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**SWM SUSTAINABLE
WILDLIFE
MANAGEMENT
PROGRAMME**

A socio-anthropological study on wild meat consumption in Binga district, Zimbabwe

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SUSTAINABLE WILDLIFE MANAGEMENT (SWM) PROGRAMME

Millions of people depend on wild meat for food and income. Wild meat is an important source of protein, fat and micronutrients, particularly for indigenous peoples and rural communities in tropical and subtropical regions of Latin America, Africa and Asia. The demand for wild meat is growing, especially in urban areas. If hunting for wild meat is not managed at sustainable levels, then wildlife populations will decline and rural communities will suffer increased food insecurity. Recent studies have shown that overhunting for food is now threatening hundreds of wildlife species with extinction.

Between 2018 and 2024, the Sustainable Wildlife Management (SWM) Program will improve the conservation and sustainable use of wildlife in forest, savannah and wetland environments. Field projects are being implemented in 13 countries and aim to:

- improve how wildlife hunting is regulated
- increase the supply of sustainably produced meat products and farmed fish
- strengthen the management capacities of indigenous and rural communities
- and reduce demand for wild meat, particularly in towns and cities

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For further information: www.swm-programme.info

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ABSTRACT

This report provides a socio-anthropological approach of the food consumption habits of the Tonga people living nearby conservancy areas in Binga district (Zimbabwe), in the KaZa site of the SWM programme (<https://www.swm-programme.info/>). It documents the type of food consumed, the practices for purchasing, preparing, sharing food, and the social and cultural values rooted in the local food consumption patterns. It focuses on wild meat and other wild products.

The study highlights, that despite the importance of livestock in the area, the production of meat is low, and is mostly traded on more attractive markets. The abundant production of fish from the Kariba Lake little benefits to the local consumers. The purchasing power is low, and the wild resources (meat and other flesh food, fruits and vegetables) are important in contributing to the diversity of the food diet, but also as part of the local culture and the social life. Wildlife also supports coping strategies to face food insecurity and crisis, as shown by the Covid-19 events.

This study allows measuring the gap between the present situation and the quantified objectives of the SWM project: 1) wild meat represents approximately 26% of the meat consumption when the objective is 10%; 2) 20% of the households have three meals per day throughout the year when the objective is to reach 80%.

The diagnosis also provides clues to finetune and achieve these objectives: Wild meat is not just “proteins”, and alternatives to wild meat consumption should address the different functions of food (nutritional but also economic, social, cultural, hedonic). The objective to reduce wild meat consumption should take into account the diversity of the species consumed (insects, rodents, birds, frogs, etc.) and be adapted to the related conservation issues (are these insects, rodents, birds, etc. endangered or resilient species?). Improving meat or fish availability will not be enough to increase local food consumption since the purchasing power is low and the local market structures are weak. The development of alternative sources of meat can support the local food security and the conservation issue, but also needs to contribute to the local fragile economy by integrating the most vulnerable economic stakeholders (rather than competing with them). The next steps should be to address more precisely the diversity of the consumers’ profile, and to quantify their consumption.

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1. INTRODUCTION

This document¹ describes the food system of the BaTonga people living in Binga district (Province of Matabeleland North, in Zimbabwe). This description focuses on rural households, their food consumption habits, the way they purchase, prepare, share food, and the social and cultural values rooted in their food consumption patterns. In particular, this study sought to highlight the consumption of wild meat and other wild food, as part of this local food system.

This description relies on studies carried out from April 2019 to September 2020. The methodological and conceptual framework is based on socio-anthropological approach described by Figuié and Lepiller (2020)². The present document is a compilation of previous intermediary reports written by the coauthors³.

This document gives a first in depth description of food consumption habits, including wild meat, in a district regularly pointed out as one of the most vulnerable in terms of poverty and food insecurity, and exposed to numerous shocks and hazards such as droughts, floods, epidemics diseases, wildlife predations. It highlights the importance of wild resources (flesh food, fruits and vegetables) in contributing to the diversity of the food diet, but also as part of the local culture and the social life.

2. AREA OF THE STUDY

Binga is a district in the North Western part of Zimbabwe under Matabeleland North province (figure 1). It was previously part of Sebungwe district (Binga, Gokwe and Nyaminyami) but is now organised into 25 wards. It shares borders with Hwange district in the South, Gokwe south in the North east and Lupane district in the South East. It is at the border with Zambia separated by Kariba dam and the Zambezi River. This district has an estimated area of 13 338 km², approximately 4 338 km² taken up by national parks, forestlands and water bodies.

The SWM project covers three wards, wards 3, 4 and 5 (figure 1 and table 1) that represent 8% of the district population.

Elected councilors and executive officers form the Binga Rural District Council. The District Development Coordinator is an additional layer of authority, which official mission is to manage district development plans. Chiefs and Village Heads are the traditional layer of authority overseen by the District Development Coordinator's office.

¹ It is based on studies carried out under the (R4.1.A2) component the SWM program.

² Figuié, M., and Lepiller, O. (2020). "Methodological guide for a sociological and qualitative study of wild meat consumption. Report for the SWM project, Montpellier, CIRAD-FAO-WCS-CIFOR.

³ R4 SWM internal reports for Binga: Dzingirai, V. (2019). "The sociology of domestic and wild food consumption in Zimbabwe with specific reference to meat consumption in Binga component under KAZA", Dzingirai V. (2020). "Exploratory study on the impact of COVID on food consumption in Binga". Figuié, M (April and July 2019). "Explorative study of wild meat consumption in Binga". Field mission reports. Munsaka L. (2020) "Wild meat consumption in Binga district wards 3 and 4, a sociological anthropological study".

Figure 1: Area of the SWM programme in Zimbabwe: wards 3 (Sinampande), 4 (Sinansengwe) and 5 (Sinakoma) Binga District, Matabeleland North, Zimbabwe.

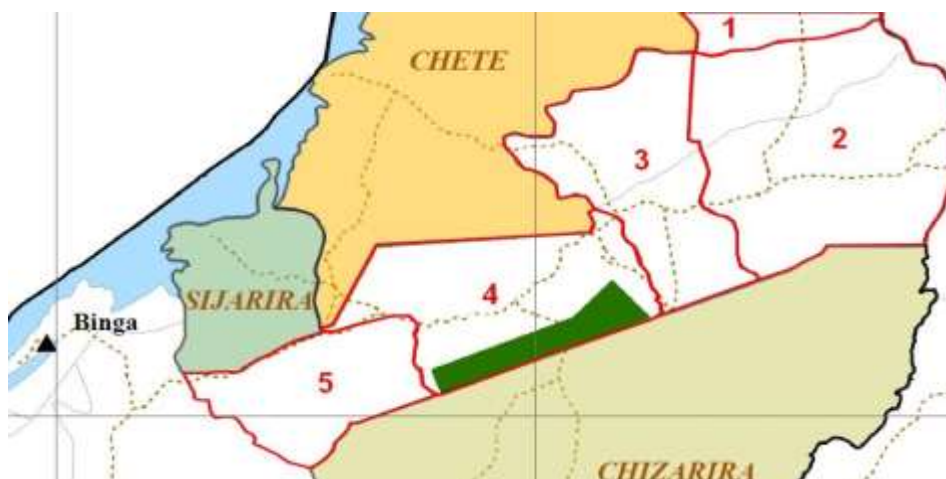


Table 1. Characteristics of the different wards, based on WFP and FNC (2016)

	Ward 3. Sinampande	Ward 4 Sinansengwe	Ward 5 Sinakoma
Agro-ecological region	Region V. Low and very erratic rainfall per annum (below 450mm), poor soils and topology, suitable for cattle ranching.		
Population (projected 2016), % of the district	5 082 (3%)	3 571 (2%)	4 795 (3%)
Poverty rates %	87.2	86.4	88.5
Irrigation schemes	None	2 ha for 30 holders	None

a) BaTonga People: “the People of the Great River”

The BaTonga people, also known as the “People of the Great River” are settled in Zimbabwe and Zambia along the Zambezi valley, where they represent the major ethnic group⁴. During the colonial period, the area was isolated and neglected (no school, no clinic, no vaccination campaigns...). Child mortality was extremely high (60 to 80% of children died before 5 year old) and life expectancy was very low due to numerous diseases such as malaria, tuberculosis and bilharzia (Tremmel 1994). Later, they also suffered from multiple development initiatives, which did not benefit to the area. Of particular mention is their displacement from the Zambezi River to give way to the Kariba Dam in the late 1950’s (Colson 1969) whose main objective was to supply Harare with water and electricity. As if that were not enough, conservation and protection programs led to the establishment of Chizarira and Chete Safari Area declared as non-hunting reserves in 1958 (Dzingirai 1994, Weinrich 1977).

Families who lived on both sides of the river found themselves separated by the Kariba Lake and the safari areas. They lost access to water and to the fertile fields along the riverbanks. Moreover, Ba Tonga people had a strong spiritual relationship with the Zambezi river (associated to the River God Nyaminyami) and with wildlife, in particular through fishing and hunting traditions. Their displacement from the riverbanks and the ban on hunting turned upside the material basis of their life and culture, and enforced them to shift for a new food system.

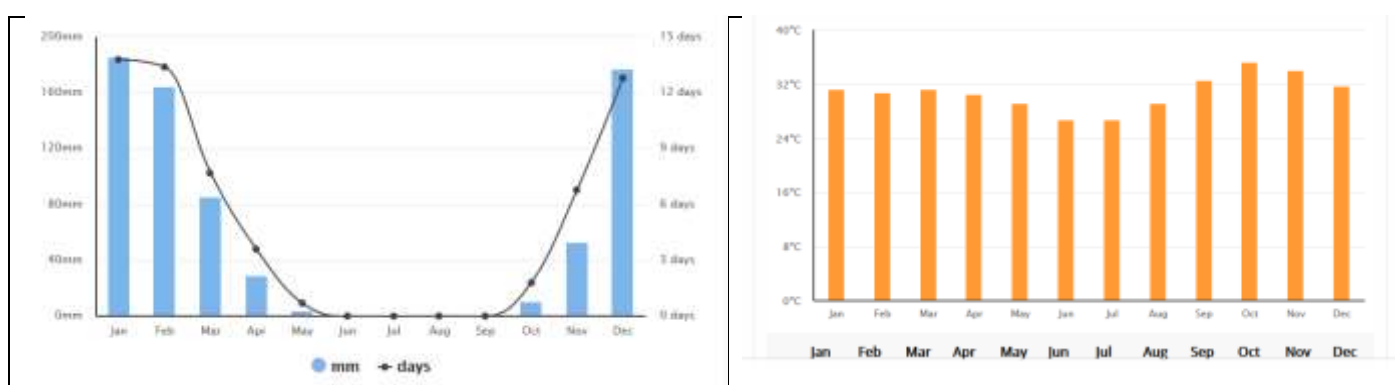
⁴ Nowadays, BaTonga people is still the dominant ethnic group of the area. However, they are a minority in Zimbabwe, with 12% of the total population people (with 70% for the Shona and 20% for the Ndebele) (Zimstat 2012). The BaTonga people stretch from Chirundu, Kariba, Mola, Binga to Victoria Falls though quite a large number of them are settled in Binga.

b) Binga District: a poor rural district

Nowadays BaTonga represents the major ethnic group in Binga (but a minority in the country). The total district population is of 139 092 (males 63736, females 75356), the majority (93%) being settled in rural area, with a district population density of 10.43/km² (ZimStat 2012, last census). Most wards of Binga districts (including wards 3, 4 and 5) fall under the agro ecological region V. This region is characterized by “Low and very erratic rainfall per annum (below 450 mm), poor soils and topology, suitable for cattle ranching” (table 1), with less favorable agro-ecological conditions in wards 3 and 5 than in ward 4 [(WFP and FNC 2016) and annex 1]. Temperatures are high (figure 2) plummeting up to 42 degrees in summer. The area is regularly affected by drought and flooding.

Figure 2. Average rainfall and number of rainy days per month. Average monthly peak daytime temperatures at Binga

<https://www.weather2visit.com/africa/zimbabwe/binga.htm>



Binga district only has one farming sector, which is communal areas⁵ (i.e. subsistence farming). Livelihoods in the district revolve around food crop production (maize, sorghum and pearl millet) and small cash crop production (vegetables and cotton). However, due to drought and the economic crisis in Zimbabwe, the fragile local economy is declining leaving casual labor and remittances as the major sources of income.

The district is one of the least developed districts in Zimbabwe ranking as the third poorest in the province with a poverty prevalence rate of 88% (relatively high compared to the national rural average of 68%). The district is among the district with the Highest Food Insecurity Levels, regularly affected by hunger period. The lean season is long, from September to March (figure 3). Access to water, electricity, health care and education is still limited (WFP and FNC 2016).

c) Conservation and Protectionism

Binga is home to multiple conservation and protection projects. It is part of the Kavango Zambezi Transfrontier initiative (KAZA). The SWM project wards Sinakoma (5), Sinansengwe (4), and Sinampande (3) are hedged by protected areas: Chizarira National Park in the south east, Chete Safari Area and the Sijarira Forest in the north-west. These areas are divided into 3 hunting concessions for safari hunters and subsistence hunting is illegal. The landscape itself is wild with extensive vegetation, worms, birds, rodents and other forestry resources thus potential food sources for the local people. There are also complimentary development organisations, which mobilise local people for development through local natural resources. These include Binga Craft Centre, Intengwe Community Development, Zubo and Basilizwi Trust. The wild resources are managed by Binga Parks and Wildlife Authority.

