

## **Geography and Ecology**

The Maasai Mara National Reserve (MMNR) is located in southern Kenya, adjacent to the Serengeti National Park across the national border in Tanzania (see maps in Exhibit 1). Together these two protected areas cover more than 1.6 million hectares (approximately 4 million acres), with MMNR accounting for 151,000 hectares (approximately 373,000 acres) (United Nations Environment Programme and World Conservation Monitoring Centre). MMNR is comprised of two regions, the Mara Triangle west of the Mara River and a newer portion to the east of the River.

### *Ecosystem and Species*

The area was once dominated by acacia brush, which also houses the tsetse fly, the carrier of “sleeping sickness” disease. However, management efforts aimed at reducing incidence of the disease have led to government workers and indigenous communities clearing major tracts of acacia over the last half century (Lamprey and Reid 2004). Pressure from elephants (Walpole et al. 2003), as well as fire and cattle grazing, have also reduced the extent of acacia and other woody plants (Salvatori et al. 2001; Dublin 1991).

MMNR and Serengeti National Park share a grassland ecosystem that extends into surrounding areas. The region is most famous for the annual zebra and wildebeest migration that stretches across the national border. The annual Great Migration has been described as “one of the greatest wildlife spectacles on earth.” In addition to migratory species, MMNR is also home to a wide range of other large mammals, including buffalo, elephant, leopard, lion, and black rhinoceros (Walpole et al. 2003:page x).

### *People and Culture*

The Reserve is named for the local Maasai tribes, whose land surrounds the Reserve area. The Maasai have traditionally lived a “semi-nomadic pastoralist” lifestyle (Walpole et al. 2003:x), moving every few years to find new pasture land for their cattle. Their homes were

traditionally set up in *bomas*, groups of huts surrounding an enclosed area in which cattle were housed (see aerial photo in Exhibit 1). Each night, the families would bring their livestock into the enclosure in order to prevent animal predation and cattle theft. Bomas are typically abandoned and rebuilt every few years, after they become uninhabitable (Lamprey and Reid 2004:1002).

Under English colonial control, Maasai grazing was limited to certain areas and divided among different Maasai clans (Pander 1995). Subsequently, group ranches were created, with control over certain areas given to each clan. During the second half of the 20<sup>th</sup> Century, acacia and other woodlands were burned to limit tsetse fly habitat. Due to reduced disease risk and additional grasslands, the Maasai grazing range shifted further south, with substantial evidence of bomas in new areas closer to the boundaries of MMNR (Lamprey and Reid 2004).

Over the last 15 years, the Government of Kenya has pushed for subdivision of the group ranches into separate plots over which individual families would maintain land tenure and legal property rights (Seno and Shaw 2002). This subdivision would, of course, limit nomadism by binding land owners to their particular pieces of land.

Resource managers are particularly concerned about MMNR and surroundings because of endangered species such as black rhino and wild dogs, the former classified as “critically endangered” by the World Conservation Union (IUCN). In addition, other large carnivores are confronting local declines, while woodlands (as noted above) are also severely limited (“Maasai Mara National Reserve Ecological Management Plan, 2009-2019” 2009). Recent research has found that, at present, Kenyan wildlife is not preserved any better in protected areas than it is on other lands (Western et al. 2009).

## **History of the Reserve**

MMNR has been managed under a variety of arrangements since the end of World War II. In 1948, the colonial administration established a Wildlife Sanctuary covering the Mara Triangle. Around the time of Kenya’s independence, the Sanctuary became a “Game Reserve” and was expanded to cover the eastern portion as well. At this time, the land was brought under control of the Narok County Council (NCC). In 1974, the status changed from Game Reserve to National Reserve (Walpole et al. 2003:x). While Kenyan National Parks are managed by the

central government, all National Reserves are held in trust, and managed, by County Councils (see Exhibit 4).

Following the status change, a few major grazing areas were removed from the reserve and attached to existing group ranches. This action reduced the overall area of MMNR and allowed Maasai to continue using areas that their cattle had grazed in recent years (Lamprey and Reid 2004). More recently, part of NCC was separated to become the TransMara County Council (TMCC). TMCC then took control of the western Mara Triangle which was under its jurisdiction. TMCC has granted management of the Triangle to the Mara Conservancy, a non-profit organization (Walpole et al. 2003), while NCC continues to manage the eastern two-thirds of the Reserve by itself.

