

Marketing of Mopane Worm in Southern Zimbabwe

Witness Kozanayi and Peter Frost
Institute of Environmental Studies,
University of Zimbabwe,
P.O. Box MP 167,
Mount Pleasant, Harare,
Zimbabwe

1. Introduction

Larvae of the mopane emperor moth, *Imbrasia belina*, colloquially referred to as 'mopane worms' are an important source of nutrition and income for poor people in Botswana, Namibia, South Africa and Zimbabwe in southern Africa. The moth is an irregular eruptive species with up to two outbreaks a year in December and March/April, at which times large numbers of larvae are available and widely harvested by people. The precise contributions of mopane worm to the livelihoods of poor rural people are not well understood in terms of the social and economic categories of people engaged in harvesting, processing, trading and consuming mopane worms. This includes limited understanding of the interactions among the various components of people's livelihoods, as well as among people with different livelihood strategies. Of particular concern is the need to understand what opportunities and constraints there are for enhanced but sustainable use of mopane worms, and how people might be able to derive more value from the resource and their use of time.

Whereas harvesting of mopane worms was traditionally a subsistence livelihood activity, undertaken largely for nutritional purposes, increasing commercialisation of the resource has been taking place in recent years (Hobane, 1994, 1995; Rebe, 1999). Mopane worms are being increasingly widely traded throughout southern Africa, with evidence of marketing chains extending from southern Zimbabwe and eastern Botswana to South Africa, Zambia and the Democratic Republic of the Congo, as well as nationally within the main producing countries (Botswana, Namibia, South Africa and Zimbabwe). Despite this, there has been little research on the nature and dynamics of the marketing chains, markets or the traders involved. This report details the results of surveys of mopane-worm traders and markets in southern Zimbabwe carried out during January 2002.

The aim of the surveys was to identify and characterise the various supply and distribution chains for mopane worms, from harvest to consumption, and the nature of the markets and traders at work at different points along the chain. Particular attention was paid to the quantities of mopane worms being traded; when and between who these transactions occurred; details of the size and location of different markets; and the general identity of those involved in the commercial supply, transport, wholesale and retail of mopane worms. Where possible, the kind and amount of value added to the product at points along the chain were also identified.

2. Methods

Surveys were carried out by one of us (WK) during January 2002 at various points of sale of mopane worms (*e.g.* national supermarket chains, smaller supermarkets; other retail outlets; market stalls; beer halls, bus terminus, informal traders, etc.), in the city of Bulawayo and the towns of Beitbridge, Masvingo, Mbalabala, Mwenezi, Rushinga and Zvishavane, as well as at various roadside sales points between Masvingo and Beitbridge. Key informant interviews were conducted at each locality with people buying and selling mopane worms. These focused on the following, where appropriate:

- kinds of mopane worm and other caterpillars on sale (species, colour, size, manner of processing);

- the way in which the worms were being sold – sealed packets, open packets, bags, open containers, or loose – and the size of the containers;
- the selling price and whether or not it was negotiable;
- the source of the mopane worms (*i.e.* whether bought from a trader, a wholesaler, another market, or a producer community; or whether others have been contracted to supply the seller);
- the price at which the mopane worms were bought, where this could be determined;
- the nature of the relationship between the buyer and the seller;
- what value, if any, had been added to the product before resale (*e.g.* packing, roasting, adding spices);
- the institutional arrangements for buying and selling mopane worms, in particular what kinds of people involved, whether the seller is working for someone else, operating his or her own business (and whether working alone or with the help of others), and the nature of these relationships.

Instances where mopane worms were not on sale at otherwise suitable venues, and the possible reasons for this, were also noted. Surveys of stocks and prices were also carried out by both of us at supermarkets, small shops and beer halls in Bulawayo, Harare, Masvingo and Zvishavane.

The kinds of traders interviewed included those buying or selling at market stalls, bus termini, informal roadside markets, as well as itinerant traders. The information sought included: how long the trader had been buying and selling mopane worms; what led him or her into the trade; what other goods the person bought or sold; how profitable mopane worms were relative to these other goods; the seasonality of the sale of mopane worms, and what the trader does when not selling mopane worms; and any specific social ties the person has with people in the rural areas (*e.g.* selling on behalf of relatives). Information on prices and the availability of mopane worms in previous years, as well as trends in prices and availability, were recorded where possible. Particular attention was paid to instances of cross-border trading, both to South Africa and Botswana, and northwards to Zambia and the Democratic Republic of the Congo (DRC). The gender and nationality, where possible, of those involved in cross-border trade were noted, as well as how the shipments were being transported (*e.g.* bus, long-distance haulage trucks, private transport etc.); the volumes involved; and the purchase and selling prices, where these could be obtained.

To standardise estimates of the quantity of mopane worms sold in containers of different sizes, the mass of mopane worms filling cups of various sizes was determined. The cups were filled to overflowing, in the same way as done by sellers (Figure 1).



Figure 1. Standardised values of the mass of dried mopane worms sold in different-sized small containers, used to calculate the unit selling price of mopane worms.

The mass of mopane worms in larger containers (5-20 litre buckets and tins) was estimated from the equation: mass (kg) = 0.283 volume (l) + 0.012 (r = 0.999), derived by measurement of known volumes of mopane worms. This gives a density value of 295 g/l. Mopane worms are also transported in 50 kg and 90 kg maize sacks. A measured density of value for maize of 710 g/l was used to estimate the volume of these sacks when filled, after which the equivalent mass of mopane worms was calculated using the above equation. The standardised values for the mass of mopane worms in different sized containers calculated in these ways are given in Table 1.

Table 1. Standardised values for the mass of dried mopane worms sold in medium- to large-sized containers, used to calculate the unit selling price of mopane worms

Container	Mass (kg)
1-litre tin	0.3
5-litre container (tin or bucket)	1.4
10-litre bucket	2.8
15-litre bucket	4.3
20-litre bucket	5.7
50 kg sack (= 70.5 l)	20.0
90 kg sack (= 127 l)	36.0

3. Source areas

Traders in Masvingo report that currently (2001/2002) they are getting their supplies largely from Rutenga, Mwenezi, Chikombedzi and, to a lesser extent, the Chiredzi-Triangle area. In other years they get most of their supplies from commercial farms in the Chiredzi-Triangle area. The farms along the Ngundu-Chiredzi and the Gutu-Chiredzi roads are the main source areas of the worms. The December 2001 outbreak of mopane worms in this area was limited, however. Local people suggest that this is attributable to high temperatures and low rainfall. As a result of the general shortage of mopane worms, traders in Masvingo have had to travel as far as Mwenezi, 170 km to the south by road, for their supplies. Others, because of the high cost of transport, are no longer travelling to rural areas to collect or buy mopane worms. Instead they wait for collectors to bring their mopane worm stocks to town, buy in bulk and re-sell in smaller packs or units. Although the collectors pass on the transport costs to the traders, the latter have lower transaction and time costs than if they had travelled to the rural areas.

4. Mopane worm collection and sales at source

4.1. Harvesting and Processing

Much of the work involved in harvesting and processing mopane worms is done by women and children. The following tasks are involved in producing a saleable product.

4.1.1 Collection

This involves collecting the worms from the forest. This is done largely by women and children. Informants reported that when collecting mopane worms they prefer to collect them from short trees where the worms are easily accessible. They also prefer to let the worms grow big enough and come

down from the trees and then pick them up as they crawl on the ground. In December and January this is not possible as there is not enough worms for everyone and the worms are collected prematurely.

4.1.2 *Removing the gut contents*

This is the most difficult and labour intensive part of processing, particularly if the larvae are collected before they are ready to pupate. When fully grown, larvae have relatively empty guts. Instead their bodies are filled with yellow nutritive material that is preferred by consumers. Buyers indicated that, if not properly squeezed, mopane worms are long and turgid. Thus when they buy the worms from suppliers the first indicator they use to assess the quality of the worms is size. To confirm if the worms' guts are clean or not they randomly take samples and break the worms in half and look at the gut.

Two basic methods are used to squeeze out the frass from the guts of the larvae. The conventional way is to process the larvae individually by squeezing them between the thumb and forefinger. Whereas the pressure can be adjusted depending on the size of the larvae and the amount of undigested material in its gut, the spines on the larvae puncture the hands of the workers, causing bleeding and sores. The hands also get discoloured by the body fluids of the larvae. In an attempt to prevent excessive damage to their hands, some collectors tie bark fibres around their fingers. Those who can afford to, buy gloves which are more effective than fibre. Processing the larvae is often done at night. One lady informant claimed that she can collect and process one and a half 20-litre buckets a day by processing the worms at night. Alternatively, to reduce damage to fingers, some processors use a bottle as a roller to expel the frass. Though quick, as more than one worm can be processed at a time, the bottle is too hard and squeezes almost everything from the gut, including the desired yellow material.

4.1.3 *Roasting and drying*

The processed larvae are then roasted on smouldering charcoal both to cook the worms and to remove the spines. This is also another time-consuming stage requiring the collection of firewood and burning it to produce glowing embers. People complained of getting burnt hands and faces as they roast the worms. Well-roasted mopane worms apparently should not show any red coloration. Buyers look for the presence of such coloration to indicate worms that have not been properly roasted. Before the worms are packed large pieces of charcoal are removed. This is usually done by old women and children during the day.

After being roasted the worms are then dried in the sun. Some people mentioned that instead of roasting the worms they just salt and then sun dry them. Worms prepared in this manner are not sold to outside markets but rather in local markets, as outsiders do not prefer worms with lots of spines. Moreover, consumers in urban markets do not want salted mopane worms because they have an unappealing whitish appearance. In places where firewood is in short supply, or where a collector is working alone (see the case history of Ms Siboni Mhlanga: Appendix 1), the worms may be boiled and then dried in the sun. As with salted and sun-dried worms, boiled mopane worms still have spines, which reduces their market value.

4.1.4 *Packing and blending*

The worms are packed in sacks or large tins for sale to traders or in markets. Traders who re-sell the worms in small packets, such as 100 g packs, buy and repack the worms in small plastic bags. Those who cannot afford to buy plastic bags just pack the worms in old newspaper when a customer buys from them. Blending is usually done by those traders who buy mopane worms in bulk from the collectors. This entails mixing low quality worms (e.g. those not properly squeezed out) with better quality ones, to disguise the lower quality worms. Such traders, often *maguma-guma*, buy these low quality worms at extremely low prices (e.g. Z\$ 450 per 35-litre bucket containing about 10 kg of mopane worms, giving a purchase price of about Z\$ 45 kg⁻¹ – see the case history of Mr Mhofu: Appendix 1). These worms are then blended with better quality ones to bulk up stocks.

4.2. Sales at source

According to most informants, prices in most areas and cases are determined by the buyers rather than the sellers. Collectors in particular complained that, in most cases, the buyers cheat them, especially if the transaction involves barter trading. Some suppliers reported that they live far away and have brought their mopane stocks to Beitbridge by donkey cart. Suppliers are therefore under pressure to sell because it is not worthwhile taking their mopane worm stocks back home. Moreover, accommodation at Beitbridge is expensive, so most suppliers try to sell their stocks and return home the same day. Under such circumstances, buyers have an advantage and can negotiate prices downwards.

