

Entrepreneurs, Elites, and Exclusion in Maasailand: Trends in Wildlife Conservation and Pastoralist Development

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Maasai pastoralists in Kenya are rapidly diversifying. Maasai may now derive their main livelihoods (and sometimes considerable income) from farming, wildlife tourism, and/or the leasing of land for large-scale cereal cultivation. The spread of large-scale commercial cultivation competes with wildlife for grazing land, and wildlife populations around protected areas are rapidly declining as a result. This paper presents new data to analyse the way returns from different land uses, and the social structures affecting their distribution, influence the land-use choices being made by Maasai around the Mara National Reserve in Kenya. Returns to different interest groups from livestock, cultivation, and wildlife enterprises, seen in the light of current social, economic, and political trajectories, can help to clarify likely future land-use trends in the Mara. In particular, community conservation initiatives that seek to make conservation worthwhile to reserve-adjacent dwellers inevitably have a strong economic dimension. However, the choices made by Maasai landowners are not a simple function of the economic returns potentially accruing from a particular enterprise. They are as much or more influenced by who is able to control the different flows of returns from these different types of enterprise. These findings are relevant not only for the wider Serengeti-Mara Ecosystem, but also for pastoral livelihoods and wildlife conservation elsewhere in sub-Saharan Africa.

KEY WORDS: Maasai pastoralist; livestock; wildlife; cultivation; land use; economic tradeoff.

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INTRODUCTION

Maasai pastoralists living around protected savanna areas in Kenya and Tanzania have in the past depended largely on livestock herding. Maasai pastoralism has for centuries coexisted alongside spectacular wildlife populations in and around the world-famous Serengeti-Mara Ecosystem. In recent years wildlife tourism and cultivation have become significant alternative sources of income. Large-scale mechanized cereal farming in areas of higher agricultural potential can be very lucrative. Increasingly, it competes for grazing around protected areas, conflicting with wildlife conservation, tourism, and pastoralist livestock. Wildlife populations are estimated to have declined by 50% in Kenya over the last two decades as a result (Norton-Griffiths, 1996; Norton-Griffiths and Southey, 1995; Ottichilo *et al.*, 2001). Besides wildlife conservation and tourism industry concerns, this has also precipitated tensions amongst pastoralists as to how land-use decisions are made and benefits distributed. This paper integrates insights from studies of pastoralist ecology, economy, and their interaction with the historical dynamics and political economy of land tenure and access, to explore factors driving land use choices around the Maasai Mara National Reserve (MMNR).

Much of East Africa is arid and semiarid rangeland (Jaezold and Schmidt, 1982), where pastoralism and agropastoralism have dominated land use for centuries (Marshall, 1994; Spear and Waller, 1993). Indigenous livestock production systems have allowed flexible transhumant use of a patchy, unpredictable, dynamic mosaic of grazing and water resources, which changes with season as well as conditions of drought, disease, and security (Ellis and Swift, 1988; Homewood and Rodgers, 1991; Niamir-Fuller, 1999). Specialized milk-based pastoralism developed early on in the region (Marshall, 1994), but East African pastoralists have commonly also depended on cereals, whether through trading with farmers, or, in the case of temporarily stock-poor families, by cultivating themselves (Berntsen, 1979; Spear, 1993). On encountering this fluid mix of economic, linguistic, and cultural strands, the colonial administration in East Africa sought to define various elements as separate tribes and to confine the different groupings to designated reserves from which other peoples could be excluded (e.g., Kikuyu farmers from Maasai reserves (Spear and Waller, 1993)). However, "pastoral" Maasai have continued to need supplies of grain to supplement the pastoral diet up to the present (Nestel, 1986; Thompson, in preparation-a,b). The strategies used by Maa-speaking and other peoples to negotiate access to reserved resources have been documented for several different areas (e.g., Brockington, 2002; Rutten, 1992; Spear, 1997; Waller, 1993).

The colonial period saw the decimation of the Maasai, the collapse of their control over East African rangelands (Waller, 1988), their restriction

to a much smaller area (Rutten, 1992; Waller, 1990) with progressively more strictly defined internal boundaries (Homewood, 1995), followed by continuing land loss to expatriate settlers and to non-Maa-speaking immigrants in the post-independence period (Rutten, 1992). In particular, this period saw major land expropriation for wildlife conservation (Homewood and Rodgers, 1991; Rutten, 1992). Wildlife conservation as imported to sub-Saharan Africa derived largely from Western roots (e.g., Neumann, 1995, 1996) and has generally excluded local people (Homewood and Rodgers, 1991; MacKenzie, 1987; Neumann, 1995, 1996; Rutten, 1992). The process intensified in the post-independence period (e.g., Igoe and Brockington, 1999). Conservation of wildlife inside protected areas typically depends on surrounding areas acting as buffer zones and wet season dispersal areas (Homewood *et al.*, 2001a; Norton-Griffiths, 1996; Western and Ssemakula, 1981). The progressive conversion of those buffer zones to alternative uses and the concomitant exclusion of wildlife has led to a drastic decline in wildlife populations (50% decline in Kenya over the last two decades, primarily through habitat loss (Homewood *et al.*, 2001a; Norton-Griffiths, 1996; Norton-Griffiths and Southey, 1995; Ottichilo *et al.*, 2001).

Pastoralist livestock resource use shows strong parallels with that of wildlife (Bourn and Blench, 1999; Homewood and Rodgers, 1991; Western, 1975). Unfenced savanna rangelands under extensive pastoralist use can be highly compatible with wildlife conservation (Homewood and Brockington, 1999; Homewood and Rodgers, 1991; McCabe and Perkin, 1992), particularly around the Serengeti-Mara Ecosystem (Homewood *et al.*, 2001a). Where savanna rangelands are fenced and/or converted to other forms of land use, wildlife populations decline and disappear.

A growing body of work both theoretical (Ostrom *et al.*, 1999) and empirical (Bell, 1987; IIED, 1994; Wøien and Lama, 1999) has suggested that wildlife conservation is unlikely to succeed in sub-Saharan Africa unless it is able to enlist the support of reserve-adjacent dwellers. Together with increasing concern over access rights and a growing awareness that structural adjustment means less power to enforce, this view has led to a wide range of initiatives attempting to develop community participation in conservation (Hulme and Murphree, 2001). Practitioner evaluations of these schemes have suggested that costs to communities (in terms of resources foregone and hazards sustained to lives and livelihoods) must be outweighed by benefits (in terms of revenue, dividends, employment, development projects (Berger, 1993)) and that communities should be actively involved in setting priorities and in managing conservation (Brandon *et al.*, 1992; Emerton and Mfunda, 1996). It may be difficult to establish meaningful community participation where the conservation goal has been conceived, introduced,

and implemented by outsiders, or to ensure equitable distribution of revenue such that the poorer and more vulnerable will not be further disadvantaged by exclusion from either resources or revenue (Gillingham and Lee, 1999; Sullivan, 2001). Conservation goals and programs may be at odds with deep-rooted local needs and perceptions (Alexander and MacGregor, 2000; Brockington, 2002; Igoe, in press; Igoe and Brockington, 1999). Finally, community conservation schemes need to work to recognize conservation-compatible forms of local land use (Homewood and Brockington, 1999).

Theorists stress the importance for common resource management of clear tenure (Murphree, 1993). Since the 1960s, land tenure in Kenya has been privatized in response to pressure from Western theorists and World Bank economists who saw communal management as leading to environmental degradation (Hardin, 1968; Rutten, 1992; Toulmin and Quan, 2000). A companion paper compares the outcomes of contrasting land tenure systems around the Serengeti-Mara Ecosystem, with state and communal control of land in Tanzania as opposed to private tenure in Kenya (Homewood *et al.*, 2001a). This paper looks in detail at access to land, firstly in terms of who gets what from privatization (Chabal and Daloz, 1999; Rutten, 1992) and secondly in terms of the implications for choices over the use to which land is put.

Theoretical analyses suggest the conditions necessary for conservation rest on clear ownership, the ability to exclude outsiders and to enforce that exclusion, and an absence of alternative higher yielding investment opportunities. Common property management of common pool resources is more likely to work where user groups are tied by a long history of reciprocal interaction and interdependence (Ostrom *et al.*, 1999). In particular, land tenure has emerged as the crucial dimension in the economic, social, and/or environmental sustainability of land use (Galaty, 1994; Markakis, 1999; Niamir-Fuller, 1999; Rutten, 1992; Ruttan and Borgerhoff-Mulder, 1999; Toulmin and Quan, 2000). Maasai communities around the Mara constitute a relatively cohesive cultural and ethnic group with established institutions for collaborative regulation of resource access (Potkanski, 1994, 1995; Spear and Waller, 1993). They hold and can enforce private land tenure (Markakis, 1999). Wildlife tourism in the Mara is an extremely high-yielding enterprise with a clearly defined and relatively small number of landowners eligible for a share of returns. Given the high returns from tourism available in the Mara, a view of economic flows alone suggests that community conservation could succeed. However, conversion to alternative land uses and wildlife population decline continue around the Mara. Understanding the reasons for this decline requires an understanding of the distribution of returns from different land-use options in situations around the Serengeti-Mara Ecosystem and similar African savanna protected areas.

