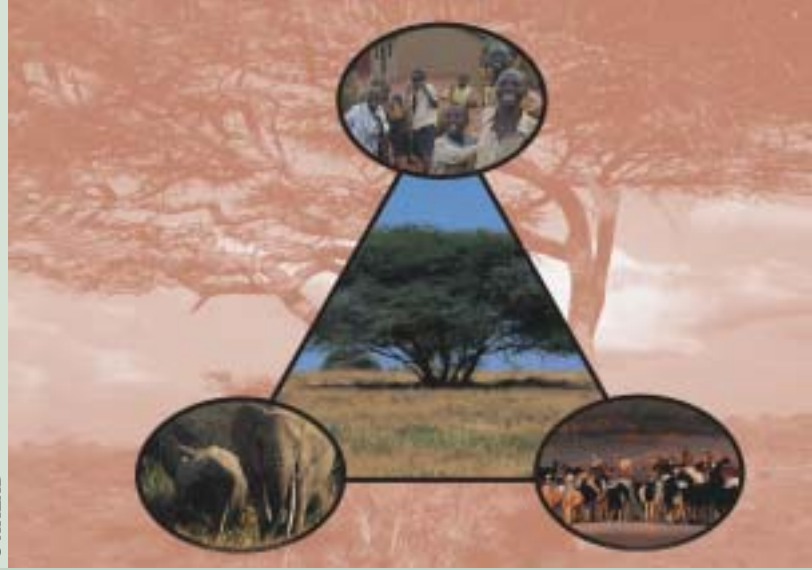


chapter 5

© AHEAD



Building support for protected areas using a “One Health” perspective

by Steven A. Osofsky, Richard A. Kock, Michael D. Kock, Gladys Kalema-Zikusoka, Richard Grahn, Tim Leyland and William B. Karesh

Editor’s introduction

Issues affecting the interplay among wildlife health, the health of domestic animals, and human health are receiving inadequate attention from protected area managers. This chapter encourages an innovative framework, called the “One Health Paradigm,” by taking a broad ecological definition of health that brings together many disciplines that too often have remained isolated from each other. This ecosystem approach to health issues is especially pertinent in the parts of the world where domestic animals often interact with the wild species of greatest interest to protected area managers. Steve Osofsky and his colleagues also provide a perspective on the many relationships between the health of wildlife and the health of people living in the often-remote areas adjacent to protected areas, where human health care

is often in short supply. Building a more appropriate response to the problems of disease transmission across the interface between wildlife and domestic animals can also lead to improvements in the health status of the people living around protected areas, thereby building a more positive attitude towards the protected area and conservation authorities. This chapter also emphasises the highly dynamic relationship between people, domestic animals, and wildlife, calling for significant investments in training, monitoring and research in order to ensure a healthy outcome for all concerned. The elements in the “One Health” paradigm provide a solid basis for building support for protected areas from those living near them and those working on human and animal health.

Introduction

In 1933, Aldo Leopold observed that “the role of disease in wildlife conservation has probably been radically underestimated” (Leopold, 1933). Despite this recognition early in the 20th century, conservation efforts worldwide are still being hampered because of their failure to recognise the critical role that health plays in animal population dynamics, species survival, and follow-on impacts on the human condition. Improving the health of people and their domestic animals is not only a key step to raising living standards and improving livelihood security, it is the single most effective way to reduce the incidence of disease transmission to highly susceptible wildlife populations (WCS FVP, 2003c), including those that live within or utilize protected areas.

Throughout the world, domestic and wild animals are coming into ever more intimate contact. Without adequate scientific knowledge and planning, the consequences can be detrimental on one or both sides of the proverbial fence. But with the right mix of expertise armed with the tools that the animal health sciences provide, conservation and development objectives have a much greater chance of being realized, particularly at the critical wildlife/livestock interface where conservation and agricultural interests meet head-on.

Infectious diseases are increasingly being recognised as important “emerging issues” by health specialists, disease ecologists, conservation biologists, wildlife managers, and protected area planners (Meffe, 1999; Deem *et al.*, 2002; Lafferty and Gerber, 2002; Aguirre *et al.*, 2002; Daszak and Cunningham, 2002; Graczyk, 2002; WCS FVP, 2003b; Kalema-Zikusoka, 2005; World Parks Congress Outputs 2003; Osofsky *et al.*, 2005). Examples of emerging diseases that have impacts on human health and biodiversity include:

- from 2001–2003 the Ebola virus killed dozens of people and wiped out hundreds of gorillas in central Africa (WCS FVP, 2003a) and remains of major concern;
- West Nile virus has afflicted a wide range of domestic and wild animals and people in North America (Marfin *et al.*, 2001);

- bovine tuberculosis (BTB) is now known to occur in buffalo, lion, and a range of other species in Kruger National Park (Clifton-Hadley *et al.*, 2001; Bengis, 2005; Michel, 2005);
- brucellosis is compromising bison populations in North America in terms of management implications (Bienen, 2002; Gillin *et al.*, 2002); and
- foot and mouth disease outbreaks in southern Africa affect livestock and wildlife as well as land-use policies over vast areas (Thomson *et al.*, 2003).

It is clear from these examples that the issues of health and disease need to be brought into the conservation mainstream (Osofsky *et al.*, 2000; Deem *et al.*, 2001; WCS FVP, 2003a).

Box 5.1

The *AHEAD* Initiative

The *AHEAD* (*Animal Health for the Environment And Development*) initiative, led by the Wildlife Conservation Society and partners, focuses on several themes of critical importance to the future of livestock, wildlife, and, of course, people: competition over grazing and water resources; disease mitigation; local and global food security; zoonoses (diseases transmitted between animals and people); and other potential sources of conflict related to the overall challenges of land-use planning and the pervasive reality of resource constraints. Prior to this initiative, neither non-governmental organizations, nor aid agencies, nor academia have holistically addressed the landscape-level nexus represented by the wildlife health/domestic animal health/human health triangle, especially as it relates to protected areas.

www.wcs-ahead.org

Impacts from interactions between livestock, wildlife and people (and habitat) are profound in many parts of the world. The issues at this interface represent an unfortunately all-too-often neglected sector of critical importance to the long-term ecological and sociopolitical security of protected areas and grazing lands worldwide. Whether the issue is the ongoing bovine tuberculosis crisis in and around South Africa’s Kruger National Park, or Yellowstone

Village meeting, Zambia.



© Steve Ososky, DVM

National Park’s ongoing brucellosis saga costing U.S. authorities millions of dollars to manage, these issues merit more proactive attention than they have received to date. It is important to note that many of the diseases of concern to landscapes of conservation importance are essentially invasive alien species, and are either already negatively affecting biodiversity or have the potential to do so. As people and their domestic animals penetrate once pristine areas and expand their range and intensity of activities, the risk of transmitting serious diseases to wildlife increases significantly. Diseases of people, domestic animals and wildlife are now being recognised as an increasing challenge to biodiversity conservation, as well as to efforts to improve the quality of life for people. Although endemic (i.e., native) wildlife diseases play important ecological roles, human activities in many cases have disrupted ecosystems, leading to both gradual and catastrophic losses of wildlife populations. A “One Health” approach is not about interfering with nature – it is about trying to help systems already perturbed by pathogens that may or may not “belong” within them to re-establish a state wherein disease does not threaten vital conservation and development objectives. Many factors affecting health and the basic epidemiology of multi-host diseases are still poorly understood, and conservation and wildlife management decisions are often made without complete information. The critical edge – where the health of wildlife, domestic animals, and people meld together and are best addressed as “One Health” – exists at the borders of most protected areas of the world.

The “One Health” paradigm: some basic concepts

People and the natural resources from which they derive their livelihoods are integral parts of their given ecosystem – a dynamic complex of plant, animal and micro-organism communities and the nonliving environment interacting as a functional unit. The World Health Organization (WHO) defines health as a state of complete physical, mental and social well-being and not just the absence of disease and infirmity (Deem *et al.*, 2001; Last, 1983), and this definition implies a link between human health and ecosystem integrity. Ecosystems provide vital services to human and animal communities, for example, by providing natural filtering systems, sources of food and fibre, and clean water (Rapport, 1998). Disruption of some of these natural services, these ecosystem “products,” will have impacts on air, water, and other renewable resources and thus health.

The concept of “One Health” – the interface between human health and that of the environment – is not new. During the 1960s and 1970s visionary attempts were made to construct a bridge between, for example, medicine and agriculture. Discussions on medical ecology and zoology, animal monitors of the environment, and comparative biology and medicine were the precursors to a more holistic approach to animal and human health (Schwabe, 1974). This concept has been further developed through programmes such as Envirovet (Beasley, 1993) and the development of ecosystem health as an integrative science (Rapport *et al.*, 1998).

The *AHEAD* approach fosters information sharing and consensus building among, for example, wildlife health scientists and rural livestock keepers.



© Robert A. Cook, WCS

The “One Health” concept takes *conservation medicine* a step further by broadening an ecological definition of health (Kock, 1996), while acknowledging that conservation medicine’s primary goal is the pursuit of ecological health – the health of ecosystems and the species that live within these systems (Else and Pokras, 2002; Tabor, 2002). Conservation medicine attempts to bring together many disciplines, including human and public health, epidemiology, veterinary medicine, toxicology, ecology, and conservation biology (Meffe, 1999). Adopting an ecosystem approach to health issues related to protected areas and the communities that live close to or in these areas represents an attempt to bridge the gaps that exist between the different disciplines and create an enabling environment for expanding benefits to both protected areas and local people. Conservation medicine indeed encourages practitioners to look both upstream and downstream for potential environmental impacts of land uses and activities (Tabor, 2002). A “One Health” approach can be attractive to a broader constituency, as it can be viewed with equal clarity through a conservation,

development, or public health lens. Powerful biomedical tools are fortunately available to address these complex issues and develop preventive approaches.

The state of health of an ecosystem can be judged by criteria very similar to those used for evaluating the health of a person or animal, namely, homeostasis (having balance between system components), absence of disease, diversity and complexity, stability and resiliency, and vigour and scope for growth. An ecosystem can be viewed as a patient (Rapport, 1998) and can be evaluated in terms of objective standards that relate to the system’s capacity for organization, vigour, and resilience. Identification and diagnosis of problems and the application of solutions along with biodiversity assessment and monitoring represent a basic approach to ecosystem health care. In biomedical terms this would be achieved through detection, diagnostics, prognostics, treatment, and prevention. In the case of ecosystem health, the precautionary principle supports an approach based on the tenets of preventive medicine – anticipatory

action to protect the environment from possible or irreversible harm (Calver, 2000). The “ecosystem as patient” metaphor can also help shape our overall approach to conservation: “Critical clinical problems mandate a rigorous diagnostic plan, a multifaceted therapeutic plan, clear communication, and short- as well as long-term monitoring. Critical conservation problems deserve no less.” (Osofsky, 1997). In addition, a *preventive* medicine approach allows for action to be taken with a causal relationship being reasonably suspected if not proven, thus lessening the risks of uncertainty.

The development of ecological indicators can yield powerful tools that can generate scientific information on the status or trends of important ecosystem health parameters (Sayre *et al.*, 2000). In parallel, epidemiological tools such as disease surveillance and monitoring can be linked to various indicators in terms of disease and health trends. The use of indicators will help simplify data for decision makers, and provide a focal point for strategic planning, policy formulation, resource allocation, and specific management actions (Boyce, 2003).

The wildlife-livestock disease interface in Africa

The wildlife-livestock interface means different things to different people. The many facets of the interface, such as health, conservation, environment, culture, and economics, have been issues since livestock became an integral part of the landscape. The interface has positive and negative aspects and it has been a source of conflict in many areas, often as a result of misunderstanding and polarization of opinion between ecocentric and anthropocentric forces in society (Boyd *et al.*, 1999). Attention here is given to those elements relevant to the health of the large mammal communities in Africa, where it is urgent to find solutions to the problems of abject poverty, poor health status for people and animals, and threats to the environment and biodiversity.

In Africa’s dry-land pastoral systems, livestock and people share resources with the most diverse array of wild ungulates on earth (R. Kock *et al.*, 2002). With improvements in human health care, the population is

growing exponentially but the economies of most countries are not keeping pace correspondingly. Poverty is both acute and widespread, with significant portions of the continent’s people living on less than US\$1 per day (FAO/UNEP/CGIAR, 2004). Communities are often food insecure, especially where land degradation is prevalent and social systems have broken down, which often happens during times of war or other unrest. Consequently, there is considerable international pressure to accelerate development and alleviate poverty (Thrupp and Megateli, 1999). With rapid economic development, environmental change and loss of biodiversity can be expected; indeed, this has been the experience in many countries, where one form of poverty is thus replaced by another.

Eighty percent of Africa’s population is rural and 70 million people are wholly dependent on livestock with no alternative source of food or wealth (AU/IBAR, 2002). Yet Africa accounts for only 2% of the total value of world trade in livestock and livestock products and imports twice as much as it exports, with the net imports increasing at 4% per year (Thambi, 2003). The single most important constraint on the African livestock export trade is the “Sanitary and Phytosanitary Measures” of the World Trade Organization (WTO) (OIE, 2003). The status of endemic livestock disease(s) in many African countries limits exports of meat, serving as a barrier to trade that is a key concern of policy makers. However, the impact of these trade-sensitive diseases is minimal within Africa, especially among pastoral livestock and poor farmers (Perry *et al.*, 2002). As the maintenance of these extensive livestock systems, and to some extent the close association between wildlife and livestock, is the main reason for the current disease status, pressure is building among certain political elements in Africa for changes that may threaten both traditional pastoral society and also wildlife resources (R. Kock *et al.*, 2002). These WTO rules are set up by the developed nations, essentially in their own self-interest, and African nations have not been able to influence changes in these regulations to their own advantage (Thambi, 2003).

Some feel that the international community’s desire to conserve Africa’s wildlife as a global environmental

good underpins its reluctance to support livestock development based on the belief that livestock is a major factor in land degradation and loss of wildlife (Bourn and Blench, 1999). However, positive environmental benefits can be attributed to well-managed livestock systems as much as poor management can lead to negative impacts (Mace, 1991). Often, livestock are only part of the picture in terms of the trend towards a general fragmentation of habitats and disruption of natural ecosystems, including the disappearance of large mammal species across much of their historic range, increases in agriculture and settlement, and disruptions to traditional systems of transhumance and mobility. Recent studies have shown that pastoralists' strategies are optimal for sustaining communities and resources, and that they are a force in conserving the environment to the benefit of wild species (Roth, 1996; Scoones, 1994).

The improved understanding of the role of livestock in dry lands is accompanied by an increasing awareness of a new potential value of the wildlife resource through community-based management. Ecotourism and other forms of utilization (both consumptive and non-consumptive) are becoming increasingly important in the economies of at least some African countries (Chardonnet *et al.*, 2002;

Jansen *et al.*, 1992; Cumming and Bond, 1991). To further support this, studies of mixed systems indicate considerable environmental benefits as well as economic ones in some settings (Western, 1994). It can be argued that one of Africa's main advantages (perhaps the only one in economic terms) over the rest of the world is its extensive and diverse wildlife resource, which is so attractive to tourists. This is not to say that livestock are not important on the continent but, to put it into context, Chile and Argentina taken together currently have a larger livestock industry than all the countries of Africa combined (FAO, 2003). So to sacrifice wildlife in favour of developing a competitive commercial livestock sector has little justification, but to develop both wildlife and livestock resources together (not necessarily defaulting to one or the other exclusively) is a key to efficient utilization of available resources.

Given the economic benefits of wildlife, health issues are an increasing concern in this field especially where epidemics and chronic disease problems occur as a result of *introduced* (alien) disease. A review of the co-existence of livestock and wildlife (Bourn and Blench, 1999) reported that wildlife disease was not a constraint, but lack of information on diseases in the field makes this a risky conclusion. Other studies have found that disease can

Plains zebra, southern Africa.



adversely affect wild animal population dynamics in the short and long term (Hudson and Dobson, 1989; Rodwell *et al.*, 2001; Jolles, 2003; Lankester, 2003; Hwang, 2003) and increases the risk of the extinction of rare species (Andanje, 2002). The initial impacts of exotic disease can be devastating and depress population growth for decades (Mack, 1970; Plowright, 1982; Kock *et al.*, 1999); conversely, control or eradication of these pathogens can lead to dramatic recovery of populations (Sinclair, 1970). The more subtle effects of disease are to make the population more susceptible to other impacts, such as predation, and effectively depress numbers well below limitations related to food resource available (Joly, 2003). The decision on what to accept as a natural or an acceptable disease dynamic within a biological system may well in the end be a value judgement, but in terms of resource use, consumptive or otherwise, depressed populations will limit the options.

The emergence of wildlife and livestock disease in many parts of the world is partly a result of the expansion of human and livestock populations into wildlife areas, with dramatically disturbed habitats and novel interactions, but may also reflect increased awareness and monitoring of diseases. The trend towards establishing larger and more integrated wildlife systems is also evident in Africa, e.g., through transfrontier parks (Gelderblom *et al.*, 1996) and extension of wildlife management areas into communities, conservancies, and wildlife corridors (IIED, 1994; Hulme and Murphree, 1999). Clearly, conserving wildlife requires a more integrated approach that will incur costs. These initiatives will inevitably be a compromise with other land use practices, and will result in complex disease phenomena (Rosenzweig, 2003) that will need novel solutions and interventions – ideally proactive ones. This is the contemporary challenge to the veterinary community, disease biologists, development specialists, and protected area managers alike. It is vital that the interests of livestock keepers living around protected areas are taken into account in the management of the wider wildlife systems.

Conditions have changed significantly over the past century, with many examples of transcontinental disease introductions (rinderpest, BTB) causing

persistent problems in wildlife and livestock populations. The wild species had not been exposed to these agents for millennia, so no co-evolution of host and disease agent had developed, with serious and persistent consequences (Bengis *et al.*, 2002; de Lisle *et al.*, 2002). Besides these initial introductions of major diseases through importation of livestock to the continent, the co-existence of people and their livestock with wildlife is not governed by “natural” mechanisms; at best they are only partially integrated, especially in pastoral systems when contact may occur seasonally or only in drought years. Thus endemism of disease organisms is disturbed and this is another reason the interface deserves close attention.