⁵ In Zimbabwe, farms and farming areas are classified as commercial farms, farms in resettlement areas and farms in communal lands.

Figure 3. Seasonal calendar in Binga (source: authors based on Fewsonet)

Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
							Rainy Season				
					Lean season						
Harvest time (cereals)				Land clearing		Land preparation					
	Vegetable Gardening production			Winter Harvest (irrigation schemes)*							
			Cotton picking and sales					Cotton planting			

*irrigation schemes in Kariyangwe (ward 15), Nabusenga (ward 2), Manjolo (ward 7), and Siansudu (ward 9).

3. METHODOLOGY OF THE STUDY

A socio-anthropological approach of food consumption was adopted (based on the methodological guide Figuié, Lepiller 2019). Data were collected using an ethnographic perspective, and employing a mix of qualitative methods to gather information from a wide range of perspectives, including observing and interacting with the stakeholders of the local food system. This methodology intended to overcome, as far as possible, the difficulty in studying activities that are largely illegal, i.e. wild meat consumption. From April 2019 to September 2020, we implemented the following activities:

- **a desktop review⁶** of secondary data available on wild meat consumption in Zambia and Zimbabwe [and reported in Lepiller and Dutilly (2018)]
- **In-depth face to face interviews** with a) experts on the Tonga people in Binga, Harare and Bulawayo, and with local authorities in Binga and b) with members of rural households, mainly women in charge of preparing food (35 interviews Binga)
- **Focus groups discussions (FGDs)** with youths, hunters, women in charge of preparing food, elderly, head of households (8 focus groups)
- **Participatory observations** were strategically done in households (kitchen and garden) and market areas.

During these FGDs, interviews and participatory observations, we had several themes: agricultural and economic activities, hunting activities, food, cooking and eating activities) [reported in Figuié et al. (2020)]. Food dairies are currently being collected among a set of 30 households, for further quantitative analysis⁷; we only mentioned here some preliminary results of this study. Additionally, a quick survey was conducted in September 2020 for a rapid assessment of the Covid impact (20 interviews in Binga). Participatory observations and in-depth interviews involving one member of our team belonging to the community (L. Munsaka, a Tonga researcher from Binga) had advantage of breaking down the barrier between interviewers and interviews and increasing the reliability of the collected data.

⁶ as part of R4.1.A1 “Analysis and exploitation of existing national consumption and nutrition surveys”.

⁷ as part of R4.1.A3 “Quantitative survey to assess the consumption level of wild meat food in relation with different types of species”.

Table 2. Data collection tools used for this study

Survey and time period	Type of tool	Sample size	Information collected
April 2019, July 2019, January and February 2020	Interviews	35 respondents (Ba Tonga experts, Local authorities, consumers, traders)	General information on Ba Tonga culture and on the foodscape in Binga.
July 2019, January, February and March 2020	Focus groups	8 focus groups (youths, hunters, women in charge of preparing food, elderly, head of households)	Food inventory, meat consumption habits and preferences, hunting practices
September 2020	Interview with key informants and rural households	20 interviews	Impact on COVID on household food consumption and coping strategies; Impact on wild products consumption
In progress	Food dairies	60 households (20 households / ward)	Socio economic data, food consumption habits (purchasing, processing, storing, sharing), food dairies, focus on meat and wild meat

To describe the food consumption patterns and the specific role of wild meat and other wild products, the presentation of the results of this study is organised on the following topics:

- **WHAT** are the products consumed?
- **WHO** consumes them?
- **HOW** are they consumed?
- **WHEN** are they consumed?

The conclusion focuses on the determinants of theses consumption (**WHY**) and on the main outputs lessons for the SWM project.

4. WHAT? EDIBLE SPACE, FOOD CULTURE AND PATTERNS

a) Local food inventory and the edible space

A comprehensive inventory of the food items consumed locally has been completed and is available in annex 4, with their local names. Such lists are useful to prepare further quantitative surveys. Table 3 presents the main ones. This inventory indicates the presence of wild resources: wild meat, wild fruits vegetables and tubers and testifies that the wild space offers numerous resources for the local food diet.

Table 3. Food groups and main food items consumed in Binga (source: authors)

Food groups	Main food items of this group
cereals	Maize (zipoka), sorghum (maila), millet (nzembwe), sesame seed (bweemgo)
vegetables	okra, blackjack, chourmolia, rape, "giant vegetable", pumpkin, butter nut, onion, tomato, leafy vegetables (nyevhe, cowpeas leaves, pumpkin leaves)
meat, poultry and offal	Chicken (nkuku), goat (mpongo), guinea fowl (nganga), beef (ngombe)
fish	bream, Jackson's Corner, tigerfish, catfish, tilapia, mubondo, tuchele
pulses, legumes and nuts	cow pea grain, groundnuts, bambara nuts
root and tubers	sweet potatoes
fruits	banana, pawpaw, mango, citrus, watermelon, guava
milk and dairy products	cow milk
eggs	chicken eggs
oils and fats	industrial oil, local animal fat and vegetal oil
sugar	industrial sugar, honey, sugar cane*
condiments and drinks	traditional (maize and sorghum) and industrial beers, tamarin, tea
wild meat	Insects, rodents, birds, toads, worms (vungu), toads, squirrels, rabbit, tortoise
wild fruits	nkula, baobab fruits (mabuyu), tamarind (busikka), mndoza, Shuma, tsvubvu, nthovwa, inji
wild vegetables	wild okra (delele), Amaranthe, Corchorus sp., Bidens pilosa, Zakalanda, syuungwa, syalundu, bbonko, Tende, kandongondo Moringa, baobab leaves, chisyu, namunywa, munsale, matanga, telele/Mudele
wild mushrooms	Tsuketsvuke, Firifit, Nzeve, Ndyu, Boowa
wild tubers	Makuli, gompe/gombe, mwanja, sozwe, Kabombe

*Sugar plantation in ward 4

Wild meat includes mammals, reptiles, rodents and birds, fish (from lake, ponds, and rivers), insects, toads and worms. The comprehensive inventory in annex 4 (based on the focus group discussion) shows the presence of large mammals like buffalo and hippopotamus. However, their presence on the inventory does not mean necessarily that they are consumed regularly, or even that there are consumed nowadays. It indicates that they belong to the local food culture. The participatory observation in the households (Food dairies) indicates a more limited diversity in wild meat consumption detailed in a table 4.

All comestible "food", available locally does not necessary belongs to the food culture. Food consumption does not only depends (and not necessarily) on their nutritional value or absence of toxicity. It also is influenced by their symbolic and social values that defines the "edible space". These values are related to the culture, the taboos and norms that transcend the sphere of the food consumption.

Table 4. Main wild species consumed in Binga, wards 3 and 4 (source: authors)

	Local name
Small mammals	
Rabbit/ Cap hare	Kasulwe
Tortoise/ Mountain tortoise	Fulwe
Impala	Insya
Squirrel	kaale
Wild pig	Kabondwe
porcupine	Nuungu
Fish	
Bream	Bbilimu
Catfish	Mubondo
Kapenta	Matemba
Mackerel	Tuchele
Tiger	Bbambala

Toads	
Bullfrogs	Maande
Insects	Inswa
Locusts	Nswabanda, Nsozi
Caterpillars	Mawungu
Birds	Tuyuni
Quails	kwale
Quelea	nswanswa
Rodents	
Mice	Mbeba
	Nteele
	Mabbende
Rats	Koswe

b) “Bad and good” food: Disgusts, cultural and social norms, collective preferences

Meat is highly value in Tonga culture. Its consumption symbolizes wealth, and slaughtering and preparing a chicken or a goat is way to honor a guest. On the other side some food, despite being present locally and comestible are not consumed (e.g. donkeys, dogs..., or Mopane worms for the Seventh Day Adventists): they are a source of disgust. Consumption of some other food may be restricted by religious norms or other collective beliefs (e.g., one cannot eat the animal totem of her/his mother family).

These restrictions are numerous when it comes to animal and meat (and rare for vegetables or fruits), specially for wild meat. Collectives preferences (or avoidance) for food can be driven by magic thinking according to which the eater is supposed to acquire the qualities (bad or good) associated to the animal, or the part of the animal. In many cultures, including in Tonga one, consuming meat is supposed to give strength to the eater, particularly when it originates from wild and strong animals. Box 1 presents other examples of magic thinking.

Box 1. Examples of the symbolic value of wild meat and magic thinking (sources: interview with Eliot Simonga, Bulawayo and Chief Sinakatenge, Binga)

Memory: There is a set of foods regarded as memory boosters. Consumption of these foods enables the eater to recall issues and matters that are linked to the survival of the family, such as places where forest products or hunted animals can be found. Meat that have this memory function include the elephant brain.

Longevity: Some other foods are supposed to increase life expectancy. These foods includes tortoise meat and its eggs. According to Tonga people, such meat prevents from premature death, one person citing the example of his century-old father who habitually ate tortoise. Moreover, as tortoise recoils into its shell for her protecting from potential enemies until trouble passes, its consumption according to Tonga people is supposed to encourage the eater to avoid confrontation with opponents.

Balance of emotions. Some offals are supposed to have the potential to affect the emotions of who consumes it. The sheep's lungs are supposed to turn the eater anxious and nervous. In contrast, liver makes the eater stable and stoic, and that is why adults who need to keep calm and have to face daunting challenges are recommended to consume it. Some hunters also say that eating the heart of a sheep would encourage cowardice, which is a highly despised value in this tribal community

Bravery can be enhanced by consuming specific food, such as meat of a crocodile, eaten by women to protect them from attacks during fishing. It is also said that hunters used eat and smear themselves with the fat of dangerous animals like lions. Those who do so allegedly would develop the bravery of a lion, and could hunt in places feared by other hunters.

Death. The sick person wanting to communicate his imminent departure is said to ask for baboon meat. Similarly, very old people who are tired of life often communicate their wish to die through asking and eating baboon meat.

Food taboos are also a driver of food behaviour. The non-respect of these taboos would challenge the identity and stability of the social group the eater belongs to. The most universally shunned food is one's totem. In Tonga people, this only applies to the mother's totem (elephant, kudu...) and the father's totem can be eaten without any compunction. This reflects that BaTonga is a matrilineal group. Box 2 indicates other food taboos.

Box 2. Food taboos among Tonga People (sources; interview with Eliot Simonga, Bulawayo; and Lucy, Binga Museum)

Fish. Some fish should not be eaten since they are associated with the tribal history. The tiger fish, cat fish, and all snake-like fishes are associated with the River God, the Nyaminami, and should not be eaten, at least not their head which is the essence of the River Spirit. In addition, greater care must even be taken when preparing them, making sure that the fish is not defiled, through drying it with non-sacred fire. Killing or eating these fishes is showing contempt to one's history.

Elephant. Also considered bad food is meat from those animals which are considered to have an intimacy with the group at large. The elephant, which the Tonga say is one us because of their matriarchal behavior, should not be eaten except under very exceptional circumstances such as starving period or when the animal has been shot by sport hunters and leaving it to rot might be an offensive waste. In those circumstances, the elephant must be eaten humbly, taking care not to touch the key organ that makes up the elephant: the brain. Those who eat the forbidden parts do not show respect to one of the fountain and foundation of all life: motherhood.

Lions and hyena. Animals who feed at night of human flesh should not to be eaten. This includes hyenas and lions (despite the magic thinking associated to lion, see box 1). This taboo could be related to the fear of indirect anthropophagy. But locally, the fear of these animals is associated to witches and giants - bad people in short - that roam Tonga settlements at night. Eating them will challenge the border between humans and non-human.

Some food items, are avoided or preferred according to the sex or the age of the individual (see annex 5), reflecting magic thinking but also the local perceptions of the role of food in health and as medicine.

The stories recorded by our team on magic thinking and taboos are numerous. They refer to cultural, religious and social norms that are not necessary enforced in the daily practices, or that were forgotten in particular by the youngest and when the food has disappeared from the foodscape (e.g. lions). Therefore, their concrete impact on hunting behavior is unclear.

c) Receipt and the culinary culture

The importance of wild resources as food is also highlighted from local culinary practices and culture.

Cereals, mainly porridge of maize known locally as Nsima' (or sadza in shona), and boiled vegetables are the basis of the diet all year round. Nsima is the most common way to prepare cereals: it is a thick porridge, commonly known as "for evening meal". A liquid porridge is consumed with sugar in the morning. The cereal used is mainly maize. Small grains (sorghum, millet) are less preferred than maize, their preparation is more time consuming. One respondent (from Sinansengwe ward) even confessed to never have tasted sadza made from small grain meal. (Upon inquiry the researcher found out that, the household had no Tonga upbringing whatsoever since the mother was Ndebele by origin). However, a dent of the existence and preferences of traditional food among the people was revealed by consumption of sadza made of a cereal known as '*mpunga*' (recorded in one household from Sinampande ward). It generally comes with boiled vegetables, including wild vegetables and mushroom for households close to forest areas. One participant in one of the focus group discussions could not help her smile as she recalled the long forgotten wild vegetables as we were setting up the food inventory. From once to two times a week, meat, fish or eggs (including guinea fowl eggs in Sinansengwe) can be served with the usual nsima and vegetables (Table 5).

