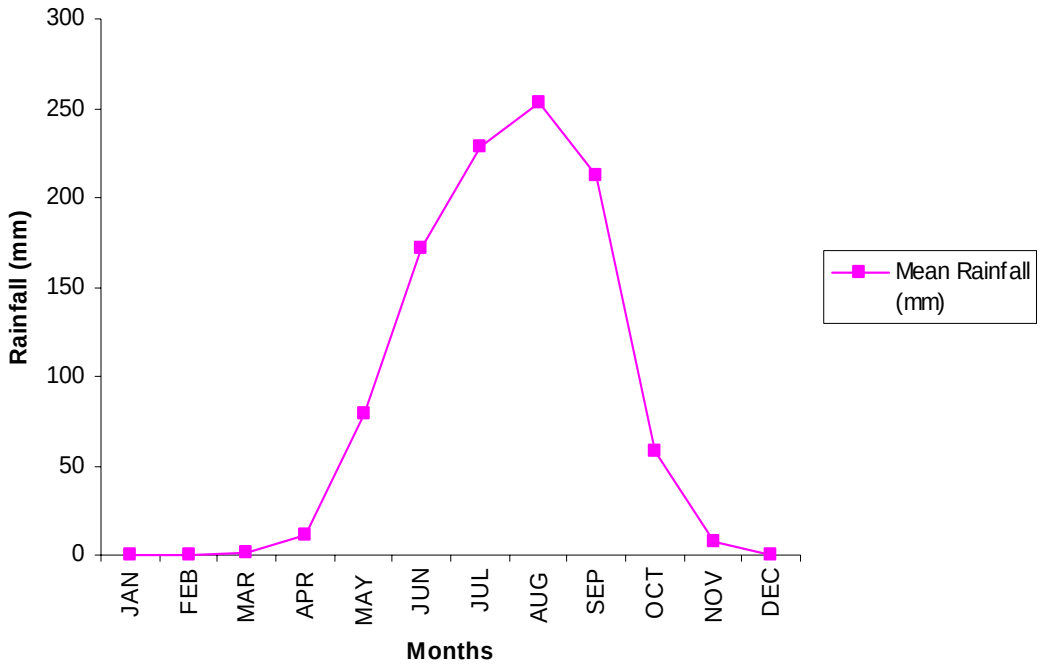


Figure 3. Mean monthly Rainfall at Metema station from 2004-2007 (Ethiopian Meteorological Agency, 2008).

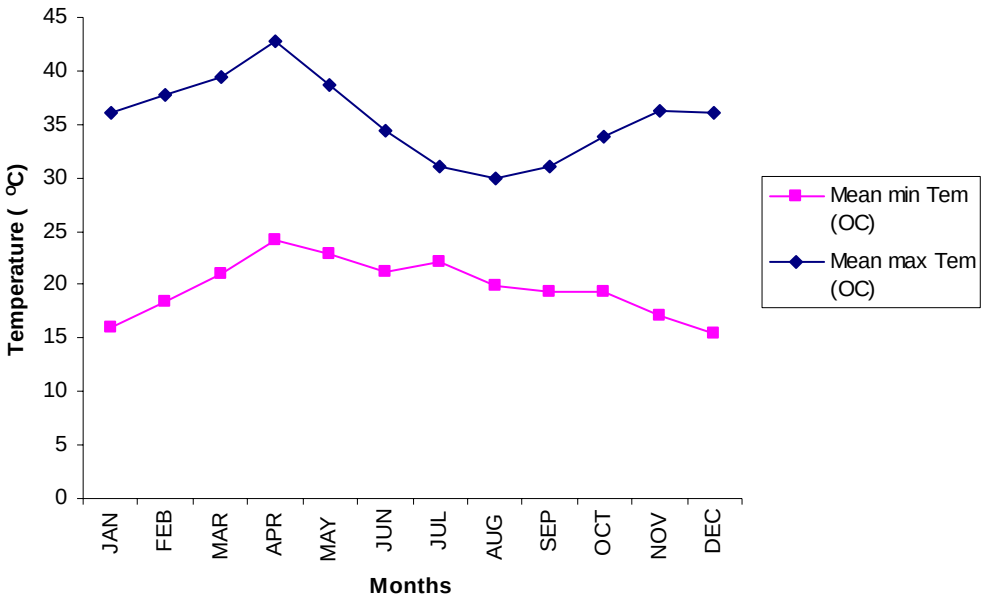


Figure 4. Monthly Mean maximum and minimum temperature at Metema station from 2004-2007(Ethiopian Meteorological Agency, 2008).

Human intervention and movement of nomads, poachers, wild plant and their product collecting activities largely depend on climate. Nomads and hunters enter in to Alatish in dry season. Activities unfavorable to the natural condition are extensively practiced in dry season (December to April).

While in wet season, Alatish rehabilitates to its natural multilayer vegetation condition and most of wild animals stay in their original habitats and breeding sites. Fellata tribes, seasonally migrating nomads, with about eight hundred thousands of cattle and half million shoats, used Alatish for grazing, hunting and deforestation for the past years. Poachers, forest honey, bamboo and other plant part collectors enter in to Alatish only in dry season. Hence, climate of Alatish is a major regulator of human intervention.

3. Objectives of the Study

The main objectives of the study are to:

Determine the key wildlife areas, Identify the limits of ethnic groups territories, Determine movements and home ranges of key wildlife species which are vital for development of conservation and management plan for the Alatish National Park.

4. Materials and Methods

4.1. Methods

- ⇨ Ground surveys were conducted using line transect to locate habitats having highest density of wildlife. Sampling units (transects) were selected systematically. Each was surveyed within one sampling session (early morning or late afternoon). We have recorded animals seen at a distance of 200 meters on both sides of the transect line.
- ⇨ During the observation of larger mammals and bird species, the type of species (diversity), their location and associated vegetation (habitat) type were recorded.
- ⇨ Location of observed mammals and bird species were marked using (Global Positioning System).
- ⇨ Observations were done with naked eyes and with the aid of Binoculars.
- ⇨ Identification of mammals and bird species were done using field guides and personal experience.
- ⇨ Photographs were taken for further confirmation.

- ⇨ The exact time of observation was recorded. The time of observation was in the morning from 06:00- 10:00 am and in the after noon from 4:00-6:00 pm.
- ⇨ All available indirect observation methods for identification mammals and birds such as vocalization, droppings, carcasses, feeding sign, burrows, and footprints were used.
- ⇨ Local guides from the indigenous gumz and Amhara people and scouts were used for observation of wildlife.
- ⇨ Suitable natural wildlife habitats for direct observation were used for studying the distribution of the target species.
- ⇨ The start and endpoints of transect lines were clearly identified before starting the survey.
- ⇨ Group discussion, interview, questionnaire and free observation for identification of tourism potentials

4.2. Materials

The following materials were used during field study.

- ✓ Binocular
- ✓ GPS
- ✓ Photo camera
- ✓ Guide book
- ✓ Topo sheets
- ✓ Data Forms/sheet

5. Significance of the Field Study

Results obtained from the field study were expected to provide valuable information on the current situation of key wildlife areas, the

degree of habitat loss due to overgrazing and competition/conflict between ethnic groups for land, pasture and water; and seasonal movements and home ranges of key wildlife species. It could be used to develop new strategies and approaches for conservation and management of natural resources in ANP.

6. Results and Sequence of the Field Survey

6.1. Sequence of the Field Survey

During survey preparation and information gathering with ANP office heads at Gelegu, we had set out 9 transect lines (Fig. 6) having highest density of wildlife population. The length of each transect line ranged from 3.5 to 58 Km. Transect lines used in the survey were

1. Amijalie through Gelegu river up to the end of Alga Sambri (Transect one; about 10 km)
2. Amijalie to the Amitish hill (Transect two; about 11 km)
3. Megenagna to Abandonlaph sambrio (Transect three; about 3.5 km)
4. Megenagna to Wedeliams (Transect Four; about 11 km)
5. Megenagna through Yelkuk to Shaw (Transect Five; about 16 km)
6. Megenagna to Demir (Transect Six; about 10 km)
7. Along the Hyma river ('Demmo megenagna') through Aybeza to the area between Abulta and Kusli and finally to Demir after crossing the inner part of the park (Transect Seven; about 58 km)
8. Mehadid to the area between beacon 5 and 6 (Transect Eight; about 10 km)
9. Megenagna to Nejila hill (Transect Nine; about 12 km)

Accordingly, during the dry season, the field survey started on 04/06/2001 in the morning (7:00 o'clock) following the dry season road northward from Gelegu through the village of Bermil to the Amijalie outpost site (Fig. 5A). Here, we set out our temporary campsite near the hand dug well water point (about 100m). The surveying team contained 4 experts, 5 scouts and 1 loader. On the next few days, we continued our surveying along transect lines No. 1 & 2 (Fig. 6).



