

Wealth differentiation in household use and trade in non-timber forest products in South Africa

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Abstract

Findings from southern Africa and internationally indicate the local use and trade of NTFPs to be significant however most present a composite picture, failing to account for intra-community socio-economic differences. These differences may have implications for policy and practice related to poverty alleviation and sustainable use. This paper reports on a study in South Africa which explored the relationship between household wealth and the use, procurement and sale of NTFPs in two villages. There was no influence of wealth on the proportion of households using or purchasing most of the NTFPs, or the number used. However, wealthier households bought significantly more resources per household, and poor households (at one village) sold significantly more. These results are discussed within the context of local conditions and poverty alleviation debates.

## 1. Introduction

Throughout the developing world rural communities use a range of non-timber forest products (NTFPs) ([[Shackleton et al., 2002a](#)], [[Dovie, 2003](#)], [[Fisher, 2004](#)] and [[McSweeney, 2005](#)]) which contribute to livelihoods through direct household provisioning, income generation and as a safety-net for consumption- and income-smoothing ([[Angelsen and Wunder, 2003](#)], [[Belcher et al., 2005](#)] and [[McSweeney, 2005](#)]). There is an increasing focus on the potential role of forests and NTFPs in economic development and poverty reduction strategies ([[Angelsen and Wunder, 2003](#)], [[Belcher et al., 2005](#)] and [[Shackleton et al., 2007](#)]), although dominated by work from the tropics.

NTFPs have been identified as a key income source for rural households ([[De Merode et al., 2004](#)] and [[Shackleton, 2005](#)]) with cases indicating an income share greater than that from cash crops and informal cash incomes ([Dovie, 2003](#)). Contributions to total livelihood incomes ranging from less than 20% to more than 50% have been noted ([[Cavendish, 2000](#)], [[Narendran et al., 2001](#)], [[Ambrose-Oji, 2003](#)] and [[Fisher, 2004](#)]). Despite these findings, there is often little recognition or

support for this livelihood strategy and although it may be significant, the value of NTFPs has generally not been captured in regional and national statistics (Shackleton et al., 2001). The policy implications of this are considerable as rural areas continue to be viewed as unproductive with households largely dependent on off-farm income sources.

Although NTFP use by rural households is widespread, the extent of use, the quantities used and the value derived vary spatially, temporally and depending on various household characteristics, including household wealth (Cavendish, 2000) and Shackleton and Shackleton, 2006). Luckert et al. (2000) identified the relationship between household wealth and the use and trade in NTFPs, as a key research gap in understanding and supporting rural livelihoods in southern Africa.

### 1.1. Household wealth and the use and sale of NTFPs

With respect to the influence of household wealth on NTFP use, commentators suggest that a greater proportion of poor households utilise NTFPs, utilise them more frequently and in greater quantities and, are more reliant on them than their wealthy counterparts (Narendran et al., 2001 and Shackleton and Shackleton, 2006). Cavendish (2000) points out however, that little is known of how household “type” affects use. Findings on the relationship between wealth and NTFP use are mixed and complex (Demmer et al., 2002), partially a result of too few empirical studies. Findings from Zimbabwe and elsewhere highlight that in terms of quantity, wealthy households tend to consume more, although the poor may be more resource dependent (Cavendish, 2000, Wunder, 2001 and De Merode et al., 2004). Chopra (1997) reported however that as household wealth increased and allowed for the purchasing of alternatives, the amount used per household decreased. According to Shackleton and Shackleton (2006) the associated cost-saving is more important to poor households than wealthy ones although both groups benefit. In Cameroon, NTFPs were found to make a greater contribution to middle-income groups (predominantly through trade), with wealthy and poor households benefiting to a lesser degree (Ambrose-Oji, 2003). Findings from South Africa show wealth to have less of an impact on proportion of households consuming NTFPs but to influence the procurement and sale, with a greater proportion of poorer households procuring NTFPs through self-collection and selling products on either a full-time or *ad hoc* basis (Shackleton and Shackleton, 2006 and Cocks et al., 2008).

Findings with respect to the influence of wealth on NTFP commercialisation are also mixed. Although poor households may sell NTFPs during times of need, middle to upper income households with access to capital, transport and markets and, with alternative fall-back options, can earn more from commercialisation as a primary livelihood activity ([Kepe, 2002], [Ambrose-Oji, 2003] and [Angelsen and Wunder, 2003]). Elite capture, by either community members or external agencies, can undermine the benefits to poor households ([Cavendish, 2000] and [Ambrose-Oji, 2003]). Fisher (2004) suggests that incomes derived from NTFPs contribute towards reducing inter-household inequality more so than other income sources including waged labour, self-employment and cash transfers, while Belcher et al. (2005) state NTFP production is less likely than other strategies to result in significant economic differentiation between producing and non-producing households. With respect to forests and poverty reduction, Angelsen and Wunder (2003) argue that interventions would be more successful if targeted at the moderately poor rather than the poorest of the poor, as the former are better positioned to respond positively.

From the above it is clear that patterns of use and trade in NTFPs in relation to household wealth are variable across different studies. Consequently, there is a need for more empirical case studies to facilitate exploration of the influence of study context in shaping patterns of use and trade, which will allow for the development of predictive typologies. This also applies in southern Africa, where many rural households make use of NTFPs, yet there is limited empirical data and understanding of differences between households in relation to aspects such as gender, wealth, access to resources or their abundance, or proximity to markets (Shackleton et al., 2002a). Consequently, there is limited predictive capacity and inadequate understanding to direct supportive policies and programmes. This study sought to examine the relationship between household wealth and NTFP use from two different areas of South Africa.

## 2. Study area

Two study sites were selected on the basis that we had prior knowledge of the activities in the areas. They display obvious differences in several aspects of their ecological setting, location, social and economic characteristics however, at a superficial level they may be regarded as typical of rural villages in any of South Africa's former homelands (as designated under South Africa's apartheid government). We therefore view them as case studies rather than representative samples

(Table 1). Under the homeland system indigenous black Africans were forcibly relocated into small ethnically defined areas termed ‘homelands’. The village of Dyala lies in the Kat River valley of the Eastern Cape province (Fig. 1). Dixie is in the Bushbuckridge Municipality of the Limpopo province (Fig. 2). According to Gelb (2003) the Limpopo and Eastern Cape provinces are the two poorest in the country.

Table 1. Ward and village profiles.

