



**TRANS-BOUNDARY ECOSYSTEM CONSERVATION AND ITS CHALLENGES: THE  
CASE OF GAMBELLA-BOMA-BANDINGILO CORRIDOR**

**MSc THESIS PROPOSAL SUBMITTED TO DEPARTMENT OF WILD LIFE AND  
PROTECTED AREA MANAGEMENT, SCHOOL OF GRADUATE STUDIES**

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## INTRODUCTION AND JUSTIFICATION

The world's biodiversity is shared by countries that are increasingly recognizing the need for effective responses to human influence and climate change impacts through coordinated management and protection of nature beyond national borders (K. Lindsay et al., 2017). According to World Bank (1996) definition, the term transboundary protected areas are relatively large areas, which straddle frontiers (boundaries) between two or more countries and cover large-scale natural systems encompassing one or more protected areas. Currently about 170 transboundary-protected area complexes are found worldwide, involving 113 different countries (Zbicz, 2001). Dhliwayo (2002), also stated that Transboundary or shared natural resources are resources that cross the political boundaries of two more States. Additionally, they are natural resources that are transected in their natural state by a political boundary such as a national frontier (Beyene and Wadley, 2004).

Distribution of natural resources and biodiversity does not respect international boundaries, hence making their management frequently of transboundary character. In Africa, this becomes especially relevant, given that the international boundaries on the continent were largely decided upon in Europe during the “Scramble for Africa” period, having little consideration for local socio-cultural, political and ecological conditions (Reader, 1999).

The United Nations Millennium Development Goal 7 calls for the integration of the principles of sustainable development into country policies and programmes in order to reverse the loss of environmental resources and biodiversity (UN Millennium Development Goal 7, available at: <http://www.undp.org/mdg/goal7.shtml>). Therefore, as an effective platform for ecosystem-based protected areas, this will complement the Convention on Biological Diversity (1992; the Ramsar Convention on Wetlands, (Ramsar, 1971), and the World Heritage Convention (1972). thus promoting a network of ecosystems not only in resource shared states but also throughout the world is necessary.

Plants, animals, micro-organisms, waters, weather systems, and other elements that constitute the environment, including people, do not remain within jurisdictional boundaries. Therefore, issues of common concern arise out of shared natural area, resource system, or migratory species (Kariuki Muigua, 2018).

Transboundary environmental challenges, however, are deemed to be of greater urgency than global environmental issues, and are generally dealt with under the Political-Security Community Blueprint rather than the Socio-Cultural Community. The Non Traditional Security approach is based on the idea of comprehensive security, which refers to those security threats that fall outside the traditional definition of

security involving military intervention. ‘Non-traditional security’ challenges include issues such as drug trafficking, transnational crimes (such as terrorism), transboundary challenges such as pandemics, and climate change disasters that spill over national boundaries.

Under international law, every state has the right to exercise sovereignty over its natural resources found within its territorial borders (Stilz, Anna, 2009). However, natural resources that cross political borders, present a complex challenge particularly in managing environmental threats, and in regulating access to and use of the accruing benefits. As such, international environmental law comes in since no single State can allege to be solely entitled to access, use or manage such shared resources to the exclusion of all the others. All the concerned States must be involved in the management of shared natural resources (Principle 10 of the Rio Declaration on Environment and Development, 1992).

According to Young (2012), protected areas in Ethiopia are gifted with unique wildlife; marvelous topographic land features with accompanying cultural manifestations that are compatible for wildlife tourism and wildlife conservation which in return help keep the functioning and healthy ecosystems which are essential for sustainable development, especially with regards to providing the services that we and future generations depend on for life. Thus, wildlife considerations have to be integrated into any poverty reduction strategy (Nielsen, 2001-cited in CBD, 2007). As a consequence, wildlife protection is being addressed to a far greater extent and increasingly receives global attention.

## **OBJECTIVES**

### **General Objective**

- To investigate trans-boundary ecosystem conservation and its challenges in the case of Gambella-Boma-Bandingilo corridor.

