Chapter 4

Responsible Tourism: A Conservation Tool or Conservation Threat?

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1. Introduction

The year 2003 marked the 30th anniversary of organized gorilla tourism, with tens of thousands of international visitors catching a precious glimpse of the gorillas' fragile equatorial ecosystem (Weber, 1993). For three decades, gorilla trekkers have stepped into a breathtakingly beautiful African landscape, steeped in human and gorilla blood. Gorilla lives and deaths have been played out against a backdrop of human war, genocide, poverty, and disease, seemingly unnoticed by the international community at large (Stanford, 2001; Weber and Vedder, 2001). During these 30 years, global international tourist arrivals per year have increased by about 500 million (World Tourism Organization, 2000), and more than 30 new diseases have emerged (World Health Organization, 2002). Ebola hemorrhagic fever decimates gorilla populations in western equatorial Africa (Walsh *et al.*, 2003), and the rapid global spread of SARS coronavirus, shows how easily new diseases may be spread by international (air) travelers (World Health Organization, 2003a).

While tourism can help fund conservation, the 100th anniversary of the discovery of mountain gorillas in 2002 (Schaller, 1963), coinciding with the *International Year of Ecotourism*, was marred by terrorist attacks in Djerba, Bali, and Mombasa. Unpredictable global tourism trends, as a result of the war in Iraq and continued terrorist attacks, mean that conservation managers in Africa cannot afford to rely on gorilla tourism funds alone (Blom, 2001a).

Most people associate gorilla tourism with the mountain gorillas (*Gorilla beringei beringei*) of Rwanda/Uganda/Democratic Republic of Congo (DRC), but the first organized gorilla tourism project was established six years earlier at Kahuzi-Biega National Park in eastern DRC with Grauer's (*Gorilla beringei graueri*) or eastern lowland gorillas (Weber, 1993; Meder and Groves, 2005). The intervening years have seen these early sites devastated by regional conflicts, with two fledgling Ugandan sites emerging as the premiere gorilla tourism sites (Litchfield, 2001a). New western lowland gorilla (*Gorilla gorilla gorilla*; Meder and Groves, 2005) tourism sites have sprung up in Central African Republic, Gabon, Congo-Brazzaville, Cameroon, and equatorial

Guinea (Aveling, 1999; Blom, 2001a; Djoh and van der Wal, 2001). Only the rare Cross River gorillas (*Gorilla gorilla diehli*; Meder and Groves, 2005), restricted to small populations at the Nigeria–Cameroon border, remain to be visited by tourists, although plans to habituate the remaining gorillas (<30) for tourism at Afi Mountain Wildlife Sanctuary have been proposed by the Cross River State Forestry Commission (Dunn, 2005).

Can *responsible tourism* save gorillas, as war, deforestation, mining, disease, and the bushmeat trade rapidly push them toward extinction? Tourism has been recognized as an important conservation management tool to protect gorillas, yet itself may pose a threat to their survival (Homsy, 1999; Butynski, 2001). For the purposes of this report, the term *responsible tourism* (which cares for the earth, and means, simply, not exploitation, but sharing), rather than *ecotourism* will be used (Litchfield, 1997, 2001b). The term *ecotourism* has been attached to ventures that have resulted in “deleterious impacts,” and the nature of the *ecotourism* industry as a whole has been “ill-defined” (Rabinor, 2002).

2. Tourism Trends and Sustainability Issues

More than three million international tourists per year travel to West and Central Africa, whilst a further six million visit East Africa. By 2020, 77 million international visitors are expected to visit Africa (World Tourism Organization, 2000). “Post-September 11 syndrome” did not impact on international tourist arrivals to sub-Saharan Africa (World Tourism Organization, 2003a), but continuing international tensions may have a considerable, if short-term, impact. Although the World Tourism Organization figures reflect mass tourism numbers rather than select groups likely to visit gorillas, overall trends could help managers anticipate increasing numbers of tourists, or conversely, low numbers.

Three main goals of ecotourism (in its ideal form) apply to *responsible* gorilla tourism. First, local communities must benefit “without overwhelming their social and economic systems” (Dawson, 2001, p.41). Second, all aspects of the “resource base” (gorillas and their habitat, and cultures of local communities) must be protected. Third, ethical behavior of tourists and tourism operators is required. Only if the ecotourism venture is “limited in scale” and minimizes environmental and social impacts can it be considered a form of sustainable development (Dawson, 2001).

Researchers are still unable to agree on an adequate measure of sustainability (Rao, 2000), but warn that global environmental issues will impact upon all forms of tourism within the next two decades (Mann, 2000). Planes and other forms of transport contribute to greenhouse gas emission, and strategies, such as reforestation programs, must be put in place now (Gössling, 2000). Local community involvement (with leadership provided by local authorities), and incorporation of principles and guidelines of Local

Agenda 21 in all aspects of planning and management is more likely to result in sustainable tourism (United Nations Environment Programme, 2002, 2003).