There have been previous assessments of likely trends in land use in the Mara ecosystem based on the economic returns from alternative production systems (Norton-Griffiths, 1996; Norton-Griffiths and Southey, 1995). Where pricing is not entirely clear, contingent valuation and related techniques can investigate likely responses to future land-use options (Emerton, 1996; Osgood, 1998; Thompson, 1998). However, these valuing techniques are not ideally suited to dealing with issues of revenue flows and of distribution that may be crucial to decision-making. They relegate social and political structures to a peripheral role, and assume that the landowner essentially commands all the returns available from the land. They also assume that where there are communal forms of ownership operating, returns are divided relatively evenly between members of the community. This is rarely the case, either in Maasai Mara or elsewhere (Rutten, 1992). An alternative approach to understanding the economics of natural resource use in rural African settings recognizes that legal title represents only one part of access (Ribot, 1998). Such approaches take account of the way patterns of returns flow along social networks according to hierarchies of power, whether through control over official channels or in extreme cases through manipulating information, misinformation, and intimidation (cf. Dietz, 1996; Muraguri, 1999c; Markakis, 1999; Rutten, 1992). Mapping the patterns of access to resources, and the mechanisms whereby those patterns of access are controlled, makes more clear who benefits, the many levels of decision-making operating, and the reasons for outcomes that may otherwise appear less than economically rational. The approach has been used to show the practical realities of community participation in natural resource management in, for example, the distribution of revenue from a single commodity chain (e.g. charcoal) derived from a resource supposedly under local rural community control (communal forest) (Ribot, 1998). The present paper undertakes a comparable analysis for the Mara.

After outlining the research setting (the Mara, the buffer zone populations, land tenure and land-use systems), and the methodology, the different interest groups are described, as are the differential flows of returns to each from different enterprises. These include cultivation (small-scale, farming association, large-scale commercial), livestock (extensive pastoralism, ranching), and wildlife enterprises (Maasai Mara National Reserve dividends; Group Ranch Wildlife Associations; subset Wildlife associations; camp-sites). The paper concludes with possible future trends, given the social, economic, and political trajectories of land use in Kenya. The Maasai Mara gives insights into the realities underlying community-based conservation, the conditions which might improve both rural livelihoods and wildlife conservation, and the means which could bring this about, here and elsewhere in sub-Saharan Africa.

Table I. Study Area Human Population Estimates (1989)

	Siana	Koiyaki	Lemek (Maasai)	Lemek (in-migrant enclave)
1989 census enumeration unit	Megwara Naikara	Aitong	Lemek	Enelera
Population density per (km ²)	Megwara: 8.0 Naikara: 9.3	5.2	6.6	72.1
Area (km ²)	Megwara: 419 Naikara: 210	877	745	87
1989 population estimates	5305	4560	4917	6272

THE RESEARCH SETTING

The Mara Area

Our study is located on Siana, Koiyaki, and Lemek Group Ranches and the Olchoro-Oiroua area adjacent to the Maasai Mara National Reserve (Fig. 1). The area comprises a mosaic of grassland, bush, and wooded grasslands (Dublin, 1995) ranging from an altitude of 1700 m to 1960 m asl, with mean annual rainfall ranging from 500 mm on Siana to 1000 mm on the Isuria escarpment (Omondi, 1994). The history of the Mara area and the evolution of the landscape over the centuries are described in Lamprey and Waller (1990) and Waller (1990). Figure 2 shows the extent of crop production in the major agro-ecological zones³ of the study area. Both large-scale commercial and small-scale farming are expanding throughout the area, even in areas thought marginal for rain-fed agriculture.

The Mara Buffer Zone Population

National population census figures for 1989 are shown in Table I for Narok District (1999 figures not yet available). There has been massive in-migration into the north of the District: 53% of the 1989 census population were non-Maasai, while 25.4% reported lifetime in-migration into the District. However, most residents of the Mara-adjacent Group Ranches are Maasai, primarily of the Purko section (Hollis, 1905; Lamprey, 1984). Of a population sample of 2605 in the Mara dispersal areas, fewer than 0.02% were

³The scheme of agro-climatic potential presented here is the most recent applicable to the study (Jaezold and Schmidt, 1982). Agro-climatic zones I, II, and III represent high and medium potential land. Zone IV represents the agro-ecological limit within which rain-fed cultivation is considered viable, and Zones V and VI comprise semiarid and arid land generally suitable for ranching and wildlife only. The majority of the study area falls within Zone IV, with higher potential land located at the northern extreme of Koiyaki and on Lemek GR, as well as on the Olchoro-Oiroua area.

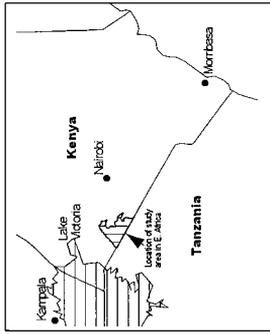
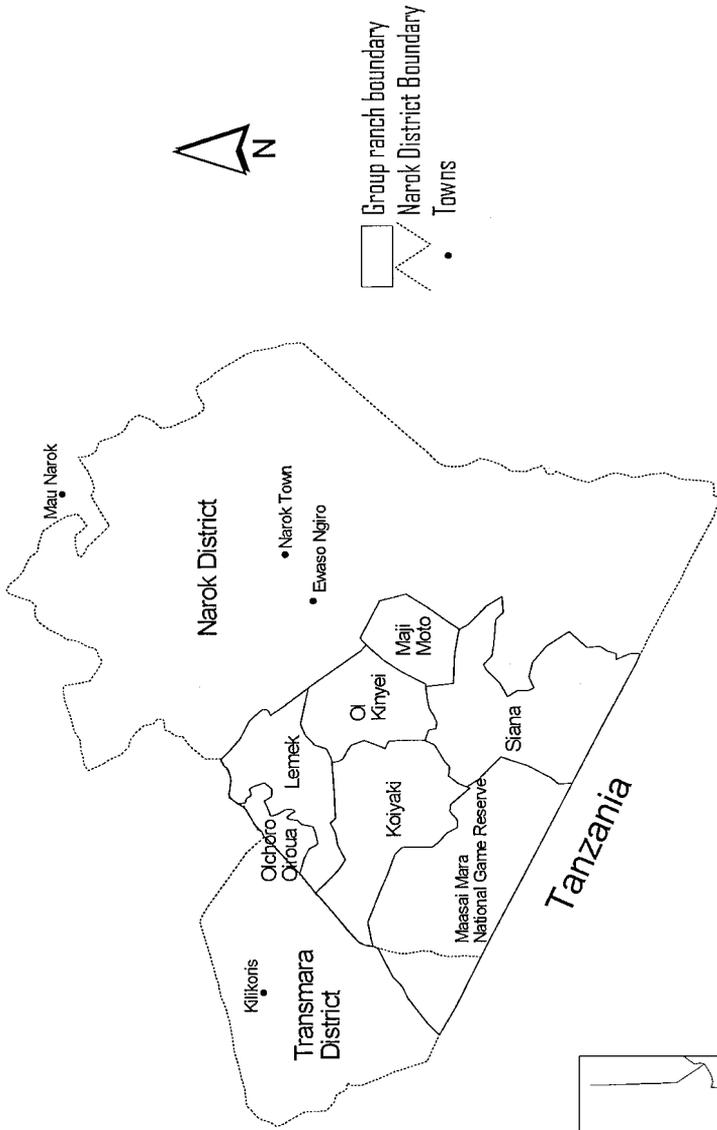


Fig. 1. Location of study area—Narok District, Kenya.

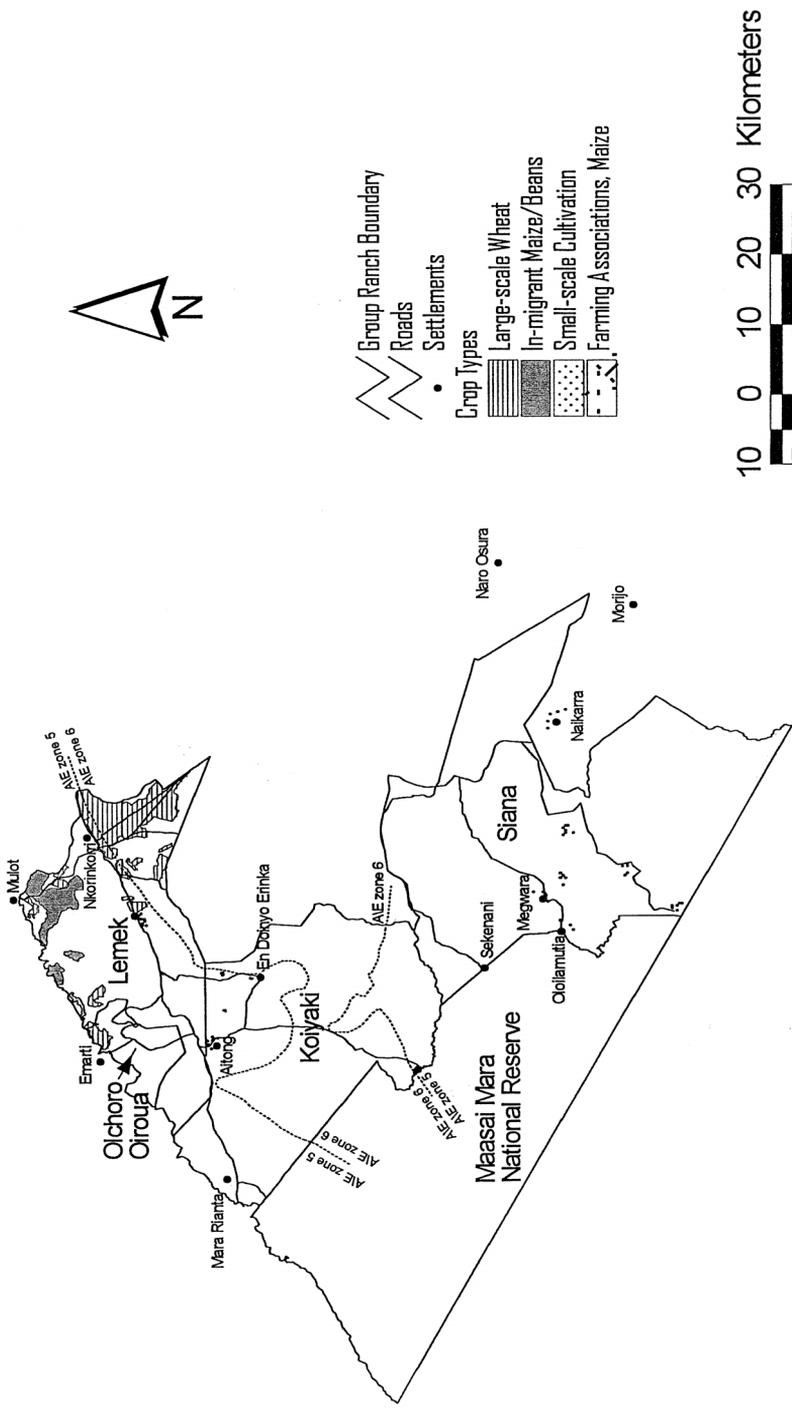


Fig. 2. Farming patterns in the study area.