Municipal ward level attribute	Village		Village level attribute	Village	
	Dyala	Dixie		Dyala	Dixie
Province	Eastern Cape	Limpopo	Latitude & Longitude	32° 32.0' S 26° 40.3' E	24° 41.7' S 31° 28.5' E
Local municipality	Nkonkobe	Bushbuckridge	Distance to regional centres	16 km; 38 km	55 km; 25 km
Ward population density (people/km <sup>2</sup> )	36.3	26.8	Approx. MAP	997 mm	600 mm
Average number people/household	4.8	4.0	Vegetation type	Amatole Montane Grassland	Granite Lowveld
Females (%)	55.5	54.8	Ethnic group	Xhosa	Tsonga
Males (%)	45.5	45.2	Total no. of households	135	98
Education: none (%)	21.6	9.9	Av. household size (sampled hhs)	4.5 ± 0.3	3.6 ± 0.3
Proportion formally employed (%)	3.7	9.8	Proportion of female-headed hhs (in sample) (%)	34.0	16.0
Proportion with no formal cash income	41.3	25.7	Average years of education per hh	5.8 ± 0.4	5.8 ± 0.3

Municipal ward level attribute	Village		Village level attribute	Village	
	Dyala	Dixie		Dyala	Dixie
(%)					

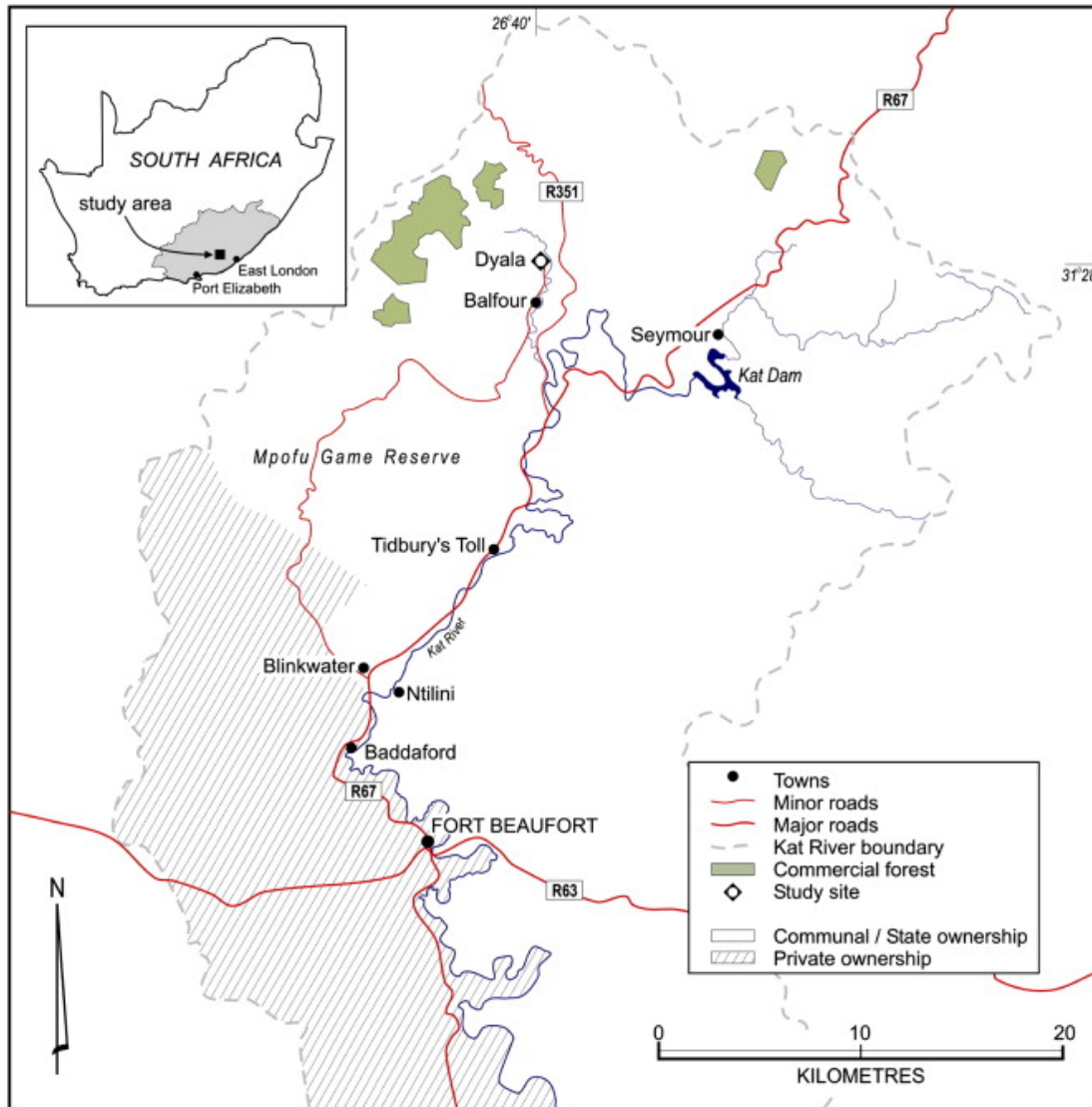


Fig. 1. Map of study area — Dyala (Eastern Cape).

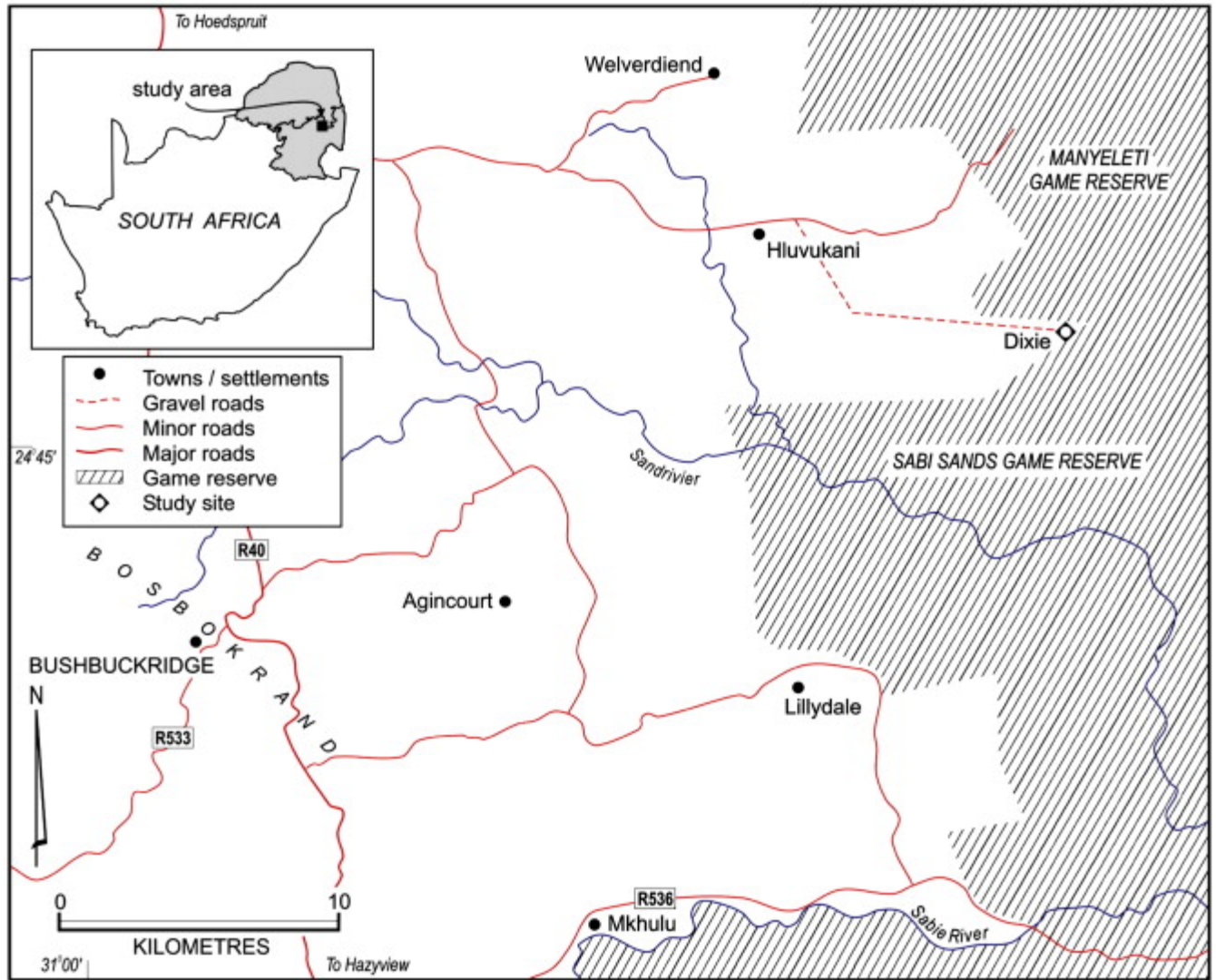


Fig. 2. Map of study area — Dixie (Limpopo).

