Chapter I: Theoretical concepts relating to wildlife-human conflicts

It is stated in Kenya’s National Environment Action Plan that the “major environmental and developmental challenge today is how to maintain the equilibrium between population, ecosystems and development. Current development efforts emphasise production with little regard for environmental conservation, while conventional conservation advocates resource protection without human use. Environmental damage, which is evidently widespread, undermines future development efforts. It is now time to meet human needs in ways that do not destroy the environment” (MENR 1994, vii).

Key concepts in the above quote like development, environment and conservation are dealt with first in this chapter. The concept of conservation is discussed in terms of protected areas, wildlife utilisation and local participation in conservation matters. Two approaches of biodiversity conservation are underlined, viz. the conservation of wildlife species and the ecosystems they are part of. As hippos have a key role in structuring wetlands, the values and functioning of these ecosystems are indicated. The ins and outs of species conservation are shown, and reasons are given why species are considered as threatened. A threatened existence may be the outcome of conflict situations between people and wildlife. Most threats facing wildlife are anthropogenic in nature, such as hunting - a direct threat- and the destruction or modification of habitats (indirect). Wildlife-human conflicts can be regarded as true conflicts between man and beast, or interpersonal conflicts between various human stakeholders. Most wildlife-related benefits accrue to a relatively small group of people, while the local people who bear the costs of the presence of wildlife rarely benefit. Questions of ownership and access to resources are discussed in this context, which turns the issue of wildlife-human conflicts into a political issue.

I.1 The environment-development nexus

The history of environmental concern is quite similar to that of development studies (Elliott 1994, 9). Environmental problems that countries face vary with their stage of development, the structure of their economies, and their environmental policies. The roots of all environment and development theories lie in the concept ‘development’, a continuing process of change, whose meaning varies with time and place (Reitsma & Kleinpenning 1991, 24). Environment covers “all abiotic and biotic elements that provide the resources and conditions for natural and human life systems (Kessler 1997, 21).

Prior to the 1970s, development policies were centred on ‘growth maximisation’. Development and environmental conservation were thought to be incompatible because of the finite character of resources (Elliott 1994, 9-10). Environmentalism was mainly reflecting European and American, white, middle-class concerns over the undesirable effects of industrial development. As a result of pollution incidents in the 1960s environmental doomsday literature appeared (Bartelmus 1994, 5).

During the 1970s, economic development came to be redefined in terms of poverty reduction, inequality and unemployment (Dixon 1990). It indicated a shift of development theory from capital to
people-centred approaches. At the 1972 United Nations Conference on the Human Environment held in Stockholm attempts were made to address the problems in developing countries. The notion of global crisis gave way to the internationalisation of both ecology and environmentalism. Parallel with the concern for global environmental issues grew an apocalyptic vision of neo-Malthusian crisis, in which demographic pressure led to resource degradation. In this context ideas about sustainable development (SD) emerged, which stressed the conservation of the resource base on which all development depends (Adams 1993, 28). There have been several attempts to permeate development with environmental principles. Examples are the World Conservation Strategy (WCS), which provided a global framework for conservation and a set of ideas labelled as ecodevelopment, which referred to ecologically sound development, with an emphasis on basic human needs.

Structural adjustment and debts characterised the 1980s, which have often been referred to as a 'lost decade of development' (Bartelmus 1994, 3). During these years there was a change in awareness of the environmental aspects of development. The search for 'environmental benign' development has clearly shaped the thinking on SD. The concept gained further credence thanks to the World Commission on Environment and Development (WCED). In its outcome, the 1987 Brundtland Report, the integration of economic and ecological systems was regarded as a basis for achieving SD. This report contained a widely known and debated definition of SD, namely: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987, 40). In addition, reciprocal links between poverty, development and environment were drawn explicitly: “many forms of development erode the environmental resources on which they must be based, and environmental degradation can undermine development”, while “poverty is to be seen as a major cause and effect of global environmental problems” (WCED 1987, 43). The WCED helped to direct a search for ways to stimulate people-oriented conservation (BSP 1993).

In the 1990s, the acceleration of economic growth was seen as a prerequisite for poverty eradication, human resource development and environmental protection (Braidoti et al. 1994, 25/6). The neglect of increasing environmental destruction in development practices led to the organisation of the 1992 UNCED in Rio, that is the United Nations Conference on Environment and Development. It brought forward the Rio Declaration on Environment & Development, Agenda 21, and adopted the Biodiversity Convention, or the Convention on Protecting Species and Habitats. The provision of funds to protect natural habitats and biodiversity was emphasised as an area of international activity.

The global dimension and interconnectedness of environmental problems were recognised. As the biosphere is shared by humans, environmental problems in a particular area have a direct or indirect impact on inhabitants elsewhere (Doyle & McEachern 1998, 166/7). Both poverty and affluence were considered to be driving forces behind environmental degradation and resource depletion (Bartelmus 1994). The increasing ‘Third World’ debt has serious implications for economic development, political stability and resource conservation (McNeely et al. 1990). However, financial support can only provide a partial solution to environmental problems (Ellenberg 1993). Attempts have been made to address debt problems and environmental problems in developing countries simultaneously, for instance through debt-for-nature swaps. In some countries these swaps are regarded as an “infringement upon national sovereignty”, because control and influence over natural resources is partially passed over to foreign organisations (Middleton 1995). Adams agrees: “Conservation is still dominated by global concentrations of wealth and power, and centralised decision-making” (1993, 200).

Development is increasingly analysed against the background of globalisation, in which global and local tendencies either coincide or conflict. De Haan (1999) distinguishes three ways of looking at the environment-development nexus: (1) a classical preservationist approach which assigns intrinsic values or rights to nature and non-human species; (2) a neo-liberal approach, in which a strong belief in a free market underlies the idea that nature can be exploited, yet state intervention is required to cope with situations of market failure; (3) a neo-populist approach, in which conservationists put their faith in the adaptive capacity of humans and thus stress local or indigenous knowledge. This fits into the spirit of the nineties. In this decade concepts like local participation and community empowerment are gaining ever more importance; participatory ‘bottom-up’ approaches are often preferred to ‘top-down’ approaches (BSP 1993).

I.2 The concept of conservation

A large array of concepts, e.g. conservationist, preservationist, ecologist or environmentalist, reveals an ambiguous terminology with regard to conservation. Its history can be described either in terms of political benchmarks (such as the passage of nature laws, see e.g. Heijnsbergen 1997) or ethics. The ethical stand contains an anthropocentric view of nature (its instrumental value or utility) and a non-human centred point of view, in which nature’s intrinsic value is independent of its usefulness to man. So far conservation has had different meanings. Depending on the context, it referred to any form of environmental protection (preservationist idea, based on the inherent value of wilderness and nature) or an efficient, non-wasteful use/management of natural resources, which is essentially the conservationist idea. At present, both terms are no longer sharply distinct, although they are still used to stress principles. Examples are the World Conservation Strategy (WCS), which provided a global framework through debt-for-nature swaps, conservationist ideas gaining ever more importance; participatory ‘bottom-up’ approaches are often preferred to ‘top-down’ approaches (BSP 1993).

The non-human centred point of view was stressed in preservation. Passmore defined preservation as “primarily the saving of natural resources from use” (1974, 73). The preservation of wilderness and species was necessary due to their intrinsic (the right to exist) or purely instrumental value, i.e. their future usefulness to man for instance as a source of genetic diversity or scientific understanding.
The ‘non-homocentric’ ethical aspect was also included in Ehrlich & Ehrlich’s (1981, 48-49) fourfold argumentation for the preservation of species, i.e. “our fellow travellers on Spaceship Earth”. These environmentalists referred to: (1) aesthetic or symbolic values; (2) direct economic benefits, or financial gain by harvesting animals on a sustained-yield basis; (3) indirect benefits to mankind, as species are components of vital ecosystems that act as life-supporting systems for humanity; and (4) a recognition that all products of evolution had a right to exist. They acknowledged that mankind had received a ‘stewardship’, a moral responsibility to respect the rights of other species on the planet because it has the power to destroy them: “By deliberately or unknowingly forcing species to extinction, homo sapiens is attacking itself; it is certainly endangering society and possibly even threatening our own species with extermination” (Ehrlich & Ehrlich 1981, 6).