non-Maasai (Thompson, in preparation-a,b). There are also two enclave areas of in-migrant Kipsigis and Kalenjin farming on leased or purchased land on Lemek Group Ranch (Fig. 1; Table I; Homewood *et al.*, 2001b). Population densities approximate 6.6 persons per km² in Maasai areas, compared to 72.1 persons per km² in in-migrant areas. Douglas-Hamilton (1988) estimated a total of 600 in-migrant families in the southern of the two enclaves, but this number varies rapidly according to the fluctuating political tensions in the area (e.g., Muraguri, 1999c). Long-term trends need to be understood in the light of the land tenure politics of the area (Homewood *et al.*, 2001a,b). For the purposes of this paper, non-Maasai in-migrant households farm <4% of the study area, concentrated within distinct enclaves. There has not been in-migration of cultivating smallholders throughout the study area comparable to that in North Narok and elsewhere in Maasailand (Campbell, 1993; Lane, 1996), and land ownership in the study area buffer zones is effectively Maasai. This paper therefore considers the economic and social structures driving land-use opportunities from a Maasai standpoint.

Land Tenure and Land Use

From 1960 to the present, Kenya Government policy has promoted land privatization in previously communally held Trust rangelands (Thompson, 1998). From the 1970s through to the mid-1980s, Group Ranches were created from previously communally managed Trust Lands with far-reaching implications for the control and distribution of benefits from use of that land (Campbell, 1993; Galaty, 1992).

The second stage of privatization, from the 1980s on, has involved the subdivision of Group Ranches amongst members who each receive private title deeds. In our study area, land tenure in the areas under consideration is as follows:

1. Siana: total area 629.15 km², unadjudicated land, still not registered as Group Ranch, held in trust for the inhabitants by the Narok County Council. In practice the area operates as a Group Ranch, with management committees making decisions over land use and land adjudication (Government of Kenya [GoK], 1995).
2. Koiyaki: total area 876.75 km², Group Ranch, preliminary survey for subdivision is underway. A total of 1020 members have been registered to date (GoK, 1995).
3. Lemek: total area 495 km², subdivided group ranch final title deeds being issued from January 1999 to 1021 registered members (GoK, 1995).
4. Olchoro-Oiroua: Large private land-holdings (200–2500 ha) were registered from the late 1960s. The total number of families involved

Table II. Study Structure and Number of Systematic Interviews Carried Out

	Siana	Koiyaki	Lemek	No. of rounds	Total
Pilot	7	4	5	1	16
Broadscale	47	160	80	1	287
Multiround	19	20	18	3	171
CVM	64	75	30	1	169

has varied but has been small throughout. The area is most commonly referred to by the Wildlife Association of the same name, formed by eight private land-owners in 1993.

Livestock keeping is the predominant land use and is practised by almost all Maasai inhabitants (Coast, 1998). Data from aerial counts suggest stocking rates have not changed over the last 25 years (Homewood *et al.*, 2001a). In Lemek and Olchoro-Oiroua approximately 23 and 9% of the land area respectively has been converted to large-scale mechanized cultivation of wheat and maize (Fig. 2). Tourist camps and lodges predominate closest to the MMNR and to the Mara River on all of the above study areas.

Methodology

The results presented here document and analyze events, processes, and returns recorded in the course of systematic questionnaire surveys, semistructured interviews and informal participant observations during an 18-month field study between March 1998 and October 1999 (Table II). An initial pilot survey identified study sites and was followed up by a broadscale household-level survey of 287 Maasai households (*Ilmareta (pl) Olmarei (sing.)*), as well as a multiround household survey of 57 *Ilmareta*. These were carried out alongside informal and semistructured discussions with informed people ranging from household members to local, district, and national level government officials and entrepreneurs. In addition to the broadscale and multiround household level surveys, a contingent valuation survey was carried out in 169 households during February–May 1999 (Thompson, in preparation-a,b).

RESULTS

Interest Groups

Table III sets out the main interest groups influencing land-use decisions amongst the Reserve-adjacent communities of the Mara, and the main patterns of control these interest groups exert over resources.

Table III. Interest Groups and Channels of Control on Group Ranches Around the Mara

	Herding	Farming	Wildlife
Group ranch member	Own 100 acres plot Negotiate reciprocal access	Cultivate own plot and/or Join farming association	Lease own plot and/or Join wildlife association
Local elites	Prior to allocation, can manipulate preferential access to/ownership of key grazing/water	Prior to allocation, manipulate preferential ownership of key farming/tourism sites Gatekeeper for farming/tourism concessions to outsiders	Prior to allocation, manipulate preferential ownership of key farming/tourism sites Gatekeeper for farming/tourism concessions to outsiders
Government elites	Control Official process for approval of land title Official licenses/permits/quotas/subsidies Protected Area revenue allocation	Control Official process for approval of land title Official licenses/permits/quotas/subsidies Protected Area revenue allocation	Control Official process for approval of land title Official licenses/permits/quotas/subsidies Protected Area revenue allocation
Outside entrepreneur	NA	Control Access to clientele/markets Capital and investment opportunities Wage labour opportunities Access to influential elites, subsidies	Control Access to clientele/markets Capital and investment opportunities Wage labour opportunities Access to influential elites, subsidies

Group Ranch Members. Ordinary membership is registered through family heads at adjudication, a process which ensures access to group ranch resources and receipt of a private plot of land on subdivision. Registers are meant to be updated frequently, but in practice many are not updated until just prior to subdivision, at which point their composition may be hotly contested. Eligibility for registration is established by long-term physical presence, construction of permanent buildings, and use of social influence. Those unable to assert these claims effectively risk becoming landless (Thompson, in preparation-a,b).

Local Elites (Group Ranch Leaders and Local Government Administration). Decisions on group ranch resource use are made by elected management committees. The Group Ranch Act (GoK, 1968) provides for annual elections of these committees, but in practice many group ranches have operated with one election in 20 years. Members of these committees wield considerable power in arranging farming and tourism concessions.

These committees compile membership registers, allocate land at subdivision, and can exert control over membership of cooperatives such as farming associations and wildlife associations. Allocation of land and revenue is achieved through social influence, insider knowledge, access to official administrative channels, legal enforcement, control of information and in some cases, manipulation of processes or documentation (Box 1).

Box 1

Lemek group ranch was established in 1969. The group ranch chairman and land adjudication committee allocated large areas of land to educated or influential Maasai in a belt along the western portion of the boundary bordering the Mara River. These allocations were cemented under private ownership with the issuing of title deeds, the process being facilitated by the local administrative chief and land registry staff, ostensibly to guard against the continued westward movement of non-Maasai cultivating groups onto Maasai lands. Beneficiaries included Maasai administration chiefs, MPs, Councillors, County Council officials and police inspector. Many of these new land-owners rapidly sold land on a piece-meal basis to the same in-migrant cultivating groups.

These private land holdings predate the subsequent subdivision of land amongst the remaining group ranch members from 1993–99. On subdivision of land on Lemek, each registered member was entitled to receive 100 acres of land (in fertile places) or 128 acres on steeply sloping or marshy areas. All circumcised males deemed by the land adjudication committee to have been resident on the group ranch prior to the closing of the register in 1993 were registered. According to the Narok County Council there were 1021 registered members on Lemek. Initial attempts by local elites to allocate larger shares to themselves were thwarted in 1995, when under the supervision of the District Commissioner, a revised survey was undertaken to ensure allocated plots were of equal size.

Despite this, locally influential people (with access to the register and map giving the location of the plots) have still been able to manipulate the land subdivision process for their personal benefit. Examples include

- Those previously involved in leasing land for wheat cultivation using the considerable sums generated to buy the permanent/modern houses constructed by commercial farming contractors. Once an owner of the permanent housing, one's stake to the land on which the house is located is secure, thus ensuring a position in the lucrative wheat leasing belt.
- Those involved in leasing out the land for wheat farming using the money accrued to buy out poorer neighbours shares in land. Once agreement had been reached (usually a handwritten confirmation signed or marked with a finger print) the position of the selling party's land would be changed to ensure it was located on the wheat belt.
- Influential people registering their younger (uncircumcised) sons and ensuring that the plots are all located adjacent to each other in the wheat belt. In this way, farms of up to 1000 acres in extent could be established.
- Inequalities have occurred, though not on the scale recorded prior to 1995. Plot sizes have varied from approximately 60 acres up to 200 acres, invariably the plots of above average size have been allocated to influential people and have been located on the wheat belt.

The same process has been used by influential people to have plots allocated in areas with tourism facilities, water points, and areas of favored grazing.

District/National Elites. Local administration officers provide legal endorsement of these patterns of use. District and national administrations and political representatives control access to entrepreneurial activities and in many cases develop business partnerships themselves, using their access to legal and social influence, investment capital or government inputs/subsidies/quotas, control of information, and in some cases, manipulation of insider knowledge, administrative channels, permits, licences, and statutory government returns.

Outside Entrepreneurs. Businessmen control capital for investment and wage labor opportunities, and maintain market position through access to national/international markets and support of national elites. This group is dominated by Kenyans of European and Asian origin.

Land-Use Options and Returns

This section describes the organizational and technical requirements of alternative land-use options available to different interest groups, the levels of economic return possible from each, and the different types of control exercised.

