

### 3. LION CONSERVATION POLICIES

- **International status**

The African lion is categorised as vulnerable by IUCN in the Red List of Threatened Species of the World (IUCN SSC, 2000).

The lion is currently listed in appendix II of CITES. This allows for continued international trade in the species under the export permit system.

- **Continental status**

This study does not find evidence that the African lion, as a species, is threatened with extinction.

However, the conservation status of the taxon appears clearly very uneven throughout its range. The different situations faced by each respective sub-population demonstrate different levels of threat. By breaking down the taxon into sub-populations, it appears that the different sub-populations may be classified in all the various categories of conservation status: some sub-populations are extinct, some are extinct in the wild, some are critically endangered, some are endangered, some are vulnerable, some are near threatened, some are of least concern, some have deficient data and some are not evaluated.

As a consequence, while a continental overview is no doubt useful, a more in-depth approach is definitely needed to design a sound action plan for the long-term conservation of the lion. Such an action plan is now urgently required to:

- (i) Determine conservation priorities;
- (ii) Define appropriate strategies on a continental, regional, national and sub-population basis, and;
- (iii) Design effective ways to implement these strategies.

- **Regional and National status**

The level of protection given to lions differs between Range States from strict protection to very little protection at all. National legislation determines whether the lion may be hunted for sport, be the object of PAC, or not at all. Most Range States allow the control of problem animals. Traditional lion hunting is generally prohibited nowadays even though it is still often practised. Some examples of the conservation status are given below in a limited number of Range States.

- *Western Africa*

In Burkina Faso, by far the main “lion country” of the region, the taxon is managed by the *Direction de la Faune et des Chasses* (Direction of Wildlife and Hunting) under the authority of the *Ministère de l’Environnement et de l’Eau* (Ministry of Environment and Water).

In Senegal, the *Direction des Parcs Nationaux* (Direction of National Parks) is responsible for the management of the lion. Two special licences for hunting lion may be issued annually by the President of the Republic.

- *Central Africa*

In Central African Republic, maybe the main “lion country” of the region, wildlife in general and lion in particular, fall under the responsibility of the *Ministère des Eaux, Forêts, Chasses, Pêches, Tourisme et Environnement* (Ministry of Water, Forestry, Hunting, Fishing, Tourism and Environment).

In Chad, the lion is managed by the *Direction de la Protection de la Faune et des Parcs Nationaux* (Direction of Wildlife Protection and National Parks) under the auspices of the *Ministère de l’Environnement et de l’Eau* (Ministry of Environment and Water). In this country, the powerful *Ministère de l’Elevage* (Ministry of Livestock) has a say in the problem of cattle depredation by lions and other predators.

- *Eastern Africa*

In Tanzania, lion management falls under the general management plans for the respective habitats (Selous, Serengeti etc.) and hence under the respective responsible authorities:

- The Tanzania National Parks Authority (TANAPA), a para-statal organisation for National Parks;
- The Wildlife Division (WD), a Government department of the Ministry of Natural Resources and Tourism (MNRT) for all game outside National Parks and Ngorongoro Crater, and;
- Ngorongoro Crater Area Authority (NCAA) for the Ngorongoro Crater.

There are no specific monitoring programmes of lion populations/habitat apart from the registered research programmes discussed below. Lion monitoring falls under the general monitoring activities of the respective authorities. The hunting offtake is monitored by the respective area (Game Reserve or District) by controlling the hunting licenses issued by the Wildlife Division, accompanying the hunting parties and checking the trophies taken out of the hunting area against the licenses. The appropriate institution, depending on the CITES-status of the animal, then issues certificates of ownership. Several lion research programmes are active in Tanzania, e.g.:

- “Project Life Lion”, Serengeti NP (Sarah Cleveland, Principal Researcher);
- “Serengeti Lion Project”, Ngorongoro Crater, Lake Manyara NP, Serengeti NP (Craig Packer, Principal Researcher);
- “Maswa Game Reserve Lion Project” (Karyl Witman, Principal Researcher);
- “Tarangire Lion Monitoring Programme” (Fondo per la Terra, Malcolm Ryen), and;
- Selous Game Reserve (Nancy M. Creel, Scott Creel, Goran Spong).

The general approach is to manage habitats to ensure that wildlife populations and wild areas are retained. In this way, free ranging lion populations will continue to survive. Use of drugs and other direct physical control methods are not favoured (L. Seige & R. Baldus, pers. comm.).

In Sudan, hunting licences are reported as being issued by the Government in the North, but are apparently not recognised in rebel controlled areas in the South, who are issuing their own licences. It is not known if or how many licences are issued for lion. There are recent moves to improve conservation in Southern Sudan, preliminary surveys being underway in Boma National Park, and others are planned.

In Uganda, there is no hunting of lion. The Government recently reintroduced the licensing of the trade in animal products, and it remains to be seen whether this will involve trade in lion products.

In Kenya, the lion is classified as fully protected, but is subject to PAC.

- *Southern Africa*

In Zambia, in 2001, a Presidential Order banned all safari hunting for one year while the new Zambia Wildlife Authority (ZAWA) was being set up. Safari hunting is now partly reopened and will probably be fully so in May 2003, once the safari hunting concessions have been allocated.

In Namibia, the lion is a protected species under Ordinance 4 of 1975. Trophy hunting is authorised and regulated by permit. Lions may be shot in protection of livestock but any such incident has to be reported to the authorities within ten days. There is no specific national lion management plan in the country, although research and monitoring activities have been launched in the mid-1990's (Predator Research Program) and are currently directed at developing such a plan in 2002/3. A Namibia Large Carnivore Atlas has been produced in 2001. Detailed population ecology and demography studies are being conducted in Etosha, Kunene and the Kaudom sub-populations. Community-based conservation programmes are currently in place in all three areas to monitor and promote suitable habitat for lions (Stander, 1990).

In Malawi, all lions are protected. No form of hunting is permitted. There is only sparse information available on lion utilisation, hunting or even Problem Animal Control in Malawi. In this country, all lion conservation, management and monitoring is carried out by the State conservation agency (DNPW) as an integral part of its management of all Protected Areas. There is no specific official programme to manage or monitor lions and no available reports on their status and trend within Malawi. What monitoring of lion activity does take place is ad hoc/circumstantial by visitors and local staff. Problem animals are closely monitored but most end up being shot.

In Zimbabwe, the hunting, capture and translocation of lions is permitted under permits issued by the relevant Minister - Parks & Wildlife Act, Chapter 20:14, Revised edition 1996. Notwithstanding this, the killing of lions in defence of human life is permitted without possession of a permit. Landowners are permitted to kill lions that are a threat to domestic livestock. There is no specific national management plan for lion. Generally, there is no formal monitoring of lion population numbers or lion habitats. However, monitoring is a by-product of some short to medium term research projects on predators. Sport hunting quotas are set annually by area. Sport hunting quotas are set by, or subject to approval by the Department of National Parks & Wildlife Management (DNPWM). Some data is collected for exported lion trophies (NP9 forms). If the DNPWM records offtakes for reasons other than sport hunting, it appears that these data are not readily available. More information is needed

on all offtake of lions (trophy hunting in all land categories, problem animal control and poaching), as well as the annual trends in these data (V. Booth, pers. comm.).

In Botswana, a National Predator Management Strategy is in the process of being developed by the Department of Wildlife and National Parks (DWNP). There is limited monitoring in the Northern regions and little protection in the Central regions. Policies in place in the Southern Kalahari/Kgalagadi region are primarily for the management of stock-raiding lions. In Botswana, trophy hunting of lions is restricted to quota per Wildlife Management Area. A temporary national ban on problem animal control and zero quota for trophy hunting of lions was instituted in January 2001. The Northern regions had a hunting quota until 2000. In the Southern Kalahari, a zero quota in Wildlife Management Areas surrounding the Kgalagadi National Park has been imposed for about 8 years prior to the nationally imposed zero quota. Lion surveys, utilizing calling stations, have been conducted by the DWNP in collaboration with private researchers to establish population estimates and structure in Northern Botswana. The proposed management strategy includes surveys every three years using calling stations in high-density areas and spoor surveys in low-density areas. The wildlife off-take policy in Botswana is one of sustainable use as long as it does not influence the conservation status of those species utilised in conservation zones. Lethal PAC is normally allowed but a temporary national ban on lethal problem animal control was established in November 2000. The proposed strategy for healthy sub-populations is one of sustainable quotas and allowance of lethal problem animal control. However, in areas adjacent to locally threatened populations, lethal off-take would be prohibited and conflict resolution measures put in place. Between 1995 and 2000, in the Okavango Delta, localised surveys were conducted and comprehensive surveys occurred in 1998 and 1999. Comprehensive surveys were also conducted in the Kwando/Chobe river area in 1999 and 2000. The Dry North had a low sampling intensity in 1999 (the calling station technique is not suitable for low-density populations). The Southern Kalahari/Kgalagadi region has very little sustained monitoring: population surveys have been conducted in 1976 and again in 1998-2001. The surveys show little change in the population size/structure. As a result, the population is not, nor does it maybe need to be, actively managed. The current ban on killing lions resulted probably from an excessive destruction of lions by livestock owners and farmers. Several poisoning incidents occurred, killing lion, hyenas, jackals and vultures. The proposed predator management strategy is based on the current mainstream thinking regarding predator conservation and conflict resolution. The management measures taken in the Northern areas are probably sufficient, although habitat destruction and increasing human population are of concern. The management measures taken in the central areas are considered to be insufficient. In the Central region, the main management issues are an increasing human population and reduced migratory ungulate population. The vast migratory wildebeest populations of Central and Southern Botswana were interrupted in the 1980's due to expansion of the cattle farming industry and the erection of game control fences. Springbok populations are now showing similar declines in this country and are not receiving much conservation attention. The collective effect of this will be (i) decline in lion, and other large predator populations, especially outside Protected Areas, and (ii) increase in lion/livestock conflicts. There is little understanding of the impact of PAC mortality, or the effect of high human densities and livestock populations in designated conservation areas (Wildlife Management Areas). In the Southern Kalahari/Kgalagadi region, current management measures manage situations in an *ad hoc* or crisis manner. In the Northern and Central regions, PAC officers are insufficiently trained and equipped. There is limited extension training. Management recommendations from a detailed study (Funston, 2001) have been made for the Southern Kalahari/Kgalagadi region. Community extension programs and the capacity to deal with stock raiding lions are seen as imperative, but remain

insufficient. Improving capacity and working more closely with communities, especially in Botswana, have been identified as crucial in terms of long-term lion conservation (P. Funston & C. Winterbach, pers. comm.).