A B

C D

Figure 5. Surveying team and campsites: A= Amijalie campsite, B and D= some members of the surveying team, C= Megenagna campsite (July, 2009)

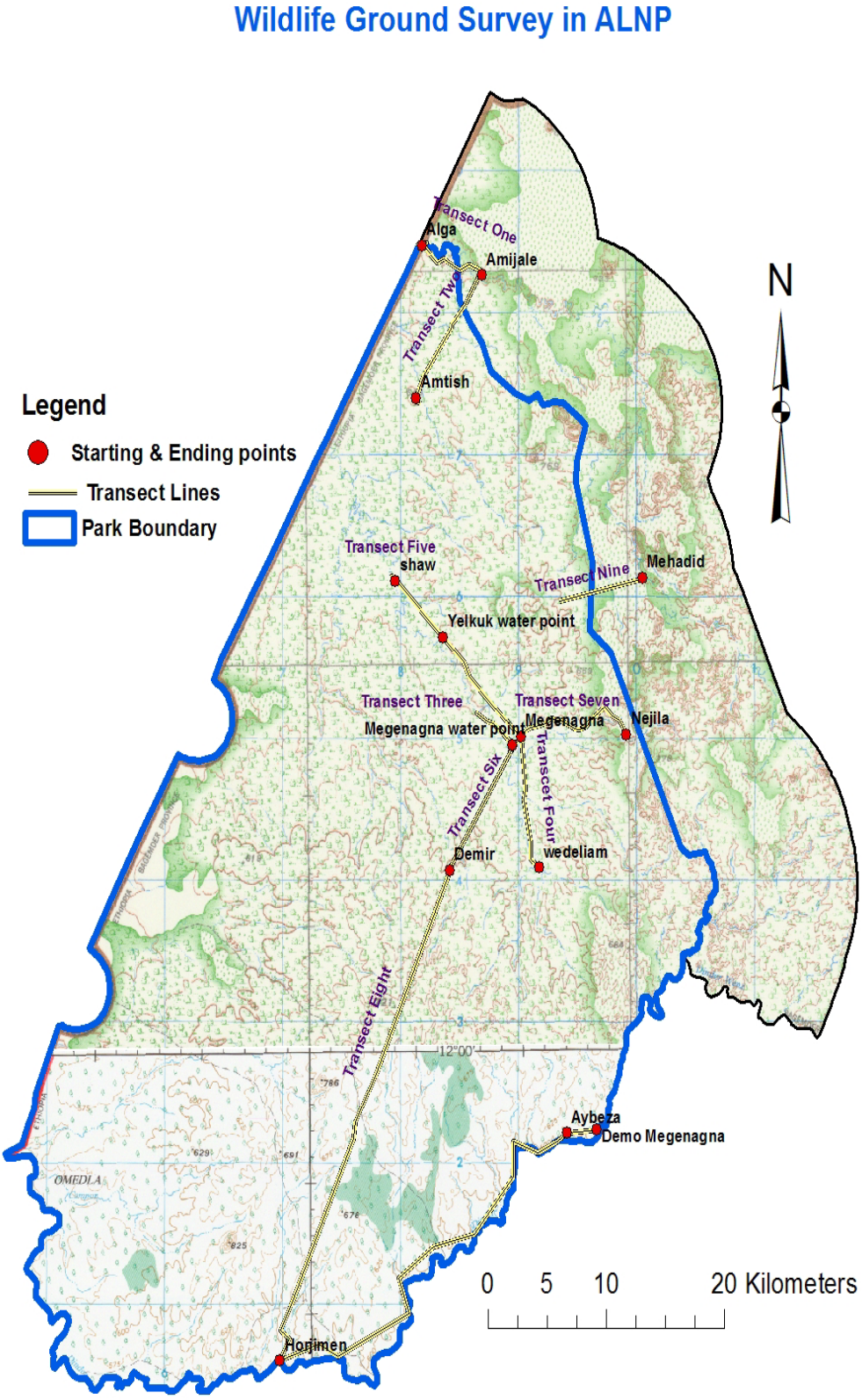


Figure 6. Transect lines and routes of surveying

After we return from the Amijalie site, we went towards the interior of the park through Mehadid and Bermil River to Megenagna. From here, we set out our temporary camp at the building (constructed formerly for outpost site) and continued our surveying along transect lines No.3, NO.4, No.5, and No.6 for the next surveying days (Fig. 5 and 6).

Finally we went following transect line (No. 7) along the Hyma river through Aybeza to the area between Abulta and Kusli and finally to Demir after crossing the inner part of the park for the next surveying days. We started our surveying at Demo Megenagna (a place where Hyma and Demo rivers meet) after crossing the area between Bambaho kebele (e.g. Bemur, Abajilajil, Ajiban,) and Benshangul Gumz regional state (e.g. Kerjamus village, Dokimit river, Large Forest Area) (Fig. 6).

Similarly, during the wet season, we surveyed similar transect lines (No. 1, 2, 3, 4, and 5) that used during the dry season survey except number 6 and 7 transect lines. However, we used additional transect lines number 8 and 9. This was due to difficulty in crossing both Alatish and Hyma rivers both by car and on foot. The surveying team contained 4 experts, 6 scouts and 1 loader (Fig. 5).

In general, during the surveying, we have covered a total distance and area of 70.5 km and 28.2 km2, respectively. Out of this about 49 km distance and 19.6 km2 area was surveyed for elephant movement and home rang determination.

6.2 Key wildlife areas surveying and ecological status of different habitats

Alatish is little known in its biological diversity and ecosystem characteristics. ANP roughly delineated in four major ecosystem components and several communities. These are Riverine, Seasonal Wetland (Sambri), wooded land and wooded grassland ecosystems. In general, 21, 92 and 129 species of Mammals, birds and plants respectively were found from ground surveying.

Around the Amijalie outpost site (fig. 5), we surveyed transect one towards Alga wetland and transect two towards the Amitish hill both in the dry and wet season ground survey. As we walked animals and plants observed at a distance of 200m on both sides of the transect line were recorded and these were presented in appendices 1-4. Some wildlife and plants observed in the survey were given below (Fig. 7 and 8).

Mammals like:

- Warthog (27), porcupine burrows and its spines
- Common bushbuck (2), Oribi (3), Elephant route (in wet season)
- Papio anubis, Grivet and Patas monkey (troops)
- Serval cat, Caracal, Civet cat
- Lion (Vocal and foot print), Leopard, Honey badger
- Hyena, Aardvark (faecal matter and foot print), etc



A



B



C



D



E



F

Figure 7. Key Mammalian species. A= Grivet monkey (Abraham Marye, June, 2008), B= Common warthog (Abraham Marye, June, 2008), C= Common bushbuck, D= Lion foot print, E= Aardvark foot print, and F= Porcupine burrows (July, 2009)

Birds like:

- Helmeted guinea fowl, Crested francolin (flock in dry & pair in wet), Ostrich
- Tawny eagle, Augur buzzard, Harrier hawk
- Long crested eagle, Abyssinian roller
- Carmine bee-eater, and African hoopoe
- Red-eyed dove, Drongo, white-billed go-away bird, etc

Plants like:

- Fola, Gimarda, Key grar, Waika, Kirkira, Chamida, Devker
- Lalo, Darley, Yekolla wanza, Gambilo,Koya, Maha, etc

Other conditions like:

- Sesame cultivation
- Smuggling/contraband route and camel faecal matter
- Tree clearing (Kancha) for cultivation
- Gum collection
- Honey collection from the wild (on big gimarda trees)
- Felata nomads coming from the sudan side
- Wetland known by the name Alga sambri
- Fish trap in Alga Sambri