Goods such as toiletries, kitchen utensils, mealie meal, and second hand clothes can also be bartered for mopane worms, particularly in the more remote areas where people are short of food and basic household necessities. Some buyers said that, where there is extreme poverty, anyone who brings food or clothes to barter will be able to obtain a lot of mopane worms. Being a barter trade, the rate of exchange fluctuates considerably, depending on the imported items being offered and on people's needs. In general, a 'new' T-shirt can be exchanged for about three-quarters of a 20-litre bucket (4 kg), while 5 kg of roller meal, costing Z\$ 130, can be traded for a 20-litre bucket of mopane worms (almost 6 kg, worth Z\$ 88 - 132 kg⁻¹). Second-hand clothes are obtained from Mozambique. Traders cross into Mozambique at the Sango border post in Chikomedzi and buy the second hand clothes originally donated to Mozambique refugees and, latterly, to victims of Cyclone Eline.

4.3. Mopane worms and other species

Informants mentioned three kinds of mopane worms in which they usually trade: 'macimbi', larvae of the real Mopane Moth, *Imbrasia belina*; 'ipipi' or 'gandari', larvae of the Speckled Emperor Moth, *Gynanisa maia*; and 'harati', thought to be the larvae of either the Pallid Emperor or Burkea Moth, *Cirina forda* (the main host tree, *Burkea africana*, is called *mukarati*) or possibly of the Diverse Emperor, *Imbrasia ertli*, a species with similar-looking larvae which outbreak periodically and are widely harvested, at least in Mashonaland. Most buyers prefer 'macimbi', by far the most abundant species. The larvae of 'ipipi' are green and spineless and, apparently, not particularly appealing. Because of this, when there are large numbers for sale, they are normally mixed in with 'macimbi', though when sold in small volumes they can be sold alone. 'Harati' are relatively uncommon.

5. Transport and trading

The source areas for mopane worms are often far from the main markets, most of which are in urban areas. Traders either way often have to travel long distances to do business. With the recent increases in the price of fuel bus fares have surged, greatly increasing the cost of travel. This has inhibited many people from travelling long distances to collect or trade in mopane worms. In many cases, traders are resorting to hitch-hiking on haulage trucks, the drivers of which charge a relatively low fee for transport. Unlike buses, where the fares are fixed, a passenger can negotiate with the haulage-truck driver over the fee. Moreover, truck drivers do not always charge an additional fee for ferrying goods or, if they do, it is usually less than on public transport.

The average cost of travel on public transport (mainly buses) in January 2002 was Z\$ 2.92 km⁻¹ (Table 2, Figure 2), with an additional amount for stowed baggage. One lady collector from Ngundu, who had gone to Chikomedzi to collect mopane worms, paid Z\$ 80 to transport 36 kg of mopane worms (Z\$ 2.22 kg⁻¹) back to Ngundu, 159 km away. More generally, bus companies charge Z\$ 30 – Z\$ 50 per 20-litre volume (about 5.7 kg of mopane worms), regardless of the distance travelled. This is equivalent to Z\$ 5.26 – Z\$ 8.77 kg⁻¹. The drivers of long-distance haulage trucks apparently charge less, Z\$ 1.64 – Z\$ 2.14 km⁻¹ for the fare, plus Z\$ 25 – Z\$ 50 per 50 kg maize sack (containing about 20 kg mopane worms), or Z\$ 1.25 – Z\$ 2.50 kg⁻¹. Assuming an average baggage cost of Z\$ 4 kg⁻¹ and a travel cost of Z\$ 2.92 km⁻¹, travel by

public transport could add between Z\$ 11 and Z\$ 121 kg⁻¹ to the cost of mopane worms, depending on the amount transported and the distance (Table 3). Transport costs (travel + freight costs) decline negatively exponentially with an increasing mass of mopane worms transported (Figure 3), indicating an advantage to those merchants able to trade in bulk. The cost reductions also scale slightly according to the distance travelled, with proportionately greater savings being made over longer distances for the same increase in the amount transported.

Table 2. Costs of a one-way bus ticket between different destinations in southern Zimbabwe in January 2002. All routes are on tarred roads except Ngundu – Chikombedzi (via Rutenga), two-thirds of which is on gravel roads. This does not appear to influence the price. Tickets for short-distance trips are relatively more expensive than for longer distances.

Destinations	Distance (km)	Bus fare (one-way) Z\$	Cost/unit distance (Z\$ km ⁻¹)
Masvingo – Ngundu	95	250	2.63
Masvingo – Museva (Romwe station)	88	220	2.50
Masvingo – Chiredzi (via Ngundu)	203	600	2.95
Masvingo - Bulawayo	280	800	2.86
Museva – Ngundu	9	40	4.44
Museva – Rutenga	64	180	2.81
Museva – Beitbridge	202	550	2.72
Ngundu – Chikombedzi (via Rutenga)	151	480	3.17
Ngundu – Chiredzi	108	320	2.96
Rutenga – Mwenezi	18	100	5.56
Harare – Beitbridge	577	1 700	2.95

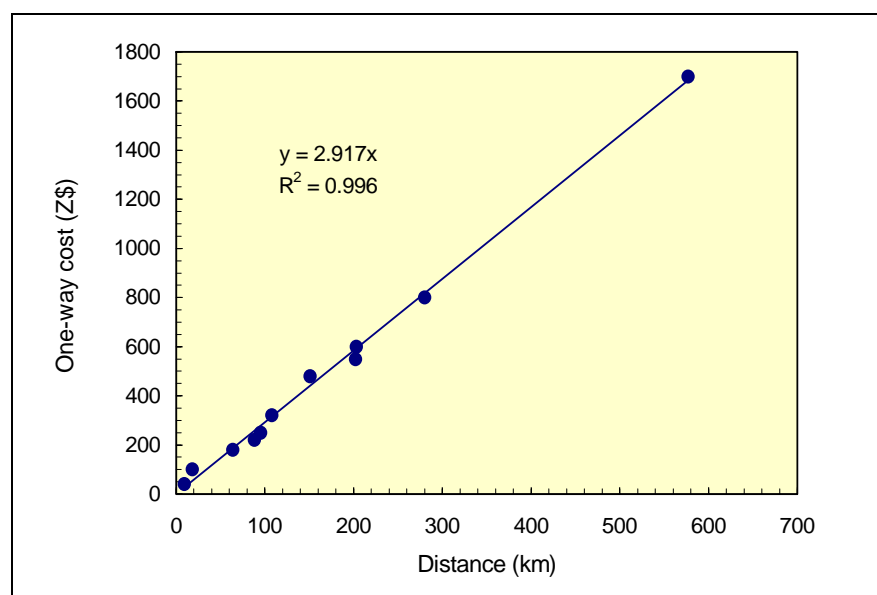


Figure 1. Relationship between distance travelled by bus and the cost of a one-way ticket in January 2002. The unit cost of travel averages Z\$ 2.92 km⁻¹.

Table 3. Unit transport costs (Z\$ kg⁻¹) for mopane worms at varying distances of the market from the source. Transport costs are calculated on the basis of a two-way journey for one person between the source area and market, at Z\$ 2.92 km⁻¹, and an average freight cost of Z\$ 4.00 kg⁻¹.

Distance to source (km)	Mass of mopane worms transported (kg)			
	10	20	30	40
50	33	19	14	11
75	48	26	19	15
100	62	33	23	19
125	77	41	28	22
150	92	48	33	26
175	106	55	38	30
200	121	62	43	33

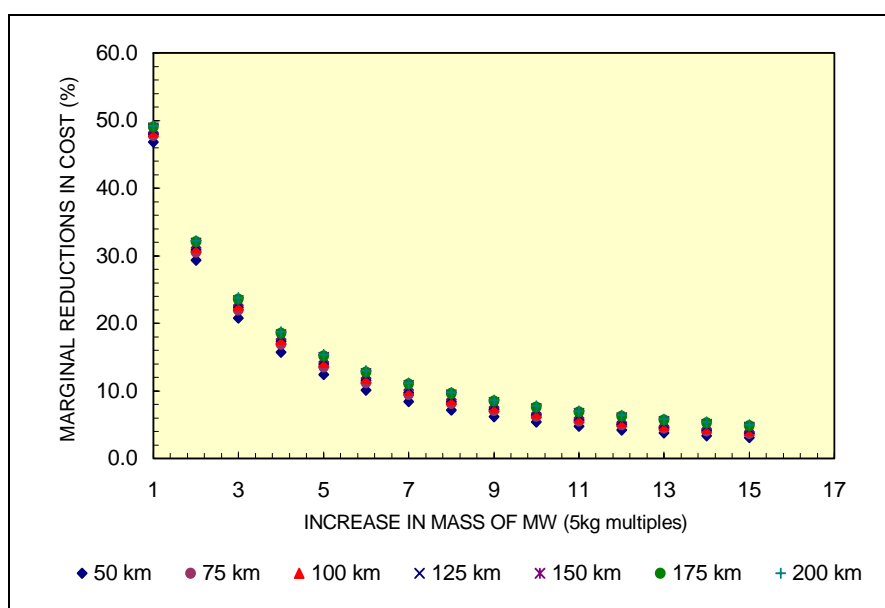


Figure 3. Simulated per cent reduction in unit transport costs of mopane worms (travel cost + freight cost) with increasing mass of mopane worms transported, calculated as multiples of 5 kg (approximately equivalent to a 20-litre container).

Not all rural areas are served by buses, however. In the more remote rural areas donkey carts are used to transport the worms from collection areas to central locations such as small business centres, from where they are then ferried to the larger markets by trucks or buses. Some of the cart owners are collectors themselves while others are just hired by collectors or buyers to ferry their consignments to accessible places. Charges for hiring the carts depend on the distance travelled and the relationship between the cart owner and collector or trader. If the two are closely related or are friends, the transport fee can be as little as \$200 per cart load or even waived altogether. In most cases, where a collector also owns a donkey cart, they will provide free transport to traders who purchase mopane worms from them in bulk, thus serving as an incentive to the bulk buyers to buy in future from that collector. Some collectors from outside the

mopane producing communities (e.g. those from Harare or Mutare) reported that in some areas local people, especially the Venda around Beitbridge, offer them free transport even if the outsiders have not bought any mopane worms from them (see the case history of Ms Mutema: Appendix 1).

6. The traders

6.1. Typology of traders and sale points

A number of people are involved in the marketing of mopane worms. Women are the main sellers of mopane worms in town and at small business centres (rural growth points). They mostly sell mopane worms in small volumes whereas men tend to dominate the large-volume trade. Generally, however, the participation of young men was low in almost all areas surveyed except Beitbridge. The following is provisional listing of the main types of traders and trading locations in urban areas.

- Merchants trading with mopane-worm collectors for cash or barter. The collectors usually sell to these merchants in bulk. The merchants in turn transport the mopane worms to the towns and then sell them on to other traders.
- Touts and hustlers (*maguma-guma*), mainly at Beitbridge, who pressure collectors from rural areas to sell to them at reduced prices.
- Buyers from South Africa and the Democratic Republic of the Congo who export mopane worms in bulk to these, and perhaps other, countries.
- Cross-border traders from Zimbabwe to neighbouring countries, including those who have permits to enter South Africa, and who pay duty at the border.
- Cross-border traders from Zimbabwe to South Africa and Botswana who attempt to evade paying duty.
- Large buyers ("*matraders*") representing wholesale food packaging companies such as Jagers, Jasbro, Neshuro, Quality Foods.
- Supermarkets and shops in the towns and cities, particularly in high-density areas, selling pre-packed and labelled mopane worms bought from the wholesale food packing companies.
- Shop owners who sell in sealed packets (sometimes packed by the seller), or who use cups to measure out standard amounts from open sacks.
- Women and men selling at open-air markets at bus termini in Beitbridge, Bulawayo, Masvingo and Rutenga.
- Women selling mopane worms on the street or on the verandas of large city-centre shops such as OK Bazaars.
- Women in beer halls selling mopane worms as a snack (e.g. Ritz night club in Masvingo and women at Ngundu and Chitubu beer halls).
- In some of the larger shops with small cafes, such as TM and OK Bazaars, mopane worms are offered as part of the main meal.