Countries where extensive wildlife populations are integrated with pastoral systems have no possibility of effective separation. In these locations the proposed solution is the creation of small export zones from which wildlife is excluded. Effectively, this means the creation of ‘protected areas’ for livestock, where foot and mouth disease, for example, can be controlled. This approach could resolve the conflict and provide the opportunity for commercial livestock development without much affecting the important wildlife resources in these parts of Africa. This would also support the culture and traditions of pastoral peoples. The concept does not exclude the opportunity for links between pastoral communities and the export zones, although a system of quarantine and the mechanisms for this would need to be explored. A fundamental issue relates to product quality and market preferences, and it will be interesting to see if some improved penetration into markets can be achieved for range or pastoral cattle (Thomson *et al.*, 2004). As the loss of key grazing resources has been a factor in the decline of pastoralism, this potential reconnection with mainstream livestock economics and what would amount to fattening areas could strengthen the overall livestock economy and reduce pressure on protected areas, which are frequently used for this purpose. This will also enable traditional peoples to benefit from a mixed-species system and develop wildlife-related livelihoods in addition to their livestock, while bypassing the veterinary restrictions that have been a constraint to market access.

The “One Health” paradigm and protected areas

In balancing the needs and expectations of Africa’s rural inhabitants with those of wildlife conservationists, including protected area managers, it is necessary to consider how disease interactions influence human, livestock, and wildlife health (WCS, FVP, 2003a, 2003b; Kalema-Zikusoka, 2005; Kock, 2005b; Bengis, 2005) while keeping in mind that the role of wildlife health in conservation goes beyond the presence or absence of disease ([Mainka, 2001](#); [Deem *et al.*, 2001](#)). Wildlife health, in the broadest sense, is a holistic concept with a focus on populations and the environments in which they live. This focus must of course include human populations and livelihood needs, especially at the wildlife-livestock interface. While some caution is merited to prevent making too simplistic a linkage between “ecosystem health” and “human health,” potentially at the expense of wildlife and conservation funding ([Osofsky *et al.*, 2000](#)), it is clear that a paradigm shift in Africa is needed. Health is the key linkage that can contribute to human well-being and, therefore, serve as a logical entry point to promote environmental stewardship and healthy ecosystems ([Margoluis *et al.*, 2001](#)).

In many instances, both historically and currently in Africa ([Kock *et al.*, 2002](#)), disease control methods that have been adopted by veterinary and health authorities have been drastic, have had a significant negative impact on ecosystem health and biodiversity, and have rarely considered the broader issues

surrounding and influencing health. Classic disease control methods include vaccination, test and slaughter, blanket slaughter, vector control, and movement controls including fencing. Many of these require “out-of-the-box” thinking by traditional veterinary and animal health authorities, including the promotion and legalization of community-based animal health systems. The indiscriminate use of fencing to control disease transmission between livestock and wildlife without considering connectivity and vital linkages between ecosystems is an example of a cause for concern ([Albertson, 1998](#); [Keene-Young, 1999](#); [Scott Wilson and EDG, 2000](#); [Thomson *et al.*, 2003](#); [Kock *et al.*, 2002](#); [Martin, 2005](#)).

Historically, African protected areas have been managed without due concern for the communities that live nearby. This “hard edge” approach has done little to foster support for conservation and environmental issues and this legacy can be seen in the lukewarm response that the wildlife industry receives from politicians and other decision makers in many parts of postcolonial Africa ([Kock, 2005a](#)). In southern Africa, the adoption of community-based approaches to resource management, such as CAMPFIRE (Communal Areas Management Program For Indigenous Resources) in Zimbabwe, softened the hard edge and allowed communities to benefit from protected areas, be they national parks, game reserves, safari areas, or private conservation initiatives ([Child, 1995](#)). Other Community-Based Natural Resource Management (CBNRM) programmes continue to be developed and evaluated

Oxcart, Zambia.



in East and southern Africa (Murphree, 2000; DFID, 2002; Weaver and Skyer, 2005; Murphree, 2005; Lewis, 2005) including the DFID-funded Mpomiba project with 19 villages close to the Ruaha National Park in Tanzania and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ)-funded project with forty villages adjacent to the Selous Game Reserve. In Namibia, the National Community Wildlife Conservancy Programme has led to the registration of significant numbers of community-owned conservancies, many of which have entered into joint ventures with the private sector.

In general, pastoralist communities are likely to perceive the main CBNRM benefits to be the managed and more sustainable cropping of bush meat; increased revenues gained from consumptive tourism (hunting) and nonconsumptive tourism (wildlife viewing), or enterprise and employment opportunities in the tourism sector; as well as access to grazing and water resources for their own animals. Indirect gains come from investments in wildlife-related tourism, which lead to improved infrastructure such as roads, water mains, electricity and communications.

To ensure that these protected areas are able to provide the resource base for these benefits to communities, addressing disease issues should be an integral part of protected area planning and management and should involve veterinary and other health authorities. This is crucial as the impact of emerging and resurging diseases on the health of people, their livestock, and wildlife is likely to constrain the maintenance and development of protected areas and compromise conservation initiatives into the future. The potential for spread of bovine tuberculosis from Kruger National Park to surrounding human communities (Michel, 2005) is a case in point. In the 21st century, management of protected areas needs to go beyond just concern for improved relationships with communities through benefits such as cash returns related to CBNRM. It must consider the health of the overall ecosystem, including people, their livestock, and the flora and fauna that are part of the larger community.

Box 5.2

Transboundary management of natural resources and the importance of a “One Health” approach

The transboundary management of natural resources, particularly of water and wildlife, and the associated development of transfrontier conservation areas (TFCAs) has been a major focus of attention over the last few years in southern Africa. Twenty potential and existing TFCAs have been identified in the Southern African Development Community (SADC) region, involving 12 continental African member states. The TFCAs include many national parks, neighbouring game reserves, hunting areas and conservancies, mostly occurring within a matrix of land under traditional communal tenure. Altogether the proposed TFCAs cover about 120 million hectares.

Transboundary natural resource management and TFCA development have also been closely linked to emerging Spatial Development Initiatives (SDIs) and corridors within southern Africa. A key economic driver linking these conservation and infrastructure development initiatives is wildlife-based tourism that seeks to maximize returns from marginal lands in a sector where southern Africa enjoys a global comparative advantage. However, the management of wildlife and livestock diseases within the envisaged larger transboundary landscapes remains unresolved and an issue of major concern to other economic sectors in the region. The interactions at the interface between animal health, ecosystem services, and human health and well-being are also poorly understood, with the result that policy development is compromised by a lack of appropriate information and understanding of the complex systems and issues involved.

Whatever the potential of wildlife-based tourism to generate wealth in such areas, the current reality is that small-scale agro-pastoralists living in the adjacent communal lands depend greatly on livestock for their livelihoods. The need to balance their livelihoods and environmental security with the development of alternative land uses and opportunities gives rise to a very

Box 5.2 (cont.)

complex set of development issues. A central focus of these issues, and one that provides a unifying theme across sectors and disciplines, is that of animal, human and environmental health – “One Health”. Innovative and integrated approaches to disease and natural resource management based on sound knowledge and understanding are urgently needed. An integrated, interdisciplinary approach offers the most promising route forward in tackling these issues.

With the ongoing philosophical and practical expansion of the transfrontier conservation area concept, the needs of communities living in and near these areas must be addressed, as transfrontier conservation areas have the potential to have both positive as well as negative impacts on sustainable livelihoods. In particular, disease issues are a significant concern when contact between wild animals and domestic stock increases with changes in land-use patterns. Corridors themselves, designed to (re)connect protected areas, can serve not only as biological bridges for wildlife, but also for vectors and their pathogens – so thorough assessments of disease risks should be made *before* areas with potentially different pathogen or parasite loads are joined.

Livestock will remain critically important culturally and economically – and of course as a vital source of sustenance – in much of the region. However, when it comes to animal health programmes and policies in transboundary landscapes, where domestic as well as wild animals have opportunities to cross international borders, making the right decisions becomes even more critical.

There is probably no region on earth where animal health policies have had as tangible an effect upon the biotic landscape as in Africa. In many parts of the world, land-use choices are often driven by government (domestic and/or foreign) incentives or subsidies that can favour unsustainable agricultural practices over more ecologically sound resource management schemes. And the most obvious beneficiaries of more holistic management are small landholders and pastoralists: people who derive much of their subsistence directly from livestock, people who are almost always marginalized in African economies and political systems.

Wildlife and livestock disease issues will likely have a significant impact on the future development of sustainable land uses, transboundary natural resource management, biodiversity conservation, and human livelihoods in the marginal lands of southern Africa. Some 65% of southern Africa is semi-arid to arid where extensive livestock and wildlife production systems are the most suitable and potentially sustainable forms of land use. The need to arrest desertification and enhance the capacity of these marginal areas to generate wealth and sustain improved human livelihoods is of paramount importance to the region. There does not appear to be an existing formal policy on animal health and disease control for the TFCAs being developed, and this must be addressed sooner rather than later.

Source: Adapted from Cumming *et al.*, 2004 and Osofsky *et al.*, 2005.

Protected areas, human livelihoods, and healthy animals: how to improve conservation and development interventions

Disease is becoming increasingly recognised as a threat to wildlife conservation, especially for endangered species (Werikhe *et al.*, 1998). The relative risk is often increased by diseases that can be transmitted between closely related species, such as people and primates or cattle and buffalo. Transmission of such diseases at the interface of protected areas with human settlements can be exacerbated by mixing of people, wildlife, and domestic animals, for example, when wild animals leave the park boundaries, when domestic animals graze illegally within the park (Bengis *et al.*, 2002), and when tourists, researchers, and field staff enter protected areas to view primates (Macfie, 1992; Woodford *et al.*, 2002).

Protected areas and diseases

Disease transmission is of particular concern for local communities around protected areas, which in developing countries tend to be surrounded by some of the poorest of the population (Balmford and Whitten, 2003). Problem animals threaten these people’s lives and property (Karanth and Madhusudan, 2002), in some cases reducing the value of land around protected areas. In Uganda, with a gross domestic product (GDP) per capita-purchasing power parity of \$1200 (CIA, 2003), those community and rural settings have very limited basic health care because most people have no transportation and live at least 30km from the nearest health centre (Ministry of Planning and Economic Development, 1997; Homsey, 1999). This marginalized group also has very little access to information on zoonotic disease prevention because very little content has been developed for local education (Grant, 2002). Even when people manage to get to health centres, many centres are not adequately equipped to diagnose and treat diseases. This has resulted in a persistence of preventable diseases such as tuberculosis (TB) and scabies that can be transmitted between people, wildlife, and domestic animals.

Although there are relatively few documented cases of disease transmission between people and wild primates, the number of cases of suspected disease transmission is growing. A disease for which transmission from primates to people has been proven is Ebola, from a chimpanzee in Cote d’Ivoire (Formenty *et al.*, 1999) and, more recently, in outbreaks involving western lowland gorillas and chimpanzees (Leroy *et al.*, 2004). The origins of HIV in chimpanzees are of course now well-known (Gao *et al.*, 1999).

Chimpanzee.



© Digital Vision

Diseases that have reportedly been transmitted between domestic cattle and Cape buffalo (*Syncerus caffer*) in Africa include BTB (Woodford, 1982; De Vos *et al.*, 2001), rinderpest (Plowright, 1968; Kock, 1999), and foot and mouth disease (Dawe *et al.*, 1994; Chilonda *et al.*, 1999; Suttmoller *et al.*, 2000). Examples of disease transmission between species that are only distantly related include mongooses (*Mungos mungo*) in Botswana and suricates (*Suricata suricatta*) in South Africa that have contracted human TB (*Mycobacterium tuberculosis*) from rubbish heaps outside tourist lodges visited by someone with a chronic cough (Alexander *et al.*, 2002). A particularly dramatic example of disease transmission from people to wildlife is the outbreak of scabies – a skin affliction caused by mites – affecting mountain gorillas in southwestern Uganda’s Bwindi Impenetrable National Park (BINP) in 1996 (Kalema-Zikusoka *et al.*, 2002). This outbreak is thought to have been associated with scabies in the local human community.

Box 5.3

Case Study – Mountain Gorillas in Bwindi and the Virungas

Mountain gorillas and people are very closely related and are therefore potentially at risk of transmitting pathogens to each other (Ott-Joslin, 1993; Wallis and Rick, 1999). Approximately 300 of the estimated 655 mountain gorillas (*Gorilla gorilla beringei*) live in the 33,100ha of Uganda's Bwindi Impenetrable National Park (BINP). A small forest remnant in Sarabwwe, Democratic Republic of Congo (DRC), is contiguous with BINP. The remaining individuals of this highly endangered species are found in Rwanda, DRC and Mgahinga National Park in Uganda (McNeilage *et al.*, 2001). The area surrounding Bwindi and the Virungas has one of the densest human populations in Africa, with an estimated 200–300 people per km² (UWA, 2001). The establishment of BINP in 1991 restricted people's access to the forest to controlled activities such as tourism and research, while allowing multiple-use access for products such as medicinal plants, basket-weaving materials, and honey (UWA, 2001).

Bwindi gorillas have close contact with tourists and researchers (Macfie, 1992) and with local farmers when crop raiding (Madden, 1998) or foraging on community land. In addition to receiving inadequate health services and information, the local communities lack hygienic amenities such as clean water and pit latrines (Ministry of Planning and Economic Development, 1997; Homsey, 1999). These factors have resulted in a large percentage of people suffering from preventable diseases that can spread to gorillas. These include scabies, diarrhoeal diseases, measles, and TB (WHO, 2002). TB is exacerbated by a greater than 35% co-infection with HIV/AIDS (Kibuga, 2001) of which Uganda, Rwanda, and DRC are among the highest prevalence nations in the world (Castro, 1995) and are among the 22 countries contributing to 80% of the global TB burden (WHO, 2002).

Uganda Wildlife Authority (UWA), a national conservation authority, has developed an

ecotourism programme in BINP. Sustainable ecotourism is dependent on maintaining gorilla health, improving the welfare of local communities through tourism, and promoting the national economy. The welfare of local communities in BINP has been improved through tourism revenue (via sharing of funds), development of income-generating activities (selling crafts, food, and lodging), and employment in restaurants and lodging facilities (Kamugisha *et al.*, 1997; Ratter, 1997). The national economy is enhanced by the funds generated by mountain gorilla tourism, which amount to up to 50% of the overall income of the Uganda National Park System in some years (McNeilage *et al.*, 2001). However, successful management of gorilla health is undermined by an unhealthy buffer zone surrounding the gorilla habitat. According to the district medical personnel surrounding BINP, the most commonly treated diseases in people are malaria, respiratory tract infections, diarrhoeal diseases, scabies, ringworm, intestinal parasites, tropical ulcers, and eye infections, including river blindness (Robert Sajjabi and Benon Nkomejo, personal communication, 2001).

The first reported scabies outbreak in mountain gorillas occurred in 1996 in a tourist-habituated group of four gorillas adjacent to the Buhoma tourist site in BINP (Kalema-Zikusoka *et al.*, 2002). The source of the scabies was never determined, although people were suspected for two reasons: scabies is common in the local communities; and the gorillas' severe reaction to the disease indicated a lack of prior exposure to this mite from a closely related host. Four years later, a scabies outbreak occurred in another group of gorillas being habituated for tourism in Nteko parish, also in BINP, resulting in morbidity of some of the group. They, too, recovered with ivermectin treatment (Graczyk *et al.*, 2001). While the ivermectin treatment was successful, interventions addressing the public health situation around BINP were needed to prevent further outbreaks. In early to mid-2000, UWA conducted health education workshops with local communities to improve the situation. Over 1000 people in five of 19 parishes

Box 5.3 (cont.)

surrounding BINP participated in the community outreach, which included eight villages. During these participatory rural appraisal workshops, the team presented lectures in the local language to introduce diseases common in the BINP area that can be transmitted between gorillas and people. Prevention strategies were also discussed.

Protected area managers were initially concerned that the local community would believe the park authorities valued gorillas more than people. However, those communities that had directly benefited from the creation of the national park were actually very receptive to these ideas, and gave more recommendations than those communities that had received fewer benefits from the creation of Bwindi Impenetrable National Park. Recommendations from the communities were divided into three categories: medical, non-medical, and hygiene. Responsibility for implementation of improved practices was shared among government and local communities.

Having a multidisciplinary team of community conservation, wildlife health, human health, and education personnel appears to have been helpful. Additionally, the target communities seem to realize that healthy gorillas can generate income to support villages, which have already become trading centres as a result of ecotourism. Encouragingly, communities that received conservation education appear to have a greater understanding of the need to protect mountain gorillas both for conservation and a sustainable income (Kalema-Zikusoka *et al.*, 2001). By contrast, one community in DRC that had received very little conservation education and virtually no tourism or gorilla research benefits did not trust the participatory rural appraisal team enough to admit that they had seen gorillas.

Silverback Gorilla.



© Digital Vision

Health education appears to be a conservation tool that can bring the public health, wildlife conservation, and ecotourism sectors together. Local communities that received mountain gorilla ecotourism benefits recognised that they could protect mountain gorillas from human diseases by doing things like digging better pit latrines and covering rubbish heaps. However, some recommendations were beyond the communities' control, such as improving access to better health services or safer water. The lack of access to clean water not only contributes to a range of gastro-intestinal illnesses but also undermines efforts to control scabies, as the mites survive on dirty clothes that can be handled by curious wild animals, such as mountain gorillas (Fossey, 1983).

Improving conservation and development interventions

An integrated approach to controlling disease transmission between wildlife, people and domestic animals in a given area needs to be developed by a full range of stakeholders. This could start with dialogue among the affected communities and professionals from the wildlife, human health, veterinary, agriculture, education, media, and communication technology sectors, and could lead to sharing of knowledge using print, radio broadcasts, video, CD-ROM, handheld computers, databases, or the internet to play a supportive role in improving education and enhancing access to health information and services (Grant, 2002).

Multidisciplinary teams from these sectors could be established to carry out joint education, health training, and research programmes while helping to maximize the use of limited resources. Close collaboration among governments, non-governmental organizations, the private sector, universities, and schools is needed to develop effective and efficient programmes, focusing specifically on interrelated human and animal diseases such as (for example) TB, scabies, brucellosis, rabies, Ebola, avian influenza, West Nile virus and HIV/AIDS. Local involvement in designing these programmes is crucial for long-term success. These grassroots programmes would benefit from input from all key stakeholders to ensure that the materials developed would be relevant to the local situation and available in local languages. Participatory rural appraisal techniques can also help to promote local community ownership of the recommendations put forward.

Joint training programmes could involve medical and veterinary technicians carrying out laboratory work together; and could help wildlife personnel, veterinarians, medical doctors, and other health workers to carry out integrated education campaigns

on interrelated wildlife conservation and public health issues. In addition to promoting collaboration, local community involvement could be encouraged through “training of trainers” to educate others.