Embraced as a nonconsumptive and low-impact means of poverty alleviation for developing countries, tourism does not appear to be increasing minimum standards of living, despite increases in tourist numbers (Rao, 2000). The World Tourism Organization is attempting to address this problem with its recently launched Sustainable Tourism-Eliminating Poverty (ST-EP) program.

“Even the most environmentally conscientious tourist will have some degree of impact, however small” (Cater, 1995, p.77). Despite holding pro-environmental attitudes, people in developed nations engage in environmentally destructive behavior (Tenbrunsel *et al.*, 1997). North America, Europe, and Japan (15% of the world’s population) are responsible for up to 80% of the consumption of world resources, and contribution to toxic pollution (Gladwin *et al.*, 1997). About 80% of all international travelers (Mann, 2000) come from these developed nations, and, as tourists, they consume wood, water, energy, and food at unsustainable levels (Rao, 2000).

Wildlife tourism in protected areas is beset with a number of problems and negative impacts (direct and indirect) that are well documented in the literature (Roe *et al.*, 1997; Weaver, 2000; United Nations Environment Programme, 2002). However, there is one overriding problem unique to gorilla (and other great ape) tourism, namely the gorillas’ susceptibility to human diseases, as a result of our genetic closeness. International tourists, en route to gorillas, have passed through other countries or even continents. “This represents, from an epidemiological point of view, a very effective means of transport for an increased number of exotic germs due to the speed and diversity of modern transport systems” (Homsy, 1999, p.v). The global outbreak of SARS in 2003 reflects this only too well.

The adoption of strict guidelines and rules at gorilla tourism sites, or other regulatory action to avoid environmental disaster, even in the absence of clear scientific evidence, is compatible with the *Precautionary Principle* (O’Riordan and Cameron, 1994; O’Riordan *et al.*, 2001). Higginbottom (2002) stresses that the *Precautionary Principle* should be adopted if: “(i) a population decline may be difficult or impossible to reverse by the time it is reliably detected; (ii) a population is small and geographically restricted, (iii) a species is of particular conservation and/or public concern” (p.4). This is clearly the case for gorillas. Taking extra precautions is not only prudent but well advised.

3. Gorilla Tourism during Times of Crisis

All tourist sites should develop integrated crisis management plans for dealing with natural or human-induced disasters, based on *worst-case scenarios*. In the event of a disaster, if coupled with honesty and transparency in communication, good crisis management techniques can speed up the process of tourists

returning to the destination (World Tourism Organization, 2003b). Worst-case scenarios already experienced at gorilla tourism sites include outbreak of war (e.g., Rwanda and DRC), death of gorillas from Ebola (e.g., Lossi), and kidnap and killing of tourists and park personnel (e.g., Bwindi). If a crisis arises, pre-existing funding and strategies should be activated to protect the gorillas, their habitat, and key personnel on the ground.

Excessively high visitor numbers can result in a number of problems, as witnessed at the two Ugandan mountain gorilla sites in 1997 and 1998, when these were the only sites in the region officially open to tourists (Macfie, 1997). At Mgahinga Gorilla National Park and Bwindi Impenetrable National Park, pushy tourists and tour leaders attempted to bribe park staff to increase visitor numbers to look for gorillas, or allow double visits (Macfie, 1997). In order to manage the day-to-day problems associated with the large number of tourists, rangers may have neglected duties such as antipoaching and boundary patrols, as well as preventing wood cutting in the park (Karlowski and Weiche, 1997). Uganda alone was unable to meet the demands of the tourism industry.

During times of conflict (when tourism is not possible), gorilla conservation organizations can provide training to relief/humanitarian agencies on environmental management during refugee operations (Lanjouw, 2000). This may minimize loss of natural habitat (35 km² of Parc National des Virunga was deforested in <2 years). It may also reduce poaching of gorillas (18 mountain gorillas were killed between 1995 and 1998), and transmission of human diseases to wildlife from improper disposal of human and medical waste (used syringes, human waste, and bloodstained materials were dumped within Parc National des Virunga). "Ranger Based Monitoring," developed in 1996 as part of a rehabilitation program for Parc National des Virunga, employs field staff to collect basic information about gorillas, elephants, and humans in the park, thereby informing park management decisions. This simple and cost-effective program now serves as a strategic protected area management tool (Lanjouw, 2000; Gray and Kalpers, 2005). It must be stressed that the success of this tool in the past has rested on the bravery of field staff, who risked and in some cases gave their lives to protect gorillas (e.g., at Karisoke).

Lanjouw's (2000) examples of the strategies implemented by the International Gorilla Conservation Programme provide alternative scenarios that can be incorporated into an integrated crisis management plan for all gorilla tourism sites. Such an integrated crisis management plan should also incorporate contingency plans for excessively high or low visitor numbers in order to prevent overwhelming problems from developing. These might include access to a database for travel agents or tourists wanting to visit gorillas with updates on sites within a region that are best suited to cater for tourists at any given time.