6.2. Origins

Most of the active traders in Bulawayo and Masvingo are apparently not local Ndebele-speaking people but Shona speakers from either Mashonaland or Manicaland. Attempts to find out why local people are not more active in trading mopane worms did not yield particularly convincing explanations from respondents. Some people mentioned the lack of accommodation for rural people, or busy schedules. Others reported that, when it comes to trading mopane worms, hunger is a major handicap facing rural people in Matabeleland. In most of the areas where the mopane worms are collected there is abject poverty and hunger, partly due to the dryness of the area. People are unable to keep reserve stocks of food, and so have to look for food on a near-daily basis. This makes it impossible for people to be away

from home for some time selling mopane worms in towns. One informant, himself an Ndebele, thought otherwise, however. He believed that the Ndebeles, culturally, are not adventurous people - "They are quite happy in their own locality. They do not like to go out of their home areas" (Mr. J. Sibanda, Bulawayo, 30 Jan 2002).

6.3. Gender relationships

The harvesting and processing of mopane worms have traditionally been activities carried out by women and children (Hobane, 1994). This still applies largely in more remote areas, though closer to the main urban centres, young unemployed men may also be involved in collecting, often under contract to a local trader (see case history of Mr Ndlovu from Bulawayo: Appendix 1). Men also generally dominate the more lucrative long-distance and large-volume trading chains in mopane worms. Women are confined largely to collecting and processing mopane worms, and to selling small volumes at open markets and sales points along the roadside or at bus termini and municipal markets. More than 70 % of 44 people interviewed during the survey were women. Women traders mentioned that they face many handicaps if they try to engage in cross-border trade. Most women collectors and processors come from rural communities and are traditionally highly immobile. They also have many domestic social obligations to fulfil – working in the fields, harvesting food, cooking, looking after the children, collecting firewood and water. In addition, it is more difficult for women to find secure but inexpensive accommodation in towns. Some women have overcome these problems, however, and are involved in a relatively lucrative trade in roundnuts or nyimo *Voandzeia subterranea*, woodcrafts, and crocheted items such as doilies and bedspreads. Some of these women in turn are also now trading in mopane worms, especially in Botswana and South Africa (see the case history of Mrs Mpofu: Appendix 1). The main problem cited by these women is that it is cumbersome to transport the large volumes of mopane worms need to make cross-border trading worthwhile.

7. Markets

7.1. General

As indicated in the previous section, mopane worms are sold at a wide variety of outlets, both to consumers and to other traders. Major outlets are supermarkets and stores, bus termini, open municipal and roadside markets, and in beer halls as a snack. Supermarkets are the main retail outlets for pre-packed and labelled mopane worms supplied by wholesale food packing companies such as Quality Foods, Jasbro and Savonuts. Bus termini encompass a range of buyers and sellers, from individual consumers buying small amounts to bulk traders involved in long-distance trade. Others are small traders who purchase one or two buckets of worms for resale in city centre or in high density suburbs. Mopane worms were also being sold at Greenmarket, the main market for fresh farm produce on 5th Street in central Bulawayo. Women are the main sellers of the mopane worms in beer halls.

Subsidiary outlets include: street-side sellers in the high-density suburbs, most of whom sell mopane worms as an ancillary commodity alongside their main products such as vegetables (*e.g.* tomatoes, onions or leafy vegetables) or loose biscuits and sweets; tuck shops; and outside supermarkets in the smaller towns. Tuck shops are ubiquitous in the high-density suburbs, but are also found in medium- and some low-density suburbs. The mopane worms on sale are usually pre-packed in polythene bags. In the case of women selling outside supermarkets, they are engaged primarily in selling jute carry bags to supermarket customers. Mopane worms are a sideline. In Bulawayo some traders in the city centre flea markets whose main business is selling toiletries and clothes imported from South Africa, were also selling mopane worms.

Mopane worms are also sold along the main roads in rural areas, usually close to source. Bags of collected mopane worms are stacked by the roadside, awaiting sale and transportation to the main cities.

When the quantities involved are relatively small and there is little competition among collectors, mopane worms stocks kept at home and prospective buyers have to travel through the communal areas to buy from collectors. Displaying mopane worms along a main road can serve to advertise the wider availability of mopane worms in neighbouring communities.

7.2. Rural markets

7.2.1 Ngundu and Romwe

Ngundu is situated about 95 km south of Masvingo on the road to Beitbridge. Romwe is a small rural community located about 8 km north-west of Ngundu. People from Ngundu and Romwe have traditionally harvested mopane worms mostly from commercial farms around Rutenga-Mwenezi and Chiredzi-Triangle, either for their own consumption or for selling at Ngundu. These areas are preferred because they are closer to Ngundu (about 70 and 110km respectively) than either Beitbridge (almost 200 km), or Chikombedzi (about 160 km on a mostly dusty and pot-holed gravel road). Their relative proximity means that mopane-worm collectors and traders can travel to them to buy or collect worms and return home the same day. The people do not have to consider the availability and cost of accommodation, something that has to be taken into account by traders travelling to more distant places such as Beitbridge. Nevertheless, those wishing to trade in large volumes of mopane worms have to go to Beitbridge or Chikombedzi.

At the time of the survey (January 2002) there were no traders at Ngundu or Romwe selling mopane worms collected from either Chiredzi or Triangle. Local informants said that there were no mopane worms in these areas at this time, though they were optimistic that, based on past trends, there would be an abundance of mopane worms there in March-April. The traders at Ngundu and Romwe reported that they had collected the mopane worms they were selling either from around Chikombedzi or in Beitbridge district (see the case histories of Ms Mhlanga and Mrs Nhamo: Appendix 1). They trade in comparatively smaller volumes than their counterparts in Beitbridge, because of fewer customers, many of whom also collect mopane worms for their own consumption. In the case of Romwe, the consumer base is narrowed further by the religious beliefs of members of certain Pentecostal and Zionist churches such as Zion Christian Church, Seventh Day Adventists, Jekenisheni, and Mapositori ekwaMarange. They believe that mopane worms are unclean and unfit for human consumption, citing the book of Leviticus in the Old Testament, chapter 11 verses 41 and 42, in support: "*...and everything that creeps on the ground and (multiplies in) swarms shall be an abomination; it shall not be eaten. Whatever goes on its belly, and whatever goes on all fours or whatever has more (than four) feet among all things that creep on the ground and swarm, you shall not eat; for they are detestable.*"

A number of small shops at Ngundu were selling mopane worms. Prices varied from shop to shop, depending on whether the mopane worms were delivered to the shop or the shop owner travelled to town to purchase the worms (thereby incurring transport costs). The main supplier of mopane worms at Ngundu is Jasbro. In general, 100 g packets of mopane worms were selling for between Z\$ 40 and Z\$ 50 (Z\$ 400 - 500 kg⁻¹). Neshuro Packaging Company, based in Triangle, was also a supplier. One shop was selling mopane worms from Neshuro at \$ 35.00 per 100 g (Z\$ 350 kg⁻¹). Shop owners reported that they prefer to sell the worms in 100g packs because these sell quickly.

7.2.2 Rutenga

Rutenga lies 55 km south of Ngundu on the Masvingo – Beitbridge road. It is a source area for mopane worms for traders from Ngundu and Masvingo, though in March and April when the second outbreak of mopane worms coincides with a high demand for worms at Beitbridge and elsewhere, some traders come from there and Bulawayo to buy. At the time this survey, there were no bulk sellers at Rutenga. Only about seven women were selling mopane worms at the bus stop and at the market place in the business centre, mostly in small lots (tea cups). Mopane worms constituted only a small fraction of the goods on

sale. Fruits, vegetables and cassette tapes were more common. The traders reported that most of their customers are bus travellers who stop over at the business centre. The low number of sellers was attributed to the scarcity of mopane worms at the time. Informants reported that the December outbreak was small and hatched early (first week of December) so that by the end of December almost all the worms had been collected and stocked. Birds and baboons also eat mopane worms, especially the early instar larvae, creating competition between people and wild life.

Informants mentioned that there are two women who supply mopane worms in bulk to outsiders. These women live on nearby recently-invaded commercial farms. They only come to Rutenga Business Centre if they have been asked to supply particular buyers, otherwise they are mostly busy in their fields. The women were said to be selling the worms at between Z\$ 900 and Z\$ 1200 per 20-litre bucket (Z\$ 158 – Z\$ 210 kg⁻¹), depending on the quantity being bought and the frequency and length of time the buyer and seller have been doing business. Long-standing, regular buyers, if they have proved to be reliable, will get a discount whenever they buy mopane worms from their supplier.

Only one shop at Rutenga was selling mopane worms in packets, from Jasbro at \$40 per 100 g pack (Z\$ 400 kg⁻¹). The other three other shops were selling loose mopane worms at \$35 a tea cup (Z\$ 250 kg⁻¹). Relative to shops visited elsewhere during the survey, the volumes being sold were low. This may be due to the small size of the market at the time, as most locals would be able to collect mopane worms for themselves from surrounding woodlands at little cost other than their time. A similar trend was noted at Mwenezi.

7.2.3 Mwenezi

Mwenezi lies 18 km south of Rutenga on the Masvingo-Beitbridge road. At the time of the survey, there were no more than five women selling mopane worms by the roadside on any one day. Many others were selling other goods such as vegetables and fruits. Some of the vegetable vendors said that they had stocks of mopane worms at their homes, but that they did not bring them to the roadside everyday because they are bulky and difficult to ferry. The women said that they live 4 - 5 km away from the road. Instead, buyers make prior arrangements with the suppliers to deliver the mopane worms on a given day and time. The selling price at Mwenezi was Z\$ 1000 – Z\$ 1200 per 20-litre bucket (Z\$ 175 – Z\$ 210 kg⁻¹). Last year the selling price for the same amount ranged from Z\$ 500 to Z\$ 2000 (Z\$ 88 – Z\$ 350 kg⁻¹) depending on availability and demand. The highest price was obtained at the end of April 2001 when the mopane worm season was tailing off and large bulk buyers from Bulawayo and Beitbridge were in the market.

7.2.4 Bubi

Bubi is situated 42 km south of Mwenezi on the main road to Beitbridge. Apparently, this is one of the main sources of supply of mopane worms, but at the time of the survey, there were no traders at the roadside in the village. Local people reported that there were no mopane worms in the area this year, thus accounting for the absence of sellers. Some women were selling mopane worms in 20-litre buckets at the entrance to a commercial farm just beyond Bubi on the way to Beitbridge. On the first day there were only three women with five buckets among them, while on the second day this had been reduced to two sellers with three buckets. The women reported that they collect the mopane worms from surrounding commercial farms and sell them for Z\$ 700 per bucket (Z\$ 123 kg⁻¹). They said that their stocks were not selling quickly, and they suspected that this was because they had been inconsistent in the past in their supply of mopane worms to buyers, resulting in the buyers losing faith in them. One of the traders remarked: "Buyers need a supplier who is reliable and consistent when it comes to supplying him or her with mopane worms. This year we have failed to do that because the worms are in short supply."