### 2.1. The biophysical environment

The climatic conditions in Dyala include warm, wet summers and cold, harsh winters. Mean annual rainfall is 997 mm. The surrounding area is a mosaic of grasslands and forest patches, including commercial timber plantations and indigenous forest. Classified as Amathole Montane Grassland (Mucina and Rutherford, 2006), highveld sour grasses are common although where heavy grazing occurs, the indigenous pioneer tree *Acacia karroo* has spread. Non-perennial and perennial streams ensure a supply of water.

Dixie is characterized by dry, frost-free winters and warm, wet summers (Swart, 1996). The mean annual rainfall is approximately 600 mm although erratic rainfall, frequent droughts, poor soils and limited land make cultivation difficult and crop failure common (Shackleton and Shackleton, 2000). Dixie falls within the “Granite Lowveld” vegetation type (Mucina and Rutherford, 2006), a savanna type dominated by the tree genera of the *Acacia*, *Albizia*, *Combretum*, and *Sclerocarya* (Swart, 1996).

## 2.2. The socio-economic environment

Former homeland areas throughout South Africa, including the study sites, have similar characteristics in terms of poor service provision, low levels of development, high unemployment and a reliance on a variety of livelihood strategies including arable agriculture, animal husbandry, formal and informal employment, government grants and the use and sale of NTFPs (Table 1). Both Dyala and Dixie have limited infrastructure with no households having electricity, potable water or sewage reticulation. People rely primarily on river and rainwater while fuelwood and paraffin constitute the primary forms of energy. Although both villages have primary school facilities, students wanting to attend high school must travel to villages further afield. Mobile clinics service both villages however poor roads often hinder these. Both communities rely on nearby regional centres for more diverse services although transport is a limitation in terms of access.

General economic activity, in the areas surrounding both villages, is low with high unemployment. For Dyala residents, there are limited employment opportunities in the forestry sector, small-scale tourism ventures and as seasonal labourers on the surrounding farms. In Dixie, tourism is the major employer followed by the informal economy. Average unemployment for the area is 63%. PRA exercises indicated a high dependence on pensions and government welfare grants. Land-based strategies including arable agriculture, animal husbandry and NTFP use contribute to households in both villages (Paumgarten, 2006).

Land in the Kat River valley was privately-owned commercial farmland until the 1970s when a large section was incorporated into the then Ciskei homeland and the commercial farmers removed. In 1994 the Ciskei was reincorporated into South Africa resulting in the current mix of

private and communal/state land ownership. The community of Dyala has open access to land, including indigenous forest, except for the surrounding forestry department forests where access is controlled by permit. Land-use in and around Dixie is a mix of residential plots; arable fields; communal grazing areas and up-market private conservation areas. Communal grazing lands provide access to NTFPs ([Shackleton, 2005](#)). The original farms in the district were purchased by the former apartheid regime, for the settlement of black families into planned villages. The community has residential, grazing and cropping rights to the farm on which Dixie was established in 1963. Despite much of the area being marginal for agriculture, households are involved in both subsistence arable agriculture and animal husbandry ([\[Shackleton and Shackleton, 2000\]](#) and [\[Paumgarten, 2006\]](#)).

Dyala consists of approximately 135 households and Dixie 98. Average household size is  $4.5 \pm 0.3$  and  $3.6 \pm 0.3$  respectively. Of the sampled households the majority in both villages were male headed (66% and 84% respectively) ([Table 1](#)).

### 3. Methods

PRA techniques and household interviews were employed with the former used to gain a baseline understanding to guide the design of the questionnaires. PRA exercises were employed to identify the NTFPs used and, community wealth criteria and rank households into wealth categories ([Paumgarten, 2006](#)). The questionnaires included structured and semi-structured questions, which covered NTFP use, procurement and sale.

For the wealth ranking exercise, the communities' own criteria of household wealth were determined. Criteria distinguishing wealthy households from their poor counterparts include livestock ownership; employment; government grants; the use of alternative fuels for cooking; the health of household members; the payment of school fees; the size and style of house and the quality of assets owned. After ranking, a list of wealthy and poor households was compiled and used to target the household interviews. One hundred households were sampled: fifty households in each village consisting of 50% poor households and 50% wealthy. A Principal Components Analysis (PCA) was performed retrospectively to corroborate the wealth ranking exercise based on the attributes of specific households that were interviewed.



The data was analysed and where nominal categorical data was recorded a Pearson's Chi-Squared Test was used to determine significant associations between variables. Numerical values (both continuous and discrete) were analysed using a *t*-test for independent samples (where the data was normally distributed) or the non-parametric Mann–Whitney *U* Test if the data failed tests for normality and homogeneity.

With respect to NTFPs we followed the definition of De Beer and McDermott (1989) where they consider NTFPs to “encompass all biological materials other than timber, which are extracted from forests for human use”. We did meet a challenge however, when some households reported the collection of soil specifically from termitaria, which, whilst not of biological origin in itself, is the result of the biological activity of termites. Because of the widespread use of this soil for building and plastering purposes we opted to include this resource. However, at times non-termitaria soil was undoubtedly included because of some households did not differentiate it from termitaria soil. We incorporated the use of soil/clay under the banner of sand.

## 4. Results

### 4.1. Wealth differentiation

With the exception of six households the PCA reliably separated the wealthy and poor households within the sample (Fig. 3). Wealthy households are distinguished from their poor counterparts in that they have a greater number of old-age pensions per household, more employed (especially formally employed) household members, more cattle per household, a greater number and diversity of accumulated assets and of saving schemes (Table 2) (Paumgarten 2006).