In South Africa, hunting of lion is allowed in some parts of the country. This is controlled and regulated by the nature conservation authorities in the various Provinces. Generally hunting is restricted to private and provincial Game Reserves. Hunting of lion is forbidden in Kruger National Park (KNP), Kgalagadi Transfrontier Park, Hluhluwe-Umfolozzi Game Reserve (HUGR), Phinda, Kwandwe and Shamwari. Hunting is restricted in Madikwe and Pilanesberg. In Mpumalanga Parks (MP), hunting of lion is legal provided that the size of the reserve is larger than 2000 ha and lions are wild (i.e. not captive-bred or hand-reared). KNP has no specific lion management programme in place. KNP believes that their current management policies are appropriate, but that sub-populations in the park itself and surrounding areas should be monitored more closely. Closure of artificial water points may lead to a slight (10%) reduction in the over-inflated lion population. Disease monitoring and research are currently conducted to evaluate the threat of bovine tuberculosis. MP believe that Kruger lions are a non-reliable source for reintroduction due to disease and would like to see more reintroductions from disease-free areas. HUGR, Kwandwe and Shamwari have been the recipients of individuals from the Pilanesberg/Madikwe metapopulation. The motive behind the recent introductions of 4 and 6 females from Pilanesberg/Madikwe into HUGR and to other reserves in Zimbabwe has been to minimise the disturbance to pride dynamics. Introduced females and resident females are captured and kept in a boma together to bond and encourage pride integration and reduce escapes from the reserve. Kwandwe and Shamwari have not yet reached the stage where they need to consider off-take of lions: the reserves' carrying capacities are estimated to be approximately 15 lions based on similar-sized reserves with comparable prey density. Introductions have been conservative because of the fear of possible impact on cheetah. Kwandwe and Shamwari monitor what prey species are being focused on through scat analysis studies. They are also monitoring the lion's home range development. At Kwandwe, lions are routinely inoculated against rabies as a precautionary measure because of surrounding domestic stock. HUGR's *ad hoc* reintroduction programme is to enlarge the gene pool of lions in the HU complex. Lions are collared and monitoring takes place both through tracking and regular call-ups. North West Parks believe their management measures to be appropriate as lion populations are increasing, disease-free and bringing in revenue. The recent introductions into HUGR have had a moderate success rate and the females do settle down: they have not broken out of the Reserve (G. Kamasho *et al.*, pers. comm.).

## 4. CHALLENGES

### 4.1. CONTROVERSY AND PARADOX

- **Divergent perceptions of lion conservation**

Historically, lions have captured our imagination to the point that, in some societies, especially in the North, they have become cultural icons and have been incorporated into literature and language. As a result, their conservation is often a highly emotive issue. This extra interest in the species can be a force in their favour when it comes to conservation. Certainly, focusing on a single flagship charismatic species can often conserve a whole suite of species and their habitats.

However, for those rural African communities that have to share their lives with lions, the perception of the “*King of Beasts*” is often very different from those who do not live side by side with wildlife. Lions may represent loss of livelihood, threat to life and suffering to rural African communities. The communities therefore often view them in a negative perspective. For instance, a study conducted in and around Queen Elizabeth National Park, Uganda, showed the following results when asked about the best way to deal with stray lions that come into the village (Dricuru, 2000):

- 37% of the respondents (156 questionnaires returned and analysed) advocated the stray lions should be killed;
- 35% said a fence should be erected around the Protected Area, and;
- 28% felt people should be taught how to avoid lions.

- **Adverse impact of lion conservation on rare species**

When lions become over-abundant in comparison to the availability of wild prey species there may be conflict between different conservation goals. In some cases, rare taxa may be threatened due to too high predation by lions. However, this situation may arise in the context of populations and other human induced factors and have possibly more to do with people's perceptions and values than any real ecological rationale. For instance:

#### **Antelopes**

- Bongo (*Boocercus euryceros*)

"...the Kenya Wildlife Service has, over several months, culled some (30) lions from the Aberdares National Park which is fenced, [where] the total number of lions is estimated to be between 145 - 180. The principal reason for the culling is their having been the main predators of the rare bongo population as well as inflicting serious depredation on the bushpigs (and giant forest hogs) within this particular habitat..." (Nehemiah Rotich, in litt. anon., 2001a).

- Giant sable (*Hippotragus niger variani*)

In Angola in the 1940s and 1950s, the lion was regarded as a pest in the *Reserva do Luando*, threatening the giant sable, especially old males. Later, more accurate observations were

considering the lion as quite rare in the region with low impact on the giant sable (Silva, 1972).

- Roan antelope (*Hippotragus equinus*)

In South Africa, predation by lions is considered to be one of the causes of the roan antelope's decline in the Kruger National Park, South Africa (Harrington *et al.*, 1999).

### **Carnivores**

- Wild dog (*Lycaon pictus*)

In Botswana, "*lions are known to be the single largest natural source of mortality of wild dogs, with lion predation resulting in more than 80% of known mortality in this study. Lion distribution and abundance is an important, and probably the most important, population-limiting factor for the wild dog*" (McNutt, 2001).

- Cheetah (*Acinonyx jubatus*)

In Tanzania, the lion factor plays a substantial role in the viability of the cheetah:

. "*Of great importance is the heavy toll exacted by lions and hyenas on cheetah cubs; for example, in the Serengeti, cubs have only a 5% chance of survival to independence*" (Laurenson, 1994 in Jackson, 1997).

. "*At low lion density [in the Serengeti ecosystem], the cheetah population has very low risk of extinction. At average and at high lion density, however, cheetah extinction risk is very high*" (Kelly, 2001).

### **Suids**

The giant forest hog (*Hylochoerus meinertzhageni*) appears heavily predated by the lion in Aberdares NP, Kenya.

## **4.2. INTENSIVE MANAGEMENT ISSUES**

- **Contraception**

In response to some of the problems of managing small populations, particularly in South Africa, there have been a number of attempts to sterilize male lions by vasectomy in order to reduce the number of births to prevent overpopulation. However, these operations have met with mixed results and generally seem to have resulted in more problems than they have resolved. Most of these are as a result of the complex, and seemingly brutal, nature of social hierarchy within lion society.

Apart from the cost implications and the logistical impossibility of carrying out such surgical interventions over vast areas, the population structure of lions is highly dynamic and anything that attempts to freeze this in time is likely to throw up other problems. This technique is

probably most useful for managing small captive populations but is too intensive, costly and intrusive to have any useful field application to wild populations.

- **Captive breeding**

There are more than 1,500 African lions in captivity worldwide, including breeding populations in many wildlife parks. This figure probably registers "official" lions only, overlooking lions kept by individuals. The value of these populations to conservation is dependent on the quality of their management. Certainly in the future the captive management of some small populations may benefit genetically the long-term survival of other small populations and races that have become fragmented in their distribution.

- **Reduction of lion population size and gene pool impoverishment**

When wild populations of a species become small and geographically isolated, there is room for some concerns about the genetic consequences of this isolation (Simberloff, 1988). In lions, dispersal patterns of sub-adult males and the high turnover of breeding males in female prides normally minimise the risk of inbreeding. Habitat fragmentation, human persecution and in some instance epidemics have divided the former range of lion into distinct sub-populations, some of them being almost 'island' populations. In these small isolated populations, the rate of inbreeding can reach a level that may cause a decrease in reproductive performance. This has been observed for the most isolated lion population, the unique Asiatic population in the Gir forest, India, where the males show high levels of developmental sperm abnormalities and diminished testosterone levels (O'Brien *et al.* 1987, Wildt *et al.* 1987). On the other hand, in Africa, male lions get kicked out of their maternal pride and roam around or migrate looking for available females, this mobility ensuring a mixture of genes, even over long distances. For instance, in Etosha NP, where lion densities are estimated between 1 and 3 per 100 km<sup>2</sup> according to the various authors, the home range of one pride of lions was stated as covering 2,075 km<sup>2</sup> and overlapping the home range of a number of other prides (Stander 1991).

Long-term studies have been carried out in the Ngorongoro Conservation Area, demonstrating that inbreeding does not have a significant effect on the survival of those populations. However in this area, one of the best studied lion populations shows a low level of heterozygosity compared to that of the Serengeti NP, as well as higher proportion of morphologically abnormal spermatozoa (Packer *et al.*, 1991). However, the low level of heterozygosity may in fact reflect the history of the Ngorongoro population which developed from a restricted set of founders (15 individuals), although its isolation may have amplified its original low genetic variation (Packer *et al.*, 1991). There is certainly an effect on reproductive performance but the long term consequences for the population are difficult to foresee, as there are several examples of large felids that have undergone such genetic impoverishment as a consequence of population fragmentation or population bottlenecks and are still widespread, although not all in a favourable conservation status (e.g. cheetah, puma) (O'Brien *et al.*, 1985, 1990).

Today, the risk of reduced genetic variability, and its consequences for the conservation of lion populations, is still the focus of many researchers particularly because of the development of introduced or re-introduced populations. The number of these 'artificial' populations has increased in the last decade, promoted by the increasing demand of the tourism industry. Small founder populations in public or private game reserves in South

Africa have shown good reproductive rates, but the initial genetic variability is low and hence managers of these small fenced populations are giving much attention to ensuring gene pool diversity through translocation and introduction of new genetic stock from different origins (Hunters and Slotow, 1999).

In small populations residing in unfenced areas, the occasional wandering lion could be enough to promote heterozygosity. In a simulation 'experiment' based on lion population dynamics and genetics, it was shown that only few exchanges (once every 5 years) could maintain a reasonable level of heterozygosity (Starfield *et al.*, 1981). The exercise of Population and Habitat Viability Assessment (PHVA) may be of help to provide guidelines in this regard.





*Wildebeest as prey, Masai Mara National Park  
(Photo : Ph. Chardonnet).*



*Eland as prey, Kalahari  
(Photo : H. Fritz).*



*Cattle-raider, Serengeti National Park  
(Photo : H. Planton).*



*Elephant as prey, Namibia  
(Photo : B. Chardonnet).*



*Buffalo as prey, Luangwa valley  
(Photo : B. Chardonnet).*



*Porcupine, Masai Mara (Photo : Ph. Chardonnet).*



*Buffaloes, Virunga National Park (Photo : Ph. Chardonnet).*



*Ankole cattle, Akagera National Park (Photo : Ph. Chardonnet).*



*Roan antelopes, Waza National Park (Photo : H. Planton).*



*"Alors King s'en alla vers ses femelles qui le réclamaient. D'abord, et comme par politesse envers nous, d'une foulée lente et digne. Mais à mesure qu'il s'éloignait, il allongea le pas. Enfin, il s'élança et rejoignit en quelques bonds lionnes et lionceaux. Ils s'enfoncèrent ensemble dans les fourrés."*