7.2.5 Chikombedzi

Chikombedzi lies in Matibi 2 Communal Land, about 106 km south-east of Rutenga. It is one of the main sources of mopane worms for the Beitbridge market, as well as for traders and people collecting for their

own use from Romwe and Ngundu (see case study of Ms Nhamo, a vendor at Ngundu: Appendix 1). Although a productive area for mopane worms, Chikombedzi lies off the main Masvingo-Beitbridge road.

7.2.6 *Mbalabala*

Mbalabala is situated 66 km south-east of Bulawayo on the road to Beitbridge. At the time of the survey, there were no mopane worms on sales in the shops. One shop owner reported that he last sold mopane worms at the beginning of December 2001. He had not ordered any new stock because demand for mopane worms is currently low. Most of his customers are local people who are themselves collecting mopane worms from neighbouring areas. When there is an outbreak of mopane worms, local collectors sometimes sell them to traders from Bulawayo, though if the market there is oversupplied the traders may not come to buy. In this case the collectors have two options: to take their mopane worms to Bulawayo themselves, or towns such as Zvishavane; or to stock the worms until demand has increased. The problem with storage is that if there is moisture in the storage rooms the whole consignment will rot. In many instances collectors do not have enough suitable storage space. When mopane worms are stored, they are periodically taken out and spread in the sun to dry so that they do not become mouldy or rancid.

7.3. Urban markets

7.3.1 *Masvingo*

At open markets in Masvingo, mainly at the main bus terminus in Mucheke Township, mopane worms were selling at \$50 per tea cup (\$357 kg⁻¹). A 5-litre tin cost \$450.00, equivalent to \$321 kg⁻¹, while four other smaller tins of different sizes cost between \$100-\$400. All sellers interviewed attributed the high price to a general shortage of the worms in traditional nearby supply areas such as Chiredzi, as well as to high transport costs. Traders also reported that the supply of mopane worms at the time of the survey was erratic. On average there were no more than five traders selling mopane worms on the days when the market was visited.

All the major supermarkets visited in Masvingo were selling the mopane worms packed in well-labelled and sealed plastic bags in 50g, 100g, 250g, 500g and, occasionally, 1 kg units. Information provided on the packages included: the mass of the contents, the name and address of the supplier, the range of other goods and services the supplier provides, and the Shona or Ndebele names of the worms (or both). No information on the nutritive value of the worms or how they can be prepared is given. In some cases the packages were marked 'Dried Kapenta' or 'Fresh Kapenta', indicating that the wholesalers are involved primarily in selling kapenta (freshwater sardine). This suggests that for some wholesalers, mopane worms are an intermittent product line. Prices differed among outlets and suppliers (Table 4).

7.3.2 *Beitbridge*

Beitbridge is situated in the extreme south of Zimbabwe, on the border with South Africa. It is the only direct official border crossing point to South Africa. It is both a hub of mopane worm marketing and, in the surrounding district, a source of the product as well. Of all the towns surveyed in southern Zimbabwe, Beitbridge had the largest volumes of mopane worms being traded. At the time of the survey, Beitbridge District was the current main source of the mopane worms being traded, with most coming from Matshiloni, Matshela, and part of Chiturupasi area. Most of people in these areas are Venda. There is a fleet of small trucks and cars at Beitbridge which traders can hire to ferry mopane worms from the collection areas to market. Informants reported that they pay about \$300 (one-way) to travel to some of the furthest places such as Matshela.

Table 4. Outlets, prices and wholesale suppliers of mopane worms in shops in Masvingo, January 2002.

Outlet	Supplier	Packet size (g)	Selling price (\$)	Unit price (Z\$ kg ⁻¹)
Kapenta Take Away (a wholesale outlet for kapenta and other food stuffs)	Jasbro	100	23.00	230
		250	57.50	230
		500	115.00	230
		1000	230.00	230
OK Supermarket	Jasbro	100	50.00	500
		250	125.00	500
		500	280.00	460
Tsongai Supermarket	Jasbro	100	45.10	451
		250	130.90	523
		500	219.50	439
TM Supermarket	Silver Best	100	40.30	403
		250	118.00	472
		500	202.00	404
	Jasbro	100	49.50	495
		250	120.00	480
	Quality foods	100	50.00	500

None of the six small food/grocery shops surveyed in Beitbridge were selling mopane worms. At the time of the survey, mopane worms were readily available in surrounding marketplaces at prices well below those of the mopane worms in packets. Prices ranged from Z\$ 500 to Z\$ 750 per 20-litre bucket (Z\$ 88 - Z\$ 132 kg⁻¹). Women were also selling mopane worms to local consumers in small units such as tea cups (140 g), 2.5-litre and 5-litre tins (containing about 700 g and 1.4 kg of mopane worms respectively). As with Rutenga and Mwenezi, people can collect mopane worms for themselves from nearby areas, and this would have further depressed demand from local consumers.

7.3.3 Bulawayo

The markets in Bulawayo do not appear to be as complex and as vibrant as those at Beitbridge which, at the time of the survey, seemed to be the hub of the marketing of the mopane worms. For example, there were no *maguma-guma* competing aggressively for suppliers. The volumes being traded in the markets were also lower than those found at Beitbridge, though prices for bulk sales were similar (Table 5). Prices for a 20-litre bucket of mopane worms in the Bulawayo markets ranged from Z\$ 600 to Z\$ 800, equivalent to about Z\$ 105 - 140 kg⁻¹. Traders were buying buy the same volume from collectors in Gwanda, Lupane and Kezi at \$250 - 350 (Z\$ 44 - 61 kg⁻¹). With transport costs of about Z\$ 40 - 50 kg⁻¹, and without taking their time or other incidental expenses into account, these traders are getting no more than 25 % return on their capital.

Some vendors sell the worms loose while others sell them in packs. A number of vegetable vendors in the high-density suburbs were selling mopane worms by the cupful at Z\$ 30 - Z\$ 50 per cup (Z\$ 214 - Z\$ 357 kg⁻¹). The price is influenced by whether a vendor collected or bought the worms being sold. The price of worms collected by the vendor is usually lower than that of mopane worms bought from a trader.

Only one supermarket, TM Hyper, was selling mopane worms, in 100 g plastic packets at \$130 per pack (Z\$ 1300 kg⁻¹). The address but not the name of the wholesaler was printed on the packet. Jasbro is

normally the main supplier of mopane worms to supermarkets in Bulawayo. Some shop owners said that they sometimes sell mopane worms, but at the time of the survey they had none on their shelves because the open markets were oversupplied. Most consumers buy mopane worms in the open markets because prices are substantially lower (Table 5). Once the supply diminishes, from June until mid December, pre-packed mopane worms are then stocked by the shops.

Table 5. Prices of mopane worms on sale at various outlets in Bulawayo. Prices at Zvishavane and in the rural areas of Gwanda, Lupane and Kezi are given for comparison.

Place	Unit of sale	Selling price (Z\$)	Unit price (Z\$ kg ⁻¹)
Renkini bus terminus, Bulawayo	Plastic tea cup	30 - 40	214 - 286
	5-litre tin	250	178
	10-litre tin	450	161
	20-litre bucket	600 - 800	105 - 140
Green market - Bulawayo	2-litre tin	200	333
	Plastic tea cup	40	286
Flea market in Bulawayo city centre	Plastic tea cup	30	214
Imnyela beer hall - Bulawayo	Lid of scud	10	357
TM Hyper - Bulawayo	100 g	130	1300
Zvishavane	Tea cup	40	286
	20-litre bucket	800 - 900	140 - 158
Kezi, Gwanda, Lupane	20-litre bucket	250 - 350	44 - 61

7.3.4 Zvishavane

Zvishavane is a mining town situated about 100 km west of Masvingo on the main road to Bulawayo. Four of the seven shops surveyed at the bus terminus were selling the worms in pre-packed 50 and 100 g packs from Jasbro and Neshuro. Shop attendants reported that though mopane worms were not selling fast, business this year in the marketing of mopane worms was more brisk than at the same time in other years because the outbreak of mopane worms in surrounding areas was small. Local buyers and others from places such as Masvingo and Harare collected or bought all the available mopane worms in a very short time, producing a general shortage. Two shops were selling loose mopane worms at Z\$ 40 a teacup (Z\$ 286 kg⁻¹). The shop owners sent buyers to purchase mopane worms from collectors living on nearby commercial farms, about 25 km west of Zvishavane. One shop owners reported that he had bought three 20-litre buckets at the end of December 2001 for \$800 each (Z\$ 140 kg⁻¹) and now had only one left. He expected to get about Z\$ 2000 per bucket (Z\$ 351kg⁻¹), though this is more than his current selling price of Z\$ 286 kg⁻¹. The shop owners said that they sometimes face problems from Environmental Health officers who do not encourage shops to sell uncovered foods.

The major source of mopane worms in Zvishavane are the surrounding commercial farms. When an outbreak occurs, many people from the town go to the farms to collect mopane worms for their own consumption or to re-sell in town or at the nearby Mashaba mine. Many of these farms have been taken over under the present 'fast-track' resettlement programme, and there is reportedly massive deforestation taking place, which may reduce the potential of such areas to produce mopane worms in future.

7.3.5 Harare

Surveys were carried out in a number of supermarkets, stores and markets in Harare to determine the presence, sources of supply, and prices of mopane worms (Table 6). In general, prices were similar to those of equivalent outlets elsewhere. Mopane worms appeared to be sold more commonly in pre-packed plastic bags, suggesting that most retailers, even those selling from roadside stalls, obtain their supplies from wholesale food packing companies (see case history of Ms Moyo: Appendix 1). Little additional information is available about this market at present.

Table 6. Prices of mopane worms on sale at various outlets in Harare, January-February 2002.

Outlet ¹	Supplier	Packet size (g)	Selling price (\$)	Unit price (Z\$ kg ⁻¹)
Bon Marche, Avondale	Quality Foods	100	42.40	424
TM Supermarket, Avondale	Quality Foods	250	118.00	472
		500	202.00	404
	Jasbro	250	118.00	472
		500	235.50	471
OK Supermarket, Belgravia	Quality Foods	100	50.00	500
TM Supermarket, Groombridge	Quality Foods	250	101.00	404
	Monaken Marketing	200	80.80	404
La Fontana, Avondale	-unmarked-	100	50.00	500
Various supermarkets in high-density suburbs	Star Packers and Agents	100	40.50	405
	Kay's Butchery	100	33.00	330
Machipisa open market	Danwin	50	20.00	400
Glen Norah beerhall (woman selling snacks)	Loose ('scud' lid)	37	10.00	270
Highfield roadside seller	-unmarked-	50	20	400

¹ In addition to the supermarkets listed, four other supermarkets in Strathaven, Mt Pleasant (2) and Ballantyne Park were not stocking mopane worms in January 2002.

7.4. Cross-border trading

7.4.1 General features

At the time of the survey, mopane worms from southern Zimbabwe were being traded to South Africa, Botswana, Zambia and the Democratic Republic of the Congo. Details of this trade are sketchy because of its informal and, in some cases, illegal nature (*e.g.* avoiding customs duty). Traders selling their mopane worm stocks outside Zimbabwe apparently connive with haulage truck drivers to put their stocks in the middle of their official cargo and then cross the boarder without paying duty. (How much duty, and whether it is payable in all instances is not yet known.) Such arrangements are not possible with bus operators. Customs officers levy all taxable goods carried by buses through the boarder posts. Paying duty obviously reduces the revenue a trader hopes to get from the sale of the mopane worms.

