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MEAT IN HARARE'S LOW AND MIDDLE
DENSITY SUBURBS.

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Working Paper AEE 1/99

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ABSTRACT

In some African countries game meat is preferred to domestic animal meat. In Zimbabwe a significant amount of game meat is being produced but little is consumed in the main urban centres. As a result the selling of game meat, especially fresh, is still unusual in urban areas. This study was premised on the underlying hypothesis that low income urban consumers are likely to become the most important segment for game meat market development. A conventional meat alternatives become more expensive this demand will expand.

This study uses buffalo, elephant, impala and warthog to determine the response of urban consumers to the possibility of widespread consumption of these meats. The study indicates that game meat could be sold in the middle and high density residential areas of Harare. Buffalo and impala are preferred to elephant and warthog. Sixty eight percent of the respondents have tasted at least one of these animals. Eighty six percent of the respondents would eat impala meat, 76% buffalo, 50% elephant and 58% warthog, if it was available. The average willingness to pay for fresh meat of these animals is lower than the average beef price by some 30 percent. Labeling and identification of game meat is very important for totem, religion and preference reasons. Game meat can be sold both fresh and dried. Seventy percent of the butcheries indicated that they would sell game meat if it was made available. However beef is the most preferred type of meat.

Introduction

This paper discusses the potential demand for game meat using primary data collected in a high density and a middle density residential area of the capital city of Zimbabwe, Harare. It assesses potential demand for buffalo, elephant, impala and warthog meat.

The tourism and safari industries generate significant economic activities, foreign currency and employment and with the expansion of the wildlife industry into farming areas, more game meat is going to be produced (Government of Zimbabwe, 1996). This will accelerate as the Zimbabwe dollar declines. Investment in the marketing of the resultant meat is not likely to take place while demand for the meat is not certain. This study assesses the potential demand for game meat. With beef price increases, game meat could become a more widely accepted substitute for beef. It can also satisfy the needs of those who prefer meat reared under natural conditions, with less harmful health implications.

The overall objective of the study is to determine potential demand for game meat and the prices consumers would be prepared to pay for the meat if it was made available. The specific objectives are:

- i. to determine the proportion of people who are likely to consume the meat of specified wild animals
- ii. to estimate a preliminary "willingness to pay" for game meat
- iii. to determine particular requirements with reference to game meat.

Hypotheses

This study was premised on the hypothesis that the average price consumers would pay for game meat is less than that of beef. In addition it was hypothesised that game meat consumers are concerned about knowing the specific animal the meat is coming from.

In most countries of the world the meat of game animals is regarded as a healthy and valuable food (Merz and Roth, 1997). In developing countries traditional attitudes and spiritual beliefs play an important role in making bush meat or other locally obtained types of meat, preferred food items. Seventy percent of the population or more in most parts of Africa South of the Sahara would eat bushmeat were it available and within their means (Asibey, 1978). In Ghana, 95% of the people interviewed would eat bush meat if it were available (Falconer, 1992). Most people in Ghana prefer bushmeat to poultry, mutton, and beef and fish (Tutu et al, 1996). Game meat is also popular in countries like Zambia, Botswana, Kenya and Tanzania.

There is a significant amount of game meat being produced in Zimbabwe but little of this is finding its way into the main urban centres (Government of Zimbabwe, 1991b). Murindagomo (1984) found out that very little game meat was supplied in Chitungwiza. Consumers and butcheries in the area indicated a positive demand for cheap

game meat. The consumers strongly preferred fresh to dried game meat.

Two sets of questionnaires were used to collect data for this study: one for consumers and the other for butcheries. Simple random sampling was applied in selecting respondents. The unit of data collection was taken to be the household for the consumers. The questionnaires were administered by the researcher with the aid of an enumerator. The questionnaires were administered from 10 February to 5 May 1997.

Household socio-economic characteristics of the sample.

As shown in table 1, the socio-economic characteristics for the two residential areas are similar except for years of education, family income and expenditure on meat which are higher for the middle density area.