Joseph Kessel, 1958. Le Lion

## BIBLIOGRAPHY

- AGIR, 2002. Dénombrement des moyens et grands mammifères de la zone intégralement protégée Mafou, Parc National du Haut-Nifer, Guinée. Ministère de l'Agriculture et de l'Elevage, Guinée.
- Ahmed, E.O., S.A. Hakim & M.B. Nimir, (Eds.), 1991. Wildlife research in relation to conservation and management in the Sudan. *Proceedings, Seminar on wildlife conservation and management in the Sudan*, Khartoum, March 16-21, 1985, 101-111.
- Amai, C.A., 1997. African Medicinal Trade Project - Uganda. TRAFFIC East/Southern Africa. Unpublished report.
- Anderson, J.L., 1981. The re-establishment and management of a lion (*Panthera leo*) population in Zululand, South Africa. *Biological Conservation*, 19(2), 107-117.
- Anon., 1994. Aerial census of animals in Botswana: wet season 1994. Wildlife conservation in Northern Botswana. Technical report by ULG Consultants to the Dept. of Wildlife and National Parks, Govt. of Botswana.
- Anon., 1994. Plan directeur des aires protégées: les écosystèmes marocains et la situation de la flore et de la faune. *Eaux & Forêts*: Tome 1, v.1.
- Anon., 1996. Conservation of Namibia's Cheetahs and Lions. *Cat News*, v.24- Spring, 11.
- Anon., 1997. Villager Kill and Eat Kruger Park Lions. *Cat News*, v.26- Spring, 11.
- Anon., 1997. Livestock Killers Translocated in Zimbabwe. *Cat News*, v.27 - Autumn, 13.
- Anon., 1997. Man-eating Lions Shot in Kruger National Park. *Cat News*, v.27 - Autumn, 11.
- Anon., 1998. Bovine tuberculosis in south Africa's lions. *Cat News*, v.29 - Autumn, 21-22.
- Anon., 1999. Some South Africans like lions in their streets, but others shoot them. *Cat News*, v.31 - Autumn, 10.
- Anon., 2000. African Lion Working Group gets to work. *Cat News*, v.33 - Autumn, 2.
- Anon., 2000. Kruger National Park. "General Park Information", <http://www.ecoafrika.com/krugerpark/general.htm>
- Anon., 2000. Kenya culls lions to protect rare bongo. *African Lion News*, v.2 African Lion Working Group website, <http://www.african-lion.org/>
- Anon., 2001. Hunting ban in Botswana. *African Lion News*, v.3. African Lion Working Group website, <http://www.african-lion.org/>
- Anon., 2001. The hunters and the hunted: lions versus life stock farmers. *African Lion News*, v.3. African Lion Working Group website, <http://www.african-lion.org/>
- Anon., 2001. Limbe Lion Workshop, 2001, [www.african-lion.org/limbe-lion-report.pdf](http://www.african-lion.org/limbe-lion-report.pdf)
- Anon., 2001. *Hunting Quotas & Licence Returns, 1995-2001*. Zambia Wildlife Authority, Chilanga.

- Anon., 2001. Status and needs for conservation of lions in West and Central Africa. Information Exchange Workshop, Limbe, Cameroon, [www.african-lion.org/limbe-lion-report.pdf](http://www.african-lion.org/limbe-lion-report.pdf)
- Anon., 2001. Lions to be re-introduced in Tembe Elephant Park. Oct. 11, [www.wildafrica.net](http://www.wildafrica.net)
- Anon., 2002. *Panthera leo* (Linnaeus 1758), <http://www.gisbau.uniroma1.it/data/amd/amd042/amd042.pdf>
- Anon., 2002. Serengeti Lions and Domestic Dogs, Trade and Environment Database, <http://www.american.edu/ted/afrdog.htm>
- Anon., 2002. Serengeti lion explosion. *Hunting Report Supplement*, April, Conservation Force.
- Anon., 2002., March. Lion conservation further compromised in Botswana. *Hunting Report Supplement*, March, Conservation Force.
- Anon., 2002. Lion Research Center, University of Minnesota, <http://www.lionresearch.org/>
- Anon., 2002. Pride and prejudice. Inside Africa, [www.cntraveller.com](http://www.cntraveller.com)
- Anon., 2002. African lion numbers are rapidly declining. Feb. 20, [www.WildlifeDecisionSupport.com](http://www.WildlifeDecisionSupport.com)
- Anon., 2002. Kenya to petition against indiscriminate hunting in Tanzania. Feb. 20. [www.WildlifeDecisionSupport.com](http://www.WildlifeDecisionSupport.com)
- Anon., 2002. Serengeti lion population rises by over 1,000. Feb. 20, [www.WildlifeDecisionSupport.com](http://www.WildlifeDecisionSupport.com)
- Anon., 2002. Lion Loose in Phalaborwa. WildNet Africa News Archive. March 4, [www.wildnetafrica.com](http://www.wildnetafrica.com)
- Ansell, W.F.H., 1978. *The Mammals of Zambia*. National Parks & Wildlife Service, Chilanga.
- Aulagnier, S. & M. Thévenot, 1986. Les ongulés sauvages du Maroc. Constat d'une régression alarmante. *Le Courrier de la Nature*, 104 (Juillet-Août), 16-37.
- Averbeck, C., 2001. A park is not an island: combining different wildlife management strategies in the area of Lake Mburo National Park, Uganda. *Abstracts IUGB. XXVth Congress - Wildlife management in the 21<sup>st</sup> century*. Lemesos, Cyprus, September 3-7, 73.
- Averbeck, G.A., Kathe E. Bjork & C. Packer, 1990. Prevalence of hematozoans in lions (*Panthera leo*) and cheetah (*Acinonyx jubatus*) in Serengeti National Park and Ngorongoro Crater, Tanzania. *Journal of wildlife diseases*, v.26 (3), 392.
- Baldus, R.D., undated. Selous Game Reserve, a guide to the Northern sector, 26-27.
- Barry, I. & B. Chardonnet, 1998. Recensement aérien de la faune de l'Unité de Conservation d'Arly. Résultats et commentaires. Direction de la Faune et des Chasses, Ouagadougou, Burkina Faso. Ref. 8, Elephant Bibliography, IUCN/SSC/African Elephant Specialist Group.
- Bauer, H. & H.H. De Liongh, 2001. Status and Needs for Conservation of Lions in West and Central Africa: *Proceedings Information Exchange Workshop*, Limbe, Cameroon, June 2001.

- Bauer, H., S. van der Merwe & J. Naude, 2002. African Lion is becoming Endangered Species. African Lion Working Group, <http://african-lion.org/ald.pdf>
- Baumjohann, W., R.A. Treumann & U. Auster, 1999. Waveform and packet structure of lion roars. *Annales geophysicae*, v.17 (12), 1528.
- Bell, R.H.V. & E. McShane-Caluzi (Eds.), 1984. Conservation and wildlife management in Africa. *Proceedings of a Workshop organized by the US Peace Corps at Kasungu National Park, Malawi, October 1984*. 646pp.
- Bengis, R.G., 1996. Emerging diseases of free ranging African wildlife. *N. Am. Vet. Conf. Vet. Proc.*, 10, 890-891. The North American Veterinary Conference, Orlando, Florida, January 13-17.
- Bennett, A.R. & D. Freeland, 1993. Severe diffuse pulmonary bullous emphysema secondary to pulmonary papillary adenocarcinoma in an African lion (*Panthera leo*). *Proceedings: American Association of Zoo Veterinarians*, 108.
- Berry, H., 1981. Abnormal levels of disease and predation as limiting factors for wildebeest in the Etosha National Park. *Madoqua*, v.12(4), 242-253.
- Berry, H., 1996. Lions in Namibia. *Cat News*, v.24, Spring 1996, 13-14.
- Bertram, B.C.R., 1973. Lion population regulation. *East African Wildlife Journal*, 11 (3&4), 215-225.
- Bigourdan, J. & R. Prunier, 1937. Les Mammifères sauvages de l'Ouest Africain et leur milieu. *Encyclopédie biologique XXIII*, Paul Lechevalier, Paris. 367pp.
- Bjork, K.E., G.A. Awerbeck & B.E. Stromberg, 2000. Parasites and Parasite Stages of Free-Ranging Wild Lions (*Panthera leo*) of Northern Tanzania. *Journal of Zoo and Wildlife Medicine*, v.31 (1), 56.
- Bond, I., 1994. The importance of sport hunted African Elephants to CAMPFIRE in Zimbabwe. *TRAFFIC*, v.14 (3), 117-119.
- Bothma, J. du P. & C. Walker, 1999. *Larger Carnivores of the African Savannas*. J.L. van Schaik Publishers, Pretoria. 277 pp.
- Bourn, D. & R. Blench, 1999. *Can Livestock and Wildlife Co-exist? An Interdisciplinary Approach*. ODI, London. 251 pp.
- Bowen, M.J., C.C. Platz Jr., C.D. Brown & D.C. Kraemer, 1982. Successful artificial insemination and embryo collection in the African lion (*Panthera leo*). *Annu. Proc. Am. Assoc. Zoo Vet.*, 57-59.
- Bridgeford, P.A., 1985. Unusual diet of the lion *Panthera leo* in the Skeleton Coast Park. *Madoqua*, v.14(2), 187-188.
- Briggs, M. & A. Boynton, 1994. Studying Southern Africa's Lions. *Brookfield Zoo bison*. v.8 (1), 20.
- Brown, E.W., N. Yuhki & S.J. O'Brien, 1994. A lion lentivirus related to feline immunodeficiency virus: epidemiologic and phylogenetic aspects. *Journal of Virology*, v.68 (9), 5953.
- Brown, J. L., M. Bush & C. Packer, 1991. Developmental changes in pituitary-gonadal function in free-ranging lions (*Panthera leo*) of the Serengeti Plains and Ngorongoro Crater. *Journal of Reproduction and Fertility*, v.91 (1), 29.

