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Spring 2010

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LESSONS LEARNED FROM BIODIVERSITY CONSERVATION IN THE PRIVATE LANDS OF LAIKIPIA, KENYA

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ABSTRACT—Increasingly, private land around the world is being set aside for conservation. The Laikipia District in Kenya is one area where wildlife conservation has been relatively successful on privately owned lands. This region supports a higher diversity of large mammals than any other region in East Africa, yet only 2% of the district is formally protected. Land is mostly owned and managed by private ranchers or groups of Maasai families on “group ranches.” In most private ranches, wildlife conservation and tourism have become important sources of revenue over the last two decades. Wildlife, once merely tolerated, are now considered desirable by most people. On group ranches, wildlife conservation is also gaining ground, albeit more slowly. Land on group ranches is being set aside specifically for wildlife, and income from wildlife-based tourism now supplements livestock ranching. In both types of ranches, however, land management practices may need to be refined to conserve a broader assemblage of fauna and flora. Populations of some threatened herbivores have fallen, and many ranches are experiencing woody encroachment, decreases in grass cover, and increases in bare ground and erosion. Conservation enterprises also face the challenge of achieving independence from foreign capital. They will need to diversify their income-generating activities and build local capacity. Regional coordination, though relatively strong, could be improved to provide greater scope to promote conservation. These challenges and successes illustrate the potential for private-land conservation in a region of high biodiversity.

Key Words: Africa, conservation, savanna, tourism, wildlife ranches

INTRODUCTION

Traditionally, wildlife and biodiversity have been viewed as collective resources whose conservation and management are the responsibility of government agencies (Knight 1999; Langholz and Lassoie 2001). More recently, private individuals, organizations, and corporations

have entered into conservation enterprises (Norton 2000; Langholz and Lassoie 2001; Langholz and Krug 2004; Carter et al. 2008). These enterprises seek to conserve biodiversity above all; however, in many cases they also seek to profit or at least break even (Langholz and Lassoie 2001).

The Laikipia District in northern Kenya is one area where private wildlife conservation enterprises appear to have been remarkably successful. This region is home to a higher diversity of large mammals than either the Serengeti National Park in Tanzania or Kruger National Park in South Africa, two of the largest and most famous

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Manuscript received for review, June 2009; accepted for publication, October 2009.

protected areas in Africa. Laikipia is also home to the second-highest abundance of wildlife in East Africa, after the Mara-Serengeti ecosystem. Yet only 2% of the land in Laikipia has been set aside exclusively for wildlife conservation (Georgiadis et al. 2007a). Through most of the district, wildlife move among unfenced properties where they share the land with livestock.

The social, political, and ecological contexts of Laikipia present some unique challenges and opportunities for wildlife conservation. Here we use this region as a case study to discuss some of the successes and failures of private land conservation in a region of high biodiversity. We begin by briefly summarizing the history of the region with respect to its land use and ecology. We then discuss the factors that have contributed to the persistence of wildlife populations in this region and identify current and future challenges to sustained conservation. Finally, we summarize the lessons that Laikipia can teach us about factors promoting wildlife conservation with reference to the Great Plains of North America.

BACKGROUND

Biogeography

The Laikipia District covers more than 9,000 km², most of which are bushed grassland or savanna habitat. The region is a high plateau (~1,800 m above sea level) just north of the equator and falls largely within the rain shadow of Mt. Kenya. Rainfall is highest in the southwestern part of the district, where some cultivation is possible. Through the rest of the district, annual rainfall (averaging between 750 and 450 mm) is insufficient to support crops. Livestock husbandry and wildlife tourism are currently the primary forms of land use in these areas.

Wildlife species diversity in Laikipia is high, including 25 species of ungulate herbivores as well as numerous species of carnivores. Common herbivores are plains zebra (*Equus burchelli*), impala (*Aepyceros melampus*), dikdik (*Madoqua kirkii*), Grant's gazelle (*Gazella granti*), elephant (*Loxodonta africana*), hartebeest (*Alcelaphus buselaphus*), oryx (*Oryx beisa*), eland (*Taurotragus oryx*), giraffe (*Giraffa camelopardalis*), buffalo (*Syncerus caffer*), gerenuk (*Litocranius walleri*), and waterbuck (*Kobus ellipsiprymnus*). Common carnivores are lions (*Panthera leo*), cheetahs (*Acionyx jubatus*), leopards (*Panthera pardus*), and hyenas (*Crocuta crocuta*). The region is also home to important extant populations of several threatened or endangered species, including black

rhino (*Diceros bicornis*), Grevy's zebra (*Equus grevyi*), African wild dog (*Lycaon pictus*), lion, and elephant.