Total household expenditure on meat ranged from \$15 to \$1 375 per month with an average expenditure of \$301.18 per month per household.

Table 1: Some household socio-economic characteristics

	High density area	middle density area	Average for the two residential areas
Average family size	5 (2.283)	5 (2.222)	5 (2.298)
Average age of household head	38.8 (11.150)	37.3 (9.757)	39.3 (10.383)
Average years of education of household head	10 (3.081)	12 (3.038)	11 (2.911)
Average no. of income earners	2 (0.976)	2 (1.079)	2 (0.904)
Average total family income/month	3 784.2 (3006.9)	5 203 (3 103.7)	3 122.4 (2 693.4)
Average expenditure on meat/month	323.81 (169.61)	387.88 (173.52)	301.18 (189.74)
N	60	36	96

Note: The number in brackets is the standard error.

Source: Game meat demand survey (1997).

Order of preference for various meats

Sixty-eight percent of the respondents had tasted at least one of the following animals; buffalo, elephant, impala and warthog. The other 32% have never tasted meat from any of these animals. The meat was mostly hunted or

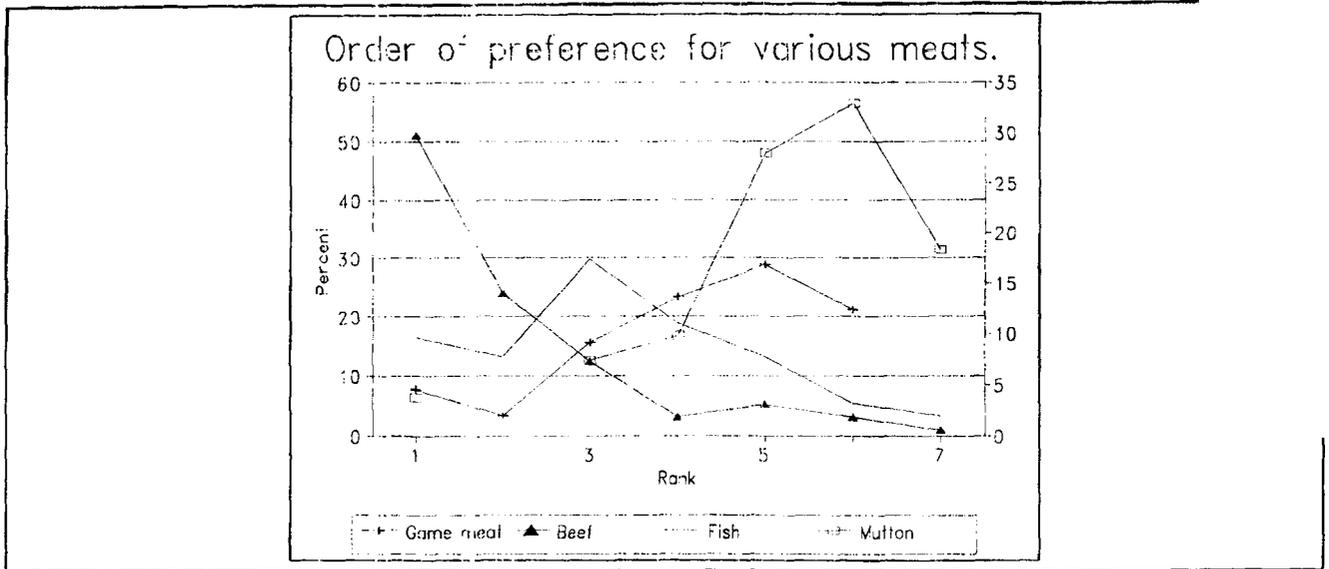


Figure 1.

Source: Game meat demand survey (1997).