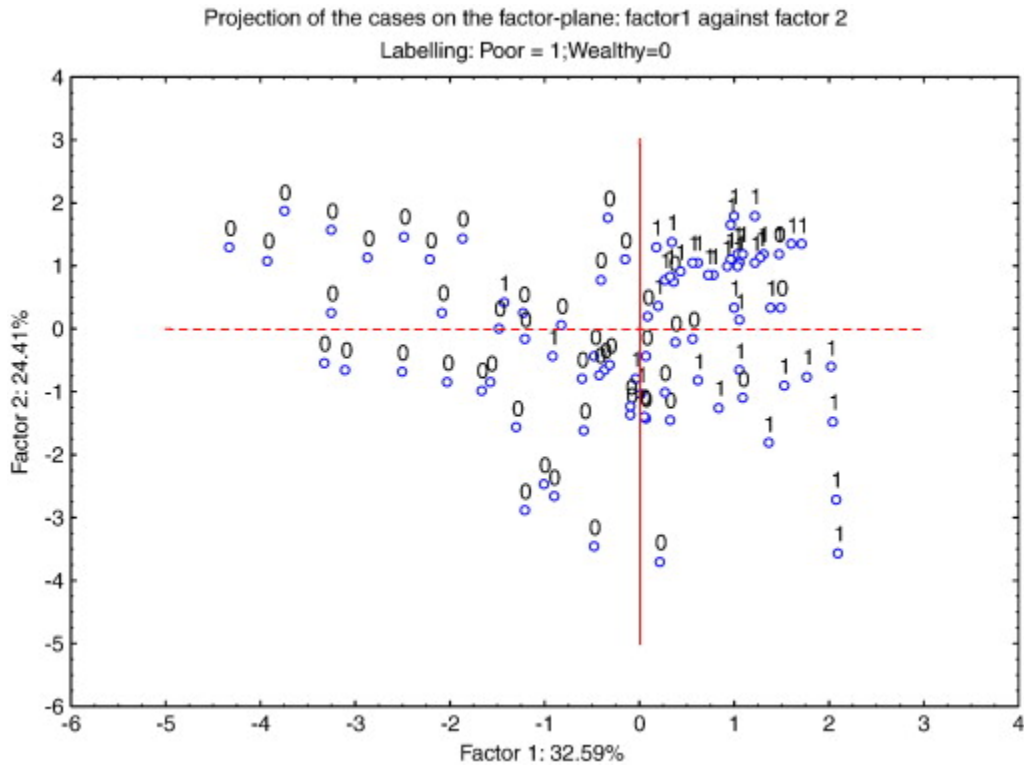


Fig. 3. Plot of factor scores separating wealthy and poor households.

Table 2.

Most common attributes differentiating poor and wealthy households (*Z*-values italicised).

	Dyala				Dixie			
	Wealthy	Poor	<i>Z/X<sup>2</sup></i>	Significance	Wealthy	Poor	<i>Z/X<sup>2</sup></i>	Significance
No. of formal jobs/hh	0.4 ± 0.1	0.4 ± 0.1	<i>0.3</i>	> 0.05	1.3 ± 0.1	0.2 ± 0.1	— <i>5.1</i>	< 0.05
No. of old-age pensions/hh	0.9 ± 0.2	0.2 ± 0.1	<i>- 3.0</i>	< 0.05	0.1 ± 0.1	0.2 ± 0.1	<i>0.8</i>	> 0.05
No. of saving	1.5 ± 0.1	0.4 ± 0.1	<i>- 4.8</i>	< 0.05	1.9 ± 0.2	0.3 ± 0.1	<i>- 5.2</i>	< 0.01

	Dyala				Dixie			
	Wealthy	Poor	Z/X <sup>2</sup>	Significance	Wealthy	Poor	Z/X <sup>2</sup>	Significance
schemes/hh								
No. of cattle/hh	6.0 ± 1.5	0.3 ± 0.2	- 4.7	< 0.05	2.3 ± 1.1	0.1 ± 0.1	- 2.1	< 0.05
% of hhs with a car	44.0	4.0	10.9	< 0.05	48.0	0.0	15.8	< 0.05
% of hhs with a TV	52.0	20.0	5.6	< 0.05	44.0	0.0	14.1	< 0.05
% hhs with a fridge	56.0	12.0	10.8	< 0.05	84.0	8.0	29.1	< 0.05

#### 4.2. The use of NTFPs

All the sampled households use NTFPs: eighteen resource groups were identified across both sites with thirteen common to both. In Dyala seven and in Dixie eleven of the resources are used by more than 50% of households ([Table 3](#)). The top five resources across both villages, in terms of proportion of households using, are fuelwood, sand/soil/clay/termitaria for building (henceforth “sand”), wild edible herbs (henceforth “herbs”), wild edible fruits (henceforth “fruits”) and medicinal plants. Grass hand-brushes are commonly used in Dyala ([Table 3](#)). Households in Dixie use a significantly higher mean number of resources per household than their Dyala counterparts (Dyala = 7.2 ± 0.2; Dixie = 10.2 ± 0.2; Z = - 10.6, p < 0.05). There is no significant difference in either village in the average number of resources used per household as determined by household wealth (Dyala: Wealthy = 6.9 ± 0.4; Poor = 7.4 ± 0.3; T = 1.1 and Dixie: Wealthy = 11.3 ± 0.4; Poor = 12.1 ± 0.4; Z = 1.2).

Table 3. Proportion of households (%) using NTFPs — stratified by village and household wealth.

Resource	Village differences					Wealth differences									
	Dyala	Dixie	Mean	$X^2$	Significance	Dyala				Dixie				Mean	
						Wealth	Po	$X^2$	Significance	Wealth	Po	$X^2$	Significance	Wealth	Po
Fuelwood	96.0	100.0	98.0	2.0	> 0.05	92.0	100.0	2.1	> 0.05	100.0	100.0	0.0	> 0.05	96.0	100.0
Sand/soil/clay/termitaria	92.0	100.0	96.0	4.2	< 0.05	88.0	96.0	1.1	> 0.05	100.0	100.0	0.0	> 0.05	94.0	95.0
Wild edible herbs	80.0	100.0	90.0	1.1	< 0.05	76.0	84.0	0.5	> 0.05	100.0	100.0	0.0	> 0.05	88.0	92.0
Wild edible fruits	88.0	84.0	86.0	0.3	> 0.05	84.0	92.0	0.8	> 0.05	84.0	84.0	0.0	> 0.05	84.0	88.0
Medicinal Plants	68.0	88.0	78.0	5.8	> 0.05	60.0	76.0	1.5	> 0.05	84.0	92.0	0.8	> 0.05	72.0	84.0
Wooden household items, carvings & furniture	52.0	94.0	73.0	2.4	< 0.05	60.0	44.0	1.3	> 0.05	100.0	88.0	3.2	> 0.05	80.0	66.0
Twig hand-brushes	46.0	96.0	71.0	3.4	< 0.05	32.0	60.0	3.9	> 0.05	100.0	92.0	2.1	> 0.05	66.0	76.0
Grass hand-brushes	92.0	28.0	60.0	4.7	< 0.05	92.0	92.0	0.0	> 0.05	24.0	32.0	0.4	> 0.05	58.0	62.0

Resource	Village differences					Wealth differences									
	D y a l a	D i x i e	M e a n	$X^2$	Signif icanc e	Dyala				Dixie				Mean	
						We alth y	Po or	$X^2$	Signif icanc e	We alth y	Po or	$X^2$	Signif icanc e	We alth y	Po or
Indigenous fencing poles	42.0	70.0	56.0	7.9	< 0.05	48.0	36.0	0.7	> 0.05	56.0	84.0	4.7	< 0.05	52.0	60.0
Bushmeat	10.0	50.0	30.0	19.1	< 0.05	8.0	12.0	0.2	> 0.05	44.0	56.0	0.7	> 0.05	26.0	34.0
Fish	0.0	52.0	26.0	35.1	< 0.05	0.0	0.0	—	—	40.0	64.0	2.9	> 0.05	20.0	32.0
Insects	0.0	38.0	19.0	23.5	< 0.05	0.0	0.0	—	—	48.0	28.0	2.1	< 0.05	24.0	14.0
Weaving reeds	0.0	94.0	47.0	88.7	< 0.05	0.0	0.0	—	—	100.0	88.0	3.2	> 0.05	50.0	44.0
Wild honey	22.0	22.0	22.0	0.0	> 0.05	20.0	24.0	0.1	> 0.05	24.0	20.0	0.1	> 0.05	22.0	22.0
Indigenous housing poles	2.0	28.0	15.0	13.3	< 0.05	4.0	0.0	1.0	> 0.05	16.0	40.0	3.6	> 0.05	10.0	20.0
Thatch grass	14.0	16.0	15.0	0.1	> 0.05	12.0	16.0	0.2	> 0.05	16.0	16.0	0.0	> 0.05	14.0	16.0
Mushrooms	12.0	0.0	6.0	6.2	< 0.05	12.0	12.0	0.0	> 0.05	—	—	—	—	6.0	6.0

Resource	Village differences					Wealth differences									
	Dyala	Dixie	Mean	$X^2$	Significance	Dyala				Dixie				Mean	
						Wealth	Poor	$X^2$	Significance	Wealth	Poor	$X^2$	Significance	Wealth	Poor
Seeds	0.0	8.0	4.0	4.2	< 0.05	0.0	0.0	–	–	4.0	12.0	1.1	> 0.05	2.0	6.0

When stratifying by village, there are significant differences in the proportions of households consuming in the case of thirteen of the eighteen NTFPs. For those resources where significant differences do exist, in all but two cases (mushrooms and grass hand-brushes) a greater proportion of households in Dixie use the resources than in Dyala. Those resources where no significant differences exist between villages include fuelwood, fruits, medicinal plants, wild honey and thatch grass (Table 3).