Cultivation

A single-round demographic survey found 46% of 635 Narok and Kajiado Maasai households currently cultivating (Coast, 1998). This study gives a similar weighted overall mean of 53% for those having any cultivation over the last 10 years (Table IV): the majority of households resident around the Mara are now involved in cultivation. There is considerable local variation. For example, Talek is a Park boundary settlement with high wildlife densities and unusual scope for tourism income opportunities. The combination of wildlife damage, drought, and higher yielding alternatives mean none of the 104 Talek households interviewed were involved in cultivation. Three levels of organization of cultivation were identified, with characteristic associated levels of yields and hence of economic returns, as well as different patterns of distribution and control (Table V).

Table IV. Percentage of Households Ever Practising Cultivation Outside the Boma Fence

Study	Siana GR		Koiyaki GR		Lemek GR	
	Siana (<i>n</i> = 46) (Megwara)	Aitong (<i>n</i> = 59)	Talek (<i>n</i> = 104)	Lemek centre (<i>n</i> = 46)	Nkorinkori (<i>n</i> = 33)	
% of households cultivating in last 10 years	76.6	95.2	0	87.0	84.8	

Table V. Variety of Farming Arrangements in Mara Group Ranches

Farming type	Land	Labour	Other inputs	Months grain feeds household	Mean acres/ household \pm SD	Net returns per household/ acre/year \pm SD (includes household consumption)
Small scale maize and beans near boma	All group ranch land tenure types	Own (wives)/ work party manual labour	Seed, thorn fences, manuring by stubble grazing	2 ± 1.7 ($n = 16$)	1 ± 0.8 acres ($n = 29$)	51 ± 48.2 \$/acre/year, ^d $n = 29$ (Siana) Produce mainly consumed within household
Farming associations: Maize (ca. 2 acres)	Koiyaki and Lemek	Hire tractor and labour for weeding	Cooperative purchase of seed, fencing, mill, store, tractor	5 ± 2.8 ($n = 43$)	Ca. 100 acres	Over 4 years from start up: 9 ± 5.82 \$/ acre/year, $n = 28$ Once start-up costs covered: 54 ± 51.3 \$/acre/year, $n = 28$
Private land	Lemek: Newly private land	Hire tractor and driver to plough and plant own land	Seed, fertiliser, pesticide, labour for weeding, harvest	Maize: 10 ± 2.8 ($n = 7$)	Maize ($n = 47$): 4 ± 2.4 acre/ hh, Wheat ($n = 27$): 11 ± 8.6 acre/ hh	Maize: Net ^{c,d} returns 150 ± 122.4 \$/acre/year, $n = 47$ Wheat: Net ^{c,e} returns 148 ± 134.5 \$/acre/year, $n = 25$
Land leased to entrepreneur ^b (ca. 100 acres)	Lemek: Newly private land	Entrepreneur organises all cultivation	Seed, fertiliser, pesticides, spray planes, etc.	NA		24 ± 5.9 \$/acre, $n = 37$
Entrepreneurs lease from multiple resident owners	Land privatised 10–15 years ago e.g. Olulungua	Leaseholder uses own tractors, lorries, combine harvesters	As above	NA		Net \$97/acre (Mwau, 1996)

^aData are 4-year averages amongst cultivating households, including years of complete crop failure.

^bFarming association: Costs of maize farming \$85.46/acre taken from actual expenditure by households.

^cFarm gate price per 90 kg bag, maize \$16.93, wheat \$23.85 (data from NCPB, Narok).

^dCosts maize cultivation \$52.31 (per acre per year): First ploughing \$18.45, harrowing \$12.30, planting (labour) \$10.78.

^eIndividuals gain higher returns overall by leasing all or most of their 100 acres to entrepreneurs than by cultivating 1–2 acres themselves, though returns per unit area cultivated are higher for self- or farming association cultivation.

Small-Scale Cultivation. Households use their own labor or organize cooperative work parties to cultivate small areas of land. New institutions are emerging around the organization of labor (e.g., communal work parties termed “*Wira*” (Kikuyu) for tilling, weeding, and harvesting fields). In most cases individual sons are designated as responsible for the organization of labor for cultivation. The harvest is mostly consumed directly by the household. Crop farming is perceived as necessary to make ends meet and to minimize the sale of livestock needed to feed the household. Typically less than 2 acres of land are cultivated next to the boma (Thompson, 1998). This scale of cropping is easily accommodated in a landscape which is dominated by grazing, and remains open to use by wildlife as well as livestock. Most Maasai households can organize the labor necessary for small-scale cultivation, and households keep control of all benefits. Small-scale cultivation may be abandoned in the face of persistent wildlife damage, or where there are higher yielding alternatives (e.g., Talek). In-migrant workers’ involvement in small-scale cultivation, leasing, and purchasing is limited by antagonism from Maasai residents. Outside of the enclave areas, only two non-Maasai respondents were residing within the 344 households interviewed and found to be cultivating. Small-scale cultivation outside of the enclave areas is not at present viable for other than Maasai group ranch members.

Farming Associations. On Koiyaki and Lemek group ranches, residents have organized themselves into farming associations (e.g., Box 2). Those invited to join a farming association and in a position to contribute, sell livestock and club together the proceeds to hire tractors, plough and fence farms of up to 100 acres, fund later stages of the cultivation process, and/or buy machinery for postharvest processing. Farming associations enable group ranch members to capture greater benefits from cultivation than can be achieved from individual efforts alone. Group ranch members can maintain

Box 2

The establishment of a Farming Association on Lemek group ranch in 1996 has been driven by a group of educated men, independent from the established group ranch Committees which are responsible for controlling land allocation and running the Koiyaki-Lemek wildlife association. The chosen location of the farming association land is in the MMNR wildlife dispersal area, close to some luxury tented camps from which members of the established group ranch committees have been drawing income. At the time of first ploughing, a dispute arose between the farming association members and the group ranch Chairman, who tried to halt the development on the grounds that it conflicted with tourism on the ranch in general and the operation of the luxury camps in particular. The tented camp operators also threatened to vacate the area. In the event the District Officer was called to resolve the issue, which he did in favor of Farming Association’s right to generate income and benefits for its members. The tour operators have since stayed put.

Box 3

With land subdivision now in place in Lemek, one Farming Association which was previously jointly managed by the association members has now been allocated to a single member of the Association as his private land. This member is now charging a high rent for the use of his land by the FA, causing the Association to purchase a field further away next to the wheat-growing belt. The member owning the original field now stands to benefit from the investment made by the Association as a whole (electric fencing, stores, and ploughed fields) at the original site, and his decision to charge a high rent has undermined the operation of the Association in the 1999 growing season.

considerable control over returns from farming associations, and the higher level of organization and technological inputs are within reach of most group ranch members. The organizational roles within the associations (chairman, secretary, manager, etc.) are strongly contested and confer prestige and power. In some cases Maasai social institutions developed to manage farming associations are sufficiently strong to underpin continued cooperation but there have been exceptions (see Box 3). Despite wildlife damage and drought, farming associations offer a high return through economies of scale and control over the proceeds.

Large-Scale Commercial Cereal Farming. Following the first stage of land privatization during the 1970s, there has been rapid growth of large-scale mechanized wheat farming in Narok District (see Fig. 2). During 1975–1995, 24% of Lemek group ranch was converted, including 36% of the Nkorinkori area (Homewood *et al.*, 2001a; Serneels *et al.*, 2001; Sitati, 1997). Control of land for commercial farming has been dominated by local and national elites. In the early 1970s, group ranch committees negotiated concessions with outside commercial farming entrepreneurs on behalf of the wider group ranch membership. Local and District level elites were well placed to facilitate the leasing of land to outside entrepreneurs on the group ranches and to benefit from lease arrangements themselves (Box 4).

Subdivision has partly redressed this imbalance, with individual group ranch members now able to lease their own plots out for individual return. However, local elites have in many cases continued to operate as the conduit through which lease money flows to the wider group ranch members. These advantages have been cemented as individual land title has been granted, with elites using financial and social status and insider information to secure their positions now as owners of private land which is leased to large-scale farming contractors (see Box 1). Nevertheless, individual group ranch members can capture higher returns by leasing land out to commercial farming entrepreneurs than through individual or farming association efforts.

Box 4

On the northern portions of Lemek, outside entrepreneurs have, since 1984, arranged concessions through the administration chief and group ranch chairman to cultivate wheat on leases of upwards from 2–4000 acres per contractor. In addition to arranging these leases for their own benefit, the administration chiefs and chairmen have given responsibility to other group ranch committee members, councillors, and associates to arrange leases with contractors.

The commercial farming sector has been dominated by outside entrepreneurs for over 20 years. These groups control the capital investment and technological inputs to fund the major requirements (machinery, seeds, fertilizer, pesticides) and reap the major profits from cash crop cereal cultivation. The potential for outside entrepreneurs to actually own land is strongly bound up with current contests over ethnic rights to land holdings, reflected in violent clashes over land tenure (Dietz, 1996; Muraguri, 1999a,b,c; Markakis, 1999), and outside entrepreneurs have not as yet purchased land within the study area. More recently, individual Maasai have begun to farm commercially on a small-scale basis (10–50 acres), while a limited number of local and national elite individuals have joined the ranks of commercial entrepreneurs holding large farms (2,000–4,000 acres). Returns from commercial farming are an order of magnitude greater for the farmer compared to leasing land out (see Box 4, Table V).

Livestock

Historically herding has been a highly effective way of extracting production from a very variable dryland savanna environment (Dahl and Hjort, 1976; Kerven, 1992; Niamir-Fuller, 1999; Raikes, 1981). It remains the basic livelihood option for the majority of group ranch members (Coast, 1998). Maasai group ranch members around the Mara have the resources, technical knowledge, and social networks needed to make herding the mainstay of the household economy. They retain control over the whole livestock production system up to and including the contacts and skills to exploit the local, regional, and cross-border livestock market system. They are able to use their social networks to exploit even illicit access to resources (e.g., Mara National Reserve grazing) and markets (e.g., unofficial cross-border trade).