An integrated crisis management plan should also develop strategies for how to protect gorillas and local communities if the tourism project fails.

Several successful gorilla tourism programs have suddenly collapsed, or been disrupted for extended periods of time. Local communities cannot afford to become dependent upon income generated by tourism alone. In the event of a crisis, the question arises, should funding also be made available to local communities involved in the tourism project? The establishment of trust funds (or other stable and sustainable sources of revenue) by international donors and conservation organizations may ensure that gorilla conservation does not rely solely on tourism funds or other “alternative economic ventures” (Blom, 2001b, p.41). Ideally, *all* gorilla tourism sites should receive sufficient funding, irrespective of tourist numbers. A specific fund for the long-term care of gorillas habituated for tourism could provide money to care for gorillas during times when tourism is not possible. Reserve funds set up from tourist income could be used to support site(s) financially during times of tourist scarcity. U.K. tourists seem “prepared to pay a premium of perhaps 5% for guarantees of responsible and sustainable travel” (World Tourism Organization, 2001, p.10). Thus, *responsible tourism* might provide a potential source of funding for conservation, but conservation managers must determine how much money is needed to support each gorilla tourism site, and whether a 5% contribution by each tourist to a reserve fund is a realistic figure.

4. The Economics of Gorilla Tourism

In the 1970s, gorilla tourism was considered to be the “only immediate option capable of galvanising sufficient and immediate support to save mountain gorillas from poaching, habitat encroachment and possible extinction” (Homsy, 1999, p.1). It is still viewed by many as the most “lucrative” and effective gorilla conservation tool (Homsy, 1999). Without mountain gorilla tourism in Uganda, it is unlikely that the tiny Mgahinga Gorilla National Park (<40 km²) would even exist today.

Some studies have estimated the value of a specific animal to the economy of a country, or the financial value (from tourism revenue) of a park per hectare in its protected state (Ceballos-Lascrain, 1996). However, viewing gorilla conservation or tourism projects merely in terms of monetary gains may not communicate the right messages. It may not make clear that gorillas and their ecosystems (particularly forests) play a vital role in preventing soil erosion, protecting water catchment areas, stabilizing local climates and compensating for greenhouse gas emissions (Werikhe *et al.*, 1997).

4.1. *Potential Economic Benefits of Gorilla Tourism*

In 1990, prior to the war in Rwanda and the DRC, tourists paid nearly US\$2 million in entry fees to visit gorillas. Rwanda’s gorilla revenues alone represent more than half of the money earned during the same period at Amboseli National Park in Kenya, but with 430% fewer tourists than at Amboseli

(Weber, 1993). Moyini and Uwimbabazi (2000) provide a detailed economic analysis of gorilla tourism in Uganda during the 1990s, in order to “assess the economic value of the mountain gorilla as a tourism resource” (p.13). More than 17,500 people (predominantly from outside Uganda) visited gorillas at Mgahinga and Bwindi between 1994 and 1999. The average expenditure per visitor was approximately US\$768.

Moyini and Uwimbabazi’s (2000) estimates are based on full capacity utilization of the three habituated groups of gorillas. At full capacity (8,760 visitors per year—6,570 at Bwindi and 2,190 at Mgahinga), the annual benefit to the Uganda Wildlife Authority is US\$2.1 million (gorilla permits and park fees), with benefits for local communities estimated at US\$678,000 (20% of entrance fees plus direct tourist expenditures). Moyini and Uwimbabazi (2000) stress that the combination of an over-representation of lower income spectrum of tourists in their study sample, and the likelihood of tourists engaging in other tourism activities in Uganda, suggest that their estimates are rather conservative.

Since 1994, income generated from gorilla tourism has been shared (sporadically) with local communities in Uganda, who have been able to build schools and clinics (Archabald and Naughton-Treves, 2001; Adams and Infield, 2003). During the pilot phase (April 1993 to June 1994) at Bwindi Impenetrable National Park, local communities received approximately US\$15,000 (Meder, 1996). For the first few years, at Mgahinga Gorilla National Park, 20% of entrance fees supported local community projects, and park rangers’ salaries were covered by proceeds from tourism, resulting in considerable financial independence, security, and confidence of local communities (Karlowski and Weiche, 1997). Money from tourism projects, as well as funding from the *Mgahinga and Bwindi Impenetrable Forest Conservation Trust* (MBIFCT), help to compensate local communities for loss of access to resources (Meder, 1999). Archabald and Naughton-Treves (2001) suggest that tourism revenue sharing appears to have improved attitudes towards protected areas in Western Uganda, but they also point out that changes in legislation resulted in no sharing of revenue with local communities between 1998 and 2001.

A number of local, national and international groups have been vying for a greater share (or some share) of funds generated by gorilla tourism in Uganda (Adams and Infield, 2003). Originally intended to benefit local communities, gorilla-tourism revenues have helped fund national parks throughout Uganda. The perception of local communities at Mgahinga continues to be dominated by a sense of economic loss (Archabald and Naughton-Treves, 2001; Adams and Infield, 2003), suggesting that their share of gorilla tourism revenues is inadequate (Brown *et al.*, Chapter 10, this volume).