Table 5. The different ways to prepare animal products (meat, eggs, milk) meat in Binga rural households (source: authors)

Nyama yazivubwa		preparation	ingred ients
Ngombe	Beef	boiled and fried/smoked	meat, salt, oil, tomatoes,onion.
Mpongo	Goat meat	boiled and fried/smoked	meat, salt, oil, tomatoes,onion.
Nkuku	Chicken	boiled and fried/grilled/smoked	meat, salt, oil, tomatoes,onion.
Nkanga	Guineafowl	boiled and fried/grilled/smoked	meat, salt, oil, tomatoes,onion.
Chisabi chamayi	Eggs	boiled/fried	eggs, oil, tomatoes, onion.
Malili masase	Sour milk	put away in sealed container overnight.	milk
Malili mawuba	fresh milk	added to tea, porridge, ate with sadza.	milk

Annex 6 provides a full list of the local receipts. It includes the different ways to prepare cereals (sadza, samp, porridge, and bread), vegetables, beverages, and meat. This list shows the importance of wild resources: they are present as ingredient, in more than half of the recorded receipts: wild meat but also and mainly vegetables and mushroom, wild fruits (used for the preparation of many beverages), nuts (including for preparing cooking oil), tubers and honey. The table 6 is a selection of the receipts including wild products.

The consumption of wild tubers is limited. Wild tubers, like '*gompe, mwanja*', were said to be a last resort. The young folks seemed to have no culinary detail and knowledge of the wild tubers and in fear of failure to distinguish the poisonous from edible ones chose to refrain from its consumption. Mushrooms are potentially dangerous foods and only experienced women are counted upon to gather these⁸. Wild fruits are important, for preparing beverages as mention, but also for boys and girls who consumed them on their way to school. Describing his typical gathering adventures, Syankoli an energetic sixth grader makes a concluding statement "*the wild takes care of its own*".

Table 6. Local receipt in Binga that include wild products (meat, vegetables, fruits, tubers...), (source: authors)

English Name	Local Name	Types	Preparation	Ingredients
Sadza	Nsima			
	yaGompe	Wild tuber	wash tuber, peel it off, bring to boil in water with ash, throw away water 5-8 times or till tender, mash into thick porridge.	Gompe, ashes, water
	yaNsyu	Nuts	peel off, dry and use powder as meal	nsyu, water
	yaSozwe	Wild tuber	as above	Sozwe, ashes, water
Porridge	Lweele			
	Cintobola	Tamarind	soak tamarind in water, then bring water to boil, add mealie meal	maize/sorghum/millet meal, tamarind

⁸ Interview with Sam Mwinde, Binga, 12/4/19.

			and ash to boiling water and stir till cooked.	
	Lwabbuyu	Boabab	soak boabab fruit in water, bring water to boil, add mealie meal to boiling water and stir until cooked.	maize/sorghum/millet meal boabab fruit.
	Lwansikili	Lwansikili	soak the nuts in water, bring water to boil, add mealie meal to boiling water and stir until cooked.	maize/sorghum/millet meal, nsikili nuts.
	seseko	maize meal	add mealie meal to boiling water and stir till cooked	maize/sorghum/millet meal, sugar/honey.
	LwaNdikka	Cereal porridge		
Bread	Cinkwa			
	Mwaaneenji	inji	mix millet meal with dried inji then pound in mortar and pestle, remove and sieve away seeds, add water in sieved mixture and crush until smooth enough make desired loaf shape.	dried inji, water.
Cereals and legumes	Coonde	bweengo	crush bweengo grains, roast and add salt to taste, serves as relish	roasted bweengo
Beverages and teas	Zinwigwa			
	Muyaya	mahewu	mix mealie meal with buswezyo, leave to ferment overnight.	mealie meal, sorghum, buswezyo, water
	kabombwe	wild tuber tea.	wash and peel off tuber, bring to boil in water with ashes, rinse and boil again 5-8 times, use juice to drink.	tuber, water, ash.
	Tea yabusikka	tamarind tea.	add tamarind fruit in boiling water, add sugar/honey to taste.	water, tamarind, sugar/honey
	Mulondo	boabab juice	soak boabab fruit in water/milk, add sugar/honey to taste.	water/milk, boabab fruit.
	Loondwe/Mubbwilibw indo	tamarind juice.	soak tamarind fruit in water, add sugar/honey to taste.	water, tamarind, sugar/ash.
	Ciluumbu	mbubu	soak mbubu fruit in water, add sugar/ash/honey to taste.	mbubu, water, sugar/ash/honey.
Vegetable oils	Mafuta acintu			

	Butwido/Musunkwidi	pumpkin seed powder, boabab seed powder.	crush pumpkin seeds into powder, add powder in relish.	roasted pumpkin and boabab seeds
	Bulovu	tree nut liquid	soak nuts overnight, add liquid into relish.	nsikili nuts.
	Mukungu	Soda	burn boabab shell, soak the ashes in water, use the liquid to make okra.	boabab shell, water.
Wild vegetables	Zisyu zyamusokwe			
	Telele	Okra	bring water to boil, add homemade/carbonated soda, add okra.	mudelele, soda, salt
	Zisyu zilimenena (Recipe 1)	boiled with pumpkin.	boil leaves with pumpkin till tender.	syuungwa leaves, pumpkin, salt.
	Zisyu Zilimenena (Recipe 2)	fried	add tomatoes and onion in greased pan, add boiled and tender syuungwa leaves in pan to cook.	syuungwa leaves, cooking oil, salt
Wild meat.	Nyama yamusokwe			
Edible Insects	Nswa, Nsozi, Nyenze	Insects	Roasted	meat, salt.
Birds	Buyuni	Birds	grilled/roasted	meat, salt.
Rodents	Mabeende	Rodents	grilled/roasted	meat, salt.
Toads	Maande	Toads	fried/roasted	
Red meat	Nyama isalala	Elephant, Nsya, Sikaale	boiled and fried.	meat, salt, oil, tomatoes, onion.
White meat	Nyama ituba	Rabbit, fish, kapenta	boiled and fried/roasted/grilled/	meat, salt, oil, tomatoes, onion.

d) Frequency and share of wild food in food consumption

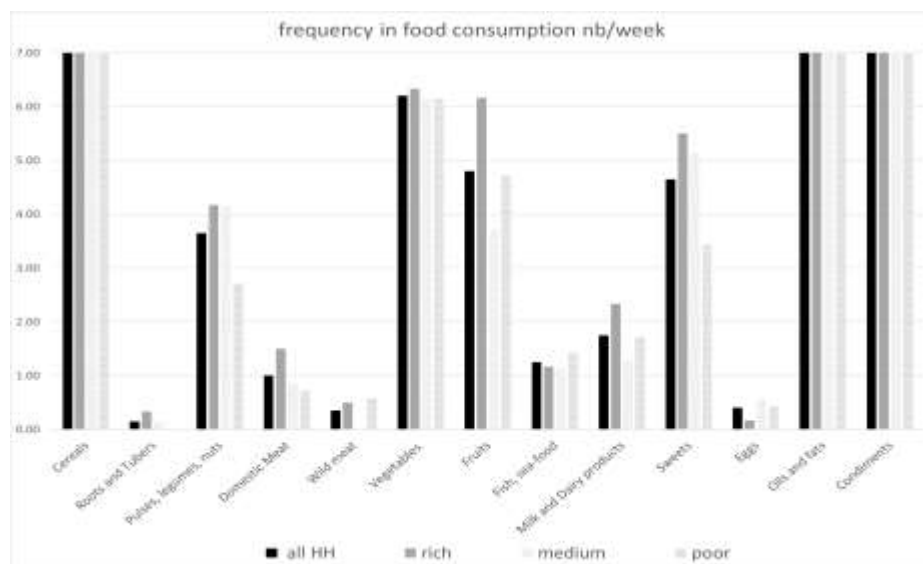
The importance of wild meat and other wild resources on food consumption can also be assessed through the frequency of their consumption or their share in the diet. This quantitative data has been collected in a small sample and will have to be confirmed by further larger survey.

By participating to the life of a small sample of households, the research team was able to record the frequency of the consumption of the main food groups (figure 4). These observations confirmed the importance of cereals and vegetables, as the basis of the daily diet. Meat consumption was limited and varied according to households. The average, once a week, hides disparities: only 8 out of the 20 households had consumed meat during the week of our survey (from once to four times a week). Classification of the households according to their wealth status indicates that meat consumption was higher in wealthy households.

Consumption of wild meat was limited (0.35 day in a week in average that is approximately once in 3 weeks) and hides disparities: 3 out of the 20 households had consumed wild meat during that week (from 2 to 3 times a week). It includes insects (9 records), toads (4 records), squirrel (1 record) and tortoise (1 record) [nb: a food items can be recorded many time in the same day].

This consumption has to be interpreted in the seasonal context: our observations were conducted in February/March, during the rainy season, where insects are more abundant. This confirms the interest in studying the seasonality of food consumption (see section WHEN).

Figure 4. Food consumption frequency among wealth groups in Binga district, wards 3 and 4. Number of days/week (n= 20 households, Feb-March 2020) (source: authors)



This set of data covers the composition of 420 meals, including breakfast, lunch and dinner. It has been recorded during seven sequential days in 20 households in wards 3 and 4 in Binga district, in February and beginning of March 2020. Households are classified using the criteria for Wealth group profile (WFP and FNS 2016).

Respondents were also asked to assess the share of wild food in their annual consumption of meat, vegetables and fruits (table 7). This first approximation indicates that wild meat (excluding fish) represents around 26% of the meat consumption .

Table 7. Share of wild food in food consumption. Binga district, wards 3 and 4 (n=60, self-reporting), (source: authors)

Share (% ,annual average) of wild food	Wild meat	Wild vegetables	Wild fruits
wild/Total (wild and domestic)	26	54	69
min	10	30	50
max	50	90	90

5. WHO? THE SOCIAL DIFFERENTIATION SPACE

Food consumption is embedded in collective practices of sharing meals, reflecting different spaces of sociability. In the rural wards of Binga, most meals are taken at home, or in the fields during the farming seasons. Children also share food at school, or collect wild food when herding. Social gathering are numerous and food is always on that occasions.

a) Who eats with whom?

Home consumption

Most meals are consumed at home, and shared with family members. A typical compound is made up of related brothers who live with their wives and children, and their parents when alive. In a polygamous family, each wife has her own homestead and kitchen, with the husband's hut centrally situated. For these reasons, the consumption unit may be different from the family unit (see box 3).

Traditionally male adults eat separately at the 'chipala' (also named gobelo), the central hut of the compound, especially at suppertime. They share the food prepared by women in the different kitchens of the compound. Wives and mature daughters eat together separately from men. Customarily, the daughters in law cannot eat from the same bowl of their mother in law during the first year of their wedding. Children eat with their mothers, but young boys may also have their own *chipala*.

People eat from the same bowl. More rarely, each member has his/her own plate. The oldest begins first, then the others in decreasing order of age. When food involves meat, the oldest shares it. Usually food rations for the men, especially the meat and sadza, are bigger than for women and children. Children up to two years old, receive breastmilk as their main source of food.

Consuming in the field

Consumption among the BaTonga is not confined to home. During the farming season (from November to March), part of the family may have their meals in the fields in particular if fields are far from home. They may also overnight there to look out for crop-preying animals. Meals may be brought from home, or prepared on site depending on the distance from home.

We met young boys involved in herding activities. They have generally their meal at home. However, when herding, they may collect honey, birds shot down using catapults and small animals like rabbit chased down by their dogs, and consumed them on site, as a snack. They may also bring their food back home. They are not expected to share it with the rest of the household members unless they wish so. This share is entirely for them, to enjoy fruits of their own hands and a badge of honor to their seemingly small but great strides into manhood.

Consuming at school

Schoolchildren in Sinampande (ward 3) share lunch on site: sadza sourced from the school feeding programs (rolled out by ADRA), sometimes with cowpeas/sugar beans or relish brought from home.

Men gathering

A local brew of beer was consumed by men outside the home were they gathered more than twice a week to quench their thirst. The social atmosphere permitting this consumption was limited to men thus women and children could never be seen drinking beer without being labelled as unvirtuous and undignified.

Box 3: "Food is not food until it is shared."

Mr X is head of a large family living in ward 4. The man lives with his four wives, children and his paternal brother, who has six children. Mr. X got four children with his 1st wife. Her three boys are married and live at the homestead with their wives and children. The 2nd wife has no child of her own and the 3rd wife has 5 children. The 4th is his inherited wife.

Mealtime sees the whole family gathering together with piles of sadza and relish served for each group. Nine people seat at the men's *chipala/gobelo* while ten seat at the women, with the youngest being 10 years old. The children from each household who do not sit at the main gobelos seat with their siblings and do nothing more than stare at the meat until the elders share the meat among them. The daughters-in-law who seat with the women are not expected to begin consumption in absence of the mother in law, who is supposed to flinch out morsels for them. Talk of solid respect! After eating, no one is expected to up and leave until everyone has finished. Talking while eating is not encouraged but is maximised after the meal as social and bonding time.

The household slaughters livestock at special events only. At Christmas, 2019, they enjoyed goat meat slaughtered by the eldest son in the household and another goat at New Year's provided by the household head. The meat was prepared from one big pot and served in different plates according to the number of the gobelos.

b) Social food events

Food is not just food is substantiated by the cultural and symbolic tags attached to food among the Tonga people. Liberal giving and sharing fuelled by a mind of joint ownership was found to be an outstanding principle in everyday consumption. In contrast to other societies whose sharing is visible at special events like Christmas, the BaTonga's food network is an everyday trend. This network is facilitated by the spiral web connecting families and nuclear settlements. This allowed for food to be shared among the extended family and relatives who stayed close by. The chat and talk that happened at the eating place carry with them a social value that knits families together - *the more the merrier and tastier the food*.