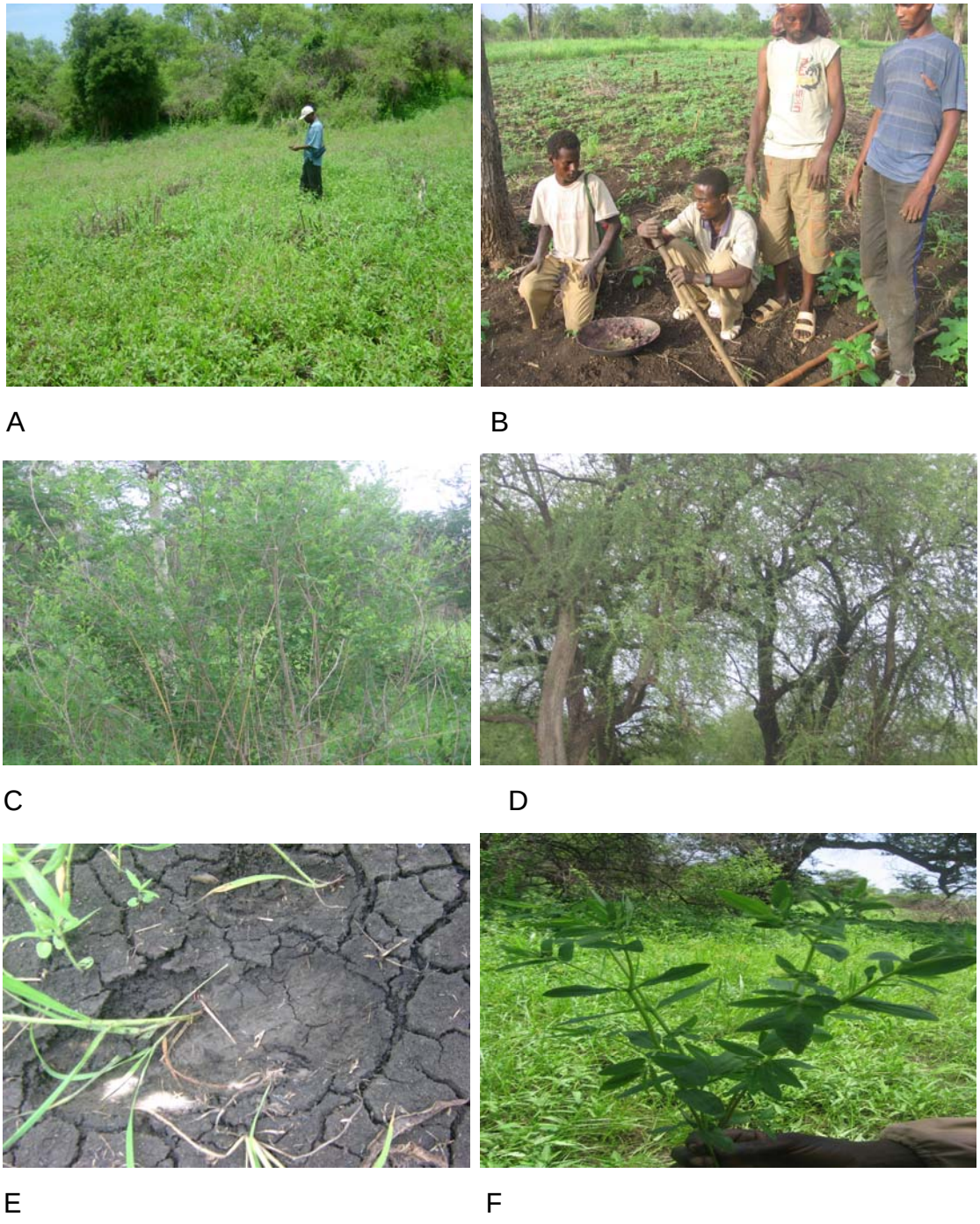
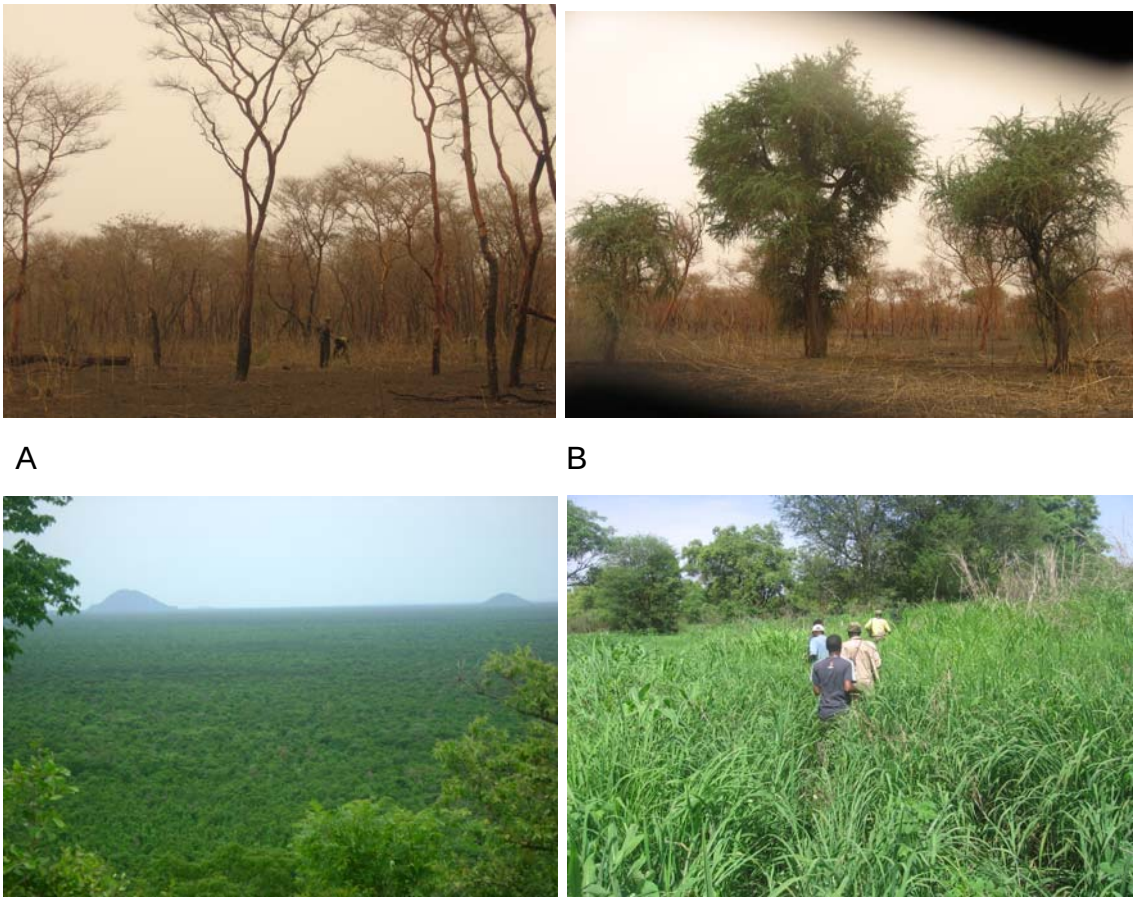


Figure 8. Fish trap, cultivation, Ostrich foot print and different plant spp. A= Fish trap in Alga Sambri, B= Sessame cultivation in the Buffer zone, C= Koya plant sp., D= Lalo plant sp., E= Ostrich foot print, and F= Maha plant sp. (drug for Qaqucha) (July, 2009)

We have also observed when warthog dugout the sandy soil on Gelegu river for search of water during the dry season. Other animals such as Baboons and Guinea fowl were seen while drinking water on these water holes made by warthog. The area was seen largely dominated by Acacia seyal (Key grar) and Balanites aegyptiaca (Lalo) (Fig. 9).



A B

C D

Figure 9. *Acacia seyal* (Key grar) and *Balanites aegyptiaca* (Lalo) dominated areas between Amijalie and Amitish hill. A= Key grar trees after firing in the dry seson (Abraham Marye; May, 2009), B= *Balanites aegyptiaca* trees in dry season (Lalo) (Abraham Marye; March, 2005), C= Key grar and Lalo dominated areas in wet season, and D= Newly growing grasses in the wet season (July, 2009)

Moreover, most part of the areas was seen fired. However, during the wet season these areas were observed covered by grasses and trees were grown newly coppicing cleaves (Fig. 9). Hence, overgrazing, recurrent forest fire, Agricultural expansion, water shortage, smuggling, gum collection, and Honey collection were the major threats for all habitats of this part of the park.

As we continued surveying the park from Megenagna outpost site towards Abandonlaph sambri, Wedeliams, Shaw, Demir and Nejila transects, we observed similar types of plants and animals except (Fig. 10 and 11):

Mammals like:

- Greater kudu (faecal matter and foot print), Elephant route (foot print and faecal matter)
- Common duiker(faecal matter), Grivet monkey, Squirrel, Side stripped jackal,
- Lion (male)

Birds like:

- Yellow-billed egret, Purple heron, Hammerkop, Glossy ibis
- Three banded plover, dwarf raven, standard-winged night jar

Plants like:

- Wenahi, Yelkuk, Touch-me-not/Atsiego, Genkila,
- Forha, Hamija, Tervieko, Serkin, Hangu/Abetry, Andra, Folla, Selselo
- Enkur, Dulata, Dawuda/Yekolla wanza, Bamboo, etc



A B



C D E



F G

Figure 10. Important wildlife, plants and wetlands around Megenagna. A= Yellow-billed egret in wedemjeris sambri, B= Faecal matter of Common duiker (July, 2009), C= Abandonlaph sambri before burning in the dry season, (Abraham Marye; May, 2009), D= Abandonlaph sambri after burning in the dry season, (Abraham Marye; March, 2006), E= Abandonlaph sambri in the wet season, F= side stripped jackal faecal matter, and G=Touch-me-not plant sp., (July, 2009)

Other conditions like:

- Large number of bee hives suspended on different trees
- A waterhole dug by warthog on Alatish river and probably other animals and hunters might be used this water hole as the only water source in the area.



A B

Figure 11. Alatish river in the dry and wet season. A= Alatish river in the dry season (Abraham Marye; May, 2009) and B= Alatish river in the wet season (July, 2009)

- At the rim of Alatish river and waterhole, we have found python skeleton preyed by poachers probably by Gumz or Felata hunters
- A very structured site for poaching, honey and plant product collection known by local name called Aybange in the Abandonlaph sambri (Fig. 10). It seemed a temporary staying area for hunters until their bush meat completely dried. It was also one of the resting or campsite of Felata nomads as revealed by about 25 hand dug water holes but now only some are visible. Each of this water points has about 8-meter depth. Until recently (by the late 2000), Felata were used theses water points. In 1990 E.C. one young elephant was left over in one of these water holes and his mother look after her baby for a week.

- The area was a wetland but completely dried and fired at dry season.
- 9 Gumz poachers from Mehadid (2 males + 7 females) along the rim of Alatish river near Megenagna during the dry season. We caught 2 of them (only 2 males) and transferred to Quara woreda police to be punished. They killed one porcupine and two warthogs, and their bush meats were suspended on the tree for dehydration (drying). The area seemed it has been used for a long time as a temporary staying place for hunters. There was a sign of long hunting activities around the area. We have found three camping sites.
- We have also found 23 kg Honey collected from suspended beehives. We have also found a large number of Zembaba collected to make seniel. It seemed that once they entered into the park, they stayed in the area for a long period because we have found many cooking and hunting materials. They hunted wild animals using 4 hunting dogs and then by killing the animal using locally made weapons like tor and Kesit. We have killed one dog while the others were escaped.
- Another sambri called wedemjeris sambri named after the river wedemjeris. It was completely fired. In the wet season covered by grasses (Fig.10)
- A small tributary river called Dindiro. It was completely dried in the dry season except at one point of the river where there was some stagnant water point. This area was one of the temporary campsites for Felata because of its water source.
- Another small tributary river called wedeliam. It was completely dried in the dry seasn except at one point of the river where there was some stagnant water point. This area was one of the

temporary campsites for Felata, smugglers and hunters from Gumz and Agew communities because of its water source. Moreover, we have also found another temporary campsite used by Agew communities near the water point when they came for hunting. Wild animals were exposed to poaching when they came for search of water. The Agew communities were the main threats to the area. Elephants were appeared during the dry season in previous years but not now due to poaching from the nearby Agew communities.

- Acacia seyal dominated area in Yelkuk to shaw transect. This area might be part of elephant route during the wet season because we have seen footprints and fallen down trees probably by elephants.
- Another wetlands known by the name Bebefaten and Yelkuk sambri. We have observed a large number of bird nests on large trees within the sambri.
- Dried faecal matters and footprints of elephants exactly on the Alatish river in yelkuk to Shaw transect.
- Another small tributary river called Demir. It was completely dried in the dry season except at one point of the river where there was some stagnant water point. It was also considered as the center of the park and internal roads.

Hence, this part of the park was highly affected by hunting (Gumz and Agew people), recurrent firing, felata nomads, Honey collection, Smuggling, and water shortage.