Brief History of the Region

Historically, Laikipia was populated by the Laikipiak Maasai—migratory pastoralists—as well as the Mukugodo hunter-gatherers. Starting in the early 1900s, the British colonial administration removed the Laikipiak Maasai to southern Kenya and divided the region into large-scale landholdings (Cronk 2002). These were then leased out to private landholders on long-term leases (typically 999-year terms). During this time, the land was used primarily for cattle ranching and sport hunting. Populations of predators and plains zebras (which are perceived to compete with cattle) were heavily suppressed by ranchers. Concomitantly, social changes among the Mukugodo hunter-gatherers, as well as the influence of neighboring Samburu pastoralists, led the Mukugodo to adopt a pastoral livelihood and self-label themselves “Maasai” (Cronk 2002).

Following Kenya's independence in 1964, some of Laikipia's large landholdings were abandoned. These were subsequently resettled, in some cases by Europeans and in other cases by families of Maasai (formerly Mukugodo), primarily in the northeastern part of the district. Although Maasai and Samburu cultures are generally tolerant of wildlife, livestock populations grew quickly in these areas, effectively excluding wildlife. European ranchers continued to manage their landholdings as they had during the colonial era, suppressing wildlife populations through hunting, often indiscriminately. Starting in the 1970s, large areas of land in the wetter, southwestern part of the district were acquired by the Kenyan government and subdivided into small holdings to be used for small-scale agriculture or livestock husbandry. Thus, in these areas, wildlife were also effectively excluded. These changes in land-tenure have led to the mosaic of land uses found in Laikipia today (Fig. 1).

In 1977 the Kenyan government issued a ban on consumptive use of wildlife. This largely brought an end to the indiscriminate killing of wildlife in Laikipia, and wildlife populations rebounded, particularly on the European-held ranches where livestock densities remained moderate. Beginning in the late 1980s, a growing awareness of the conservation threats to wildlife, the intrinsic value of their existence, and the economic potential for wildlife-based tourism led to a shift in attitudes, particularly among European landholders. The persecution of predators abated, and many land managers began