### **Specific Objectives**

- To identify Key Challenges related to Transboundary Ecosystem conservation in the case of Gambella-Boma-Bandingilo corridor.
- To study Transboundary Ecosystem Conservation in the of Gambella-Boma-Bandingilo corridor.

## STATEMENT OF THE PROBLEM

Transboundary Ecosystem conservation is becoming an increasingly the concern of current global Biodiversity conservation communities. The challenges that regional organizations face as they are increasingly confronted with, and need to respond to, ever more frequently, environmental issues that begin as matters of national concern rapidly become transboundary in scope. Transboundary protected area governance is on the rise in Africa. There is still a scarcity of well-documented success stories on how to design and deliver institutionally consistent transboundary outcomes concerning biodiversity and sustainable livelihoods (J. G. Petursson et al., 2011). Furthermore, Wildlife Migrations are wonders of the conservation world; they are indicators for functionality and connectivity of land or seascapes. A species movement promotes nutrient cycling, seed dispersal, prey predator interaction, as well as species fitness and survival. The disruption of wildlife migration phenomena are alarms to an underlying and complicated socio-political and environmental crisis yet to come. For instance, as exemplified by the outbreak of avian flu, and more recently the outbreak of Covid-19, integrated national, regional and international efforts are necessary to tackle transboundary environmental issues which, by their very definition, call for a coordinated effort (Wang & Zhao, 2004). It also contributes to the normal cycle of the ecosystem by consuming herbaceous vegetation and redistributing nutrients via their urine and dung (Lundberg & Moberg, 2003). This has indirect effects on ecosystem processes (e.g. increasing grassland production and raising nitrogen mineralization) (Frank, 1998), and therefore losing migrations may result in ecosystem alterations and possibly collapse. Motivating factors in transboundary ecosystem conservation thinking has to include enhanced protection of viable wildlife populations as well as wildlife-based revenue generation through tourism circuits that link sites in neighboring countries (Vasiljević et al., 2015).

A landscape approach allows a better ecosystem integrity and stability within transboundary protected areas or transboundary conservation initiative while recognizing the intrinsic importance of the human being within the landscape, however it requires the identification and protection of ecological processes associated with ecosystems and focal species, which is another supplementary gap in the case of Gambella-Boma-Bandingilo corridor Trans-boundary Ecosystems Conservation. From the three large terrestrial mammalian migrations in the African continent, white eared kob (*Kobus kob leucotis*) migration of the Boma-Gambella landscape in South Sudan and Ethiopia is still least known, (WCS, 2007; Grossmann and Kasahun Abera, 2013; Malik, 2014; Malik et al., 2018). This indicates that there is a big gap concerning the Ecosystems Conservation and its challenges within the ecoregion.

## **METHODOLOGY**

### **STUDY AREA**

The Gambella-Boma-Bandingilo landscape is an isolated ecosystem on the border between two sovereign states, South Sudan and Ethiopia. It is endowed with exceptionally high biodiversity of renowned global importance (Kassahun Abera. 2018). This landscape represents one of the most bio-culturally diverse areas in Africa. The ecological unit forms a transition zone between the Guinea-Congolian and Somali–Maasai biomes with patches of Afro-montane forests (David and Michael, 2013, cited in Kassahun Abera, 2018). According to WCS (2007), this unique, fragile and little-known wilderness area exhibits the second largest terrestrial mammal migration in the world; i.e., the White eared kob migration, which is comparable to the wildebeest migration of the Maasai -Mara ecosystem between Tanzania and Kenya. WCS also indicated that the total population of white eared kobs in the Boma-Gambella landscape is estimated to be around a million. Out of this number, close to 50,000 are estimated to be resident in Gambella region (Gambella National Park and its surroundings). A considerable population (est. 400,000) is known to forage for resources seasonally between Boma-Bandingilo in South Sudan and the Gambella landscape in Ethiopia. Even though some resource of the area (Specifically the Migration of the White eared kobs within the corridor), are investigated, Most of the Biodiversity and Ecosystem conservation of the region is not yet studied. Therefore, this research will answer the challenges related to this issue.