The trader pays a nominal fee to the truck driver for this service. Prior to a truck driver taking a cargo of mopane worms, the mopane worm trader sends someone ahead to the neighbouring country to await the arrival of the cargo and to scout for buyers. The relationship is founded on friendships and trust between

the mopane worm trader, his or her associates, and the truck driver. There is also often familiarity between the truck drivers and customs officers, build up through frequent and often prolonged interaction at border posts where truck drivers can spend considerable time waiting for their cargoes to be cleared. There is no indication that customs officers are involved in facilitating the cross-border movement of mopane worms.

Some traders also hire small trucks in border towns such as Beitbridge to transport their cargoes across the boarder. The truck owners usually have permits to offer this cross-border ferrying service. Some trucks have South African or other foreign registration numbers, but are owned locally. These small truck operators can also be hired to transport mopane worms from neighbouring communal areas where the worms are collected or bought. The charge for this depends largely on the distances involved.

Haulage services are also offered by men operating two-wheeled carts. These carts are mostly used to transport goods around the boarder post, for example from the highway (where the traders are dropped off by haulage trucks) to selling points at the open market. These two-wheeled carts are cheaper to hire than small trucks. There are no standard charges for hiring the two-wheeled carts, but the fee is negotiated by the parties, preferably beforehand as the cart-pushers are in the habit of increasing the fee arbitrarily after the load has been moved. Some traders mentioned that they travel across the borders by train (see the case history of the five Zimbabweans trading mopane worms in Zambia: Appendix 1). Travel and transport by train is cheaper than by bus, but not necessarily cheaper than by haulage truck, as some traders appear to be able to negotiate low fares on the trucks. A limitation of transport by train is that not all areas where mopane worms are traded are linked by rail.

7.4.2 *South Africa*

There is apparently a thriving cross-border trade in mopane worms at Beitbridge. Most of it has the general characteristics outlined above. One of the *maguma-guma*, who apparently sometimes trades mopane worms in South Africa, indicated that the selling price on the street there is currently R 9.00 kg⁻¹ (see case history of Mr Mhofu: Appendix 1). Some of the cross-border traders in mopane worms are women who normally trade in crocheted items such as doilies and bedspreads in neighbouring countries, mostly South Africa. In turn, they import electronic and other goods in demand in Zimbabwe, which they purchase with the proceeds of their sales. The volumes of mopane worms traded by these women are relatively small compared to those of full-time men traders, mainly because trading mopane worms is not their core business and they participate for short periods only.

7.4.3 *Botswana*

The main border crossing is at Plumtree/Ramokgwebana. Some traders reported that the customs officers at the Plumtree border post between Zimbabwe and Botswana are uncooperative when traders want to take their merchandise (mopane worms or any other) to Botswana for sale. (Unfortunately, we do not know if the uncooperative officers are on the Zimbabwean or Botswana side; this needs to be checked.) As a result, collectors and traders of mopane worms in neighbouring Bulilimamangwe District, are often not able to supply the Botswana market with mopane worms despite their proximity to Botswana. Mopane worms destined for export often go instead through the Beitbridge boarder post to South Africa.

Well-established traders who know how to circumvent the obstacles at the Plumtree boarder post apparently still manage to take mopane worms across to Botswana, for example by smuggling their stocks in cross-border haulage trucks, thereby avoiding declaring their goods at the boarder. Some traders were also reported to use illegal entry points to Botswana to avoid the difficulties at customs. The main buyers of mopane worms in Botswana are individuals who buy the worms for their own consumption, or who purchase in bulk for resale to other Botswanas. The current selling price in Botswana is not known, though in 2001 mopane worms were selling for 5-7 Pula kg⁻¹.

7.4.4 Zambia

There is little information on the nature or scale of the trade in mopane worms to Zambia. Some entrepreneurs from Zimbabwe are involved in transporting mopane worms in bulk to markets in Zambia where they sell on to Zambia traders (see the case history of five young Zimbabwean men engaged in this trade: Appendix 1). The trade there is apparently extremely profitable, with the cross-border traders being paid in US dollars which are then exchanged on the parallel market in Zimbabwe. (In January 2002, the official ZW\$:US\$ exchange rate was 55:1, while the parallel rate was up to 350:1.) Based on information provided by one set of interviewees, they are apparently able to sell mopane worms for the equivalent of Z\$ 1,000 kg⁻¹. Obviously, allowance has to be made for their transport and accommodation costs, but the profits nevertheless appear substantial.

7.4.5 Democratic Republic of the Congo

Buyers from the DRC, as well as traders from Zimbabwe who export mopane worms to the DRC, are apparently both active at the peak of the mopane worm season, particularly at Beitbridge. Little is known about this trade, however. Given the security concerns of Zimbabwe and the DRC, and the questionable business ties, it was not considered advisable to pursue information on the nature of this market or the identities of the traders at this juncture.

8. Seasonal fluctuations in availability and price

The price of mopane worms differs considerably among localities and selling points, and with time (Tables 4-6), reflecting not only the position of the sales point along the marketing chain, and the kind and amount of value added up to that point, but also to differences in the quality of the product, the negotiating skills of the buyer and seller, and the number and kinds of competing buyers. Fluctuations in price through the year at a locality largely reflect variations in supply and demand. For example, in December – February 2001 there was a general shortage of mopane worms, which forced prices upwards in places such as Beitbridge. Even the absence of bulk buyers such as Jasbro and traders from the Democratic Republic of the Congo (DRC) did not apparently have much effect on prices. The selling price at that time ranged from Z\$500 – Z\$ 1300 per 20-litre bucket (about Z\$ 88 – Z\$ 288 kg⁻¹). Conversely, in March and April 2001, there was a major outbreak of mopane worms in southern Zimbabwe, particularly in Chiredzi and Mwenezi districts. The markets were flooded with mopane worms. In theory, this should have forced the price down, but the opposite happened. Large wholesalers and food packaging companies such as Jasbro and Jagers, as well as bulk buyers from the DRC, South Africa and Bulawayo, entered the Beitbridge market at this time, intensifying competition and forcing prices up. A 20-litre bucket of mopane worms was then selling at between Z\$1,700 and Z\$ 2,500 kg⁻¹ (Z\$ 298 – Z\$ 438 kg⁻¹). Traders apparently made substantial profits from the sale of mopane worms.

Selling prices increased further from June to November 2001, after the mopane worm outbreak was over and no more were being collected. Some traders mentioned that they usually stock up mopane worms in their rooms in March/April and then sell the worms from June to early December when there is a shortage of the worms and selling prices are high. This is the period of highest profits for traders. According to some informants, 20-litre buckets of mopane worms during this period sold for as much as Z\$ 3,500 (Z\$ 614 kg⁻¹). Such prices have prompted some collectors to stock their mopane worms and only sell later when prices have risen. Mai B., a popular female trader at Beitbridge who comes originally from Shurugwi, reported that she stocked 35 20-litre buckets last year and sold them at \$3,500 each between June and November 2001. This year she is planning to store even more. She is now renting a house in Beitbridge, for which she pays Z\$ 700 month⁻¹. This saves her the higher costs of short-term accommodation and storage.

An analysis of small set of data collected during the survey in which both the buying and the selling price is known, suggested that men were generally able to negotiate lower prices from collectors than women

(average price paid by men: Z\$ 96.0, s.d. 36.4, n = 5; average price paid by women: Z\$ 160.8 kg⁻¹, s.d. 13.2, n = 6). This dissimilarity is probably due to differences in the amounts bought. In aggregate, the five men traders purchased about 1,258 kg of mopane worms, an average of 251.8 kg each (though the individual amounts bought were highly variable), whereas the women bought only 171 kg or about 28.5 kg each. The men had a further advantage in buying from collectors who had brought their stocks to town and thus had already borne the transport costs. In contrast, most of the women in the survey bought in the rural areas and so had to incur further costs in transporting the mopane worms to town. The women appeared to compensate, however, by selling at a proportionately higher price. The mark up on their purchase price was 104 % compared to an average 88 % mark up by men traders.

When buying from traders, there was no difference in the average price paid by men or women (Z\$ 140.4 kg⁻¹), though the sample sizes are small. Interestingly, perhaps, these data suggest that women paid about Z\$ 20 less when buying from traders than collectors, though the result may be an artefact of the small sample sizes.

9. Constraints on trading

People collecting, buying and selling mopane worms experience a range of problems, The following are the key ones mentioned by respondents.

- Cleaning the mopane worms is labour-intensive, time-consuming, and damages and discolours the processors' hands
- Collectors face a number of natural hazards, including the risk of being bitten by snakes. Last year a woman from near Romwe died after being bitten while collecting mopane worms near Chiredzi.
- The source areas of mopane worms are often remote and relatively inaccessible. This adds considerable costs in terms of time and money in transporting mopane worms to the major markets.
- Some of the commercial farms where the traders used to collect mopane worms have either been invaded or been taken over by government for resettlement. The newly-settled farmers no longer allowing traders to collect mopane worms from these farms.
- In both December/January and March/April, if it rains incessantly, it is difficult to dry mopane worms properly. As a result, they become rancid or mouldy and are then rejected by prospective buyers.
- For traders from rural areas, the high cost of accommodation in market towns such as Beitbridge means that they are under pressure to sell their stocks quickly and attempt to return home the same day. This often results in them accepting lower prices, as they do not have the time to engage in protracted negotiations. For others, especially cross-border traders, the lack of decent and affordable accommodation means that they often end up sleeping in the open at the border posts because they can not get or afford to rent accommodation. This is a major problem when it rains, not only because of personal discomfort but also because their stocks may get wet and spoil.
- The crime rate at Beitbridge is high and traders, especially those from outside, risk being robbed by *maguma guma* or others if they are seen to be carrying a lot of money. As a result, big traders tend to move around as a group for security reasons. One woman interviewed at Beitbridge had just been robbed of Z\$ 2,000 at knife-point by a gang of young men. Mrs Zikhali, a widow who usually sold vegetable and traded in second-hand clothes by the roadside, had decided to buy and sell mopane worms to raise money to pay school fees for her children.
- Although traders in Masvingo and elsewhere know the prices of mopane worms in other localities, even in places as far away as Beitbridge, the high cost of travel and risk of road accidents on public transport often inhibits them from travelling to these places to take advantage of the higher prices. (One woman respondent in Masvingo commented that the busy Masvingo-Beitbridge road has "the highest road carnage in the country.")
- Most sellers in markets or on the street sell mopane worms in loose batches from open stocks. Customers must either bring their own containers (bags, tins) or have their purchase wrapped in old

newspaper. Few sellers purchase polythene or paper bags and pre-pack their stocks. Most considered that this adds an “unnecessary” production cost. Nevertheless, selling unpacked worms also has a cost, as some customers, particularly in the more affluent urban areas, prefer well packed mopane worms to those sold loose and uncovered. “Some buyers are very particular about their health, they are very hygienic. They will not buy mopane worms that have a swarm of green flies hovering above them” (Mrs Ncube, a buyer of mopane worms on 5th street in Bulawayo city centre).

Further constraints to aspiring traders are illustrated in the case history of Miss P. Mhlanga (Appendix 1).