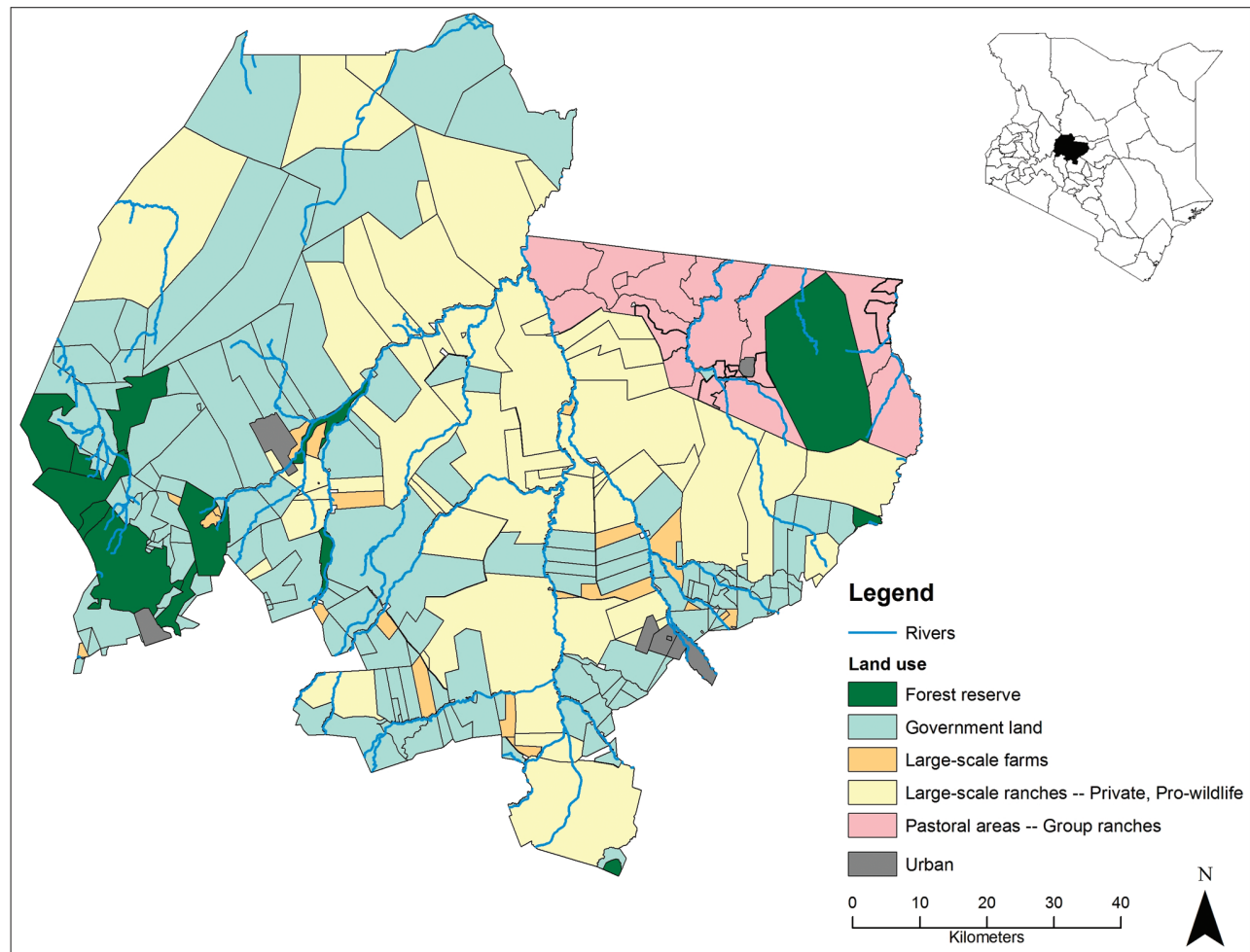


Figure 1. Map of Laikipia District showing the major land-use types. Government land includes settlement areas where small-scale agriculture and livestock husbandry are practiced. Source: Property boundaries and land use data from Mpala Research Center.

to remove fences to allow wildlife to move more freely within and among properties.

In 1992 Laikipia was designated as one of five areas in Kenya in which experimental cropping of certain wildlife species was introduced. In a movement to regulate cropping and promote conservation in a coordinated manner, a group of landholders joined together to form the Laikipia Wildlife Forum. In 2003 the ban on any form of cropping or hunting was issued again and has not since been lifted. The Laikipia Wildlife Forum, however, has grown both in membership and in the scope of its efforts (see below). At the same time, cattle ranching has become less profitable as demand has fallen and export regulations have tightened, while ranchers' ability to control disease spread remains compromised. As a result, most European landholders have established tourism enterprises on their land, and many now actively promote wildlife populations. The example of these "private ranches" has

prompted pastoralists on community-held lands ("group ranches") to also seek out tourism opportunities and actively promote wildlife conservation on their land.

GROUP RANCHES AND PRO-WILDLIFE RANCHES

Wildlife conservation in Laikipia can only be understood within the context of the two different forms of private land use that support wildlife. On the one hand, pro-wildlife ranches, although technically leased from the government, are effectively managed as private ranches. Figure 1 shows these properties labeled as "large-scale ranches." These large ranches (averaging 89 km² each) are typically "owned" and managed by wealthy foreigners and Kenyans of European descent who believe there is an intrinsic value to wildlife conservation. In most cases, livestock are kept on these properties either to meet legal requirements (see "Policy Challenges" below) or as a

supplemental form of income, but rarely as a profit-making enterprise in and of itself. Livestock densities are therefore low, usually below the recommended stocking rates for the region, and wildlife populations are relatively high.

On the other hand, group ranches, which are in theory privately held, are effectively managed as collective resources (“pastoral areas” in Fig. 1). Group ranches were created as a form of private landownership in Kenya to allow a group of families from the local community to own and manage their land. In Laikipia, many Maasai families have formed groups and set up group ranches. However, these ranches are often occupied by a large number of families and managed in a much less centralized manner than the pro-wildlife ranches. Group ranch members typically elect various committees to manage grazing, tourism, and other ranch operations. The effectiveness of these management committees varies from ranch to ranch. Few group ranch members are wealthy; most subsist on a marginal income (below \$1 per day) supplemented with tea, maize meal, milk, blood, and occasional meat from their livestock. These lands are characterized by high densities of livestock and people, with livestock numbers well above the recommended stocking rates. As a result, wildlife populations are far lower on group ranches than on pro-wildlife ranches. Within the socioeconomic context of the group ranches, wildlife conservation is viewed as a luxury that must pay for itself.