Social events generally come with meal sharing. Meat holds a central place among Tonga societies. In Binga, main social events have been listed (Table 8). Taking the place of wild meat, domestic meat has been used to celebrate specific life events like at birth, marriages, deaths and funerals. Goat or chicken meat was consumed at marriage and betrothal ceremonies and cattle used to pay '*lobola*'. Beef was the main food item used at funerals either for consumption or completing rituals. It was also consumed at religious gatherings and community workshops, which are social interfaces. However, wild meat is still important at events that celebrate achievements in a person's life. One of such events celebrated by the BaTonga people is the hunters inauguration where wild meat is surpassed by no other food item. Not only is this event joyous but it is embedded with so much meaning as an automatic elevation of the hunter's social status. However, the existence of such events and the memories seem to be washing away among the BaTonga people.

Table 8. Main food events in Binga (source: authors)

events	Local Name	Culinary Space	Meat used/substitute.	Comments
Christmas/ New year	kkisimusi	Eldest' homestead (guunzi pati)	Beef/ goat/ chicken/ guinea fowl	Meat cooked in one big pot and shared among extended family.
Funeral	Dilwe	Bereaved homestead	Beef	Meat is used to feed the mourners. In some burial rituals the bereaved are required to eat the meat unsalted.
Church gatherings	Muswangano	Church	Goat	Meat is prepared usually for lunch and eaten with sadza.
Rainmaking Ceremony	Malende/ Mpande	Sacred hills	Beef/Goat	meat is roasted on open fire. It is served on leaves and twigs. Cooks use their hands to cut and eat. Meat is not salted. Leftovers (hide, horns, meat) are burnt on site.
Ancestral appeasing	Kwaanga muzimu	Eldest maternal relative homestead	Beef/goat	meat is used to feed the visiting kinsmen.
	Ngozi	Affected person homestead	Goat	goat must be black in colour. Raw liver and" kkulu" are cut into small pieces and mixed with raw blood for the affected person to lick up. The rest of the meat is used to feed to drummers, singers, dancers and officiators.
	Kupiila	Eldest' homestead	Goat	meat is roasted and served with beer.
Healing Rituals- Barrenness	Kutazyazya	Healer' homestead	Chick	chick must not be dressed, it is stuffed with traditional medicine, boiled in air tight 3legged pot.
Hunters Graduation	Pobwe Iyamujimba	Senior hunter' homestead	Hunters kill	meat is used to feed participants, hunter is dressed with special beaded dress.
Marriage Ceremonies	Luselo	In-law's homestead	Beef/ goat/ chicken	Husband-to be is expected to bring meat to feed the in-laws.
Chief's Celebration	Pobwe IyaSimwami	Chiefs homestead	hippopotamus	meat is boiled and served for lunch
Restaurant	kuzintolo	Binga/Siabuwa Business centre	beef/fish	rarely visited
Farm	Kumuunda	farm shade	according to access	lunch for every family member is prepared from there.
Workplace	Kumulimu	Kitchen	Beef	cook in groups.
Workshops	Muswangano	Social centres	Goat	communal sharing of food.

6. HOW? THE FOOD SYSTEM

Food behaviors does not only depends on cultural factors. It depend also on structural factors such as food availability and the organization of the food supply chains. These factors are very constraining in Binga: agricultural production is low, food trade is limited and food insecurity is high.

a) The foodscape

Binga is a rural district and food self-sufficiency is an objective for most households, since employment and income opportunities are rare. However, local food production is limited, yields are low (188 kg/ha for maize in ward 3) and irregular. The district needs to import food from outside the area. Most wards have high deficit in staple food production except Lusulu who is said to be the breadbasket of the district but most of the grain production is send to Binga center and Bulawayo. According to the local statistics, the production of cereals in wards 3, 4, 5 only covers respectively 3, 4 and 7 months of their consumption. In our sample, the reserve of cereals produced at home covers the households consumption from 2 to 3 months in the poorest households to 5 months in the wealthiest. Food aid programs mainly cover deficits in cereals.

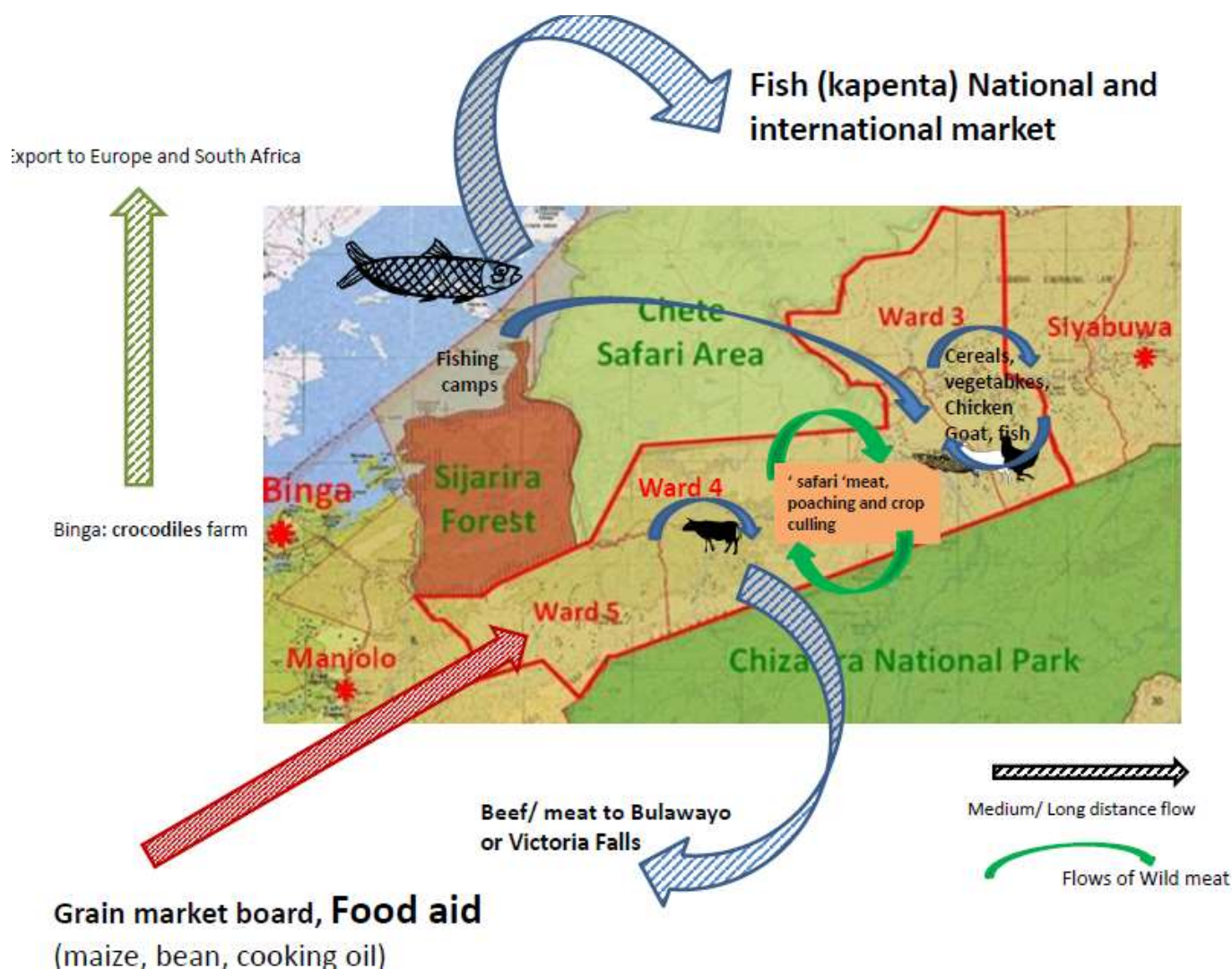
Livestock production is also low. Matabeleland North has the highest rate of livestock mortality in the country, with a strong increase during the last years (ZimStat 2020). This is visible in Binga where livestock ownership is said to decrease due to a number of factors. The major cause being the persistent drought, which leads to high mortality of cattle. Another factor is related to the animal diseases affecting livestock for the past three years (new castle diseases, anthrax and swine fever) and the limited access to veterinary services. The other lamented cause of livestock decrease was wildlife preying on domestic animals especially baboon attacking the goats and chicken. These different factors turn investment in livestock very risky.

Battering small livestock (goat, chicken) for food has been a coping strategy- buttressing the fact that livestock is an asset more than a food item.

We characterized the main flows of food at the level of the area of the project (figure 5). The main salient points are the following:

- Cattle supply a local farm-to-farm market of living animals and hardly contribute to the local meat market and the local consumption. Cattle are used for savings and sold when cash is needed to collectors visiting the district. These animals supply the market of Bulawayo and Victoria Falls.
- Fish production is important in the Kariba lake which supply 90% of the national market, mostly kapenta fish. Local consumption relies on artisanal fishing sold by communities living close to the lake (e.g. Mujele fishing camp) and developing activities of buying and selling of dried fish.
- Goat and chicken are consumed locally. In poor households, they have also a role of saving and are exchanged for cereals during the lean season or may be sold to collectors.
- Wild meat is hunted and consumed locally. It comes from safari area (some hunters only look for the trophy and meat is distributed to the personal of the safari or to the neighboring communities), crop culling and poaching. Wild meat from poaching is consumed by the family hunters. It can also be sold or battered but this is risky (we have been told that one poacher was denounced by potential buyers because he was asking for a too high price)
- There is also a crocodile farm in Binga whose production is exported to South Africa and Europe.

Figure 5: Main food flows in Binga (wards 3, 4, 5) (source: authors)



This quick analysis at district level highlights that despite a low local production of animal products, part of it is exported, and the local consumption is low. Selling animals is not depending of existing surplus in livestock production but rather on need for cash or coping strategies to access cereals. This highlights that food security relies not only on local food availability but also on its accessibility for local consumers. Interventions aiming at increasing local production (availability) must be combined with interventions targeting also its accessibility, by favoring self-consumption or income generation in the poorest households.

b) Food supply

We detail here the different sources of food, at household level. Household consumption in Binga mainly depends on (table 9):

- home production (grain, beans, vegetables, fruits, chicken, goat),
- local exchange from farmers to famers (cereals, small animals).
- food assistance aid (cereals, beans and oil) during the lean season, from September to March -April
- collect of wild products (wild fruit, vegetables, tubers and small animals, fish and insects).

Table 9. Main sources of food in Binga rural households (source: authors)

Food items	Food sources				
	Home production	Bought or bartered	Food assistance	Gift	Distribution from safari, cropping ...
Maize grains	x	x	x	x	
Sorghum	x	x		x	
Maize meal		x	x	x	
Beans and lentils			x	x	
Cowpeas	x	x		x	
Domestic Vegetables	x	x		x	
Cooking oil		x	x	x	
Meat	x	x		x	
Wild meat	x	x		x	x
Wild fruits	x	x			
Wild vegetables	x				

Family farming

The main cultivated cereals locally are maize, sorghum, and finger millet but yields are low and irregular due to the poor agro ecological conditions. In wards 3 and 4, gardening is practiced in the post-harvest season where swampy farmland was used for vegetable production. Maize (for consumption in green), pumpkins, watermelon tomatoes, onions and other vegetables are grown in little gardens along rivers' banks or in lowlands (pictures 1 and 2).

Farming activities target mainly the subsistence of the family. Cash crops (crops grown to generate cash income) are limited to maize (when there is a surplus), and cotton in a lesser extent. Surplus of gardening production can also be sold. For example, in Sinansengwe ward (Zuka Village), bananas, onions, green vegetables, sugarcane and watermelons are sold to the Chizarira National Park community of workers, or in Binga town. And butternuts are produced in Sinampande ward.

Protecting crops from birds and baboons is a time consuming task, assumed generally by children, or men at night. Animal ownership (picture 3) is multi-purpose and reflects the socio-economic status of its owner. Low-income groups owned goats and chicken whilst middle and high-income groups own cattle, guinea fowls (and even ostriches in Nagangala, ward 3). Animals are used as saving: cattle for the wealthiest households, goats, and even chicken for the poorest ones. Cattle is also a productive asset (draft power, manure). With goats, they are used for ceremonial purposes and as endowment.

During the time of our survey, many families reported livestock loss from anthrax and swine flu. Domestic meat consumption was barely from intentional slaughters. The people had meat at times when it was either a left over carcass from wildlife prey or when the livestock would have died of a disease.

Of particular mention is a community led goat-rearing project in Sinansengwe ward (Mbalule village). Though not functional at the time of study, respondents testified to it having been a source of livelihood.

Picture 1. Gardening in Binga (*©Muriel Figuié. Images for FAO, CIFOR, CIRAD, WCS*)



Picture 2: Garden products in Chitate, Binga. (*©Muriel Figuié. Images for FAO, CIFOR, CIRAD, WCS*)



Picture 3. Goats in Binga (*©Muriel Figuié. Images for FAO, CIFOR, CIRAD, WCS*)



Food aid

Up to 80-90% of the Binga population is in chronic poverty and requires permanent food assistance (Save the Children 2003, Save the Children 2004). Food aid is a major source of the food consumed locally. Various non-governmental organisations are involved in bringing this assistance; of particular mention Save the Children (UK) present for over 20 years, but also more recently the Adventist Development and Relief Agency (ADRA) and the Kulima Mbobumi Training Centre (KMTC) extending monthly food baskets. The World Food Program (WFP) is also involved in Food for asset program (WFP/Lead). This assistance is important during the long lean season, from September to April. Some other programs also target aged people all year long. (picture 4).