As we continued our surveying from Demo Megenagna (a place where Hyma and Demo rivers meet) through Horjimen to Demir transect for tracking elephant movement during the dry season, we observed similar types of plants and animals except:

Mammals like:

- Elephants (footprint and faecal matter),
- Greater kudu (footprint and faecal matter)

Birds like:

- Hooded vulture, White backed vulture, Marabou stork
- Black headed heron, King fisher- Giant and pied, Nubian vulture

Plants like:

- Lieza, Nim, grasslands, etc

Other conditions like:

- Three temporary live stock sheltering places (Kirat) within the park near Demo area, which were used by Domestic, herd grazers from Bambaho (about 9 people with more than 2000 cattle). Gumz community previously used this area as this can be revealed by the presence of Nim trees.
- Temporary staying site probably by Gumz for poaching at Megomby (a place where elephants once took water from Hyma river). In the site, we have seen two common bushbuck, one warthog and Catfish skeleton left over on the ground being hunted probably by Gumz. The area seemed it has been used for so long for poaching because it is well organized and can be easily identified.
- Hence, this part of the park was severely affected by livestock grazing from Bambahoo kebele (domestic herds), poaching from Gumz people on key mammals, recurrent firing, and Honey collection.

6.3 Determine movements and home ranges of key wildlife species (Elephants)

Dry and wet season home ranges of elephants were identified. According to the field survey, the movement and distribution of elephants was restricted to the southwestern part of the park in the dry season (along Hyma River) due to water scarcity in other parts of the park. The home range extended from horjimen to Abnune, however as revealed from the questioner, elephants used 400 km^2 area for daily movements. In the wet season, elephants preferred the central area of Alatish especially from Jabra, Amitish, Shaw, Kerjika and Demir to Tsequa because there is enough water and feed and safety from hunting (Fig. 13).

During transect two surveying in the dry season, we have found a place where there is a sign of elephant feeding during wet season. We have seen three-foot prints of elephants and fallen down trees. This area might be the main route of the elephants during the wet season. In addition to this, we have also realized that one can observe the park clearly from every direction being at Hamitish Mountain. It is possible to observe the way elephants follow where Acacia seyal are dominant.

As we continued our surveying transect five towards Yelkuk to Shaw during the dry season, we found dried faecal matters and foot prints of elephants exactly on the Alatish river. It seemed starting from the area between Amijalie and Hamitish, they went through Shaw to Kerjika and Demir then to Tsiequa and Hyma river and probably to Dinder National Park.

Part of this faecal matter was taken to Alatish National Park office by our scouts about one month (January/2001 E.C) before this field

survey. We have also seen this at the office during our field preparation at Gelegu. The faecal matter was very fresh at the time of observation by our scouts indicating elephants were there during this period. Hence, this area could be part of elephant route during dry and wet seasons.

As we continued our surveying from Demo Megenagna (a place where Hyma and Demo rivers meet) through Horjimen to Demir transect for tracking elephant movement during the dry season, we have walked a total of 58 km distance. Then, we have found a place where Awujamis river meet with Hyma river. This river came across Awujamis desert in Benshangul Gumz regional state which was suspected to be part of Elephant home range during the dry season due to intensive poaching on them for their tusk.

Then, we have also observed an area where Tsira river meets with Hyma. This area was once known to be part of elephant home range to get in to Hyma. Then, we continued our surveying and found a place where elephants take water from Hyma river. It was known by the name called Megomby. Though the area was once one of the place where elephants drink water on Hyma, there was no any sign of their presence (as told by Gumz people).

Then, we continued our surveying towards the interior of the park but not very far from the Hyma river. As we walking, we have observed big marble area near Horjimen valley- another small tributary river. As we continued, we have found a dry season route for elephant (footprint).

Instead of following the route towards the interior of the park, we just return back and followed the route towards the Hyma river. About 2 km walk, we have found the faecal matters and footprints of elephants on the rim of Hyma river. Fruits of Lalo tree and grasses can be easily

identified in the faecal matters found indicating it is being laid down recently because lalo produces fruits at this time. Similarly, we have observed faecal matters here and there repeatedly. The area is also known by the local people as Horjimen.



Figure 12. Elephant Faecal matter and seedlings of Lalo (*Balanites aegyptiaca*)

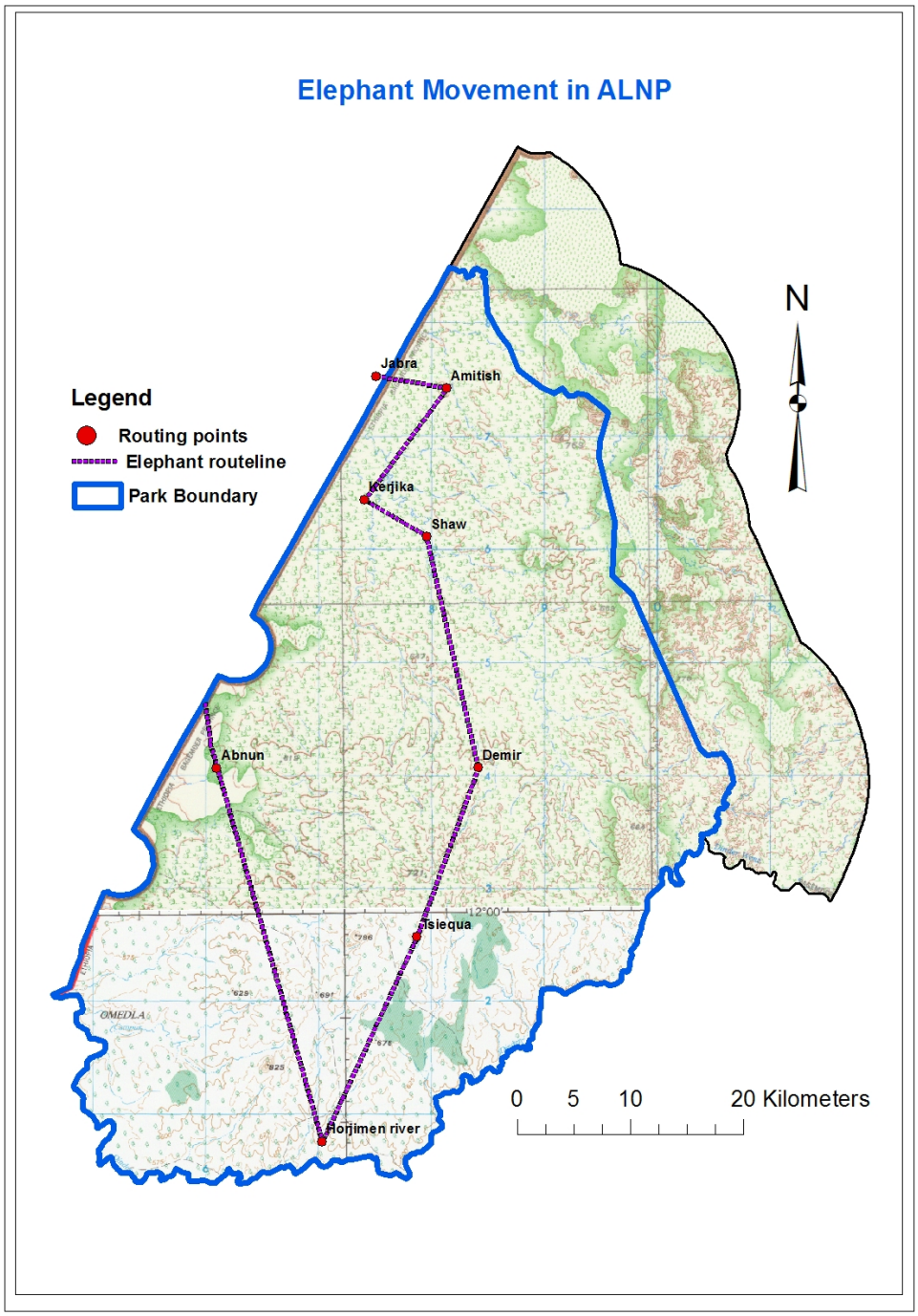


Figure 13. Elephant movement in ANP

After we have found the main route where elephants take water from Hyma, we return leaving Hymishmish and Omega behind-suspected to be part of elephants home range and continued crossing the interior of the park towards Demir. During our crossing, we have observed several times laid down trees and footprints of elephants and kudu along the way to Demir.

Similarly, during the wet season, we have surveyed the area between beacon 5 and 6 near Mehadid to track elephant route. Footprint and faecal matters of 6 elephants were found in the area. It was first seen at June 18/2009 by our scouts. The faecal matter was very fresh at the time of observation by our scouts indicating elephants were there during this period. Hence, this area could also be part of elephant route during dry and wet seasons. We have observed seedlings of Lalo in their faecal matter Lalo being the dominant tree in the area (Fig. 12).

6.4 The limits of the ethnic group's territories and the main pattern of land use

Socioeconomic surveying was done to determine the limits of the ethnic group's territories and the main pattern of land use in and around the *park buffer zone.* The three major ethinic groups (Gumuz to the south and east, Agews to the south, and Amharas to the east and north east) border the park (fig.). We have covered a total distance of 82 km from Amijalie to Bemur for the survey.

Within this distance, we have met and discussed with 6 Kebeles park coordinating committees (Bmabaho, Gelegu, Mehadid, Bermil, Dizza/Gumz wuha, Marwuha/Mirt gelegu). In each kebele we have interviewed and discussed at least 14 persons (9 park coordinating

committee, 4 elders, Agriculture, Health, Education, water representatives and 3 scouts).

According to the field survey, a population of male 16285 female 14343 sum 30628 were living around the park while about a total of 27656.26-hectare land area in and around the park buffer zone were used for cultivation.

Moreover, from this 17.5 for millet, 44.63 for rice, 1019 for maize, 11138 for sorghum, 30.43 for haricot bean, 43.75 for pinut, 14653 for sesame, 259.5 for pepper, 3.3 for onion, and 447.15 for cotton were used.