CONSERVATION SUCCESSES

The rise of the conservation movement in Laikipia highlights the potential for conservation to succeed in private lands. Most notably, the formation of the Laikipia Wildlife Forum (LWF) and the success of several tourism enterprises has had a “snowball effect,” leading to ever-greater unity in regional management objectives and efforts. The LWF has grown from a small organization whose main objective was wildlife management on large-scale private ranches to an organization of more than 150 members (including 11 community groups and 65 corporate members) whose activities range from environmental education to income diversification among pastoralist communities to restoration of degraded rangelands. These activities are now estimated to benefit some 300,000 people in Laikipia. With more than 40 tourism enterprises as members, the LWF is able to promote tourism for the region as a whole. In exchange, tour operators contribute a “bed-night fee” to LWF, which provides some of the funding to run the forum. (Other sources of

funding include membership dues and grants from external agencies.) Finally, the organization facilitates the spread of information among managers, educators, community members, and scientists in the area. This level of coordination can be viewed as both a cause of Laikipia’s conservation successes and a success in its own right.

Tourism in the region has largely focused on high-end, low-impact foreign tourism. The average Laikipia tourist lodge has only 16 beds. Yet Laikipia hosts 80,000 visitors annually, accounting for 10% of Kenya’s foreign tourists. These tourism operations may be run directly by landowners themselves or through professional tour operators who pay a negotiated fee to the landowner for tourism rights. Recently, a number of partnerships have been formed between private ranches and their neighboring group ranches to promote tourism in the group ranches. Typically, private ranches provide capital for startup expenses, access to tourism markets, and technical and logistical support to community-driven tourism enterprises. LWF also acts to facilitate outside investment in group ranches as a means of kick-starting tourism operations. Investors or tour operators lease and manage tourist facilities within group ranches. In return, the group ranch member typically receives a “conservation fee” from the tour operator. In addition, particular local community members benefit from the employment income generated by having such facilities on their property. To attract wildlife to the land surrounding their lodges and campgrounds, many group ranches have set aside “conservation areas”—areas where settlement is prohibited and livestock are rarely taken to graze. This approach appears to be working, as wildlife sightings are higher inside conservation areas than in the surrounding communal grazing lands (S. Sundaresan, unpublished data).

In addition to these partnerships, group ranches have also begun to organize themselves into regional conservancies. For example, nine group ranches in northeastern Laikipia recently joined together to form the Naibunga Conservancy. The conservancy trains and employs security patrols to prevent stock theft, regulate land use, and prevent poaching. This promotes overall security in the group ranches for people and their livestock and wildlife. Finally, forming an umbrella conservancy improves the ability of these communities to attract funds for their development. While the long-term success of the Naibunga Conservancy in promoting wildlife populations is still unexamined, the formation of such a unified conservancy can be seen as a first critical step toward wildlife conservation.

A number of conservation successes have also come through reducing the level of conflict between people

and wildlife. In western Laikipia, the primary conflict is between farmers and crop-raiding elephants (Thouless and Sakwa 1995; Gadd 2005). To mitigate this conflict, LWF in partnership with the Laikipia Elephant Research Project, is erecting a large-scale elephant fence between pro-wildlife ranches to the east and small holdings to the west. This fence will provide a barrier to elephants but will allow other wildlife to pass beneath it. Ongoing education and outreach programs are also working to reduce human-elephant conflict and raise awareness of the threatened status of elephants in Kenya.

Among ranchers and pastoralists, predator attacks on livestock are the main form of human-wildlife conflict. Various research programs such as the Laikipia Predator Project, followed by education and outreach programs, have demonstrated ways of reducing predation risk. These include various ways of building better night corals for livestock as well as measures such as having a domestic dog accompany livestock herds (Ogada et al. 2003; Woodroffe et al. 2007). Videos and educational materials are prepared and distributed among ranchers and communities who suffer livestock depredation.

Collectively, these conservation measures appear to be working for a variety of wildlife species in Laikipia, even as wildlife populations have generally plummeted in Kenya's national reserves (Newmark 2008). Common species such as plains zebra, impala, Grant's gazelle, and giraffes have remained stable (Georgiadis et al. 2007a), while populations of several endangered species have actually grown over the last decade. The persecution of lions and African wild dogs has abated, and populations of both species have grown remarkably. Grevy's zebra, once rare in Laikipia, now number nearly 2,000 in the district. Elephant populations have also grown from 3,400 in 1999 (Kahumbu et al. 1999) to more than 5,000 today (M. Kinnaird and T. O'Brien, unpublished data).