Some elements of the above argumentation are visible in Passmore’s (1974) definition of conservation, “the saving of natural resources for later consumption”. In this respect, conservation is regarded as a broad concept that partly covers “preservation, maintenance, sustainable utilisation, restoration and enhancement of the natural environment” (Makombe 1993, 4). Onsandi (1995) referred to conservation in a narrow sense, i.e. protection without interference. He used this term to describe early conservationists who stressed ecological concerns and ignored human interests. This notion of wilderness is largely rooted in western ideas though. There are many countries in which the natural and human realm are not separated. Whether people consider humanity to be a part of nature (integrationist view) or not (segregationist view) affects their perception of the future and how nature fits into it.4 People who worry about humanity’s future are less likely to grant more space to wildlife. A less purist view of conservation would thus look beyond parks. According to Western, “conservationists have ignored the non-park areas in favour of saving nature by segregating it from humanity” (1989, 158).

**The World Conservation Strategy**

Over the years, conservation has become an elaborate and detailed concept. It is no longer defined as an ideal status, but more as a mode of action by which to attain that status (Heijnsbergen 1997). The World Conservation Strategy (WCS) developed the current concept of conservation. Its definition is closely related to management: “Conservation is that aspect of management which ensures that utilisation is sustainable and which safeguards the ecological processes and genetic diversity essential for the maintenance of the resources concerned” (Heijnsbergen 1997, 49). The launch of the WCS was a cautious attempt to put conservation on a “rational, systematic and truly global base” (Kingdon 1990, 238). Indeed, many countries have used its recommendations to construct National Conservation Strategies (Elliott 1994, 11).

Wildlife conservation must become an extension of wider debates about SD, or environment and development. One approach to this synthesis is presented in the various products of the UNCED, another is offered by the WCS (Adams 1996). In the WCS, development was first suggested as a major means of obtaining conservation instead of obstructing it (Adams 1993). A need to link protected-area management with economic activities of local communities was stressed (BSP 1993). Conservation goals of the WCS were to be incorporated in all development programmes, viz. (1) maintenance of life-support systems, (2) preservation of genetic diversity and (3) ensuring SD of ecosystems and species. Yet the WCS bears the imprint of the ethics and morality of 1970s environmentalism, according to which wild species have to be conserved because they are useful (scientific utilitarianism), and it is right to do so (romantic holistic thinking; ethical or moral argument). Indigenous values placed on wildlife are addressed as well: “For many people, wildlife is of great symbolic, ritual and cultural importance, enriching their lives emotionally and spiritually” (Adams 1993, 48).

**Wildlife utilisation**

The ownership and utilisation of natural resources, which include wildlife, is a recurrent theme in the discussion on SD. It is evident that economic activities transform the natural world, and sometimes lead to severe environmental degradation. Unless users agree upon resource utilisation, shared resources like ecological systems and fisheries will degrade over time, particularly in case of population growth and the accompanying increase of economic activity (World Bank 1992).

The recent emphasis on utilitarian arguments reflected a growing awareness of the need to integrate conservation and development, a debate that has revolved around the issue of trade in ivory (Adams 1996). Wildlife utilisation has been debated on ethical and pragmatic levels. In the pragmatic debate it is questioned to what extent wildlife utilisation furthers or hinders its conservation. The ethical debate questions whether humans should adhere to a homocentric or a biocentric perspective: is it justified to use wild animals for our own benefit, or do species have inalienable rights of their own? In this respect, many people are convinced that man will only value wildlife when it is useful in a consumptive or non-consumptive way. If not, species and habitats will most likely be destroyed to provide space for other types of land use. However, the issue of accepting utilisation as a means of conservation is detached from the debate on the economic justification of use: not all value can be measured by means of economic indices (Robinson & Redford 1991, 3).

**The establishment of protected areas**

Worldwide, around 5% (7,500,000 km²) of the global land surface is covered by 8,200 National Parks and other protected areas. Between 1972 and 1990 the area under national protection systems tripled (World Bank 1992). Many areas are threatened in their existence (Ellenberg 1993), due to inadequate management funds, strong incentives for encroachment, and an ineffective enforcement of conservation laws (World Bank 1992). A similar tendency applies to Africa, where protected areas are regarded as the backbone of nature conservation. Areas selected as park sites were mostly considered to be unsuitable for agriculture, or served as ‘no-man’s land’ along a national frontier (Warren & Wood...
It is widely acknowledged that few species can survive outside their natural habitats: they need to be conserved within the biotic community of which they form a part. Unfortunately, protected areas often have artificial or political boundaries, which do not correspond with the ecological requirements of wildlife in terms of for instance habitat diversity and space. Human settlements in dispersal areas, the areas that lie adjacent to parks, strongly interfere with wildlife’s spatial mobility, as expressed in seasonal migration or dispersion patterns (Korfage 1985, 45/6). Wildlife is a fugitive resource, which cannot be confined to parks (Sibanda & Omwega 1996). On ecological grounds, the protectionist approach to parks is unsound (Western 1994). Even if all species could be included within the boundaries of protected areas, they would still be prone to extinction due to insularisation of reserves or threats from poaching, pollution and inadequate conservation practices (Western 1989).

In many countries, conventional wildlife conservation has been directed at the creation, support and extension of protected areas in which human activities were excluded (Robinson & Redford 1991; Warren & Wood 1981). The national park concept is virtually an American idea (Yellowstone Park 1872), which has been copied to Africa. However, geographic, cultural and economic differences were not taken into consideration. The implementation of conservation techniques based on foreign ideas which hardly reflected African interests, underlies the problem in the wildlife sector and made land use conflicts unavoidable (Marekia 1991). Alienation of land for national parks and hunting reserves fitted into a pattern of colonial restructuring of African land use traditions (BSP 1993). Expelling people has often led to disturbances, high surveillance costs, a decreasing acceptance of conservation, and a hardening of land use conflicts (Ellenberg 1993). Under the wildlife sanctuary approach local people were viewed as enemies of wildlife (Sibanda & Omwega 1996), while African knowledge and value systems have generally been marginalised by “Northern” values in conservation strategies (BSP 1993).

Ideally, rural people should be a forceful lobby for conservation, because they share the land with wildlife. However, when wildlife conservation is at odds with the livelihood of local communities, people complain that their interests and values are too often pushed aside and wildlife protection is being given exclusive preference. This perception and the implementation of legislation have fuelled a hostile attitude towards wildlife (Nepal & Weber 1995; Makombe 1993; Omwendi 1995). Western (1994) puts it firmly: “For decades, colonial preservation policies put animals above people and drew deep hostility. Where is the fairness in conservation?”

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The Hippopotamus: nothing but a nuisance? Aenne Post, University of Amsterdam.

(1995, 85) biodiversity is generally defined in terms of (1) species, (2) genes and (3) ecosystems, which are the fundamental, inextricably connected levels of biological organisation. (1) Species diversity or ‘species richness’ concerns the number of species in a site or habitat, i.e. a local environment occupied by a particular species, or a place inhabited by a community of organisms (Pomeroy & Service 1992, Gilpin 1996). (2) Genetic diversity relates to the heritable variation within and between populations of organisms. (3) Ecosystem diversity is locally or regionally based—largely in terms of vegetation—and covers the relative abundance of species and species’ types (Groombridge 1992, xiii/xiv).

Within the context of this research, two approaches of biodiversity conservation are of importance, viz. (1) conservation of species and (2) habitats or ecosystems (Groombridge 1992, 543). The first approach entails a review of taxa, i.e. groups of organisms, aimed at identifying species considered to be of high conservation priority, in particular endangered species and those of actual or potential resource value. Conservation or recovery plans often combine in situ (undertaking population surveys, gazetting of sites as protected areas) and ex situ management practices (establishing captive breeding populations).

The second approach covers safeguarding representative samples of ecosystems or habitat types. It assumes that species inhabiting these areas will be conserved through the designation of a network of protected areas or other controls of land use (Groombridge 1992, 543). If conservation schemes of individual species are to succeed they need to be integrated into broader land use strategies involving complete ecosystems (Simon 1993, 166). Hutchins goes beyond this by arguing that threats to wildlife are too pervasive to be solved by habitat preservation and integrated conservation strategies alone. “Unprecedented levels of human intervention will be necessary if many species are to persist. Intervention may take the form of for instance mediating conflicts between humans and animals, controlling indigenous animal populations, and manipulating or restoring habitats” (Hutchins 1995, 3).