- Brown, J. L., M. Bush. & C. Packer, 1993. Hormonal characteristics of free-ranging female lions (*Panthera leo*) of the Serengeti Plains and Ngorongoro Crater. *Journal of Reproduction and Fertility*, v.97 n 1, 107.
- Brugiere, D., M. Dia, M. Magassouba, S. Diakite, M. Gbansara, B. Saliou, & M. Mamy, 2002. Dénombrement de la moyenne et grande faune dans la ZIP Mafou du Parc National du Haut Niger. Rapport au projet AGIR, Conakry.
- Caro, T.M., N. Pelkey, M. Borner, K.L.I. Campbell, B.L. Woodworth, B.P. Farm, J. Ole Kuwai, S.A. Huish & E.L.M. Severre, 1998. Consequences of different forms of conservation for large mammals in Tanzania: preliminary analyses. *African Journal of Ecology*, v.36(4), 303-320.
- Caro, T.M., N. Pelkey, M. Borner, E.L.M. Severre, K.L.I. Campbell, S.A. Huish, J. Ole Kuwai, B.P. Farm & B.L. Woodworth, 1998. The impact of tourist hunting on large mammals in Tanzania: an initial assessment. *African Journal of Ecology*, v.36(4), 321-346.
- Caro, T., 1999. Abundance and Distribution of Mammals in Katavi National Park, Tanzania. *African Journal of Ecology*, v.37, 305 - 313.
- Carpenter, M.A., M.J.G Appel, M.E. Roelke-Parker, L. Munson, H. Hofer, E. Marion & S.J. O'Brien, 1998. Genetic characterization of canine distemper virus in Serengeti carnivores. *Veterinary Immunology and Immunopathology*, v.65(2-4), 259-266.
- Chadeau, M.R., 1920. Remarques sur quelques mammifères du Sahara et du Nord du Soudan. *Ass. Fr. Avanc. Sci.*, Strasbourg, T.44: 307-312.
- Chaffard-Sylla, Solange, 2002. Des chasseurs aux abords d'une aire protégée : les Konon, les Manon et la Réserve de Biosphère des Monts Nimba, République de Guinée. Thèse de Doctorat, Muséum National d'Histoire Naturelle de Paris. 255 pp.
- Chai, N., 1996. Projet de réhabilitation et d'aménagement du Parc National de Manda. Projet FAC. Ministère de l'Environnement et du Tourisme, N'Djamena, Tchad. 112 pp.
- Chardonnet, B., 1999. Recensement de la faune de l'Unité de Conservation d'Arly. Mise à jour de la version 1998. Direction de la Faune et des Chasses, Ouagadougou, Burkina Faso.
- Chardonnet, B., 2002. Rapport de mission au Katanga, République Démocratique du Congo. OUA/IBAR/PACE, Bamako. 12pp.
- Chardonnet, B., P. Rouamba, I. Barry, A. Ouagraogo & P. Nacoulima, 1999. Suivi écologique des aires classées des bassins de l'Arly et du Singou. MEE, FFEM, FAC & AFD, Ouagadougou, Burkina Faso. 124 pp.
- Chardonnet, Ph. & F. Lamarque, 1997. La faune sauvage du Bassin du Lac Tchad *In: Atlas du Bassin du Lac Tchad*. CIRAD-EMVT, Montpellier (France) & CTA, Wageningen (Pays-Bas), 109-124.
- Chardonnet, Ph., B. des Clers, J. Fisher, R. Gerhold, F. Jori & F. Lamarque, 2002. The value of wildlife. *In: Infectious diseases of wildlife: detection, diagnosis and management*. *Rev. Sci. Tech. Off. Int. Epiz.*, v.21(1), 15-51.
- Chauhan, N.P.S., V.B. Sawarkar & H.S. Pabla, 1995. Resolving human-large felid conflicts associated with Protected Areas in India. *Gt. Plains Agric. Counc. Publ.*, No. 153, 103.
- Chazée, L., 1987. La faune en Somalie. Unpublished report.

- Cilliers, S., 1999. Lion versus buffalo! *African Wildlife*, v.53 (3), 20-21.
- Clarke, B.C. & H.H. Berry, 1992. Water flux in free-living lions (*Panthera leo*) in the Etosha National Park, Namibia.. *Journal of Mammalogy*, v.73 (3), 552-558.
- Cooper, S.M., 1991. Optimal hunting group size: the need for lions to defend their kills against loss to spotted hyenas. *African Journal of Ecology*, v.29 (2), 130.
- Crawford, C.J. & A. Paías Simoes, 1990. Distributional data and notes on Angolan carnivores. Mammalia: Carnivora. II - Larger species. *Garcia de Orta, Série de Zoologica*: Lisboa v.15(2), 9-20.
- Creel, S. & N.M. Creel, 1997. Lion density and population structure in the Selous Game Reserve: evaluation of hunting quotas and offtake. *African Journal of Ecology*, v.35(2), 83-93.
- De Waal, H.O., P.L. Avenant, H.J. Fouché & S.J. van der Merwe, 2001. A comparison of the seeds found in the scat of a Kalahari lion with the seeds of two well-known Cucurbitaceae families. *African Lion News*, vol.3, August 2001: 21-22.
- Dejace, P., L. Gauthier & P. Bouché, 2000. Les populations de grands mammifères et d'autruches du Parc National de Zakouma au Tchad: statuts et tendances évolutives. *Rev Ecol. (Terre Vie)*, v.55.
- D'Huart, J.-P., 1991. Mission d'appui à la réhabilitation des Parcs Nationaux de l'Upemba et de Kundelungu. République du Zaïre.
- Din, N.A., 1978. Notes on two lion prides near Mweya in the Rwenzori National Park, Uganda. *Pakistan Journal of Zoology*, v.10(2), 133-138.
- Donkin, D., 2001. The effect of habitat on lion group dynamics, a long-term study in the Kruger National Park. *African Lion News*, v.3, 11.
- Draulans, D. & Ellen Van Krunkelsven, 2002. The impact of war on forest areas in the Democratic Republic of Congo. *Oryx*, v.36 (1), 35-40.
- Dricuru, M., 1999a. The Lions of Queen Elisabeth National Park, Uganda. Institute of Natural Resources at Makerere University, Uganda.
- Dricuru, M., 2000. The lions of Queen Elisabeth National Park - Uganda. Their demographic and health status and relationships with people. *African Lion News*, v.2, 14-16.
- Dricuru, M., D. Katarwa, D. Kisolo, E. Lutaaya, D. Pomeroy & H. Tushabe, 1999. The Lions of Queen Elisabeth National Park, Uganda: Their Demographic and Health Status and Relationships with People. *African Lion News*, v.2., September 2000, African Lion Working Group, South Africa.
- Dubey, J.P. & O. Bwangamoi, 1994a. *Sarcocystis felis* (Rotozoa: *sarcocystidae*) from the African Lion (*Panthera leo*). *Journal of the Helminthological Society of Washington*, v.61(1), 113.
- Dubey, J.P. & O. Bwangamoi, 1994b. *Microbesnoitia leoni* Bwangamoi, 1989 from the African Lion (*Panthera leo*) Redetermined as a Junior Synonym of *Hepatozoon canis* (James, 1905) Wenyon, 1926. *The Journal of Parasitology*, v 80(2), 333.
- Dublin, H.T. & J.O. Ogotu, 1998. Demography of lions in relation to prey density and habitat factors in Masai Mara National Reserve, Kenya. *Advances in Ethology*, 33, 88. Hofer, Heribert; Pitra,

- Christian; Hofmann, Reinhold R., (Eds.). Contributions to the International Symposium on Physiology and Ethology of Wild and Zoo Animals, Berlin, Germany, 7-10 October 1998.
- Duckworth, J.W., 1992. Sighting frequencies of nocturnal mammals in an Ethiopian Rift Valley National Park. *Afr. J. Ecol.*, v.30, 90-97.
- Dunham, K.M., 1992. Response of a lion (*Panthera leo*) population to changing prey availability. *Journal of Zoology*, v.227(2), 330-333.
- Dunham, K.M., 1994. The effect of drought on the larger mammal populations of Zambezi riverine woodlands. *J. Zool.*, Lond., v.234 (3), 489-526.
- Dupuy, A.R., 1971. Le Niokolo-Koba, premier grand Parc National de la République du Sénégal. G.I.A., Dakar.
- Dupuy, A.R., 1972. Les Parcs Nationaux de la République du Sénégal. G.I.A., Dakar. 19 pp.
- East, R., 1984. Rainfall, Soil Nutrient Status and Biomass of Large African Savannah Mammals. *Afr. J. Ecol.*, v.22, 245 - 270.
- El Badawi, M.A. & S.A. Hakim, (Eds.), 1991. The role of Protected Areas in wildlife conservation. *Proceedings, Seminar on wildlife conservation and management in the Sudan, Khartoum, March 16-21, 1985*, 153-159.
- Elliott, J.P. & I. Mc Taggart Cowan, 1978. Territoriality, density and prey of the lion in Ngorongoro Crater, Tanzania. *Can. J. Zool.*, v.56, 1726-1734.
- Eloff, F.C., 1984. Food ecology of the Kalahari lion *Panthera leo vernayi*. *Koedoe Suppl.*, v.2 (7), 249-258.
- Enawgaw, Cherie, K. Argaw & T. Alem, 2001. Assessment of wildlife population in Tellalak-Dawe and Fursi-Artuma proposed hunting bocks of Afar National Regional State.
- Ernst, D. & M. Elwasila, (Eds.), 1991. Present situation of the "Dinder National Park" in the Sudan. *Proceedings, Seminar on wildlife conservation and management in the Sudan, Khartoum, March 16-21, 1985*, 172-178.
- Fagotto, F., 1985. The lion in Somalia. *Mammalia*, v.49(4), 587-588.
- Falkena, H. & W. Van Hoven, 2000. *Bulls, Bears and Lions. Game Ranch profitability in Southern Africa*. ABSA. 69pp.
- Féron, E.M., 1995. La Réserve de Faune de Binder-Lere (Mayo Kebbi, Tchad). Possibilités et entraves de la conservation, gestion et mise en valeur compte tenu des groupes concernés. CIRAD/EMVT. 92 pp.
- Flizot, P., 1971. Etude sur la situation actuelle des parcs nationaux, des réserves et de la chasse dans le Nord-Cameroun. Rapport non publié.
- Frank, L.G., 2000. Ranchers Learn to Coexist with Predators in Kenya. Laikipia Predator Project, The Wildlife Conservation Society. <http://wcs.org/home/wild/Africa/637/>
- Frank, L.G., 2001. Costs of lion depredation on an East African rangeland. *National Technical Predator Management and Conservation Workshop Proceedings*, Maun, Botswana, October 9-12.

- Fuanioli, U. & A. M. Simonetta, 1967. The Mammalian Fauna of the Somali Republic, *Mon. Zool. It.*, 74, Firenze.
- Funaioli, U., 1971. *Guida breve dei mammiferi della Somalia*. Istituto Agronomico per l'Oltremare. Biblioteca Agraria Tropicale.
- Funston, P., 2001. The hunters and the hunted: lions versus life stock farmers. *African Lion News*, v.3, 1-2.
- Funston, P., 2001. Kalahari Transfrontier Lion Project: Final Report. Endangered Wildlife Trust, South Africa.
- Funston, P., 2002. Kalahari Transfrontier Lion Project Reaches Conclusion. *Wildlife* N°39 January 2002: 18-24.
- Gauze, R., 1958. Guide touristique et cynégétique de l'Oubangui-Chari. Imprimerie Ozanne & Cie, Caen. 377pp.
- Gelderblom, C.M., G.N. Bronner, A.T. Lombard & P.J. Taylor, 1995. Patterns of distribution and current protection status of the Carnivora, Chiroptera and Insectivora in South Africa. *In: Vertebrate Conservation in South Africa. Papers presented at the ZSSA symposium, July 1994. S. Afr. J. Zool.*, v.30(3), 103-114.
- Gilbert, D.A., C. Packer & A.E. Pusey, 1991. Analytical DNA Fingerprinting in Lions: Parentage, Genetic Diversity and Kinship. *The Journal of Heredity*, v.82(5), 378.
- Gillet, H., 1969. La végétation du Parc National de Zakouma (Tchad) et ses rapports avec les grands mammifères. *La Terre et la Vie*, 4, 373-485.
- Gogate, M.G., 1997. Conservation values of zoological parks/safaris-Lion Safari Park: a case study. *Indian Forester*, v.123(10), 887-894.
- Graham, J., 1996. National Parks of Ethiopia's Southern Region, Agricultural Bureau, Southern Nations Nationalities and Peoples Region, DHV Consultants, EU/Democratic Republic of Ethiopia, Awasa, Ethiopia.
- Grinnell, J. & K. McComb, 1996. Maternal grouping as a defence against infanticide by males: evidence from field playback experiments on African lions. *Behavioural ecology*, v.7 (1), 55.
- Grinnell, J., C. Packer & A.E. Pusey, 1995. Cooperation in male lions: kinship, reciprocity or mutualism?, *Anim. Behav.*, v.49, 1, 95.
- GTZ/Selous Conservation Programme, 1995. Selous Game Reserve General Management Plan. Department of Wildlife, Dar es Salaam, Tanzania, 145pp.
- Hanby, J.P., 1987. Emigration of subadult lions. *Anim. Behav.*, v.35, 161-169.
- Hanssen, L. & F. Stander, 2000. Desert lions of Namibia. *Cat News*, v.33. IUCN/SSC Cat Specialist Group.
- Harder, T. C., M. Kenter & A.D.M.E. Osterhaus, 1995. Phylogenetic evidence of canine distemper virus in Serengeti's lions. *Vaccine*, v.13 (6), 521.