During the period of our survey (S4, February to March), a monthly food basket inclusive of 50kg mealie-meal or maize grain, 10 liters vegetable oil, 9kgs of sugar beans or cowpeas and 6kgs of super cereal meal were distributed to households with children under five years. In addition, ADRA was providing supplementary feeding to schoolchildren thus maize grains and cowpeas for their lunches.

Picture 4. Food relief beneficiaries at distribution points. (*©Luzibo Munsaka. Images for FAO, CIFOR, CIRAD, WCS*)



Foraging, hunting and fishing

Hunting, trading and consuming wild meat are activities regulated by the current Zimbabwean legislation that protect wildlife. The status of small animals (insects, birds, rodents...) as well as the rights for collecting wild vegetables and fruits is less clear.

The gathering is another strategy for supplying food. It is a seasonal activity and is regarded as a woman's and children activities. Women collect food in group for safety issue. Children collect food when herding cattle or goats or on their way from school. Collection of insects (crickets are the most popular during the rainy season), birds and rodents is multipurpose: food supply, crops protection and pastime for children. Having lost count of boys with catapults hanging from their necks like it were a hood of excellence, it was crystal clear that owning a catapult was glorifying. Rodents (mainly mice) are collected by digging them out and suffocated them in water-filled buckets. Toad (Bullfrogs) are harvested in shallow waters, or dugged.

Most of the households met in ward 3 have access to water for fishing and gardening. However, these activities were seasonal since most of the streams dried up after the rain season. Households in Sinansengwe (this ward had better access to streams and they caught tilapia and mackerel fish frequently as compared to those in Sinampande. However, because Sinampande ward was near Mujele Fishing camp, a formally established fishing place, fishing, commercial fish

trading and petty fish mongering was more pronounced in ward economics and areas beyond. At the time of the survey (S4, feb-march), fishing and toad harvest were the major sources of white meat for the households. Fish were collected by children and women using plastic container traps (picture 5) and their catch were small fish like mackerel whilst the men used hooks to catch much bigger fish. The calmness and fishing expertise, even among the children as they stood knee-deep in the waters, was convincing that BaTonga are indeed people of the Great River, 'Basilwizi'.

Picture 5. Homemade fish traps used by women and children. . (©Luzibo Munsaka. Images for FAO, CIFOR, CIRAD, WCS)



Small mammals (small antelopes, rabbits)⁹ are hunted by young men using traps, snares and dogs. Big game such as buffaloes would also be hunted. However, it is difficult to know if this hunt corresponds to a current reality or to histories that the oldest like to recall. Traditionally hunting expedition for large animals could last up to a week. Hunting is solitary or in a group (people do not say why but three would be the ideal number of participants), with dogs (up to 40 dogs are required to wear down a buffalo). Before hunting, medicine men used to prepare concoctions of herbs and meat for hunters and their dogs, in order to support hunters' bravery and dogs' ferocity, speed and sense of tracking. Some hunters would have the power to turn themselves into an animal, for hunting; this power is inherited from father to son. During the hunting season, dogs are fed with small animals killed by these hunters in order to open (wet) their appetite. Big game such as buffalo were skinned on site and the meat was left hanging onto the tree to dry and to hide it from predators such as jackals and hyena. At the conclusion of the hunt, typically when the game meat is sufficient and when the duration of the expedition is about to enter a threshold of probable concern from kin, one hunter used to go back home to ask help for carrying the meat back to home. Upon arrival, home women are assembled for the breaking news and break into praise poetry for the hunters. The meat brought home can also be sold or bartered with other villagers who cannot hunt. Nowadays, hunters catch mainly small animals, and hunting practices seem to have lost part of their ritual dimension.

Box 4. A magic way of fishing and its limits (source Isaac Mpande, Harare, 08/04/2019)

This is the story of a man with a magic stick. When he goes fishing, his friend hits him with this stick, in order to turn him into a hippopotamus. The man/hippopotamus goes into the water and eats many fish. Then when he comes out of water, his friend hits him again with the stick and he spits out the fish and turns back into a man again. But one day, as the friend was in the hospital, the man asked his wife to use the stick. But when he came out as a hippo, she forgot that the hippopotamus was her husband and ran away with fear, asking help from the others villagers. She was scared, the villagers too and they killed her husband/hippopotamus.

⁹ Interviews with Isaac Mpande, Harare, 8/4/19 and Eliot Simonga, Bulawayo, 10/4/19

Trade and batter

Local economic exchange are limited due to the poor conditions of the road, the low purchasing power of the population and the lack of cash. Grain is sold at grinding mills as payment for milling is done using grain due to cash shortages. Business centers supply with basic food such as sugar, salt, oil, tea, coffee, biscuits, chips. Ambulant vendors sell fish (mainly during the fool moon when fishermen are less busy).

Some families go once a month in Binga center for different activities and buy food there at the central market (Renkin), or at others shops and small supermarkets. Meat (mainly beef) can be bought from one of the eight butcherries or from informal sellers (there is one slaughterhouse and other informal slaughtering facilities in Binga). Binga has a large fish market where bream fish, catfish and kapenta are sold.

Main income sources that enabled food purchase are garden produce, salaries from formal employment, livestock sales. However, the exorbitant prices charged by local grocery shops minimised purchase. Thus, most households considered commodities such as sugar and flour as luxury products. On a different note, one of the interviewee, heartily emphasis on how her great grandparents without sugar and oils lived to a ripe age, pointed to a health conscious people.

Picture 6. A community member selling onions to Chizarira National Park staff. (©Luzibo Munsaka. Images for FAO, CIFOR, CIRAD, WCS)



Picture 7. A shop in rural Binga (©Muriel Figuié. Images for FAO, CIFOR, CIRAD, WCS)



Picture 8. Rural business center and main manufactured food sold in rural business center (*©Muriel Figuié. Images for FAO, CIFOR, CIRAD, WCS*)



Picture 9. Butcheries in Binga center (*©Muriel Figuié. Images for FAO, CIFOR, CIRAD, WCS*)



Picture 10. Fish (left), vegetables, and wild tamarin (right) sold in the market n Binga center and market in Binga center
 (©Muriel Figuié. Images for FAO, CIFOR, CIRAD, WCS)



Farm-to-farm trade or battering is also very important, due to the lack of cash availability and the limited faith in the country's currency. Exchanging livestock for cereals is common as a safety net. Some poor households have chicken as a saving source (when rich households used cattle for savings): they rarely eat meat, not even chicken meat, but keep it for battering against cereals. Any epizootic made these households more vulnerable. Hunted animals are also battered with cereals during the lean season. The following exchange values have been reported to us:

- 1 goat for 5 chicken or 40 kg of mealie meal.
- 5 chickens for 20kg of maize meal.
- 5 brems for 750 ml cooking oil
- 1 chicken for 1 kg of sugar
- 15 baobab fruits for 5kg of maize meal

Meat distribution from safari hunting and cropping measures ¹⁰

Local population also receive wild meat from safari operators. Sometimes village leaders take charge and provide instruction on how the meat ought to be shared. On other occasions, though, there is no one presiding over the distribution of meat, when this happens, only those with the sharpest knife or those able to muscle their way benefit the most. Those households headed by women usually are the least to benefit from this process, which palpably favors men. However, the quantity received are small. In the recent elephant killing, households said they received two palmful of meat, enough to fill up a plate. In one homestead of 25 people, the meat was just about able to provide 2 standard portions of meat to each, indications no more than 2 kg of meat.

With aim to conserve wildlife, Chizarira National Park has substituted wild meat monthly rations for their employees with domestic meat rations.

¹⁰ Interview with Sam Mwinde, 13/4/19 and FGD (S2) in Chitate Binga, 12/4/19.

Cropping operations are another potential source of food. Local authorities can decide to kill wild animals “in excess” or a wild animal threatening population life and goods. In that case, the carcass of the animal is left for the local community for roasting and sharing. That is the reason why people refer to these operations as ‘*magocha*’—the times of roasting. However, *magocha* is rare event the last *magocha* reported to us referred to an elephant, ten years ago.

Gift

Gift, food gift are common in the area. For example, live chicken are given to relatives who lived outside the home for them to dress and prepare to their liking. Our team recalls boarding with a woman with a big chicken: she meant to give to her son-in-law strapped gently on her back in the same way one carries a baby. Such a picture triggers a strong imagery and connotes to nothing less other than that food is not just food and meat not just protein among the BaTonga people.

c) Food storage

Food is stored in granary, locally named *ngazi*. *Ngazi* is made of wood, it contains mainly grains (maize, sorghum or millet) but also baobab fruits, pumpkins and watermelons among others.... except animal products. The *ngazi* is elevated, roughly 2 meters above the ground and is roughly 4 square meters.

Picture 11. A granary in Binga (©Muriel Fiquié. Images for FAO, CIFOR, CIRAD, WCS)



It protects food from wild animals, although elephants are known to destroy these as they hunt for pumpkins and watermelons. The *ngazi* (picture 8) also sometimes hosts at night a man and his drum for alarming the neighborhood from unwelcome visitors and animals. Another variant of *ngazi* is a type of lowered granary made of thin poles and mud (and shaped like an igloo with approximately 2 cubic meters), the mud protect the cereals stored in it from fire. Food (cereals, meat, food relish) are also stored in the hut that serves as a kitchen (picture 7) in various compartments, including baskets, called *zibo* or hung from the roof. The kitchen can also serve as a bedroom is also a bedroom, with people sometimes sleeping there to guard the food.

Picture 12. Kitchens in Binga rural area (©Muriel Figuié. Images for FAO, CIFOR, CIRAD, WCS)



d) Food processing

The work of feeding the family and culinary details remain a cultural prerogative that lies within the female domain. In the same manner, children contribution towards food collection and preparing is paramount. Girls fetch water and firewood, cook, and clean the yard whilst boys herd cattle, hunt, and collect wild fruits for sale. It is true that little boys can prepare snacks for them such as roasted crickets, birds or mice.

Picture 13. Woman cooking on open fire (©Luzibo Munsaka. Images for FAO, CIFOR, CIRAD, WCS)



We indicate below the main ways to prepare food locally.

Cereals, vegetables, meat and tubers

Maize, sorghum, millet are dried, after which they are shelled. The shelling is manual. Often Tonga beat the product until seeds separate from husks. The preparation of cereals based meal starts with the grinding of the grain into a rough powder, the meal. In the past, it was manual, but now the process has been mechanized (Women carry the grain on their heads to the nearest local miller who charges \$1/ kg of maize). The maize meal is mixed with boiling water, instantly forming a thin paste, which is constantly stirred to make a porridge. Depending on the family's status, sugar can be added to taste, but otherwise, the additive *busika* (tamarin) suffices to make sour porridge for breakfast¹¹. The thin porridge can be eaten with a spoon, or as is usual the case, slowly drunk from a cup or bowl.

The preparation of sadza follows the same pattern. The only difference is that for sadza mealie is added into the thin porridge, which is vigorously stirred to form a thick and consistent paste. This paste is left to simmer for 15 minutes or more. Nothing but salt is added, although to presumably drive away ghosts from eating the premature food. Sadza is served with vegetables and possibly beans or meat. Vegetables are cleaned from of insects and worms, washed and boiled in salted water. They are served, with their green broil. Nowadays some households add cooking oil donated by organizations or natural fat (from goats or sometimes sheep). Meat is cut into pieces and boiled, often for hours, with salt added. Nowadays, it is often fried after boiling or stewed with tomatoes and other vegetables.

When culling an animal, not all the meat is consumed the same day and then part is dried for the coming days. Two methods are observed; stripes of meat are left in the sun on tree tops or left on ambers of fire. The process can take hours to days. Any part of meat are dried, except the liver.

Fish also are dried, after descaling, cleaning and being symmetrically opened up. The fish is then put in specially designed earth often where it is left to dry. Otherwise, the fish is smoked on a slow burning fire from a sacred tree.

Picture 14. Strips of sun dried meat. (left ©Luzibo Munsaka. Images for FAO, CIFOR, CIRAD, WCS) and. Dried fish (right ©Muriel Fiquié. Images for FAO, CIFOR, CIRAD, WCS)



¹¹ Interview with Mrs. Mudenda, Harare, 0/4/19

Drying (sundried and/or smoked) is also a way to preserve leafy vegetables and fruits like 'inji' (*Berchemia zeyheri*) used to prepare sweet-sorghum bread.

The preparation of tubers is challenging. Tubers are washed thoroughly and, depending on the tuber, can be peeled off. People say that only experienced women should prepare tubers, otherwise food poisoning or intoxication might occur in the family¹². The general rule when preparing tubers is to boil them for half a day or more, each time replacing the boiling water and presumably poisonous water with a fresh one. The tubers are then cut into small pieces, which are then eaten separately, or as a supplement to the main dish.