**Fig.1 Gambella-Boma-Bandingilo Corridors (Source: Copyright © M. J. Kauffman et al., 2021).**

## **STUDY DESIGN**

Mixed research approach will be employed as it provides more comprehensive answers to research questions going beyond overcoming the limitations of a single approach (Creswell, 2003). A cross-sectional study design, (Investigations and data collections will be undertaken simultaneously only at one time) will be selected as it is best suited to study existing situations, problems and phenomena.

## **SOURCES OF DATA**

To realize a significant contribution of the effective use of a variety of data sources, both primary and secondary sources of data will be used to collect the required Information for the study. Questionnaires (both open -and closed -ended), focus group discussion and key informant interview methods as well as personal observation, and at the end, there will be a stakeholders meeting (if situations are good, both from Ethiopia and South Sudan) will be used as a primary data sources. Relevant scientific journals and academic articles, published and unpublished materials describing the area, office reports, documents from concerned institutions, Environment, Forest and

Climate Change office, Ethiopian Environmental Protection Authority, wildlife conservation authority and Regional and Federal Investment Commissions will be used as the major sources of secondary data.

### **DATA GATHERING TOOLS**

Key Informant Interview: Structured and semi-structured interviews will be undertaken with 2 park officials(1 from Ethiopia, 1 from South Sudan), 3 Environment, Forest and Climate Change experts, 2 Wildlife research experts, 2 Scouts, Focus Group Discussion incorporating 9 informants (2 park expert, 1 Natural Resources Management, 2 scouts, 2 local representative, 2 elder), and some open-ended questions will be used for both local and Wildlife professional experts.

### **SAMPLE SIZE AND SAMPLING TECHNIQUE**

Five kebeles found near the buffer zones of the trans-boundary with different households which will consist of the total sample size of about 500 representatives will be selected. The total sample size will be determined using Israel formula (1992),

$$\text{This is; } \frac{N}{1+N(E)^2}$$

Where; N = the total population that will be studied,

n = the required sample size

e = the precision level which is  $\pm 5\%$ , Confidence Level is 95% at  $P = \pm 5$  (maximum variability). A random systematic sampling method possibly will be employed to ensure the representativeness of the study Population (Babbie, 2008 cited in Bith, 2011). To do so, the first household will randomly selected and subsequently every tenth household will be visited. To determine the sample size of each kebele from the total sample size of respondents, percentage (p) may be calculated as total sample size(n) divided by total number of study population(N) (Yallem Endaweke, 2011).

Mathematically, it is expressed as  $P = n/N$

Where; P= percentage, n = the total sample size and N= total number of study population.

### **DATA ANALYSIS**

Quantitative data from the household questionnaires were analyzed by means of SPSS statistical software, using chi-square tests to test the dependence between resources collected and regimes, and ordinal logistic regression to test the linkages between the dependent ordinal variable stakeholder relationships and some



important demographic variables. Relationships will be measured with 5-point Likert-type scales (very good to very bad). MS -Excel will be also used. Narration and descriptions will be employed in the case of qualitative data analysis. The data that will be collected through interviews, focus group discussions and observations will be analyzed systematically by condensing and summarizing information.

### ***RECONNAISSANCE SURVEY***

Reconnaissance survey will be carried out in September 2021 for about five days to be familiar with ground truth of the study area status, and the accessibility of the area. This is also used to identify sampling site, determine sample size and sampling methods that will be used for a major data collection period.

### **EXPECTATIONS**

- ☞ Transboundary Ecosystem conservation challenges in the case Gambella-Boma-Bandingilo corridor will be identified;
- ☞ There will be a detailed quantitative and qualitative data concerning the Transboundary Ecosystem conservation challenges in the region;
- ☞ It will be a great input and make an initiations to conservation researchers in the area;
- ☞ It will bring together stakeholders and Intergovernmental organizations in the Transboundary ecosystem conservation in the area.
- ☞ Finally, it will be an input for the development and policy makers in the region.