- Harrington, R., N. Owen-Smith, P.C. Viljoen, H.C. Biggs, D.R. Mason & P. Funston, 1999. Establishing the causes of the roan antelope decline in the Kruger National Park, South Africa. *Biological Conservation*, v.90(1), 69-78.
- Hassaballa, E.O. & M.B. Nimir, (Eds.), 1991. Towards a national conservation policy in the Sudan. Proceedings, Seminar on wildlife conservation and management in the Sudan, Khartoum, March 16-21, 1985, 137-151.
- Heath, D., 2001. A question of Lions in Africa. *African Hunter* Vol. 7 N°6: 40-42.
- Heinsohn, R., 1997. Group territoriality in two populations of African lions. *Animal Behaviour*, v.53(6), 1143-1147.
- Heinsohn, R., 1997. The Pride of Africa. Rob Heinsohn reports on Australian efforts to preserve Africa's lion population. The Australian way.
- Heinsohn, R., C. Packer & A.E. Pusey A. E., 1996. Development of cooperative territoriality in juvenile lions. *Proceedings of the Royal Society of London*, v 263 (1369), 475.
- Hemson, G. & D. Macdonald, 2000. Diet and home range variation of lions in Makgadikgadi pans as aspects of their interactions with the surrounding livestock farming communities, abstract, Project 8. Project summaries. *Proceedings of the Southern Africa Lion Workshop*.
- Hemson, G., 2001. Lion/livestock conflict in the Makgadikgadi. *National Technical Predator Management and Conservation Workshop Proceedings*, Oct. 9-12, Maun, Botswana.
- Hill, A.C., 1992. *Mycoplasma simbae* sp. nov., *Mycoplasma leopharyngis* sp. nov. and *Mycoplasma leocaptivus* sp. nov., isolated from lions. *International Journal of Systematic Bacteriology*, v.42(4), 518.
- Hillman, J.C., 1982. Wildlife Information Booklet, Department of Wildlife Management, Democratic Republic of the Sudan, Ministry of Wildlife Conservation and Tourism, Southern Region, Funded by New York Zoological Society, U.S.A.
- Hillman, J.C., (Eds.), 1991. *Wildlife research in the Sudan in relation to conservation and management. Proceedings, Seminar on wildlife conservation and management in the Sudan*, Khartoum, March 16-21, 1985, 77-100.
- Hofmann-Lehmann, R., D. Fehr, M. Grob, C. Packer, J.S. Martenson, S.J. O'Brien & H. Lutz, 1996. Prevalence of antibodies to feline parvovirus, herpesvirus, calici virus, coronavirus and immunodeficiency virus and of feline leukemia virus antigen and the interrelationship of these viral infections in free ranging lions in East Africa. *Clinical Diagnostic Laboratory Immunology*, v.3, 149.
- Hunter, L. & R. Slotow, 1999. The socio-ecology of re-introduced lions in small reserves: comparisons with established populations and the implications for management in enclosed conservation areas. *African Lion News*, v.2.
- Hunter, L., 1996. Reintroduction of lions and cheetahs in South Africa. *Cat News*, v.24, 14-15.
- Hunter, L., 1998. The lion-Africa's great cat. *Afr. Environ. Wildl.*, v.6(3), 50-63.
- Hunter, L., 1999. Large felid restoration: lessons from the Phinda Resource Reserve, South Africa, 1992-1999. *Madoqua*, v.31, 20-21.

- Hunter, L., 2001. The future of Africa's magnificent cats. *Africa Geographic*, June 2001: 48-57.
- IUCN, 1996. African Lion-*Panthera leo* (Linnaeus 1758), Species Accounts, Cat Specialist Group/Species Survival Commission. <http://lynx.uio.no/catfolk/cat-spec1.htm>
- IUCN SSC, 1999. *African Antelope Database 1998*. Occasional Paper of the IUCN Species Survival Commission N° 21.
- IUCN SSC, 2000. *2000 IUCN Red List of Threatened Species*. The IUCN Species Survival Commission. 61pp.
- IUCN & UNEP, 1987. *The Directory of Afrotropical Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK. 134 pp.
- Jachmann, H., 1991. Current status of the Gourma elephants in Mali: a proposal for an integrated resource management project. IUCN. 74pp.
- Jachmann, H., 2001. Estimating abundance of African Wildlife: an aid to adaptive management. Kluwer Academic Publishers Group, The Netherlands. 285pp.
- Jackson, P., 1996. Conservation of Namibia's Cheetahs and Lions. *Cat News*, v.24, 11. IUCN/SSC Cat Specialist Group.
- Jackson, P., 1997. Lions of the Kalahari. *Cat News*, v.26, 11. IUCN/SSC Cat Specialist Group.
- Jackson, P., 1997. The status of cats in the wild. *International Zoo Yearbook*, v.35: 17-27.
- Jackson, P., 1999. Could the Lion go the way of the Tiger? *Cat News*, v.31, 1. IUCN/SSC Cat Specialist Group.
- Jackson, P., 2000. Tsavo lions became man eaters because of tooth aches? *African Lion News*, v.2, 9.
- Jong-Boon, de C. & S.B. Tabidi, (Eds.), 1991. *Use of Sudanese wildlife*. Proceedings, Seminar on wildlife conservation and management in the Sudan, Khartoum, March 16-21, 1985, 216-238.
- Kadoi, K., M. Kiryu & Y. Inaba, 1998. Antibody response of lions inoculated with inactivated calicivirus vaccine experimentally prepared. *Microbiologica*, v.21(2), 147.
- Kahatano, D.E., 1997. Trade in Wildlife Medicinals in Tanzania. Report prepared for TRAFFIC East/Southern Africa, unpublished.
- Keet, D., 1998. Tuberculosis in Lions. *African Wildlife*, v.52 (2), 11.
- Kelly, M., 2001. Serengeti cheetah viability and the lion factor. *Cat News*, v.34, 28-29.
- Kennedy-Stoskopf, S., D.H. Gebhard, R.V. English, L. H. Spelman & M. Briggs, 1994. Clinical implications of feline immunodeficiency virus infection in african lions (*Panthera leo*): preliminary findings. *Proceedings of the American Association of Zoo Veterinarians and Association of Reptilian and Amphibian Veterinarians Annual Conference*. Randall E. Junge, (Ed.), 345-346.
- Kenyi, J.M., (Ed.), 1991. *Status and distribution of important wildlife and habitats in the Sudan with emphasis on South Sudan*. Proceedings, Seminar on wildlife conservation and management in the Sudan, Khartoum, March 16-21, 1985, 127-129.

- Kessel, J., 1958. Le lion.
- Kingdon, J., 1997. *The Kingdon field guide to African Mammals*. Academic Press, London and New York: Natural World.
- Kingdon, J., 2001. *The Kingdon field guide to African mammals*. Academic Press, London, San Diego, 476 pp.
- Kinsel, M.J., M.B. Briggs, R.D. Murnane, 1998. Gastric spiral bacteria and intramuscular Sarcocysts in African lions from Namibia. *Journal of Wildlife Diseases*, v.34 (2), 317.
- Kirida, Ph., 2000. Les activités cynégétiques dans la Province du Nord Cameroun entre 1983 et 1997. WWF/Projet Savanes Soudaniennes du Nord.
- Kitchener, A., 1991. *The Natural History of the Wild Cats*. Christopher Helm, London. Mamm. Series.
- Kock, R., 1998. Canine distemper antibodies in lions of the Masai Mara., *The veterinary record*, v.142 (24), 662.
- Krishnamurthy, R., H.J.L Orford. & M.R. Perrin, 1989. Contraception, reproduction and demography of free-ranging Etosha lions (*Panthera leo*). *Journal of Zoology*, v 216 n 4, 717.
- Lamprey, H., 1964. Estimation of the large mammal densities, biomass and energy exchange in the Tarangire Game Reserve and the Masai Steppe in Tanganyika. *E. Afr. Wildl. J.*, v.2, 1-46.
- Lancia, R.A., J.W. Bishir, M.C. Conner, & C.S. Rosenberry, 1996. Use of catch-effort to estimate population size. *Wildlife Society Bulletin*, 24(4): 731-737.
- Lang, H. & J. Chapin, 1915. *The Congo Expedition, May 1909-November 1915*. The American Museum of Natural History.
- Lauginie, F., 1990. *La faune des savanes de Cote d'Ivoire. Caractéristiques et role dans l'économie régionale*. Actes du seminaire international sur laproductivité des savanes, la conservation et l'aménagement des aires protégées, Korhogo, 6-10 mai 1990: 269-279.
- Laurent, A. & D., 2002. *Djibouti, les mammifères d'hier à aujourd'hui pour demain*. Editions BEIRA, Toulouse, 178-179.
- Le Berre, M., 1990. *Faune du Sahara, Tome 2*. Terres africaines, Lechevalier-Chabaud, Paris, 172-173.
- Legge, S., 1996. Cooperative lions escape the Prisoner's Dilemma. *Trends in ecology & evolution*, v.11 (1), 2.
- Lichtenfeld, L.L., 2001. Among humans and lions: Exploring biological and social relationships to the lion in Northern Tanzania. 8<sup>th</sup> International Theriological Congress 2001.
- Limoges, B., 2000. Atlas des espèces de la forêt de Banguassou, RCA. Première approximation. Projet CAF/95/GB. Unpublished draft. 229pp.
- Linnell, J.D.C., R. Aanes, J.E. Swenson, J. Odden & M.E. Smith, 1997. Translocation of carnivores as a method for managing problem animals: a review. *Biodiversity and Conservation*, v.6, 1245-1257.