Surrounding areas are managed as group ranches by Maasai communities. However, the Kenyan government has promoted subdivision of group lands into private ranches. 85% of respondents to a recent survey expected some positive effects of this subdivision, particularly the anticipated increased security of property rights. However, 56% also noted likely negative impacts such as reduction in available grazing areas. The survey found that many community members anticipate a shift in livelihood and/or land use if their ranch is subdivided (Seno and Shaw 2002).

MMNR has undertaken a process to develop management plans for the Reserve and surrounding regions. Exhibit 3 includes the most recent MMNR Ecological Management Plan, intended to cover MMNR management activity over the period 2009-2019.

## **Human Land Use in MMNR and Surrounding Areas**

### *Grazing*

As noted above, the area has traditionally been used by the Maasai as grazing area for livestock, with frequent movements depending on climate variation and the presence of disease-bearing tsetse flies. While the shift to private ranches has resulted in some fenced enclosures, “livestock production continues to be the primary source of subsistence” at least in communities surveyed by Seno and Shaw (Seno and Shaw 2002:84). Fencing is infrequent due to its expense and the desire to maintain traditional pastoral lifestyles (Lamprey and Reid 2004:21).

Despite this intent to continue raising livestock, herding has become a difficult livelihood to maintain. Following positive climate conditions, there were an average of 16 livestock per adult in some areas. However, even with good rainfall in the late 1990s, this same area now supports just under 3 cattle per adult, below minimum subsistence levels (Lamprey and Reid 2004:1020). Many group ranches have failed due to mismanagement by self-serving leaders, while smaller private ranches are less conducive to pastoralism (*id*: 1021). Due to this decline, many Maasai communities now confront other livelihood options.

### *Cultivation*

As a result of the shift to more sedentary lifestyles, cultivation has increased in the region. While new local owners have not generally fenced their lands, they have begun to rent lands to outsiders who aggregate multiple small private ranches for crop cultivation (Lamprey and Reid 2004:1021-1022). Unsurprisingly, land conversion for cultivation is most frequent when it is most profitable, particularly for leasing to outsiders (Homewood et al. 2001). The shift mirrors typical changes from pastoral communities to sedentary agricultural lifestyles (Gadgil and Guha 1993:ch.1). Furthermore, the fragmentation of communities reduces reliance on the subsistence ethic (Scott 1976), likely leading to more short term profit-maximizing behavior.

According to Homewood et al. (2001), “mechanized cultivation [is associated] with distance from the reserve (12548)” suggesting that leasing land for agriculture provides an economic alternative when tourism is not a possibility. Similarly placed communities outside Tanzania’s Serengeti National Park do not display this relationship (*id*), indicating that land use policies also control behavior.

See Exhibit 2 (Homewood et al 2001) for further discussion of expanding cultivation.

### *Tourism*

Ecotourism has often been proposed as a sustainable alternative to agricultural land uses (Terborgh and Peres 2002). Tourism has also provided livelihoods for many Maasai living in areas around MMNR. In fact, the Reserve itself appears to impact this possibility, as tourist activities are positively “associated with proximity to MMNR (Homewood et al. 2001:12548).”

The Mara tourist industry centers around wildlife viewing. Because wildlife survival depends on open land for migration, managers are considering payments to Maasai who continue grazing rather than fencing land for cultivation (Lamprey and Reid 2004:1025).

## **Conservation and Livelihood Concerns**

Unfortunately, MMNR and surrounding areas face a number of threats to human livelihoods and wildlife populations.

### *Human-Wildlife Conflict*

Some human land uses in Maasailand are incompatible with wildlife survival, while increasing wildlife density also threatens pastoral and cultivation lifestyles.

Elephants, in particular, threaten cultivation. Large elephant populations raise concerns about crop trampling (Walpole et al. 2003:52) and damage to homesteads, while other grazing animals may eat the crops intentionally. To prevent these problems, private cultivators may fence their land, limiting wildlife range. Other methods have been tried to simultaneously reduce crop destruction and wildlife declines, though most have not yet caught on in the region (id).

Pastoralism also faces threats from migratory wildlife, with the Koyake Maasai community “refer[s] to the annual wildebeest migration as their ‘yearly famine’” because the wildebeest outcompete cattle for grass and introduce diseases to the domesticated animal population (Lamprey and Reid 2004:1019). Of course, this competition works in reverse as well, with cattle using forage that could instead be retained for migrating zebras and wildebeest (id: 1018). As a result, these animal populations are inherently at odds with each other, forcing managers to search for solutions.

Tourism is often considered to be a more benign use of the land. However, the introduction of additional people can have negative impacts on the ecosystem and may not always provide benefits for local people.