Economic assessments of returns to land from pastoralism show the huge fluctuations to be expected from a system which relies on mobility, seasonal access of both limited high potential and extensive low potential land, and a cycle of drought years. Bekure *et al.* (1991) showed Maasai livestock production on two group ranches in Kajiado yielded net returns of from

Table VI. Wage Employment in the Tourism Sector Amongst Study Households

	Siana	Talek	Aitong	Lemek Centre	Nkorinkori
% households with wage earning members	26.1 (<i>n</i> = 45)	46.2 (<i>n</i> = 101)	25.8 (<i>n</i> = 54)	29.8 (<i>n</i> = 46)	0 (<i>n</i> = 33)
Average value per household (waged households only)	\$473.00 (SD = 343.50, <i>n</i> = 5)	\$1,221.80 (SD = 854.79, <i>n</i> = 11)	\$475.00 (SD = 125.83, <i>n</i> = 4)	NA ^a	NA

^aNo households were found with members receiving a wage from tourism employment at Lemek or Nkorinkori.

\$1.55/acre (\$3.72/ha) to \$3.86/acre (\$9.31/ha) during the period 1980–1983. The average figure given over this period is \$1.6/acre (\$3.95/ha). Adjusted for inflation, this gives comparable figures of \$5.3/acre (\$13.09/ha) today.⁴ These returns will vary greatly between sites and years, and do not allow for the subtleties of milk production and stock accumulation as well as off-take. Even if these were to raise values by an order of magnitude, returns would still not match those potentially available from cultivation or tourism (Tables V, VI, VII).

Livestock husbandry depends on access to livestock and to land, with both currently being concentrated in progressively fewer hands. Access to other grazing and water resources across a large area in times of need becomes increasingly difficult as private land demarcation increases and fencing proliferates, resulting in a growing gap between the richest members of the group ranches and the rest (Homewood, 1992). This may have contributed to alternative forms of land use becoming increasingly attractive to group ranch members (Campbell, 1993). Nevertheless, both the general conditions of access and control, and contingent valuation work suggest herding will remain a major component of Maasai livelihoods for years to come. As part of the contingent valuation survey, 76 households were asked how they plan to use their newly received title to land (ranging from 100–130 acres: Table VIII). Households would on average allocate more land to livestock (60.2% of land) than they would to cultivation (average 37.8% of land, whether by leasing out to large-scale mechanized cultivators or by undertaking their own cultivation).

Tourism Incomes

Tourism provides a major source of income in Narok District from enterprises both inside the MMNR and, increasingly, on adjacent group

⁴Valuing Kenyan inflation against the U.S.\$; 1 KSh:18—1983, 1 KSh:60—1998.

Table VII. Returns Available From Wildlife Tourism

	Description	Beneficiaries	Returns ± SD
Individual camp sites	Select sites	Occupiers of that land with or without title	275 ± 855.6 \$/hh/year, <i>n</i> = 259 Zero returns for nonshareholding members Shareholders only 1033 ± 1407.7 \$/hh/year, <i>n</i> = 69 Local leaders: 7294 ± 5865.4 \$/year, <i>n</i> = 13
Group ranch level wildlife associations	Game viewing and bed-night fees	All circumcised men in the group ranch	4-year average per hh (often >one member) 126 ± 88.6 \$/hh/year, <i>n</i> = 173 Best year range \$117.86–\$1060.71
Elite subset associations	Campfire (Koiyaki), OI Tome (Lemek)	Group of families leasing exclusive access to single tour operator group	2-year average income 3637 ± 4083 \$/hh/year, <i>n</i> = 24 Best year range \$162–\$19305/hh Zero returns to nonshareholders
Large scale lodges	Koiyaki, Lemek, Siana, and Olchoro-Oiroua	Held by elites with or without title deed	3976 ± 441.67 \$/year, <i>n</i> = 22 Zero returns to nonshareholders

ranches. Site lease payments, game viewing fees paid, bed-night fees per visitor, and employment in the tourism industry have all grown steadily over the last 20 years, although this field period coincided with a drop and then rapid recovery of tourism visits to the Maasai Mara area (and to Kenya) following security concerns in 1997 (CDA/EICS, 2000).

Table VIII. Contingent Valuation Survey: Average % of 100 Acres Interviewees Notionally Allocated to Different Uses

	Koiyaki GR		Lemek GR	
	Talek (<i>n</i> = 25)	Aitong (<i>n</i> = 16)	Lemek (<i>n</i> = 21)	Nkorinkori (<i>n</i> = 14)
Livestock	85	34	56	52
Maize home consumption	2	8	7	3
Maize commercial	0	12	11	5
Leasing for wheat	10	40	11	25.5
Own wheat commercial	3	3	6.5	13
Horticulture home consumption	0	0	3.5	1
Horticulture commercial	0	0	2	0.5
Other business	0	2	4	0

MMNR Game Viewing Dividends. Of the approximately \$3.52 million annual income of MMNR (GoK, 1999), 19% is disbursed to nine reserve-adjacent group ranches through the Narok County Council. In practice these funds rarely filter through to ordinary group ranch members. They are instead diverted through the various administrative mechanisms operating at county council, group ranch association, and individual group ranch management levels. Group ranch members assume that the majority of these funds benefit the local elites running these groupings. Funds disbursed at the group ranch level are generally for medical expenses or school bursaries. Many Maasai interviewed in this and previous studies complain that they have never received anything from these sources, despite presenting claims to their group ranch representatives (Ngene and Kariuki, 1999; Thompson, in preparation-a,b).

Small Scale Campsites. Around one-third of households benefit from small-scale campsite arrangements with tour companies (36.7% of 279 households had received income in this way in the last 5 years). Average earnings for Maasai households which receive income in this way were \$971 p.a. (approximately equivalent to 10 acres of maize cultivation), paid as a rent. However, relatively few have this option and those who do not are likely to diversify into farming rather than into tourism. There is significant inverse relation between involvement in tourism and involvement in cultivation: logistic regression shows a 38% probability of households with income from shares in tourist camps cultivating, while the probability of households without shares in tourism cultivating is 63% (see Table IX).

Group Ranch Wildlife Associations. Several wildlife associations have been established on land outside the MMNR, for example on Olchoro-Oiroua and Koiyaki/Lemek (Box 5), or are planned (e.g., Siana). Despite

Table IX. Logistic Regression, Influence of Income From Shares in Tourism on the Probability of a Household Cultivating

	d.f.	Deviance	Mean deviance	Deviance ratio (<i>F</i>)	Prob <i>F</i>	Shares in tourism	Predicted cultivation	s.e.
Shares in tourism (y/n)	1	15.52	15.52	15.52	<.001	1 (yes)	0.3846	0.0477
Residual	274	365.647	1.334			2 (no)	0.6279	0.0368
Total	275	381.167	1.386					
		Estimate	s.e.	<i>t</i> (*)	pr.			
Constant		-0.47	0.201	-2.33	0.99			
Shares in tourism (no)		0.993	0.256	3.89	<.001			

Box 5

Prior to 1994, all tourist revenues accruing from lodges, campsites, and visitors to the group ranches outside the Maasai Mara National Reserve were collected by Narok County Council. After this date, the private land-owners on Olchoro-Oiroua challenged the County Council in the high court over their continued rights to collect this revenue, and won a ruling enabling them to establish their own revenue collection scheme, under the auspices of a wildlife association. The small number of families involved (eight) and large revenues generated led to large per capita returns.

Until 1995 the Olchoro-Oiroua wildlife association collected revenue from a further three lodges located on neighboring, Koiyaki and Lemek group ranches. In 1995, this led to a challenge from members of the Koiyaki and Lemek ranches who sought to establish a wildlife association of their own. Initially this was resisted both by the Olchoro-Oiroua wildlife association and by leaders (local elite) on Koiyaki-Lemek. A wildlife association was, however registered on Koiyaki-Lemek once the group ranch leadership had established themselves as leaders in the fledgling Koiyaki-Lemek wildlife association.

There followed a challenge from the Koiyaki-Lemek wildlife association to reclaim from Olchoro-Oiroua the tourism revenues from those lodges on its land. Failure to get a hearing in the courts resulted in direct action being taken on the ground, with four vehicles originating from Olchoro-Oiroua being blocked from entering the neighboring group ranches. This resulted in agreement being reached; the Koiyaki-Lemek wildlife association collecting revenue from all tourism facilities on its land, and the Olchoro-Oiroua association collecting revenue from the one lodge and campsites on its land.

the considerable revenues generated through tourist concessions on the group ranches, problems of management of funds reduce the benefits available to group ranch members from these institutions (Thompson, in preparation-a,b).

For example, in one wildlife association, group ranch members received an individual dividend of some U.S.\$ 70 each in 1997, despite total revenues that can exceed half a million U.S. dollars annually. This amounted to approximately 16% of the wildlife association's income. The next year, 1998, no dividends were paid at all. In 1997, expenditure on education bursaries, health, and roads (designed to benefit group ranch members) accounted for some 6.5% of total income. The remainder (77.5% of income) was accounted for against staff and trustees salaries and benefits (55.5%), and other operational costs (22%). Twenty-five percent of the entire budget was spent on Board Members' allowances, with individual Board Members receiving sitting allowances of up to U.S.\$ 4,000 p.a. Cases of outright fraud were reported, but in terms of diverting funds away from group ranch members, were less significant, accounting for approximately 4% of total wildlife association revenues.