CHALLENGES AHEAD

Despite these conservation successes in Laikipia, a number of challenges remain before the region can be considered a model of sustainable private conservation. These include biological and management challenges, as well as fiscal challenges.

One of the foremost challenges is to ensure that group ranches remain friendly toward wildlife (Gadd 2005). To do so requires maintaining viable wildlife habitat within the group ranches and maintaining positive relationships between group ranches and private ranches. Although group ranches do not support a high density of wildlife,

they are a critical part of any strategy to conserve wildlife on a regional scale. Biologically, group ranches do include some important habitat. The group ranches to the northeast of Laikipia, for example, provide key corridors between private ranches to the southwest and several parks and reserves in Samburu District to the northeast (Thouless 1995). Elephants rely on decades-old (if not centuries-old) migration routes through this area, and it is likely that other wildlife species also migrate through the group ranches. For some species, moreover, the majority of their range falls within group ranches.

Maintaining the group ranches as viable wildlife habitat will require both improved range management practices and improved security on these ranches. Currently, group ranches are being grazed very heavily. Little grass cover remains, and soil is quickly eroding. Trees are also being cut down for charcoal production in some of the group ranches. If these trends continue, there will soon be little forage left for wildlife or for livestock. A substantial challenge, therefore, is for group ranches to find ways to manage their land in a more sustainable fashion. Economic and social constraints, however, make destocking an impractical option unless alternative sources of income are found. Several rangeland restoration initiatives have been started in cooperation between group ranches and outside organizations. Since rangeland restoration benefits livestock as well as wildlife, these initiatives have generally been welcomed by group ranch members. However, the long-term sustainability of these efforts is questionable, as they are labor-intensive and usually require livestock exclusion for some period of time if they are to succeed.

Maintaining wildlife-friendly attitudes among group ranches is critical to the success of conservation measures not just on the group ranches themselves, but also on neighboring private ranches. Poverty, coupled with resentment toward wealthy private landowners and managers, can lead to conflict between group ranch members and private ranches. Poachers, for example, can access private ranches through adjacent group ranches. Poaching remains a significant threat to elephant and rhino populations in the region. Group ranch members have also occasionally held "walk ons," whereby they occupy portions of private ranches and demand that their ancestral grazing rights to these lands be returned. Occasional violent attacks on ranch managers have also raised tensions between group ranches and private ranches. At best, these activities distract from the ability of private ranchers to manage their wildlife; at worst, they can directly threaten wildlife populations.

As discussed above, individual ranches as well as organizations such as the LWF are engaging in a variety of activities to foster better relations between private and group ranches. These include promoting tourism, as well as other income-diversifying activities. Tourist lodges and camps are intended to benefit the entire community since guests pay “conservation fees” in addition to lodging fees. It is not clear, however, whether the amount of money each household receives makes it worthwhile for community members to avoid grazing their livestock in the conservation areas. Additionally, it is not clear whether group ranches will effectively be able to take over the management of tourism enterprises without relying on outside financial and logistical support.

Many similar issues are facing private ranches, albeit to a lesser extent. Like the group ranches, private ranches depend on tourism and livestock ranching as sources of income. Both of these ventures are inherently risky and can change based on factors outside local control. Drought and disease present significant risks for livestock production. Tourism in Kenya is mostly international and is subject to the vagaries of global economic conditions. Moreover, political instabilities within Kenya also threaten the tourist market. As a consequence of these various instabilities, few private ranches are operating at a profit every year. Ranches are able to persist through bad years thanks to supplementary funds from their wealthy owners or other donors. Thus, a key challenge facing private ranches is to achieve economic independence and resilience in the face of market fluctuations.

Private ranches also face several challenges in terms of managing their wildlife and biodiversity. Several species of large mammals, for example, have declined substantially in numbers over the last several decades, even on pro-wildlife ranches (Georgiadis et al. 2007a). These include eland, waterbuck, hartebeest, and Thompson’s gazelle (*Gazella thomsoni*). These declines are hypothesized to be a result of increasing predator densities (Georgiadis et al. 2007b) coupled with increases in woody vegetation. Predators that were formerly not tolerated because of their effects on livestock are now encouraged because they represent tourist attractions. By focusing on promoting species that appeal to tourists, managers may be negatively affecting other, less charismatic species. This problem extends to other taxa too; the consequences of management decisions that center around large mammals for the flora and other, smaller fauna are not known.