4.2. Economic Costs of the Habituation Process and Infrastructure

The potential economic benefits of gorilla tourism, based on income generated by mountain gorilla tourism during times of stability (and at maximum

capacity), are likely to feature prominently as the prime incentive for establishment of new sites (Djoh and van der Wal, 2001). Yet, the costs of the habituation process and infrastructure may be prohibitive, unless well funded by large international organizations over a prolonged period (Blom, 2001a, 2001b). The time needed to habituate a gorilla group can vary between six months and 14 years (Goldsmith, 2005). Blom (2001b) estimates that a two-year habituation period for one group of gorillas, based on the process used at Dzanga-Sangha (Central African Republic), would cost at least US\$250,000. This figure excludes the budget for the health-monitoring program that should be conducted prior, during, and after habituation.

Blom (2001b) points out that the potential revenues that gorilla tourism can generate for protected area management, as a self-financing strategy, in the central African region is limited at best. The mountain gorilla tourist sites have set a high standard of service to tourists, resulting in expectations of well-organized tracking and good gorilla viewing. These sites have also generated large and well-publicized revenues during stable periods, which may set unrealistic financial expectations in other countries. Western lowland gorillas living in forests that are logged, and where they are hunted for bushmeat, may be difficult to habituate. Djoh and van der Wal (2001) emphasize that “the gorillas have many bad memories of their encounters with men...If they have too many bad memories, it could very well be impossible to regain their trust” (p.34). Western lowland gorillas may also live in closed and flat lowland forests with dense undergrowth, which makes tracking more difficult and risky, since trackers unexpectedly may stumble into gorillas (Djoh and van der Wal, 2001).

5. “New” Western Lowland Gorilla Tourism Sites

Despite the constraints imposed by environment and human activities (e.g., hunting and logging), western lowland gorillas have been habituated for tourism at a number of sites. These include Dzanga-Sangha in Central African Republic, Lopé Wildlife Reserve in Gabon, Maya north saline (Odzala National Park), Lossi Gorilla Sanctuary (about 15 km from Odzala National Park) in Congo-Brazzaville, and Monte Alén National Park in Equatorial Guinea. Habituation trials have also taken place at Lomié (near Dja Wildlife Reserve) in Cameroon (Aveling, 1999; Blom, 2001a; Djoh and van der Wal, 2001). These sites provide opportunities to observe gorillas in a variety of ways. At Maya north saline, gorillas and other large mammals (e.g., forest elephants, buffaloes, bongos, and sitatungas) feeding in forest clearings can be viewed from observation hides. At Lossi, tourists could once view gorillas feeding on fruit above them in the trees (prior to the gorillas’ decimation by Ebola). Unlike mountain gorilla and eastern lowland gorilla tourism sites, not all western lowland gorilla tourism sites are located within traditional protected areas (e.g., national parks and reserves). The Lossi site still belongs to its traditional owners, the villagers of Lengui-Lengui, who

developed gorilla tourism as part of a community conservation initiative (Aveling, 1999). The Lomié site is located partly within a production forest, and partly within a forest requested as a community forest by the neighboring villages of Karagoua and Koungoulou (Djoh and van der Wal, 2001).

The Lossi Gorilla Sanctuary now serves as a stark reminder of the vulnerability of gorillas and gorilla tourism. For almost a decade, Magdalena Bermejo and Germain Ilera have been there, studying and monitoring eight families of gorillas (139 individuals). Two of these groups, the first lowland gorillas to be habituated in central Africa, were habituated for tourism. At the end of 2002, Ebola virus was confirmed in four gorilla and two chimpanzee carcasses. Since then, all but a handful of gorillas have disappeared from the study area—victims of an Ebola epidemic (Aveling, 2003). Ebola appears to pose an even greater threat to western lowland gorillas than the bushmeat trade. The combined impact of Ebola and hunting has resulted in an estimated 56% decline in the gorilla and chimpanzee population numbers in Gabon and Congo Republic, between 1983 and 2000 (Walsh *et al.*, 2003).

6. Evidence for Potential Threats to Gorillas from Tourism

This section examines some of the potential threats that tourism may pose to gorillas. These potential threats fall into three main categories—the process of habituating gorillas for tourism, increased risk of disease transmission, and inappropriate tourist purchases. Before embarking on an analysis of potential threats of tourism, it should be noted that the high profile of “Virunga” mountain gorillas (which excludes “Bwindi”) and protection afforded them by regular tracking and monitoring for tourism and research (260 of the total 359 + individuals) have resulted in an increase in mountain gorillas over the last three decades (annual growth rate of 1.0–1.3% per year) despite prolonged armed conflict in the area (Kalpers *et al.*, 2003). “Many of the warring factions have actually shown commitment and invested resources to ensure that the gorillas were not harmed,” as a direct result of recognition of these gorillas as an “important resource (through tourism)” (Kalpers *et al.*, 2003, p.335). Nonetheless, not all mountain gorillas habituated for tourism and research have fared equally well. Whereas four of the gorilla groups in Rwanda increased in size by 76% over a decade (1989–2000), seven habituated groups in DRC declined in size by almost 20% in four years (1996–2000; Kalpers *et al.*, 2003).