Research on interrelated wildlife conservation and public health issues should be encouraged to increase understanding of these links, and results should be shared with policy makers. Such research could help to identify the most common diseases that pose a threat to public health, wildlife conservation, animal agriculture, and ecotourism in a given area. Other research studies could help to evaluate local community attitudes and behaviour that facilitate disease transmission at the interface. Because public health is dependent on people’s behaviour, evaluation of programmes integrating wildlife conservation and public health should focus on how people’s behaviour is changing (or not) over time. Studies to determine how poor wildlife conservation and public health practices are affecting socio-economic development would be useful. Furthermore, research could explore models for sustainability for integrated conservation and public health programmes.

Kenyan children.



Developing “multiple use” health care and diagnostic services and facilities can potentially be more effective in preventing diseases that spread between people, domestic animals, and wildlife because information can be shared more easily. Sharing facilities and services could also save costs. Many places with wildlife have poorly developed infrastructure and few resources for transporting needed goods to the population. Tour operators and wildlife managers with access to good vehicles could help by transporting free medication, such as TB medication (WHO, 2002), to the people who need it. Such a programme has been carried out via the Healthy Community Initiative of the Kayapo Health Project in Brazil, where researchers bring malaria medication to people residing next to the forest (Margoluis *et al.*, 2001). Joint domestic and wild animal laboratories at the interface of protected areas and human settlements could help to facilitate information sharing and better control of disease outbreaks, as could functional community-based animal health systems made up of trained community members, under the supervision of veterinarians, who can provide services to the animals of fellow community members as well as assist in disease surveillance.

Finally, an integrated approach to wildlife conservation and public health can maximize the limited resources available to control disease transmission between wildlife, people and domestic animals at the interface. Funds from wildlife conservation could be allocated to public health, where it directly affects conservation, such as the case of scabies in the Bwindi mountain gorillas. Similarly, donor funds earmarked for health improvement could be allocated to wildlife conservation where it directly affects public health, such as the situation of people contracting Ebola from eating gorillas or chimpanzees (Leroy *et al.*, 2004). Beyond reducing the risks of disease transmission across the human-wildlife-domestic animal interface, a favourable outcome of improving the health status of local communities living around protected areas and of the domestic animals on which they depend is the potential to cultivate a more positive attitude towards wildlife conservation and public health. Developing new constituencies for conservation, especially local ones, is certainly worthwhile.

Conclusions

Disease is becoming an important issue in conflicts between protected area authorities and adjacent communities. These frequently poor communities increasingly perceive wildlife negatively, especially where they have no stake in the management or use of that wildlife resource. Under these circumstances disease outbreaks can trigger conflict, and historically, politics have dictated that interventions by public health and (agriculturally oriented) state veterinary services take priority: this usually has negative impacts on the wildlife resource. On the other hand, those same poor communities and livestock are seen as a threat to many protected areas as they compete with wildlife for resources and also because of a history of disease introductions. This situation is counterproductive for all concerned and cannot lead to better decisions being made for healthier ecosystems or human environments.

To reduce this conflict, as well as the risks and impacts of disease, in particular at the interface between wildlife and livestock but also at the interface with people, a “One Health” approach is required. Public education, training and awareness-raising regarding human, domestic animal, and wildlife health issues are crucial. In addition, more research on land-use and disease management at the interface is needed, as are new philosophies, attitudes, and approaches to livelihoods and resource use. New practical measures, such as multiple-use diagnostic centres, should be introduced in order to improve both animal and human health. This will be beneficial to community development and biodiversity conservation alike.

By raising the profile of the management, development, and research implications of the impacts of infectious diseases on the ecological and socio-political security of protected areas, especially in (but not by any means limited to) Africa, this chapter has sought to sensitize the reader to the critical importance of these issues. As socio-economic progress demands sustained improvements in health for people, their domestic animals, and the environment, the value of moving towards a “One Health” perspective is hopefully clear.

References

- Adams, Alexander B. 1962. *First World Conference on National Parks*. U.S. Government Printing Office, Washington, DC, USA.
- African Union/Interafrican Bureau for Animal Resources (AU/IBAR). 2002. Fact sheet on livestock production in Africa. *CAPE Unit Programme for the Control of Epizootics (PACE) Newsletter 2(1)*:8.
- Aguilar, L., I. Castaneda, H. Salazar (with Giselle Rodrigues and Jackie Siles). 2002. *In Search of the Lost Gender: Equity in Protected Areas*. IUCN, San Jose, Costa Rica.
- Aguirre, A.A., R.S. Ostfeld, G.M. Tabor, C. House and M.C. Pearl (Eds). 2002. *Conservation Medicine: Ecological Health in Practice*. Oxford University Press, New York, USA.
- Albertson, A. 1998. *Northern Botswana Veterinary Fences: Critical Ecological Impacts*. Okavango Peoples Wildlife Trust, Maun, Botswana. Accessed March 2004 at www.stud.ntnu.no/~skjetnep/owls/fences/index.html#impact
- Alem, Alfonso, A. Robles and M. de la Cruz. 2003. New Ways of Involving Local, Indigenous, and Traditional Populations in Protecting and Managing Non-material Value. PowerPoint presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12. Durban, South Africa.
- Alexander, K.A., E. Pleydell, M.C. Williams, E.P. Lane, J.F.C. Nyange and A.L. Michel. 2002. *Mycobacterium tuberculosis*: an emerging disease of free-ranging wildlife. *Emerg. Infect. Dis.* **8**:598–601.
- Alvarez, J.M. 2003. Conservation of Natural Resources and Biodiversity in El Salvador: The SalvaNATURA-SHELL Alliance. Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September 2003.
- Amaya, Maria Teresa. 2003. Exorcising Death in the Purace National Natural Park, Colombia. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.
- Amend, Stephan and Thora Amenda (Eds). 1995. *National Parks Without People? The South American Experience*. IUCN and Parques Nacionales y Conservacion Ambiental, Quito, Ecuador.
- Andanje, S. 2002. *Factors Limiting the Abundance and Distribution of *Hirola* (*Beatragus hunteri*) in Kenya*. PhD dissertation, Evolution and Behaviour Research Group, Department of Psychology, University of Newcastle upon Tyne, Newcastle, UK.
- Anderson, Mary B., L. Olson and K. Doughty. 2003. *Confronting War: Critical Lessons for Peace Practitioners*. The Collaborative for Development Action, Cambridge, USA.
- Andrade, G.I. 2000. The Non-material Values of Machu Picchu World Heritage Site: from acknowledgement to action. *Parks* **10(2)**:49–62.
- Argumedo, Alejandro. 2003. Indigenous Peoples and Sacred Landscapes: The Ausangate Spiritual Park. PowerPoint presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 13, Durban, South Africa.
- Arntzen, J.W. 2002. *An Economic View on Wildlife Management Areas in Botswana*. CBNRM Support Programme, Gaborone, Botswana.
- Austin, Duncan and A. Sauer. 2002. *Changing Oil: Emerging Environmental Risks and Shareholder Value in the Oil and Gas Industry*. World Resources Institute, Washington, DC, USA.
- Austin, Jay E. and C.E. Bruch. 2003. Legal Mechanisms for Addressing Wartime Damage in Tropical Forests. In: Steven Price (Ed.). *War and Tropical Forests: Conservation in Areas of Armed Conflict*. The Haworth Press, New York, USA.

- Baillie, Barry. 2002. New Gummut Awards for Holiday Parks. Presentation at Ecotourism Australia, 11th National Conference, 10–14 November 2003.
- Balmford, A. and T. Whitten. 2003. Who should pay for tropical conservation, and how could the costs be met? *Oryx* **37(2)**:238–250.
- Barktus, B.R., S.A. Morris and B. Sierfert. 2002. Governance and Corporate Philanthropy: Restraining Robin Hood? *Business and Society* **41(3)**: 319–344.
- Barnes, J.L. 1998. *Wildlife Economics: A Study of Direct Use Values in Botswana's Wildlife Sector*. Ph.D. thesis. University College, London, UK.
- Barnes, J.I. 2001. Economic returns and allocation of resources in the wildlife sector of Botswana. *South African Journal of Wildlife Research* **31**:141–153.
- Barnett, Jon. 2001. *The Meaning of Environmental Security: Ecological Politics and Policy in the New Security Era*. Zed Books, London, UK.
- Barrow, Edmund. 2003. Our Culture, Our Spirituality and Nature: Understanding and Integrating the Importance of Sacred Trees and Forests into Our Lives. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.
- Barrow, E. 2003. IUCN's ICD Experiences thus far and the Evolution to a Landscape Approach. Presentation at the Vth World Parks Congress, Durban.
- Barzetti, Valerie. 1993. *Parks and Progress: Protected Areas and Economic Development in Latin America and the Caribbean*. IUCN, Gland, Switzerland and Inter-American Development Bank, Washington DC, USA.
- Beasley, V. 1993. Ecotoxicology and ecosystem health: roles for veterinarians; goals of the Envirovet program. *J. Am. Vet. Med. Assoc.* **203**:617–628.
- Beazley, Olwen, Graeme Calma and Lynette Liddle. 2001. "Nganana Tatintaja Wiya", "We Never Climb": Uluru-Kata Tjuta National Park, Sustainable Management and Development. In: *Final Report of the UNESCO Thematic Expert Meeting on Asia-Pacific Sacred Mountains*. UNESCO, Tokyo, Japan.
- Beltrán, J. (Ed.). 2000. *Indigenous and Traditional Peoples and Protected Areas: Principles, Guidelines and Case Studies*. IUCN, Gland, Switzerland and Cambridge, UK and WWF International, Gland, Switzerland.
- BEN. 2004. *Black Environment Network*. BEN, Llanberis, Wales. www.ben-network.org.uk
- Bendell, J. 2000. Civil regulation: a new form of democratic governance for the global economy? In: Bendell, J. (Ed.). *Terms for Endearment: Business, NGOs and Sustainable Development*. Greenleaf Publishing, Sheffield, UK.
- Bengis, R.G. 2005. Transfrontier conservation area initiatives in sub-Saharan Africa: some animal health challenges. In: Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr and A. Yang (Eds). *Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health*. IUCN, Gland, Switzerland and Cambridge, UK.
- Bengis, R.G., R.A. Kock and J. Fischer. 2002. Infectious animal diseases: the wildlife/livestock interface. *Rev. Sci. Tech.* **21**:53–65.
- Berger, J., P.B. Stacey, L. Bellis and M.P. Johnson. 2001. A mammalian predator-prey imbalance: grizzly bear and wolf extinction affect avian neotropical migrants. *Ecological Applications* **11**:947–960.
- Bernbaum, Edwin. 2003. The Cultural and Spiritual Meaning of Mountains as a Basis for Interpretation and Conservation. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.

- Bhutia, Pema. 2003. Demazong: The Sacred Landscape: A community managed conservation site in Khangchendzonga, India. PowerPoint presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 13, Durban, South Africa.
- Bienen, L. 2002. Conservation corridors and the spread of infectious disease. *Conservation in Practice* **3**:11–17.
- Birckhead, Jim, Terry de Lacy and Laurajane Smith (Eds). 1992. *Aboriginal Involvement in Parks and Protected Areas*. Aboriginal Studies Press, Canberra, Australia.
- Bishop, J. 2003. Pro Poor Markets for Ecosystem Services. Presentation at the Vth World Parks Congress, Durban.
- Bodmer, R. E. 1994. Managing wildlife with local communities in the Peruvian amazon: the case of the Reserva Comunal Tamshiyacu-Tahuayo. In: Western, D., R.M. Wright and S. Strum (Eds). *Natural Connections: Perspectives in community-based conservation*. Island Press, Washington DC, USA.
- Bodmer, R.E. and P.E. Puertas. 2000. Community-based co-management of wildlife in the Peruvian Amazon. In: Robinson, J.G. and E.L. Bennett (Eds). *Hunting for sustainability in tropical forests*. Columbia University Press, New York, USA.
- Borrini-Feyerabend, Grazia. 2003. Governance of protected areas – innovation in the air... *Policy Matters* **12**: 92–101.
- Borrini-Feyerabend, Grazia. 2003. Community conserved areas (CCAs) and co-managed protected areas (CMPAs) – towards equitable and effective conservation in the context of global change. Report of the IUCN joint CEESP/WCPA Theme on Indigenous and Local Communities, Equity and Protected Areas (TILCEPA) for the Ecosystem, Protected Areas and People (EPP) project, April 2004.
- Bourn, D. and R. Blench (Eds). 1999. *Can Livestock and Wildlife Co-Exist? An Interdisciplinary Approach*. Overseas Development Institute (ODI) and The Environment Research Group Oxford (ERGO) Publishers, London, UK.
- Boyce, W. 2003. Ecological Monitoring in the Anza Borrego/Cuyamaca Region. Report prepared for California State Parks. Wildlife Health Center, University of California, Davis, CA, USA.
- Boyd, C., R. Blench, D. Bourn, L. Drake and P. Stevenson. 1999. *Reconciling Interests Among Wildlife, Livestock and People in Eastern Africa. A Sustainable Livelihoods Approach*. Overseas Development Institute (ODI) Natural Resource Perspectives. Accessed March 2004 at www.odi.org.uk/nrp/45.html
- Boyd, S.W. 2000. Tourism, national parks and sustainability. In: Richard W. Butler and Stephen W. Boyd (Eds). *Tourism and National Parks: Issues and Implications*. John Wiley and Sons, Ltd., New York, USA.
- Brandon, K., K. Redford and S. Sanderson (Eds). 1998. *Parks in Peril: People, Politics and Protected Areas*. Island Press, Washington, DC, USA.
- Brechin, Steven R., P.R. Wilshusen, C.L. Fortwangler and P.C. West. 2002. Beyond the Square Wheel: Toward a More Comprehensive Understanding of Biodiversity Conservation as Social and Political Processes. *Society and Natural Resources* **15**:41–64.
- Brechin, S.R., P.R. Wilshusen, C.L. Fortwangler and P.C. West. 2003. *Contested Nature: Promoting International Biodiversity with Social Justice in the 21st Century*. SUNY Press, Albany, NY, USA.
- Bronson, D. 2004. Engaging Canadians: Building Professional Communications in Parks Canada. In: Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.

- Brown, K. 2004. Trade-off Analysis for Integrated Conservation and Development. In: T.O. McShane and M.P. Wells (Eds). *Getting Biodiversity Projects to Work: Towards More Effective Conservation and Development*. Columbia University Press, New York, USA.
- Buckley, R. and J. Pannell. 1990. Environmental Impacts of Tourism and Recreation in National Parks and Conservation Areas. *Journal of Tourism Studies* 1: 24–32.
- Burton, R. (Ed.). 1991. *Nature's Last Strongholds*. Oxford University Press, New York, USA.
- Bushell, R. and S. McCool. [In press.] Tourism as a Tool for Conservation and Support for Protected Areas: Setting the Agenda. In: Bushell and Eagles (Eds). *Tourism and Protected Areas: Benefits Beyond Boundaries*. Forthcoming CABI publication.
- Butler, R.W. and S.W. Boyd (Eds). 2000. *Tourism and National Parks: Issues and Implications*. John Wiley and Sons, New York, USA.
- CA. 2004. *The urban challenge*. Cities Alliance, Washington, DC, USA. www.citiesalliance.org
- Calver, M.C. 2000. Lessons from preventive medicine for the precautionary principle and ecosystem health. *Ecosystem Health* 6:99–107.
- CARE-WWF Social and Environmental Justice Initiative. 2002. www.care-international.org/wssd and www.panda.org/mpo/wssd
- Carlisle, L. and S. Bagley. 2003. Tourism as a Tool for Conservation and Community Development. An African Private Sector Model: Conservation Corporation Africa. Paper presentation Vth World Parks Congress, Durban.
- Castelo, M. and S. Schielmann. 2001. *Information on United Nations Conferences, Bodies, and Instruments relating to Environmental Issues and Indigenous Peoples*. WWF International People and Conservation Unit, Gland, Switzerland.
- Castro, H., R. Abadia and S. Quesada. 2004. Strategic Intentions: Using Communications and Education to Support Biodiversity Conservation and Protected Areas. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Castro, H. and J. Wyss. 2004. Mass Media and Engaging Journalists: Supporting Biodiversity Conservation. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Castro, K.G. 1995. Tuberculosis as an opportunistic disease in persons infected with human immunodeficiency virus. *Clin. Infect. Dis.* 21(Suppl. 1): S66–S71.
- Cavalcanti, H.C. 2004. The Projeto Doces Matas and Communication, Minas Gerais, Brazil. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Ceballos-Lascurain, H. 1996. *Tourism, Ecotourism and Protected Areas: The State of Nature Based Tourism Around the World and Guidelines for its Development*. IUCN, Gland, Switzerland.
- Central Intelligence Agency (CIA). 2003. Uganda. In: *The World Fact Book*. CIA Publications, Washington, DC, USA.
- Cerneia, Michael and K. Schmidt-Soltau. 2003. The End of Forced Displacements? Making conservation and impoverishment incompatible. In: *Community Empowerment for Conservation, Policy Matters*. IUCN Commission on Environmental, Economic and Social Policy.
- Cerneia, Michael and K. Schmidt-Soltau. 2003. National parks and poverty risks: Is population resettlement the solution? Presentation at the Vth World Parks Congress, Durban.
- CFN. 2004. *Cape Flats Nature: The project*. Cape Flats Nature, Cape Town, South Africa. www.capeflatsnature.org