Whereas 123, 355 and 822-hectare land were used for cultivation within the park buffer zone respectively in Bermil, Mehadid and Dizza/Gumz wuha kebeles. More surprisingly, 110-hectare land was used within the park region in Mehadid and Girara kebele. Hence sesame, sorghum and maize, respectively were the main agricultural products of the area.

On the other hand, more than 105,123 domestic animals (mainly cattle) were located in two kebeles (Gelegu and Banbaho). In all discussion and interviews, the community raised the following Management issues (problems) that requiring immediate solution.

- Illegal agricultural expansion in and near the park region and buffer zone
- Deforestation for cultivation, cooking, house building, and charcoal.
- Lack of ranch land
- Buffer zone demarcation and awareness creation

- Lack of land ownership and unequal land distribution (1-20 hectare)
- Recurrent interference of Felata and their consequence
- Hunting
- Fish poisoning (Gelegu and Hyma)
- Wide spread of domestic animals diseases (being most predominant)
- Recurrent firing by smugglers, land clearing, gum and honey collectors, Felata
- Weak movement of woreda park coordinating committee (lack of commitment)
- Releasing guilty persons without punishment

6.5 Community based Tourism Development

The tourism potential resources are immense. It had many wildlife species, landscape, historical and cultural values. These could generate economic return to the local community and to the nation through tourism development in addition to the ecological benefits.

At the same time, another group of experts assessed the tourism potential resources of Alatish National Park. Before starting the actual work, 141 (10 women and 131 men) Kebele Administrators, and elders were elected to work with the experts and given awareness training about natural resources, park management aspects, and importance of tourism (Fig. 14).



A



B



C



D



E



F



G H

Figure 14. Awareness creation training about natural resources, park management aspects, and importance of tourism for different Kebeles. A=Mehadid kebele, B=Grara village, C= Bermil kebele, D= Gumzwuha Kebele, E= Marwuha kebele, F= Bambahoo kebele, G= Baiwa Village, and H= Omedlla kebele communities (February, 2009)

Following these, group discussion, interview, questionnaire and free field observation commenced to generate data for tourism strategic development document and identification of tourism potentials of the study area.

The data from this study revealed there are many tourism attractions in and around Alatish National Park. Different wild animals, vegetation, special landscapes like Amrakuba, Dmire, Dinar, Omedela and Amtish are very remarkable view points. Omedela is a historical place that witnessed the return journey of Emperor Haile Silase from exile during the Ethio-Italian war (Fig. 15).



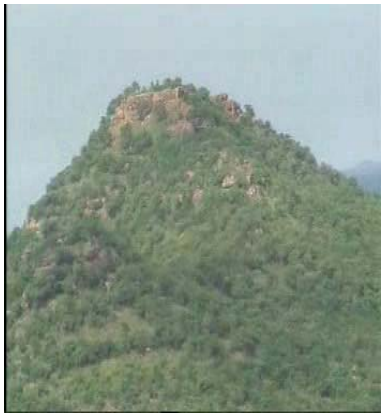
A



B



C



D



E



F



G



H I

Figure 15. Tourism potentials in and around Alatish National park. A= Bermel village north of ALNP(Abraham Marye; May, 2009), B, C, D, E= Dinar hill and its Rock hole window at the top (Abraham Marye, June, 2008), F= Warthog (*Phacochoenus aethiopicus*) (Abraham Marye , March, 2005), G= Egyptian cobra (Naja naja)"a king of Alatish', (Abraham Marye, March, 2005), H and I= Dizza tree (*Adansonia digitata*) (Abraham Marye; May, 2009)

Three ethnic groups (Amhara, Agew and gumuz) with their different cultural practices and way of life give additional beauty and attraction to the study area (Fig. 16). Accommodating these data, preparation of tourism development strategic document is on progress.



A B







C D E

Figure 16. Ethnic groups with their different cultural practices. A= Gumz People at Baiwa, B= A place where Emperor Yohanse IV dead, C= and D= A place where Emperor Yohanse IV wounded and now a holly water on the area serving for spiritual healing (Tsebel), E= People in their sheltering waiting for healing from the Tsebel (February, 2009)

6.6 Cross-border Awareness creation

Another vital activity was cross border awareness creation. A brief awareness creation material on cross border issues was produced. Using the awareness creation material, a one-day workshop was conducted (two times) and common understanding on cross border issues and park management is established. 167 (152 male and 15 female) relevant stakeholders which include woreda heads, lawyers, police and experts attend the workshop.

7. Discussion

To this date, there is no detailed published information on seasonal movements, home ranges and distribution of key wildlife species of the ANP except that was done by Girma Mengesha and Tadesse Habitamu (2005)-AAU students and Regional team (2002). Therefore, the results obtained in this surveying study will be compared with the results obtained by previous researchers in the same area.

In this study, large number of key wildlife were recorded in Riverine and wetlands indicating the importance of water for life as these habitats are located near Alatish, Gelegu and Hyma rivers. Similarly, Girma Mengesh (2005) reported the presence of highest number of mammalian species in Riverine woodland during the dry season. Hence, the availability of water was the main factor to determine the diversity of species existing in the area during this time. Furthermore, there was no water available for animals except from the sandy riverbed dug by warthog in both Alatish and Gelegu rivers, and the water from Hyma River. However, availability of cover might be another factor but the Riverine and wooded grasslands vegetations had been destroyed by large number of domestic and Felata's herds, and forest fire set by hunters, smugglers, honey and other plant product collectors. The disappearance of wildlife species in the woodland habitat during the dry season might be due to the effect of fire. Almost 90% of the total areas of the park were fired at the time of this study.

7.1 Human Induced Threats

Hunting and Forest fire are two of the most severe threats for the Alatish Park management. The area is highly suffered from these threats mainly by Fellata and Hunters (Gumuz, Agew and Amhara) through overgrazing, hunting, firing, collection and harvesting plant products. These threats were evaluated by their severity, scope and ranking. Measuring results in overgrazing, forest fire and hunting by unfavorable activities of Fellata and Gumuz remain very far above the ground on all ecological units.

Annual burning, carried out in part by herdsmen to make fresh grass growth available to their herds, affects up to 90% of the total area each year. Forest firing is also carried out partly by hunters and honey collectors so that hunting pressure is high. Domestic herds also graze within the park following the Hyman River up to Kusli border of the park. In addition to creating competition for water and grazing, these domestic herds may cause outbreaks of animal diseases. Illegal hunting and fires set by local domestic grazers, honey and other plant product collectors by far are among the chief threats to the area.

We have observed a very large number of wetlands, or "Sambri", formed by Alatish and Gelegu rivers that are part of the Hyma river drainage systems. Both rivers and their tributaries, coming from the highlands across the flat plain of the Park, are seasonal and flow from June to November, peaking in August. The wetlands are vital as a source of water and of the most nutritious grasses for herbivores, especially during the most severe part of the dry season. However, this year, these wetlands were completely dried due to climatic uncertainty. A large number of animal species are supported, some of

which, like Warthog and some antelopes, are threatened. As a result, several species no longer exist in many areas of the Park

Although Alatish national park has a rich diversity of species, growing human pressure, grazing, firing, and hunting during the last decades has caused considerable destruction to the natural habitat. Many of the park areas have been severely damaged by nearby communities and resettlers.

Therefore, wildlife species continue to decline at an alarming rate because of several factors:

- Impact of ever increasing human population
- Expansion of human settlement and land cleared for agriculture
- Lack of conducive mechanisms for public participation in wildlife conservation processes
- Illegal hunting
- Inadequate financial and logistic support for conservation
- Insufficient current data on wildlife resources
- Inadequate law-enforcement mechanisms
- Low public awareness of the value of wildlife
- Lack of institutional capacity

Hence, major threats commonly seen in Alatish National Park are:-

- Recurrent Forest fire
- Poaching / hunting
- Deforestation and encroachment
- seasonal Overgrazing and Livestock
- Smuggling/contraband trades

- Ever increasing population and Expansion of Agricultural lands
- Gum collection
- Seasonal water shortage and inaccessibility /dry season
- Honey collection within the Park
- Habitat competition
- Fish poisoning
- Harmful cultural habits

  E.g. Frequent hunting by Gumz community.

7.2 Livestock Induced Threats

Livestock are one of major drivers of habitat change. It also directly contributes to habitat change as overgrazing and overstocking accelerate desertification. Livestock-related land use and land use change modify or destroy ecosystems that are the habitats for wildlife species. Livestock also contribute to climate change, which in turn has modifying impact on ecosystems and species. It also directly affects biodiversity through invasive alien species (the livestock themselves, carry diseases for which they may be vectors and other more competitive plant species) and overexploitation, for example, through overgrazing. Habitat destruction reduces forest size leading to the reduction of food sources. Habitat destruction of forests in ANP for domestic grazing along the Hyma River by the Bambaho community is a big threat for wildlife's in the park. We have observed a large number of livestock temporary sheltering sites (Kirat). These have been used by the local community between October and may.

8. Recommendations

Grazing is one of the major threats of Alatish national park. The main task of the park management will be controlling this effect by collaboratively working with the local community and relevant stakeholders. This calls for allocating and developing grazing land and rangeland development outside the buffer zone and make the park free of domestic animal grazing especially from felata Nomads and domestic herdsmen.

Wild animal hunting and illegal fishing in and around Hyma across Benshangul gumuz are also serious threats and must be given due attention. In this respect there should be expansion of the continuation of Alatish Park in Benshangul Gumuz Regional State by the federal Wildlife Development and Protection Authority.

At the same time there should be a continuous awareness creation for the local community in the future to give enough information about the benefits of wildlife, ecotourism and sustainable natural resources utilization. In addition communication and cooperation between the Sudanese Dinder National park and Alatish is required. By the cooperation of the two countries, it must be possible to stop smuggling so that the recurrent firing by the smugglers will be controlled.