- Loveridge, A.J., T. Lynam T. & D.W. Macdonald, 2000. *Proceedings of the Southern African Lion Research Symposium*, Harare.
- Loveridge, A.J., T. Lynam & D.W. Macdonald, 2001. *Lion Conservation Research: Survey Techniques*, 2-3. Wildlife Conservation Research Unit, University of Oxford (UK), Russel Brookes Print Ltd.
- Loveridge, A.J., 2002. Hwange Lion Project. Wildlife Conservation Unit, Oxford. Workshop on Ecological Research in Hwange NP, Main Camp, Hwange, June 2002.
- Luxmoore, R., 1985. Game farming in South Africa as a force in conservation. *Oryx* 19(4), 225-231.
- Lyons, J., R.J. Young & J.M. Deag, 1997. The effects of physical characteristics of the environment and feeding regime on the behavior of captive felids. *Zoo Biology*, v.16(1), 71-83.
- Maddock A., A. Anderson, F. Carlisle, N. Galli, A. James, A. Verster & W. Whitfield, 1996. Changes in lion numbers in Hluhluwe-Umfolozi Park. *Lammergeyer*, v.44, 6-18.
- Magin, C. & C. Burdette, 2001. Terrestrial Ecoregions - Hoby grasslands and shrublands. <http://www.nationalgeographic.com/wildworld/terrestrial.html>
- Makacha, S. & G.B. Schaller, 1969. Observations on lions in the Lake Manyara National Park, Tanzania. *E. Afr. Wildl. J.*, v.7, 99-103.
- Malbrant, R. & A. Maclatchy, 1949. *Faune de l'Equateur Africain Français. Tome II: Mammifères*. Paul Lechevalier éditeur, Paris. 323 pp.
- Marchant, J., 2001. Lions face extinction in large parts of Africa. *The New Scientist*, No.1/11/01, <http://www.newscientist.com/news/news.jsp>
- Marshall, T., 1998. *Searching for a Cure: Conservation of Medicinal Wildlife Resources in East and Southern Africa*. TRAFFIC International.
- Martin, G., 2001. In peace with predators. *African Lion News*, v.3, 14-16. African Lion Working Group website, <http://www.african-lion.org/>
- Martin, G., 2001. In Peace With Predators: UC biologists say people must learn to co-exist with Africa's carnivores if these animals are to survive. *African Lion News*, v.3.
- Mashima, T.Y., H.L. Jordan & S. Kennedy-Stoskopf, 1996. Whole Blood Leukocyte Counts of Domestic Cats and African Lions Utilizing a Disposable Hemacytometer. *Veterinary Clinical Pathology*, v.5 n 3, 84.
- Maydon, Major H.C., 1957. *Big game shooting in Africa*. Lonsdale Library, v.XIV, 237-245.
- McComb, K., C. Packer & A. Pusey, 1994. Roaring and numerical assessment in contests between groups of female lions, *Panthera leo*. *Animal Behaviour*, v.47 (2), 379.
- McNutt, J.W., 2001. African wild dogs in Northern Botswana: 1989-Present. *National Technical Predator Management and Conservation Workshop Proceedings*, Oct. 9-12, Maun, Botswana.
- MEE, ME & FFEM, 2001. Intercations élevage-faune sauvage-environnement autour des aires protégées (Sud-Est du Tchad). Rapport de présentation. N'Djaména. 58pp.
- Michler, I., 1998. Mozambique's Niassa Reserve. *Afr. Environ. Wildl.*, v.6(5), 66-73.

- Mills, M.G.L., 1984. Prey selection and feeding habits of the large carnivores in the Southern Kalahari. *Koedoe Suppl.*, v.27, 281-294.
- Mills, G.L., 1992. A comparison of methods used to study food habits of large African carnivores. In: McCullough D.R., Barrett R.H. (Eds.). *Wildlife 2001: populations. Proceed. of Wildlife 2001: populations*, an International Conference on Population Dynamics and management of Vertebrates (exclusive of primates and fish) held at Oakland, California. Elsevier, Amsterdam, 1112-1124.
- Mills, M.G.L., 1995. Notes on wild dog *Lycaon pictus* and lion *Panthera leo* population trends during a drought in the Kruger National Park. *Koedoe*, v.38(1), 95-99.
- Mills, M.G.L., 2000. About lions - Conservation issues. African Lion Working Group website, <http://www.african-lion.org/>
- Mills, M.G.L., P. Wolf, E.A.N. Le Riche & I.J. Meyer, 1978. Some population characteristics of the lion (*Panthera leo*) in the Kalahari Gemsbok National Park. *Koedoe*, v.21, 163-171.
- Mills, M.G.L. & H.C. Biggs, 1993. Prey apportionment and related ecological relationships between large carnivores in Krüger National Park. Zoological Society of London. *Symposia*, 65, 253-268.
- Mills, M.G.L. & T.M. Shenk, 1992. Predator-prey relationships: the impact of lion predation on wildebeest and zebra populations. *Journal of Animal Ecology*, v.61(3), 693-702.
- Mills, M.G.L., H.C. Biggs & I.J. Whyte, 1995. The relationship between rainfall, lion predation and population trends in African herbivores. *Wildlife Research*, v.22(1), 75-88.
- Mitchell, B.L., J.B. Shenton & J.C.M. Uys, 1965. Predation on large mammals in the Kafue National Park, Zambia. *Zool. afr.*, v.1(2), 297-318.
- Mollet, C.L., 1977. A probable case of anthrax in a Serengeti lioness. *East African Wildlife*, v.15(4), 331.
- Morris, P.J., C.O. Thoen & A.M. Legendre, 1996. Pulmonary Tuberculosis in an African Lion (*Panthera leo*). *Journal of Zoo and Wildlife Medicine*: official publication of the American Association of Zoo Veterinarians. v.27(3), 392.
- Mukherjee, G., T.K. Graczyk & J.D. Strandberg, 1999. Feline Asthma Syndrome in African Lions (*Panthera leo*). *Journal of Zoo and Wildlife Medicine*, v.30(4), 555.
- Muller-Graf, C.D.M., 1995. A Coprological Survey of Intestinal Parasites of Wild Lions (*Panthera leo*) in the Serengeti and the Ngorongoro Crater, Tanzania, East Africa. *The Journal of Parasitology*, v.81(5), 812.
- Myers, N., 1986. *Conservation of Africa's cats: problems and opportunities. Cats of the World: Biology, Conservation and Management*, 437-446.
- Natoli, E., 1990. Mating strategies in cats: a comparison of the role and importance of infanticide in domestic cats, *Felis catus* L., and lions *Panthera leo* L. *Animal Behaviour*, v.40(1), 183.
- Neo-Mahapeleng, G., T. Dimakatso, H. Andreassen & P. Wegge, 2001. Population structure, group dynamics, home ranges and habitat use of lions (*Panthera leo*), in northeast Chobe National Park, Botswana. *National Technical Predator Management and Conservation Workshop Proceedings*, Oct. 9-12, Maun, Botswana.

- Nkulikiyinka, J.-B., 1993. La Chasse-Umuhigo. Spectacle et informations sur la chasse dans l'ancien Rwanda. Mission Française de Coopération et d'Action Culturelle à Kigali. 246pp.
- Nowell, K. & P. Jackson, 1996. *Wild Cats. Status Survey and Conservation Action Plan*, 382 pp.
- Nowell, K., 1997. Namibia's Cheetah Conservation Strategy. *Cat News*, v.26, 12. IUCN/SSC Cat Specialist Group.
- Obat, D.A., (Eds.), 1991. Wildlife conservation and management in the Upper Nile region of the Sudan. Proceedings, *Seminar on wildlife conservation and management in the Sudan*, Khartoum, March 16-21, 1985, 179-182.
- O'Brien, S.J., M.E. Roelke, L. Marker, A. Newman, C.A. Winkler, D. Meltzer, L. Colly, J.F. Everman, M. Bush & D.E. Wildt, 1985. Genetic basis for species vulnerability in the cheetah. *Science* 227: 1428-1434.
- O'Brien, S.J., J.S. Martenson, C. Packer, L. Herbst, V. de Vos, P. Joslin, J. Ott-Joslin, D.E. Wildt & M. Bush, 1987. Biochemical genetic variation in geographic isolates of African and Asiatic Lions. *Natl. Geogr. Res.* 3: 114-124.
- O'Brien, S.J., M.E. Roelke, N. Yukhi, K.W. Richards, W.E. Johnson, W.L. Franklin, A.E. Anderson, O.L. Jr Bass, R.C. Belden & J.S. Martenson, 1990. Genetic introgression within the Florida panther *Felis concolor coryi*. *Natl. Geogr. Res.* 6: 485-494.
- O'Connell-Rodwell, C., T. Rodwell, M. Rice & L.A. Hart, 2000. Living with the modern conservation paradigm: can agricultural communities co-exist with elephants? A five-year case study in East Caprivi, Namibia. *Biological Conservation*, v.93 (2000), 381-391.
- Ogutu, J.O. & H.T. Dublin, 1998. The response of lions and spotted hyaenas to sound playbacks as a technique for estimating population size. *Afr. J. Ecol.* v.36, 83-95.
- Orford, H.J.L., M.R. Perrin & H.H. Berry, 1988. Contraception, reproduction and demography of free-ranging Etosha lions (*Panthera leo*). *Journal of Zoology*, v.216(4), 717-733.
- Osemeobo, G.J., 1988. Animal wildlife conservation under multiple land-use systems in Nigeria. *Environ. Conserv.*, v.15(3), 239-249.
- Osofsky, S.A., Karen J. Hirsch, Evelyn E. Zuckerman & W.D. Hardy Jr., 1996. Feline lentivirus and feline oncovirus status of free-ranging lions (*Panthera leo*), leopards (*Panthera pardus*), and cheetahs (*Acinonyx jubatus*) in Botswana: a regional perspective. *Journal of Zoo and Wildlife Medicine*, v.27(4), 453-467.
- Osofsky, S.A., Karen J.Hirsch, Evelyn E. Zuckerman & W.D. Hardy Jr., 1997. Lentivirus infection in lions, leopards and cheetahs in Botswana. *Cat News*, v.27, 25. IUCN/SSC Cat Specialist Group.
- Osofsky, S.A., W.D. Hardy & Karen J. Hirsch, 1994. Serologic evaluation of free-ranging lions (*Panthera leo*), leopards (*panthera pardus*) and cheetahs (*acinonyx jubatus*) for feline lentivirus and feline leukemia virus in Botswana. *Proceedings of the American Association of Zoo Veterinarians and Association of Reptilian and Amphibian Veterinarians Annual Conference*. Randall E. Junge, editor., 398-402.
- Oxford, H.J.L., M.R. Perrin & H.H. Berry, 1988. Contraception, reproduction and demography of free ranging Ethosha lions (*Panthera leo*). *J. Zool.*, Lond., v.216(4), 717-733.