The key issue at stake in the biodiversity debate is its loss, which can take many forms. The most fundamental and irreversible loss is species’ extinction, which may be indirectly or directly caused by the hand of man (Groombridge 1992, xv; Middleton 1995, 85). Groombridge (1992, 235) distinguishes four threat categories which are anthropogenic in nature, that is either induced or influenced by man.

(1) An indirect threat like habitat loss or modification is generally a result of urbanisation, agricultural expansion/pastoral development (deforestation, fire), and industrial activities (pollution). Nearly all forms of sustained human activity influence the natural environment; they either cause environmental stress or alter ecological processes. As a result, species’ habitats may become unsuitable or fragmented, e.g. when previously contiguous populations of species are divided into sub-populations, which in case of fairly small sizes enhances the risk of extinction. Fragmentation affects common dispersion and colonisation processes, and reduces foraging areas (Middleton 1995, 88/90).

(2) A direct threat like exploitation relates to meat, hides, and trade in wildlife. Trade is meant for scientific/medical research, zoo display and the supply of animal products like skin, medicine and decorative objects. The technological improvement of hunting equipment contributed to the large-scale hunting of commercially valuable species. Ehrlich & Ehrlich (1981, 105/6) blamed this attitude on a “temporal myopia build into human behaviour”, or its economic equivalent “discounting the future” that involves a decision-making process which is mainly based on short-term goals. Particularly when animals are regarded as common property resources, ‘owned’ by no one and ‘desired’ by all, there is a strong tendency for their destruction.

(3) The deliberate or accidental introduction of exotic species may end up in competition or hybridisation with endemic species. A well-known example is the direct introduction of Nile perch into Lake Victoria, which reduced the biodiversity and environmental stability in the lake’s ecosystem.

(4) Direct threats to animal species relate to diseases (exotic or endemic), incidental take, such as the drowning of mammals in fishing nets, a limited distribution, and animal disturbance, i.e. the deliberate eradication of species considered to be pests by means of extensive control programs.

Many wildlife species are still being killed far above their reproductive capacity (Sommerlatte 1988). Particularly species which are perceived as harmful or dangerous to people, or those which are highly valued for food and trophies may be at risk. Human population growth increases the demand for bushmeat. Excessive hunting, trapping, and poaching of animals have resulted in a severe decline in both numbers and geographical ranges of certain species. Both hunting pressure and the rate of reproduction determine in how far hunting affects a species type. When removal outnumbers replacement, population numbers decline (Happold 1987, 312).

Several authors seem convinced that in terms of overall loss of biodiversity, destruction and modification of natural habitats outweigh direct causes of species threat, although hunting pressure can have severe effects as well and decimate some species (Middleton 1995; Dobson 1996; Kiss 1990; Ehrlich & Ehrlich 1981; Groombridge 1992). Kiss for example argues that “habitat loss is the greatest overall threat: of an original 20,797,441 square miles of wildlife habitat on the continent of Africa, around 65% has been lost through logging and conversion to agriculture or other uses” (1990, 1). The World Bank (1992) also labels habitat loss or fragmentation as a major threat, while over-exploitation, species introduction, and pollution play a secondary role. Ehrlich & Ehrlich presented a doom-scenario, in which large game such as elephants, hippos and rhinos were all feared to be extinct before the year 2000, largely because of the expansion of cultivated areas (1981, 141/2).

Wetland ecosystems

Wetlands are highly important to humans and animals. Peoples’ livelihoods revolve around the functioning of wetlands, which supply water, support vast numbers of fish and wildlife, and provide a range of goods and services. The tourist industry highly values wetlands, particularly when focused on
wildlife. Hippos are one of the wetland inhabitants. The survival of Africa’s ‘Big Game’ heavily depends on wetlands, as they rely on the provision of water, habitat and biodiversity functions such as intricate species assemblages and food webs (Denny 1991). Hydrological and ecological processes sustain wetland functions such as flood control, food production, wastewater treatment, and wildlife conservation. Functions of individual wetlands have a direct impact at local or regional level, whilst the total effect of all wetland ecosystems contributes to global environmental dynamics (Middleton 1995).

Around 6% of the earth’s land surface is currently covered by wetlands. In Africa, wetlands cover 1% of the total surface area. The three largest wetland systems in Equatorial Africa are the Zaire Swamps (80,000 km²), the Sudd in the Upper Nile and the wetlands of Lake Victoria Basin (both 50,000 km²).

The term wetlands groups together a wide range of inland, coastal and marine habitats which share several common features. These areas are largely inundated with water: the aquatic environment and elevated lands both serve as wildlife habitats (Gilpin 1996). In the 1971 Ramsar Convention (Convention on Wetlands of International Importance Especially as Waterfowl Habitat), wetlands are defined as “areas of marsh, fen, peatland or water whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres” (Harcourt 1992, 293). Due to the highly dynamic nature and variety of wetland types, exact boundaries of wetlands are difficult to define. Thus estimations of the size of wetlands vary considerably. The ecosystem edges are mostly characterised by transitional zones, or ecotones (Pomeroy & Service 1992). These zones are incorporated in Denny’s (1994, 250) working definition of wetlands, i.e. “seasonally or permanently waterlogged or flooded areas which support hydrophytic vegetation” (a hydrophyte is a plant adapted to live in water or waterlogged soil).

**Meaning of wetlands**

Thirty years ago wetlands were regarded as “worthless wastelands, only fit for drainage, dredging and infilling” (Middleton 1995, 166). They were mere breeding grounds for disease carrying insects, who transmitted malaria, yellow fever, bilharzia, and diseases of the respiratory system. The association with disease and waste has encouraged the view that wetland reclamation is a beneficial form of development (Simon 1993, 47). Colonial governments and subsequent aid programmes have often instigated the drainage of African wetlands for food production and higher living standards (Denny 1991; Middleton 1995), mostly at the expense of environmental factors (Simon 1993).

Africa’s highly dynamic wetlands, such as Lake Victoria’s permanent herbaceous swamps, are classed among the most productive ecosystems in the world. People now realise that properly managed wetland communities can be more productive in terms of plant matter than conventional agricultural land. According to Denny (1991), the cultivation of particular wetland plants, like rice and oil palm, should be preferred over conventional crops with a lower yield. Inedible plants are valuable as well: reeds are widely used for matting and thatching, while papyrus, a dominant emergent water plant in many African swamps, can be twice as productive as maize or sugarcane. The estimated yield of papyrus ranges from 100-143 tonnes/hectare. Yet highly productive crop plants like maize and sugarcane, which need regular care, have estimated yields of respectively 60 and 63 tonnes/hectare.

The productivity in African floodplains, the predominantly waterlogged grasslands alongside rivers and lakes, depends on the continuous input of nutrients into the system and the nutrient cycle. Floodwaters carry nutrient rich sediments, which once deposited, increase the fertility of the plain. The vegetation that cannot adapt to rising water levels drowns and its tissue decomposes. Released nutrients enter the aquatic food cycle: facilitate a rapid development of insects, snails etc. and serve as a rich food base for fisheries. When the water recedes the land sprouts to life. Livestock dung deposited on land, and the faeces of hippos, which mainly defecate in the water, both increase the fertility of the ecosystem and the cycle continues (Denny 1991).

Wetland ecosystems are maintained by an energy flow, expressed in a grazing food chain or a detrital food chain, which are often interlinked and provide life for an array of flora and fauna (Malbly 1991). In the grazing chain living plants are consumed by herbivores, which in turn provide food for carnivorous animals. The detrital chain provides energy for a variety of decomposers of detritus, i.e. dead organic material that falls to the ground or sinks to the bottom in aquatic ecosystems. Decomposers like fungi and bacteria release mineral elements into the environment.

**The loss of wetlands**

The Ramsar Convention ‘acts’ as a major forum for the global promotion of wetland conservation in order to halt the decline and ensure the ecological viability. A Ramsar Wetland Conservation fund has been established to assist developing countries in wetland conservation; wetlands of international importance have been designated as ‘Ramsar Sites’ (Malbly 1991; Simon 1993). The destruction of wetlands has continued, even though signatories to Ramsar have committed themselves to include wetland conservation in their national land use planning strategies. In the past four decades, more than 59% of the wetlands has been lost world-wide. Developing countries were mostly affected, as the expense of replacing lost wetland functions is an impossible burden. Reclaimed swamps and lakes e.g. have led to a lowering of the ground water level. Natural wetlands in Africa are under threat due to the need to provide food, employment and settlement for a fast growing population (WNF 1996).