10. Discussion and conclusions

10.1. Value addition

The utility of a product such as mopane worm is a function of its form, location, concentration, and time of availability. Changes in these attributes along the marketing chains (Figure 4) adds value to the product as it moves from producers (collectors) to consumers. Mopane worms are an irregularly occurring, dispersed resource (1). Initial value is added through collection and processing of mopane worms, which changes both the form and the concentration of the product (2). Batches of processed and dried mopane worms, situated in the collection areas, are then moved to consumer markets, either directly by the collectors themselves (2-4 or 2-5) or through intermediate traders (2-3) who then sell on to the wholesale markets (4). This adds further value as the product is relocated to the consumer markets. Of course, some consumers can also collect mopane worms themselves, directly from the production areas (1-6), thereby deriving sole benefit from the utility of the product. Wholesalers may repackage their stocks into smaller, sealed and labelled packs, for sale in formal outlets (shops, supermarkets), or sell in bulk direct to retailers in open markets. Retailers (5), whether trading with consumers (6) through shops or formal or informal markets, can also obtain stocks direct from intermediate traders. Small traders in bars, restaurants or open-air markets may add further value by cooking mopane worms and adding spices before selling them on to consumers (5-6). For example, one woman seller at Ngundu who buys from traders and then fries and spices mopane worms for sale at the local council beer hall gets a return of about 300 % on her capital outlay (see the case history of Mrs Dube: Appendix 1).

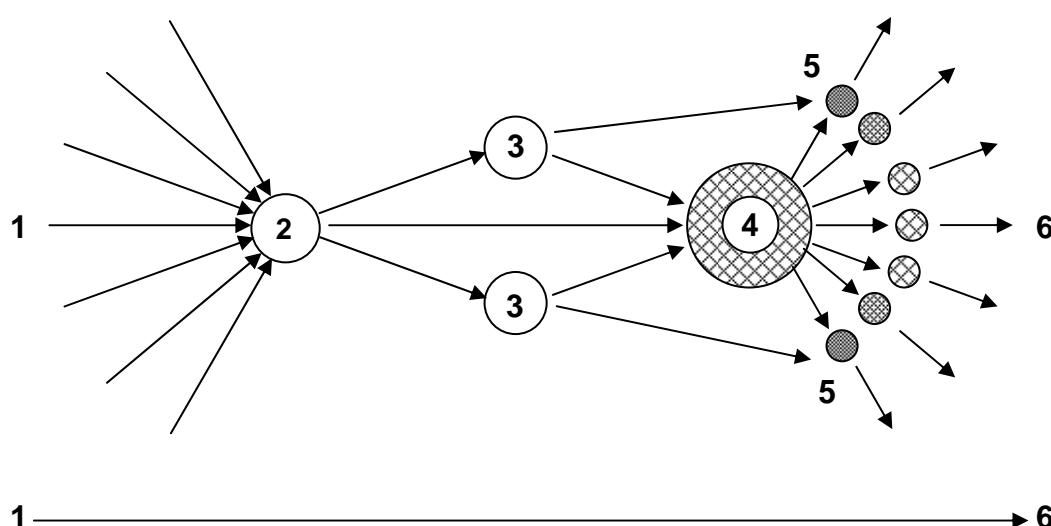


Figure 4. Stylised marketing chains for mopane worms in southern Zimbabwe. See text for explanations.

The results of this survey show that the collection and marketing of mopane worms is a widespread and diverse activity carried out by many, mostly poor, people under a range of circumstances. The mopane worm trade seems to be characterised by a high degree of opportunism and, perhaps, some risk. Barriers to entry are low, both for collectors and traders. Barriers to expansion among traders, however, may depend largely on their ability to secure sufficient capital to purchase in bulk. Based on figures obtained during the survey, on the average price paid by buyers to collectors and the average amounts bought, the men interviewed were laying out about Z\$ 24,154 on average in purchasing their stocks. Women traders were laying out considerably less, about Z\$ 4,583 on average, in addition to having to pay for transport and, in some cases perhaps, accommodation. Whereas the returns appear to be relatively high, the figures do not take into account some ancillary costs (*e.g.* transport, accommodation), and the opportunity costs of both time and money. Further work is needed in this regard.

Relatively little information is currently available on consumers: who buys mopane worms, in what amounts, how often, and for what purposes; whether mopane worms are considered to be a luxury or cheap food; whether they are consumed as a relish with a main meal, or as a snack; what consumer preferences are for the size, colour, taste and manner of processing of mopane worms; and whether any or all of these are changing. Trends in the demand for mopane worms, and whether demand is sustained in the face of competition from alternative foods, also need to be assessed.

The present survey did not encompass the wholesale food packaging companies. A list of these is attached (Appendix 2). A detailed survey of these companies is planned during the next phase of this study. Other outstanding issues that need to be explored include:

- Interview some customs officers at Beitbridge border post about the volumes of mopane worms that pass through that border post to South Africa and the total revenue customs receive as duty.
- Interview some of the cross border traders who have permits to sell in S. Africa.
- Interview some locals in Beitbridge, including the Rural District Council and others with responsibility for the woodlands producing mopane worms, about their attitudes towards outsiders coming from elsewhere to exploit this resource.
- Investigate what prevents the local Venda-speaking people from organising themselves and selling mopane worms directly to South Africa (where many have relatives), or to Jasbro, instead of being pressured to sell to *maguma guma* and other local traders.
- Continue collecting data on prices at various points along the marketing chains, including checking the wholesale price of mopane worms in Masvingo and Bulawayo.

11. References

- Hobane, P.A. (1994) *The urban marketing of the mopane worm: the case of Harare*. Centre for Applied Social Sciences, University of Zimbabwe. 10pp.
- Hobane, P.A. (1995) *Amacimbi: the gathering, processing, consumption and trade of edible caterpillars in Bulilimangwe District*. Centre for Applied Social Sciences, University of Zimbabwe. 33 pp.
- Rebe, M. (1999) *The Sustainable Use of Mopane Worms as a Harvestable Protein Source for Human Consumption: Local Perceptions*. Unpublished M.Sc. Thesis, University of Pretoria.

APPENDIX 1

Case Studies of Traders in Mopane Worms, Southern Zimbabwe, January 2002

Introduction

The following boxes contain a series of brief sketches of people involved in trading mopane worms. They illustrate the diversity of circumstances of the people, as well as their own perceptions of the trade, their personal situations, and their reflections on these.

Ms. Siboni Mhlanga (real name) of Romwe

Ms Mlanga is in her late twenties and still unmarried. She is staying with her parents at the moment. In addition to selling mopane worms she also actively participates in dryland and irrigated farming as a member of the family. Selling of mopane worms is very seasonal, from January to about April. During the rest of her time she is involved in selling farm produce like tomatoes and onions from the family gardens. Irrigated farming contributes the largest portion to her livelihood portfolio.

This year she decided to trade in the selling of mopane worms. She got the idea to sell the worms from her sister and brother's wife who used to be actively involved in this enterprise. This year her sister is not trading in the mopane worms because she wants to "take a short rest". Her brother's wife on the other hand has enrolled at a teacher's college and is now unable to participate in the trading of mopane worms. A number of local women who usually trade in mopane worms had also taken a temporary break at the time of the survey. Ms. Mhlanga decided to fill in the gap left behind by these women. She was not clear on why some traditional mopane worm sellers had decided to take a short break but she suspected that some traders were still scared after one of them was bitten to death by a snake last while collecting the worms in the Chiredzi area.

Ms. Mhlanga went to collect the worms on her own from Beit Bridge. She went by bus and paid Z\$ 500.00 per trip. She had to collect and process the worms on her own to save on production costs (transport costs, labour to squeeze out the chaff in the gut of the mopane worms etc). She took one week collecting and processing the worms. Unlike other collectors, she did not roast the worms in fire to remove the spines and improve on the appearance of the worms. Instead she boiled the worms and then dried them. "I found that roasting the worms require lots of firewood which was difficult to get. Also roasting the worms in fire burns the skin".

She was staying with a local Venda family who offered her free accommodation. Ms. Mhlanga claimed that her hosts did not ask her to pay them for hosting her. However out of a spirit of reciprocity than anything else, Ms. Mhlanga claimed that she bought her host a few groceries as a token of appreciation. Although her hosts were generous Ms. Mhlanga claimed that some Venda people were jealous of outsiders who come to "take their resources away". She alleged that in some areas the Vendas were said to be chasing away all outsiders collecting mopane worms from their areas and confiscating the collected worms. She brought home one 50 kg maize meal bag of mopane worms [about 20 kg mopane worms]. At the time of the survey she was selling the worms from her home. This gives her time to do other jobs like working in the irrigated gardens or selling vegetables from the garden.

She is selling the worms at Z\$ 50 a tea cup. Most of her buyers are families from the Romwe catchment. She is hoping to go and collect more worms when her current stock is finished.

Mrs. Nhamo*: mopane vendor at Ngundu

Mrs Nhamo was selling mopane worms at Ngundu market. Other items on sale included tomatoes, mangoes, onions, and leaf vegetables.

Mrs. Nhamo reported that she has been involved in the selling of mopane worms for more than six years. Though the marketing of mopane worms is seasonal, returns for that short period of time are high. For much of the year, Mrs. Nhamo relies on selling farm produce like vegetables, fruits, green mealies, roasted groundnuts, sweet sorghum and a whole range of other farm produce.

"I went to Chikombedzi about three weeks ago to collect the mopane worms. I brought one 90-kg bag of the worms [about 36 kg mopane worms]. In most cases people from Chikombedzi do not want us to collect the worms on our own. They say we if we collect for ourselves we will collect large volumes and even end up cutting down trees while collecting the mopane worms. In some areas they actually chase us away. So in most cases they collect the worms themselves and we buy from them. When I went to collect in early December I did not face any resistance because everyone was busy in the fields as the cropping season had just started. In March/April it will be a different story because there will be less work to do in the fields and the Shangaan (inhabitants of Chikombedzi), will be in full force collecting mopane worms. I am selling the worms here. They are selling fast. Each day I get about Z\$ 200 from the sale of the worms" She is selling the worms at Z\$ 40 a tea cup. Mrs. Nhamo claimed that she did not know how much she gets as profit after selling a 90-kg bag of the mopane worms, despite the many years she has been involved in the trading of the mopane worms. She claimed that she never gets a chance to save money from the sale of the mopane worms because she uses all the money she gets to buy food, mainly maize. (At the time of the survey a 20-l bucket of maize was selling at Z\$ 500 at Ngundu. Such a bucket will only last for at most one week for a family of six to seven people)

Mrs. Nhamo paid Z\$ 480 bus fare (one trip) to Chikombedzi. On her second leg the fare was slightly more because she had to pay Z\$ 80 for her luggage. She mentioned that in future she will just go and buy already processed worms from where ever she can get them because it takes her less time that when she has to collect and process them herself.

* Some informants refused to provide their names because they suspected that their names could be used to victimise them politically.

Ms Mutema, a mopane-worm trader from Chimanimani

Ms Mutema has been trading mopane worms for almost the last three years. She collects mopane worms in Beitbridge District, camping at the home of one of the local people. "The Vendas are very generous people. If you treat them well they treat you well too. Sometimes they even bring us water to drink while we are in the forests harvesting the worms, using their carts. What they do not want are people who harvest all the mopane worms from their areas. If they think that you are overexploiting their resources (mopane) they can even chase you away. Some collectors are in the habit of causing veld fires in the forests as they roast mopane worms or harvesting mopane worms by cutting down whole trees" explained Ms Mutema. She can speak Ndebele and is also learning Venda to enable her to communicate better with the Vendas who are sometimes her hosts when she is collecting mopane worms. Ms Mutema reported that, after collecting enough mopane worms for sale, she usually gets free transport from her hosts from the otherwise remote areas to the main tarred road or any other accessible gravel road. She usually brings them some groceries from Mutare where she sells the mopane worms. She prefers to stay with one family each time she is camped a particular locality. That way she is able to build social capital with the families, so that they will end up offering her free transport.