Further to strengthen the management of the park some infrastructural activities are very crucial. The most urgently required ones are:

- At least two water points between Demir and Ayma River
- Internal access roads
- At least two outposts at Aybeza and Megenagna

9. Conclusions

During seasonal ground surveying along 9 systematically selected transect lines, we have found 21, 92 and 129 species of Mammals, birds and plants respectively. Moreover, recurrent firing, hunting, domestic seasonal grazing, honey collection, deforestation, fish poisoning along Gelegu and Hyma rivers, and cultivation in the buffer zone are some of the major threats commonly seen in the park. Gumz, Agew and Amhara ethnic groups with a total population of 30628, surrounds the park.

We have covered a total area of 28.2 km^2 for the seasonal ground survey. Out of this, about 19.6 km^2 areas were surveyed for elephant's movement determination. According to this survey, the dry season home ranges of elephants extend from Horjimen to Abnune whereas in the wet season, elephants preferred the central area of Alatish especially from Jabra, Amitish, Shaw, Kerjika and Demir to Tsequa. But from our interview of the local people elephants usually use more than 400 km^2 for their daily activities.

The tourism potential of Alatish National Park was assessed using group discussion, interview, questionnaire and free field observation to generate data for tourism strategic development document and identification of tourism potentials of the area. The data from this study revealed there are many tourism attractions in and around Alatish National Park. Different wild animals, vegetation, special landscapes like Amrakuba, Dmire, Dinar, Omedela and Amtish are very remarkable view points. Omedela is a historical place that witnessed the return journey of Emperor Haile Silase from exile during the Ethio-Italian war.

Using the awareness creation material, a one day workshop was conducted and common understanding on cross border issues and park management was established among 167 (152 male and 15 female) relevant stakeholders which include woreda heads, lawyers, police and experts.

10. Appendices

Appendix 1

Observed large mammalian species of Alatish National Park

No.	Scientific Name	Common Name	Conservation status
1.	*Canis adustus*	Side stripped Jackal	LR/lc
2.	*Caracal caracal*	Caracal	LR/lc
3.	*Ceropithecus aethiops*	Grivet monkey	DD
4.	*Civettics civetta*	African civet cat	LR/lc
5.	*Crocuta crocuta*	Spotted hyaena	LR/nt
6.	*Erythrocebus patas*	Patas monkey	LR/lc
7.	*Felis serval*	Serval cat	LR/lc
8.	*Felis silvestris*	Wildcat	LR/lc
9.	*Hystrix cristata*	*Porcupine*	LR/nt
10.	*Loxodonta africana*	African elephant	EN
11.	*Mellivora capensis*	Ratel (Honey badger)	VU
12.	*Ourebia ourebi*	Oribi	LR/cd
13.	*Panthera leo*	Lion	VU
14.	*Panthera pardus*	Leopard	LR/lc
15.	*Papio anubis*	Anubis baboon	LR/cd
16.	*Phacochoerus aethiopicus*	Common warthog	LR/lc

No.	Scientific Name	Common Name	Conservation status
17.	*Sylvicapra grimmia*	common (grey) duiker	LR/lc
No.	**Scientific Name**	**Common Name**	**Conservation status**
18.	*Tragelaphus scriptus*	Common bushbuck	LR/lc
19.	*Tragelaphus strepsiceros*	Greater kudu	LR/cd
20.	*Redunca redunca*	Bohor reedbuck	LR/cd
21.	*Orycteropus afer*	Aardvark	EN

Appendix 2

Observed Bird species of Alatish National Park

No.	Scientific Name	Common Name
1.	*Alopchen aegyptiaca*	Egyptian goose
2.	*Anthus novaeseelandiae*	Richards pipit
3.	*Apalis rufifrons*	Red-faced apalis
4.	*Aquila rapox*	Tawny eagle
5.	*Aratinga erythrogenys*	Red masked parakeets
6.	*Ardea melanocephala*	Black-headed heron
7.	*Ardea purpurea*	Purple heron
8.	*Ardeirallus sturmii*	Dwarf bittern
9.	*Bucorvus abyssinicus*	Abyssinian ground hornbill
10.	*Bueto rufofuscus*	Augur buzzard
11.	*Butorides striatus*	Green-backed heron
12.	*Campethera nubica*	Nubian woodpecker
13.	*Centropus senegalensis*	Senegal coucal
14.	*Ceryle maxima*	Giant king fisher
15.	*Ceryle rudis*	Pied kingfisher
16.	*Charadrius pecuarius*	Three banded plover
17.	*Chrysococcyx caprius*	Didric cuckoo
18.	*Cieonia episcopus*	Woolly-necked stork
19.	*Columba guinea*	Speckled pigeon
20.	*Coracias abyssinica*	Abyssinian roller
21.	*Corvus dithae*	Dwarf raven
22.	*Corythaixoides leucogaster*	White-bellied go-away bird
23.	*Dicrurus adsimilis*	Drongo
24.	*Egretta alba*	Great white egret

No.	Scientific Name	Common Name
25.	*Egretta garzetta*	Little egret
26.	*Egretta intermedia*	Yellow -billed egret
27.	*Euplectes orix*	Red bishop
28.	*Francolinus coqui*	Crested francolin
29.	*Gyps bengalensis*	White backed vulture
30.	*Hagedashia hagedash*	Hadada ibis
31.	*Halcyon senegalensis*	Woodland king fisher
32.	*Haliaeetus vocifer*	African fish eagle
33.	*Hieraaetus spilogaster*	African hawk eagle
34.	*Hirundo daurica*	Wire-tailed swallow
35.	*Indicator indicator*	Greater honeyguide
36.	*Indicator minor*	Lesser honeyguide
37.	*Kaupifalco monogrammicus*	Lizard buzzard
38.	*Lagonosticta rubricata*	African firefinch
39.	*Lagonosticta senegala*	Red-billed firefinch
40.	*Lamprotornis chalyhaeus*	Blue-eared glossy starling
41.	*Lamprotornis purpuropterus*	Ruppelss's long-tailed starling
42.	*Laniarius erythrogaster*	Black-headed gonolek
43.	*Leptoptilos crumeniferus*	Marabou stork
44.	*Lophaetus occipitalis*	Long-crested eagle
45.	*Lybius bidentatus*	Double-toothed barbet
46.	*Melierax gabar*	Gabar goshawk
47.	*Melierax metabates*	Pale chanting goshawk
48.	*Merops albicollis*	White-throated bee-eater
49.	*Merops bullockoides*	White-fronted bee-eater
50.	*Merops nubicus*	Carmine bee-eater
51.	*Milvus migrans*	Black kite

No.	Scientific Name	Common Name
52.	*Mirafra hypermetra*	Redwing bush lark
53.	*Myrmecochichla aethiops*	Anteater chat
54.	*Necrosyrtes monachus*	Hooded vulture
55.	*Nectarinia cuprea*	Copper sunbird
56.	*Nectarinia kilimensis*	Bronze sunbird
57.	*Nectarinia pulchella*	Beautiful sunbird
58.	*Nectarinia tacazze*	Tacazze sunbird
59.	*Numida meleagris*	Helmeted guinea fowl
60.	*Nycticorax nycticorax*	Night heron
61.	*Oena capensis*	Namaqua dove
62.	*Passer gongonensis*	Parrot-billed sparrow
63.	*Passer griseus*	Grey-headed sparrow
64.	*Petronia xanthosterna*	Yellow-spotted petronia
65.	*Phoeniculus purpureus*	Green-wood hoopoe
66.	*Plegadis falcinellus*	Glossy ibis
67.	*Ploceus capitalis*	Yellow-billed weaver
68.	*Ploceus cucullatus*	Black-headed weaver
69.	*Ploceus luteolus*	Little weaver
70.	*Ploceus taeniopterus*	Northern masked weaver
71.	*Poicephalus gulielmi*	Red-spotted parrot
72.	*Polemaetus bellicosus*	Marital eagle
73.	*Poliohierax semitorquatus*	Pygmy falcon
74.	*Poyboroides radiatus*	Harrier hawk
75.	*Pyconotus barabatus*	Yellow-vented bulbul
76.	*Rhodophoneus cruentus*	Rosy-patched shrike
77.	*Scopus umbretta*	Hamerkop
78.	*Steganuara paradisaea*	Paradise whydah
79.	*Streptopelia capicola*	Ring-necked dove

No.	Scientific Name	Common Name
80.	*Streptopelia semitoquata*	Red-eyed dove
81.	*Streptopelia senegalensis*	Laughing dove
82.	*Struthio camelus*	Ostrich
83.	*Terpsiphone viridis*	Paradise fly catcher
84.	*Threskiornis aethiopicus*	Sacred ibis
85.	*Tockus erythrochynchus*	Red-billed hornbill
86.	*Tockus flavirostris*	Yellow-billed hornbill
87.	*Torgos tracheliotus*	Nubian vulture
88.	*Treron australis*	Green pigeon
89.	*Turtur chalcospilos*	Emerald-spotted wood dove
90.	*Upupa epops africana*	African hoopoe
91.	*Uraeginthus bengalus*	Red checked cordon-bleu
92.	*Vidua macroura*	Pin-tailed-whydah