The most damaging type of wetland ‘development’ is single-purpose utilisation of wetlands, like the drainage for agriculture or clearing for paddy rice. When the full value of wetlands is not taken into account, local people experience adverse impacts at once. Wetlands are sensitive to disruption by human activities, such as drainage, pollution and alteration through biotic introductions (Mavuti 1992). Actions which alter hydrology often have a more permanent character than those affecting only flora and fauna, although the latter eventually may lead to species’ extinction (Malbly 1991).
Conservation of species

The stability of an ecosystem partially determines the type and commonality of species that inhabit it. Series of adaptations are associated with the degree of ecosystem stability. In stable systems, changes in the physical environment are minimal for lengthy periods of time. Such systems, e.g. large lakes, favour species diversity. Unstable ecosystems, like ponds and deserts, are usually inhabited by fewer species, whose abundance is subject to wide fluctuations. Since conditions are far from ideal, the animals have to respond quickly when conditions are favourable (Pomeroy & Service 1992, 198).

The concept of carrying capacity\(^1\) relates area to species. It has been defined in various ways, for instance as “the number of individuals which can be supported on a given area for a significant period of time” (Taber 1971, 60) or the upper limit to the number of species that can be supported in a specific area on a sustainable basis (Gilpin 1996; Happold 1987). Some species are best adapted to temporary or unstable habitats: these species are characterised as r-selected and have a high innate (or intrinsic) capacity\(^2\) of increase (Pomeroy & Service 1992, 174). More stable habitats are characteristic for K-selected species, whose populations are at or near K, which is similar to carrying capacity.

The assessment of an animal’s broad population dynamics strategy\(^3\) may take the form of an oversimplified classification in terms of r- and K-selection (Laws 1981). Both terms are used in a comparative sense, for no animals are considered to be completely r- or K-selected. When the features that typify the selection are regarded as extremes of a continuum, most species would be somewhere in between, one being more r or more K than another (Pomeroy & Service 1992, 199). Larger mammals which are identified with overpopulation problems, such as hippos, generally tend toward the K-strategy end of the spectrum (Laws 1981). They may have a key role in structuring ecosystems, as they have evolved subtle, delicate mechanisms to respond to changes. Due to their more defined regulatory mechanisms, “they are less likely to overshoot carrying capacity than r-selected species. But when they do, the effect will be sustained and probably catastrophic” (Laws 1989, 219). Characteristics of r- and K-selected species are shown in table I.1.

Table I.1: A summary of features of typically r- and K-selected species

<table>
<thead>
<tr>
<th>Feature</th>
<th>Typical of r-selection</th>
<th>Typical of K-selection</th>
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<tbody>
<tr>
<td>Physical environment</td>
<td>Unpredictable</td>
<td>Constant or predictably seasonal</td>
</tr>
<tr>
<td>Mortality rate</td>
<td>Often high (mostly density independent factor)</td>
<td>Usually low (mostly density-dependent factor)</td>
</tr>
<tr>
<td>Survivorship</td>
<td>Short life-span</td>
<td>Relative to long life-span</td>
</tr>
<tr>
<td>Mobility</td>
<td>Efficient: long distance dispersal, migratory</td>
<td>Obligate dispersal locally, non-migratory</td>
</tr>
<tr>
<td>Competition: intra- and inter-specific</td>
<td>Little and infrequent</td>
<td>Intense and frequent</td>
</tr>
<tr>
<td>Consequences of natural selection</td>
<td>Rapid development, high Rm, Reproduction early in life, once only</td>
<td>Slow development, low Rm, Delayed reproduction, repeated every season, High efficiency (few large eggs or young)</td>
</tr>
</tbody>
</table>

Source: Pomeroy & Service 1992, 199

Conservation of keystone species is essential, for a “keystone species might hold the key to both the diversity and stability of its community” (Baskin 1997). These animals are referred to as ecosystem engineers, capable of shaping landscapes by activities like felling trees and pecking holes. Hippos are regarded as such keystone species, they are “engineers which stomp trails and gouge out mud wallows” (Baskin 1997, 49). When an ecosystem partially collapses, the importance of keystone species becomes evident. The elimination of these species among integrative ecosystems may lead to a cascade of further extinctions throughout their ecosystems (Middleton 1995, 86; Ehrlich & Ehrlich 1981, 96). Myers (1987) wonders whether such a process is transferable to an higher scale\(^4\): “can we afford to lose some species, and some communities more than others?”

Endangered species are “flora and fauna likely to become extinct due to direct exploitation by humans, intrusion into highly specialised habitats, threats from other species, interruption of the food chain, pollution or a combination of such factors” (Gilpin 1996). Species face an enlarged risk of extinction when they are found in small populations, inhabit a narrow geographical range, or occupy a few specialised habitats. K-strategists are more prone to extinction than r-strategists. The latter not only produce many offspring early in life, but are also capable of reacting quickly to habitat changes, thus enlarging their chances for survival; contrary to the K-strategists, which “tend to live in stable habitats, delay reproduction to an advanced age and produce only a few, large offspring” (Middleton 1995, 86).

As a first step, accurate data is required to take remedial action to halt the decline of species. The Species Survival Commission (SSC) of the International Union for the Conservation of Nature (IUCN), which collates data on rare and endangered species, has grown into a large global network. It is divided into Specialist Groups, which are organised mainly on a geographical or taxonomic basis. These groups prepare Action Plans, which contain reviews of the conservation status and needs of species, besides recommendations for conservation actions. Their implementation is actively promoted through a lobby of governments, conservation organisations, and donors.

**Threat categories**

Due to the development of the Red Data Book concept in the 1960s, which categorised species at risk, public awareness of threatened species increased (Groombridge 1992, 234). Until 1979, the IUCN Red Data Book has been the official register of globally rare and endangered species. Then the World Conservation Monitoring Centre (WCMC) took over the responsibility for compiling the animal volumes, in collaboration with the SSC (Simon 1993). Since 1986, the so-called IUCN Red List of Threatened Animals is being compiled every two years, on the basis of information obtained from scientists and naturalists/conservationists working in the field. Each listed species is assigned a threat category: extinct, endangered, vulnerable, rare, indeterminate, or insufficiently known. Categories are generally applied to species on an international or global scale. Their assignment is based on a review of key factors, such as changes in distribution or numbers, degree and type of habitat and population biology. Most likely, ‘missing species’ are not yet described by science; otherwise, their status has not been reviewed (Groombridge 1992, 234). Species’ threat categories are presented in table I.2.
Competition is the active demand of two or more resources for a common vital resource. With competition, in which one animal uses resources more efficiently than another (Fogiel 1987). Threatened species are listed in three categories: critically endangered, endangered or vulnerable. Listing is based on a range of quantitative criteria (A-E) meeting any one criterion is sufficient for listing a given taxon (IUCN 1999).

### Table L2: Species’ threat categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extinct</td>
<td>species which have not been definitely located in the wild during the past 50 years</td>
</tr>
<tr>
<td>Endangered</td>
<td>species in danger of extinction; survival is considered unlikely as long as underlying causes remain</td>
</tr>
<tr>
<td>Vulnerable</td>
<td>species that are thought likely to become endangered unless the adverse factors that threaten them can be removed</td>
</tr>
<tr>
<td>Rare</td>
<td>species at risk. They occur in low numbers, have a very restricted range, or are sparsely distributed</td>
</tr>
<tr>
<td>Indeterminate</td>
<td>species known to be E, V or R. Information is insufficient to know the appropriate category</td>
</tr>
<tr>
<td>Insufficiently known</td>
<td>species suspected of being eligible for one or other of the preceding categories, but whose lack of information makes confirmation impossible</td>
</tr>
</tbody>
</table>

The general term threatened is used to refer to a species considered to belong to any of the listed categories. Both definition and application of status categories have been objects of discussion, mainly because they are influential tools in needs assessment and the mobilisation of resources for conservation at the (inter)national or sub-national level. As Groombridge (1992, 234-235; Simon 1993, 167), “Many scientists find the existing threat category definitions excessively subjective, and as a result, categorisations made by different authorities can vary and may not accurately reflect real extinction risks”. Simon acknowledges that several species have become “endangered by default -through inefficient administration, ignorance of their ecology, or simply because nobody seems to have either the interest, authority or responsibility for taking constructive action to safeguard them” (1993, 166).