Of those resources used in both villages, all are used by both wealthy and poor households with the exception of indigenous housing poles in Dyala, which are only used by wealthy households. In both villages household wealth does not significantly influence the proportion of households using NTFPs with the exception of two resources in Dixie, namely indigenous poles for fencing and insects. The fencing poles are used by a significantly greater proportion of poor households, while insects are consumed by a significantly greater proportion of wealthy households. Taking the mean for wealthy and poor households respectively, the top four resources in terms of proportion of households using them are the same (Table 3).

#### 4.3. The purchase and sale of NTFPs

Across both villages a greater mean proportion of households buy NTFPs (94%) than sell (22%) (Table 4). The inter-village differences are not significant. Of the identified resources all are

purchased by at least one household with the exception of fish, insects, honey and mushrooms. Fewer resources are sold namely fuelwood; grass hand-brushes; sand; herbs; wooden household items, carvings and furniture (henceforth “household items”), bushmeat, weaving reeds/woven products (henceforth “weaving reeds”) and seeds.

Table 4.

Proportion of households (%) buying or selling NTFPs — stratified by village and wealth.

Site		Wealthy	Poor	Wealth comparison		All households	Village comparison	
				$\chi^2$	Significance		$\chi^2$	Significance
Dyala	Buying	96.0	84.0	2.0	> 0.05	90.0	2.8	> 0.05
	Selling	0.0	28.0	8.1	< 0.05	14.0	3.7	> 0.05
Dixie	Buying	100.0	96.0	1.0	> 0.05	98.0		
	Selling	24.0	36.0	0.9	> 0.05	30.0		

In Dyala the difference between wealthy and poor households buying resources is not significant however a significantly greater proportion of poor households sell resources. No wealthy households in Dyala sell. In Dixie 100% of wealthy households buy at least one resource however this is not significantly different to the proportion of poor households. Both wealthy and poor households sell resources: the difference is not significant (Table 4).

In Dyala, households buy, on average, less than two resources each (Table 5; Fig. 4a), significantly less than the average number purchased per household in Dixie. Wealthy households in both villages buy a significantly greater average number of resources per household than their poor counterparts (Fig. 4b).

Table 5.

Average number of resources bought and sold per household — stratified by village and household wealth (*T*-values underlined; *Z*-values italicised).

Site		Wealthy	Poor	Wealth comparison		All households	Village comparison	
				<i>T/Z</i>	Significance		<i>T/Z</i>	Significance
Dyala	Av. no. resources bought	2.1 ± 0.2	1.0 ± 0.1	- 3.9	< 0.05	1.6 ± 0.1	- 5.5	< 0.05
	Av. no. resources sold	0.0 ± 0.0	0.3 ± 0.1	2.8	< 0.05	0.1 ± 0.1		

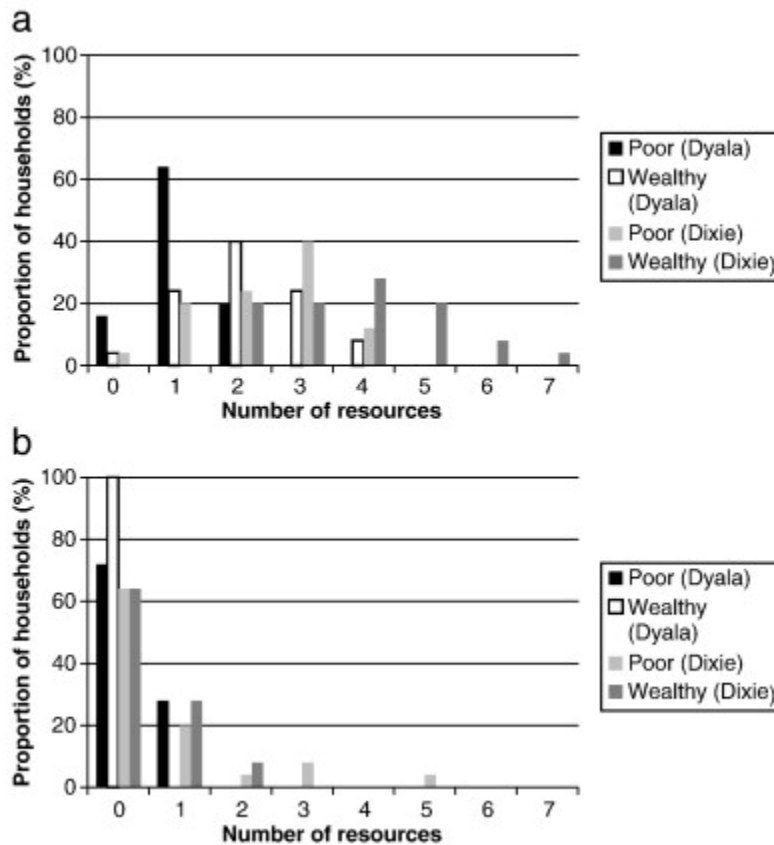


Fig. 4. a: Frequency distribution of households buying NTFPs. b: Frequency distribution of households selling NTFPs.



With respect to the sale of resources, in Dixie households sell a significantly greater average number of resources per household than households in Dyala. In Dyala only the poor households sell resources, with the difference with their wealthy counterparts being significant while in Dixie the difference in the average number of resources sold by wealthy and poor households, is not significant (Table 5).

In Dyala seven resources are purchased by wealthy households compared to four by poor households. The differences in proportion of households are not significant with the exception of fuelwood and medicinal plants, both of which are purchased by a significantly greater proportion of wealthy households. Only wealthy households buy fuelwood (Table 6). In Dixie wealthy households buy twelve resources while poor households buy seven. As with Dyala no poor households buy fuelwood while 28% of the wealthy households do; this difference is significant. The difference is also significant for sand, household items and twig hand-brushes, all of which are purchased by significantly greater proportions of wealthy households. The differences for the remaining resources are not significant. There are no resources that the poor purchase exclusively although only wealthy households purchase fruits, medicinal plants, poles for housing and thatch grass.

Table 6. Proportion of households (%) purchasing NTFPs — stratified by household wealth.