6.1. *The Habituation Process as a Potential Threat to Gorillas*

The Nkuringo group of gorillas at Bwindi Impenetrable National Park (Uganda) has been habituated for tourism since 1997, but has not yet been included in the tourism program. At the end of 1998, Michele Goldsmith

and colleagues (2006) conducted a three-month study of the behavioral ecology of this group of 16 gorillas (2 adult silverback males, several adult females, juveniles and infants), monitoring daily habitat use, diet, daily path length, and group cohesion. The researchers were particularly interested in how much time the gorillas spent outside the National Park boundaries, and whether their behavioral ecology differed once outside the park.

Over a 36-day follow, the Nkuringo group of gorillas nested within the park on only one occasion and, on two other days, nested almost 1 km outside the park, within meters of the main road. Spending most of their time outside the park, the gorillas consumed large amounts of nonforest food (domestic banana pith, eucalyptus bark, and sweet potato leaves). Almost half the trails outside the park were in open agricultural areas. Unlike gorillas inside the park, this group traveled shorter daily distances, and demonstrated a type of “home-base” nesting strategy (nesting cohesively and often reusing sleeping sites over consecutive nights).

These preliminary findings provide clear evidence that the Nkuringo Group explores and exploits human-inhabited areas. Increased contact with humans in agricultural areas around National Parks may increase the gorillas’ risk of contracting diseases (e.g., outbreak of scabies in the Nkuringo group, Nkurunungi, 2001). Increases in crop raiding may lead to further conflict with local communities, already a concern to communities around Bwindi (Nkurunungi, 2001; Biryahwaho, 2002).

While the habituation process may pose a threat to gorillas, gorillas that are overly habituated to humans (e.g., rehabilitated orphaned gorillas) may pose a danger to tourists by responding unpredictably. For example, a gorilla at Lefini Reserve (Republic of Congo) charged, “attacked,” and jumped onto a pirogue (small boat) containing people (King *et al.*, 2005). Larger “buffer” distances between rehabilitated gorillas and tourists may be necessary. Some researchers suggest that “de-habituation” of rehabilitated gorillas should take place, with all human contact minimized or eliminated (Carlsen *et al.*, 2006, p.33).

6.2. *Disease Transmission as a Potential Threat to Gorillas*

Regular checks on the website of the World Health Organization (WHO), with its information about the latest disease outbreaks, can make even the hardest of individuals feel uneasy. As a result of international travel and trade, emerging infectious diseases have the potential to spread globally, as witnessed by the new coronavirus (SARS), which traveled globally within its incubation period. For example, one infected man traveled by plane from Singapore to New York to Germany before he was hospitalized (World Health Organization, 2003a, 2003b). The WHO took the unprecedented step of advising travelers to avoid Hong Kong, southern China, and Toronto. Disease risks vary depending on the type of travel undertaken (e.g., package tours or independent), and the type of tourist (e.g., businessperson, soldier, backpacker). Nevertheless, all tourists “may be susceptible to diseases transmitted

during travel, and these may be more common than is presently recognized . . . all such infections may be transported around the world within their incubation period” (Green and Roberts, 2000, p.560).

Genetically similar to humans, gorillas are extremely vulnerable to human diseases, with a common cold potentially life threatening to wild populations, which may have no natural immunity. Similarly, although the risk may be small, the potential exists for humans to be exposed to potentially deadly new viruses (Homsy, 1999). Sick tourists and staff are prohibited from tracking gorillas in Uganda and Rwanda. However, this “sickness rule” cannot be monitored effectively, since most people are only capable of recognizing obvious symptoms of illness (e.g., coughs, sneezes, rashes or stomach ailments), and could be shedding viruses or bacteria before or after symptoms have appeared (Homsy, 1999). The self-report rule depends on the honesty of the individual tourist and staff member. The provision and use of facemasks (and safe collection and disposal of them afterwards) when viewing gorillas may bring home these issues more emphatically.

The minimum distance of five meters or 15 feet (the “buffer distance” rule) previously in place at the tourist sites in Uganda was considered inadequate to protect gorillas from the risk of disease transmission, and has been increased to seven meters (Homsy, 1999; Lanjouw *et al.*, 2001). In the absence of wind, sneeze particles can travel 6 m (20 feet), influenza can be transmitted up to 20 m, and other airborne organisms may travel even further in favorable wind and ultraviolet light conditions (Homsy, 1999). To protect primates from human diseases in zoos, Plexiglas structures are often built as a barrier. The only protection that is afforded to wild gorillas is the strict enforcement of an adequate minimum distance. Unfortunately, it is the one rule that the guides and park staff report that they have the most difficulty enforcing (Homsy, 1999).