- Chape, S., S. Blyth, L. Fish and M. Spalding (Compilers). 2003. *2003 United Nations List of Protected Areas*. IUCN, Gland, Switzerland and UNEP-WCMC, Cambridge, UK.
- Chardonnet, P., B. des Clers, J. Fischer, F. Jori and F. Lamarque. 2002. The value of wildlife. *Rev. Sci. Tech.* **21**:15–51.
- Chatterjee, S., Y. Gokhale, K.C. Malhotra, S. Srivastava. Undated. *Sacred Groves of India. An Overview*. Indira Gandhi Rashtriya Manav Sangrahalaya, Bhopal, India.
- Child, G. 1995. *Wildlife and People: the Zimbabwean Success*. Wisdom Foundation, Harare, Zimbabwe and New York, USA.
- Child, G. and L. Chitsike. 2000. “Ownership” of wildlife. In: Prins, H.H.T., J.G. Grootenhuys and T.T. Dolam (Eds). *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Boston.
- Child, B. 2003. A comparison of the impact of top down versus bottom up CBNRM systems on incentives and accountability in the Luangwa Valley. Presentation at the Vth World Parks Congress, Durban.
- Chilonda, P., J.D. Woodford, B. Ahmadu, K.L. Samui, M. Syakalima and J.E. Mlangwa. 1999. Foot and mouth disease in Zambia: a review of the aetiology and epidemiology and recommendations for possible control. *Rev. Sci. Tech.* **18**(3):585–592.
- Christ, C., O. Hillel, S. Matus and J. Sweeting. 2003. *Tourism and Biodiversity: Mapping Tourism’s Global Footprint*. UNEP and Conservation International, Washington DC, USA.
- Christensen, J. 2004. Win-Win Illusions: Facing the Rift between People and Protected Areas. *Conservation in Practice* **5.1**:12–19.
- CIPA. 2001. *An ecosystem approach to natural resource conservation in California*. California Institute of Public Affairs, Sacramento, USA. www.InterEnvironment.org/cipa
- CIPA. 2004. *An intercontinental program on cities and conservation in Mediterranean-type ecosystems*. www.InterEnvironment.org/med-5
- Cirelli, M.T. 2002. *Legal Trends in Wildlife Management*. FAO, Rome, Italy.
- Clifton-Hadley, R.S., C.M. Sauter-Louis, I.W. Lugton, R. Jackson, P.A. Durr and J.W. Wilesmith. 2001. *Mycobacterium bovis* infections. In: Williams, E.S. and I.K. Barker (Eds). *Infectious Diseases of Wild Mammals, 3rd Ed.* Manson Publishing/The Veterinary Press, London, UK.
- CNP. 2004. *Mosaic: Building links between ethnic communities and national parks*. Council for National Parks, London, UK. www.cnp.org.uk/mosaic.htm
- Cochrane, P. 2001. *The Cultural Dimension to Nature-based Tourism: a case and future of jointly managed parks*. The Fenner Research Conference Nature Tourism and the Environment, Australian Academy of Science, Australia.
- Cock, J and D. Fig. 2000. From colonial to community based conservation: environmental justice and the national parks of South Africa. *Society in Transition* **31**(1):22–36.
- Colding, J. and C. Folke. 2001. Social taboos: “invisible” systems of local resource management and biological conservation. *Ecological Applications* **11**:584–600.
- Conca, Ken and G.D. Dabelko. 2002. *Environmental Peacemaking*. Woodrow Wilson Center Press, Washington, DC, USA.
- Conner, Nicholas. 2005. Some benefits of protected areas for urban communities: A view from Sydney, Australia. In: Trzyna, 2005.
- Conservation International and Tour Operators Initiative. 2002. *A Practical Guide to Good Practice: Managing Environmental and Social Issues in the Accommodations Sector*. Conservation International, Washington DC, USA.
- Convention on Biological Diversity (CBD). 2004. Web site updated March 2004. www.biodiv.org/default.aspx

- Convention of Biological Diversity. 2004. Conference of the Parties, Decision VII/28, Protected Areas (Articles 8(a) to (e)), www.biodiv.org/decisions/
- Council, N.R. 2001. *Marine Protected Areas: Tools for Sustaining Ocean Ecosystems*. National Academy Press, Washington DC, USA.
- Creasey R. and L. Fischer. 2004. Reduction of Footprint and Restoration of Function: An Approach to Cumulative Effects Management. In: *The Seventh Society for Petroleum Engineers International Conference on Health, Safety and Environment in Exploration and Production*. Calgary, Canada, 29–31 March 2004.
- Creel, S. and N.M. Creel. 1997. Lion density and population structure in the Selous Game Reserve: evaluation of hunting quotas and offtake. *African Journal of Ecology* **35**:83–93.
- CUBES. 2003. Submission to the Conference on Urban Biosphere and Society: Partnership of Cities. CUBES Cape Town Urban Biosphere Group, Cape Town, South Africa.
- CUBES. 2004. Cape Town Urban Biosphere Group; New York Urban Biosphere Group. Columbia University/UNESCO Joint Program on Biosphere and Society, New York, USA. www.earthinstitute.columbia.edu/cubes
- Cumming, D.H.M. and I. Bond. 1991. *Animal Production in Southern Africa: Present Practice and Opportunities for Peasant Farmers in Arid Lands*. WWF Multispecies Project, No. 22, Harare, Zimbabwe.
- Cumming, D.H.M. and the AHEAD GLTFCA Working Group. 2004. Sustaining animal health and ecosystem services in large landscapes: Concept for a program to address wildlife, livestock and related human and ecosystem health issues in the Greater Limpopo Transfrontier Conservation Area. Wildlife Conservation Society (WCS) AHEAD GLTFCA concept paper. 2nd draft, 24 pp. Accessed October 2004 at www.wcs-ahead.org/workinggrps_limpopo.html
- Cunha e Menezes, Pedro da. 2005. Raising the priority of urban areas in protected area systems in Brazil and beyond. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Dahlstrom, Asa Nilsson. 2003. *Negotiating Wilderness in a Cultural Landscape: Predators and Saami Reindeer Herding in the Laponian World Heritage Area*. Ph.D Thesis. Uppsala University, Sweden.
- Daszak, P. and A.A. Cunningham. 2002. Emerging infectious diseases: a key role for conservation medicine. In: Aguirre, A.A., R.S. Ostfeld, G.M. Tabor, C. House and M.C. Pearl (Eds). *Conservation Medicine: Ecological Health in Practice*. Oxford University Press, New York, USA.
- Davey, A.G. 1998. *National System Planning for Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Davis, George. 2005. Biodiversity conservation as a social bridge in the urban context: Cape Town's sense of "The Urban Imperative" to protect its biodiversity and empower its people. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Davys, T.R., D.M. Forsyth and G.J. Hickling. 1999. Recreational Himalayan thar (*Hemitragus jemlahicus*) hunters in Canterbury, New Zealand: A profile and management implications. *New Zealand Journal of Zoology* **26(1)**:1–9.
- Dawe, P.S., F.O. Flanagan, R.L. Madekurozwa, K.J. Sorensen, E.C. Anderson, C.M. Foggin, N.P. Ferris and N.J. Knowles. 1994. Natural transmission of foot-and-mouth disease virus from African buffalo (*Syncerus caffer*) to cattle in a wildlife area of Zimbabwe. *Vet. Rec.* **134(10)**: 230–232.

- Debonnet, Guy and K. Hillman-Smith. 2003. Supporting Protected Areas in a Time of Political Turmoil: The Case of World Heritage Sites in the Democratic Republic of Congo. Paper prepared for workshop on Building Support for Protected Areas. Vth World Parks Congress, Durban, September 2003.
- Deem, S.L., W.B. Karesh and W. Weisman. 2001. Putting theory into practice: wildlife health in conservation. *Conservation Biology* **15**:1224–1233.
- De la Torre, Luz Maria. The Cayambe Sacred Mountain, Ecuador. PowerPoint presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.
- de Lisle, G.W., R.G. Bengis, S.M. Schmitt and D.J. O'Brien. 2002. Tuberculosis in free-ranging wildlife: detection, diagnosis and management. *Rev. Sci. Tech.* **21**:317–334.
- Department for International Development (DFID). 2002. *Wildlife and Poverty Study*. DFID, London, UK.
- De Vos, V., R.G. Bengis, N.P.J. Kriek, A. Michel, D.F. Keet, J.P. Raath and H.F.K.A. Huchzermeyer. 2001. The epidemiology of tuberculosis in free-ranging African buffalo (*Syncerus caffer*) in the Kruger National Park, South Africa. *Onderstepoort J. Vet. Res.* **68**:119–130.
- Diamond, Jared. 2005. *Collapse: How Societies Choose to Fail or Succeed*. Viking, New York, USA.
- Diouf, A.M. 2003. Education environnementale support pour une gestion participative du parc de Djoudj au Sénégal. PowerPoint Presentation at the Vth World Parks Congress, Durban 2003.
- Driml, S. and M. Common. 1995. Economic and financial benefits of tourism in major protected areas. *Australian Journal of Environmental Management* **2(2)**:19–39.
- Driver J., R.M. Cowling and K. Maze. 2003. *Planning for Living Landscapes: Perspectives and Lessons from South Africa*. The Botanical Society of South Africa and the Center for Applied Biodiversity Science, Washington DC, USA.
- Drumm, Andy and A. Moore. 2002. *Ecotourism Development: A Manual for Conservation Planners and Managers*. The Nature Conservancy, Washington DC, USA.
- Ducks Unlimited accessed April 19, 2004. www.ducks.org/news/Sept2003NAWCAGrants.asp
- Dudley, N., G. Biksham, B. Jackson, J.P. Jeanrenaud, G. Oviedo, A. Phillips, P. Rosabal, S. Stolton and S. Wells. 1999. Challenges for protected areas in the 21st century. In: Stolton, S. and N. Dudley (Eds). *Partnerships for Protection: New Strategies for Planning and Management for Protected Areas*. Earthscan, London, UK.
- Dudley, N. and S. Stolton. 2003. Mining and Protected Areas: Draft Case Study, Speaking a Common Language research project, www.cf.ac.uk/cplan/sacl/cs-mining_pas.pdf
- Dudley, Nigel, and S. Stolton. 2005. The role of forest protected areas in supplying drinking water to the world's biggest cities. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Dutt, S. 2003. Ecodevelopment Effort in India. Presentation at the Vth World Parks Congress, Durban.
- Eagles, P.F.J., M.E. Bowman and T. Chang-Hung Tao. 2001. *Guidelines for Tourism in Parks and Protected Areas of East Asia*. IUCN, Gland, Switzerland and Cambridge, UK in collaboration with University of Waterloo, Canada.
- Eagles, P.F.J. and S. McCool. 2002. *Tourism in National Parks and Protected Areas: Planning and Management*. CAB International, New York, USA.

- Eagles, P., S. McCool and C. Haines. 2002. *Sustainable Tourism in Protected Areas: Guidelines for Planning and Management*. IUCN, Gland, Switzerland and Cambridge, UK.
- Edgerton, Robert B. 1992. *Sick Societies: Challenging the Myth of Primitive Harmony*. Free Press, New York, USA.
- Ellen, Roy, P. Parkes and A. Bicker (Eds). 2000. *Indigenous Environmental Knowledge and its Transformations*. Harwood, Amsterdam, Netherlands.
- Elliott, Hugh. 1974. *Second World Conference on National Parks*. IUCN, Lausanne, Switzerland.
- Else, J.G. and M.A. Pokras. 2002. Introduction. In: Aguirre, A.A., R.S. Ostfeld, G.M. Tabor, C. House and M.C. Pearl (Eds). *Conservation Medicine: Ecological Health in Practice*. Oxford University Press, New York, USA.
- Emerton, L. 2001. The nature of benefits and the benefits of nature: why wildlife conservation has not economically benefited communities in Africa. In: Hulme, D. and M.W. Murphree (Eds). *African Wildlife and Livelihoods: The Promise and Performance of Community Conservation*. James Currey Ltd., Oxford, UK.
- Encalada, M. 2004. Optimizing the use of research in order to consolidate communication planning and practice for protected areas. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Energy and Biodiversity Initiative. 2003. *Integrating Biodiversity Conservation into Oil and Gas Development*. Energy and Biodiversity Initiative, www.theebi.org, Washington DC, USA.
- English, Anthony J. 2000. An Emu in the Hole: Exploring the Link between Biodiversity and Aboriginal Cultural Heritage in New South Wales, Australia. *Parks* **10(2)**:13–25.
- English, Anthony J. and Ellen Lee. 2003. Managing the Intangible. In: Harmon, D. and A. Putney (Eds). *The Full Value of Parks: from Economics to the Intangible*. Rowman and Littlefield Publishers, Lanham, MD, USA.
- Ewel, K. 1997. Water quality improvement: evaluation of an ecosystem service. In: Daily, G. (Ed.). *Nature's Services: Societal Dependence on Natural Ecosystems*. Island Press, Washington DC, USA.
- Extractive Industries Review. 2003. 'Striking a Better Balance': *The Final Report of the Extractive Industries Review, December 2003*. www.eireview.org
- Fairley, A. 2004. Turtle Island, personal communication.
- Farrell L., P. Sampat, R. Sarin and K. Slack. 2004. *Dirty Metals: Mining, Community and the Environment*. Earthworks and Oxfam America, Washington DC, USA.
- Fernández Dávila, P. 2004. The process of local ownership of the Tingo Maria National Park (Huánuco, Perú). In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Ferraro, P.J. and A. Kiss. 2002. Direct Payments to Conserve Biodiversity. *Science* **298**:1718–1719.
- Ferraro, P.J. 2001. Global habitat protection: limitations of development interventions and a role for conservation performance payments. *Conservation Biology* **15**:990–1000.
- Figgis, P.J. 1999. Australia's National Parks and Protected Areas: Future Directions Discussion Paper. *Australian Committee for IUCN Occasional paper No 8*. Australian Committee for IUCN, Sydney.

- Financing Protected Areas Task Force (FPATF). 2000. *Financing Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Finger, Matthias. 1994. From Knowledge to Action? Exploring the relationships between environmental experiences, learning, and behavior. *Journal of Social Issues* **50(3)**:141–160.
- Fisher, B. 2003. Within Boundaries: the Implications of Pro-Poor Conservation for Protected Areas. Presentation at the Vth World Parks Congress, Durban.
- Fischer, Frauke *et al.* 2003. Status of the Comoe National Park, Cote d'Ivoire and the Effects of War. Paper prepared for workshop on Building Support for Protected Areas. Vth World Parks Congress, Durban, September 2003.
- Flintan, F. 2003. *Engendering Eden Volume 1: Women, Gender and ICDPs: Lessons Learnt and Ways Forward*. IIED Wildlife and Development Series No. 16.
- Folke, C., L. Pritchard Jr., F. Berkes, J. Colding and U. Svedin. 1998. *The problem of fit between ecosystems and institutions*. International Human Dimensions Programme on Global Environmental Change. www.ihdp.uni-bonn.de
- Food and Agriculture Organization (FAO)/United Nations Environment Programme (UNEP)/Consultative Group on International Agricultural Research (CGIAR). 2004. The poverty lines: population living with less than 2 dollars and less than 1 dollar a day. Accessed March 2004 at www.povertymap.net/mapsgraphics/index.cfm?data_id=23417&theme=
- Food and Agriculture Organization (FAO). 2003. Accessed September 2003 at <http://apps.fao.org/faostat/default.jsp>
- Formenty, P., C. Hatz, B.L. Guenno, A. Stoll, P. Rogenmoser and A. Widmer. 1999. Human infection due to Ebola virus, subtype Cote d'Ivoire: clinical and biologic presentation. *J. Infect. Dis.* **179(Suppl. 1)**:S48–S53.
- Fossey, D. 1983. *Gorillas in the Mist*. Houghton Mifflin, Boston, USA.
- Foxlee, J. 2003. Key Principles and Direction for Tourism in Protected Areas: a review of existing charters, guidelines and declarations. Unpublished report, University of Western Sydney, Australia.
- Franks, P. 2003. New directions for Integrated Conservation and Development – a CARE/WWF perspective. Presentation at the Vth World Parks Congress, Durban.
- Freeman, M.M.R. 2001. Culture, commerce, and international co-operation in the global recovery of Polar Bears. *Pacific Conservation Biology* **7**:161–168.
- Freese, C.H. 1998. *Wild Species as Commodities: Managing Markets and Ecosystems for Sustainability*. Island Press, Washington DC, USA.
- Gao, F., E. Bailes, D.L. Robertson, Y. Chen, C.M. Rodenburg, S.F. Michael, L.B. Cummins, L.O. Arthur, M. Peeters, G.M. Shaw, P.M. Sharp and B.H. Hahn. 1999. Origin of HIV-1 in the chimpanzee *Pan troglodytes troglodytes*. *Nature* **397**:436–441.
- Gardner, J. 2001. Rehabilitating mines to meet land use objectives: bauxite mining in the Jarrah Forest of Western Australia. *Unasylva* **52**:2001–4. www.fao.org/DOCREP/004/Y2795E/y2795e00.htm#TopOgPage
- Gardner, J. and G. Stoneman. 2003. Bauxite Mining and Conservation of the Jarrah Forest in South-West Australia. Paper prepared for the IUCN ICMM Mining and Biodiversity Workshop, Gland, July 2003.
- Gavva, I.A., V.V. Krinitsky and Y.P. Yazan. 1984. Development of nature preserves and national parks in the Soviet Union. In: McNeely, Jeffrey A. and Kenton R. Miller (Eds). *National Parks, Conservation, and Development*. Smithsonian Institution Press, Washington DC, USA.

- GEF. 2004. *GEF and the Convention on Biological Diversity*. Global Environment Facility, Washington DC, USA.
- Geisler, C. 2003a. *A New Kind of Trouble: Evictions in Eden*. Blackwell, Oxford, UK.
- Geisler, C. 2003b. Your Park, My Poverty: Using Impact Assessment to counter the displacement effects of environmental greenling. In: Brechin, S.R., P.R. Wilshusen, C.L. Fortwangler and P. West. *Contested nature: Promoting International Biodiversity with Social Justice*. SUNY Press, New York, USA.
- Gelderblom, G., B.W. Van Wilgren and N. Rossouw. 1996. *Proposed Transfrontier Conservation Areas: Maps and Preliminary Data Sheets*. Council for Scientific and Industrial Research (CSIR), Division of Water, Environment and Forestry Technology, Stellenbosch, South Africa.
- Gell, F.R. and C.M. Roberts. 2003. Benefits beyond boundaries: the fishery effects of marine reserves. *Trends in Ecology and Evolution* **18**:448–455.
- Gerber, L.R., P.M. Kareiva and J. Bascompte. 2002. The influence of life history attributes and fishing pressure on the efficacy of marine reserves. *Biological Conservation* **106**:11–18.
- Ghimire, K. and M. Pimbert. 1997. *Social Change and Conservation*. Earthscan, London, UK.
- Gichere, S. 2003. Protected Areas and Poverty in Kenya – A Government Perspective. Presentation at the Vth World Parks Congress, Durban.
- Gill, C. 2003. Biodiversity Conservation and USAID's Global Development Alliance. Presentation at Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September 2003.
- Gilligan, B. and C. Allen. 2001. *Resource and Visitor Management in NSW National Parks*. The Fenner Conference on Nature Tourism and the Environment 3–6 Sept, Australian National University with CRC Sustainable Tourism, Canberra.
- Gillin, C.M., G.M. Tabor and A.A. Aguirre. 2002. Ecological health and wildlife disease management in national parks. In: Aguirre, A.A., R.S. Ostfeld, G.M. Tabor, C. House and M.C. Pearl (Eds). 2002. *Conservation Medicine: Ecological Health in Practice*. Oxford University Press, New York, USA.
- Gladu, Jean Paul, D. Brubacher and C. Meek. 2003. *Aboriginal Experiences in Canada. Parks and Protected Areas*. Boreal Footprint Project, Taiga Rescue Network.
- Global Environmental Facility (GEF). 2004. Web site updated April 2004. www.gefweb.org/
- Gokhale, Yogesh. 2003. Communicating the Importance of Sacred Groves to a Broader Audience for Conservation of Biocultural Heritage. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.
- Goode, David. 2005. Connecting with nature in a capital city: The London Biodiversity Strategy. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Graczyk, T.K., A.B. Mudakikwa, M.R. Cranfield and U. Eilenberger. 2001. Hyperkeratotic mange caused by *Sarcoptes scabiei* (Acariform Sarcoptidae) in juvenile human-habituated mountain gorillas (*Gorilla gorilla beringei*). *Parasitol. Res.* **87**:1024–1028.
- Graczyk, T.K. 2002. Zoonotic infections and conservation. In: Aguirre, A.A., R.S. Ostfeld, G.M. Tabor, C. House and M.C. Pearl (Eds). 2002. *Conservation Medicine: Ecological Health in Practice*. Oxford University Press, New York, USA.
- Grant, G. (Ed.). 2002. *Guidelines for Sectoral ICT Policy and Planning: Regional Initiative for Informatics Strategies, Sectoral ICT Strategies Planning Templates*. The Commonwealth Network of IT for Development (COMNET-IT) and The Commonwealth Secretariat. Ottawa, Canada.