- Packer C., A.E. Pusey, H. Rowley, D.A. Gilbert, J. Martenson & S.J. O'Brien, 1991. Case study of a population bottleneck: lions of the Ngorongoro Crater. *Conservation Biology*, v.5(2), 219-230.
- Packer, C. & A.E. Pusey, 1983. Male takeovers and female reproductive parameters: a simulation of oestrous synchrony in lions (*Panthera leo*). *Anim. Behav.*, v.31, 334-340.
- Packer, C. & A.E. Pusey, 1993. *Dispersal, kinships, and inbreeding in african lions. Natural History of Inbreeding and Outbreeding: Theoretical and Empirical Perspectives*. Nancy Wilmsen Thornhill, (Ed.), 375-391.
- Packer, C. & A.E. Pusey, 1997. Divided We Fall: Cooperation among Lions. *Scientific American*, v.276 n 5, 52.
- Packer, C., 1992. Captives in the Wild. *National Geographic*, v.181(4), 122.
- Packer, C., 1996. Coping with a lion killer. *Natural History*, v.105(6), 14-17.
- Packer, C., 1996. Who rules the Park? Africa's lions fight disease and displacement. *Wildlife conservation*, v.99(3), 36.
- Packer, C., D. Scheel & A.E. Pusey., 1990. Why lions form groups: food is not enough. *The American Naturalist*, v.136(1), 1.
- Packer, C., D.A.Gilbert & A.E. Pusey, 1991. A molecular genetic analysis of kinship and cooperation in African lions. *Nature*. v.351(6327), 562.
- Packer, C., S. Altizer & H. Lutz, 1999. Viruses of the Serengeti: patterns of infection and mortality in African lions. *The Journal of Animal Ecology*, v.68(6), 1161.
- PDRN, 2000. Rapport final PDRN phase II - NORCADEV RCA: 56.
- Peel, M.J.S. & G.P. Montagu, 1999. Modelling predator-prey interactions on a Northern Province game ranch. *South African Journal of Wildlife Research*, v.29(2), 31-34.
- Pennycuik, C.J. & J. Rudnai, 1970. A method of identifying individual lions *Panthera leo* with an analysis of the reliability of identification. *J. Zool. Lond.* 160, 497-508.
- Planton, H., 1994. Conservation et gestion de la biodiversité au Cameroun. Projet FAC/FEM.
- Planton, H., 1999. Développement local et valorisation de la biodiversité au Nord Cameroun. Rapport final de synthèse : mars 1995 - décembre 1998. Ministère de l'Environnement et des Forêts, Cameroun & Ambassade de France au Cameroun. 80pp.
- Poilecot, P., 1991. Un écosystème de savane soudanienne: le Parc National de la Comoé, Côte d'Ivoire. UNESCO, PNUD, MAB. 346pp.
- Pole, A, 2000. The behaviour and ecology of the African wild dog, *Lycaon pictus*, in an environment with reduced competitor density. Ph.D. thesis, University of Aberdeen.
- Poli, A., F. Abramo & M. Pistello, 1995. Lentivirus infection in an African lion: a clinical, pathologic and virologic study. *Journal of Wildlife Diseases*, v.31(1), 70.
- Powell, D.M., 1995. Preliminary evaluation of environmental enrichment techniques for African lions (*Panthera leo*). *Animal Welfare*, v.4(4), 361-370.

- Prévost, Y.A., 1987. Etudes sur la Faune, Mauritanie, Bilan et Recommandations. FAO, Rome. 57pp.
- Purchase, G. (in prep.). Aspects of the ecology and behaviour of lions (*Panthera leo*) and spotted hyaenas (*Crocuta crocuta*) in Matusadona National Park, a closed woodland savannah system. Is there any evidence of competition between the two species? Chapter 4. *In: Factors affecting the ratio of lions (Panthera leo) to spotted hyaenas (Crocuta crocuta) in Protected Areas of Africa.* Ph.D. thesis, University of Aberdeen.
- Pusey, A.E. & C. Packer, 1987. The evolution of sex-biased dispersal in lions. *Behaviour*, v.101, 275-310.
- Quandt, S.K.F., I.J. Van Rensburg & A.L. Leisewitz, 1992. Single Extrahepatic Portocaval Shunt in an African Lion (*Panthera leo*). *Journal of zoo and wildlife medicine*, v.23(3), 336.
- Raynaud, J. & G. Georgy, 1969. Nature et chasse au Dahomey. Secrétariat d'Etat aux Affaires Etrangères. 320pp.
- Rodgers, W.A., 1974. The lion (*Panthera leo*, Linn.) population of the eastern Selous Game Reserve. *East African Wildlife Journal*, v.12(4), 313-317.
- Roelke-Parker M.E., L. Munson & M.J.G. Appel, 1996. A canine distemper virus epidemic in Serengeti lions (*Panthera leo*). *Nature*, v.379(6564), 441.
- Roelke-Parker, M.E., L. Munson & M.J.G. Mgas, 1996. A canine distemper virus epidemic in Serengeti lions (*Panthera leo*). *Nature*, v.381(6578), 172.
- Roure, 1956. *Faune et chasse en Afrique occidentale française. Guide du tourisme de la nature vivante.* Editions G.I.A., Dakar. 412pp.
- Rudnai, J., 1973. Reproductive biology of lions (*Panthera leo massaica* Neumann) in Nairobi National Park. *E. Afr. Wildl. J.*, v.11, 241-253.
- Rudnai, J., 1974. The pattern of lion predation in Nairobi Park. *E. Afr. Wildl. J.*, v.12, 213-225.
- Rudnai, J. A., 1983. The ecology of lions in the Kitengela Conservation Unit, Kenya. *National Geographic Society. Research Reports*, v.15, 565-571.
- Ruggiero, R.G., 1991. Prey selection of the lion (*Panthera leo* L.) in the Manovo-Gounda-St. Floris National Park, Central African Republic. *Mammalia*, v.55(1), 23-33.
- Schaller, G.B., 1972. *The Serengeti Lion : a study of predator-prey relations.* Univ. Chicago Press, Chicago, 480 pp.
- Scheel, D. & C. Packer, 1991. Group hunting behaviour of lions: a search for cooperation. *Animal Behaviour*, v.41(4), 697.
- Scheel, D., 1993. Profitability, encounter rates, and prey choice of African lions. *Behavioural Ecology*, v.4(1), 90-97.
- Scheel, D., 1993. Watching for lions in the grass: the usefulness of scanning and its effects during hunts. *Animal Behaviour*, v.46(4), 695.
- SECA, 1991. Parc National de Zakouma. Résultats des inventaires de la faune. Projet FED/Zakouma. Ministère de l'Environnement & du Tourisme, 28pp.

- Sechele, M.L., 2000. Coordinated survey of the lion population in the Okavango Delta. *African Lion News*, v.2, 11-12.
- Sechele, M.L. & C.W. Winterbach, 2001. Lion surveys in Northern Botswana 1998-2000. *National Technical Predator Management and Conservation Workshop Proceedings*, Oct. 9-12, Maun, Botswana.
- Shoemaker, A.H., 1996. New Age lions: the ex situ issues. Annual Conference. *Proceedings; American Association of Zoological Parks & Aquariums*, No. 1996, 314-318.
- Siefert L., (Ed.), 2000. Uganda Large Predator & Scavenger Research & Management Project Training Workshop Report: Large Predators - Data, Protocols, Viability, 23 July- 2 August 2000, Mweya, Queen Elizabeth National Park, Uganda. LPP/WARM Dept., Makerere University, Kampala, Uganda.
- Siefert, L., (Ed.), 2000. Prof Ludwig Siefert lashes out at Internet sensation writer. *African Lion News*, v.2, 9.
- Siefert L., M. Driciru & D. Muwanguzi, 2001. The Uganda Large Predators and Scavengers Research & Management Programme. *Proceedings of the Information Exchange Workshop on the Status and Needs for Conservation of Lions in West and Central Africa*, Limbe, Cameroon, June 2001.
- Silva, J. A., 1972. *A palanca real*. Junta de investigações do ultramar, 54-59.
- Simiyu S., E. Ouko, R. Achieng, J. Muasya., M. Mbuvi & P. Muthoka, 1996. African Medicinal Trade Project: Kenyan Component. TRAFFIC East/Southern Africa, Unpublished report.
- Simonetta, A.M., 1988. Chapter 6: Somalia. In: *Antelopes - Global survey and regional action plans. Part 1. East and Northeast Africa*. IUCN/SSC Antelope Specialist Group, 27-33.
- Sindiga I., 1995. Wildlife-based Tourism in Kenya: Land use conflicts and Government compensation policies over Protected Areas. *The Journal of Tourism Studies*, Vol.6, N°2, Dec. 95: 45-55.
- Sinnary, A.W.S., (Eds.), 1991. The Jonglei Canal: impact on wildlife and people. *Proceedings, Seminar on wildlife conservation and management in the Sudan*, Khartoum, March 16-21, 1985, 112-126.
- Singh, H.S. & R.D. Kamboj, 1996. Predation pattern of the Asiatic lion on domestic livestock. *Indian Forester*, v.122(10), 869-876.
- Skinner, J. & R.H.N. Smithers, 1990. *The Mammals of the Southern African Subregion*. University of Pretoria, South Africa, 771 pp.
- Smithers, R.H.N. & J.L.P. Lobão Tello, 1976. *Check List and Atlas of the Mammals of Moçambique*. Museum Memoir No 8, 88.
- Smithers, R.H.N., 1983. *The Mammals of the Southern African Subregion*. University of Pretoria, Pretoria, 736 pp.
- Smuts, G.L., 1976. Population characteristics and recent history of lions in two parts of the Kruger National Park. *Koedoe*, v.19, 153-164.
- Smuts, G.L., J.L. Anderson & J.C. Austin, 1978. Age determination of the African lion (*Panthera leo*). *Journal of Zoology*, v.185(1), 115-146.

- Spencer, J.A., 1991. Survey of antibodies to feline viruses in free-ranging lions. *South African Journal of Wildlife Research*, v.21(2), 59.
- Spencer, J.A., A.A. Van Dijk, M. C. Horzinek, 1992. Incidence of feline immunodeficiency virus reactive antibodies in free-ranging lions of the Kruger National Park and the Etosha National in Southern Africa detected by recombinant FIV p24 antigen. *The Onderstepoort Journal of Veterinary Research*, v.59(4), 315.
- Spencer, J.A., P.D. Bouic, L. Colly, 1995. A comparison between T-helper (CD4) and T-suppressor (CD8) cell ratios in FIV positive and negative lions *Panthera leo* and domestic cats *Felis catus*. *South African Journal of Wildlife Research*, v.25(3), 111.
- Stander, P.E., 1990. A suggested management strategy for stock-raiding lions in Namibia. *South African Journal of Wildlife Research*, v.20(2), 37-43.
- Stander, P.E., 1991. Demography of lions in the Etosha National Park, Namibia. *Madoqua*, v.18(1), 1-9.
- Stander, P.E., 1992. Cooperative hunting in lions: the role of the individual. *Behavioral ecology and sociobiology*, v.29(6), 445.
- Stander, P.E., 1997. The ecology of lions and conflict with people in north-eastern Namibia. *Proceedings of a Symposium on Lions and Leopards as Game Ranch animals*, Onderstepoort, 10-17.
- Stander, P.E., 2000. Conservation of lions and other large carnivores in the Kunene region, *Namibia. African Lion News*, v.2, 8-9.
- Stander, P., Jacece//au, Nisa /ui, Tsisaba Dabe & Dam dabe, 1997. Non-consumptive utilisation of leopards: community conservation and ecotourism in practice. *Proceedings of a Symp. on lions and leopards as game ranch animals*, Onderstepoort, RSA, Oct. : 50-57.
- Stander, P.E & L. Hanssen, 2001. Population ecology and long term monitoring of free-ranging populations in Namibia's marginal and arid environments. Research Progress Report
- Stander, P.E & L. Hanssen, 2001. Namibia Large Carnivore Atlas Progress Report. Unpublished report.
- Stander, P.E. & L. Hanssen, 2001. Desert Lions of Namibia. *Cat News*, v.33, 15.
- Stander, P.E. & P. Morkel, 1991. Field immobilization of lions using disassociative anaesthetics in combination with sedatives. *African Journal of Ecology*, v.29(2), 137.
- Stander, P.E. & S.D. Albon, 1993. Hunting success of lions in a semi-arid environment. Zoological Society of London. *Symposia*, v.65, 127-143.
- Starfield, A.M., H.A. Rowley, H. Quadling & T.J. Foose, 1995. Genetic Risk Analysis of a Small Wild Lion Population. In: *Population Management for Survival and Recovery. Analytical Methods and Strategies in Small Population Conservation* (Ballou J.D. et al, Eds); Columbia University Press, New York, 155-179.
- Starfield, A.M., J.D. Shiell & G.L. Smuts, 1981. Simulation of lion control strategies in a large game reserve. *Ecological Modelling*, v.13(1-2), 17-28.