Subset Wildlife Associations and Lodges. Group ranch level wildlife associations are currently fragmenting into subset groupings negotiating

Box 6

The Koiyaki-Lemek group ranches cover a vast area (some 1500 km²) encompassing the majority of the wet season range of the Mara seasonal migrations (Ottichilo *et al.*, 2001). An early decision was taken by the Koiyaki-Lemek wildlife association's leadership to exclude those members of Lemek living to the north of the Mara dispersal areas from receiving dividends from the tourism money collected. In successive years the number of people on Lemek receiving dividends has declined, the rationale being to include only those members living near tourism facilities from which tour operators drive their clients. Now only those members living in the southern portion of Lemek receive the dividend, the motivation from the leadership of the Association being to decrease the number of people receiving dividends and increase the per capita revenue accruing to remaining members.

directly with tour operators. This trend is headed by local elites, who tend to control the high-return tourism sites (lodges and luxury campsites), having cemented ownership following subdivision through insider knowledge and influence (see Box 1). They dominate at the expense of the wider group ranch membership. Benefits of subset wildlife associations are an order of magnitude greater, as elites exclude group ranch members to increase benefits to remaining members. On Lemek, for example, the majority of group ranch members have been progressively excluded from the Koiyaki-Lemek Wildlife Association on the grounds that few tourists drive over the Lemek group ranch, despite this land being a critical part of the wildlife's range (see Box 6). This process is rapidly affecting the ability of the Koiyaki-Lemek Wildlife Association to operate, and more households are turning to cultivation as a means of providing a higher and more certain income.

Ownership of lodges is potentially very lucrative and is firmly controlled by local, district and national level elites. On Olchoro-Oiroua, for example, a subset of three families have negotiated a premier tourist lodge concession with companies linked to the national elite. This means sufficiently lucrative returns from wildlife tourism to make the exclusion of farming acceptable. Nevertheless, even here farming could bring much higher returns than tourism (Thompson, in preparation-a,b), given the large proportion of Olchoro that lies in high potential agro-ecological Zone III. The opportunity, costs of forgoing cultivation on Olchoro are estimated as running to over \$30,000 pa (Thompson, in preparation-a,b). Some Maasai landowners may forgo profits of large scale cultivation for reasons of cultural preference. Alternatively, where (as on Olchoro) a tourism concession has been negotiated with the highest in the land, the side benefits may balance the considerable opportunity costs of forgoing farming. The penalties of refusing or withdrawing from such collaboration should also be taken into account in understanding local land-use decisions.

Table X. Returns to Different Groups From Different Land Use Options

Activity \$/hh/p.a/100 acres	GR member	Elite
Large scale cultivation	2500	5,350 ^a (264,290)
Conservation-compatible land uses	1200	19,600
Livestock	530	530
Small-scale cultivation	50	550
Farming association	100	100
Small-scale campsite	275	7300
GR level wildlife association	125	3500
Select campsite association	—	3500
Large-scale lodge	—	4000
Toursim wages	120	1150

^aAv. of return from medium and high potential farms in Narok District (Mwau, 1996), first figure is for 100 acres farm, the figure in parentheses is what would accrue from a 20 km² farm.

Wage Earning. Table VI gives the percentage of households that have members employed in the tourism sector⁵ in our study area. Averaged across all households in the study area, wage earnings are only ca. \$120 per annum. However, for those households with members employed in the tourism sector, the average income for households is U.S.\$1,145.73 per annum, showing the considerable potential contribution of tourism wage earnings to the Maasai household economy.

Future Trends

Contingent valuation studies as well as the access mapping and the logic of risk avoidance suggest livestock production will be maintained, although higher returns are potentially available from cultivation (see Table X). Amongst local elites, commercial livestock enterprises may be improved through preferential access to water points, closed pastures, grade breeds of cattle, and veterinary inputs. Past experience suggests these are unlikely to have a major impact on Maasai livestock production in the foreseeable future (Homewood, 1992) though developments in disease control and/or export markets could change this.

Small-scale cultivation is similarly likely to be a long-term future component of the landscape, given the minimal investment and technological input needed to hand-sow small acreages close to the household, coupled with the significant contribution made to household food security (Homewood *et al.*, 2001a). Small-scale cultivation is largely compatible with wildlife conservation and tourism interests, both because of the relatively small proportion

⁵The group ranch wildlife associations are largely staffed by members of local Maasai households. Commercial tourist camps and lodges employ largely non-Maasai staff or Maasai from outside the immediate study area, ostensibly because of the low levels of education of local Maasai.

of land taken up (1–2 acres in the each 100-acre plot), and because of its relatively dispersed nature (Homewood *et al.*, 2001a). Statistical analyses of long-term data sets suggest that wildlife decline is strongly linked to the spread of commercial cultivation removing key sites and resources, but hitherto not to smallholder agriculture, which is more dispersed (Homewood *et al.*, 2001a).

Economies of scale and social institutions of control mean farming associations can potentially provide significant benefits for group ranch members. In terms of benefit distribution, each farming association appears to operate slightly differently, and each records a different degree of success. Where the farming association membership and leadership reflect established hierarchies with entrenched patterns of decision-making, and where these are congruent with the group ranch and wildlife association leadership hierarchies, the synergy and stability bring benefits even though those benefits may flow along preset paths. Elsewhere, farming associations, group ranch committees and wildlife associations may all contest land-use, and conflicts may make cooperative action difficult. Farming associations able to maintain management cohesion may well expand to become a long-term feature of the landscape. As with individual small scale cultivation, if such farms are planned sensitively, they need not necessarily conflict with wildlife or tourism uses.

Future land-use decisions with most impact on wildlife hinge on trade-offs between large-scale cultivation, and various combinations of livestock, small-scale cultivation, farming associations, and tourism opportunities. Table X presents the figures likely to influence these decisions. Group ranch level household incomes were boosted from approximately \$680 (a combination of livestock, small-scale farming, and membership of farming associations) to around \$2500 by leasing land out to large-scale farming. Household incomes would presently gain on average a further \$520 from involvement in tourism.

The present difference between potential income from conservation-compatible uses (livestock + small-scale farming + tourism) and that from leasing land for large-scale cultivation currently provides considerable economic incentive for group ranch members to lease land for farming. Tourism returns from campsites may never balance the potential returns from cereals (Table X), but distribution of campsite income is likely to be as great a factor driving households to cultivation. The returns potentially available from tourism must be seen to be working for group ranch members, not just local elites, if group ranch members are to resist leasing land for cultivation.

At present, group ranch members peripheral to the main tourism areas are effectively excluded by local elites from wildlife association dividends.

Returns for remaining members are reduced as local elites establish competing subset wildlife associations, while available income is largely spent on salaries, fees, and other benefits for a small group of board members and employees. Support for these institutions is shrinking along with the actual and perceived returns to individual group ranch members, as is the cohesion essential for equitable allocation of dividends. Changing the distribution of revenue means confronting the interests of local elites as well as ensuring high levels of financial management and a transparent distribution mechanism. Experience to date shows the difficulty of achieving this with or without technical and financial support to wildlife associations from outside. This is a major challenge currently facing NGOs and donors fostering the flow of benefits from conservation to communities (e.g., IIED, 1994; Lane, 1996).

A struggle is developing between local elites controlling the associations and campsites on the one hand, and the group ranch members who benefit little on the other. Where this is resolved in favor of local elites, as on Lemek, group ranch members are opting to take up cultivation in a way that will eventually undermine the group ranch level of organization of the wildlife associations. Group ranch members are choosing a higher and more consistent income from farming or leasing land out to large-scale contractors, as against limited and low returns from tourism with little prospect of the situation improving. For local elites, income from tourism exceeds what could be gained from lease-or self-cultivation. This is because tourist income from wider group ranch lands has historically accrued to local elites, while any attempt to appropriate such land for commercial cultivation would be resisted by group ranch members. In areas of highest tourism potential, such as next to the MMNR (where incomes are already comparable with cultivation), local elites are choosing to maintain wildlife tourism uses while investing in cultivation further away. In areas further from the MMNR, more and more group ranch members are excluded from wildlife benefits and are driven toward cultivation on economic grounds. As entrepreneurs move in to take up land, the growing market in leasing land for large-scale cultivation results in a movement of cultivation southwards toward the MMNR (Thompson, in preparation-a).

Local elites have manipulated the subdivision process to secure ownership of small areas on which tourist lodges are located. Where group ranch members on newly privatized land start to cultivate immediately adjacent to premier lodges outside the Mara Reserve, owned at the very highest levels of government, tourism returns from these lodges could be seriously affected as game drive areas become cultivated. With the unfolding subdivision process, two possible scenarios can be described.

Currently, a small ring of tourism facilities outside the MMNR is maintained on ever-decreasing wildlife dispersal areas. The majority of group

ranch members receive little or no income from tourism. Despite local group ranch members' complaints, their ability to change this situation is limited by the vertical hierarchies and patron groups operating in the area, driving them instead to switch to cultivation (e.g., Lemek group ranch; Aitong in Koiyaki group ranch). This may result in a vicious circle of reduced resident and migratory wildlife numbers (Norton-Griffiths, 1996; Ottichilo *et al.*, 2001),⁶ reduced tourism returns, and greater pressure for conversion of land to cultivation. In time, the physical isolation of such areas from the main wildlife concentrations inside the protected areas could make cultivation rather than tourism the more profitable land use for elites (Thompson, in preparation-a).

Alternatively, better distribution of returns from wildlife based tourism could even out disparities in wealth between local elites and group ranch members, while maintaining wildlife tourism-based incomes in areas next to the MMNR. This would require reining in the interests of local elites, the addition to technical organization and assistance to the group ranch level of wildlife associations and increased accountability (Walpole and Leader-Williams, 2001). This differential could also be modified through a shift of wage earning opportunities toward local residents. There are, however, no clearly successful precedents for this. The considerable total revenues available from tourism need to start working for ordinary group ranch members if the wildlife dispersal areas on group ranches outside the MMNR are to escape conversion to large-scale cultivation.