- Groundwork. 2004. *What is Groundwork?* Groundwork UK, Birmingham, UK. www.groundwork.org.uk
- Grove, Richard H. 1995. *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860*. Cambridge University Press, Cambridge, UK.
- Gurung, C. and N. Shrestha. 2004. Bringing Positive Changes in the Protected Areas of Nepal through Communication and Education. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Hall, M.C. and A.A. Lew. 1998. *Sustainable Tourism: A Geographic Perspective*. Longman Publishing, New York, USA.
- Halpern, B. 2003. The impact of marine reserves: do reserves work and does reserve size matter? *Ecological Applications* **13**:S117–S137.
- Hamù, Denise, Auchincloss, E. and W. Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Harmon, David. 1994. *Coordinating Research and Management to Enhance Protected Areas*. IVth World Congress on National Parks and Protected Areas, Caracas, Venezuela. IUCN, Gland Switzerland, in collaboration with The George Wright Society, Science and Management of Protected Areas Association, and the Commission of the European Union.
- Harmon, David. 2002. *In Light of our Differences: How Diversity in Nature and Culture Makes Us Human*. Smithsonian Institution Press, Washington DC, USA.
- Harmon, David and Allen Putney (Eds). 2003. *The Full Value of Parks: from Economics to the Intangible*. Rowman and Littlefield, Lanham, MD, USA.
- Hart, J.A. 2000. Impact and sustainability of indigenous hunting in the Ituri forest, Congo-Zaire: a comparison of hunted and un hunted duiker populations. In: Robinson, J. G. and E. L. Bennett (Eds). *Hunting for Sustainability in Tropical Forests*. Columbia University Press, New York, USA.
- Herlugson, C. 2003. The Scottish Forest Alliance. Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11-13 September 2003.
- Hesselink, F. 2004. How to manage change? How to manage people? Skills and knowledge for effectiveness in communicating protected areas and biodiversity values. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Hesselink, F., E. Idle and G. Van Boven. 2004. Beyond Training: Protected Area Institutions as Learning Organisations. Developing capacity to change towards management in partnership. Effective Communication for Nature Conservation. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Hilbrunner, R.W. 2004. The GreenCOM Project: Using Strategic Participatory Communications for Protected Areas. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Hill, K., G. McMillan and R. Farina. 2003. Hunting-related Changes in Game Encounter Rates from 1994 to 2001 in the Mbaracayu Reserve, Paraguay. *Conservation Biology* **17**:1312–1323.
- Hockings, Mark, S. Stolton and N. Dudley. 2000. *Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Holling, C.S. (Ed.). 1978. *Adaptive Environmental Assessment and Management*. John Wiley, New York, USA.

- Homsey, J. 1999. *Ape Tourism and Human Diseases: How Close Should We Get? A Critical Review of the Rules and Regulations Governing Park Management and Tourism for the Wild Mountain Gorilla*, Gorilla gorilla beringei. Report. Consultancy for the International Gorilla Conservation Programme (IGCP) Regional Meeting, Rwanda, Uganda, February 1999.
- Honey, M. 1999. *Ecotourism and Sustainable Development: Who Owns Paradise?* Island Press, Washington DC, USA.
- Hornback, K. and P. Eagles. 1999. *Guidelines for Public Use Measurement and Reporting at Parks and Protected Areas*. IUCN, Gland, Switzerland and Cambridge, U.K, Parks Canada, CRC for Sustainable Tourism, Australia.
- Hudson, P.J. and A.P. Dobson. 1989. Epidemiology and population dynamics of host parasite interactions. *Parasitology Today* **5**:283–291.
- Hulme, D. and M. Murphree. 1999. Communities, wildlife and ‘the new conservation’. *Africa J. Int. Dev.* **11**:277–286.
- Humavindu, M.N. and J.I. Barnes. 2003. Trophy hunting in the Namibian economy: an assessment. *South African Journal of Wildlife Research* **33**:65–70.
- Hunter, C.G. 1996. Land uses on the Botswana/Zimbabwe border and their effects on buffalo. *South African Journal of Wildlife Research* **26**:136–150.
- Hurt, R. and P. Ravn. 2000. Hunting and its benefits: an overview of hunting in Africa with special reference to Tanzania. In: Prins, H.H.T., J.G. Grootenhuis and T.T. Dolam (Eds). *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Boston.
- Hutcherson, Lucy. 2005. Chicago Wilderness: A collaborative model for urban conservation. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Hwang, Y.T. 2003. Dynamics of rabies and striped skunk (*Mephitis mephitis*) populations: an indication of disease population regulation mechanisms. In: *Proc. 52nd Wildlife Disease Association Conference*. Saskatoon, Canada, 11–14 August.
- International Council on Mining and Metals, August 20 2003, Press Release: ‘Landmark “no go” pledge from leading mining companies’. www.icmm.com/news/158ICMMPressRelease-nogoareas-20August03.pdf
- International Institute for Environment and Development (IIED). 1994. *Whose Eden? An Overview of Community Approaches to Wildlife Management*. IIED, London, UK.
- IPIECA (i) (International Petroleum Industry Environmental and Conservation Association). Series of case studies: The Oil and Gas Industry – Operating in Sensitive Environments:BP in Dorset, southern England. www.ipieca.org/publications/biodiversity.html accessed on April 25 2004.
- IPIECA (ii) (International Petroleum Industry Environmental and Conservation Association). Series of case studies: The Oil and Gas Industry – Operating in Sensitive Environments: Statoil in Norway. www.ipieca.org/publications/biodiversity.html accessed on April 25 2004.
- IUCN. 1994. *Guidelines for Protected Area Management Categories*. IUCN, Gland, Switzerland.
- IUCN. 1998. *Economic Values of Protected Areas: Guidelines for Protected Area Managers*. IUCN, Gland, Switzerland and Cambridge, UK.
- IUCN. 2001. Vision and Reality: The World Heritage Convention in action. *World Conservation* **2**.
- IUCN. 2003. Vth World Parks Congress: Recommendation 5.24 on Indigenous Peoples and Protected Areas and Recommendation 5.29 on Protected Areas and Poverty. IUCN, Gland, Switzerland.

- IUCN(i). 2003. The Durban Accord, Output of the World Parks Congress, www.iucn.wpc2003
- IUCN(ii). 2003. The Durban Action Plan, Output of the World Parks Congress, www.iucn.wpc2003
- IUCN(iii). 2003. Message of the Vth World Parks Congress to the Convention on Biological Diversity, Output of the World Parks Congress, www.iucn.wpc2003
- IUCN(iv). 2003. Recommendations of the Vth World Parks Congress, www.iucn.wpc2003
- IUCN. 2003. Community Empowerment for Conservation. *Policy Matters* **12**.
- IUCN. 2004. IUCN ICMM workshop: Mining, Protected Areas and Biodiversity Conservation: Searching and Pursuing Best Practice and Reporting in the Mining Industry. www.iucn.org/themes/business/mining/index.htm
- Jaffé A. and D. Victor. 2004. The Geopolitics of Natural Gas, Executive Summary, May 2004, Program on Energy and Sustainable Development at Stanford University and James A. Baker III Institute for Public Policy at Rice University. http://pesd.stanford.edu/docs/natural_gas/Exec_Sum.pdf
- Jaireth, H. and D. Smyth. 2003. *Innovative Governance: Indigenous peoples, Local Communities and Protected Areas*. Ane Books, New Delhi, India.
- Jansen D., I. Bond and B. Child. 1992. *Cattle, Wildlife, Both, or Neither. Results of a Financial and Economic Survey of Commercial Ranches in Southern Zimbabwe*. WWF Multispecies Project, No. 27, Harare, Zimbabwe.
- Jeanrenaud, Sally. 1999. *People-oriented Approaches in Global Conservation: Is the Leopard Changing its Spots?* IIED, London, UK.
- Jeanrenaud, Sally. 2001. An International Initiative for the Protection of Sacred Natural Sites and Other Places of Indigenous and Traditional Peoples with Importance for Biodiversity Conservation: A Concept Paper. Unpublished paper: WWF International, Gland, Switzerland.
- Jell, B. and J.S. Machado. 2002. Collaborative management in the region of Lobéké, Cameroon: the potentials and constraints in involving the local population in protected area management. *Nomadic Peoples* **6**:180–203.
- Jolles, A.E. 2003. Tuberculosis in African buffalo (*Syncerus caffer*): population effects of a chronic disease. In: *Proc. 52nd Wildlife Disease Association Conference*. Saskatoon, Canada, 11–14 August.
- Joly, D.O. 2003. Bovine tuberculosis and brucellosis as factors limiting population growth of bison in northern Canada. In: *Proc. 52nd Wildlife Disease Association Conference*. Saskatoon, Canada, 11–14 August.
- Jones, B. and M.W. Murphree. 2001. The evolution of policy on community conservation. In: Hulme, D. and M.W. Murphree (Eds). *African Wildlife and Livelihoods: The Promise and Performance of Community Conservation*. James Currey Ltd., Oxford, UK.
- Joshi, N.V. and M. Gadgil. 1991. On the role of refugia in promoting prudent use of biological resources. *Theoretical Population Biology* **40**:211–229.
- Justiniano, H. 2003. The Chiquitano Forest Conservation and Sustainable Development Plan. Vth World Parks Congress, Workshop 8, on Sustainable Finance Stream, September 2003, Durban, South Africa.
- Kahn, Peter H., Jr. and S.R. Kellert (Eds). 2002. *Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations*. MIT Press, Cambridge, MA, USA.
- Kalema-Zikusoka, G. 2005. Protected areas, human livelihoods and healthy animals: ideas for improvements in conservation and development interventions. In: Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr and A. Yang (Eds). *Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health*. IUCN, Gland, Switzerland and Cambridge, UK.

- Kalema-Zikusoka, G., R.A. Kock and E.J. Macfie. 2002. Scabies in free-ranging mountain gorillas (*Gorilla gorilla beringei*) in Bwindi Impenetrable National Park, Uganda. *Vet. Rec.* **150**:12–15.
- Kalema-Zikusoka G., B. Mugerwa and S. Asuma. 2001. Health education workshops for local communities of Bwindi Impenetrable National Park, Uganda. In: *Proc. American Association of Zoo Veterinarians (AAZV), the American Association of Wildlife Veterinarians (AAWV), the Association of Reptilian and Amphibian Veterinarians (ARAV), and the National Association of Zoo and Wildlife Veterinarians (NAZWV) Joint Conference*. AAZV/AAWV/ARAV/NAZWV, 18–23 September. Orlando, USA.
- Kalpers, J. 2001. *Overview of Armed Conflict and Biodiversity in Sub-Saharan Africa: Impacts, Mechanisms and Responses*. Biodiversity Support Program, Washington, DC, USA.
- Kamugisha, J.R., Z.A. Oguta and M. Stahl, 1997. Parks and People – Conservation and Livelihoods at the Crossroads: Four Case Histories. *Technical Report 17*. Regional Soil Conservation Unit/Swedish International Development Agency (SIDA), Nairobi, Kenya.
- Karanth, K.U. and M.D. Madhusudan. 2002. Mitigating human-wildlife conflicts in southern Asia. In: Terborgh, J., C.P. van Schaik, L. Davenport and M. Rao (Eds). *Making Parks Work: Strategies for Preserving Tropical Nature*. Island Press, Washington, DC, USA.
- Keene-Young, R. 1999. A thin line: Botswana's cattle fences. *Africa Environment and Wildlife* **7**:71–79.
- Kempf, Elizabeth (Ed.). 1993. *The Law of the Mother: Protecting Indigenous Peoples in Protected Areas*. Sierra Club Books, San Francisco, CA, USA.
- Kennedy, P. 2001. Minnamurra Rainforest Centre – Budderoo National Park: a case study of the link between National Parks and Tourism. A Resource for NSW Geography Teachers, CD produced by the University of Western Sydney, Australia.
- Kibuga, D. 2001. Multi-sectoral approach to DOTS – the only hope. *Scand. J. Infect. Dis.* **33**:725–727.
- Kock, M.D. 1996. Wildlife, people and development: veterinary contributions to wildlife health and resource management in Africa. *Trop. Anim. Health Prod.* **28**:68–80.
- Kock, R.A., J.M. Wambua, J. Mwanzia, H. Wamwayi, E.K. Ndungu, T. Barrett, N.D. Kock and P.B. Rossiter. 1999. Rinderpest epidemic in wild ruminants in Kenya 1993–1997. *Vet. Rec.* **145(10)**:275–283.
- Kock, M.D., G.R. Mullins and J.S. Perkins. 2002. Wildlife health, ecosystems, and rural livelihoods in Botswana. In: Aguirre, A.A., R.S. Ostfeld, G.M. Tabor, C. House and M.C. Pearl (Eds). *Conservation Medicine: Ecological Health in Practice*. Oxford University Press, New York, USA.
- Kock, R.A., B. Kebkiba, R. Heinonen and B. Bedane. 2002. Wildlife and pastoral society – shifting paradigms in disease control. *Ann. N.Y. Acad. Sci.* **969**:24–33.
- Kock, R.A. 2005a. The wildlife domestic animal disease interface – should Africa adopt a hard or soft edge? *Transactions of the Royal Society of South Africa* **59(I)**:10–15.
- Kock, R.A. 2005b. What is this Infamous “Wildlife/Livestock Disease Interface?” A Review of Current Knowledge for the African Continent. In: Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr and A. Yang (Eds). *Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health*. IUCN, Gland, Switzerland and Cambridge, UK.
- Koutsouris A., E. Santi and A. Tare. 2004. Building Support for Protected Areas: the case of the Butrint National Park. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.

- Kothari, A., N. Pathak and F. Vania. 2000. *Where Communities Care: Community Based Wildlife and Ecosystem Management in south Asia*. IIED, London, UK.
- Kothari, Ashish. 2003. Cross-Cut Theme on Communities, Equity, and Protected Areas. Plenary presentation at the Vth World Parks Congress, Durban.
- Koziell I. and E. Omosa. 2003. *Room to Manoeuvre? Mining, biodiversity and protected areas*. International Institute for Environment and Development and the World Business Council for Sustainable Development, London, UK.
- Lafferty, K.D. and L.R. Gerber. 2002. Good medicine for conservation biology: the intersection of epidemiology and conservation theory. *Conservation Biology* **16**:593–604.
- Laine Powell, A. 2003. Pipeline Construction in Environmentally Sensitive Areas: Leveraging Partnerships with Oil and Gas Companies for Protected Areas. Vth World Parks Congress, Workshop 8, on Sustainable Finance Stream, September 2003, Durban, South Africa.
- Laird, Sarah (Ed.). 2002. *Biodiversity and Traditional Knowledge: Equitable Partnerships in Practice*. Earthscan, London, UK.
- Lanjouw, Annette. Building Partnerships in the Face of Political and Armed Crisis. In: Steven Price (Ed.). *War and Tropical Forests: Conservation in Areas of Armed Conflict*. The Haworth Press, New York, USA.
- Lankester, M. 2003. Parasites, barriers and consequences of breaching them. In: *Proc. 52nd Wildlife Disease Association Conference*. Saskatoon, Canada, 11–14 August.
- Lapham N. and R. Livermore. 2003. *Striking a Balance, Ensuring Conservation's Place on the International Biodiversity Assistance Agenda*. Conservation International, Washington DC, USA.
- Lasswell, Harold D. 1958. *Politics: Who Gets What, When, How*. Merriam Books, New York, USA.
- Last, J.M. 1983. *A Dictionary of Epidemiology*. Oxford University Press, New York, USA.
- Laudré, J. and T.W. Clark. 2003. Managing puma hunting in the western United States: through a metapopulation approach. *Animal Conservation* **6**:159–170.
- Lavides, M., N.A. Mallari, A. Plantilla, B. Tabaranza Jr., B. de la Paz and C.M. Nozawa. 2004. Building Support For and Beyond Protected Areas in the Philippines: A Haribon's Journey of Transformations. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Leach, M. 2000. New shapes to shift: war, parks, and the hunting person in modern West Africa. *Royal Anthropological Institute* **6**:577–595.
- Leader-Williams, N. 2000. The effects of a century of policy and legal change on wildlife conservation and utilisation in Tanzania. In: Prins, H.H.T., J.G. Grootenhuis and T.T. Dolam (Eds). *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Boston.
- LeBeau, Mark. 2003. Update on Protecting American Indian Sacred Places in California. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.
- Le Blanc, Stephen A. 1999. *Prehistoric Warfare in the American Southwest*. University of Utah Press, Salt Lake City, UT, USA.
- Lee, Ellen. 2000. Cultural Connection to the Land – a Canadian Example. *Parks* **10** (2):3–12.
- Leopold, A. 1933. *Game Management*. Charles Scribner's Sons. Reprinted in 1986 by University of Wisconsin Press, Madison, USA.
- Leroy, E.M., P. Rouquet, P. Formenty, S. Souquière, A. Kilbourne, J.-M. Froment, M. Bermejo, S. Smit, W. Karesh, R. Swanepoel, S.R. Zaki and P.E. Rollin. 2004. Multiple Ebola virus transmission events and rapid decline of central African wildlife. *Science* **303**:387–390.