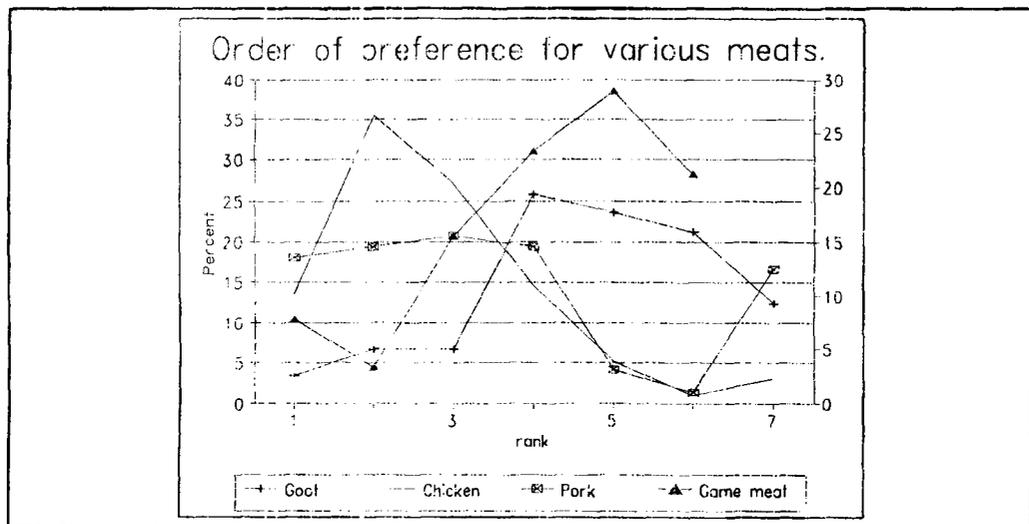


Figure 2.

Source: Game meat demand survey (1997).

The trend for ranking of chicken is similar to that for beef. For goat meat and pork the trend is not clear (Figure 2).

Potential substitute for beef

Most respondents said they would substitute beef with chicken and fish. Pork was placed third as a substitute in

the event of a beef shortage. Game meat was in fourth position with goat and mutton as a last resort.

The reason given for choosing a particular substitute for beef by the majority was affordability. Availability and good taste were also of major significance. Some respondents also said beef would be substituted with game meat since it tastes similar to beef. Other factors considered are familiarity of the meat, second favorite and a combination of affordability and good taste. A few respondents did not eat red meat eating only fish and chicken.

Comparison of game meat and beef

The majority (88%) of the respondents felt that game meat should be cheaper than beef. Only 12% said game meat should be more expensive and 1% was indifferent.

The main reason given was that wild animals are not looked after or require less stock feed. Other reasons given for game to be cheaper include lower demand for game meat, quality of game meat not guaranteed, game has less fat¹, game breed naturally, game meat is tough and smelly, game is God given/natural heritage and game meat is not always inspected. The 14.1% who said beef should be cheaper said there is plenty of beef compared to game meat, hence beef must be cheaper. Others argued that it is easier to raise cattle.

Ninety-one percent of the respondents who would eat game meat, would consume more of the meat if the price of beef increased significantly (by about 25%) and 9.4% would not. Most of them looked at affordability. Others suggested that game meat would enable them to have variety.

Arguments given against consuming more game meat are that consumers thought that game meat could not be refrigerated for long, they are used to beef, game meat is tough and also the unavailability of game meat. Sixty-four percent of the respondents who eat game feel that the meat is a special occasions meat, unlike beef and 36.5% think game meat is not special. The main reason for treating game as special is because of its unavailability. Other reasons given were that game meat is more nutritious and tastes better than beef and game is special because it is a God-given natural heritage.

Over ninety percent of the sellers felt that beef is in greater demand than game meat. They argued that few people ask for game meat, consumers of biltong prefer beef biltong. The arguments put forward by most of the sellers were that people are used to beef, game is not available hence less demand and because of totem and religion reasons. The perception that game meat is a luxury item, mistrust of the labeling and bad smell of the meat were other reasons given for the lower demand.

¹ This may be because, fat is considered a desirable property in meat as it makes the gravy richer and, therefore, goes further than lean meat in feeding the family.