CONCLUSIONS

A differentiated analysis of the returns available from different types of land-use, and of the patterns of distribution of those returns, provides a basis for understanding changing land-use patterns around the Mara in Kenya Maasailand. In particular, the reasons underlying the rapid loss of wildlife habitat in some areas, and its relatively slower conversion in others become clear. The rapid conversion encountered further from the MMNR (see Fig. 2), for example, on Lemek group ranch where 20% land area has been converted, has not been mirrored in group ranches nearer to the Mara Reserve (e.g., <3% of Koiyaki and Siana have been converted (Serneels *et al.*, 2001)). This is because large-scale farming requires good road access to markets, hired machinery, and fencing to exclude wildlife damage. These conditions have been met on the outer areas of Lemek group ranch near

⁶Norton-Griffiths estimates the conversion of the GRs under discussion here would result in a 30% reduction in migratory wildebeest numbers. Ottichilo demonstrates that based on aerial counts, the migratory population in Kenya has declined by >50% 1975–1997.

Nkorinkori, where wheat farming was established in the 1960s (Homewood *et al.*, 2001a). This initial expansion facilitated Maasai cultivation and a rapid improvement in household incomes. Large-scale cultivation has not been possible closer to the MMNR due to the poor road access, distance to markets, existing farming infrastructure, and local elites' tourism interests (Thompson *et al.*, in press).

As subdivision proceeds, possibilities for arranging cultivation leases amongst group ranch members increase. Cultivation represents a mechanism for increasing real incomes in a way members can control, and they increasingly favor cultivation over wildlife-based tourism uses. Amongst local and national elites, tourism concessions are favored over shrinking opportunities for arranging large-scale cultivation concessions. Returns from farming now accrue to local elites only on their private allocated land, while returns from wildlife still accrue from larger areas of the group ranch, with the wider membership excluded from benefits from tourism.

Understanding the reasons for the differences in rates of conversion between group ranches, and the implications of the current subdivision into individual private land holdings, will be central for developing any sustainable compromises between livelihoods and wildlife conservation. These data and analyses clarify some of the current realities of community-based conservation. The paper demonstrates the importance of understanding patterns of access to revenue from alternative forms of land use: who controls access, and what proportion of the profits can each type of player control? Second it is necessary to understand the interplay of the different kinds of control mechanism: local elites and entrepreneurs may ally to keep most of the benefits from the holder of legal title. What renegotiation of control mechanisms is occurring following subdivision, and does this provide opportunities for influencing land-use outcomes and wealth distribution patterns? Third, it is necessary to take into account the difficulties of establishing the conditions necessary for cooperative associations to function (Ostrom *et al.*, 1999).

Historically, the wildlife tourism "commodity chain" has bypassed Maasai residents. State licensing bodies, private entrepreneurs, and local elites have captured all the benefits. Elsewhere in East Africa, and in sub-Saharan Africa in general, similar tradeoffs are being played out against background contexts of different systems of tenure, access, and political control. The factors are similar but their relative weight varies according to the situation. Immediately over the border in Tanzania, Maasai have the option neither of large-scale cultivation nor of income generation from tourism (in Ngorongoro, a world-class tourist destination, <10% Maasai households receive any income from tourism; 0.2% derive their primary income from tourism).

In the Mara case study presented here, current trends have concentrated wealth into the hands of local and national level elites. Developments in tenure mean there is a rapid renegotiation of business relations and of land-use outcomes. This provides an opportunity for community-based, non-governmental, and government agencies to influence unfolding patterns which are presently increasing wealth disparities between elite and ordinary group ranch members, and undermining the natural resource base which underlies tourism. The social networks that are emerging as a result of these relatively new ventures have a dynamic of their own. The rapid evolution and proliferation of mutually exclusive or potentially complementary trade-offs has shaken up the established patterns of control. They have opened new windows of opportunity for resident Maasai to improve their share of revenue, and for new social institutions of cooperation and accountability to develop. Any attempt to steer the process of land conversion is likely to go awry unless these changes and their underlying social and political realities are taken into account.

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REFERENCES

- Alexander, J., and MacGregor, J. (2000). Wildlife and politics: CAMPFIRE in Zimbabwe. *Development and Change* 31: 605–627.
- Bekure, S., de Leeuw, P. N., Grandin, B. E., and Neate, P. J. H. (1991). *Maasai Herding. An Analysis of the Livestock Production System of Maasai Pastoralists in Eastern Kajiado District, Kenya*, International Livestock Centre for Africa, Nairobi.
- Bell, R. (1987). Conservation with a human face. In Anderson, D., and Grove, R. (eds.), *Conservation in Africa*, Cambridge University Press, Cambridge.
- Berger, D. (1993). *Wildlife Extension: Participatory Conservation by the Maasai of Kenya*, Africa Centre for Technology Studies, Nairobi.
- Berntsen, S. (1979). The Maasai and their neighbours: Variables of interaction. *Economic History* 2: 1–11.
- Bourn, D., and Blench, R. (eds.) (1999). *Can Wildlife and Livestock Co-exist? An Interdisciplinary Approach*, Overseas Development Institute/ERGO, Oxford.

- Brandon, K. E., and Wells, M., with Hannah, L. (1992). *People and Parks: Linking Protected Areas Management with Local Communities*, The International Bank for Reconstruction and Development, Washington, DC.
- Brockington, D. (2002). *Fortress Conservation: The Reservation of the Mkomazi Game Reserve, Tanzania*, African Issues Series, James Currey, London.
- Campbell, D. J. (1993). Land as ours: Land as mine. Economic, political and ecological marginalisation in Kajiado District. In Spear, T., and Waller, R. (eds.), *Being Maasai*, Chapter 12, James Currey, London.
- CDA/EICS (2000). *Land Use Change in the Mara Ecosystem*, Kenya Wildlife Service, Nairobi.
- Chabal, P., and Daloz, J. P. (1999). *Africa Works: Disorder as Political Instrument*, James Currey Press, London.
- Coast, E. (1998). Impacts of land use policy on environment, wildlife, demography and socio-economic indicators in East African Savannas: The single-round demographic survey, Technical Report No. 1, Anthropology, University College London.
- Dahl, G., and Hjort, A. (1976). *Having Herds, Pastoral growth and Household Economy*, Studies in Social Anthropology, Department of Social Anthropology, University of Stockholm.
- Dietz, T. (1996). *Entitlements to Natural Resources*, International Books, Utrecht.
- Douglas-Hamilton, I. (1988). Identification study for the conservation and sustainable use of the natural resources in the Kenyan portion of the Mara-Serengeti ecosystem, Report to European Development Fund of the European Economic Community, I Douglas Hamilton & Associates, Nairobi.
- Dublin, H. T. (1995). Vegetation dynamics in the Serengeti-Mara Ecosystem: The role of elephants, fire and other factors. In Sinclair, A. R. E., and Arcese, P. (eds.), *Serengeti II, Dynamics, Management and Conservation of an Ecosystem*, Chapter II. 4, University of Chicago Press, Chicago.
- Ellis, J., and Swift, D. (1988). Stability of African pastoralist ecosystems: Alternate paradigms and implications for development. *Journal of Range Management* 41: 450–459.
- Emerton, L. (1996). Valuing domestic forest use: Communities and conservation in Kenya. In *Rural Development Network*, Paper 19e, ODI, London.
- Emerton, L., and Mfunda, I. (1999). Making wildlife economics viable for communities living around the North-West Serengeti, Tanzania, IIED-Evaluating Eden and IUCN-EARO Biodiversity and Economics Working Paper, London and Nairobi.
- Galaty, J. G. (1992). This land is yours: Social and economic factors in the privatisation, subdivision and sale of Maasai ranches. *Nomadic Peoples* 30: 26–40.
- Galaty, J. (1994). Rangeland tenure and pastoralism in Africa. In Fratkin, E., Galvin, K., and Roth, E. (eds.), *African Pastoralist Systems*, Lynne Rienner. Boulder, Colorado and London.
- Gillingham, S., and Lee, P. C. (1999). The impact of wildlife related benefits on the conservation attitudes of local people around the Selous Game Reserve, Tanzania. *Environmental Conservation* 26(3): 218–228.
- Government of Kenya (1968). Land (Group Representatives Act), CAP 287 of 1968.
- Government of Kenya (1995). Narok District Livestock Production Department, Annual Report.
- Government of Kenya (1999). Economic Survey, Central Bureau of Statistics, Office of Vice President, Ministry of Planning and National Development.
- Hardin, G. (1968). The tragedy of the commons. *Science* 1162: 1243–1248.
- Hollis, A. C. (1905). *The Masai, Their Language and Folklore*, Clarendon Press, Oxford.
- Homewood, K. M. (1992). Development and the ecology of Maasai pastoralist food and nutrition. *Ecology of Food and Nutrition* 29: 61–80.
- Homewood, K. (1995). Development, demarcation and ecological outcomes in Maasailand. *Africa* 65: 331–350.
- Homewood, K., and Brockington, D. (1999). Biodiversity, conservation and development in Mkomazi Game Reserve, Tanzania. *Global Ecology and Biogeography* 8: 301–313.
- Homewood K., Lambin, E. F., Coast, E., Kariuki, A., Kikula, I., Kivelia, J., Said, M., Serneels, S., and Thompson, M. (2001a). Long term changes in Serengeti-Mara wildlife and land