- Leung, Y.F., J.L. Marion and T.A. Farrell. 2001. The Role of Recreation Ecology in Sustainable Tourism and Ecotourism. In: McCool, S. and N. Moisey (Eds). *Tourism, Recreation, and Sustainability*. CABI, Wallingford, UK.
- Leung, Y.F. and J.L. Marion. 2000. Recreation Impacts and Management in Wilderness. In: Cole, D.N. *et al.* (Compilers). *Wilderness Science in a Time of Change*. USDA Forest Service, Washington DC, USA.
- Lewis, Connie. 1996. *Managing Conflicts in Protected Areas*. IUCN, Gland, Switzerland.
- Lewis, D.M., G.B. Kaweche and A. Mwenya. 1990. Wildlife conservation outside protected areas – lessons from an experiment in Zambia. *Conservation Biology* **4**:171–180.
- Lewis, D.M. and P. Alpert. 1997. Trophy hunting and wildlife conservation in Zambia. *Conservation Biology* **11**:59–68.
- Lewis, D.M. 2003. How Safari Hunting Can Build Partnerships: A Case Study from Zambia (Presentation). In: Building New Constituencies for Protected Areas. Vth World Parks Congress, Durban, South Africa.
- Lewis, D. 2005. Synergies between animal husbandry and wildlife conservation: perspectives from Zambia. In: Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr and A. Yang (Eds). *Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health*. IUCN, Gland, Switzerland and Cambridge, UK.
- London. 2002. *Connecting with London's Nature: The Mayor's Biodiversity Strategy*. Greater London Authority, London, UK. www.london.gov.uk/londonissues
- Lougheed, L.W., G.J. Edgar and H.L. Snell (Eds). 2002. Biological Impacts of the Jessica Oil Spill on the Galapagos Environment: Final Report v.1.10. Charles Darwin Foundation, Puerto Ayora, Galapagos, Ecuador.
- Lubow, B.C., F.J. Singer, T.L. Johnson and D.C. Bowden. 2002. Dynamics of interacting elk populations within and adjacent to Rocky Mountain National Park. *Journal of Wildlife Management* **66**:757–775.
- Mace, R. 1991. Overgrazing overstated. *Nature* **349**:280–281.
- Macfie, E.J. 1992. Gorilla tourism programme for Uganda: veterinary recommendations. In: *Bwindi Impenetrable National Park: A Tourism Development Plan*. International Gorilla Conservation Programme, Kampala, Uganda.
- Mack, R. 1970. The great African cattle plague epidemic of the 1890's. *Trop. Anim. Health Prod.* **2**:210–219.
- MacKay, Fergus. 2002. Addressing Past Wrongs. Indigenous Peoples and Protected Areas: The Right to Restitution of Lands and Resources. Briefing Paper, Forest Peoples Program.
- Mackenzie, John M. 1997. *The Empire of Nature: Hunting, Conservation, and British Imperialism*. Manchester University Press, Manchester, UK.
- MacKinnon, John. 2002. ASEAN Experiences with World Heritage Parks. Paper presented for Workshop on Using World Heritage to build broader support for protected areas. IUCN HQ, Gland. 15–17 October, 2002.
- Madden, F. 1998. *The Problem Gorilla – A Report of the East and Central African Workshop on Problem Mountain Gorillas Using the Situation in Bwindi Impenetrable National Park as a Basis for Solution Development*. International Gorilla Conservation Programme (IGCP) and Cooperative for Assistance and Relief Everywhere (CARE) – Development Through Conservation (DTC).
- Mahajan, P. 2004. Developing Support for Protected Areas through a Conservation Education Centre – India Case Study. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.

- Mainka, S.A. 2001. The veterinarian's role in biodiversity conservation. *J. Zoo Wildl. Med.* **32**:165–167.
- Mair, J and J. Delafons. 2001. The Policy Origins of Britain's National Parks: The Addison Committee 1929–31. *Planning Perspectives* **16(3)**:293–309.
- Makwaeba, I.M. 2004. The use of traditional knowledge in the South African National Parks' Imbewu Youth Programme: planting a seed of environmental awareness. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Malhotra, K.C. 2003. Conservation and Culture in India. PowerPoint presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 11, Durban, South Africa.
- Maller, Cecily *et al.* 2002. *Healthy Parks, Healthy People: The Health Benefits of Contact with Nature in a Park Context*. School of Health Sciences, Deakin University, Melbourne, Australia.
- Maretti, Claudio. 2002. *Protected Areas and Indigenous and Local Communities in Brazil*. Report of the IUCN joint CEESP/WCPA Theme on Indigenous and Local Community, Equity and Protected Areas (TILCEPA).
- Marfin, A.A., L.R. Petersen, M. Eidson, J. Miller, J. Hadler, C. Farello, B. Werner, G.L. Campbell, M. Layton, P. Smith, E. Bresnitz, M. Cartter, J. Scaletta, G. Obiri, M. Bunning, R.C. Craven, J.T. Roehrig, K.G. Julian, S.R. Hinten, D.J. Gubler, and ArboNET Cooperative Surveillance Group. 2001. Widespread West Nile virus activity, eastern United States, 2000. *Emerging Infectious Diseases* **7(4)**:730–735.
- Margoluis, R., S. Myers, J. Allen, J. Roca, M. Melnyk and J. Swanson. 2001. *An Ounce of Prevention: Making the Link Between Health and Conservation*. World Wildlife Fund and Conservation International, Washington, DC, USA.
- Marks, S.A. 1996. Local hunters and wildlife surveys: an assessment and comparison of counts for 1989, 1990, and 1993. *African Journal of Ecology* **34**:237–257.
- Martin, Paul S. and Richard G. Klein (Eds). 1984. *Quaternary Extinctions: A Prehistoric Revolution*. University of Arizona Press, Tucson, AZ, USA.
- Martin, R.B. 1996. Sport hunting: the Zimbabwe government viewpoint. In: Williams, N., J.A. Kayera and G.L. Overton (Eds). *Tourist Hunting in Tanzania*. IUCN, Gland, Switzerland and Cambridge, UK.
- Martin, R.B. 2005. The influence of veterinary control fences on certain wild large mammal species in the Caprivi, Namibia. In: Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr and A. Yang (Eds). *Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health*. IUCN, Gland, Switzerland and Cambridge, UK.
- Masoud, T. and R. Wild. 2003. Promoting Community-Based Management of Natural Resources in Zanzibar. Presentation at the Vth World Parks Congress, Durban.
- Mayaka, T.B. 2001. Wildlife co-management in the Bénoué National Park-complex, Cameroon: a bumpy road to institutional development. *World Development* **30**:2001–2016.
- Mayer, M. and C. Garbe. 2001. Compilation and analysis of existing international documents relating to sustainable tourism. Prepared for the Workshop on Biological Diversity and Tourism, Santo Domingo, 4–7 June.
- Maze, K. 2003. AngloAmerican and the Bushmanland Conservation Initiative. Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September 2003. PDAC. www.pdac.ca/pdac/land-use/pa-manitoba.html
- McComb J. Research provides strategy to combat forest devastation www.comm.murdoch.edu.au/webster/A74.html, accessed April 12th 2004.

- McCullough, D. 1996. Spatially structured populations and harvest theory. *Journal of Wildlife Management* **60**:1–9.
- McKerchar, N.D. and P.R. Dingwall. 1984. Identifying the essential scientific needs of protected area managers. In: McNeely, J.A. and D. Navid (Eds). *Conservation, Science, and Society*. UNESCO, Paris, France.
- McNeely, J.A. and Paul Spencer Wachtel. 1988. *Soul of the Tiger: Searching for Nature's Answers in Southeast Asia*. Doubleday, New York, USA.
- McNeely, J.A. 1994. Protected areas for the twenty first century: working to provide benefits to society. *Unasylva* **176(46)**:3–8.
- McNeely, J.A. (Ed.). 1995. *Expanding Partnerships in Conservation*. Island Press, Washington, DC, USA.
- McNeely, J.A. and L. Guruswamy. 1998. Conclusion: how to save the biodiversity of Planet Earth. In: Guruswamy, Lakshman and J.A. McNeely (Eds). *Protection of Global Diversity: Converging Strategies*. Duke University Press, Durham, NC, USA.
- McNeely, J.A. 1999. Protected area institutions. In: Sue Stolton and Nigel Dudley (Eds). *Partnerships for Protection: New Strategies for Planning and Management of Protected Areas*. Earthscan Publications, London, UK.
- McNeely, J.A. (Ed.). 1999. *Imagine Tomorrow's World: 50th Anniversary Symposium Proceedings*. IUCN, Gland, Switzerland and Cambridge, UK.
- McNeely, J.A. 2002. Biodiversity, Conflict and Tropical Forests. In: Matthew, Richard, M. Halle and J. Switzer (Eds). *Conserving the Peace: Resources, Livelihoods, and Security*. IISD and IUCN, Winnipeg, Canada.
- McNeely, J.A. (Ed.). 2001. Cities and Protected Areas: An oxymoron or a partnership. *Parks* **11(3)**:1–3.
- McNeely, J.A. 2003. Conserving Forest Biodiversity in Times of Violent Conflict. *Oryx* **37(2)**:142–152.
- McNeely, J.A., K. Redford and A.L Stewart Carter. 2003. A Taxonomy Of Support: How And Why New Constituencies Are Supporting Protected Areas. Framework Paper for Vth World Parks Congress Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September 2003.
- McNeilage, A., A. Plumptre, A. Brock-Doyle and A. Vedder. 2001. Bwindi Impenetrable National Park, Uganda: gorilla census. *Oryx* **35**:39–47.
- McShane, T. 2003 Integrated Conservation and Development: Summary of Lessons learnt, most important issues to address in the next 10 years with approaches and methodologies. Presentation at the Vth World Parks Congress, Durban.
- McShane, T.O. and M.P. Wells (Eds). 2004. *Getting Biodiversity Projects to Work: Towards More Effective Conservation and Development*. Columbia University Press, New York, USA.
- McShane, T.O. and S.A. Newby. 2004. Expecting the Unattainable: The Assumptions Behind ICDPs. In: T.O. McShane and M.P. Wells (Eds). *Getting Biodiversity Projects to Work: Towards More Effective Conservation and Development*. Columbia University Press, New York, USA.
- Maginnis, S., W. Jackson and N. Dudley. 2003. Conservation Landscapes. Whose landscapes? Whose trade-offs? In: McShane, T. and M. Wells (Eds). *Getting Biodiversity Projects to Work: Towards more Effective Conservation and Development*. Columbia University Press, New York, USA.
- Medellin, R. 2003. Trophy Hunting, Local Communities, and Biosphere Reserves: A Case from Tiburon Island, Mexico. In: *Building New Constituencies for Protected Areas*. Vth World Parks Congress, Durban, South Africa.
- Mefalopulos, P. and Grenna, L. 2004. Promoting Sustainable Development Through Strategic Communication. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.

- Meffe, G.K. 1999. Conservation medicine. *Conservation Biology* **13**:953–954.
- Memon, Jessica. 2005. Mosaic: Building links between ethnic communities and national parks in the United Kingdom. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Meyer, Carrie A. 1997. Public-non-profit partnerships and North-South green finance. *Journal of Environment and Development* **6**(2):123–146.
- Michel, A.L. 2005. Tuberculosis – what makes it a significant player at the wildlife/livestock/human interface? In: Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr and A. Yang (Eds). *Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health*. IUCN, Gland, Switzerland and Cambridge, UK.
- Millennium Ecosystem Assessment. 2003. *Ecosystems and Human Well-being: A Framework for Assessment*. Island Press, Washington DC, USA.
- Miller, G. 2003. The Energy and Biodiversity Initiative Site Selection Framework. Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September 2003.
- Ministry of Planning and Economic Development. 1997. *Statistical Abstract*. The Republic of Uganda, Kampala, Uganda.
- Milner-Gulland, E.J., E.L. Bennett and the SCB 2002 Annual Meeting Wild Meat Group. 2003. Wild meat: the bigger picture. *Trends in Ecology and Evolution* **18**:351–357.
- Miranda M., P. Burris, J. Bingcang Froy, P. Shearman, J. Briones, A. La Vina and S. Menard. 2003. Mining and Critical Ecosystems: Mapping the Risks. World Resources Institute, Washington DC, USA.
- Mittermeier, R. 2003. Foreword. In: Christ, C., O. Hillel, S. Matus and J. Sweeting. *Tourism and Biodiversity: Mapping Tourism's Global Footprint*. UNEP and Conservation International, Washington DC, USA.
- MMSD (Mining, Minerals and Sustainable Development). 2002. *Breaking New Ground*. Earthscan, London, UK. Can be accessed www.iiied.org/mmsd/mmsd_pdfs/finalreport_toc.pdf
- Molefi, T. 2004. Protected Area Communication, Education and Public Awareness: Case of Every River Has Its People Project – Botswana. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Morales, M. 2003. Indigenous Territories, Rights and Conservation of Protected Areas in Latin America. Presentation at the Vth World Parks Congress, Durban.
- Morales, M and L.M. Scherl. 2003. Integrated Conservation and Development in Ecuador: Analysis of a Ten Year Project. Presentation at the Vth World Parks Congress, Durban.
- Moseley, Robert. 2003. Kawagebo Snow Mountains: Sacred Natural Sites Case Study. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.
- Moss, Jack, G. Wolff, G. Gladden and E. Guittierez. 2003. *Valuing Water for Better Governance: How to Promote Dialogue to Balance Social, Environmental, and Economic Values*. Sponsored by the CEO Panel, Business and Industry.
- Mulongoy, Kalemani Jo and Stuart Chape. 2004. *Protected Areas and Biodiversity: A Summary of Key Issues*. UNEP and CBD, Montreal, Canada.

- Murphree, M.W. 2000. Community-based conservation: old ways, new myths and enduring challenges. *Proceedings of the Conference on African Wildlife Management in the New Millennium*, 13–15 Dec 2000. Mweka, Tanzania: College of African Wildlife Management.
- Murphree, M.J. 2005. “Counting sheep”: the comparative advantages of wildlife and livestock – a community perspective. In: Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr and A. Yang (Eds). *Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health*. IUCN, Gland, Switzerland and Cambridge, UK.
- Najam, Adil. 2003. *Environment, Development and Human Security: Perspectives from South Asia*. University Press of America, Lanham, MD, USA.
- Namara, A., N. Agrippina *et al.* 2003. Bwindi and Mhahinga National Parks in Uganda: Has 15 Years of ICD Programming Succeeded in Increasing Support for Conservation among Local Communities? Paper prepared for workshop on Building Support for Protected Areas. Vth World Parks Congress, Durban, September 2003.
- Nash, R.F. 2001. *Wilderness and the American Mind*. Fourth Edition. Yale University Press, New Haven, USA.
- Natori, Y. 1997. Shiretoko Logging Controversy: a case study in Japanese environmentalism and nature conservation system. *Society and Natural Resources* **10(6)**.
- Ndolanga, M.A. 1996. The Department of Wildlife's perspective on tourist hunting in Tanzania. In: Williams, N., J.A. Kayera and G.L. Overton (Eds). *Tourist Hunting in Tanzania*. IUCN, Gland, Switzerland and Cambridge, UK.
- Nelson, J. and L. Hossack (Eds). 2003. *From Principles to Practice: Indigenous Peoples and Protected Areas in Africa*. Forest Peoples Programme, Moreton-in-Marsh, UK.
- Noss, A.J. 1999. Censusing rainforest game species with communal net hunts. *African Journal of Ecology* **37(1)**:1–11.
- Noss, A.J. and R.L. Cuellar. 2001. Community attitudes towards wildlife management in the Bolivian Chaco. *Oryx* **35**:292–300.
- Novaro, A.J., K.H. Redford and R.E. Bodmer. 2000. Effect of hunting in source-sink systems in the neotropics. *Conservation Biology* **14**:713–721.
- NSW National Parks and Wildlife Service. 2003. Project Brief: Research into Kinship with the Natural World: Influencing the role and function of field staff within the NSW National Parks and Wildlife Service.
- OECD. 1996. *Shaping the 21st Century: The Role of Development Co-operation*. OECD, Paris, France.
- Office International des Epizooties (OIE). 2003. *Terrestrial Animal Health Code 2003*. Office International des Epizooties, Paris, France. Accessed December 2003 at www.oie.int/eng/normes/MCode/A_summry.htm
- O'Neill, Brian and G. Moore. 2005. Building urban constituencies for nature conservation: The Golden Gate Experience. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Osofsky, S.A. 1997. Think link: critically evaluating linkages between conservation projects and development. *J. Zoo Wildl. Med.* **28**:141–143.
- Osofsky, S.A., W.B. Karesh and S.L. Deem. 2000. Conservation medicine: a veterinary perspective. *Conservation Biology* **14**:336–337.
- Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr and A. Yang (Eds). 2005. *Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health*. IUCN, Gland, Switzerland and Cambridge, UK.

- Ostergren, D.M. and S.J. Hollenhorst. 1999. Convergence in protected area policy: a comparison of the Russian zapovednik and American wilderness systems. *Society and Natural Resources* **12(4)**:293–313.
- Ostrom, Elinor. 1998. Scales, policentricity, and incentives: designing complexity to govern complexity. In: Guruswamy, Lakshman and J.A. McNeely (Eds). *Protection of Global Diversity: Converging Strategies*. Duke University Press, Durham, NC, USA.
- Otegui Acha, Mercedes. Wirikuta: The Wixarika/Huichol Sacred Natural Site in the Chihuahuan Desert, San Luis Potosi, Mexico. In: Harmon, D. and A. Putney (Eds). *The Full Value of Parks: from Economics to the Intangible*. Rowman and Littlefield Publishers, Lanham, MD, USA.
- Otegui Acha, Mercedes. 2003. Wirikuta, the Huichol Sacred Space in the Chihuahuan Desert of San Luis Potosi. Paper prepared for the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 11–13, Durban, South Africa.
- Otegui Acha and Diana Luque. 2003. Taheojc: The Comcaac Sacred Space, Tiburón Island, Sonora, Mexico. Paper prepared for the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 11–13, Durban, South Africa.
- Otegui Acha and Gilberto Torres. 2003. The Sacred Caves of the Wind and Fertility, “Tam Bokom Mim”. Huehuetlan, San Luis Potosi, Mexico. Paper prepared for the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 11–13, Durban, South Africa.
- Ott-Joslin, J.E. 1993. Zoonotic diseases of nonhuman primates. In: Fowler, M.E. (Ed.). *Zoo and Wild Animal Medicine, Current Therapy 3*. W.B. Saunders Company, Philadelphia, USA.
- Oviedo, Gonzalo. 2002. Protected Areas and Indigenous and Traditional Peoples’ Lands and Territories: Options and Opportunities. April 2002 draft.
- Oviedo, Gonzalo. 2003a. *Trabajo con Comunidades Indígenas en las Areas Protegidas*. CIAT, Cali, Colombia.
- Oviedo, Gonzalo. 2003b. Lessons Learned in the Establishment and Management of Protected Areas by Indigenous and Local Communities, South America. In: *Enhancing equity in the relationship between protected areas and indigenous and local communities in the context of global change*. www.iucn.org/themes/ceesp/Publications/TILCEPA/CCA-GOviedo.pdf
- Oviedo, Gonzalo, Luisa Maffi and Peter Bille Larsen. 2000. *Indigenous and Traditional Peoples of the World and Ecoregion Conservation: An Integrated Approach to Conserving the World’s Biological and Cultural Diversity*. WWF International and Terralingua.
- Oviedo, Gonzalo. 2004. Conservation of Biodiversity Rich Sacred Natural Sites. Draft Project Proposal. IUCN, Gland, Switzerland.
- Pagiola, S., J. Bishop and N. Landell-Mills. 2002. *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan, London, UK.
- Pagiola S. 2003. Pro-poor Markets for Water Catchment Services. Presentation at the Vth World Parks Congress, Durban.
- Pasanisi, G. 1996. The outfitter's perspective of tourist hunting in Tanzania. In: Williams, N., J.A. Kayera and G.L. Overton (Eds). *Tourist Hunting in Tanzania*. IUCN, Gland, Switzerland and Cambridge, UK.
- Paul, Seema. 2003. The Appeal of World Heritage Designation to Funding Agencies: Case of the UN Foundation. Paper prepared for workshop on Building Support for Protected Areas. Vth World Parks Congress, Durban, September 2003.