Since 1996, the Red Data List system⁴ no longer classifies species according to the degree in which they face extinction. The new system is indicated in table I.3. Species’ population decline, regardless of abundance, is the new criterion, which enables the prioritisation of species in immediate need of conservation. This classification system is more objective in nature: it allows for comparisons to be made across species in an assessment of the likelihood of extinction. The new Red Data List is to serve as a platform for debate (Owen 1996). Threatened species are listed in three categories: critically endangered, endangered or vulnerable. Listing is based on a range of quantitative criteria (A-E) meeting any one criterion is sufficient for listing a given taxon (IUCN 1999).

### Table L3: The new wildlife classification system (IUCN status)

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threatened species known to survive in captivity or as a naturalised population will outside the past range</td>
<td></td>
</tr>
<tr>
<td>Critically endangered species facing an extremely high risk of extinction in the wild in the immediate future</td>
<td></td>
</tr>
<tr>
<td>Endangered species facing a very high risk of extinction in the wild in the near future</td>
<td></td>
</tr>
<tr>
<td>Lower risk species threatened with extinction</td>
<td></td>
</tr>
<tr>
<td>Lower risk</td>
<td>A continuing species-specific or habitat-specific conservation programme directed at the taxon in question, its cessation leading to a threatened status within 5 years</td>
</tr>
<tr>
<td>Lower risk</td>
<td>a taxon which is close to qualifying for “vulnerable”</td>
</tr>
<tr>
<td>Data deficient</td>
<td>Information needed for an assessment of the risk of extinction is inadequate</td>
</tr>
<tr>
<td>Not evaluated</td>
<td>The taxon has not yet been assessed against the criteria</td>
</tr>
</tbody>
</table>

Sources: Groombridge 1992, 234-235; Simon 1993, 167

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**The Hippopotamus: nothing but a nuisance? Aenne Post, University of Amsterdam.**

### Trade in species threatened with extinction

In order to protect wildlife from over-exploitation and prevent international trade in species threatened with extinction, CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) was drawn up in 1973. It is based on a permit system linked to three lists or appendices, which each represent an increasing degree of protection. In appendix I, which concerns species threatened with extinction, trade is banned. Appendix II lists species that may become so. Appendix III species are subject to regulations within areas under jurisdiction of signatories to the convention (Heijnsbergen 1997; Simon 1993). Enforcement is largely up to individual member states.

Trade in wildlife is estimated at approximately €12 billion a year, up to a quarter of it illegal (Nicholson-Lord 1997). In support of the implementation of CITES, the IUCN/SSC founded TRAFFIC (Trade Records Analysis of Flora and Fauna in Commerce) to keep an eye on international trade (Heijnsbergen 1997). The Wildlife Trade Monitoring Unit (WTMU), a division of the WCMC, collects and analyses information on trade in wildlife or wildlife products. The CITES-secretariat obtains information from the WTMU and TRAFFIC, and trade statistics from governments.

### L4 Conflicts

**Competition from an ecological point of view**

A number of reasons have been provided for declining animal populations, which either related to man or nature. Even though most natural causes are beyond the scope of this research, species-related competition is discussed briefly because it may have a severe impact on animal populations (competition with respect to hippos is discussed in chapter V).

Competition is the active demand of two or more resources for a common vital resource. With regard to species, two types of competition can be distinguished. (1) In interspecific competition, which involves two or more species, the competitive superiority of a rival species may even drive another species to extinction. (2) Intraspecific competition, between individuals of the same species, often contributes to large fluctuations in population size (Pomeroy & Service 1992). It consists of contest (a physical confrontation between two animals which allows one to win the resource) and scramble competition, in which one animal uses resources more efficiently than another (Fogiel 1987).

Since ecosystems are highly dynamic systems that are in a perpetual state of flux, their ‘inhabitants’ have to be adaptive in their way of life. Species fit into ecological niches, suited to their functional role or position within the ecosystem (Joffe 1969). These niches are defined through a set of variables, such as temperature range, required nutrients and characteristic activities (Fogiel 1987, 961).
permanent coexistence between them may be possible. Generally, this is referred to as resource partitioning² (Pomeroy & Service 1992, 123/4).

Regarding man as a factor in the environment of animals, involves recognising his huge impact in many circumstances. People modify habitats, hunt, fish, poach, and even promote interspecific competition through the introduction of foreign species. As Laws says: “The importance of man probably overrides all else in terms of direct (e.g. poaching, crop protection) and indirect (competition for space) conflicts. These conflicts tend to remove the opportunity for dispersion and migration and to bring populations in the different cells of habitat mosaic. The smaller the range occupied by an animal, the more severe the effect to be expected, and the greater chance of irreversible changes. The social behaviour of the animal in question is important - whether it is organised as solitary, in small groups, harems/family units, or in large herds; whether it is resident, territorial, or migratory” (1981, 228).

Wildlife-human conflicts

Wildlife-human conflicts can be regarded as “any and all disagreements or contentions relating to destruction, loss of life and property, and interference with rights of individuals or groups that are attributable directly or indirectly to wild animals” (KWS 1996, 2). Eriksen et al. stress the apparently incompatible demands for resources in particular areas when they define wildlife-human conflicts as “situations where land use by humans and wildlife affect or are perceived to affect each other in a negative way. The extent to which these interactions cause conflict reflects increased pressure for utilisation of those resources in a restricted area, or decreased compatibility in uses” (1996, 209).

The human and ecological realm are both characterised by processes that determine the overall state they are in. Ecosystems for instance are organised in a particular way, and so is human society. These patterns also determine the requirements of each realm. The apparent incompatibility of different demands for the same resources is manifested in situations of conflict. Wildlife-human conflicts can essentially be regarded as conflicts over land use, or nature protection versus human land use needs.

Relations between human society and the ecological system are indicated in terms of positive and negative influences and interactions (see figure IA). The arrows are indicative of conflict situations. Nature conservation for example is portrayed as a positive influence, while human induced changes in ecosystems often affect wildlife species in a negative way. It all depends on how conservation is looked upon. When it represents ‘isolation’, it can be associated with negative impacts, on species as well as man. Attempts to conserve animals in protected areas can be perceived as negative when the interests of local people, living in the immediate vicinity of the parks, is not taken into account. These people rely on the use of natural resources in order to fulfil their basic needs. However, the acquisition of goods and services may interfere with nature’s capacity to supply them, especially when resources are over-utilised, thresholds are crossed, and landscapes are altered through the clearing of wetlands, burning of fields, preparing of soils, construction of homesteads, erection of fences etc. It remains unclear to what extent external factors, such as rapid population growth and the policy environment, are included in the figure. These aspects clearly influence conflict situations.

**Figure IA: Relations between human society and the ecological system**

Source: Kessler 1997

**Conflict categories**

There are roughly two types of wildlife-human conflict: (1) situations of direct interaction between people and animals, or true conflicts and (2) interpersonal conflicts between human stakeholders.

1. Human activities endanger wildlife. Conflicts may manifest themselves in different ways, for instance as illegal or excessive human use of protected areas or resources to which access is being denied, or land use practices outside or bordering protected areas, which affect wildlife interests both inside and outside parks or reserves (Eriksen et al. 1996). Several threats have already been mentioned in the section on biodiversity loss, such as habitat destruction, animal disturbance, and exploitation. However, animal species pose threats too: they threaten human life, transmit diseases, kill livestock, and destroy crops. Such losses may affect people economically or psychologically (KWS 1996, 2).

2. Interpersonal conflicts are clashes of interest between stakeholders with polarised group or self interests in the competition for resources and the ability to control wildlife benefits (KWS 1996, iii). Some groups may dispute policy changes that are likely to benefit particular groups, or affect the existing power balance. Actors in the field of wildlife conservation clash with wildlife opponents. The increasing pressure on protected areas is revealed by disputes between people who think that wildlife should be kept in conservation areas and people who want to pursue land uses, which are believed to be incompatible with wildlife as a form of land use (Korfage 1985, 44/6).