- cover: Pastoralists, population or policies? *Proceedings of National Academy of Science* 98: 12544–12549.
- Homewood, K., and Rodgers, W. A. (1991). *Maasailand Ecology: Pastoralist Development and Wildlife Conservation in Ngorongoro Conservation Area, Tanzania*, Cambridge University Press, Cambridge.
- Homewood, K., Thompson, M., and Coast, E. (2001b). In-Migrants, livelihoods, resource access and exclusion in East African rangeland buffer zones, Final Research Report ESCOR-R7638, Department for International Development, London.
- Hulme, D., and Murphree, M. (2001). *African Wildlife and Livelihoods: The Promise and Performance of Community Conservation*, James Currey, Oxford.
- Igoe, J. (2001). National parks and human ecosystems: The challenge to community conservation. A case study from Simanjiro, Tanzania. In Chatty, D. (ed.), *Displacement, Forced Settlement and Conservation*, Berghahn Press, Oxford.
- Igoe, J., and Brockington, D. (1999). *Pastoral Land Tenure and Community Conservation: A Case Study from North East Tanzania*, IIED Drylands Programme, Pastoral Land Tenure Series 11, IIED, London.
- IIED (1994). *Whose Eden? An Overview of Community Approaches to Wildlife Management*, IIED, London, pp. 124.
- Jaezold, R., and Schmidt, W. (1982). *Farm Management Handbook of Kenya, Vol. III: Rift Valley and Central Provinces*, Ministry of Agriculture, Government of Kenya, Nairobi.
- Kerven, C. (1992). *Customary Commerce: A Historical Reassessment of Pastoral Livestock Marketing in Africa*, ODI, London.
- Lane, C. (1996). *Pastures Lost. Barabaig Economy, Resource Tenure and the Alienation of Their Land in Tanzania*, Initiatives publishers, Nairobi.
- Lamprey, R. H. (1984). *Maasai Impact on Kenya Savannah Vegetation: A Remote Sensing Approach*, PhD Thesis, University of Aston.
- Lamprey, R., and Waller, R. (1990). The Loita-Mau Region in historical times: Patterns of subsistence, settlement and ecological change. In Sutton, J. E. G. (ed.), *Early Pastoralists of South Western Kenya*, Memoirs of the British Institute in Eastern Africa, No. 11, British Institute, Nairobi.
- Muraguri, K. (1999a). Mara: DC speaks out. *Daily Nation March*: 16. p. 16.
- Muraguri, K. (1999b). Morans invade lodge. *Daily Nation March*: 16.
- Muraguri, K. (1999c). Land-tenure killing off pastoralism. *Horizon April*. 15 <<http://www.nationaudio.com/News/DailyNation>>
- MacKenzie, J. (1987). Chivalry, social darwinism and ritualised killing: The hunting ethos in central Africa up to 1914. In Anderson, D., and Grove, R. (eds.), *Conservation in Africa: Peoples, Policies and Practice*, Cambridge University Press, Cambridge, pp. 41–62.
- Markakis, J. (1999). Pastoralists and politicians in Kenya. *Review of African Political Economy* Sept. 293–296.
- Marshall, F. (1994). Archaeological perspectives on East African pastoralism. In Fratkin, E., Galvin, K., and Roth, E. (eds.), *African Pastoralist Systems*, pp. 17–44. Lynne Rienner. Boulder, Colorado and London.
- McCabe, J., and Perkin, S. (1992). Can conservation and development be coupled among pastoral people: An examination of the Maasai of Ngorongoro Crater, Tanzania. *Human Organisation* 51: 353–366.
- Murphree, M. W. (1993). *Communities as Resource Management Institutions*, IIED Gate Keeper Series, No. 36, IIED, London.
- Mwau, G. (1996). Wildlife utilisation study, Report No. 2: Economic analysis, Kenya Wildlife Service & AWF, Nairobi.
- NCPB (National Cereals Produce Board) (1999). Information provided for this survey.
- Nestel, P. (1986). A society in transition: Developmental and seasonal influence on the nutrition of Maasai women and children. *Food and Nutrition Bulletin* 8: 2–18.
- Neumann, R. (1995). Ways of seeing Africa: Colonial recasting of African society and landscape in Serengeti National Park. *Ecumene* 2: 149–169.
- Neumann, R. (1996). Dukes, earls and ersatz edens: Aristocratic nature preservationists in colonial Africa. *Environment and Planning D: Society and Space* 14: 79–98.

- Ngene, S., and Kariuki, A. (1999). *Community Attitudes Towards Natural Resource Management in the Mara Ecosystem*, Kenya Wildlife Service, Nairobi, Kenya.
- Niamir-Fuller, M. (ed.) (1999). *Managing Mobility in African Rangelands. The Legitimization of Transhumance*, IT Press, London.
- Norton-Griffiths, M. (1996). Property rights and the marginal wildebeest: An economic analysis of wildlife conservation options in Kenya, *Biodiversity and Conservation* 5: 1557–1577.
- Norton-Griffiths, M., and Southey, C. (1995). The opportunity costs of biodiversity conservation in Kenya, *Ecological Economics* 12: 125–139.
- Omondi, P. (1994). *Wildlife-Human Conflict in Kenya. Integrating Wildlife Conservation with Human Needs in the Maasai Mara Region*, Unpublished PhD Thesis, McGill University, Montreal.
- Osgood, D. (1998). *Valuing Biodiversity: Evidence from Farming Households in Mwea, Kenya*, unpublished PhD Thesis, London School of Economics, University of London.
- Ostrom, E., Burger, J., Field, C., Norgaard, R. B., and Policansky, D. (1999). Revisiting the commons: Local lessons, Global challenges. *Science* 284: 278–282.
- Ottichilo, W., de Leeuw, J., Skidmore, A., Prins, H., and Said, M. (2001). Population trends of large non-migratory wild herbivores and livestock in the Maasai Mara Ecosystem, Kenya, 1977–1997. *African Journal of Ecology* 38: 202–216.
- Potkanski, T. (1994). *Property Concepts, Herding Patterns and Management of Natural Resources Among the Ngorongoro and Salei Maasai of Tanzania*, IIED Drylands Programme, Pastoral Land Tenure Series No. 6, IIED, London.
- Potkanski, T. (1995). Mutual assistance among the Ngorongoro Maasai. In Anderson, D., and Broch-Due, V. (eds), *The Poor Are not Us*, James Currey, London.
- Raikes, P. (1981). *Livestock Development and Policy in East Africa*, Centre for Development Research, Copenhagen, Scandinavian Institute of African Studies, Uppsala.
- Ribot, J. (1998). Theorising access: Forest profits along Senegal's charcoal commodity chain. *Development and Change* 29: 301–341.
- Ruttan, L., and Borgerhoff-Mulder, M. (1999). Are East African pastoralists truly conservationists? *Current Anthropology* 40(5): 621–652.
- Rutten, M. (1992). *Selling Wealth to Buy Poverty. The Process of Individualization of Land Ownership Among the Maasai Pastoralists of Kajiado District, Kenya, 1890–1990*, Nijmegen Studies in Development and Cultural Change 10, Verlag Breitenbach Saarbrücken.
- Serneels, S., Said, M. Y., and Lambin, E. F. (2001). Land cover changes around a major East-African wildlife reserve: The Mara Ecosystem (Kenya). *International Journal of Remote Sensing* 22: 3397–4320.
- Sitati, N. (1997). The change of land-use patterns in the Masai Mara and its impact on the large herbivore populations, Project Report, World Wide Fund for Nature, Nairobi.
- Spear, T. (1993). Being 'Maasai' but not 'people of cattle': Arusha agricultural Maasai in the nineteenth century. In Spear, T., and Waller, R. (eds.) *Being Maasai*, James Currey, London, pp. 120–136.
- Spear, T. (1997). *Mountain Farmers*, James Currey, London.
- Spear, T., and Waller, R. (eds.) (1993). *Being Maasai*, James Currey, London.
- Sullivan, S. (2001). How sustainable is the communalising discourse of "new" conservation? The masking of difference, inequality and aspiration in the fledgling conservancies of Namibia. In Chatty, D. (ed.), *Displacement, Forced Settlement and Conservation*, Berghahn Press, Oxford.
- Thompson, D. M. (1998). *The Role of Cultivation in Maasai Production Systems on Three Group Ranches Adjacent to the Maasai Mara National Reserve in Kenya*, Department of Anthropology, First Year Report/PhD Upgrading proposal, University College London.
- Thompson, D. M. (in preparation-a). Opportunity costs of conservation on inner Group ranches adjacent to the Maasai Mara National Reserve in Kenya. Anthropology, Working Paper University College, London.
- Thompson, D. M. (in preparation-b). *Livestock, Cultivation and Tourism: Livelihood Choices and Conservation in Maasai Mara Buffer Zones*, Thesis for submission for Doctorate, Department of Anthropology.

- Thompson, D. M., Serneels, S., and Lambin, E. (in press). Land use strategies in the Mara ecosystem: A spatial analysis linking socio-economic data with landscape variables. In Crews-Meyer, K. A., and Walsh, S. (eds.), *Remote Sensing and GIS Applications for linking people, place and policy*, University of Texas, Kluwer.
- Toulmin, C., and Quan, J. (eds.) (2000). *Evolving Land Rights, Policy and Tenure in Africa*, DFID/IIED/NRI, London.
- Waller, R. (1988). *Emutai*: Crisis and response in maasailand 1883–1902. In Johnson, D., and Anderson, D. (eds.), *The Ecology of Survival: Case Studies from Northeast African History*, Lester Crook/Westview, London and Boulder, Colorado.
- Waller, R. (1990). Tsetse fly in western Narok, Kenya. *Journal of African History* 31: 81–101.
- Waller, R. (1993). Acceptees and aliens: Kikuyu settlement in Maasailand. In Spear, T., and Waller, R. (eds.), *Being Maasai*, James Currey, London.
- Walpole, M., and Leader-Williams, N. (2001). Maasai Mara tourism reveals partnership benefits. *Nature* 413: 771.
- Western, D. (1975). Water availability and its influence on the structure and dynamics of a savanna large mammal community. *East African Wildlife Journal (now African Journal of Wildlife Ecology)* 13: 265–286.
- Western, D., and Ssemakula, S. (1981). The Future of savanna ecosystems. *African Journal of Ecology* 19: 7–19.
- Wøien, H., and Lama, L. (1999). *Market Commerce as Wildlife Protector? Commercial Initiatives in Community Conservation in Tanzania's Northern Rangelands*, IIED Drylands Programme, Pastoral Land Tenure Series 12, IIED, London.