- Pedersen, Arthur. 2002. *Managing Tourism at World Heritage Sites: A Practical Manual for World Heritage Site Managers*. World Heritage Centre, Paris, France.
- Pedersen, Arthur and Alfredo Arellano. 2003. Using Tourism to Foster a Sense of Commitment at World Heritage Sites: A Case Study in Sian Ka'an. Paper prepared for workshop on Building Support for Protected Areas. Vth World Parks Congress, Durban, September 2003.
- Pei, Shengji. 2003. Workshop on the Importance of Sacred Natural Sites for Biodiversity Conservation: Kunming (17–18 Feb., 2003) and Xishuangbanna (19–20 Feb., 2003), Yunnan, China. PowerPoint presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.
- Pei, Shengji. 2003. Laojunshan: A Sacred Mountain in Northwestern Yunnan, China. PowerPoint presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.
- Perry, B.D., T.F. Randolph, J.J. McDermott, K.R. Sones and P.K. Thornton. 2002. *Investing in Animal Health Research to Alleviate Poverty*. International Livestock Research Institute (ILRI), Nairobi, Kenya.
- Phillips, Adrian. 2002. World Heritage Sites: Foundations or Pinnacles? Paper presented for Workshop on Using World Heritage to build broader support for protected areas. IUCN HQ, Gland. 15–17 October 2002.
- Phillips, Adrian. 2003. Turning Ideas on their Head – the New Paradigm for Protected Areas. *The George Wright Forum* 20(2):8–32.
- Pimbert, M. and J.N. Pretty. 1995. *Parks, People and Professionals: Putting Participation into Protected Area Management*. United Nations Research Institute for Social Development Discussion paper 57.
- Pimentel, D. *et al.* 1995. Environmental and Economic Costs of Soil Erosion and Conservation Benefits. *Science* 267:1117–1123.
- Plowright, W. 1968. Inter-relationships between virus infections of game and domestic animals. *East African Agricultural and Forestry Journal* Special Issue:260–263.
- Plowright, W. 1982. The effect of rinderpest and rinderpest control on wildlife in Africa. In: *Animal Diseases in Relation to Animal Conservation. Symposium of the Zoological Society of London* 50:1–28.
- Poirier R. and D. Ostergren. 2002. Evicting people from nature: indigenous land rights and national parks in Australia, Russia and the US. *Natural Resources Journal* 42(2):331–352.
- Porter, G., A. Stewart Carter, M. Bakarr and C. Kormos. 2001. *Review of an Ilmenite Mining Project in South East Madagascar*. Conservation International, Washington DC, USA.
- Posey, D.A. (Ed.). 1999. *Cultural and Spiritual Values of Biodiversity: A Complementary Contribution to the Global Biodiversity Assessment*. Intermediate Technology Publication, London, UK.
- Prescott-Allen, Robert and Christine Prescott-Allen. 1984. Park your Genes: Protected areas as in situ genebanks for the maintenance of wild genetic resources. In: McNeely, Jeffrey A. and Kenton R. Miller (Eds). *National Parks, Conservation, and Development: The Role of Protected Areas in Sustaining Society*. Smithsonian Institution Press, Washington DC, USA.
- Price, Steven V. (Ed.). 2003. *War and Tropical Forests: Conservation in Areas of Armed Conflict*. The Haworth Press, New York, USA.
- Price Waterhouse. 1996. A comparison between hunting systems in some Southern African countries. In Williams, N., J.A. Kayera and G.L. Overton (Eds). *Tourist Hunting in Tanzania*. IUCN, Gland, Switzerland and Cambridge, UK.

- Pritchard, L. Jr., C. Folke and L. Gunderson. 2000. Valuation of ecosystem services in institutional context. *Ecosystems* **3**:36–40.
- Pulliam, R.H. 1988. Sources, sinks, and population regulation. *The American Naturalist* **132**:652–661.
- Putney, A. 2003. Introduction: Perspective on the Values of Protected Areas. In: Harmon, D. and A. Putney (Eds). *The Full Value of Parks: from Economics to the Intangible*. Rowman and Littlefield Publishers, Lanham, MD, USA.
- Putney, A. and T. Schaaf. 2003. Guidelines for the Management of Sacred Natural Sites. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 13, Durban, South Africa.
- Putz, F.E., K.H. Redford, J.G. Robinson, R. Fimbel and G.M. Blate. 2000. *Biodiversity Conservation in the Context of Tropical Forest Management*. The World Bank Environment Paper No. 75.
- Pyle, R.M. 2002. Eden in a vacant lot: Special places, species, and kids in the neighborhood of life. In: Kahn and Kellert (Eds). *Children and Nature: Psychological, Sociological, and Evolutionary Investigations*. MIT Press, Cambridge, MA, USA.
- Raipon and Caff. 2004. *The Conservation Value of Sacred Sites of Indigenous Peoples of the Arctic: A Case Study in Northern Russia – Report on the State of Sacred Sites and Sanctuaries*. The CAFF Technical Report 11. www.caff.is
- Ramakrishnan, P.S. 2001. *Ecology and Sustainable Development*. National Book Trust, New Delhi, India.
- Ramakrishnan, P.S. 2003. Conserving the Sacred: The Protective Impulse and the Origins of Modern Protected Areas. In Harmon, D. and A. Putney (Eds). *The Full Value of Parks: from Economics to the Intangible*. Rowman and Littlefield Publishers, Lanham, MD, USA.
- Rametsteiner, E. and M. Simula. 2001. *Forging Novel Incentives for Environment and Sustainable Forest Management: Background Paper*. For Workshop on Forest Certification, Brussels, 6–7 September. European Commission DG Environment. October.
- Rapport, D. 1998. Defining ecosystem health. In: Rapport, D., R. Costanza, P.R. Epstein, C. Gaudet and R. Levins (Eds). *Ecosystem Health*. Blackwell Science, Oxford, UK.
- Rapport, D., R. Costanza, P.R. Epstein, C. Gaudet and R. Levins. (Eds). 1998. *Ecosystem Health*. Blackwell Science, Oxford, UK.
- Ratter, A. 1997. *Participatory Evaluation*. Evaluation report: Community Conservation, for Uganda Wildlife Authority Project. Kampala, Uganda.
- Redford, Kent and Jane A. Mansour (Eds). 1996. *Traditional Peoples and Biodiversity Conservation in Large Tropical Landscapes*. America Verde Publications, Arlington, VA, USA.
- Redford, K.H., K. Brandon and S. Sanderson. 1998. Holding ground. In: K. Brandon, K.H. Redford and S.E. Sanderson (Eds). *Parks in Peril: People, Politics, and Protected Areas*. Island Press, Washington DC, USA.
- Redford, K.H., P. Coppolillo, E.W. Sanderson, G.A.B. Fonseca, C. Groves, G. Mace, S. Maginnis, R. Mittermeier, R. Noss, D. Olson, J.G. Robinson, A. Vedder and M. Wright. 2003. Mapping the Conservation Landscape. *Conservation Biology* **17**(1):116–132.
- Richards, D., J. Hall and P. Roberts. 2003. RioTinto Biodiversity Partnership Programme. Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September 2003.
- Roberts, Debra *et al.* 2005. Resource economics as a tool for open space planning in Durban, South Africa. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.

- Rodrigues A.S., S.J. Andelman, M.I. Bakarr, L. Boitan, T.M. Brooks, R.M. Cowling, L.D. Fishpool, G.A. Fonseca, K. Gaston, M. Hoffman, J.S. Long, P.A. Marquet, J.D. Pilgrim, R.L. Pressey, J. Schipper, W. Sechrest, S.N. Stuart, L.G. Underhill, R.W. Waller, M.J. Watts and X. Yan. 2004. Effectiveness of the Global Protected Area Network in Representing Species Diversity. *Nature* **428**:640–643.
- Rodriguez-Navarro, Guillermo E., 2003. Spiritual Significance and Environmental Effects of Offerings Amongst the Indigenous People of the Sierra Nevada of Santa Marta. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 11–13. Durban, South Africa.
- Rodwell, T.C., I.J. Whyte and W.M. Boyce. 2001. Evaluation of population effects of bovine tuberculosis in free-ranging African buffalo (*Syncerus caffer*). *J. Mammal.* **82**:231–238.
- Roe, D. and J. Elliot. 2003. Pro-poor conservation: The elusive win-win for conservation and poverty reduction? Presentation at the Vth World Parks Congress, Durban.
- Roe, D. and J. Elliott. 2004. Poverty reduction and biodiversity conservation: rebuilding the bridges. *Oryx* **38**:137–139.
- Rondinelli, D.A. 2002. Transnational Corporation: International Citizens or New Sovereigns? *Business and Society Review* **107(4)**:391–413.
- Rosabal, P. 1997. IUCN guidelines for protected area management categories: a framework for actions. *Gibier Faune Sauvage* **14**:125–140.
- Rosenberg, A.A. 2001. Marine reserves and population recovery or how do closed areas affect exploited population dynamics. *Reviews in Fish Biology and Fisheries* **10**:519–520.
- Rosenfeld A., D. Gordon and M. Guerin-McManus. 1997. *Reinventing the Well: Approaches to Minimizing the Environmental Impact and Social Impact of Oil Development in the Tropics*. Conservation International, Washington DC, USA.
- Rosenfeld Sweeting A. and A. Clark. 2000. *Lightening the Lode: A Guide to Responsible Large-Scale Mining*. Conservation International, Washington DC, USA.
- Rosenzweig, M.L. 2003. Reconciliation ecology and the future of species diversity. *Oryx* **37**:194–205.
- Ross, A. 1994. Traditional hunting in national parks and the cultural heritage paradigm. *Ngulaig* **11**:1–19.
- Rössler, Mechtild. 2000. World Heritage Convention: Goals, Objectives, Criteria, Issues and Challenges with Respect to World Heritage and Mining. In: IUCN, UNESCO World Heritage Centre and ICME. *Proceedings of a Technical Workshop on World Heritage and Mining*. Gland, Switzerland.
- Rössler, Mechtild. 2003. Using World Heritage to Link Nature and Culture. Paper prepared for workshop on Building Support for Protected Areas. Vth World Parks Congress, Durban, September 2003.
- Roth, E.A. 1996. Traditional pastoral strategies in a modern world: an example from northern Kenya. *Human Organisation* **55**:219–224.
- Rozemeijer, N. 2003. CBNRM in Botswana: Revisiting the assumptions after 10 years of implementation. IUCN/SNV CBNRM Support Programme in Botswana, Gaborone.
- Ruiz Corzo, M.I. 2004. Education and Communication for Conservation: Co-management of the Sierra Gorda Biosphere Reserve, Mexico. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Ruddle, Kenneth and R.E. Johannes. 1985. *The Traditional Knowledge and Management of Coastal Systems in Asia and the Pacific*. UNESCO, Jakarta, Indonesia.
- Ruppert, D. 2003. Building partnerships between Native Americans and the National Park Service. *Ecological Restoration* **21(4)**:261–263.

- Russ, G.R. and A.C. Alcala. 2003. Marine reserves: rates and patterns of recovery and decline of predatory fish, 1983–2000. *Ecological Applications* **13**:1553–1565.
- Ruzicka, J. 1995. Legal framework of game management in the Czech Republic. In: *How Hunting and Fishing Can Contribute to Nature Conservation and Rural Development*. Council of Europe Publishing, Strasbourg, France.
- Sahgal, Bittu. 2005. Kids for Tigers: The Sanctuary Asia Tiger Program: A globally replicable school contact program to win support for wildlife and protected areas. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Saiia D.H., A.B. Carroll and A.K. Bucholtz. 2003. Philanthropy as Strategy: When Corporate Charity “Begins at Home”. *Business and Society* **42(2)**:169–201.
- Salafsky, N. 2003. *A Systematic Test of an Enterprise Based Approach to Conservation: The Experience of the Biodiversity Conservation network in Asia and the Pacific*. Presentation at the Vth World Parks Congress, Durban.
- Salvatori, V., H. Okarma, O. Ionescu, Y. Dovahanyeh, S. Findo and L. Boitani. 2002. Hunting legislation in the Carpathian Mountains: implications for the conservation and management of large carnivores. *Wildlife Biology* **8**:3–10.
- Sanchez Lira, M. 2004. Case study: Strategic Communication and Identity in the National Commission for Natural Protected Areas. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Saunier, Richard E. and R.A. Meganck. 1995. *Conservation of Biodiversity and the New Regional Planning*. Organization of American States and IUCN, Gland, Switzerland.
- Sayer, J. and M.P. Wells. 2004. The Pathology of Projects. In: T.O. McShane and M.P. Wells (Eds). *Getting Biodiversity Projects to Work: Towards More Effective Conservation and Development*. Columbia University Press, New York, USA.
- Sayre, R., E. Roca, G. Sedaghatkish, B. Young, S. Keel, R. Roca and S. Sheppard. 2000. *Nature in Focus: Rapid Ecological Assessment*. Island Press, Washington, DC, USA.
- Scherl, L.M. 2003. Working the Links between Protected Areas and Poverty. Presentation at the Vth World Parks Congress, Durban.
- Scherl, L.M., A. Wilson, R. Wild, J. Blockhus, P. Franks, J.A. McNeely and T.O. McShane. 2004. *Can Protected Areas Contribute to Poverty Reduction? Opportunities and Limitations*. IUCN, Gland, Switzerland, and Cambridge, UK.
- Schnitger, F.M. 1964. *Forgotten Kingdoms in Sumatra*. E.J. Brill, Leiden, Netherlands.
- Schultz, P. Wesley. 2000. Empathizing with Nature: The effects of perspective taking on concern for environmental issues. *Journal of Social Issues* **56(3)**:391–406.
- Schultz, P. Wesley. 2002. Inclusion with Nature: The psychology of human-nature relations. In: Peter Schmuck and P. Wesley Schultz (Eds). *Psychology of Sustainable Development*. Kluwer, Boston.
- Schwabe, C.W. 1974. *Veterinary Medicine and Human Health*. Williams & Wilkins, Baltimore, MD, USA.
- Schwenk, S. 1991. History of hunting and conservation of Ungulates by hunters in Germany and Austria. In: Spitz, F., G. Janeau, G. Gonzalez and S. Aulagnier (Eds). *Proceedings of the international symposium Ongulés/Ungulates*.
- Scoones, I. (Ed.). 1994. *Living with Uncertainty: New Directions in Pastoral Development in Africa*. Intermediate Technology Development Group, London, UK.

- Scott Wilson Resource Consultants/Environment and Development Group. 2000. *Final Report: Environmental Assessment of Veterinary Fences in Ngamiland*. Volumes 1–5. UK Department for International Development (DFID) and the Government of Botswana, Edinburgh and Oxford, UK.
- Secaira, Estuardo. 2003. A Fruitful Dialogue between Local Protected Area Managers and Spiritual Guides: the Case of Chicabal Volcano and Lagoon in the Western Highlands of Guatemala. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 12, Durban, South Africa.
- Sellers, R.W. 1997. *Preserving Nature in the National Parks: A History*. Yale University Press, New Haven, USA.
- Senior, John and Mardie Townsend. 2005. “Healthy Parks, Healthy People” and other social capital initiatives of Parks Victoria, Australia. In: Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Seymour M. 2003. Partnerships to support sustainable development and conservation: West-East Pipeline Project, China. Vth World Parks Congress, Workshop 8, on Learning from concrete successes of sustainably financing protected areas. Durban, South Africa, 11–13 September 2003.
- Shafer, C.L. 2000. The Northern Yellowstone Elk debate: policy, hypothesis, and implications. *Natural Areas Journal* **20**:342–359.
- Shambaugh, James, J. Oglethorpe and R. Ham. 2001. *The Trampled Grass: Mitigating the Impacts of Armed Conflict on the Environment*. Biodiversity Support Program, Washington, DC, USA.
- Shell. 27 August 2003. Press Release: Shell commits not to operate in World Heritage Sites. www.shell.com/home/
- Shorten, P., I. Harper and R. Loon. 2003. Sabi Sabi – a model for effective ecotourism, conservation and community involvement in southern Africa. Paper presentation Vth World Parks Congress, Durban.
- Sinclair, A.R.E. 1970. *Studies of the Ecology of the East African Buffalo*. D.Phil. thesis. Oxford University, Oxford, UK.
- Sinclair, A.R.E. 1995. Serengeti Past and Present. In: Sinclair, A.R.E. and P. Arcese (Eds). *Serengeti II: Dynamics, management, and conservation of an ecosystem*. University of Chicago Press, Chicago, USA.
- Singh, S., V. Sankaran, H. Mander and S. Worah. 2000. *Strengthening Conservation Cultures: Local Communities and Biodiversity Conservation*. UNESCO, Paris, France.
- Singh, Shekhar. 2002. Relating Cultural and Religious Heritage to Biodiversity Conservation: The Indian Experience. Paper prepared for the Workshop on Using World Heritage to build broader support for protected areas. IUCN HQ, Gland. 15–17 October, 2002.
- Sitanon, Jasdapiat and Matthew D. Markopoulos. 1996. Promoting private investment in biodiversity conservation. In: McNeely, J.A. and Sunthad Somchevita (Eds). *Biodiversity in Asia: Challenges and Opportunities for the Scientific Committee*. Office of Environmental Policy and Planning, Ministry of Science, Technology and Environment, Bangkok, Thailand.
- Skeat, A. and H. Skeat. 2003. Systems to make tourism and others contribute to protected areas – the Great Barrier Reef. Paper presentation Vth World Parks Congress, Durban.
- Sladek Nowlis, J. and C.M. Roberts. 1999. Fisheries benefits and optimal design of marine reserves. *Fisheries Bulletin* **97**:604–616.
- Smietana, W. and J. Wajda, 1997. Wolf number changes in Bieszczady National Park, Poland. *Acta Theriologica* **43**:241–252.

