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Wildlife and biodiversity

Wild mammals and birds are important food sources to millions of people who cannot afford to buy or rear them. In addition, trade in animals captured from the wild is a multi-million dollar business, providing significant local and national income. However, unsustainable use is leading to losses and extinctions of wild animals; in addition, many species are threatened by loss of wild habitats due to clearance and other disturbances.

There are 4,763 recorded species of mammals (75% of which are small rodents, bats and insectivores), 9,946 species of birds, and more than 35,000 species of reptiles, amphibians and fish. Their ecological characteristics vary with habitat; larger savannah species are often migratory, and/or undergo substantial population changes in response to extreme conditions such as fires or drought. Damage caused by large mammals is an integral part of savanna and forest ecosystems; it is often cyclical, and facilitates dispersion and germination of colonising plants.

Importance of wildlife for human development

Wildlife provides many goods and services which are important in subsistence livelihoods:

- **bushmeat** can include anything from caterpillars to large mammals and is an important source of protein. In Africa, 236 genera of animals are consumed, including antelopes, monkeys, rodents, reptiles, snails, termites and beetles. In addition to meat, wildlife products include honey, milk, eggs, and flavourings;
- wildlife (particularly small species) is a crucial component of food security, in providing a safety net in times of hardship, and can thus **reduce vulnerability**;
- various parts of wild animals can be used as medicines in the treatment of ailments, and animals or their products are used in Western medical systems for surgery as well as biomedical research;
- **clothing**, can be made from skins, pelts, feathers and teeth, and bones may be used as tools or weapons;
- many species have **spiritual values**, or may be used as cultural artefacts and trophies; as well as adding to the quality of life, cultural values can be important in ensuring sustainable off-take or local conservation of key species;
- various **ecosystem functions** provided by wildlife species, such as seed dispersal, pollination, and manure are an integral part of the functioning of wild and semi-domesticated systems.

In addition to its role in subsistence livelihoods, wildlife is also **traded** in many forms:

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Trophies collected by a safari client who shot a crop-raiding elephant on the Dande communal land, Zambezi Valley, Zimbabwe.

- the commercialisation of **bushmeat** provides important revenues – for example, it accounts for 10% of GDP in the Central African Republic, and in the Amazon Basin wild meat yields over US$175 million/year;
- much wildlife is traded as live **pets** (e.g. parrots, frogs), and dead **ornaments** (e.g. butterflies, cat skins, ivory). In 1968, 13,500 jaguar skins were legally imported into USA in 1968, compared to 50 legally traded worldwide in 1979, after CITES (see BB20). However post-CITES trade continues: between 1976–79 over 21.5m wildlife specimens were exported from Buenos Aires, worth over US $ 245m;
- income generated from **sport hunting** in 1991 ranges from 1.4 million Euro in Burkina Faso to 10 million Euro in Tanzania;
- wildlife can also provide revenue through **non-consumptive** uses such as wildlife tourism: annual income from wildlife viewing has been estimated at more than 300 million Euro in Kenya and 75 million Euro in Zimbabwe (equivalent to 2–5 % of GDP) (see BB9).

As well as these resources, wildlife can be destructive to humans, their livestock and crops, and property. For example, monkeys eat grains and fruits (cocoa, coffee, bananas, etc); rodents and many bird species focus on seeds (annual losses of cereals to red-billed quelea in Sudan amount to $1–$6 million); elephants eat or trample most crops; and large cats pose a threat to livestock in remote areas. Some wildlife can also be a source of disease, for instance trypanosomiasis, which can pass to domesticated livestock. These pose management issues that must be addressed in development planning.

Loss of wildlife biodiversity

Overall, one in four mammal species is threatened with extinction, but the proportion of species threatened varies between families: 63% of wild horses, rhinos and tapirs; 45% of monkeys and apes; and 33% of pigs, cattle and antelopes.

The direct causes of these declines are almost universally the loss, degradation and fragmentation of habitats. For larger species hunting and trapping are also major causes of population decline, and this is increasingly problematic as inaccessible habitats are opened up with new roads. Timber companies, for example, are frequently cited as one of the major players in opening up forests, and bushmeat can fetch very high prices in urban markets.

Indirect causes of biodiversity loss include the fact that wildlife is a common resource, which makes it vulnerable to unregulated and unsustainable harvests. Local people tend to suffer from a lack of control which allows outsiders to exploit the resources which they have traditionally managed. Another underlying cause is the high price or shortage of domestically produced meat.

Opportunities

Through the conservation and sustainable use of wildlife, these losses can be avoided and sustainable benefits for human development can be sought. The equitable sharing of these benefits (which can be cash, products or other benefits) is crucial.