Frogs, rodents and insects

Live frogs are thrown in warm water to kill them. Then, they are eviscerated and washed, using ashes. Then frogs can be stewed or dried on a slow burning fire for hours until they are crispy and dry enough for storage. Rodents (mainly) mice are 'defurred' on fire, then placed in a shot split stick in series before they are distantly placed on embers. They can also be dried for storage.

Picture 15. Frogs preparation (source: Mr. Mudenda Silveira House)



Drinks

There are many drinks made of cereals or forest fruits. The increasingly popular drink among Tonga men is *Mahewu*, made from lightly fermented grain. The grain is pounded into a powder, which is then made into a paste of mealie meal. This is left to ferment overnight, forming a non-alcoholic beverage in decorated clay pots. When ready the drink is poured into a huge mug from which seated members take turns to draw as they wait for lunch, or as they work in the field¹³.

7. WHEN? EATING AND TIMING

The food consumed varied along the day and along the year. We present here a food day and food calendar.

a) Typical food day

Based on our observations in the family of our sample (S4), a typical food day includes three meals: breakfast, lunch and dinner (table 10).

¹² Focused Group Discussion, Chitate Village, 11/4'19

¹³ Interview with Eliot Simpongo, Bulawayo, 9/4/19.

Table 10: Typical food days for the BaTonga People (source: authors)

Meal	Local name	Place	Composition
Breakfast (morning food)	<i>Mbusyabulo</i>	Home	porridge with pumpkin or tamarind.
Lunch	<i>Chisusulo</i>	Home/Field/ School	sadza, vegetables, pulses, mahewu (fermented drink).
Dinner	<i>Chilalilo</i>	Home	sadza, (meat), vegetables.

Morning food was eaten at sunrise before daily duties commenced and sometimes at mid-morning. The morning meal was mainly a liquefied porridge prepared from tamarind and mealie meal. However, consumption of this dish was highly dependent on the availability of sugar. In the case where there was no sugar, the porridge was prepared to be a lot thicker. Sometimes morning food involved left over sadza from the previous night. This food was sometimes heated by steaming or grilled on open fire.

Afternoon food was consumed at noon or mid-afternoon. It was informal and thrifty, where one could choose to eat on the go or eat outside the household. For some households, their afternoon meals were prepared at the farm shade and household members were expected to come out and eat from there. The usual afternoon dish was mainly *sadza* (from maize) mixed with cowpeas or a fermented thin porridge to guarantee a filling. Farm produce like sugarcane, watermelons were consumed on the go and were the food items shared to visitors or passers-by. In cases where breakfast would have been skipped the household had an early lunch thus sadza which was accompanied by vegetables or milk.

Supper, eaten shortly after dusk, is the major meal among the Tonga. Cases of dire poverty would mean missing both breakfast and lunch but not the evening meal. This meal included sadza, a bigger ration than the afternoons, and meat was mainly reserved for this meal. For this meal the whole family gathered together in the homestead and every member was expected to show up to the eating place. At times, an exception could be made for children to eat earlier than everyone else before sleep catches up with them. After this main meal, followed a time for nibbles and snacks where people ate roasted maize cobs at the same time as they were chatting and talking. The children normally took this time to gather around the grandparents and listen to folktales until bedtime.

There is also variation along the week (during the week-end, meat and fish or more likely to be served), or the month (during full moon break, fishermen do not fish and come to trade into the villages), and at special days like Christmas (see section on social events above).

This consumption depended on the availability or proximity of a water body to the household thus Mackerel fish was consumed during the rainy season around January, February when the streams had enough water. Households far away from streams and with no purchasing power had no record of fish.

Box 5. Sharing meal at night

The evening meal, in which there is a subdued conversation, typically lasts 5 minutes, because people compete as they eat from the same dish. The one who eats slowly is left hungry, and so with everyone eating fast, it is a matter of minutes before plates are clean and eaters clap their hands in appreciation of the food¹⁴. This short episode is followed by a protracted and lively one and one that every Tonga person longs for.

With food finished men return to their exact positions around the fire, onto which bones are tossed. Then follows a conversation with a social function. Usually talks centre on bushcraft. Those men who would have caught animals that supplied the meat for the evening meal narrate their skills and acumen leading to the kill. They may also praise their dogs and how they prepared them for the kill. If they used a trap, they narrate how they acutely laid it to catch a stubborn animal. If they used a spear they narrate how they inflicted mortal stabs on the animal. The stories center on bushcraft and would be hunters listen attentively to these.

But it is not all serious talk on bushcraft. One after the other, and according to their ability, men recount stories of survival from charging animals which they thought they had killed. Some recount stories of traps catching inedible animals; some recount stories of how they survived by a whisker charging buffalo or hippos by swinging onto a tree cheating death from a stealth crocodile. These stories have humour and they are as rule presented to achieve that. But they are also designed to caution men about dangers in the wild.

Moreover, there are stories about socialisation that are also shared during this episode. In particular, values and norms that bind the group are stressed. For example, the sharing of products from the forest is stressed. Equally stressed is the importance of openness to advice and suggestion. In this connection, stories are repeated showing how refusal to hunt in particular places, or to fish in particular areas that are infested with dangerous animals cost a gatherers' life. These trouble-preventing stories are mixed with proverbs¹⁵ which shows the value of listening to wisdom from elders and other people in the neighborhood.

b) Food calendar: Seasonality in food consumption

Food availability varies during the year according to the climatic seasons (rainy and dried seasons), agricultural calendar (harvest time), etc. Food accessibility also varies with seasonal income, or time available to gather or hunt. The lean period (figure 3 and table 12) runs from September to March, when granaries are empty and harvest have not yet begun. The impact on household food consumption varies depending on households food supply mode patterns. It can translate in period of food scarcity, and families reducing the number of meals per day (table 11). In Binga, only 20% of the households have three meals per day throughout the year.

The seasonal determinants of wild meat consumption are complex. For example, harvest time is a period with low manpower availability but hunting can be a priority in order to protect crops from predators (e.g birds). Another example is given by respondents explaining that in the past they used to hunt during the dry seasons, since vegetation is less abundant and animals are more easy to be seen; but nowadays, as hunters need increasingly to hide from authorities, they prefer to hunt at night and during the rainy season since they can hide in the tall grass and vegetation.

¹⁴ Interview Isaac Mpande, Harare, 8/4/19.

¹⁵ The Tonga proverbs compiled by I Mpande are dominated by proverbs, which show the value of listening to advice.

Table 11. Number of month in the year with at least 3 meals a day in Binga (n= 60 respondents, wards 3, 4 and 5) (source: authors)

	Number of month(s) in the year				
	0	1 to 3	4 to 6	7 to 9	10 to 12
Number of households	19	3	8	7	23 (including 20 with 12 months)
% of households	32	5	13	12	38 (33)

Nevertheless, as Tonga family are highly dependent on their own agricultural production, there is roughly two food seasons:

- from April to September, the post-harvest season, food is available and some families can even spare grain and even sell it for cash. During these periods, families have 3 meals a day and there is a great deal of intermeal eating.
- from August-September to the March-April, is a long lean period: food is little, families must reduce the number of meals (sometimes reduced to one meal a day), together with the quantities that are eaten by each member. Food aid and wild resources are then essential.

A simplified food calendar (based on food availability) is given in table 12.

Table 12. Food calendar in Binga

	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
								Rainy Season				
						Lean season						
	Cereals locally produced				Food assistance							
		Vegetable Gardening production			Winter Harvest (irrigation schemes)							
rodent, birds and wild fruits	++ +											
toads								+ +				
mushroom												
insects								++				

Milk consumption is highly variable during the year, since it relies mainly on home production and calving (it is mainly cow meat since production is low and the taste is reportedly not so good). At times of celebrating relationships meat was consumed and the bulk of it was domestic. Chicken or guinea fowl was slaughtered each time the household was hosting a guest or had a relative visiting in the home.

Wild meat consumption is in actual sense small-animals consumption since culling and intentional slaughter for public events, like independence days or chief's celebrations, are *a thing of the past*.

8. COVID-19. THE IMPACT OF THE COVID 19 CRISIS ON FOOD SECURITY AND WILDLIFE

The Covid epidemics has had a limited direct impact in Binga (limited number of cases) but the measures taken to limit the spread of the disease, have strongly affected the local economy. We provide here a quick overlook of that impact (S3)¹⁶.

a) The impact of Covid-19 on food availability and accessibility

The measures taken at national level to limit the spread of the Covid-19 have strongly impacted food availability in Binga, in particular in the remote rural wards of the district. These measures include, among others, the interruption of the public (ZUPCO) and private ("mchohva") transports, the closure of the Binga central market (Renkin) and the restrictions of operating times for retailers. They have disrupted the local supply and distributing chains, provoking shortages of basic commodities such as sugar, beans, flour and mealie. These shortages have been partly tempered by smuggle activities across the Zambezi from neighboring Zambia. Not only food trade was affected but also local food production due to limited access to inputs such as fuel for the water pump used for gardening, leading to local shortages in potatoes and other vegetables. Another indirect impact of the Covid-19 reported by one farmer is the impossibility, due to the lockdown, in travelling for reporting to local authorities the repeated damages caused by one elephant, letting him watch powerless at the destruction of his crops.

Food accessibility has also been badly affected. Food prices have augmented: as an example, the price for cooking oil in the rural districts is the double of the one charged in Binga town, retailers claiming extra cost of transport and high cost of smuggled food. The restriction of operating times for retailers meant that people have to compete and queue to be served for basic food items. In Binga Center, at the only two wholesale shops (Zapalapala and Gains), it is common to queue up to 12 hours and still not get served. Moreover, the Covid-19 context has deepened the national economic crisis, limiting access to income (including remittances) and to the US dollars required for local transactions, restraining badly the purchasing power of the already poor population and encouraging exchanges in kind.

b) Wild resources in the coping strategies of the rural households

Numerous coping strategies have been implemented by the households of the area of the SWM project to face this difficult context. This includes usual strategies such as casual labor or using savings, i.e selling or battering farned animals, to access basic foods. Home production has been encouraged when feasible, such as home gardening. What is most interesting is the use of wild resources (wild animals, wild fruits, wild tubers and vegetables) to generate income or to support household food consumption. As declared by one the traditional chiefs of the area: *'We the Tonga, have a past, and this is the past that allows us to survive Covid. We have our own foods, which we use for your modern ones. And that is what we are doing now. We have the forests, and the hills and these valley, and these contain different foods. It's because you don't live here and don't know the places, otherwise you will have seen the many different fruits we have here in this valley'*. And indeed, people met reported the collection of wild fruits such as Buzikka (tamarin fruits), Matamba and Nyii. To face shortage in cooking oil, one family explained extracting oil from Baobab fruit. But what the Chief call "our own foods" is not limited to fruits; it also include wild animals.

Fish played a central role in households coping strategies. Fishing activities have intensified in the households, partly thanks to children, children having more free time because of the school lockdowns. The fish has replaced meat in many households meal. *"We eat more fish now. My supper now includes fish, unlike before Covid. Last year it was vegetables and meat. Things have definitely changed"*, declared one inhabitant in ward 4. Fish also served as a bargaining chip: one pound of fish for one kg of beans. Harvesting bird was more also pronounced. One household member said that they harvested and sold about 20kg of birds daily in April: *"The birds make a difference and so we are grateful for the birds"*.

According to the local authorities, hunting of impalas, duikers and bushbucks has increased, in particular night hunting with dogs, involving an increasing number of hunters (including younger hunters that usual). As declared by one official

¹⁶ This section is based on an expertise conducted by Dr V.Dzingirai in September 2020 for the SWM project

at Chizarira National Parks: *“Here it’s always business as usual, People don’t have lockdown in hunting”*. Illegal hunting is not new but it has increased in the context of the Covid 19 epidemic. Crime life would be 8 times higher than last year at the same period. More worrying even, hunting would have extended to rare species. *‘The problem has reached another level. Last week we apprehended people who had caught a leopard using a trap’* declared another official. Hunting contributes to support the food consumption of hunter’s family and community but also generates income and supply a local market of meat: *“For 12 USD dollars, one can buy a whole carcass of impala. For 4 USD one can buy two hind legs. Go to any rural centres and see if you don’t get swarmed with youths who are looking for money to buy phones and memory cards”* according to one official. Some of local bush meat hunters are caught, but because they are teenagers, they are often reprimanded and released by the community and authority. The Covid-19 crisis is a systemic one: it affects and challenges all the sectors of activities including food supply and wildlife conservation. It shows the high vulnerability of the population living in the rural districts of Binga. It also highlights the major role of wild resources in local resilience to crisis and the limited number of alternatives, except depending on food aid.

Picture 16. Empty market in Binga center during the Covid Crisis, September 2020 (V.Dzingirai)



9. CONCLUSIONS AND RECOMMENDATIONS

a) Main findings

Wild food (meat, fish, vegetables, fruits...) are key elements of the local culture

The comprehensive inventory of the local food items and local receipts compiled in our study, shows that wild resources, including wild meat, vegetables tubers and fruits, contribute significantly to the local food culture. The numerous taboos and magic thinking related to the consumption of wild meat indicate that the cultural role of wild transcends the sphere of the food culture but is part of the whole culture. Fishing for the BaTonga people is also very important, not only a source of food but as part of the cultural history, when BaTonga people, before being displaced for the construction of the Kariba dam, were “the People of Great River”.