Homsy (1999) points out that researchers have tended to focus on the risk of tourists passing on respiratory infections to gorillas (e.g., measles, tuberculosis, pneumonia, influenza, and respiratory syncytial virus). Disturbingly, measles microbes can travel great distances in the open (especially if it is windy), and polio microbes can survive in the soil for several months (Homsy, 1999). There are, however, many other diseases that can be contracted by gorillas if they come in contact with human faeces or fomites (inanimate objects). Hepatitis A and B viruses, shigella, trichuris, herpes simplex, scabies, polio, and intestinal worms may pose an even greater threat to the ultimate survival of wild populations of gorillas (Homsy, 1999). The habituation process may cause stress, which in turn may exacerbate diseases, such as scabies or sarcoptic mange (McNeilage, 1996; Woodford *et al.*, 2002).

Research following the baseline studies of intestinal parasite fauna of mountain gorillas prior to tourism (e.g., Ashford *et al.*, 1990, 1996) suggests that exposure to tourists and other humans in the parks (thereby making it impossible to determine whether the origin of the parasites is from tourists or other groups of people) has introduced new parasites or altered the natural

parasite fauna of the mountain gorillas. New parasites found include *Entamoeba*, *Trichuris*, *Chilomatix*, and *Endolimax nana* (Homsy, 1999). More recent baseline studies measure differences in prevalence of infection in different primate species within the same area (e.g., baseline study of intestinal parasites of western lowland gorillas, chimpanzees, agile mangabeys, and humans working at the Mondika Research site at Dzanga-Ndoki National Park, Central African Republic, Lilly *et al.*, 2002).

Evidence for disease symptoms, for lack of current vaccinations, and for ongoing infectious diseases in both tourists and a local community was found in a study conducted at the Kanyanchu chimpanzee tourism site (Kibale National Park) in Uganda (Adams *et al.*, 2001). This study is of relevance to gorilla tourism, since more than two-thirds (67%) of the total tourists surveyed had either already visited, or were planning to visit, gorillas or other chimpanzees. In Uganda, it is possible for tourists to visit orphan chimpanzees at Ngamba Island Chimpanzee Sanctuary, as well as wild chimpanzees and gorillas at several tourist sites all within one to two weeks (Litchfield, 2001a).

Based on the self-reported medical histories of 62 tourists (predominantly European), Adams *et al.* (2001) found that few were currently vaccinated against influenza (3%), mumps (21%), or measles (37%). Almost half were not vaccinated against tuberculosis, and about a third were not vaccinated against viral hepatitis A or polio. Symptoms of illness experienced during their visit to Africa included diarrhea (>50%), coughing (>10%), fever, vomiting, and general illness (all >5%). Disturbingly, five cases of herpesvirus, six of influenza, and one of chickenpox were considered infectious at the time of visit. With respect to tuberculosis, less than 50% of the tourists had ever been tested. Three people (10%) reported having had positive intradermal skin test results, indicating that they may have been infectious at the time of their visit. This study provides evidence that the potential exists for tourists to spread infection to more than one wild group of gorillas and/or chimpanzees.

Wallis and Lee (1999) point out that researchers (and visitors) who work with laboratory apes in the United States undergo stringent testing procedures for tuberculosis (at least annually) and usually wear gloves and masks if they come in contact with the apes. Yet, ironically, these same people can visit gorillas in the wild, without having to take similar precautionary measures.

Tourists are not the only humans encountered by wild populations of gorillas (Butynski and Kalina, 1998). A number of gorilla groups are also exposed to gorilla conservation workers, local communities, and illegal extant communities (MGVP/WCS, Chapter 2, this volume).

6.3. *Tourist Purchases as a Potential Threat to Gorillas*

Poaching may be encouraged inadvertently if tourists purchase inappropriate souvenirs, such as souvenir drums made of supple duiker (antelope) skin rather than cow hide in Uganda. Duikers are trapped illegally in wire snares

set in forests and National Parks, and gorillas (and chimpanzees) are maimed, crippled, or killed by these snares (Weber and Vedder, 2001). Many African souvenirs are made of animal products (bones, skulls, and skins), and tourists must make a concerted effort to find out what they are buying (Friends of Conservation, 2002).

Well-meaning tourists may buy malnourished and suffering orphaned gorillas or chimpanzees, inadvertently supporting trade in great ape infants. Money made this way encourages dealers and poachers to obtain other infants illegally. Currently, African primate sanctuaries (of the Pan African Sanctuary Alliance or PASA) care for 80 orphaned gorilla infants, 700 + chimpanzees, and 45 bonobos—"by-products" of the bushmeat trade, surviving the slaughter of mothers or other members of their community (Carlsen *et al.*, 2006).