*Endangered Species and Habitat*

As mentioned earlier, a number of important species face survival pressure in MMNR. In particular, some of the most popular large mammals have experienced population declines – beyond those expected from climate variation – in recent years.

Due to the subdivision of group ranches, the Maasai population has stretched further across the area. The average homestead has declined in size from few communal bomas to many smaller settlements (Lamprey and Reid 2004:1011). The footprint of these additional structures covers more space, interfering with wildlife migration patterns. Evidence suggests that wildlife density “declines significantly” when the density of structures rises (id: 1022). In addition to the expanding human population, private fenced ranches limit wildlife movement.

Tourist activities – including protected areas – are usually seen as a less invasive use of land. However, scholars have found evidence that tourist movements – whether repeated use of hiking trails, or mechanized transportation – may contribute to soil erosion and other habitat changes (Krüger 2005:592).

*Political Instability*

Poor management practices have compounded many of the problems noted above. As noted earlier, Tanzanian policies limiting cultivation have succeeded in reducing pressure on the land. Kenya has not succeeded in emulating those institutional designs (Homewood et al. 2001).

Furthermore, many Maasai have not benefited from tourism revenues, leading them to have little stake in wildlife conservation goals (Lamprey and Reid 2004:1024). Elite households (ie, those who are not generally searching for livelihoods) tend to control most of the income from tourist activities (Homewood et al. 2001:12548). These relatively wealthy families also control the policy process in most parts of the region and they have incentives to make policies most advantageous to their own continued incomes. Unfortunately, “approaches...involving the sharing of tourism revenues amongst pastoralists with communal land tenure, have largely failed in the Mara (Lamprey and Reid 2004:1025).”

Due to the lack of trust between Maasai communities and park authorities, and the history of external influence on Maasai lands, ecotourism benefits are limited. In addition, nationwide political instability occasionally reduces tourism in the region (id).

In order to limit self-interested policy decisions, the Trans-Mara County Council has granted management control to the non-profit Mara Conservancy since 2000. The Conservancy aims to reduce embezzlement by making revenue flows more transparent. It has also shifted to more science-based management of the Mara Triangle, with support from ecological researchers (including some from MSU) and a recently developed ten year Ecological Management Plan (see Exhibit 3). Although the Mara Conservancy has received high marks for its management changes, the Narok County Council and other surrounding areas have shown little interest in adopting this approach.

## **Discussion Questions**

1. MMNR is managed as a protective area, with no extractive uses permitted. However, some of the surrounding communities face dire economic conditions as a result of limited grazing land. Many pastoralists are therefore shifting to cultivation livelihoods, with the affiliated concerns for wildlife noted above. Should MMNR allow grazing within its borders, especially at a time when surrounding Maasai communities might otherwise enclose land for plant-based agriculture?
2. In class, we have discussed some benefits of local resource management. However, in this case, we see that the County Councils have not been effective managers of MMNR. Who should manage the reserve (Kenya Wildlife Service, County Councils, other governing units, or private actors)? Should the Narok County Council adopt the same Conservancy approach as TMCC, or does that delegation of power raise concerns about the influence of external actors? If so, what institutions can be put in place to ensure the Conservancy accounts for local interests?
3. We have discussed the trend towards smaller private ranches. Although this allocation of property rights has produced a trend toward fenced enclosures and mechanized agriculture, many Maasai prefer this subdivision of group ranches. Their strongest support, particularly in light of past experiences with outside rule, is based on future land tenure security. Should Maasai communities own the land in common or as individuals?

If it is divided, what method should the group ranches use to allocate property among their current shareholders?

4. Although tourism increases economic incentives for wildlife conservation, it also brings a series of potential problems, including habitat degradation and soil erosion. How should tourism be regulated within MMNR and surrounding areas? Who should gain the revenue from these activities, and how should the revenue be distributed within each participating community?
5. We have noted a series of problems with each management approach. Nonetheless, most economic development experts aim for a “win-win” solution with benefits for both conservation and community livelihoods. Is a win-win solution politically and economically feasible in and around MMNR? If so, what would such an approach entail?
6. Finally, place yourself in the position of a resource manager, perhaps working for the Mara Conservancy. Other than the scholarship mentioned in this case study, what other scientific research would you want available to help with your decision making process? What other information would be useful in answering questions 1-5 above?

## Exhibits

1. Maps and an aerial photo from Lamprey/Reid article
2. Homewood et al article (PNAS)
3. MMNR Ecological Management Plan
4. Summary of Kenyan wildlife law

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