While charismatic “flagship” species may be useful in attracting tourists, it is not clear that these species can

be considered “umbrella” species whose conservation guarantees the conservation of the ecosystem’s other biological diversity (Walpole and Leader-Williams 2002). In the long run, exclusive management for a few species of large mammals could even lead to loss of ecosystem function and services. Thus, an important challenge on private ranches is to develop management strategies that promote the conservation of a diverse complement of species and ecosystem processes in addition to tourists’ favorite species.

POLICY CHALLENGES

The apparent success of conservation in the private lands of Laikipia has occurred despite many policy and legal obstacles. Most notably, the Kenyan wildlife laws do not provide landowners or managers with some of the management options that have promoted conservation on private lands in other countries.

Trophy and sport hunting, which have been used successfully in other African countries to support wildlife conservation (Baker 1997; Leader-Williams et al. 2005; Cloete et al. 2007; Lindsey et al. 2007), have been banned in Kenya since 1977. Trophy and sport hunting have great potential to generate incentives and funds for wildlife conservation. Across nine African countries where hunting is a significant industry, private land used for hunting exceeds parks and protected lands in area (Lindsey et al. 2007). Hunting in these countries generates a substantial amount of income in lands that might otherwise be overlooked by tourists. These financial incentives can underpin successful management, conservation, and reintroduction of endangered species in areas where they were formerly threatened (Leader-Williams et al. 2005). Trophy and sport hunting are not without their pitfalls—most notably, inadequate monitoring of populations for quota setting, inequitable distribution of revenues among constituents whose land supports wildlife (Lindsey et al. 2007), and a variety of indirect consequences for the population (Packer et al. 2009). However, the current ban on hunting in Kenya is estimated to be costing the country US\$20 million to \$40 million per year, and costing Laikipia, specifically, \$1.6 million to \$2.2 million per year in lost revenues (Elliott and Mwangi 1998). Whether hunting can be considered a suitable practice for Laikipia or not, it is clear that the ban on hunting in Kenya is limiting the options available to land managers in this region.

In addition, Kenyan land policy is currently unclear about whether conservation is considered a legitimate form of land use. This lack of regulatory clarity makes



Plate 3. Cattle and plains zebras (*Equus quagga*) at Ol Pejeta Conservancy, Kenya, a conservancy with high wildlife densities and many cattle. Occasionally, the cattle intermingle with the wildlife as they graze. Photo by Justine Cordingley.

it challenging to set up and manage conservancies. Pro-wildlife ranches and conservancies often continue to keep livestock and manage themselves as livestock ranches to avoid legal problems with local and central governments. However, this approach may not be in the best interests of the wildlife; while some evidence suggests that wildlife populations can continue to flourish in the presence of livestock, there are also a number of direct and indirect ways in which livestock and wildlife can come into conflict with one another (Gadd 2005; Young et al. 2005; Ogutu et al. 2009).

Finally, wildlife are considered a public good in Kenya. Private landowners are thus paying for and subsidizing a resource that they do not own and cannot control. This precludes trade in live wildlife, an important source of revenue for conservation in other African countries (Cloete et al. 2007). For example, in South Africa, wildlife can be bought and sold by private individuals and game parks. Wildlife auctions often generate large sums of money that are plowed back into conservation efforts (for example, state and national parks).

Together, these policies—by closing revenue options, confusing land administration, and creating disincentives for conservancies—act to discourage individuals and business enterprises from setting aside land for wildlife. Policies that devolve wildlife ownership or legalize hunting can be controversial for the ethical issues they raise. However, policies that treat wildlife as a private or semi-private commodity would offer the private landholder a wider set of tools to use toward conserving wildlife.

OPPORTUNITIES

As we have discussed, the conservation successes of Laikipia have emerged despite many obstacles and continuing challenges. Yet a number of factors highlight the opportunities in this region for wildlife conservation, and the opportunities that wildlife conservation offer this region.

First, the majority of Laikipia is semiarid savanna. With low productivity and little mineral wealth, there are few forms of land use competing with wildlife for habitat. Mining, crop farming, and logging are not viable through most of this region. Thus, ranching livestock or wildlife are the most profitable land uses. As we have noted, livestock can compete with wildlife (Gadd 2005; Young et al. 2005; Ogutu et al. 2009). However, livestock rarely irreversibly transforms wildlife habitat to the extent that other commercial enterprises do. For instance, even highly overgrazed land can recover more easily than land

that has been mined or tilled. Moreover, there is much evidence that livestock and wildlife, if managed properly, can coexist in this region.