Appendix 3

Observed Plant species

No.	Local Name	Scientific Name	Remark
1	Gimarda	*Acacia polycantha*	Woody/tree
2	Keye girar	*Acacia seyal*	‘’
3	sub sp. A. fistula	*Acacia seyal (A. fistula)*	‘’
4	Diza	*Adansonia digitata*	‘’
5	Yekok inchet	*Allophylus macrobutrys*	‘’
6	Kirkra	*Anogeisus leiocarpus*	‘’
7	Nim	*Azadirachta indica*	‘’
8	Lalo/yelijlige	*Balanites aegyptiaca*	‘’
9	Zembaba/Seniel	*Borassus aethiopum*	‘’
10	Walia meker/Yetan Zaff	*Boswellia papyrifera*	‘’
11	Tobiaw	*Calotropis procera*	‘’
12	Gumero	*Capparis tomentosa*	‘’
13	Chamida	*Combretum collinum*	‘’
14	Aballo	*Combretum molle*	‘’
15	Zobi	*Dalbergia melanoxylon*	‘’
16	Ader	*Dichrostachys cinerea*	‘’
17	Ayeh	*Diospyros mespiliformis*	‘’
18	Korch/Quara	*Erythrina abyssinica*	‘’
19	Bamba	*Ficus sycomorus*	‘’

No.	Local Name	Scientific Name	Remark
20	Warka	*Ficus vasta*	‘’
21	Gambilo	*Gardenia volkensii*	‘’
22	Lenkuata	*Grewia flavescens*	‘’
23	Amekala	*Hygrophylla spinosa*	Herb
24	Fola	*Lannea fruticosa*	‘’
25	Yekolla Atat/Germ Atat	*Maytenus undata*	‘’
26	Touch me not	*Mimosa pigra*	Shrub
27	Checheho	*Muxia congesta*	‘’
28	Waika	*Not idenified*	Herb
29	Aliguangua	*Not identified*	‘’
30	Lieza hareg	*Not identified*	Herb
31	Eub	*Not identified*	‘’
32	Bamboo/Shimel	*Oxytenanthera abyssinica*	‘’
33	Yekolla wanza	*Piliostigma thonningii*	‘’
34	Tikur inchet	*Prunus africanus*	‘’
35	Charia	*Pterocarpus lucens*	‘’
36	Gulo	*Ricinus communis*	‘’
37	Wenahi	*Securinega virosa*	Shrub
38	Kelo sar /Sudan grass	*Sorghum arundiaceum*	Grass
39	Darley	*Sterculia africana*	Woody/tree
40	Zana	*Stereospermum kunthianum*	‘’
41	Dokma	*Syzygium guineense*	‘’
42	Humer	*Tamarindus indica*	‘’
43	Wenbella	*Terminalia laxiflora*	‘’

No.	Local Name	Scientific Name	Remark
44	Enkoy	*Ximenia americana*	‘’
45	Arka	*Zizphus mauritiana*	‘’
46	Foch/Kukura	*Zizphus mucrinata*	‘’
47	Dulata	*Not identified*	Woody/trees
48	Genkila	*Not identified*	‘’
49	Chamita	*Not identified*	‘’
50	Enikur	*Not identified*	‘’’
51	Yelkuk	*Not identified*	‘’
52	Forha	*Not identified*	‘’
53	Hamija	*Not identified*	‘’
54	Gorgoro	*Not identified*	‘’
55	Tervieko	*Not identified*	‘’
56	Serkin	*Not identified*	‘’
57	Hangu/Abetry	*Not identified*	‘’
58	Sholla	*Not identified*	‘’
59	Ensirwy	*Not identified*	‘’
60	Deviker	*Not identified*	‘’
61	Warda farda	*Not identified*	‘’
62	Ankelib	*Not identified*	‘’
63	Chilaya	*Not idenified*	‘’
64	Pia	*Not identified*	‘’
65	Girda	*Not identified*	‘’
66	Andra	*Not identified*	Shrubs
67	Amidolie	*Not identified*	‘’
68	Yejib Abeba	*Not identified*	‘’
69	Sipash	*Not identified*	‘’
70	Yejib shinkurt	*Not identified*	‘’

No.	Local Name	Scientific Name	Remark
71	Wendi	*Not identified*	‘’
72	Aba afiena	*Not identified*	‘’
73	Wega	*Not identified*	‘’
74	Gucha	*Not identified*	‘’
75	Siesie	*Not identified*	‘’
76	Dadinkur	*Not identified*	‘’
77	Kemily	*Not identified*	‘’
78	Yesiet kesit	*Not identified*	‘’
79	Koya	*Not identified*	‘’
80	Yutilla	*Not idenified*	‘’
81	Bieliera	*Not identified*	‘’
82	Hamira	*Not identified*	‘’
83	Hudira	*Not identified*	‘’
84	Enitekaw	*Not identified*	‘’
85	Riejila	*Not identified*	‘’
86	Tamielka	*Not identified*	‘’
87	Higna	*Not identified*	‘’
88	Bartie	*Not identified*	‘’
89	Yeahiya abish	*Not identified*	‘’
90	Tsibik awita	*Not identified*	‘’
91	Maha	*Not identified*	‘’
92	Pewatsie	*Not identified*	‘’
93	Chir	*Not identified*	‘’
94	Gemissa	*Not identified*	‘’
95	Beda	*Not identified*	Herbs
96	Selselo	*Not identified*	‘’
97	Yelbursh	*Not idenified*	‘’’

No.	Local Name	Scientific Name	Remark
98	Papak	*Not identified*	‘’
99	Oppa	*Not identified*	‘’
100	Yewuha enikur	*Not identified*	‘’
101	Kierm	*Not identified*	‘’
102	Diriya	*Not identified*	‘’
103	Hamiet	*Not identified*	‘’
104	Tsigienyehu	*Not identified*	‘’
105	Yabid	*Not identified*	‘’
106	Sefermaek	*Not identified*	‘’
107	Tutuhu	*Not identified*	‘’
108	Shallop	*Not identified*	‘’
109	Duduwa	*Not identified*	‘’
110	Buchalie	*Not identified*	Grasses
111	Topaz	*Not identified*	‘’
112	Al anis	*Not identified*	‘’
113	Kermtsetsy	*Not identified*	‘’
114	Pieniny	*Not idenified*	‘’
115	Yohua	*Not identified*	‘’
116	Feteko	*Not identified*	‘’
117	Gicha	*Not identified*	‘’
118	Bus	*Not identified*	‘’
119	Birgugu	*Not identified*	‘’
120	Gisasa	*Not identified*	‘’
121	Erg wancha	*Not identified*	‘’
122	Berdod	*Not identified*	‘’
123	Al ed	*Not identified*	‘’
124	Buff	*Not identified*	‘’
125	Amisiya	*Not identified*	‘’

No.	Local Name	Scientific Name	Remark
126	Qiello	*Not identified*	‘’
127	Suku	*Not identified*	‘’
128	Devisisy	*Not identified*	‘’
129	Lagio	*Not identified*	‘’

Appendix 4

GPS Location (UTM)

Transect No.	X	Y	Remark
1	**786754**	**1382809**	**Amijalie campsite (starting point)**
	786876	1382636	
	786645	1382988	
	785773	1383375	
	784960	1382977	
	783963	1383618	
	783752	1383760	
	783288	1383580	
	783166	1383581	
	785899	1382185	
	786409	1382175	
	782029	1384630	
	782189	1384848	
	781788	1384707	
	781169	1384787	
	780815	1384512	
	780573	1384609	Alga sambry number 2 (end point)
2	**786754**	**1382809**	**Amijalie campsite (starting point)**
	785374	1380548	
	781287	1373976	
	784476	1379318	

Transect No.	X	Y	Remark
	784391	1379196	
	784323	1379010	
	781902	1375556	
	781290	1373975	
	781363	1374183	Amitish mountain (end point)
3	**790183**	**1350104**	**Megenagna campsite (starting point)**
	789535	1349415	**Megenagna water point**
	789245	1349075	
	787772	1350997	
	787342	1351110	
	786542	1351752	Abandonlaugh sambry number 1
	787300	1351752	
	787631	1351711	
	788114	1350554	Abandonlaugh sambry number 2(end point)
4	**790183**	**1350104**	**Megenagna campsite (starting point)**
	790554	1346366	
	790468	1345668	
	791000	1342570	
	791043	1341482	
	791784	1340867	
	791737	1349100	Wedeliams (water point) (end point)
5	**790183**	**1350104**	**Megenagna campsite (starting point)**

Transect No.	X	Y	Remark
	787661	1352405	
	785764	1354332	
	785321	1355408	
	783593	1357108	Yelkuk water point
	779732	1360965	
	779562	1361069	Shaw (end point)
6	**790183**	**1350104**	**Megenagna campsite (starting point)**
	789535	1349415	**Megenagna water point**
			Demir(end point)
7	**790183**	**1350104**	**Megenagna campsite (starting point)**
	790778	1350575	
	791025	1350711	
	791442	1350817	
	791727	1350889	
	792269	1351033	
	792659	1351155	
	792947	1351206	
	792967	1351247	
	793125	1351245	
	793680	1350997	
	793803	1350941	
	793959	1350917	
	793973	1350918	
	794156	1350946	
	794341	1350865	

Transect No.	X	Y	Remark
	794694	1350688	
	795143	1350594	
	795758	1350815	
	795941	1351118	
	796015	1351155	
	797258	1352236	
	797845	1351622	
	798502	1351279	
	798838	1350826	
	799140	1350254	Nejila water point
8	796779	1321842	Demmo megenagna**(starting point)**
	796605	1322379	
	794831	1321666	
	794240	1321996	
	794117	1322145	
	793131	1321536	
	791599	1320332	Aybeza
	789464	1319074	Awujamis river
	786131	1314896	Tsira river
	774527	1306322	Yagor
	781413	1309063	abulta
	774666	1306375	mogemby
	774339	1306536	Korsilik river
	773068	1307305	
	770512	1307666	

Transect No.	X	Y	Remark
	770312	1307617	Horjimen river
	769758	1306069	Horjimen
	769781	1308219	
	770657	1309976	
	776007	1321767	
	776033	1322353	
	776150	1322944	
	777803	1326114	
	784149	1340674	Demir(end point)
9	800761	1361174	Mehadid campsite**(starting point**
	793417	1359606	Between beacon 5 and 6(end point)
Elephant route	775065	1375259	Jabra
	781363	1374183	Amitish
	784149	1340674	Demir
	779562	1361069	Shaw
			Kerjika
	778663	1325727	Tsiequa
	770312	1307617	Horjimen river
			Abnune

Appendix 5

List of Participants to Awareness creation on Alatish National Park Establishment, Protection and Utilization through tourism.