**Conflict manifestation**

Wildlife induced damage is a clearly visible manifestation of the underlying conflict over resources. A rough division of the most frequent wildlife damage problems would contain three elements, viz. (1) the type of damage, (2) usual damage pattern, and (3) control methods.
Wildlife populations will be in jeopardy, irrespective of any other game management measures taken. When habitats are destroyed or permitted to deteriorate, food, or shelter, as well as changes in the number of parasites and predators. This is an important issue in game management because an improvement of both quality and amount of suitable habitat offers the best prospect to increase wildlife populations. When habitats are destroyed or permitted to deteriorate, wildlife populations will be in jeopardy, irrespective of any other game management measures taken. 

(1) Direct regulation sets limits on sex, size or age of animals killed or removed from a habitat. A framework is provided through game laws placing restrictions for instance on the type of species and equipment used, and the season or time of day. An animal's population status determines the severity of the regulations: they are usually stringent for locally rare species.

(2) Indirect manipulation of a habitat or ecosystem involves a regulation of the supply of water, food, or shelter, as well as changes in the number of parasites and predators. This is an important issue in game management because an improvement of both quality and amount of suitable habitat offers the best prospect to increase wildlife populations. When habitats are destroyed or permitted to deteriorate, wildlife populations will be in jeopardy, irrespective of any other game management measures taken.

(3) Control depends on an animal’s legal status: is it a fully protected or non-protected species, is it classified as pest or predator? Whether a species is considered to be a pest not only depends on the definition of the word ‘pest’, but also on aspects like locality and seasonality. Generally, a pest species infringes on human activities by eating or destroying something that is required by people. It tends to occur in large numbers and causes extensive damage. However, the assessment of species’ abundance and the amount of damage is subjective (Happold 1987, 315).

Wildlife management and conservation
In addition to several techniques for restoring, maintaining, and increasing game populations, wildlife management also contains guidelines for the control of problem animals. Botkin & Keller distinguish two types of population management techniques, viz. (1) direct and (2) indirect regulation (1986, 211).

(1) Direct regulation sets limits on sex, size or age of animals killed or removed from a habitat. A framework is provided through game laws placing restrictions for instance on the type of species and the number of individuals taken (by hunting, trapping or fishing), the type of firearm, trap or fishing equipment used, and the season or time of day. An animal’s population status determines the severity of the regulations: they are usually stringent for locally rare species.

(2) Indirect manipulation of a habitat or ecosystem involves a regulation of the supply of water, food, or shelter, as well as changes in the number of parasites and predators. This is an important issue in game management because an improvement of both quality and amount of suitable habitat offers the best prospect to increase wildlife populations. When habitats are destroyed or permitted to deteriorate, wildlife populations will be in jeopardy, irrespective of any other game management measures taken.

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Politics and land use
The concept of entitlements to natural resources is of major importance in political environmental geography, the geographic counterpart of political ecology (Dietz 1996). Entitlements encompass three rights, viz. (1) ownership, (2) utilisation and (3) intervention. With regard to the first right, individuals, companies and government agencies increasingly demand resource ownership or the right to determine who uses the resource and in what way. Their claims may be based upon an array of legal systems. Secondly, use rights relate to social use (access) or economic exploitation of resources. Restrictions may either refer to time or specific resource elements. Finally, the financial and organisational basis of several local and external agents allows for intervention in environmental issues. Distinct resource users often value natural resources in a particular area according to their own interests. Moreover, they have their own personal agendas and set their own priorities: in many cases the political arena determines the decision-making side of natural resources. At present, environmental argumentation is handled as a powerful tool in the local political arena (Dietz 1996, 11). Indeed, issues of land use and wildlife protection are inherently political, especially when they arise in food-deficient and economically less developed societies. They become matters of life and death for man and animals occupying the space where the man-land-wildlife relationship is particularly intimate (Yeager & Miller 1986, 3/5). Wildlife can bring advantages and problems to the people whose land it shares. Wildlife benefits generally accrue to the national or international level, while costs are borne by local people who experience damage due to wildlife. There is hardly any agreement between people who deal with wildlife on a day-to-day basis and people who do not (Miller 1986, 70). Land and wildlife have become objects of conflicting international, national and local goals, which represent legal as well as illegal practices of a number of actors. Actors involved in Kenyan wildlife issues are discussed in chapter III. A broad overview of two ‘actor-levels’ is presented underneath.

Actor-levels
(1) Rural dwellers are determined to protect themselves and their property against wildlife. Their daily interactions with the environment are directed at the supply of basic necessities. Without a good policy and fair compensation rules for property destruction by wildlife, local people find it hard to regard the presence of game as beneficial. To them, wildlife does not represent ‘forex’ earnings, but destruction.
and loss of income or lack of food. As long as net benefits outweigh indirect costs of production (damage, protection costs), wildlife remains a net cost to people who own or use the land. Sibanda argues that conflicts occur due to “short-sighted colonial conservation strategies that created National Parks (ecological islands) and separated the local people from wildlife and denied them access to wildlife as a resource. In so doing they also took away from the local people the responsibility for managing and conserving wildlife” (1995b, 78). Particularly when wildlife crosses park boundaries, other land uses are affected and people’s livelihoods are undermined. African pastoralists for instance have become heavily involved in the conflict over resources, which they fight among themselves, with commercial ranches, cultivators, wildlife and wildlife proponents (Peperkamp & Remie 1989).

(2) International and national interests of the wildlife conservation movement and the tourist sector underlie the wildlife lobby. Wildlife advocates and foreign visitors frequently emphasise animal conservation for scientific and aesthetic or recreational reasons. Wildlife related benefits that emanate from protected areas, like park entrance fees, are often directed towards the tourist industry and the central government. Wildlife-related tourism is a mere source of foreign exchange, which is required by the national elite for economic development and the acquisition of imported consumer goods.

At a national level, wildlife conservation is intricately connected to policies surrounding land adjudication and subdivision, rates of urbanisation and industrialisation, the organisation of the tourist industry, and agricultural policies (Norton-Griffiths 1996). In its economic policy the government can aim at developing agricultural practices in ASALs, or prioritise wildlife related activities (Peperkamp 1989). However, wildlife management is rarely perceived as productive land use. In economic and natural resource planning, donors and governments tend to overlook the significance of wild harvests to local people (Makombe 1993). In many African countries the policy environment lacks appropriate land tenure and land use planning sensitive to biodiversity conservation (BSP 1993).

Conservationist interventions are often political in nature: they support the imposition of state controls over indigenous political frameworks. This is particularly so when relative outsiders to a region or a country leave their mark on conservation policies, for which they seek legitimacy and authority through government. International agencies dealing with (global) environmental issues reinforce the top-down orientation of many conservation programmes (Colchester 1996). According to Sibanda (1995b), many international conservation experts still believe that conservation is attainable through law enforcement (as in the controversial issue of the elephant’s status on the CITES-list) and denial of access to resources instead of popular participation and education.

**Local or community participation**

Local or community participation can be defined as a process “whereby people act in groups to influence the direction and outcome of development programs that will affect them” (BSP 1993, 103). In a broad sense, participation relates to a limited or extensive input into decision-making and control, and finally stewardship of resources; community concerns a self-defined entity that is made up of different stakeholders (BSP 1993). As stated earlier, safeguarding the environment asks for a holistic, participatory approach: it cannot be separated from broader issues of rural development. People’s immediate needs should be addressed along with long-term conservation. Humans and wildlife interact specifically beyond the borders of protected areas. Biodiversity conservation thus requires the involvement of local people (BSP 1993). It is essential to find ways to involve landowners and other stakeholders in the process of identification, planning and decision-making with regard to wildlife management beyond protected areas (Kagiri 1997). This calls for the provision of appropriate incentives for conservation - including a reorientation of wildlife values (Makombe 1993).

Throughout Africa, there is an increasing number of projects directed at local community involvement in biodiversity conservation in protected areas. In Zambia for example, the Administrative Design for Game Management Areas (Admale) directly involves local communities in the management and protection of wildlife resources, by giving them a share of the benefits that mostly emanate from hunting, thus enabling their future empowerment in sustainable resource management (BSP 1993).