	Dyala				Dixie				Mean	
	Wealt hy	Po or	$\chi^2$ —	Significa nce	Wealt hy	Po or	$\chi^2$ —	Significa nce	Wealt hy	Po or
Fuelwood	32.0	0.0	9.5	< 0.05	28.0	0.0	8.1	< 0.05	30.0	0.0
Sand/soil/clay/term itaria	0.0	0.0	—	—	88.0	48.0	9.2	< 0.05	44.0	24.0
Wild edible herbs	0.0	0.0	—	—	16.0	4.0	2.0	> 0.05	8.0	2.0
Wild edible fruits	16.0	4.0	2.0	> 0.05	8.0	0.0	2.1	> 0.05	12.0	2.0

	Dyala				Dixie				Mean	
	Wealt hy	Po or	$\chi^2$ —	Significa nce	Wealt hy	Po or	$\chi^2$ —	Significa nce	Wealt hy	Po or
Medicinal Plants	48.0	16.0	5.9	< 0.05	8.0	0.0	2.1	> 0.05	28.0	8.0
Wooden household items, carvings & furniture	12.0	0.0	3.2	> 0.05	68.0	36.0	5.1	< 0.05	40.0	18.0
Twig hand-brushes	0.0	4.0	1.0	> 0.05	100.0	76.0	6.8	< 0.05	50.0	40.0
Grass hand-brushes	92.0	80.0	1.5	> 0.05	24.0	28.0	0.1	> 0.05	58.0	54.0
Indigenous fencing poles	4.0	0.0	1.0	> 0.05	0.0	0.0	—	—	2.0	0.0
Bushmeat	0.0	0.0	—	—	24.0	24.0	0.0	> 0.05	12.0	12.0
Fish	0.0	0.0	—	—	0.0	0.0	—	—	0.0	0.0
Insects	0.0	0.0	—	—	0.0	0.0	—	—	0.0	0.0
Weaving reeds	0.0	0.0	—	—	8.0	20.0	1.5	> 0.05	4.0	10.0
Wild honey	0.0	0.0	—	—	0.0	0.0	—	—	0.0	0.0
Indigenous housing poles	0.0	0.0	—	—	4.0	0.0	1.0	> 0.05	2.0	0.0
Thatch grass	4.0	0.0	1.0	> 0.05	12.0	0.0	3.2	> 0.05	8.0	0.0
Mushrooms	0.0	0.0	—	—	0.0	0.0	—	—	0.0	0.0
Seeds	0.0	0.0	—	—	0.0	0.0	—	—	0.0	0.0

Taking the means for each wealth category into account, the greatest proportion of both categories reported buying grass hand-brushes, followed by twig hand-brushes and sand. This highlights how

the nature of the resource can determine the trade: grass and twig hand-brushes both require particular skills and resources to make while sand is bought from households with available transport (Table 6).

With respect to the sale of resources, in Dyala only two resources (fuelwood and grass hand-brushes) are sold, both by poor households. In Dixie seven resources are sold with three (fuelwood, herbs and bushmeat) sold exclusively by poor households, sand is sold exclusively by wealthy households while weaving reeds, household items and, seed jewellery are sold by households in both wealth categories. In both villages the difference with respect to fuelwood is significant (Table 7).

Table 7. Proportion of households (%) selling NTFPs — stratified by household wealth.

	Dyala				Dixie				Mean	
	Wealthy	Poor	$X^2$	Significance	Wealthy	Poor	$X^2$	Significance	Wealthy	Poor
Fuelwood	0.0	24.0	6.8	< 0.05	0.0	16.0	4.4	< 0.05	0.0	20.0
Sand/soil/clay/termitaria	0.0	0.0	–	–	8.0	0.0	2.1	> 0.05	4.0	0.0
Wild edible herbs	0.0	0.0	–	–	0.0	8.0	2.1	> 0.05	0.0	4.0
Wild edible fruits	0.0	0.0	–	–	0.0	0.0	–	–	0.0	0.0
Medicinal plants	0.0	0.0	–	–	0.0	0.0	–	–	0.0	0.0
Wooden household items, carvings & furniture	0.0	0.0	–	–	28.0	16.0	1.1	> 0.05	14.0	8.0
Twig hand-brushes	0.0	0.0	–	–	0.0	0.0	–	–	0.0	0.0
Grass hand-brushes	0.0	4.0	1.0	> 0.05	0.0	0.0	–	–	0.0	2.0
Indigenous fencing poles	0.0	0.0	–	–	0.0	0.0	–	–	0.0	0.0

	Dyala				Significance	Dixie				Mean	
	Wealth	Poor	$\chi^2$			Wealth	Poor	$\chi^2$		Wealth	Poor
Bushmeat	0.0	0.0	–	–		0.0	8.0	2.1	> 0.05	0.0	4.0
Fish	0.0	0.0	–	–		0.0	0.0	–	–	0.0	0.0
Insects	0.0	0.0	–	–		0.0	0.0	–	–	0.0	0.0
Weaving reeds	0.0	0.0	–	–		4.0	12.0	1.1	> 0.05	4.0	6.0
Wild honey	0.0	0.0	–	–		0.0	0.0	–	–	0.0	0.0
Indigenous housing poles	0.0	0.0	–	–		0.0	0.0	–	–	0.0	0.0
Thatch grass	0.0	0.0	–	–		0.0	0.0	–	–	0.0	0.0
Mushrooms	0.0	0.0	–	–		0.0	0.0	–	–	0.0	0.0
Seeds	0.0	0.0	–	–		4.0	12.0	1.1	> 0.05	2.0	6.0

Respondents gave reasons for selling NTFPs including: the loss of income/retranchment (11%), demand/available market (26%), poverty (13%), an insufficient primary income (21%), and to purchase food and household goods (26%). Three percent listed other reasons. Of those households selling, 72.7% started to sell within the last five years while 90.9% stated they will continue to sell unless they find employment or get too old/sick to collect.

## 5. Discussion

### 5.1. The use of NTFPs

NTFPs provide a range of benefits to rural households who use various products and species for household consumption and sale ([Cavendish, 2000], [Shackleton et al., 2001] and [Dovie, 2003]). This study found households from two South African villages to be using NTFPs for food, shelter, construction, fencing, medicinal purposes, energy, tools and functional items and, cultural and

decorative items. Most households use these resources for direct household consumption, although almost one-quarter are involved in either *ad hoc* or full-time trade. Across the sample NTFP use is a common feature with all the households using at least one product supporting findings from southern Africa where a high proportion of households have been found to be utilising a range of products to meet household needs ([Dovie, 2001], [Shackleton et al., 2002b] and [Twine et al., 2003]). This is particularly for key resources such as fuelwood and wild foods ([Cavendish, 2000], [Dovie, 2003], [Twine et al., 2003] and [Shackleton and Shackleton, 2004]). In terms of the most prevalently used NTFPs, in both villages wild edible herbs and fruits, sand and fuelwood are used by more than 80% of households while in Dyala grass hand-brushes and in Dixie, medicinal plants, wooden utensils and twig hand-brushes, are also used by more than 80% of households. These findings support research from the surrounding regions ([Dovie, 2001] and [Twine et al., 2003]). The study identified a range of NTFPs that households utilise for direct household consumption with households in Dixie using significantly more per household than those in Dyala. Seventeen and fourteen products were identified in Dixie and Dyala respectively. This falls within the range identified by other commentators, who have noted the use of between twelve and twenty-seven products by rural households in South Africa ([Shackleton et al., 2002a] and [Twine et al., 2003]).