- Smyth, D. 2001. Joint Management of National Parks in Australia. In: Baker, R.J., J. Davies and E. Young (Eds). *Working on Country – Contemporary Indigenous Management of Australia's Lands and Coastal Regions*. Oxford Press, Oxford, UK.
- Sorvig, Kim. 2002. The Wilds of South Central. *Landscape Architecture* **92(4)**:66–75.
- Soutter, Rob, Yaa Ntiamao-Baidu, John Smith and Devendra Rana. 2003. Recognising the Contribution of Sacred Natural Sites for Biodiversity Conservation. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 11, Durban, South Africa.
- Spergel, B. 2002. *Raising Revenues for Protected Areas: A Menu of Options*. WWF, Washington, DC, USA.
- Staiff, R., R. Bushell and P. Kennedy. 2002. Interpretation in national parks: some critical questions. *Journal of Sustainable Tourism* **10(2)**:97–113.
- Staiff, R. and R. Bushell. 2004. *Minnamurra Rainforest Centre: Interpretation and Education Strategic Plan*. Report to NSW National Parks and Wildlife Services. University of Western Sydney, Australia.
- Stanvliet, R. *et al.* 2004. Applicability of the biosphere reserve concept to an urban context: An overview evaluation of the CUBES Cape Town Study. *Annals of the New York Academy of Sciences*, **1023**:80–104.
- Stewart Carter, A.L. 1999. *Mining Companies as Agents of Development? Corporate Social Responsibility, Participation and Local Community at Mining Projects*. Ph.D Thesis. University of Bath, UK.
- Stewart Carter, A.L. 2003a. Partners in Funding Strategies for Protected Areas: The Efficacy of Corporate Philanthropy. Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September, 2003.
- Stewart Carter, A.L. 2003b. The Initial Biodiversity Assessment and Planning Methodology: a tool for land use planning at energy and mining projects. Vth World Parks Congress, Workshop I, on Linkages in the Landscape/Seascape, Durban, South Africa, 11–13 September, 2003.
- Stolton, Sue and Nigel Dudley (Eds). 1999. *Partnerships for Protection: New Strategies for Planning and Management of Protected Areas*. Earthscan Publications, London, UK.
- Stone, C. 2003. The Global Conservation Fund. Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September, 2003.
- Sumaila, U.R., S. Guénette, J. Alder and R. Chuenpagdee. 2000. Addressing ecosystem effects of fishing using marine protected areas. *ICES Journal of Marine Science* **57**.
- Sutmoller, P., G.R. Thomson, S.K. Hargreaves, C.M. Foggin and E.C. Anderson. 2000. The foot-and-mouth disease risk posed by African buffalo within wildlife conservancies to the cattle industry of Zimbabwe. *Prev. Vet. Med.* **44(1–2)**:43–60.
- Suzuki, David and P. Knudtson. 1992. *Wisdom of the Elders: Sacred Native Stories of Nature*. Bantam, New York, USA.
- Sweeting, James and Wayne, Scott. 2003. *A Shifting Tide: Environmental Challenges and Cruise Industry Responses*. Conservation International, Washington, DC, USA.
- Sykes, R. 2003. Shell Working Together for Conservation. Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September, 2003.
- Szabo, S. *et al.* 1996. Indigenous Protected Areas: A New Concept in Biodiversity Conservation. In: *Biodiversity – Broadening the Debate*. Australian Nature Conservation Agency, Canberra, Australia.

- Taber, A., G. Novarro and M.A. Arribas. 1997. A new park in the Bolivian Gran Chaco – an advance in tropical dry forest conservation and community based management. *Oryx* **31**:189–198.
- Tabor, G.M. 2002. Defining conservation medicine. In: Aguirre, A.A., R.S. Ostfeld, G.M. Tabor, C. House and M.C. Pearl (Eds). *Conservation Medicine: Ecological Health in Practice*. Oxford University Press, New York, USA.
- Tanzania Game Tracker Safaris and Robin Hurt Safaris. 1996. The Cullman rewards and benefits scheme. In: Leader-Williams, N., J.A. Kayera and G.L. Overton (Eds). *Tourist Hunting in Tanzania*. IUCN, Gland, Switzerland and Cambridge, UK.
- Taskforce on Economic Benefits of Protected Areas. 1998. *Economic Values of Protected Areas: Guidelines for Protected Area Managers*. IUCN, Gland, Switzerland and Cambridge, UK.
- Taylor, R. 2001. Participatory natural resource monitoring and management. In: Hulme, D. and M.W. Murphree (Eds). *African Wildlife and Livelihoods: The Promise and Performance of Community Conservation*. James Currey Ltd., Oxford, UK.
- Ten Kate, K. 2003. Sensitive Sites – Sensitive Issues: An Investors' Perspective on Extractive Companies and Biodiversity. Vth World Parks Congress, Workshop II.5, on Building Support from New Constituencies, Durban, South Africa, 11–13 September, 2003.
- Thambi, E. 2003. *Promoting Livestock Marketing and Trade for Sustainable Livestock Development*. Internal publication, African Union/Interafrican Bureau for Animal Resources, Nairobi, Kenya.
- Thibaults, M. and S. Blaney. 2003. The Oil Industry as an Underlying Factor in the Bushmeat Crisis in Central Africa. *Conservation Biology* **17**(6):1807–1813.
- Thomson, G.R., W. Vosloo and A.D.S. Bastos. 2003. Foot and mouth disease in wildlife. *Virus Res.* **91**:145–161.
- Thomson, G.R., E.N. Tambi, S.K. Hargreaves, T.J. Leyland, A.P. Catley, G.G.M. van't Klooster and M.-L. Penrith. 2004. *Shifting paradigms in international animal health standards: the need for comprehensive standards to enable commodity-based trade*. CAPE Unit, Pan African Programme for the Control of Epizootics (PACE), African Union/Interafrican Bureau for Animal Resources (AU/IBAR) Discussion Paper. Nairobi, Kenya. Accessed October 2004 at www.eldis.org/static/DOC15066.htm
- Thorsell, Jim. 1992. *World Heritage Twenty Years Later*. IUCN, Gland, Switzerland.
- Thorsell, Jim. 2003. World Heritage Convention: Effectiveness 1992–2002 and Lessons for Governance. Governance Workshop. Vth World Parks Congress. Durban.
- Thrupp, L.A. and N. Megateli. 1999. *Critical Links: Food Security and the Environment in the Greater Horn of Africa*. WRI Project Report. World Resources Institute (WRI), International Livestock Research Institute (ILRI), Nairobi, Kenya.
- Thulstrup Hans. 1999. *World Natural Heritage and the Local Community: Case Studies from Asia-Pacific, Australia and New Zealand*. World Heritage Centre, Paris, France.
- Todishev, Mikhail. 2003. The Conservation Value of Sacred Sites of Indigenous Peoples of the Arctic: A Case Study in Northern Russia. Paper presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 11. Durban, South Africa.
- Tongson, E. 2003. Securing Tenure for Biodiversity Protection: The Case of Sibuyan Mangyan Tagabukid, Philippines. Presentation at the Vth World Parks Congress, Durban.
- Torres, Miriam and Ricardo Espinosa. 2003. Building Cultural Support through development of a network of PAs Associated to the Great Inca Route. PowerPoint presented at the Vth World Parks Congress, Technical Sessions on Building Cultural Support for Protected Areas, September 11. Durban, South Africa.

- Tranel, Michael J. and Adrienne Hall, 2003. Parks as Battlegrounds: Managing Conflicting Values. In: Harmon, D. and A. Putney (Eds). *The Full Value of Parks: from Economics to the Intangible*. Rowman and Littlefield Publishers, Lanham, MD, USA.
- Trouvilliez, J. 1997. Twenty years of hunting reserves and refuges in France: conclusions and recommendations. *Gibier Faune Sauvage* **14**:227–235.
- Trzyna, Ted. 2001a. California's Urban Protected Areas: Progress despite daunting pressures. *Parks* **11**(3):4–15.
- Trzyna, Ted. 2001b. *The Groundwork Approach to Urban Renewal: What California can learn from an innovative British environmental partnership organization*. California Institute of Public Affairs, Sacramento, USA. www.InterEnvironment.org/cipa/groundwork.htm
- Trzyna, Ted (Ed.). 2005. *The Urban Imperative: Urban Outreach Strategies for Protected Area Agencies*. InterEnvironment, California Institute of Public Affairs, Sacramento, USA.
- Tryzna, T. 2005. Urban Dwellers and Protected Areas: Natural Allies. (This volume).
- Uganda Wildlife Authority (UWA). 2001. *Bwindi Impenetrable National Park/Mgahinga Gorilla National Park (Bwindi/Mgahinga Conservation Area) General Management Plan (July 2001–June 2011)*. UWA Planning Unit, Kampala, Uganda.
- UN (United Nations Population Division). 2004. UN report says world urban population of 3 billion today expected to reach 5 billion by 2030. Press release, 24 March, 2004. United Nations, New York. www.unpopulation.org
- UNEP and WTO. 2002. *The Quebec Declaration on Ecotourism*. World Tourism Organization, Madrid, Spain.
- UNESCO. 1996. *Biosphere Reserves: The Seville Strategy and the Statutory Framework of the World Network*. UNESCO, Paris, France.
- UNESCO. 2004. *MAB Urban Group*. UNESCO, Paris, France. www.unesco.org/mab
- United Nations Educational, Scientific, and Cultural Organization (UNESCO). 2004. World Heritage List. UNESCO, Paris, France. Online at: <http://whc.unesco.org/heritage.htm> (April 22nd 2004).
- U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce (Census Bureau). 2002. *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. Washington DC, USA.
- USFWS. Viewed February 20, 2004. <http://refuges.fws.gov/faqs/acquisition.html#hunters>
- Van Boven, G. and F. Hesselink. 2003. *Conservation results by Managing Change: The Role of Communication, Education and Public Awareness, Experiences in Central Europe*. IUCN, Gland, Switzerland.
- Van Weerd, M., G. Van Boven and J. Van der Ploeg. 2004. *Using Communication to involve Local Communities and Local Governments in Protected Area Management: Two Related Cases from Northeast Luzon, Philippines*. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Various recommendations arising from the Congress available from IUCN (2003). www.iucn.org/themes/wcpa/wpc2003/pdfs/Proceedings/recommendations.pdf
- Vidal, R.M., G. Grenna, E. Santi and D. Calabrese. 2004. Strategic Communication Planning for a National System of Protected Areas: The Mexican Case. In: Hamù, Auchincloss and Goldstein (Eds). 2004. *Communicating Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK.
- Vincelette, M. Environmental Program Manager, QIT Madagascar Minerals. Personal communication by email on April 22, 2004.

- Von Droste, Berndt and N. Ishwaran. 2003. World Heritage in Danger: How it can Build Political Support. Paper prepared for workshop on Building Support for Protected Areas. Vth World Parks Congress, Durban, September, 2003.
- Wadley, R.L., C.J. Pierce Colfer and I.G. Hood. 1997. Hunting Primates and Managing Forests: The Case of Iban Forest Farmers in Indonesian Borneo. *Human Ecology* **25**:243–271.
- Wallace, David Rains. 1992. *The Quetzal and the Macaw: The Story of Costa Rica's National Parks*. Sierra Club Books, San Francisco, USA.
- Wallis, J. and L.D. Rick. 1999. Primate conservation: the prevention of disease transmission. *Int. J. Primatol.* **20**:803–825.
- Warhurst, A. 1992. Environmental management in mining and mineral processing in developing countries. *Natural Resources Forum* **16**:39–48.
- Warhurst, A., A.L. Stewart Carter and A. Mohan. 2001. *Corporate Foundations as Agents of Development*. Mining Policy Research Initiative of the International Development Research Centre, Canada.
- WCPA. 2000. Definition of the Non-Material Values of Protected Areas. Unpublished report. IUCN World Commission on Protected Areas, Task Force on the Non-Material Values of Protected Areas, Gland, Switzerland.
- WCPA. 2003. Cities and Protected Areas (Recommendation 5.14 of the Vth World Parks Congress). www.iucn.org/themes/wcpa
- WCPA. 2004. Task Force on Cities and Protected Areas. www.InterEnvironment.org/pa
- Weaver, L.C. and P. Skyer. 2005. Conservancies: integrating wildlife land-use options into the livelihood, development and conservation strategies of Namibian communities. In: Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr and A. Yang (Eds). *Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health*. IUCN, Gland, Switzerland and Cambridge, UK.
- Welcomme, R.L. 2001. *Inland Fisheries: Ecology and Management*. Food and Agriculture Organization of the United Nations. Blackwell, Oxford, UK.
- Wells, M. and K. Brandon. 1992. *People and parks: Linking Protected Area Management with Local Communities*. The World Bank, Washington, DC, USA.
- Wells, M., S. Guggenheim, A. Khan, W. Wardoyo and P. Jepson. 1999. *Investing in Biodiversity: A Review of Indonesia's Integrated Conservation and Development Projects*. World Bank, Washington, DC, USA.
- Wells, M. 2003. The Evolution of the ICD Approach: An Overview. Presentation at the Vth World Parks Congress, Durban.
- Werikhe, S., L. Macfie, N. Rosen and P. Miller (Eds). 1998. *Can the mountain gorilla survive? Proc. Population and Habitat Viability Assessment Workshop for Gorilla gorilla beringei*. Conservation Breeding Specialist Group (CBSG), Apple Valley, MN, USA.
- West, P.C. and S.R. Brechin (Eds). 1991. *Resident Peoples and National Parks*. University of Arizona Press, Tucson, USA.
- Western, D. 1994. Ecosystem conservation and rural development – the case of Amboseli. In: Western, D., R.M. Wright and S.C. Strum (Eds). *Natural Connections: Perspectives in Community-based Conservation*. Island Press, Washington, DC, USA.

- Western, D., R.M. Wright and S.C. Strum (Eds). 1994. *Natural Connections: Perspectives in Community-based Conservation*. Island Press, Washington, DC, USA.
- Wildlife Conservation Society (WCS), The Field Veterinary Program (FVP). 2003a. *Animal Health Matters: Improving the Health of Wild and Domestic Animals to Enhance Long-Term Development Success in USAID-Assisted Countries*. RFA USAID/G/ENV/ENR 99-01 Technical Application Report. Wildlife Conservation Society, Bronx, New York, USA. Accessed October 2004 at http://wcs.org/sw-high_tech_tools/wildlifehealthscience/fvp/168570/168612/animalhealthmatters
- Wildlife Conservation Society (WCS), The Field Veterinary Program (FVP). 2003b. *Livestock and Wildlife Health. Wildlife Health: Disease – A Growing Threat to Wildlife Conservation*. Accessed October 2004 at http://wcs.org/sw-high_tech_tools/wildlifehealthscience/fvp/167670
- Wildlife Conservation Society (WCS), The Field Veterinary Program (FVP). 2003c. *Gorilla and Human Health. Wildlife Health: Disease - A Growing Threat to Wildlife Conservation*. Accessed October 2004 at http://wcs.org/sw-high_tech_tools/wildlifehealthscience/fvp/167670
- Wilkie, D.S. and J.F. Carpenter. 1999a. [Can nature tourism help finance protected areas in the Congo Basin? *Oryx* 33:332–338.](#)
- Wilkie, D.S. and J.F. Carpenter. 1999b. [The potential role of safari hunting as a source of revenue for protected areas in the Congo Basin. *Oryx* 33:339–345.](#)
- Wilkie, D., K.H. Redford and T.O. McShane. [In press]. [Taking of rights for natural resource conservation: a discussion about compensation. *Oryx*.](#)
- Williams, Michael. 2003. [Deforesting the Earth: From Prehistory to Global Crisis. University of Chicago Press, Chicago, IL, USA.](#)
- Williams, Nancy and G. Baines (Eds). 1988. *Traditional Ecological Knowledge: Wisdom for a Sustainable Development*. Australian National University, Canberra, Australia.
- Wilshusen, Peter R., S.R. Brechin, C.L. Fortwangler and P.C. West. 2002. Reinventing a Square Wheel: Critique of a Resurgent “Protection Paradigm” in International Biodiversity Conservation. *Society and Natural Resources* 15:17–40.
- Wily, L. 2003. Emerging Legal Opportunities for Community Ownership of Valuable Resources. Presentation at the Vth World Parks Congress, Durban.
- Woodford, M.H. 1982. [Tuberculosis in wildlife in the Ruwenzori National Park, Uganda \(Part I\). *Trop. Anim. Health Prod.* 14:81–88.](#)
- Woodford, M.H., T.M. Butynski and W.B. Karesh. 2002. [Habituating the great apes: the disease risks. *Oryx* 36:153–160.](#)
- World Bank. 2001. *World Development Report 2000/2001: Attacking Poverty*. The World Bank, Washington DC, USA.
- World Bank. 2002. [World Development Indicators 2002](#). World Bank, Washington DC, USA.
- World Commission on Protected Areas. 1999. WCPA Position Statement on Mining and Protected Areas. Paper endorsed by the IUCN Council, April.
- World Health Organization (WHO). 2002. [Global Tuberculosis Control: WHO Report, 2002](#). World Health Organization, Geneva, Switzerland.
- World Heritage Centre. 1999. *Operational Guidelines for the Implementation of the World Heritage Convention*. World Heritage Centre, Paris, France.
- World Heritage Centre. 2001. *UNESCO Thematic Expert Meeting on Asia-Pacific Sacred Mountains*. World Heritage Centre, Paris, France.

World Parks Congress Outputs. 2003. *Vth World Parks Congress Emerging Issues*. Accessed March 2004 at www.iucn.org/themes/wcpa/wpc2003

WWF. 2004. *How Effective are Protected Areas? A Preliminary Analysis of Forest Protected Areas*. Report prepared for the Seventh Conference of Parties of the Convention on Biological Diversity. WWF, Gland, Switzerland.

Yunis, E. 2003. Sustainable Tourism: World Trends and Challenges Ahead. In: Buckley, R., C. Pickering and D. Weaver (Eds). *Nature-based Tourism, Environment and Land Management*. CABI Press.

Zimmerman, B., C.A. Peres, J.R. Malcolm and T. Turner. 2001. Conservation and development alliances with the Kayapó of south-eastern Amazonia, a tropical forest indigenous people. *Environmental Conservation* 28:10–22.