No.	Name	Responsibility	Kebele
1.	Kasim Belay	Farmer	Mehadid
2.	Zedein Belay	K/Administrator	"
3.	Goraj Tiku	Elders	"
4.	Jemma Sebet	Farmer	"
5.	Beshir Sanito	"	"
6.	Alli Mismar	"	"
7.	Belay Talim	"	"
8.	Tezera Legasso	"	"
9.	Abebe Tilahun	"	"
10.	Melkam Gurba	"	"
11.	Ezzana Sanicho	"	"
12.	Zemen Dagnew	"	"
13.	Muhammed Hussen	Youth	"
14.	Sheh Muhammed Nur	Religious leader	"
15.	Silieman Ahammed	"	"
16.	Mossa Belay	Scout	"
17.	Mebiratu melaku	"	"
18.	Sintayehu Ketele	"	"
19.	Aks Alfin	"	"
20.	Al hedi Alfin	"	"
21.	Mehammed	"	"

No.	Name	Responsibility	Kebele
	Abdurahim		
22.	Zikrie Kerahema	"	"
23.	Alkadir Mossa	"	"
24.	Hamis Alfin	"	"
25.	Eusman Sebet	Farmer	Bermil
26.	Tekilie Badeg	"	"
27.	Tensu Tamirat	Scout	"
28.	Gebeyaw Weretaw	"	"
29.	Birara Worku	Farmer	"
30.	Qies Sitotaw Tekilie	Religious leader	"
31.	Alemnew Yirga	Farmer	“
32.	Tesfahun Nigusie	“	"
33.	Marie Chanie	"	"
34.	Misigie Admassie	"	"
35.	Kiros Bimirew	"	"
36.	Moges Ayalew	"	"
37.	Wassie Asefa	"	"
38.	Tiget Weldu	"	"
39.	Teshale Yazie	"	"
40.	Adigo Bainesa	"	"
41.	Gelagay Melese	Scout	"
42.	Melese Solomon	"	"
43.	Ketemaw Menigist	Farmer	Dizza/Gumz
44.	Melkamu Mebirie	"	"
45.	Yemataw Mekonnen	"	"
46.	Moges Anidargie	"	"
47.	Werkie Amberbir	"	"

No.	Name	Responsibility	Kebele
48.	Adinew Mequanint	"	"
49.	Mengesha Girmaye	"	“
50.	Kassa G/Medihin	"	"
51.	Semegn Atenna	"	"
52.	Azzanaw Yikunu	"	"
53.	Wubie Tirusew	"	"
54.	Tilaye Teshome	"	"
55.	Fikadu Yimmer	"	"
56.	Gonbel Takele	"	"
57.	Mihiretie Alebachew	"	"
58.	Zinabo Ayalew	"	"
59.	Marie Mulie	"	"
60.	Bazzie Tegegne	"	"
61.	Takele Bazzie	"	"
62.	Fentaw Erku	"	"
63.	Gitnet Tadesse	"	"
64.	Sheh Abidu Biruye	Religious leader	Marwuha
65.	Mekasha Abebew	Farmer	"
66.	Muhadin Temitem	"	"
67.	Bediru Hussen	"	"
68.	Tesfa Sitotaw	"	"
69.	Goshiye Betelat	"	"
70.	Nigusu Mehammed	"	"
71.	Fentaw Abebew	"	"
72.	Menigistie Allene	"	"
73.	Ahimmed Sileman	"	"
74.	Abraraw Amare	"	"

No.	Name	Responsibility	Kebele
75.	Abebe Kassa	"	"
76.	Mengesha Gietu	"	"
77.	Wubitu Adugna	"	"
78.	Sefi Yassin	"	"
79.	Maru Aduagna	"	"
80.	Abuye Golla	"	"
81.	Tadesse Wendimu	"	"
82.	Fikreselam Beyene	"	"
83.	Amare Fikrie	"	"
84.	Birhanu Meliku	"	"
85.	Gualu Alemu	Religious leader	"
86.	Hussen Mekonnen	"	"
87.	Ferede Ayitegeb	"	"
88.	Ayinekulu Metalign	"	"
89.	Birhan Yazzachew	"	"
90.	Shegaw Bisetegn	"	"
91.	Birhanu Awaju	"	Derehassen
92.	Yirdaw Gebirie	"	"
93.	Babit Melkie	"	"
94.	Muluken Dagnew	"	"
95.	kenu Aserie	"	"
96.	Mihiret Mekete	"	"
97.	Gebeyehu Worku	"	"
98.	Adibaru Mekete	"	"
99.	Tesfaye Wale	"	"
100.	Tigabu Tefera	"	"
101.	Degu Abie	"	"

No.	Name	Responsibility	Kebele
102.	Zewdie Alemwassie	"	"
103.	Getnet Manahilu	"	"
104.	Semegnew Wubet	Scout	"
105.	Cherie Tsehaye	"	Bambahoo
106.	Asfaw Mekete	"	"
107.	Hailu Asfery	"	"
108.	Gelagay Amisalu	"	"
109.	Abitu Mengisou	"	"
110.	Lissan Gebrie	"	"
111.	Agafari Asfaw	"	"
112.	Mebratie Ayinalem	"	"
113.	Asfery Hunegnaw	"	"
114.	Mekuriaw Ayalew	"	"
115.	Awoke Abitu	"	"
116.	Esuneh Azage	"	"
117.	Tegegne Arefe	"	"
118.	Qies Beyene addisu	"	"
119.	Amisalu Bogale	"	"
120.	Allene Dubale	"	"
121.	Bitweded Addisu	"	"
122.	Yeshiwas Agegne	"	"
123.	Asifaw Yitay	"	"
124.	Molla Arefaw	"	"
125.	Aweke Asirade	Scout	"
126.	Esubalew FeKedu	"	"
127.	Alemie Alebachew	"	"
128.	Kassa Kerkawie	Elders	Baiwa

No.	Name	Responsibility	Kebele
129.	Anderye Ayal	Farmer	"
130.	Ayifiku Ayal	"	"
131.	Gietachew Bezza	Elders	"
132.	Laqew Desta	Farmer	"
133.	Ashiber Addis	"	"
134.	Gelbasu Desta	"	"
135.	Ayenew Muhammed	Elders	Omedla
136.	Eusman Mustefa	"	"
137.	Hamis Abdulaziz	Farmer	"
138.	Babecherie Adem	"	"
139.	Sabit Metor	"	"
140.	Mossa Seid	"	"
141.	Hamas Eusman	"	"

Appendix 6

Workshop participants from different stakeholders on cross- border issues

No.	*Name of participants*	*Sex/M,F/*	*Remarks*
1	Desie Syum	M	
2	Kalkidan Kindu	F	
3	Mekonn Amare	M	
4	Sisay Ayele	"	
5	Asfaw Menesha	"	
6	Ch/In Getnet Altaseb	"	
7	Kasahun Wubshet	"	
8	Zeferu TsegaYe	"	
9	Kedir Seid	"	
10	Shemsu Jemal	"	
11	Birhanu Damtie	"	
12	Tedla Adugna	"	
13	Bisrat Abera	"	
14	As/In Wortaw Almu	"	
15	Almu Jemere	"	
16	I. Amare Jemberu	"	
17	Nega G/kidan	"	
18	Demke Hailie	"	
19	Achenafi Nega	"	
20	Chernet Nerga	"	
21	Gizachew Gebeyehu	"	
22	Nibret Fetene	"	

No.	*Name of participants*	*Sex/M,F/*	*Remarks*
23	Ayenew Demlew	"	
24	V/S Getachew Baye	"	
25	Legese Alemu	"	
26	Silesh Woldie	"	
27	In. Sisay Tadese	"	
28	Bushra Ahmed	"	
29	Tarekegn Abera	"	
30	Aderaw Derso	"	
31	Yirga Mesfin	"	
32	As/In Siltanu Wolie	"	
33	Gizaw W/Michael	"	
34	Fentahun Ayelgn	"	
35	Mengesha Mequannt	"	
36	Nega Fentalew	"	
37	Bicha Ferede	"	
38	Birku Damtie	"	
39	Habtewold Aginche	"	
40	Meron Lakew	F	
41	Ateka Demsash	M	
42	Mandefro Awoke	"	
43	Anguwach Chernet	F	
44	Tesfaye Mekonn	M	
45	Nigusie G/Silasie	"	
46	Tsegaye Gashaw	"	
47	Mekonn Mitku	"	
48	Degwale ManaYe	"	
49	Yohans Mekuryaw	"	

No.	*Name of participants*	*Sex/M,F/*	*Remarks*
50	Umer Ebrahim	"	
51	Melaku Eneyew	"	
52	Desie Ferede	"	
53	Endale Demlie	"	
54	Anteneh Demeke	"	
55	Bahiru Addis	"	
56	Mesafint Kebede	"	
57	Tesfahun Addisu	"	
58	Melkie Bayuh	"	
59	Ggetahun G/Hiwot	"	
60	As/In Ayalew Bantie	"	
61	Alemayehu Demeke	"	
62	Molalgn G/Michael	"	
63	Girmay H/Melekot	"	
64	Asrade Sisay	"	
65	Demas Alemeneh	"	
66	Bantihun Aragaw	"	
67	Amsalu Walelgn	"	
68	Molalgn degefaw	"	
69	Bantihun Demilew	"	
70	Shambel Asmamaw	"	
71	Alefew Mamo	"	
72	Birhanu Gebrie	"	
73	Bekel Zerihun	"	
74	Workineh Hailu	"	
75	Dr. Basaznew Bogale	"	
76	Yiitayew Admasu	"	

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