Wild meat contribution to the daily local diet is decreasing

This cultural importance contrasts with the current daily practices. Hunting and wild meat consumption are decreasing according to local testimonies. A first approximation indicates that wild meat (excluding fish) represents less than 26% of the meat consumption (taking into account that meat consumption is reduced). Moreover, our direct observations and records of the households' consumption shows that the consumption of wild meat is restricted to small animals such as insects and toads (and squirrel and tortoise in a lesser extend). The frequency of consumption is limited, around once in three weeks, but with high diversity among households (up to 3 times a week). This does not include fish consumption which remains relatively more accessible and is consumed more than once a week.

Domestic meats and gathering of small animals is replacing hunting of large game.

In many traditional events, the consumption of domestic meat has replaced the one of wild animals, except when it comes to hunters “graduation” and Chief celebrations. But as noted by Chief Sinakatenge sadly ‘We are now called poachers in our land’. Hunting large mammals was a man activity. Nowadays, young men keep on hunting small mammals (such as antelopes), and women and children play a major role in collecting insects, toads, rodent. This collect as a nutritional function but also aim at protecting crops (in the field and in the granary) and is also a pastime for children.

Food insecurity is very high locally

Food consumption among the BaTonga people has changed significantly since the displacements from the Zambezi in the late 1950s. However, this past period was hard with a high burden of infectious diseases and child mortality the BaTonga people remembers their living on the river bank of the Zambezi is period as with great affluence, in particular due to their easy access to fish, wild meat and wetlands. Nowadays, their food consumption is characterized by scarcity. Food insecurity affects up to 88% of the households, and the area is highly depending on regular food aid from years. Many households cannot afford three meals a day in particular during the long lean season (from September to March) when they have to reduce to two or even one meal a day. Only 20% of the households have three meals per day throughout the year Access to lowlands or riverbanks or other sources of water for home gardening or fishing are less vulnerable to food in security.

The majority of fruits and vegetables consumed locally are wild

It is a fact beyond doubt that wild food (fruits and vegetables, more also tubers, and mushrooms) are an important source of food that greatly improve the diversity of the food diet. They represent around 60% of the total fruits and vegetables consumed annually, but up to 90% in some households. They bring diversity to the cereal-based diet and contribute to the nutritional security.

Livestock ownership has an indirect role on food security

The consumption of domestic meat is limited (once a week in average) and generally based on home production (mainly chicken and goat). Meat is highly valued in the local culture and is served for special events (e.g. Christmas, visitors) or when animals are found sick or wounded. Livestock are an asset. Cows supply the households with draft power and manure for cereals production, and has a saving function. In poorest households, chickens support this saving function: they are battered locally for cereals during the difficult periods. Unfortunately, regular epidemics (e.g. Newcastle disease) and wildlife attacks can comprise any efforts to intensify livestock production.

The role of wild life as a safety net is confirmed by the Covid-19 crisis

The Covid-19 crisis confirms the essential role of wild resources (animals, mainly fishes and birds, but also fruits) in coping strategies, by supplying households with alternative sources of food and income. This is made possible by an increasing number of people involved in illegal hunting (including younger hunters than usual), and an increased number of preys including rare species, as reported by the local authorities.

The nutritional and cultural drivers of wild meat consumptions

This socio anthropological research shows that the drivers of wild meat consumption are numerous. Food insecurity is the main one: it is linked to the low and irregular yield in agriculture and the lack of income opportunity. Proximity to conservation areas, male in age of hunting among the family members seems to favour access to wild meat (but need to be quantified). People with a social position seems also more likely to receive wild meat as gift, in particular from safari areas.

Cultural factors play a role on old people, nostalgic of the past time before the displacement of the BaTonga people for the construction of the Kariba dam. This past time is associated to the abundance of wildlife, hunting of big mammals and the rituals and cultural life associated to wildlife. Nowadays, the consumption of beef meat seems to replace partly the social function of wild meat consumption, when chicken and goats replace its nutritional functions. But the cultural life associated to hunting activities and wild meat sharing just seems to disappear.

The economic function of wild meat is small and limited to few activities of local trade or barter. This reflects the low monetarization of the local economy.

b) Lessons learnt and recommendations

Our results show that the four dimensions of food security are problematic in Kaza: availability of food, access to food, the safe and healthy utilization of food, the stability of food availability, access and utilization.

Local meat availability is limited and is decreasing. There is no available comprehensive local statistic to assess the local livestock size and the meat production (agricultural statistics are mainly available for vegetal products). Nevertheless, according to local informants, the livestock population is decreasing due to repeated shocks (droughts, epidemics). Other sources (Fewsnet, Zimbabwe¹⁷) confirmed that many households have had to sell their animals as coping strategies to face the repeated crisis (economic, sanitary).

The food poverty is expected to increase in the area due to the increasing poor macroeconomic conditions, consecutive droughts, and continued COVID-19 impacts.

Therefore, the challenge for the SWM project is not just to increase the availability of meat that need to be produced locally to address the local current need and to support the increase in the population. The main issue is to make it accessible to a population whose purchasing power and capacity of home production is highly limited. This requires ambitious supports to the local economic development. Moreover, as the market infrastructure are very limited, supporting the local production requires also supporting the market chains, from production to consumption.

¹⁷ <https://fews.net/southern-africa/zimbabwe/food-security-outlook/october-2020>

According to the Kaza M&E framework, there is two main objectives involving R4:

1. By the end of 2023, 80% of the HH in the CCs are consuming 3 balanced meals per days throughout the year

Indicator: number of balanced meals per person and per year

Means of verification: annual survey report

Regarding this first objective, and in relation with the number of meal per day, our findings show that now, in Binga only 20% of the households have 3 meals per day throughout the year (and 32% never have). Regarding the balance of the diet, our findings suggest that the quantity consumed at each meal are limited: indeed to face scarcity, households tend to limit first the quantity consumed per meal, before reducing the number of meals. Moreover, our description of a food day shows that the diet is cereals based (nshima) and food diversity is limited, suggesting that the meals are not balanced.

2. By July 2023 “non wild meat meals represents 90% of HH habits

Indicators: 1) % of meal per month that include domestic meat, fish and forest food and 2) % of HH practising sustainable extraction/collection/ hunting/ fishing

Means of verification: consumption survey at baseline and endline

Our findings shows that currently, according to the surveyed households, wild meat represents 26% of their meat consumption in average in the year (and non-wild meat 74%). We show also that the category “wild meat” covers a high diversity of items (from large mammals to worms...), and that the reduction in the consumption of some of these items should not necessary be an objective. Consequently, this objective should be refined.

There is a need for further information. Our socio anthropological study provides a wide understanding of the foodscape, food habits and food security issues. Some of this information need to be completed. We recommend the implementation of a large quantitative survey to identify more precisely the socio-economic profile and the localisation of the households that need to be targeted by the SWM project. The socio anthropological research provides a strong basis for the implementation of such quantitative study (already in progress).

The quantitative survey (baseline and end line) needs to have the following objectives:

- Investigate how household characteristics (i.e. demography, wealth, ethnicity, employment, localisation) correlate with household wild meat consumption
- Estimate how wild meat contributes to household food security (frequency, 24hr recall)
- Determine the provenance of wild meat consumed (i.e. own-caught, bought from traders/markets, eaten as part of a village ceremony etc.).
- Analyse the variation of wild meat consumption among the households
- Analyse the variation of wild meat consumption among the members of households (men, women, children)
- Analyse the variation of wild meat consumption along the year (two contrasted seasons)

In relation with the first objective, we recommend to assess the balance of the diet (rather than the balance of the meal as suggested by the Kaza M&E framework), based on the calculation of an individual food diversity score (ACF 2011), for different individuals inside a household (male, female, children) .

In order to produce an annual survey of the situation, we suggest the implementation of a permanent observatory of a small sample of households with regular collection of their food dairies. This observatory will be used to monitor trends in food consumption and livelihoods during the time of the project. Moreover, this observatory will be useful to provide prompt answers to questions addressed by other Rs (e.g. detail on fish consumption developed in R3) or for quick assessments of potential unexpected events (e.g. Covid impact).

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ANNEX 1. LIVELIHOOD ZONES BY WARD

(extract from WFP, NFC, 2016)

Livelihood zone	Zone description	Wards
Kariba Valley, Kariangwe, Jambezi Communal	This zone lies in northwestern Zimbabwe and includes parts of Kariba, Binga and Hwange districts. It is a dry, remote and resource-poor area that suffers from chronic food insecurity. Cultivation of maize, sorghum, millet and pulses is unreliable and wild foods are consumed during the lean season. Goat sales are the most common source of cash income but fishing, local wage work, craft and beer sales must also be pursued. Close proximity to Hwange provides some work opportunities at Coal mines for the communities, as well as access to the tourist craft market near Hwange, Kariba and Victoria Falls. Infertile soils, adverse weather conditions, foraging wild animals and poor input and output market access are the biggest constraints to crop production.	4 , 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 25
Cereal and Low Cotton Communal	This relatively productive zone lies to the north of the country covering parts of Gokwe North, Hurungwe, Kariba and Binga districts. Livelihoods are centred on production of maize for household consumption and cotton for cash. For the poor households, labour income from picking cotton is very important. Food aid has been consistently provided over the last several years.	2, 3 , 5 , 23

ANNEX 2. WEALTH AND FOOD SECURITY GROUPS IN BINGA

a) Wealth group profile (WFP and FNS 2016)

“Households are classified into wealthy groups according to their asset base and their sources of livelihood and income. There are four generally agreed wealth groups and these are the better off, middle income, poor and very poor groups. The households’ classification vary according to different geographical locations. The general definition for each of the 4 wealth groups is as follows:

A-Better off -: this group has a broad asset base as they own large pieces of land, some own businesses or are formally employed, they also have reliable remittances and they have big herds of livestock. They can employ people or hire labour. They are able to send their children to school and they also assist the poor households in times of need.

B-Middle class -: they have assets that depreciate, they own livestock but less than the better off, they have reliable remittances. They have medium sized pieces of land and they are able to hire labour. In times of shock they dispose their assets and some can even move to the lower classes.

C-Poor -: they have limited asset base and do not have reliable remittances. They offer labour to the middle and better off classes. They depend mainly on crop production and are not able to cultivate big pieces of land. They own very few livestock and some do not have draught power for their agricultural activities. They are not able to send all their children to school and they also depend on external assistance.

D-Very poor -: these are mainly social welfare cases. They are mainly households lead by the elderly, the chronically ill or the disabled. They do not have any assets and they are not able to provide labour. They are neither able to provide for themselves nor to send children to school. They cannot make it in life without external assistance.”

Those that fall in A have 20 or more livestock with adequate farm power, those in B have 10 or more but less than 20, those that fall in the C category have around 5 animals and those in D have less than 5 animals.)

a) Food security groups in Binga, Binga district seasonal livelihood programming report, 2014

Group A Already resilient	These households are food secure and resilient, already benefitting from growth and development through their own efforts. They are likely to manage difficult seasons and shocks without requiring emergency assistance, and would benefit from social programmes – such as health, education, further capacity development, early warning, etc.
Group B Food secure under no major shocks	These households are moderately resilient and vulnerable to not meeting food needs during difficult seasons or in the event of shocks, without compromising assets or livelihoods through negative coping strategies. On top of social programmes, this group may require seasonal support or emergency assistance during crises to safeguard assets. It was identified that for households that lost significant assets in recent years are at risk to sliding downwards (into Group C or D) if not supported with development and asset creation programmes.
Group C Highly food insecure from last or consecutive shocks	These households have become highly food insecure as a result of eroded coping strategies from the war, coupled with constant exposure to difficult seasons and shocks, hindering their ability to recover by rebuilding lost assets and livelihoods. They would benefit from recovery and resilience building interventions whilst simultaneously improving their access to food, together with other complementary support (e.g. social programmes). Without such support, they risk sliding downwards into eventual destitution (Group D).
Group D Highly food insecure, including destitute	These highly food insecure households – including the destitute – are the most vulnerable groups, with little or no asset ownership, they are labour-constrained, and are likely to be supported by the community. This group is likely to be persistently (chronically) food insecure and require a different set of programming support (e.g. social protection and alternative livelihoods). Identified by participants as those households with few means for self-support, are labour-constrained, are dependent on others, and receive little, irregular, or no remittances. They have few or no assets, and will own only small livestock (but no cattle) and agricultural equipment. They have limited food stocks and no reserves.