Half of the sellers said that some of their consumers ask for game meat although the meat is not available. However not many of the customers actually ask for game meat and most of those ask for ostrich. The other half said consumers do not ask for the meat, mainly because they (consumers) know that they do not sell game meat.

Consumption of selected game meat and price prepared to pay

The money consumers are prepared to pay for fresh game meat is lower than the average price of fresh beef (\$30/kg). The values are lower by 30%, 40%, 33% and 40% for buffalo, elephant, impala and warthog respectively (Table 4).

The significance tests were used to test the null hypothesis that the average willingness to pay for game meat is greater than the average beef price. The average beef prices (\$23.30/kg in Sunningdale and \$23.86 in Warren Park D) were used for the tests. Table 5.3 shows the calculated t-statistic values for each of the four animals.

Table 4: Average desired price for game meat deviation from average beef price

Animal	Deviation between means	t-value	degrees of freedom
Buffalo	2.8	4.1	77
Elephant	5.5	6.6	50
Impala	3.4	6.2	85
Warthog	5.6	6.5	58

Source: Game meat demand survey (1997).

The difference between the average beef price and the desired price of game meat for each of the four wild animals is highly significant as indicated by the t-ratios which are statistically significant at the 0.01 level for the four wild animals. The evidence from the survey shows that the average price consumers would pay for fresh game meat is significantly lower statistically than the average beef price. This means if game meat is to be marketed the initial price must be lower than the beef price.

Table 5: WTP for game meat

Meat	Average WTP for fresh meat Z\$/KG	Average WTP for dried meat Z\$/KG
Buffalo	\$20.78 (5.87) 79*	\$26.38 (10.73) 79*
Elephant	\$18.19 (6.03) 52*	\$22.31 (9.49) 52*
Impala	\$19.71 (6.08) 88*	\$24.92 (10.63) 85*
Warthog	\$17.91 (6.64) 60*	\$22.56 (10.41) 59*

Notes: 1. The number in brackets is Standard error.
2. * Number of respondents.

Source: Game meat demand survey (1997).

Buffalo

Seventy six percent of the respondents would eat buffalo meat if it was available, but only 26% have ever tasted the meat. Seventy - two percent of those who would eat the meat suggested that the main reason for not eating the meat is unavailability. The main reasons for eating buffalo meat was good taste and resemblance to cattle. Other reasons also include assumed affordability, for a change from beef and a few stated that they are used to buffalo meat.

The willingness to pay for fresh buffalo meat ranged from \$4 to \$35 with an average of \$20.78 per kg. For dried meat the value ranged from \$5 to \$60.

Elephant

Only 15.4% had ever tasted elephant meat and half of the respondents would eat the meat if it was available. Just like buffalo, the reason for not tasting the meat is unavailability. For those who do not eat elephant meat the reasons included unfamiliarity, totem custom, religion and also tough texture and dislike of the taste. Very few respondents had eaten elephant meat more than once.

Forty percent of those who eat elephant meat consider good taste as an important factor for eating the meat. Other reasons given included affordability and some felt that since elephants are destroying the environment, they must be eaten. The willingness to pay for fresh elephant meat ranged from \$6 to \$30 per kg, with a mean of \$18.19.

For the dried meat it ranges from \$7 to \$60 with mean of \$22.31.

Impala

Eighty six percent of the respondents said that they would eat impala meat if available and 55.8% have tasted the meat. Those who would eat the meat but have never tasted it, gave unavailability as the main reason for not eating the meat. Just like buffalo and elephant, impala meat is not easily available. However some of the respondents have been eating impala for more than 10 years. Willingness to pay for a kg of fresh impala ranges from \$5 to \$40 and the average is \$19.70 per kg. For dried meat the value ranges from \$6 to \$60 with a mean of \$24.92.

Warthog

The other specified animal in the study is the warthog. Some fifty-eight percent of the respondents said that they would eat the meat but only 37.5% have tasted it. They said the meat was not available. Religion is the main reason for not eating the meat. Other factors for not eating warthog were totem, dislike of the taste and unfamiliarity. Most argued that they would eat the meat if the taste is good and price affordable.