Curiosity of some tourists to taste "exotic" meat (even that of endangered species), potentially increases demand for bushmeat (Barlow, 2001). Tourist consumption of domestic animal meat in Africa may contribute to destruction of habitat for cattle grazing (Goodall and Bekoff, 2002). Early index cases of human disease epidemics may be traced to close contact with infected animals that are butchered and eaten. Cases of human plague have been attributed to consumption of raw infected camel liver in Saudi Arabia (Bin Saeed *et al.*, 2005), and humans have contracted SARS-CoV from a restaurant serving palm civets in China (Wang *et al.*, 2005). In gorilla habitat countries, Ebola kills people who butcher and eat infected or dead chimpanzees and gorillas, and eating nonhuman primates or keeping them as pets has allowed HIV and Simian Foamy Virus to emerge in humans (Wolfe *et al.*, 2005).

Sanctuaries play an important role in conservation education and tourism, with orphaned apes serving as powerfully emotive messages for the plight of African apes (Farmer and Courage, Chapter 3, this volume). Open and informed discussion and dissemination of information about disease transmission, and unsustainable and unsafe consumption of meat, is vital for gorilla and human health and survival (Wolfe *et al.*, 2005). Recommending that tourists avoid eating meat whilst in Africa may be a good message to promote. As with information about disease transmission, visitors should be provided with details regarding appropriate tourist purchases prior to their trip.

7. Strategies to Minimize Potential Threats to Gorillas

A number of strategies have been implemented to attempt to minimize the potential threat to gorillas that tourism may pose, as mentioned in the previous section. This section will examine these, as well as other general approaches that have been employed to help protect gorillas.

7.1. Minimizing the Potential for Human–Gorilla Conflict as a Result of the Habituation Process

The habituation of gorillas for tourism has the potential to increase human–gorilla conflict, since it may lead to gorillas that crop raid as a result of spending increased amounts of time outside protected areas. The International Gorilla Conservation Programme’s “Human Gorilla Conflict Force” (HUGO) was developed to deal with the problem of crop raiding by gorillas. Special ranger groups (local community members and park rangers) have been trained to patrol boundary areas, and use loud noises (e.g., bells or drums) to “herd” gorillas back into the national park (Lanjouw *et al.*, 2001). Despite such attempts to alleviate conflict between gorillas and farmers, gorillas may still be killed while crop raiding. Recently, a three-year old gorilla (Bahati) was killed in a corn field near the border of Parc National des Virunga in DRC, after stones and wood were hurled at his family who had consumed 235 corn stalks (Kiyengo and Binyeri, 2003). If a site is to be developed for gorilla tourism, opportunities for creating buffer zones (e.g., nonpalatable crops), or physical barriers (Lanjouw *et al.*, 2001) should be explored and implemented before the habituation process begins.

7.2. Minimizing the Potential for Disease Transmission and Inappropriate Tourist Purchases

As long as humans enter the habitat of the gorilla, the potential for disease transmission exists. Relatively long incubation periods and rapid travel between countries make the adoption of standardized guidelines and rules at *all* gorilla sites vital. How do researchers themselves fit into the current picture? Are they a special category of tourist? Unlike tourists who are restricted to a one-hour visit with gorillas, researchers may sometimes conduct “nest-to-nest” follows, which involve observing gorilla behavior from morning (when they leave their nests), until evening (when they build and retire to their nests). Strict monitoring of health and inoculations of all visitors and workers should form part of regular routines at all gorilla sites (Adams *et al.*, 2001). The Dian Fossey Gorilla Fund International (DFGFI) has a two-week quarantine period for any researcher working with habituated gorillas (Tara Stoinski, personal communication).

Standardized guidelines and rules (health and tourist behavior and purchases), particularly the reasons behind them, must be provided prior to the tourist or researcher’s arrival at gorilla sites (Macfie, 1997; Litchfield, 2001a). As Homsy (1999) maintains, “the best hope for a least damaging tourism programme resides in the widespread sensitisation, awareness and understanding of the catastrophic consequences of unconscious gorilla tourism” (p.57). Educational interpretation, which moves beyond provision of basic information to a more challenging, engaging, and explicit discussion of latest research, current threats (including those posed by tourism), concrete

suggestions for activism (on behalf of gorillas) may help to alleviate problems associated with gorilla tourism (Russell, 2001).

7.3. *Other Strategies for Protecting Gorillas*

Gorilla tourism has the potential to serve as a model for *responsible* tourism with endangered species. As a result of the serious threat that human diseases pose to gorillas, perhaps the most stringent guidelines for any form of wildlife tourism exist. Vets and other researchers linked with the Mountain Gorilla Veterinary Project and the Wildlife Conservation Society (MGVP/WCS, Chapter 2, this volume) have been able to pioneer the application of conservation medicine principles to ecosystem and human health and gorilla health. This holistic ecosystem health approach recognizes the importance of health monitoring of all humans, domestic animals, and wildlife. A *Population and Habitat Viability Assessment* (PHVA) serves as a first and most vital step in formulating a practical conservation management program for the survival and recovery (e.g., at Lossi) of gorillas in a particular country or region (Miller *et al.*, Chapter 8, this volume). The mountain gorilla PHVA held in Uganda stressed the importance of tourism as part of the overall conservation management strategy (Werikhe *et al.*, 1997; Litchfield, 2001a).