Mrs. Olivia Mutema (not her real name)

She is married and a mother of one. She hails from Romwe. Her husband is a migrant labourer in South Africa. About three months ago her husband fell ill while he was in Zimbabwe on holiday. He was admitted at Beit Bridge hospital on his way back to South Africa. He was diagnosed and found to be suffering from TB. He is being treated for TB at the hospital. Meanwhile Mrs. Mutema who was accompanying her husband to South Africa when her husband fell ill decide to join the mopane worm trading group. The couple needed money to pay medical bills and for their own up keep and since Mrs. Mutema 's husband was now ill, Mrs. Mutema took over as the breadwinner. Her problem was that she did not have starting capital. To get started Mrs. Mutema started sewing small shirts and dresses and exchanged them for mopane worms. She would then sell the worms at Beit Bridge. Using her profit from her first merchandise, Mrs. Mutema bought more cloth and made more shirts and dresses to exchange for mopane worms. For two or three small dresses or shorts, she would obtain a bucket of mopane worms. She is also exchanging roller meal for mopane worms. She sells the mopane worms she gets from the barter trade to buyers who buy the worms in bulk at Beit Bridge at between Z\$ 750 and Z\$ 900 per bucket. Now she has managed to save more than Z\$ 3,000 from the sale of mopane worms.

She sells her wares in remote areas surrounding Beitbridge. To get to these remote areas she hires local trucks or hitch-hikes on trucks that ply those routes. One trip to the furthest places she goes to sell her wares costs Z\$ 300.

When she gets to the areas where she will sell her wares, notably Matshela, she will entrust one family to sell her wares on her behalf. Already she has found families who are always selling her wares on her behalf while she is away caring for her sick husband. Those who buy her wares will bring the mopane worms they use to pay for the wares at that central homestead. When she comes to collect the mopane worms she will collect them from one place. If the entrusted homestead is not accessible by road, usually the entrusted family will ferry the worms to a reachable place using donkey carts. All these services are done free of charge. Of course Mrs. Mutema will pay something e.g. donating a skirt to the hosting family as a token of appreciation.

A woman trader selling from the roadside at Mwenezi

There is a group of middle people who buy and sell mopane worms from the collectors. This group includes some of the women who sell the worms by the road side. This group has sharp negotiating skills. When I approached one of them at Mwenezi and asked her if she could sell me a 20-litre bucket of mopane worms she asked me where I come from. "Ngundu", I said. "But you are not a familiar face, how come I do not see you there when I come to sell mopane worms there? Are you from that area?". I truthfully told her that Ngundu is where I work. She went on "Do you want to eat or resell the mopane worms you want to buy?". I told her I wanted to sell them. "Where do you I intend to sell the worms?" she made a follow up. "Harare" I responded. She then charged me Z\$ 1,300 for the 20-litre bucket yet the other sellers I had asked previously at the same place had said the maximum selling price for a 20-litre bucket of mopane worms was Z\$ 1,100. I asked this trader why she was asking all the questions she asked me and she told me the information I gave her helped her to determine the selling price. "If you want to resell the worms in Harare we know you will make lots of profit so we charge a high price but if the worms are for consumption we can reduce the price" she explained.

Bulk trader at Renkini Bus Terminus, Bulawayo: Mr D. Ndhlovu

Mr Ndhlovu is 36 years old. He is from Bulawayo. He has been in the business of buying and selling mopane worms for 4 years now. At the moment he is employing three assistants who help him to grade, pack and sell the worms. The assistants also scout for suppliers of mopane worms and buyers. When demand is high like in March/April Mr Ndhlovu can hire more assistants to help him buy and sell the worms.

Besides selling mopane worms, Mr Ndhlovu is also involved in the selling of wood carvings. He buys the wood-carvings from Matopo's area from rural wood carvers and sells them in neighbouring countries, especially S. Africa. He sells mopane worms between December and June. After June he ventures into the trading of wood-carvings.

"The wood carvings pay well. I sell them to safari operators and tourists in S. Africa. They pay reasonably well (he refused to disclose how much he gets from the sale of the wood carvings), but it is much more than what I get from the sale of mopane worms. Of course the carvings are cumbersome to transport. I use illegal routes or the haulage trucks to take the carvings out of the country. If I use the border post I will be forced to pay customs duty".

"I send my assistants out to buy the worms from collectors. Per trip they can bring about twenty x 50kg volume bags of worms. Per week we can buy two or three consignments of the worms. Sometimes the collectors bring the worms here but most of the time we go out and buy the worms from them. It is costly to transport the worms from the rural areas (Lupane, Gwanda and Kezi) and the majority of the collectors do not have enough money to transport large volumes of the worms here to town that is why we go out to buy the worms ourselves. To transport the worms from the source areas it costs between Z\$ 1,500 and 2,500 (two trips for one person plus fare for the luggage)".

"In the rural areas we have contact people who scout suppliers for us. The contact persons mobilise suppliers to send all their supplies (mopane worms) to one central place from where we will buy them. I pay these contact persons about Z\$ 2,000 per task done. In the rural areas at the moment we are buying the worms at Z\$ 300 per 20-litre tin and we sell the same volume at Z\$ 800. On a busy day we can sell 25 x 20 litre tins/buckets of mopane worms. Most of our customers are bulk traders who sell the worms in Harare or outside the countries".

"Our major competitors are big companies like Jagers and Jasbro. They buy worms in large volumes and they offer very high buying prices to suppliers such that the moment they enter the market prices inevitably shoot up. I have managed to save some money from the sale of the wood-carvings and mopane worms and I have already bought a residential stand here in town for Z\$ 75,000. I am in the process of buying construction material".

Mr. Mhofu: *muguma-guma and Jack-of-all-trades**

Mr. Mhofu is in his early thirties. He is one of the buyers who buy mopane worms in bulk from mopane collectors and then sell the worms to big traders such as Jasbro, traders going to or coming from the DRC, or local middle persons who buy in bulk and then resell the worms packed in smaller units. Ironically the same middle persons are some of the main suppliers of mopane worms to Mr. Mhofu and other *maguma guma*. Alternatively, Mr Mhofu crosses over to South Africa and sells the worms there at R9 per kilogram

When buying the worms from collectors and other middle persons Mr. Mhofu uses a 35-litre bucket to measure the volumes to be bought. At the time of the survey Mr. Mhofu was offering Z\$ 700 per 35-litre bucket of mopane worms. However when reselling the mopane worms to other people he charges the price per 20-litre tin which is deformed at the base to decrease its volume. At the time of carrying out this survey Mr. Mhofu was selling the worms at Z\$ 900 per "20-litre" bucket.

Mr. Mhofu claimed that on a good day he can buy in excess of twenty 90-kg maize bags of mopane worms [about 36 kg mopane worms in each]. This seems true because on the day of the interview (which was a bad day according to Mr. Mhofu), he had bought 16 x 90 kg bags of mopane worms. Another *muguma guma* nearby bought a total of 36 x 90 kg bags of mopane worms on that particular day.

Mr. Mhofu employs some touts who scout around for suppliers selling mopane worms. If the touts see a supplier coming to the market place with a scotch cart or truck full of mopane worms, they will literally besiege the cart or truck and highjack it to Mr Mhofu's buying stall at the market place. Touts for different *maguma gumas* can physically fight over suppliers. Once at Mhofu's buying stall the suppliers cannot move on to another buyer even if the former is offering an unreasonable price. The whole process is marred by intimidation and physical abuse.

I had a chance to accompany two women who wanted to sell two 90-kg maize bags of mopane worms to Mr Mhofu. They left the sacks about three hundred metres away from *maguma guma* and moved around negotiating prices with potential buyers before they brought the worms. Meanwhile they lied to the potential buyers that they had left the worms at home. All the other *maguma gumas* were offering Z\$ 600 per 35-litre tin of the product. Mr Mhofu offered Z\$ 750. The two women were happy with this price and Mr Mhofu assigned two of his touts to go and collect the two bags of the product. When the worms came, Mr. Mhofu started to complain that they were of poor quality. He randomly picked samples from the sacks and broke them into half. He claimed that the worms were not properly squeezed out. Because of the poor quality he was only prepared to pay Z\$ 500 per 35-litre tin. The two women refused and threatened to take their worms away but Mr Mhofu would not let them go. After thorough bargaining Mhofu bought the worms at a paltry Z\$ 450 per 35 litre tin!

Mhofu confessed that he has been in the business of buying and selling mopane worms since he was still a young man. "I am a real *muguma guma* my brother. Buying and selling mopane worms pays me well especially when I export the worms down south. But if I say that of the activities I do selling mopane worms is the most lucrative I will be lying. There are other things that I do that pay me very well: changing S.A. rands on the black market, assisting people to cross to South Africa, selling vegetables, second hand clothes etc. I always switch from one enterprise to another depending on what is most lucrative at a particular moment".

* a person who earns a living through dubious means which are not easy to comprehend.

Five young traders who sell mopane worms in Zambia

A group of 5 young men from Mashonaland are actively involved in trading mopane worms outside the country. The five men, all in their mid-20s, started selling mopane worms two years ago due to lack of employment opportunities. Since they started the business of selling mopane worms they have never looked back. They started by selling mopane worms in low volumes by the roadside in town. Initially they operated as individuals and then they joined together after a year so that they could start selling the worms outside the country.

"We all realised that we could not make huge profits if we kept on selling the mopane worms in small volumes and we decided to sell outside the country. We then joined together and started to trade our mopane worms in Zambia. We gathered information on how the business of selling mopane worms is contracted in Zambia from a friend who had gone there before. He told us how we could source our own market and the likely hardships we were to encounter in Zambia. Initially we would sell very few bags of mopane worms because we did not have money to buy and sell large volumes of mopane worms. But now we are able to purchase many bags of mopane worms for resale. Today we got 11 x 100-kg maize bags of mopane worms. We join two 50-kg sacks together to form one sack. If joined together the mopane worms' load becomes easy to transport. We travel from here to Vic Falls border by train. We travel all night long and then on the second day we cross over to Zambia by commuter buses or haulage trucks. We usually sell our merchandise to bulk buyers. We get an equivalence of Z\$ 40,000 per 100 kg sack of mopane worms in Zambia. The Zambians pay us in US\$ ". [The traders were however reluctant to disclose how much they get per unit volume in US\$. I suspect that they change the foreign currency they get on the parallel market, in which case the traders are realising much more than what they claimed, they are getting per 100kg volume.]

"Per month we can make two or even three trips to Zambia. Per trip we can have a consignment of 10 to 13 bags (100kg volume ones). Per trip we can realise a gross income of Z\$ 400,000".

"We usually go to the rural areas to buy the worms but this time we have decided to buy the worms from middle persons here at the bus terminus. Some of the areas where we buy the worms from are reported to be politically volatile. In addition we have realised that if we go to the rural areas we waste precious time moving from one collector to another in search of mopane worms because no one collector can supply us with all the worms we need per trip. Here at the bus terminus we can get middle persons who can sell us the amount of mopane worms we need per trip. We bought the worms at Z\$ 700/20-litre bucket".