The willingness to pay for a kg of fresh warthog ranges from \$4.50 to \$35, with a mean of \$17.91. For dried meat it ranges from \$4 to \$60 with a mean of \$22.56.

Reasons for preferring certain animals to others for game meat

Respondents were also asked to give reasons why they prefer certain types of game meat to others. The main reason was good taste. Totem, religion and resemblance to domestic animals were also considered to be very important. Very few respondents considered nutritional status, upbringing, hardiness and other factors like health. Affordability among various game meats did not appear to be as an important factor in the preferences between different wild animal meats. This may be because of the way the question was posed and the current lack of reality.

Preference between dried and fresh game meat

Because of the distances of wildlife producers from the city of Harare, it was important to ask respondents their preference between dried and fresh game meat, since it may be difficult to supply fresh game meat. Thirty-four percent prefer fresh game meat, 35.2% dried game meat and 30.8% were indifferent.

Table 6: Preference between dried and fresh game meat

	Frequency	Percentage
Fresh	31	34.1
Dried	32	35.2
Indifferent	28	30.7
Total	91	100

Source: Game meat demand survey (1997).

Reasons for preferring fresh game meat

Some respondents felt that dried game meat would be difficult to cook. Others prefer fresh game meat and consider it to have all the nutrients. Dried game meat is considered to be difficult to eat and was considered that some members of families (especially children) are not used to dried meat. It is difficult to tell whether the meat is of good quality when dry and some respondents felt that one could always do the drying if necessary. Some also argued that fresh meat is cheaper and also it is difficult to identify the animal the meat is from, when it is dry.

Those who prefer dried meat argued that dried meat is less likely to cause disease compared to fresh meat, it can be stored for long periods, fresh is not always available, less bad smell when dried and some also felt that game meat tastes better dried. Those who were indifferent wanted a variety of fresh and dried meat.

Perceptions of tinned game meat

Sixty - four percent said they would buy their favorite game meat if it was processed and tinned. Thirty - six percent felt that they would not. They argued that tinned is expensive and the taste is not good and others do not trust the labeling. Others also felt that customers must get used to untinned game meat first, some chemicals are added during processing and those who prefer dried game meat could not have it tinned.

Potential consumption of game meat

The majority of the respondents (90.7%) said they would eat game meat more regularly if it was made available in butcheries and supermarkets. Only 9.3% said they would not eat game meat more regularly. However the assumption made by most of the respondents was that game meat would be cheaper than beef. Some respondents also felt that game meat reduces risk of diseases like heart attack because of less fat content, that it tastes better and is more nutritious. Others argued that they would eat game meat more regularly for a change from beef. Those who said they would not eat game meat regularly felt that game meat is tougher than beef and produces a bad smell. Some said that they are not used to game meat.

Potential quantities which can be consumed

Of the respondents who would consume game meat for each of the four animals studied it is important to estimate the percentage which would be prepared to pay reasonable prices. In the sample for butcheries there was one butchery which was selling impala meat at \$18 per kg. Based on this, it was assumed that fresh meat for the four animals can be sold at this price. However it does not necessarily mean that selling the meat at this price is profitable for all butcheries. The costs of cropping the four wild animals are also likely to be different and it is uncertain that it would be viable to sell all four animal meats at \$18.00. However it has the only data readily available and provides a starting point. Assuming that fresh meat will decrease to one-third if dried the profitable price of dried game meat was assumed to be three times that of fresh game meat. Fresh impala and buffalo meat are likely to be demanded by many people if sold for \$18 per kg (Table 7). Dried meat for all the four animals is not likely to be demanded by most people unless it is sold for less than \$54 per kg. Buffalo and impala are likely to be the most preferred. Warthog meat is the least preferred.