One of the most widely known attempts to stimulate conservation and development outside protected areas in Africa is Zimbabwe’s Communal Areas Management Programme for Indigenous Resources, or Campfire. This approach is often regarded as being innovative in the field of sustainable rural development (Sibanda 1995b), and a powerful incentive to adopt wildlife management schemes as adjuncts to cattle and cropping (Sibanda 1996b; Pitman 1990). It is a participatory approach which aims at involving local people in the decision-making, planning and management of wildlife, and allows them to share in wildlife related proceeds (Sibanda 1995b), thus encouraging them to become more tolerant towards wildlife and regard it as a valuable resource instead of a nuisance. **Campfire is foremost a change in the land use system for marginal, non-arable land in areas under traditional communal tenure (Martin 1994). The proprietorship of wildlife on communal lands is transferred from the state to local governance structures (Sibanda 1996b; Butler 1995). Both local participation and people’s ownership are considered as the key to sustainable resource management: in order to secure an ongoing flow of earnings, stakeholders are keen on protecting the resource. Studies in Campfire areas have shown that participation has not only reduced the man-beast conflict but allowed peaceful coexistence as well (Sibanda 1996b). The programme has increased household income in communal areas by an estimated 15-25% per household (Butler 1995).**

Campfire has received support from international organisations like the IUCN. Nonetheless, it is also being criticised. Some international ‘green’ organisations perceive the approach as a threat to their conservation ideology that opposes wildlife exploitation by man (Martin 1994). However, the controversy goes beyond the debate over animal rights. Several NGOs argue that conservation is becoming a matter of supply and demand: more cash! More killings! Instead they emphasise non-
The Hippopotamus: nothing but a nuisance? Anne Post, University of Amsterdam.

consumptive ways of utilising wildlife resources (Rowell 1997). Campfire is an African initiative that is considered to initiate a democratic movement among communal land people. Government officials may oppose the approach due to the decentralisation of power and authority (Martin 1994). Even though many leading development and conservation organisations are supportive of community based conservation projects (CBC) the movement has opponents as well, for it might influence the existing power structure. CBC “favours indigenous people who live near parks over patronising and exploitative foreigners, it funnels resources into impoverished local communities rather than to politicians and corrupt officials. International donors find it less pleasant to deal with local peasants than with powerful operatives in capitals” (Benirschke et al. 1998). Environmental concerns may disguise the real political motives that underlie the controversy. Local participation in conservation issues encompasses several complexities indeed. Involvement can only be effective when local people have a degree of control over resources. However, government agencies may be reluctant to allow a transfer of management responsibilities, particularly when local empowerment is regarded as a threat to the central authority or a support of political opposition groups. Local communities for their part may object conservation activities that are considered to be tools of Northern donors or national governments to exert influence and control (BSP 1993, 107).

Tenure regimes

A primary source of conflict between man and wildlife is lack of access to natural resources, such as land. Land tenure regimes directly influence wildlife management. Rights related to wildlife are mainly secured through public tenure (Eriksen et al. 1996, 202). In terms of tenure regimes, the conflict centres on the issue of public rights versus individual rights to land and natural resources. Eriksen et al. express this as follows: “Conflicts between individual and public tenure originate in the fact that the local population is not allowed to utilise the natural resources to which they feel they have a claim. In addition, government property in the form of wildlife, whose management and conservation does not involve the local population, is seen as violating private poverty on which it does not have rights of access” (1996, 209). Tenure systems operating in Kenya are discussed in chapter III.

Property rights regulate the access to natural resources: wildlife-human conflicts can be partly attributed to problems of ownership and access. “The antagonism comes down to the question of ownership. Who owns wildlife and who has the right to use it?” (Western 1994). Different types of property rights regimes are presented in table I.4. Common-pool resources are often restricted to land, forests, wildlife, fish etc. (Burger & Gochfeld 1998). They are in common ownership because the large size of the resource pool severely hampers the exclusion of potential beneficiaries of their exploitation, and resource management to prevent depletion is difficult (Johnston et al. 1995). Access to these resources may be equal or unequal, control may be democratic or not (Burger & Gochfeld 1998).

In many areas people appear to take all the benefits they can get out of wildlife, because the state has failed to manage it. Instead of regarding wildlife as their own resource, local people often see it as state property, for which they have no responsibility whatsoever. Reference is made to Hardin’s tragedy of the commons, which expresses that communally owned resources cannot be properly managed because each user tries to maximise his own benefits, even though this means that the resource is being depleted. Individuals will not altruistically set limits on their utilisation, unless they are sure that the other users will do so as well. It is assumed that only an external organisation (such as the state) can enforce optimal use and ensure the individual and collective interests (Johnston et al. 1995, 639).

Sibanda (1995b) opposes the above statement by arguing that a communally owned resource cannot suffer from the tragedy of the commons, because its use is controlled by a communal resource management regime. Hardin’s model is an oversimplification of reality: it assumes the non-existence of community control, social norms and ignores contextual factors such as rules about uses.

Resource access

Ideas behind resource access widely differ. Two extreme positions are the ecototalitarian approach and ecopopulism. Adherents of the first approach stress the severity and scale of environmental problems. They favour a decisive, technocratic leadership. Moreover, they consider the enforcement of stringent environmental laws as necessary in order to safeguard the future of humanity (Dietz 1996, 21). Ecofascists go beyond this: they value environmental conservation over the livelihoods of people. The term ecofasism can be used to describe the harsh methods of law enforcement. Indeed, environmental policies can be full of violence, which merely manifests itself at local level (e.g. imposition of informal taxation or utilisation of forced labour). Since these policies deal with resource access and utilisation, they are to be considered as powerful tools in the political arena (Dietz 1996, 13/15).

Ecopopulists regard rural people’s knowledge as a ’valuable and under-utilised‘ resource. They value the research technique of participatory rural appraisal, which is also referred to as ‘participatory conservation‘. According to them, participation of local communities is the key to finding solutions to existing problems (Dietz 1996, 23). The incorporation of indigenous knowledge into formal research and extension practice is necessary in order to make agriculture and rural development strategies more sustainable. As Scoones & Thompson (1994, 17/18) say: “the starting point of development is an active

Table I.4: Types of property rights regimes

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open access</td>
<td>Absence of any well-defined property rights; completely open access to resources that are free to everyone</td>
<td>Over-harvesting of species, leading to decline and even extinction</td>
</tr>
<tr>
<td>Common property (common pool)</td>
<td>Resources held by community of users who may apportion or regulate access by members and may exclude non-members</td>
<td>Fishing village that regulates fishing rights among users</td>
</tr>
<tr>
<td>State property</td>
<td>Resource held by government, which may regulate or exploit it, or grant public access. Its use can be regulated, subsidised</td>
<td>Public lands, like parks, where grazing rights are granted by the government</td>
</tr>
<tr>
<td>Private property</td>
<td>Individual owns property and has the right to exclude others from use as well as sell or rent the property rights</td>
<td>Privately owned woodland: the owner can sell or rent land, and cut or sell trees</td>
</tr>
</tbody>
</table>

Source: Burger & Gochfeld 1998
and equitable partnership between rural people, researchers and extensionists”. When development programmes ignore the social rationale behind people’s interaction with the environment they cannot succeed. Key concepts in this respect are access to resources, property systems and empowerment.

I.6 Conclusion

Many concepts have been introduced in this chapter. Conservation has been linked to environment and development, and different emphases in conservation have been mentioned. The discussion of two relevant approaches of biodiversity conservation viz. conservation of species and ecosystems revealed the huge impact people have on the natural environment. Landscape alterations, declining animal populations and animal induced damage are manifestations of different interests of man and animals.

The direct confrontation between man and animals is only one side of wildlife-human conflicts. Interpersonal conflicts between various human actors with distinct interests constitute the other side. Wildlife revenues, stemming from protected areas and the tourism industry, accrue to people whose daily lives are free from encounters with wild animals. Local people bear the costs of wildlife conservation. Instead of receiving benefits, they are left with damage brought about by game. Accordingly, they may have a negative perception of wild animals. As was stated earlier: to local people wildlife does not represent ‘forex’ earnings, but destruction and loss of income or lack of food.