This study shows differences between the two sites in the use of NTFPs (i.e. the proportion of households using) with greater differences between the two sites than within each site (i.e. as determined by household wealth) although the top five most used resources are common to both sites. Inter-village differences in the resources used as well as the proportions of households using them may be determined by factors such as accessibility, availability, substitutability, institutional controls, local preferences as well as employment levels, population densities and so forth ([Shackleton et al., 2001]). For example in Dyala the use of weaving reeds was not reported in the household interviews: during the PRA respondents explained that these reeds are found in areas inaccessible without a permit from the forestry department. Furthermore, only a small proportion of households in Dyala use indigenous wood housing or fencing poles, not because of a lack of resources but because these are substituted with exotic poles from the surrounding plantations. Other village level differences include the use of twig and grass hand-brushes. A significantly greater proportion of households in Dyala use the grass brushes while the twig brushes are preferred in Dixie. Both availability and local preference are determining factors ([Shackleton,

2005). This study emphasises the variability in use between regions however reasons for this would have to be examined in more detail. This difference with respect to NTFP use is important to bear in mind as it may have implications for land-use planning, development programmes and policy aimed at both poverty alleviation and the sustainable use of NTFPs (Shackleton et al., 2007).

This study considered the influence of household wealth on the use, procurement and sale of NTFPs. Although the quantities of NTFPs used were not considered, the findings suggest that wealth does not significantly influence the use of resources in terms of proportion of households using NTFPs or the average number of resources used per household. Other commentators have also found this relationship to be negligible ([Chenevix-Trench, 1997], [Shackleton and Shackleton, 2006] and [Cocks et al., 2008]). Shackleton and Shackleton (2006) suggest however that the associated cost-saving is more important to poor households than wealthy ones although both groups benefit with wealthy household using NTFPs to allow for investments elsewhere. Distinctions in resource use as determined by household wealth have been noted in other studies. For example, poor households have been found to be reliant on a greater diversity of products than wealthy households, who substitute with manufactured alternatives ([Campbell et al., 1997], [Chopra, 1997] and [Dovie, 2001]). Cavendish (2000) found that although the poor are more dependent on the contribution made, wealthy households use greater quantities. Twine et al. (2003) describe poor households to be more reliant on so-called “essential items” such as wild foods while wealthy households used a greater range of products and more “luxury items”. De Merode et al. (2004) found wealthy households to be benefiting more from both the use and sale of NTFPs while Godoy et al. (1995) and Ambrose-Oji (2003) noted middle-income groups as the primary beneficiaries.

The findings from this study, on the negligible influence of wealth on NTFP use, highlight the important contribution of NTFPs to rural households irrespective of wealth and suggest the need to include wealthy households in assessments of resource use aimed at informing development programmes and policy. According to Ambrose-Oji (2003) assessments need to consider socio-economic characteristics and ascertain which groups are “interested” in NTFP use and sale. While the composite picture suggests household wealth to have little influence on the use of NTFPs in

terms of the proportion of households using these products, there are exceptions when taking individual resources into consideration.

## 5.2. The procurement of NTFPs

Households procure NTFPs either through self-collection or by purchasing them in nearby centres, at monthly pension-point markets, from outside traders selling in the village or community members. This study found 94% of households to be purchasing at least one NTFP which compares favourably with the findings of Shackleton and Shackleton (2006) who reported 98% of rural households engaged in the purchase of NTFPs. Although the primary means of procurement is through self-collection, the resources in question and household characteristics (i.e. wealth) influence the manner with which households in the two villages procure individual resources. Households in Dixie buy a greater variety of NTFPs than those in Dyala again emphasising differences between the sites and a more extensive trade in NTFPs in Dixie and its surrounds.

This study found high proportions of both wealthy and poor households purchasing NTFPs: for both villages more than 80% of households from both wealth groups reported purchasing at least one NTFP however wealthy households buy more resources per household. This supports findings by Shackleton and Shackleton (2006) and Cocks et al. (2008) who noted that wealth determines the manner with which households procure their NTFPs and whether or not they sell although not necessarily the proportion of households using NTFPs. It is suggested that the greater number of resources bought by wealthy households indicates that poor households benefit more from the resources available (Shackleton and Shackleton, 2006). Findings from this study suggest that while wealthy households purchase NTFPs because they have available capital (and are potentially labour constrained), the poor buy NTFPs which they cannot collect, either because they are not available locally or because explicit knowledge/skills are required for collection. For example, in Dyala both wealth groups buy grass hand-brushes, which require certain skills to make while only wealthy households purchase fuelwood. In Dixie both wealth groups buy twig hand-brushes, as the preferred brushes are made from species not available locally ([Dovie, 2001] and [Shackleton, 2005]). This pattern is highlighted by the findings of Shackleton and Shackleton (2006): 96% of both wealthy and poor households reported purchasing NTFPs, although if hand-brushes are

disregarded then 76% of wealthy households purchased resources compared to 56% of poor households.

The opportunity costs involved in the collection also determine whether households self-collect or buy (Shackleton and Shackleton, 2006). For example in Dixie households use sand for building which is sold by one family with access to a tractor and trailer. Both wealth groups in Dixie buy sand because the opportunity cost of self-collection is likely to be high however, a greater proportion of wealthy households buy. Most households collect wild edible fruits and herbs and the difference in households purchasing these is not significant for wealth. The opportunity cost of collecting these is potentially less as households collect herbs from their homestead, garden/fields and fruits when performing other tasks such as collecting fuelwood. Ambrose-Oji (2003) found households rely more on NTFPs from forest-fallow areas (rather than deep forest) because of the lower opportunity costs associated with the collection of these. In Dixie where significantly more wealthy households have employed members and more employed members per household, the opportunity costs involved in the collection of NTFPs may be high. For this reason wealthy households choose to purchase a variety of essentially “free” resources.

### 5.3. The sale of NTFPs

In both villages NTFPs are sold either regularly as a livelihood strategy or on an *ad hoc* basis in response to need. Households sell NTFPs to cover food and household expenses; to meet local demand; to supplement the primary income; because of poverty and, in response to the loss of other income sources. The findings suggest that as a livelihood and coping strategy the sale of NTFPs is becoming increasingly important in response to continued unemployment and vulnerability in South Africa's rural areas: more than 70% of those households selling NTFPs had started to sell within the last five years. This supports findings by Shackleton (2005). In this study, 90% of those selling stated that they will continue to sell unless work becomes available or they are too old/ill to continue to collect the resources. This response not only reflects households' perceptions of the importance of a formal cash income but also suggests a possible shortcoming of NTFPs as a rural safety-net. The collection of some NTFPs can be labour intensive and therefore a shortage of labour constrains both the daily and coping function of NTFPs (Angelsen and Wunder, 2003).



Twenty-two percent of households across the sample sell NTFPs corresponding with findings from elsewhere in South Africa where up to 25% of households sell (Shackleton et al., 2000). Dovie (2001) found a smaller proportion of households selling NTFPs and the trade to be predominantly focussed on six resources. This study found two resources sold in Dyala and seven in Dixie. Those resources not sold in either village include fruits, medicinal plants, twig hand-brushes, fencing poles, fish, insects, honey, housing poles, thatch grass and mushrooms. There were however households that reported buying these suggesting that either the households selling were not covered in the survey or that the resources are bought elsewhere.