Second, many properties in this region remain unfenced, allowing wildlife to move freely among them. This provides the opportunity for the region to be managed as one larger conservancy, rather than many fragmented conservancies. Managing land in such a cooperative manner affords a number of benefits (Lindsey et al. 2009). Biologically, large mammal populations—including populations of predators and rare herbivores—are more likely to remain healthy and resilient in the face of disturbances when they have access to a larger area of land. Economically, cooperative land management may afford more opportunities for attracting investors. The Laikipia Wildlife Forum has already brought stakeholders together to seek some of these opportunities, but there is scope for further cooperation in this region. However, recently a number of private ranches have chosen to reintroduce rhino populations and have erected fences to contain the rhinos. These fences were designed to allow other species to pass through them at periodic fence gaps. However, their effects on animal migrations are unknown, and if this trend toward more fencing continues, the fences could become significant barriers to migration.

Third, there may be a broader tourism market than is currently exploited. At present, the majority of tourism comes in the form of high-end boutique tourism. Yet there is a wider array of tourism markets—such as adventure tourism, cultural tourism, and corporate tourism—that has yet to be fully tapped. A broader portfolio of tourism markets may ensure a more consistent flow of income and clientele for the region.

Fourth, there is potential for more extraction of natural products as a source of income in this region. Products such as honey, resin, essential oils, aloe extracts, and even charcoal can, if managed properly, be exploited in a sustainable manner that does not interfere with wildlife populations or ecosystem functioning. These products could provide additional income to supplement revenues accrued from wildlife tourism.

Finally, there is potential for land managers in Laikipia to accrue income through carbon sequestration. There is currently a great deal of interest in the potential of grassland and savanna ecosystems to serve as carbon sinks (Tennigkeit and Wilkes 2008). At the same time, the demand for carbon sequestration is rising. While there remain many biological and marketing challenges before grasslands can become viable carbon markets, this sector presents a potentially exciting opportunity for regions such as Laikipia.

LESSONS FROM LAIKIPIA

It has generally been assumed that private conservation will only work if it is profitable. However, the case of Laikipia illustrates that this is only partially true. Here, wildlife conservation has generally been successful on privately held ranches. Many of these ranches make some profit from tourism and cattle, but few consistently make a net profit every year. Wealthy landowners believe in the inherent value of the wildlife and the land. Profit-making is not their priority, and they can afford to tolerate small fiscal losses or ride out market fluctuations. On communal group ranches, wildlife conservation also appears somewhat successful, but not without large external subsidies of funds, support, and expertise—at least initially. Given the general interest in conserving Africa's savannas, however, many communities have succeeded in obtaining such donor support. In both cases, private conservation is succeeding even though it is not highly profitable. It illustrates that an ethic of conservation is the primary ingredient needed for private conservation to succeed.

The success of biodiversity conservation in Laikipia has several implications for biodiversity conservation in the private lands of the northern Great Plains ecosystem. Despite being geographically far removed from each other, the two regions of Laikipia and the northern Great Plains share many similarities, both ecologically and socially. For example, both regions are grasslands that support or historically supported diverse assemblages of large mammals. Human population densities in both regions are relatively low and much of the land is privately held as large livestock ranches. Under these conditions, the potential for private landholders to successfully conserve biodiversity is high.

The ecological, social, and land-use similarities between the regions suggests that some approaches that have succeeded in Laikipia could serve as a model to landowners in the Great Plains. One important lesson from Laikipia is that cattle ranching and wildlife tourism can coexist successfully if managed appropriately. In the Great Plains, creative zoning of land uses within ranches could allow the two enterprises to occur more easily. For example, ranches could be loosely divided into several zones: areas where attracting wildlife and entertaining tourists are the primary management objectives, areas where grazing cattle is the primary objective, and a buffer area between the two. These zones need not be fixed or strictly adhered to, but such zoning may facilitate the maintenance of a diverse portfolio of activities within a ranch.

However, managing land for both wildlife and livestock in the Great Plains may present some new challenges. North American ungulates, such as deer or elk, may be tolerated by ranchers who keep livestock on their ranch. However, maintaining large predator populations in the Great Plains may be more problematic than in Laikipia. On the one hand, large predators, such as grizzly bears in North America or lions in Africa, are immensely appealing to tourists. On the other hand, the cost of maintaining these predators may be high for many ranchers. In Laikipia, active herding of livestock allows ranchers to minimize the number of livestock lost to predators. Herding is labor-intensive, but relatively cheap labor allows Laikipia ranchers to employ this system. Ranchers in the Great Plains are unlikely to have access to such cheap labor, and minimizing predation losses could become difficult. However, it is conceivable that revenue from tourism may offset any livestock losses.