Responsible tourists and the tourism sector might serve to highlight the threat that the illegal bushmeat trade poses to gorilla conservation and international animal and human health (Peeters *et al.*, 2002). In 2001, spot checks at London's Heathrow airport netted 5.5 tons of bushmeat, including "bits of gorilla" (Lawrance, 2002, p.2). As much as 17,484 tons of illegal meat enters the United Kingdom per year from outside the European Union (a conservative estimate), with West Africa and South Africa as the top five contributors to the total flow (Department of the Environment, Food and Rural Affairs, 2003). In Australia, it is illegal to bring in meat, and 48 teams of detector dogs at Australian international airports sniff out such items (Department of Agriculture, Fisheries and Forestry, 2006). Following a pilot scheme at Heathrow airport of two detector dogs, there are still only six teams of such dogs in the UK (Duggan and Jarvis, 2003; National Audit Office, 2005). By engaging, educating, and encouraging proactive behavior in *responsible* tourists, they may be enlisted to help protect gorillas.

8. Conclusion

"Yes, we assured him, there were thousands of crazy white people out there who would pay a lot of money to hike through the cold rain and steep terrain to sit with wild gorillas. The director laughed at the notion. *Beaucoup d'abazungus fous?* Yes, that much we could vouch for: the world was full of crazy white people" (Weber and Vedder, 2001, p.157).

Despite a history spanning 30 years, it is too soon to determine whether responsible tourism with gorillas is a sustainable option—at any site, or in any country or region. In the short-term, mountain gorilla tourism has been adversely affected in Rwanda and the Democratic Republic of Congo (and to a lesser extent in Uganda following, for example, the massacre of tourists at Bwindi). Within its shorter history, lowland gorilla tourism has been destroyed at the Lossi Gorilla Sanctuary (Republic of Congo), and the same threat of Ebola (and the bushmeat trade) hovers over other western lowland gorilla tourism sites. Whether tourism with Grauer's gorillas at Kahuzi-Biega National Park can be resurrected is unclear at the present time. Nevertheless, the local chiefs and thousands of children from the town of Bukavu appear keen to protect the remaining gorillas and this World Heritage Site as a future “main pillar of tourism” (Iyatshi and Schuler, 2003, p.3; Kyalangalilwa *et al.*, 2003).

If governments are supportive, standardized guidelines are followed, comprehensive health monitoring is implemented, local communities are involved, rebel activity is contained, and public interest (both local and global) in conserving gorillas is aroused, tourism may become a sustainable option at some sites. Since the ultimate survival of mountain gorillas depends on the political and social situations prevalent in three countries (Uganda, Rwanda, and DRC), a regional approach to conservation management and tourism is most likely to succeed (Lanjouw, Chapter 13, this volume). It could be argued that survival of *all* gorillas may depend on a more collaborative regional or transboundary approach (ECOFAC lowland gorilla tourism sites already collaborate), which allows investment costs to be shared (e.g., training, marketing, and policy development), potentially leading to increases in tourism revenue and avoidance of competition between sites (Lanjouw *et al.*, 2001). All gorilla tourism sites could then use the stringent and carefully developed standardized guidelines for mountain gorilla tourism, similar interpretative or educational material, and successful training procedures for staff and tourism-linked enterprises for local communities, and health monitoring programs.

For economic and ecological sustainability to be achieved, an optimal number of visitors must visit gorilla tourism sites—a steady stream of low numbers. Every human visitor can make a difference to the ultimate survival or demise of gorillas. The interest and support of *responsible* tourists at *responsible* sites may help some populations of gorillas survive, and can help promote the concept of Heritage Species status for gorillas and other apes (Wrangham, 2000; Wrangham *et al.*, Chapter 14, this volume). Tourism itself can promote world peace and support global Peace Parks or transfrontier protected areas (Lanjouw *et al.*, 2001; International Institute for Peace Through Tourism, 2006). Responsible tourists can serve as ambassadors for gorillas, raising awareness of their plight.

Responsible tourism with gorillas: conservation tool or conservation threat? Many conservationists do not believe that gorillas should have to be the focus of tourism—paying for their own conservation (Werikhe *et al.*, 1997).

Ethical considerations (e.g., ape rights affording gorillas ethical and legal protection) may one day call a halt to gorilla tourism and some field research (not directly of benefit to welfare and conservation of gorillas), which might be considered too intrusive and exploitative (Butynski, 2001; Goldsmith, 2005). Funding mechanisms independent of tourism may provide the gorillas' greatest hope of survival, but until these become a reality, and since "eco-tourism is unlikely to go away" (Russell, 2001, p.41), well-informed *responsible* tourists and researchers may serve as an increasingly effective international voice for gorilla conservation.

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