As with the purchase of NTFPs, the inter-village difference is not significant for the proportion of households selling but is for the number of resources sold per household, with households in Dixie selling a significantly greater average number than their Dyala counterparts. This finding highlights how local conditions affect the trade in NTFPs. According to Campbell et al. (1997) households in deeper rural areas market products through informal networks selling opportunistically or in response to orders from community members. Similar patterns were noted in Dyala where the sale is largely to meet local demand and is often based on orders from members within the same community. In Dixie, however while most resources are sold to meet local demand, the sale of certain products (including wooden curios and woven products) has developed predominantly in response to the growing market offered by tourists visiting the surrounding game-reserves. This commoditisation of traditional crafts for sale to tourists has been identified as an important aspect of NTFP trade in studies throughout South Africa ([Shackleton, 2005] and [Pereira et al., 2006]). Additionally, high population densities in the area surrounding Dixie together with regular pension-point markets provide a greater market for products and a wider option of selling points than in Dyala. In general however, both villages are off major transport routes and both are characterized by relatively low levels of available cash which limits the trade in NTFPs beyond the local context.

In terms of intra-village differences as determined by household wealth, the findings differ for the two sites. In Dyala only poor households sell NTFPs suggesting that the sale of NTFPs is important to poor households with limited alternative cash incomes (Shackleton and Shackleton, 2006). The inter-household trade in NTFPs represents a mechanism through which a proportion of external cash income earned by migrant employees from wealthy households is redistributed

amongst the community. The intra-community downstream use and benefits of cash income derived from NTFP trade has not been studied. In Kwa-Zulu Natal [Shackleton et al. \(2002b\)](#) found households least likely to sell NTFPs were those receiving a cash income either through wages or old-age pensions. In cases where wealthy households are involved in the trade of NTFPs, although they may earn more, the poor rely more on the income as input for other activities especially as the entry barriers to arable agriculture and animal husbandry can be high ([\[Cavendish, 2000\]](#) and [\[Belcher et al., 2005\]](#)). In Dixie both poor and wealthy are involved in the sale although the poor sell more resources per household. Wealthy households are predominantly involved in the sale of curios suggesting these households have responded to opportunities in higher-return products while the poor have diversified into the sale of various products in response to vulnerability and to provide cash income. Recent observations by [Chopra and Dasgupta \(2008\)](#) in India from a large census of over 75,000 households suggest a similar situation in which households specialising the sale of NTFPs need not necessarily be poor, but have exploited opportunities or have more secure access to the NTFPs. Our work shows, and that of others ([\[Cavendish, 2000\]](#), [\[Fisher, 2004\]](#) and [\[Shackleton and Shackleton, 2006\]](#)), that poor households trade opportunistically in low-return products with low-skill requirements as a livelihood stabiliser and a means to cope while wealthy households are involved in the more lucrative trade of high-return products. According to [Shackleton et al. \(2000\)](#) the incomes from NTFP sales are generally higher where there is an external market, as is the case in Dixie. This therefore makes the trade a more attractive option to wealthy households who trade to supplement other income sources. Poor households on the other hand often face barriers to NTFP sale in terms of value-adding and the necessary tools ([De Merode et al., 2004](#)). In Zimbabwe however, [De Jong et al. \(2000\)](#) found the income from woodcrafts to be equally distributed between wealth groups.

Discussions indicated that wealthy households have certain advantages in the sale of these high-return products supporting findings on the barriers faced by poor households in the sale of NTFPs ([\[De Merode et al., 2004\]](#) and [\[Chopra and Dasgupta, 2008\]](#)). With respect to woven reed products, many wealthy households are able to collect reeds within the adjacent game-reserves where family members are employed, whereas the poor households have to collect from communal areas where there is higher competition for resources. Wealthy households are also fortunate with respect to wooden curios. There are few households in Dixie that produce wooden carvings, the

majority buy carvings from outside carvers/traders and resell them to visiting tourists. Wealthy households trading in these carvings are at an advantage as they can afford to buy stock as well as pay to join the “carving stokvel” that has been established. This carving group operates on a rotational basis with each member getting an out-payment in turn, which they then use to buy stock for their curio stall. The other resource sold by wealthy households in Dixie is sand. This is sold by one family with access to a tractor and trailer. Households with the skills to make hand-brushes, woven products and such occupy a smaller, niche market. Fuelwood is sold by several households in both villages — no skills are required for this and there is a sufficiently large market.

Resource commercialisation offers both opportunities and constraints to poor households however the lack of alternative income sources suggests poor households benefit more than their wealthier counterparts (Shackleton and Shackleton, 2004). As Cavendish (2000) highlights, although wealthy households dominate the use of NTFPs, in terms of income share, the poor depend more on the contribution made. According to Shackleton and Shackleton (2004) more poor households commercialise, sell a greater variety of products and the income made constitutes a greater proportion of the total household income. This study substantiates this in terms of the variety of products sold by poor households.

As highlighted by previous work, there are a range of factors that influence use of and trade in NTFPs, such a gender, local knowledge, access to markets and the like ([Cavendish, 2000] and [Shackleton and Shackleton, 2006]). These are often context specific and also variable in time. In this paper we have highlight wealth in isolation of these other attributes, but that does not mean they are any less important or that they in turn have no compounding effect with wealth. Our focus was to respond to the lack of empirical work on wealth dimensions of general household use and procurement of NTFPs (as opposed to specialist market chains), both in southern Africa and internationally (Luckert et al., 2000). The underlying relationships of wealth and NTFPs are paralleled by those with gender, because throughout the developing world female-headed households are disproportionately represented amongst the poorest households (Shackleton, 2005). The relationship to wealth plays out through multiple dimensions, but most specifically (i) the greater ability of a wealthy households to withstand or survive a shock through use of accumulated assets (including NTFPs), (ii) the power of cash wealth to allow choices on what consumptive goods are self procured and what are purchased (locally or further afield), and (iii) the ability or

option of wealthier households to invest in cash generating opportunities, including the opportunistic sale of NTFPs (for example they may have a vehicle, or can hire one, to take NTFPs to regional markets). The constraints that poorer households experience through having less cash or other valuable but disposable assets mean they have a greater dependence on NTFPs for daily consumptive use as well as trading them in local markets to wealthy households (Shackleton and Shackleton, 2006). Should they experience misfortune or shock to the household (retrenchment, death, drought, disease to crops) the range of response options they have is less than wealthy households. Consequently, it takes longer for them to recover, reinforcing their basic dependence on NTFPs (Paumgarten, 2006).

## 6. Conclusion

The findings of this study suggest NTFPs make an important contribution to rural livelihoods through both the use and sale of products. They show NTFP use to be a common feature of rural livelihoods irrespective of household wealth, particularly with respect to the proportion of households involved as well as the average number of resources used per household. The results however suggest poor households to be more dependent on NTFPs in that they sell a greater variety of products and buy significantly fewer products than their wealthy counterparts. According to Belcher et al. (2005) the variable contribution made by NTFPs highlights the need to consider this livelihood strategy in terms of its contribution towards households' total livelihood portfolio rather than as an independent strategy. This study has contributed to the growing research in South Africa on the affect of households' socio-economic characteristics on resource use. This socio-economic dimension of NTFP use has previously been under-researched (Shackleton and Shackleton, 2006). According to Shackleton and Shackleton (2006) even though overall consumption may not show differences for household wealth, poor households depend more on the use and sale of NTFPs because they typically have fewer alternative income sources. The findings suggest the commercialisation of NTFPs to be an escalating trend in response to increasing vulnerability although while poor households sell a variety of low return products in response to financial need, wealthy households respond to opportunity selling fewer but more lucrative products. A socio-economic focus allows for more effective targeting of interventions for both poverty alleviation and conservation. An appreciation of those households most dependent on the goods and services offered by NTFPs and therefore most affected by changes in availability and

accessibility, allows for more effective targeting of interventions at a development and policy level.

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