Although the nature of wildlife-human conflicts is often regarded in terms of ‘people versus animals’ it is basically ‘people versus people’ oriented. Wildlife-human conflicts can virtually be regarded as conflicts about land use. The conflicts are fuelled by external factors such as rapid population growth. People compete with wildlife over land. Moreover, they compete among themselves over depleting resources. Conflicts are centred on rights to own or utilise natural resources. Local people often lack access to resources. Nonetheless, they could be a forceful lobby for conservation, as their livelihoods depend on the utilisation of natural resources.

However, conservation projects that involve local communities regularly experience resistance, mostly because local empowerment involves a degree of decentralisation of power and authority. This is often regarded as a threat to the central authority. In fact, authorities may use conservationist concerns to disguise political motives. Conservationist activities have frequently been initiated or supported by international organisations with a bias towards protected areas. This issue is covered by the bulk of scientific literature, whereas little attention has been devoted to conflict situations between humans and wildlife outside of protected areas. Initially, these areas were intended to save species and ecosystems from interference by local people.

Currently, an increasing number of projects throughout Africa address local community involvement in biodiversity conservation, both within and beyond protected areas. Approaches like Admade and

NOTES CHAPTER I

1 Population growth is not negative per se. According to Boserup, whose work accounts for spatial differences in farming intensity, the relation between people and the environment can be improved by population growth and the intensification of land use. Neo-Malthusian ideas ignore huge regional and local differences (Johnston et al. 1995; Manshard 1998).

2 These agreements relate to “the exchange of foreign debt held by an environmental organisation for a larger quantity of domestic debt that is used to finance the preservation of a natural resource or environment in the debtor country” (Todaro 1995). See also: McNeely et al 1990.

3 The relationship between man and nature can be expressed in several ways. In order to indicate environmental management in development, Colby (1990) has distinguished five world views, presented as paradigms, which formulate man’s relation to, and interaction with nature. Conservation is regarded from different perspectives. The paradigms are: frontier economics (very strong anthropocentric), environmental protection, resource management, ecodevelopment and deep ecology (biocentric).

4 The WCS was published in 1980 by the International Union for the Conservation of Nature (IUCN), with funds provided by the World Wildlife Fund (WWF) and the United Nations Environment Programme (UNEP). After the Stockholm Conference, UNEP had been established in Nairobi, Kenya, as the ‘environmental’ conscience of the UN-system.

5 IUCN Protected-Area categories are reproduced by Adams (1996), Ellenberg (1993), McNeely et al. (1990).

6 Programmes that involve rural people in wildlife management are discussed by authors such as Shepard (1994), Martin (1994), Pitman (1990) and Shibanda (1995/1996). The latter discusses the need for local level management institutions in detail.

7 Ecosystems are arranged in a more or less pyramidal way, dominated by food chains, which are intertwined with each other in food webs. They are smaller units within a biome; a generally large area covered by characteristic vegetation and containing distinctive species within its boundaries. In an ecosystem, living organisms (biotic components) interact with one another and with their physical (abiotic) environment, through which matter and energy flow (Pomery & Service 1992, Gilpin 1996).

8 Over-exploitation sometimes occurs under peculiar political and economic circumstances. This happened for instance in Uganda in 1979, when soldiers from Tanzania killed many animals in Ruwenzori National Park and sold the meat to businessmen. In less than four months around 6,000 hippopotamuses had been killed (Ehrlich & Ehrlich 1981, 117).

9 An extensive overview of natural functions and values of wetlands is given by Denny (1994) and Harcourt (1992).

10 Organisms in an ecosystem can be characterised by their mode of nutrition (trophic level). Few ecosystems have less than three trophic levels. The first trophic level consists of green plants (autotrophs or primary producers); herbivores form the second level (they eat parts of green plants). Herbivores are subdivided into groups, such as grazers (which eat grasses and herbs) and browsers (they eat leaves and twigs of trees and shrubs). Secondary producers (herbivores or consumers) are either carnivores or decomposers. The latter feed on dead plant and animal matter (Pomery & Service 1992, 35-36).

11 Under a given set of environmental conditions a habitat can support a finite number of animals. Some populations may never reach their carrying capacity, while others increase in size until they reach the carrying capacity and may even exceed it for a short period of time, after which increased mortality will prevent any further increase (Pomery & Service 1992, 181/2).
The innate capacity for increase ($R_m$) depends upon the amount by which the birth rate exceeds the death rate. $R_m$ is often used to estimate how fast a population would grow under a given set of environmental conditions, like food resources or climate. The actual rate of population increase (actual growth rate or $r$) is often less than $R_m$ (Pomeroy & Service 1992, 174).

The population dynamics strategy of animals covers their size, lifespan, annual cycle, and characteristic features of their food supply (Laws 1981). Apart from this, populations possess properties such as age-structures, sex-ratios, density, and the basic parameters birth, death, immigration and emigration. Population refers to all individuals of a particular species living in a certain area, at a particular time. When populations are described, reference is often made to animal abundance (size of a population). However, the amount of space it occupies has to be taken into consideration as well. This aspect is covered in the parameter population density, meaning the number of individuals per unit area (Pomeroy & Service 1992, 175). At different times of the year, the location, numbers, density or structure of most animal populations vary. Local circumstances also count when stress due to weather and disease, and the effects of crowding and harassment are regarded (Happold 1987, 312).

In this respect, the discipline of conservation biology is helpful. Setting conservation priorities requires a functional efficiency, based on insights into ecological processes and biotic interactions, in order to prevent mass extinctions of species. The goals of the 1996 IUCN Red List of Threatened Animals are: providing scientifically-based information on the status of species at a global level, drawing attention to the scale and importance of threatened biodiversity, affecting (inter) national policy and decision making, and providing information to support biodiversity conservation (IUCN 1999). Qualification for a category depends on whether species’ abundance and/or range sizes, or rates of decrease, meet explicit numeric thresholds.

The criteria are: declining population rate (A), small population and decline or fluctuation (B), small population size and declining rate (C), very small population/very restricted distribution (D) and a quantitative analysis indicating the probability of extinction in the wild. In addition, there are subcriteria that provide further information on the reasons to list a species, potential causes of threat etc. (World Resources Institute 1998, 328). An extensive overview of all criteria for (critically) endangered or vulnerable taxa can be obtained at (http://www.iucn.org/themes/ssc/redlists/criteria.htm).

Since periods of competition may be few and far between, whereas environmental components are continually changing, competitive advantages may shift from one species to the other, for both respond in a different way to environmental changes.

Happold gives an overview of the main responses of animal species to changing patterns of land use/environmental change, either in the form of a change in the number of individuals or a change in the geographical range (1987, 311).

Activities of animals often vary with the time of year. This so-called seasonality factor may reflect variations in resource availability (particularly food and water) or activities that occur at particular times, e.g. when the soil is moist. The breeding cycles of many species, and the timing of migration or dispersal movements, clearly indicate seasonality in behavioural patterns (Pomeroy & Service 1992, 160).

Listing of the elephant on CITES-Appendix I, in which (legal) trade is banned, is regarded by many as necessary in order to stop poaching and illegal trade. This is broadly the East African position, which is strongly pursued by Kenya (Adams 1996). Opponents argue that it creates an artificial shortage of ivory, by pushing up the prices on the black market. Illegal trade becomes highly lucrative and poaching obligatory (Sibanda 1995b). Without trade there will be no funds to pay either local people or guards to prevent poaching. This opposing view is held by the CITES Secretariat itself. Moreover, it is widely held in central/southern Africa (Adams 1996), particularly by Zimbabwe, Botswana and Namibia, countries that have worked hard for its relaxation. Finally, the ivory ban was lifted in 1997 (Nicholson-Lord 1997).

In Zimbabwe, the district councils were granted an ‘appropriate authority’ status: they can manage, use and benefit from wildlife management in the communal lands under their jurisdiction (Pitman 1990). Strictly speaking, the district council owns the wildlife: “wildlife is district common property” (Sibanda 1995b).

It is questionable whether the Campfire model, which suits the apparently unique communal land structure in Zimbabwe, is transferable to other African countries (Buffer 1995). As far as the applicability of Admade is concerned, similar considerations prevail. Although the results from the trial in one GMA (game management area, that has been divided into hunting blocks) have been highly successful, it is uncertain whether the programme could apply to other GMAs in Zambia (Siachoono 1995).