### **STUDY SCHEDULE**

The study will be accomplished from August 2021 to February 2022. the major research activities will be performed during the specified time schedule as follows

**Table 1. Activity schedule with respect to Months**

No.	Activities	Aug	Sept	Oct	Nov	Dec	Jan	Feb
1	Proposal writing							
2	Submission of draft proposal							
3	Final Proposal submission							
4	Field reconnaissance survey							
5	Preparation of data collection tools							
6	Data collection							
7	Compiling and changing Manual data to computer							
8	Analyzing Data							
9	Writing actual thesis							
10	Submission of 1 <sup>st</sup> draft thesis							
	Submission of final thesis and defence							
13	Submission of Final thesis paper							

## BUDGET BREAKDOWN

**Table 1. Budget requirement and cost breakdown**

### I. Stationery materials

Items category	Measurement	Quantity	Unit cost (in birr)	Total cost	Remark
Printing	Pages	320	5	1,600	
Binding	Number	4	30	160	
External Hard Disk	Number	1	2500	3000	To secure data
Printing Paper	Pack	4	300	1,400	For questionnaires
Pen/pencil	Pack	1	80	80	
Note book	Pack	12	25	300	
<b>Sub-total I</b>			<b>6,540</b>		

### II. Transportation cost

Flight ticket	Days	2	(2000*4), go and return Back	8000	1 <sup>st</sup> term for reconnaissance survey, 2 <sup>nd</sup> term for data collection
Vehicle rent	Number	1	3000 birr per day for 30 days	90,000	During data collection
Driver	No	1	600 x 30 x 1	18,000	
Fuel	Litre	1500	23birr*1500 L	34,500	
<b>Sub-total II</b>			<b>150,500 Birr</b>		

### III. Per diem cost

Researcher	No	1	1000 x 60 x 1	60,000	All costs needed for the researcher are included here
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Data collectors	No	2	600 birr x 30 x 2	36,000	
<b>Sub-total III</b>				<b>96,000</b>	
<b>Sub-grand total</b>				<b>253,040</b>	
<b>Contingency (5%)</b>				<b>12,653</b>	
<b>Grand total</b>				<b>265,693</b>	

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## CURRICULUM VITAE (CV)

### 1. Personal Information

- Name : **Tolera Sori Debessa**
- Sex: Male
- Date of birth: January 23,1990
- Place of birth:, , A/Coman woreda(Fincha), Horo Guduru Wallaga zone, Oromia ,Ethiopia
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- E-mail : [abdi.lamisaf@gmail.com](mailto:abdi.lamisaf@gmail.com)

### 2. Educational Background

- ☞ Higher Educational Institute: ***Haramaya University, Haramaya (2009-20011)***
- ☞ 9 up to 12 Grade at Fincha Secondary and preparatory school , Fincha (2005-2008 )
- ☞ 1-8 Grade: Achane Primary and elementary School(2001-2004)

### 3. Profession:

- **Bachelor Of Science In Applied Biology** From Haramaya University On July 09, 2011
- Certificates:
  - **GIS –ARC GIS** for Natural Resource management and socio economic Development planning from Addis Ababa University
  - **SMART** conservation Training

**4. Work Experience:** - **Sevev (7)** years of working experience on a position ***wildlife and their Habitats Researcher*** at Ethiopian Wildlife Conservation Authority, Abijata Shalla Lakes National park

- Freelance Bird guide
- Conducting research on wildlife issues with national and international researchers.

### 5. Language proficiency:

- ❖ Afaan Oromo- Mother tongue and Regional working language

- ❖ Amharic –My 1 working language , Excellent communication(speaking , Listening, Reading and writing)
- ❖ English- Excellent communication(speaking , Listening, Reading and writing)

## 6 . Publications

- ☞ Large-scale versus small-scale agriculture: Disentangling the relative effects of the farming system and semi-natural habitats on birds' habitat preferences in the Ethiopian highlands.
- ☞ Habitat preferences of the Ortolan Bunting (*Emberiza hortulana*) in its prime wintering grounds, the cereal dominated Ethiopian Highlands.
- ☞ High grove cover and heterogeneity of field sizes promote bird beta-diversity at larger scales in Ethiopian Highlands (in Publication process).

## 7 . Reference

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