Table 7: Percentage of respondents who would eat the meat prepared to pay reasonable prices for game meat (\$18/kg)

Animal	Dried meat	Fresh meat
Buffalo	1.3 %	75 %
Impala	3.4 %	75 %
Elephant	1.9 %	59 %
Warthog	0 %	53.3 %

Source: Game meat demand survey (1997).

Based on the percentages in Table 7, the quantities of fresh meat from each animal which can be sold at reasonable prices were computed assuming consumers would substitute game meat for beef. The quantities which can be sold are for an animal at a time and shown in Table 8.

The following formula was used for the calculation;

$$QTY = (AFEB/ABPR) * (POP N * PEREAT) * PERRESP$$

where;

QTY is the quantity in kgs of meat which can be sold in the two residential areas for at least \$18 per month.

AFEB is the average family expenditure on beef (Z\$130.19/month).

ABPR is the beef price for the two areas (Z\$23.58/KG).

POP N is the number of households in the two (Sunningdale and Warren Park D) residential areas area.

PERRESP is the percentage of consumers who would consume the particular game meat and prepared to pay at least Z\$18/kg for freshmeat and \$54 per kg for dried meat.

PEREAT is the percentage of consumers who would eat the meat.

The quantities are presented in table 8. The quantities were computed for the two survey areas then extrapolated to all Harare's middle and high density residential areas.

Table 8: Quantities of fresh game meat which could be sold at \$18 per kg

Animal	Quantity (kg/month) (Survey areas)	Quantity (kg/month) (Middle and high density residential areas of Harare)
Buffalo	19 067.5	719 013.4
Impala	21 576.4	813 620.4
Elephant	9 868.3	372 129.0
Warthog	10 283.1	387 762.7

Source: Game meat demand survey (1997).

Attitudes towards specifying and inspection of game meat

Almost all the respondents (99%) want sellers to specify the animal were the game meat is from. The evidence from the survey does concur with the hypothesis that game meat consumers must know which specific animal the meat is from. The majority of them felt that this was necessary for totem and religious reasons. Others felt that if sellers did not specify, animals like baboons might be sold. Besides totems and religion it was also argued that some people naturally do not like some animals. All operators who sell game meat said that consumers always wanted sellers to specify the type of game meat. This was because some consumers eat a limited number of wild animals e.g. impala and also emphasized the totem and religious factors.

Consumers were also asked whether they would buy game meat marketed by other organizations besides CSC. Thirty percent of consumers felt that meat not marketed by CSC is likely to be not licensed or is uninspected, so they were afraid of diseases. The majority said that they would consume game even if not marketed by CSC. Some felt that buying meat not marketed by CSC is illegal and unscrupulous sellers may also sell animals like donkeys.

Only 28.1% would eat uninspected game meat. Seventy - two percent said they would not. The main reason for not eating uninspected meat was for health reasons. Consumers are also afraid of being ill-informed on species where the meat is from. Those who are prepared to eat uninspected meat argue that people in rural areas eat uninspected meat without negative effects on health.

Constraints to game meat consumption

The most likely constraint to game meat consumption according to the respondents is unavailability of the meat. Some felt that game meat must be inspected, some were not used to the meat and some people do not eat game meat because of totems/religion. Others considered that game meat is expensive, sellers do not specify species, that it has expensive to transport game meat to urban areas and that the bad smell of the meat itself are also constraints to wider consumption.

Out of the 36 butcheries in the survey, only 6 (16.7%) ever sold meat from wild animals including ostrich. The animals sold are impala, ostrich, kudu and buffalo. Among these respondents ostrich was the most common game meat.

Retailers Reasons for not selling game meat

The majority of the butcheries (75%) have never sold game meat from any of the following animals buffalo, impala and warthog but 70% would sell the meat if available.