Wildlife tourism and sport hunting provide opportunities for the maintenance of wildlife

International context

- The Convention on the Conservation of Migratory Species (or Bonn Convention, 1979) includes a provision for setting up regional agreements (legally-binding or not) to protect or manage sites used by species or groups of species. *http://www.wcmc.org.uk/cms*
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1973) (see BB 20) regulations seem to have supported recovery of some wild populations of rare species (e.g. vicuñas), but have proved less effective for others, such as the tiger. *http://www.cites.org*
- Regulation of trade to reduce the risk of species extinction has been constrained by disputes with World Trade Organization (WTO) agreements on free trade. Following rulings against USA embargoes on goods that were deemed to be inappropriately harvested, it is clear that environmental issues must be integrated into WTO/GATT agreements and procedures. *http://www.wto.org/english/tratop_e/envir_e/envir_e.htm*

populations in their natural habitats, through non-consumptive viewing or controlled off-take. It is a particularly good method of conserving large animals (so-called 'charismatic megafauna', such as elephants, zebra and lions) which tourists (usually foreigners) will pay to come to look at, or to kill for trophies[1]. Few rainforest sites have been developed for large-scale tourism, due to the poor visibility, although a few forest lodges exist for game viewing in clearings in Kenya and India, and these are increasingly being developed in Amazonia and Mexico.

Sustainable harvesting from the wild can ensure that benefits continue to accrue over time, rather than being short-term. The most successful ways of achieving such sustainable production have been based on community participation (see text box next page), although such approaches are time-consuming, costly and sometimes controversial.

Ranching and domestication can provide food and so reduce pressure on wild populations. Various fairly successful attempts have been made, such as crocodile farms in Africa and Asia and cayman farms in Latin America. But developing small-scale cane rat ('cutting grass') and paca farms in west Africa and meso-America respectively has had less good results.

Less intensive production systems have been developed in rangelands of Latin America (e.g. for capybaras in Venezuela), and more thoroughly in the rangelands of Africa where there are over 30 species of suitable bovids and antelopes. Using species adapted to local food, water and disease conditions has allowed production / ha to exceed those for cattle under some circumstances, and areas fenced-in for this type of production are rapidly increasing in southern Africa - generally in combination with cattle rearing and sport hunting.

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In Cote d'Ivoire, for example, twice as much bushmeat is eaten as livestock (bushmeat hunter with duiker and guenon monkeys).

Conclusions

- Traditionally, policies concerning wildlife have been protectionist and have excluded local people from either protected areas or from harvesting the wildlife resource. The criminalisation of people who rely on wildlife means that much harvesting becomes illegal and more difficult to monitor and control. The conservation and sustainable use of wildlife must be done in collaboration with local communities, with effective regulation from government.
- The private sector needs to be fully involved in attempts at improving wildlife (and the biodiversity) in wildlife habitats, such as through innovative codes of conduct being developed with logging companies, which commit to monitoring hunting and transport of wildlife by their employees.
- Planning procedures and land-use management which supports sustainable use of wildlife needs to integrate extractive and protected zones in a landscape. This should be based on accurate assessments of the resources, and allow sufficient place for wild animals to reproduce and migrate. They should also address issues of competition and conflict between wild and domestic stock and human populations (e.g. over water, grazing, crop losses, etc).
- Improved management is only possible where there is clear ownership and/or access which allows for the clear definition of rights and even the exclusion of 'outsiders'. These should complement laws to protect vulnerable species from hunting, to control wildlife trade, and to control sale of weapons. It may be necessary to formalise relationships in legal terms.

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Community-based wildlife management (CWM)

CWM can be defined as *the regulated use of wildlife populations and ecosystems by local stakeholders*. Benefits can include the sale of products and sale/leasing of hunting rights. In southern Africa, in particular, significant revenues have been made from the sale or leasing of hunting concessions. World wide, significant revenues have also made on internationally traded products such as ivory, vicuña fibre and iguanas.

Factors which favour CWM largely concern the nature of the wildlife assets (clear boundaries, relative scarcity, substantial value, proximity to communities, predictability and ease of monitoring), but factors such as clear tenure rights, and the capacity of communities to undertake the necessary managerial roles are also crucial to success.

However, the costs of CWM, such as labour inputs and investments, or the opportunity costs of not using land for other purposes, can offset any such benefits. Furthermore, commercial interests tend to capture the benefits over local communities, so there is a need to assess who bears the costs of CWM, who benefits, and whether the communities involved perceive their benefits outweigh costs.

- Some interventions may require the control of wildlife populations that pose a threat to livelihoods. Problem animal control (PAC) needs to build on existing knowledge and trapping/hunting experience to reduce numbers and provide bushmeat benefits.
- Many of the opportunities for improved management of wildlife rely on access to finance, markets (including infrastructure) and information that are beyond the means of local communities. Innovative approaches are therefore required to ensure that local communities get access to these resources, and are involved in planning and decision-making, and are able to derive benefits from new activities.
- Addressing the loss of wildlife biodiversity means addressing the underlying reasons why it is being lost. In many cases this means looking at policies in other sectors (such as agricultural, forestry and trade), and ensuring that effective environmental appraisal procedures are carried out.
- Greater international funds will need to be directed to local government departments and communities that are carrying the costs of maintaining wildlife in protected areas if developing countries are to maintain global biodiversity.

[1] It is worth noting studies which have shown the lifetime value of some large mammals (e.g. lions) may be greater from wildlife viewing than sport hunting.

Further information

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- reference to other Biodiversity Briefs is denoted as (see BB#).

Website

All Biodiversity Development Project (BDP) documents can be found on the website: http://europa.eu.int/comm/development/sector/environment