A second lesson from Laikipia is that tourism can provide an adequate source of income to make up for lost revenue from more extractive land-use practices, including cattle ranching. For this to take place, however, tourism products available to the typical Great Plains landowner must be marketed well to the wider local and global community. Efforts that promote tourism for the region as a whole or that target specific niches within the tourism sector are likely to be most effective.

Finally, the case of Laikipia illustrates the importance of regional coordination that brings multiple landowners together. Such coordination allows increased political and economic leverage, opportunities for regional conservation planning and cooperative management, and opportunities for private enterprises to share information and learn from each other. This type of regional cooperation already exists in the Great Plains; for example, livestock owners' associations bring ranchers together to advance livestock ranching as an economically profitable activity. Broadening the scope of such institutions or creating similar institutions for wildlife conservation would greatly increase the potential for conservation enterprises to succeed—both ecologically and economically—in the Great Plains.

ACKNOWLEDGMENTS

We thank the Denver Zoological Foundation (SRS) and Princeton University (CR) for supporting us during the preparation of this paper. We are grateful to Anthony King for discussions of many of the ideas in the paper. We thank Rich Reading, Rick Edwards, and Tyler Sutton and

the Grassland Foundation for inviting us to present these findings in a conference on Grasslands of the World. We thank Rich Reading, Rick Edwards, and two anonymous reviewers for comments on earlier drafts of this paper. Discussions with other conference participants also helped to further our understanding of the challenges and opportunities for private biodiversity conservation.

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The Center for Great Plains Studies, University of Nebraska–Lincoln, and *Great Plains Research* wish to thank the

Nebraska Rural Initiative

for its generous support of the publication of this Special Issue on

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The University of Nebraska Rural Initiative identifies opportunities in rural Nebraska and catalyzes experimentation, innovation and collaboration across the University campuses and with rural citizens. We seek to enhance the economy of rural areas while promoting sustainable and socially beneficial use of resources.

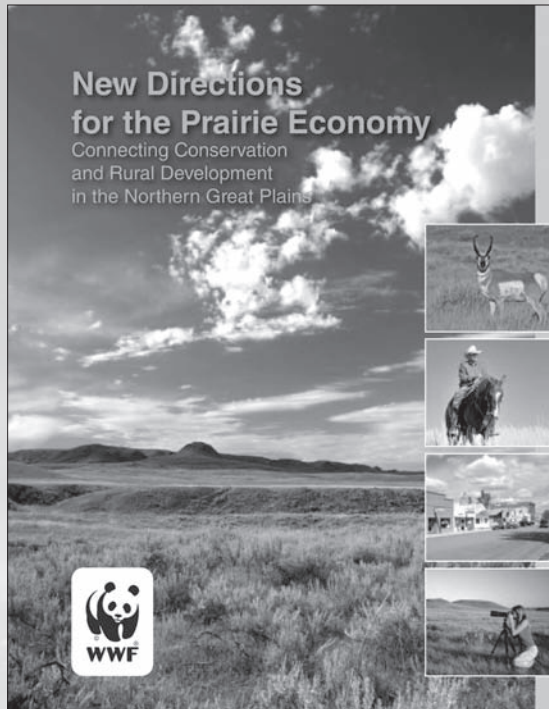
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*Identifying opportunities
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New Directions for the Prairie Economy



The World Wildlife Fund's Northern Great Plains program (WWF) presents the report **New Directions for the Prairie Economy: Connecting Conservation and Rural Development in the Northern Great Plains**. The authors provide an examination of serious problems facing the Northern Great Plains (NGP) of the United States' rural communities and native prairies, and identify emerging opportunities for addressing the problems. These opportunities offer common ground, the authors propose, for rural development and prairie conservation to work together to build a new, more sustainable, prairie economy.

About WWF's Northern Great Plains Program

WWF has been working in the Northern Great Plains for over a decade, playing an integral role in charting a sustainable future for the region by bringing together local communities, landowners, governments, scientists and conservation experts to achieve lasting results in the conservation and restoration of the region's natural heritage.

Our vision is a healthy and well-managed landscape that conserves all native species through a combination of conservation areas and ecologically sustainable agriculture.

WWF is committed to making this vision a reality by restoring large areas of intact native habitats, protecting keystone species and working with local communities to create economic opportunities linked to conservation.

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