"To ensure ourselves of business for much of the year we stock some of the mopane worms we buy at a house we are renting here in Bulawayo (monthly rental charges are Z\$ 2,000 per two rooms). From end of April to December there are no mopane worms on the market and we capitalise on that, we sell some of the worms we would have stocked. In addition when the second outbreak of mopane worms comes in March a lot of heavy weight buyers like Jasbro and DRC buyers come into the market and force price to shoot up drastically. So if we stock some mopane worms now, we will be able to sell them later on in the year when prices shoot high. Also we ensure that we have something to occupy ourselves with for much of the year. If trading in mopane worms sinks to very low levels, we can switch to anything lucrative e.g. trading in wood-carvings or buying goods from Zambia for resale here in Zimbabwe. Our intention is to get lots of money from the selling of mopane worms and settle down. God willing, we can end up owning commuter omnibuses or houses in towns like some old traders we have heard about".

Cross boarder trader in hand woven crafts and mopane worms: Mrs Mpofu

Mrs Mpofu comes from Magwegwe high-density suburb of Bulawayo. She is a mother of four. Her husband is a self-employed carpenter.

"I am a cross boarder trader. I sell a number of artefacts in South Africa. These range from farm produce like round nuts, doilies, wood-crafts, and crocheted pieces. I have been doing this business for close to ten years now. When I started I was a bit nervous. I was scared by the risk of being robbed or killed in crime rife South Africa. I got a lot of encouragement and support from other women in my neighbourhood. Now I understand the ethics of cross boarder trading. Of late I am now venturing into cross boarder trading in mopane worms. It pays. I have been doing it for the past two years. My major problem though is that I do not have contacts in the mopane worm business. In informal trading as a trader one should have reliable suppliers of the goods being traded. This is the case with me when it comes to hand woven items that I take to South Africa. I have people I ask to make different items that I trade in South Africa. The other problem with mopane worms is that they are bulky nature of the worms make them costly to handle as one has to hire labour to move them from place to place. In buses too bulky luggage is charged. This adds unnecessary costs to the trader. Doilies on the other hand are quite handy to carry".

"Depending on the time of the year, mopane worms can be more profitable than the hand woven items we sell in South Africa. On average, per trip I sell 10 x 20 litre buckets of mopane worms. I usually sell them at Messina or even in Johannesburg. I sell the worms to people at open markets or bus termini. Most of my customers buy the worms for own consumption. From the ten buckets I can get R800 – 900. Per month I usually make one trip to South Africa. From my other merchandise I can raise more than R1,000. These days that is a lot of money because I use the parallel market when changing the rands to local currency. I have been able to pay tuition for my children who are doing secondary level using my earnings from cross boarder trading. As I say, much of the income comes from selling items other than mopane worms".

Stumbling blocks to aspiring traders of mopane worms: interview with Miss P. Mhlanga

Miss Mhlanga completed her O-level studies three years ago. She managed to pass five subjects. Unfortunately she has not been able to enrol at any tertiary college neither has she been fortunate to find employment somewhere. She tried the army but ran away because she could not endure the training. I asked her why she is not trying buying and selling mopane worms for a living seeing that this is a lucrative business and the following is her response.

"I have been thinking about buying and selling mopane worms to earn a living for a long time now. I have talked to people who are already involved in the business and I have realised that I can earn a reasonable amount of money if I join the business of selling mopane worms. Unfortunately I cannot get starting capital. To get started one needs at least Z\$ 4,000 for bus fare and purchasing the worms. I have asked my uncle with whom I stay for assistance but he is unable to assist me. He works as a security guard and with a large family to fend for there is no way he can spare so much money to help me with. At one point I suggested to him that he gives me bus fare only and I will go and collect the mopane worms in the rural areas on my own but he refused. He said it is not safe for young ladies like me to go out and camp in rural areas where they have no relatives. Here in town the worms are expensive, otherwise I would buy a bucket of the worms and sell in the high-density suburbs. Also here in town the worms do not sell fast as they do outside the country. If I had money I would prefer to sell the worms outside the country".

"At the moment I am exploring the possibility of crossing over to South Africa where I can work as a migrant labourer. Two of my brothers are already working there. They have told me about their physical addresses and I might be joining them soon". [I met this young woman at the bus terminus where she was asking bus conductors about fares from Bulawayo to the boarder post with S. Africa].

Mrs. Dube (not her real name)

Mrs. Dube is one of the women who provide food catering services to patrons at Ngundu beer hall. She cooks and sells sadza with stew or vegetables, and in the mornings, tea. She also fries and sells mopane worms. She has been involved in the food industry for close to five years. According to Mrs. Dube the business of selling fried mopane worms is very lucrative. She was however quick to point out that she gets most of her income from selling *sadza* [maize-meal porridge] and stew.

Her customers are mainly patrons to the Council owned beer hall. The majority of the clients buy the worms and eat them as a snack while a small percentage take the worms with sadza as relish. She is selling the mopane worms at Z\$ 20/ lid of a scud container [about Z\$ 714 kg⁻¹]. Per day she claimed that she can raise more than Z\$ 200 from the sale of fried mopane worms. On good days like month ends she can double her average daily income from mopane worms. When preparing mopane worms, Mrs. Dube mentioned that she add cooking oil and spices like piri-piri and salt to add flavour. If she buys Z\$ 500 worth of ingredients she will be able to fry close to a 20 L bucket of the worms. Cooking oil is the only ingredient that is used in large amounts when frying the worms. Salt and piri-piri is used in small amounts.

Mrs. Dube buys the worms she fries from traders from Chikombedzi. Usually she buys about a bucket (20 l), per month. A bucket costs between Z\$ 600 and Z\$ 900 (if she buys directly from collectors). In most cases she can sell out the entire bucket per month. At the time of the survey Mrs. Dube did not have the worms on the list of foodstuffs on her menu. Her supply had run out a few days earlier.

Chitubu beer hall in Glen Norah High density suburb: Mrs Mauwa (not her real name)

Mrs Mauwa is a widow in her late forties. She is fending for five children, three of whom are still going to school. She has been involved in the business of selling mopane worms and other snacks in beer halls for more than five years now. She took up the business of selling snacks in beer halls after her husband had died and she took over as the bread winner of the family.

Mr. Mauwa was selling roasted mopane worms at Z\$ 10 per lid of a scud container. [These mopane worms weighed 37 g (28 g dried), equivalent to Z\$ 357 kg⁻¹.] She had Z\$ 500 worth of worms on sale. She reported that on weekends she can get between Z\$ 400 - Z\$ 550 from the sale of worms. On weekends that coincide with month ends she can even get more than Z\$ 600 per day from the sale of the worms. She sells the worms during the night when many people patronise the beer hall when they are back from work. Most of her clients are beer drinkers who eat the mopane worms as snacks.

In addition to the mopane worms she also sell bananas and roasted ground nuts. Of these three foodstuffs she sells, mopane worms is the most enterprising. She can get Z\$ 150 per night from bananas and groundnuts collectively. She buys the mopane worms in bulk from Mbare market at Z\$ 1,300 per 20-litre bucket. The supply of the worms varies through out the year. The highest supply is around April and May and lowest from July to December.

Mrs. Mauwa and other female vendors have formed a revolving fund “society” whereby at the end of every week the women take turns to make contributions to each member of the group. The group has five members. Each member contributes Z\$ 900 per week. This means that when it is her turn, a member will get a total of Z\$ 3,600 - excluding her own contribution. Mrs. Mauwa claimed that this arrangement has enabled her to make great strides in her life because she is able to get a reasonable amount of money when it is her turn to receive contributions. “With the high cost of living these days I would not be able even to buy school uniforms for my kids, but for this revolving scheme we initiated” remarked Mrs. Mauwa.

“The only problem with this business of selling mopane worms in beer halls is that some patrons think that women who get into beer halls are of lose morals and they treat us like that. However that is not true because some of us come here specifically to sell things like mopane worms. Otherwise how would I fend for my family?” - Mrs. Mauwa

Ms. Moyo: an informal vendor of mopane worms operating by the roadside in Highfield high density suburb, Harare

Ms. Moyo is employed by the Moyana family of Highfield high density suburb as a general hand. At the time of this survey Ms. Moyo was working as a shopkeeper in a tuck shop by the road side that is owned by the Moyanas.

In the tuck shop there were some loose biscuits, sweets, bananas and mopane worms. Save for the mopane worms, all the other items being sold were in small quantities. The mopane worms were packed in 50g packs. The Moyanas bought the mopane worms from a wholesale in town. The Moyanas have been involved in the selling of mopane worms for more than four years now. Though Ms. Moyo was not sure about why the Moyanas decided to venture into buying and selling mopane worms, she highly suspected it was due to the high profit realised from the sale of the worms. Ms. Moyo also mentioned that mopane worms have a very long shelf life and as a result they are able to store the worms for long. If for example, prices on the market are low, they can withdraw their mopane worms' stocks and put them back in the shelves when prices go up again.

On average, the Moyanas buy 200 to 300 packs (50g) of mopane worms. "Yesterday my employers bought 100 x 50g packs of the mopane worms. I put them in the shelves this morning and as you can see they are selling fast." Only 77 packets were left at the time of the survey. Ms. Moyo attributed the high demand for the mopane worms to the high cost of meat, both beef and chicken. "People now substitute meat with mopane worms. Most people here are now unable to buy meat in butcheries, the price of beef is now beyond the reach of many people. In the past the majority of our customers were beer drinkers and vendors who would cook the worms and sell them in beer halls where patrons would eat the worms as a snack. Now things have changed, mopane worms are no longer eaten as a snack, but as relish and part of the main meal." Ms. Moyo claimed that she did not know the whole sale price for the mopane worms. However, they were selling the worms at Z\$ 20 per 50g pack.

APPENDIX 2

Food packaging companies involved in the wholesale distribution of mopane worms in Zimbabwe. The list is unlikely to be complete.

Company	Address	City/Town	Tel./Fax./E-mail
Matemba Sales (Pvt.) Ltd	141 Fort Street between 14 th /15 th Avenue	Bulawayo	09-71474
Jasbro Foods (Pvt.) Ltd	P.O. Box 1629, 14a Bristol Road South	Bulawayo	09-68198/79269 09-74053 (fax)
Quality Foods (Pvt.) Ltd	8452 Canal House, Bristol Road	Bulawayo	09-75679/75547 09-78688 (fax)
National Foods Ltd	P.O. Box 648, Steelworks Rd/Basch St.	Bulawayo	09-880211 09-79251/1 09-540212 (fax)
Savonuts Products (Pvt.) Ltd	P.O. Box 38, 43 Kaguvi St	Harare	04-723018 savonuts@zol.co.zw
Monaken Marketing (Pvt.) Ltd	P.O. Box A603, Avondale 45a Spurrier Rd, Ardbennie	Harare	04-662141
Danwin Enterprises (Pvt.) Ltd	P.O. Box ST855, Southerton Stand 136, Dartford Rd, Willowvale	Harare	04-741885 04-731901/2 (fax)
DNA Wholesalers (Pvt.) Ltd	P.O. Box 609, 5 th Ave/Robert Mugabe Way	Bulawayo	09-77927 (voice/fax)
J.W. Jagers Wholesalers	P.O. Box 73, Cnr Waverley/Wingrove Rds	Bulawayo	09-65964/5 09-65966 (fax)
Neshuro Packaging Co.	<i>No address available</i>	Triangle	-
<i>No name given</i>	1 Walgrove Rd, Thorngrove	Bulawayo	09-77927
Star Packers & Agents (Pvt.) Ltd	P.O. Box 4758, 30 Craster Rd, Southerton	Harare	04-665998 04-666492
Kays Butchery (Pvt.) Ltd	P.O. Box CY 116, Causeway 21 Jason Moyo Ave.	Harare	04-725963