The most common reason given for not selling game meat is unavailability of the meat. Other common reasons for not selling game meat were that there is high demand for beef, so operators felt that it was not necessary to sell game meat and those still new in the business prefer to deal with mainly beef, pork and chicken which have an assured market. Some operators also think that game meat is not inspected by qualified inspectors and the city council discourages the selling of game meat for health reasons. However the city council does allow selling of game meat, but the meat must be inspected and have separate storage facilities. Other reasons also given include, lack of interest in game meat, having licenses for beef only, selling game meat may give health problems, afraid of loosing customers because people do not want meat to be mixed for totem/religion reasons and also selling of game meat calls for extra storage facilities.

Some butcheries argue that it is difficult to sell game meat as this requires separate cold-rooms for different animals. This is because of totem/religion reasons. They also argued that its easier to sell game meat as biltong rather than fresh. Some respondents said the city council allows selling of game meat, if the suppliers are approved. Another constraint raised was that of clearly labeled the meat.

Only three butcheries said they are still being supplied with game meat. Others who once sold game meat did so for less than a year. Of these three, two sell ostrich and only one is selling impala meat. Unlike beef the supply of game meat is erratic. Only one butchery said the supply of game meat (impala) is regular and that butchery sold impala at \$18 per kg. Some operators claimed that they stopped selling game because suppliers did not supply in time and at times it was not available. Even the few who sell game meat said the suppliers do not have the meat

most of the time.

The suppliers of those who once sold game meat are; Fortune Services, ARDA farm, private farmers, OK Central Meats and Pocro.

What needs to be done to promote game meat consumption

In order to promote game meat marketing, butcheries felt that the meat must be made available to their suppliers, and that the buying price must be low initially to increase demand and argued for licensed abattoirs who would supply residential areas. They admitted that clear labeling was very important. They also argued that the industry must operate like the beef industry and also give incentives to wildlife producers.

Conclusion

More than half of the respondents of the survey would consume game meat from buffalo, elephant, impala and warthog if it was available. The most preferred was impala followed by buffalo, warthog and lastly elephant. The majority of the respondents (86%) would consume impala meat if it was made available, but only about 56% had ever tasted the meat. Buffalo (76% would consume the meat) is also likely to be popular if made available. Fifty-seven percent and half of the respondents would eat warthog and elephant respectively if it is made available. In due course, if the meat is made available, it is possible that demand will be greater than these proportions as people get used to the meat. The demand for game meat seems to be affected by the beef price, family income, age and education. Increases in beef price are likely to result in higher demand for game meat if it is made available at prices which are lower than for beef.

The average prices the consumers are willing to pay for game are lower than the average beef price by at least 30%. It is 30%, 40%, 33% and 40% for buffalo, elephant, impala and warthog respectively. 88% of the respondents felt that game meat should be cheaper than beef. This is a higher differential than Murindagomo (1984) found in Chitungwiza (24% lower than the beef price). In Graham's study the price for small game was also some 30% lower than that of beef. In 1992 game meat was sold in rural butcheries at between 12% to 37% lower than the average beef price (Price Waterhouse and Environmental Resources, 1992c).

Consumers of game meat are concerned about which animal the meat is from with 99% of the respondents wanting sellers to specify the animal on the meat sold. Butcheries who had sold game meat confirmed that consumers wanted sellers to specify.

In order to promote game meat demand, the meat must be clearly labeled. Labeling is important because consumers would like to avoid eating some game meat because of totem/religion reasons and some people prefer

other animals if they resemble domesticated animals. One of the reasons that tinned game meat is not likely to be popular is because consumers do not trust the labeling. Dried game meat is also likely to be less popular compared to fresh because consumers feel that it would be difficult to confirm the type of animal when the meat is dried. These are in addition to the taste and other reasons for the preference for fresh meat. At \$18 per kg (while beef is \$23 per kg) the middle and high density areas of Harare would consume over 2000 tonnes per month of fresh game meat if it was made available and clearly and consistently labeled. This shows a considerable vent for surplus and indicates that a more comprehensive analysis of demand and the determination of a demand schedule would be useful to the emerging wildlife industry, particularly in the light of the increasing relative prices of all pen-fed domestic animals as a result of rising feed prices.

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