Source: Binga District Seasonal Livelihood Programming Report: 2014

ANNEX 3: DATA COLLECTED IN HOUSEHOLDS

(S4
survey)

Family composition	<ul style="list-style-type: none"> • number of men/women/ children • but also structure of the family (nb of generation, nb of "sub-households")
Localization	<ul style="list-style-type: none"> • GPS position
Wealth criteria	
Annual income (in cash) for the whole household	<ul style="list-style-type: none"> • Remittance (US \$/year) • Sale of agriculture or livestock (US \$/ year)) • Others activity (US \$/ year))
Cash crop (maize, coton...)	<ul style="list-style-type: none"> • Species
Livestock ownership of the whole household	<ul style="list-style-type: none"> • Cow (nb adults) • Goat/sheep (nb adults) • Chicken (nb adults)
Food security and consumption	
Frequency of domestic meat consumption	<ul style="list-style-type: none"> • Nb of days with meat consumption per week or per month
Last time the HH consumed domestic of meat	<ul style="list-style-type: none"> • Date • species
Frequency of fish consumption	<ul style="list-style-type: none"> • Nb of days with fish consumption per week or per month
Last time they HH consumed fish	<ul style="list-style-type: none"> • Date • species
Duration of the lean season	<ul style="list-style-type: none"> • nb of months with 3 meals/day • nb of months with 2 meals/day* • nb of months with 1 meal/day
Access to water	<ul style="list-style-type: none"> • For home gardening (yes/no) • For fishing (yes/no)
Access to wild food	
Frequency of wild meat consumption	<ul style="list-style-type: none"> • Nb of times/ week month or year • Main species • Last time (date and species)
Last time they have consumed wild meat (possibly before 2019)	<ul style="list-style-type: none"> • Nb of times/ week month or year • Main species • Last time (date and species)
People Hunting in the family	<ul style="list-style-type: none"> • Number, age
Share of wild meat in total meat consumption	<ul style="list-style-type: none"> • %
Share of wild vegetables in total vegetables consumption	<ul style="list-style-type: none"> • %
Share of wild fruit in total fruit consumption	<ul style="list-style-type: none"> • %

ANNEX 4: LIST OF FOOD ITEMS

English	Latin	shona	tonga
Mamals			
buffalo	<i>Syncerus caffer</i>	nyati	nyati
elephant	<i>Loxodonta africana</i>	nzou	nzovu
hippotamus	<i>Hippopotamus amphibius</i>	mvuu	mvuvu
wild pig		nguruve	ngulube
warthog	<i>Phacochoerus aethiopicus</i>		chipongo
bushpig	<i>Potamocheerus porcus</i>		chipongo
bushbaby			bbwindi
baboon	<i>Papio cynocephalus</i>	bveni	sokwe
vervet monkey	<i>Cercopithecus aethiops</i>	soko	cheta
big cats		shumba	mulavu
impala	<i>Aepyceros melampus melampus</i>		
duiker			
rodents		mbeve	mbeba
grand rats			bbende
tree mouse	<i>Thallomys paedulus</i>		ntele
pouched mouse	<i>Saccostomus campestris</i>		nsana
rock dassie	<i>Procavia capensis</i>	mbira	hibira
squirrels (ground, tree and red squirrels)	<i>Xerus inauris, Paraxerus cepapi, Sciurus carolinensis, Paraxerus palliatus</i>	tsindi/shindi	sikale
cap hare (cap hare, scrub hare)	<i>Lepus capensis, Lepus saxatilis</i>	tsuro	sulwe
rabbits		tsuro	sulwe
FISH			
kapenta	<i>Lymnothrissa miodon</i>	kapenda	kapenta
Pink bream (Tilapia)	<i>Oreochromis niloticus, O. andersonii</i>	gwaya	inswi
Mozambican Tilapia	<i>Oreochromis mossambicus</i>		mucheke
sharp-tooth catfish	<i>Clarias gariepinus</i>		mubondo
bottle nose	<i>Mormyrus longirostris</i>	ndikusi	toonto
jackson corner			simuyanda
tiger fish	<i>Hydrocynus vittatus</i>		simwenge
cat fish	?	vundu and claries	
insects			
ants		tsabaramafuta	
beetles		ndere, marupwa	
caterpillar		gandari, harati, madora	buungu ou zikanda?
cricket		gurwe/ mazhumashu	nswabanda
grasshopper		hwiza	nsozi
locust			Chilodo

termites		ishwa, majuru	inswa
reptiles			
crocodile	<i>Crocodilus niloticus</i>	ngwena	ntale
tortoise		hamba/ kampa	fulwe
moutain tortoise	<i>Geochelone pardalis</i>		nondo
tortoise eggs		maza ekampa	maji afulwe
lizard		mpurwa	dyolo
water monitor	<i>Varanus niloticus</i>		ibbulu
rock monitor	<i>Varanus albiguralis</i>		zilinde
snake/ python	<i>Python sp.</i>		inceka
toads (african bull)	<i>Pyxicephalus edulis</i>		maande
snails		hozhwe	nzoka
birds		shiri	
guinea fowls	<i>Numida meleagris?</i>	hanga/ telele	nkanga
quails	<i>Coturnis coturnix</i>		kwale
quelea (passereau)			nswanswa
dove (cape turtle and laughing dove	<i>Streptopelia capicol, Streptopelia senegalensis</i>		nziba
emeraud spotted pidgeon	<i>Turtur chalcospillos</i>		chibbili
redwinged starling	<i>Onychognathus morio</i>		nsyobobo
cape glossy starling	<i>Lamprotornis nitens</i>		mpiye
hornbill	<i>Tockus sp.</i>		makoche
yellow wagtail	<i>Motacilla flava</i>		titi
whitewinged widow	<i>Euplectes albonotatus</i>		ndrim ou tundonga
great spotted cuckoo	<i>Clamator glandarius</i>		mpatamatu

ANNEX 5. FOOD AVOIDANCES AND PREFERENCES

(source: authors)

English Name	Local Name	Avoidance	Preference	Comments
Chicken back	Gungunyo/Bbo ngobongo	women, children	men	represents respect for household head, sexual boost
Chicken feet	Mawulu	men	children	encourages children to be adventurous
	Ntandali	children	women, men	shows respect for household head
Chicken head	mutwe nkuku	all	none	attracts bee-stings.
	Mubeengwa/Ka lambalala	women	men, boys	worsens blood flow at menstrual cycle
	Cilya bembela	women	men/boys	reward to boys for herding cattle, sexual booster for men
	Mutaala	men	Children	reward for slaughter
	Bbele IyaMpongo	women	men, boys	compromises lactation.
Ribs	Bbambo	women	men	shows respect of household head
Elephant meat	Nzovu	nursing mothers	men, boys, children.	compromises baby' health
Birds	Kayuni	toddlers	men, boys, women	Nail growth.
Fish	mutuka	men	women, children	compromises sexual performance.
	mubondo	women, ritual ordinations, religious sects	men, children	compromises sexual performance.
Toads	Maande	ward 4	ward 3	avoid consuming poisonous bones
Rodents	Mabeende	ward 4	ward 3	meat usually has sores on it

ANNEX 6. MAIN MEALS CONSUMED IN BINGA

(source: authors)

English Name	Local Name	Types	Preparation	Ingredients
Sadza	Nsima			
	yazipopwe	Maize meal	Bring water to boil, add meal, leave to steam then	meal, water
	yamila	Millet meal	as above	millet meal, water
	yanzembwe	Sorghum meal	as above	sorghum meal
	chinkone	Maize grains husks	as above	Maize grains husks, water
	yaGompe	Wild tuber	wash tuber, peel it off, bring to boil in water with ash, throw away water 5-8 times or till tender, mash into thick porridge.	Gompe, ashes, water
	yaNsyu	Nuts	peel off, dry and use powder as meal	nsyu, water
	yaSozwe	Wild tuber	as above	Sozwe, ashes, water
Samp	Musozya			
	wenyangu	with legumes (nyangu)	put all ingredients at once and bring to boil till tender.	maize samp and cowpeas/sugarbeans/peanuts
	mufungu	Boiled and dried maize cobz (mufungu)	as above	Boiled and dried maize grains, salt.
	wamatanga	with pumpkin (wamatanga).	as above	samp, pumpkin
	Chamakanda	maize grains (Chamakanda).	as above	maize grains, salt
	wantanga	maize grains and seed powder		
	Mpalempale	Maize grains (mpalempale)	soak maize grains for 30-60mns then roast in hot pan.	maize grains
Porridge	Lweele			
	Cintobola	Tamarind	soak tamarind in water, then bring water to boil, add meal and ash to boiling water and stir till cooked.	maize/sorghum/millet meal, tamarind
	Lwabbuyu	Boabab	soak boabab fruit in water, bring water to boil, add meal to boiling water and stir till cooked.	maize/sorghum/millet meal boabab fruit.
	Lwansikili	Lwansikili	soak the nuts in water, bring water to boil, add meal to boiling	maize/sorghum/millet meal, nsikili nuts.

			water and stir till cooked.	
	Lwamalili	Milk	add meal meal to boiling water, stir till thick, add warm milk and sugar to taste.	maize/sorghum/millet meal, fresh/ sour milk.
	Lwamunyo	salted	bring salted water to boil, add meal meal, stir till thick	maize/sorghum/millet meal, salt, cooking oil.
	seseke	maize meal	add meal meal to boiling water and stir till cooked	maize/sorghum/millet meal, sugar/honey.
	Lwadobi	Peanut butter	add meal meal to boiling water, stir till thick, add peanut butter.	maize/sorghum/millet meal, peanut butter.
	LwaNdikka	Cereal porridge		
Bread	Cinkwa			
	Chibunge/chimodo	flour	mix flour in water to make thick pastry,	flour, sugar, salt, water
	Mumpelela	sorghum	crush sorghum in mortar and pestle, add water and salt to enhance flavour and desired thickness.	sorghum, salt, water.
	Mwaaneenji	inji	mix millet meal with dried inji then pound in mortar and pestle, remove and sieve away seeds, add water in sieved mixture and crush until smooth enough make desired loaf shape.	dried inji, water.
Cereals and legumes			crush bweengo grains, roast and add salt to taste, serves as relish	
	Coonde	bweengo		roasted bweengo
	Chisabi	Sugarbeans/Cowpeas.	cowpeas/sugarbeans.	cowpeas/sugarbeans, salt.
	Nyangu.	cowpeas/sugarbeans.	boil till tender, add salt and cooking oil or vegetable oils, serve with sadza	cowpeas/sugarbeans, salt.
Beverages and teas	Zinwigwa			
	Muyaya	mahewu	mix meal meal with buswezyo, leave to ferment overnight.	meal meal, sorghum, buswezyo, water
	Mahewu	mahewu	mix meal meal with flour, leave to ferment overnight.	meal meal, flour, water
	Bukande	beer	mix maize meal, sorghum meal (buswezyo), leave to ferment for 7days.	meal meal, sorghum, buswezyo

	kabombwe	wild tuber tea.	wash and peel off tuber, bring to boil in water with ashes, rinse and boil again 5-8 times, use juice to drink.	tuber, water, ash.
	Tea yabusikka	tamarind tea.	add tamarind fruit in boiling water, add sugar/honey to taste.	water, tamarind, sugar/honey
	Mulondo	boabab juice	soak boabab fruit in water/milk, add sugar/honey to taste.	water/milk, boabab fruit.
	Loondwe/Mubbwilibbwindo	tamarind juice.	soak tamarind fruit in water, add sugar/honey to taste.	water, tamarind, sugar/ash.
	Ciluumbu	mbubu	soak mbubu fruit in water, add sugar/ash/honey to taste.	mbubu, water, sugar/ash/honey.
Vegetable oils	Mafuta acintu			
	Butwido/Musunkwidi	pumpkin seed powder, boabab seed powder.	crush pumpkin seeds into powder, add powder in relish.	roasted pumpkin seeds
	Bulovu	tree nut liquid	soak nuts overnight, add liquid into relish.	nsikili nuts.
	Mukungu	Soda	burn boabab shell, soak the ashes in water, use the liquid to make okra.	boabab shell, water.
Wild vegetables	Zisyu zyamusokwe			
	Telele	Okra	bring water to boil, add homemade/carbonated soda, add okra.	mudelele, soda, salt
	Zisyu zilimenena (Recipe 1)	boiled with pumpkin.	boil leaves with pumpkin till tender.	syuungwa leaves, pumpkin, salt.
	Zisyu Zilimenena (Recipe 2)	fried	add tomatoes and onion in greased pan, add boiled and tender syuungwa leaves in pan to cook.	syuungwa leaves, cooking oil, salt
Domestic Vegetables	Zisyu zyakulilimina	Rape, Chourmolina	add tomatoes and onion in greased pan, wash vegetable leaves and add in pan to cook.	vegetables, oil, salt, onion, tomatoes.
Wild meat.	Nyama yamusokwe			
Edible Insects	Nswa, Nsozi, Nyenze	Insects	Roasted	meat, salt.
Birds	Buyuni	Birds	grilled/roasted	meat, salt.
Rodents	Mabeende	Rodents	grilled/roasted	meat, salt.
Toads	Maande	Toads	fried/roasted	
Red meat	Nyama isalala	Elephant, Nsya, Sikaale	boiled and fried.	meat, salt, oil, tomatoes, onion.

White meat	Nyama ituba	Rabbit, fish, kapenta	boiled and fried/ roasted/grilled/	meat, salt, oil, tomatoes,onion.
Meat	Nyama yazivubwa			
	Ngombe	Beef	boiled and fried/smoked	meat, salt, oil, tomatoes,onion.
	Mpongo	Goat meat	boiled and fried/smoked	meat, salt, oil, tomatoes,onion.
	Nkuku	Chicken	boiled and fried/grilled/smoked	meat, salt, oil, tomatoes,onion.
	Nkanga	Guineafowl	boiled and fried/grilled/smoked	meat, salt, oil, tomatoes,onion.
Animal products	Chisabi chamayi	Eggs	boiled/fried	eggs, oil, tomatoes, onion.
	Malili masase	Sour milk	put away in sealed container overnight.	milk
	Malili mawuba	fresh milk	added to tea, porridge, ate with sadza.	milk

The logo features the text 'SWM' in a large, bold, green sans-serif font, with 'PROGRAMME' in a smaller, bold, orange sans-serif font directly below it. This central text is surrounded by four concentric circles. The innermost circle is yellow, followed by an orange circle, then a green circle, and finally a light grey outermost circle. Each of these concentric circles is composed of several short, overlapping line segments, giving the logo a dynamic, hand-drawn appearance.

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