- Starfield, A.M., P.R. Furniss & G.L. Smuts, 1981. A model of lion population dynamics as a function of social behaviour. In: Fowler C.W. & T.D. Smith (Eds.). *Dynamics of Large Mammal Populations*. Wiley, Chichester & New York, 121-134.
- Stegmann, G.F., L. Bester & L. Venter, 2000. Halothane anaesthesia in an African lion. *South African Journal of Wildlife Research*, v.30(2).
- Stewart, C. & T., 2001. Lion situation in Zambia. *African Lion News* v.3, August 2001, 9-10.
- Strang, A., 2002. Eric Pasanisi, guide de chasse professionnel. *Jours de chasse*, n°8, Eté 2002: 48.
- Stuart, C.T., 1991. Lion. Unpubl. data sheet, Cat Specialist Group, Bougy-Villars, Switzerland.
- Stuart, C.T., 2000. Lion situation in Zambia. *African Lion News*, v.2, September 2000, 9.
- Stuart, C.T., I.A.W. Macdonald & M.G.L. Mills, 1985. History, current status and conservation of large mammalian predators in Cape Province, Republic of South Africa. *Biological Conservation*, v.31(1), 7-19.
- Stuart-Hill, G. & D. Grossman, 1993. Parks, profits and professionalism. Lion return to Pilanesberg. *African Wildlife*, v.47(6), 267-270.
- Tacher, G., L. Letenneur & D. Viallet, 2001. Etude sur la compétitivité des filières de productions animales en Afrique Sub-Saharienne. CIRAD-EMVT, Montpellier & Secrétariat d'Etat à la Coopération, Paris.
- Thresher, P., 1981. The economics of a lion. *Unasyuva*, v.33(134), 34-35.
- Thresher, P., 1981. Valeur actuelle d'un lion vivant. *Revue Mondiale de Zootechnie*. Oct.-Dec., v.40, 30-33.
- Tiega, A. & T. Price, 1995. Wildlife use in Niger, West Africa: historical trends and future perspectives. In: Bissonette, J.A. & P.R. Krausman (eds). Integrating people and wildlife for a sustainable future. Preceedigs of the first International Wildlife Mngement Congress. The Wildlife Society, Bethesda, Md. 8-10.
- Toure, S., S. Soumah, S. & A. Alberti, 1997. Inventaire, distribution et abondance des mammifères dans le Parc National du Haut-Niger, Guinee. Rapport au projet PRABV, Conakry.
- Traoré, C., 1993. L'impact écologique de la transhumance du bétail domestique dans le Parc National de la Boucle du Baoulé au Mali. Rapport de stage. Ecole pour la formation de spécialistes de la faune, Garoua, Cameroun. 47pp.
- UNEP/WCMC, 1999. Species account: *Panthera leo*. African Mammals Data Bank.
- UNEP/WCMC CITES Trade Database, 2001. CITES trade statistics 1991-2000.
- UNESCO/PNUD, 2000. Plan d'aménagement global de la Réserve de la Biosphère de la Boucle du Baoulé. Ministère de l'Environnement, Bamako, Mali, 97pp.
- Van der Merwe, S., 2001. Hunting ban in Botswana. *African Lion News*, v.3, 5-6. African Lion Working Group website, <http://www.african-lion.org/>
- Van Der Meulen, J.H., 1977. Note on the capture and translocation of stock raiding lions in North Eastern and North Western Rhodesia. *South African Journal of Wildlife Research*, v.7(1), 15-17.

- Van Dyk, G., 2001. Achieving ecological and socio-economic objectives in Pilanesberg National Park : lion re-introduction project. Wildlife and Livestock: disease and sustainability: what makes sense? International Joint Conference - Society for Tropical Veterinary Medicine and the Wildlife Disease Association. Pilanesberg National park, 22-27 July 2001. Book of abstract, 54.
- Van Heerden, J., (Eds.), 1997. *Proceedings of a Symposium on Lions and Leopards as Game Ranch Animals*. Onderstepoort, Republic of South Africa. 265 pp.
- Van Orsdol, K.G., 1982. Ranges and food habits of lions in Rwenzori National Park, Uganda. *Symp. zool. Soc. Lond.*, v.49, 325-340.
- Van Orsdol, K.G., 1984a. Foraging behaviour and hunting success of lions in Queen Elizabeth National Park, Uganda. *Afr. J. Ecol.*, v.22, 79-99.
- Van Orsdol, K.G., 1986. Feeding behavior and food intake of lions in Rwenzori National Park, Uganda. In: *Cats of the World: Biology, Conservation, and Management*. S. Douglas Miller and Daniel D. Everett, (Eds.), 377-388.
- Van Orsdol, K.G., Jeannette P. Hanby & J. D. Bygott, 1985. Ecological correlates of lion social organization (*Panthera leo*). *Journal of Zoology. Series A*, v.206(1), 97-112.
- Van Schalkwyk, A.C., 1994. A survey of all lion colonies outside of National Parks in South Africa. Centre for Wildlife Management, University of Pretoria. MSc Thesis.
- Ventner, J. & M.E. Hopkins, 1988. Use of a simulation model in the management of a lion population. *S. Afr. J. Wildl. Res.*, v.18, 126-130.
- Viljoen, P.C., 1993. The effects of changes in prey availability on lion predation in a large natural ecosystem in Northern Botswana. *Symp. Zool. Soc. Lond.*, v.65, 193-213.
- Vincke, P.P. & M. Singleton (Eds), 1982. Gestion de la faune sauvage, facteur de développement ? Actes du colloque des 5, 6 et 7 Mai. ISE, ENDA, UNESCO/MAB.
- Vivien, J., 1991. Faune du Cameroun. Guide des mammifères et poissons. GICAM et Ministère de la Coopération et du Développement, 271 pp.
- Wagener, T. & M. Fouraker, 1996. The PHVA process: identifying in situ conservation strategies for the Namibian lion. *Proceedings; American Association of Zoological Parks & Aquariums. Annual Conference. Proceedings, No.1996: 357-361.*
- Walker, C., 1996. *Signs of the wild. A field guide to the spoor & signs of the mammals of Southern Africa*. Struik Publishers (Pty) Ltd., Cape Town, 215 pp.
- Wendo, C., 1999. Uganda lions have "AIDS". *African Lion News*, v.2, 8.
- Wildt, D.E., S.J. O'Brien, C. Packer, J.L. Brown & M. Bush, 1986. A habitat-induced isolation influences the reproductive and genetic characteristics of the free-ranging lion. *Annu. Proc. Am. Assoc. Zoo Vet.*, 140-141.
- Wildt, D.E., M. Bush, K.L. Goodrowe, C. Packer, A.E. Pusey, J.L. Brown, P. Joslin & S.J. O'Brien, 1987. Reproductive and genetic consequences of founding isolated lion populations. *Nature* 329: 328-331.

- Wilkins, B., 1996. Kalahari tragedy. Namibian farmer kills 13 lions from the Kalahari Gemsbok National Park. *African Wildlife*, v.50(5), 25.
- Wilson, V.J., 1975. Mammals of the Wankie National Park, Rhodesia. Museum Memoir n°5, 52-55.
- Wilson, V.J., 1997. *Biodiversity of Hwange National Park, Part I, Large Mammals and Carnivores*. Chipangali Wildlife Trust, 87-98.
- Wilson, V.J., 1993. A zoological survey of Mole National Park, North-Western Ghana. Part 1, Large Mammals. Game and Wildlife DEPT/IUCN project 9786, Accra, Ghana. 87pp.
- Winterbach, C.W. & H. Winterbach, 1999. Ecological Monitoring Report for CHA NG29 and NG30 1997-1998 Draft 1. Maun, Botswana.
- Winterbach, C.W. & H. Winterbach, 2001. Okavango Delta lions: ecology, home range and population dynamics. National Predator Workshop, Maun, Botswana.
- Winterbach, C.W., H. Winterbach, P.W. Kat & L.M. Sechele, 2000. Coordinated dry season lion survey for the Okavango Delta, 1998. Department of Wildlife and National Parks, Botswana. Unpublished report.
- Winterbach, C.W., H. Winterbach, P.W. Kat & L.M. Sechele, 2001. Coordinated dry season lion survey for the Okavango Delta, 1999. Department of Wildlife and National Parks, Botswana. Unpublished report.
- Winterbach, H. & R. Kamnitzer, 2001. People and predators - Can they live together ? Conservation Force' *Hunting Report Supplement*, Dec.
- WWF, 1997. Quota Setting Manual. Wildlife Management Series, Harare, Zimbabwe, 41pp.
- Yalden, D.W., M.J. Largen & D. Kock, 1980. Catalogue of the mammals of Ethiopia 4. Carnivora. *Monitore Zoologico Italiano: suppl.* XIII, 169-272.
- Yalden, D.W., M.J. Largen, D. Kock & J.C. Hillman, 1996. Catalogue of the mammals of Ethiopia and Eritrea. 7. Revised checklist, zoogeography and conservation. *Tropical Zoology*, v.9, 73-164.
- Yamaguchi, N., 2000. Follow up: the Barbary lion project: its feasibility and potential. *African Lion News*, v.2.
- Yamazaki, K. & T. Bwalya, 1999. Fatal lion attacks on local people in the Luangwa Valley, Eastern Zambia. *South African Journal of Wildlife Research*, v.29(1), 19-21.
- Yamazaki, K., 1996. Social variation of lions in a male-depopulated area in Zambia. *The Journal of Wildlife Management*, v.60 n 3, 490.
- Zahavi, A., 1996. Cooperation among lions: an overlooked theory. *Trends in Ecology & Evolution*, v.11(6), 252.
- Ziegler, S., G. Nikolaus & R. Hutterer, 2002. High mammalian diversity in the newly established National Park of Upper Niger, Republic of Guinea. *Oryx*, v.36(1), 73-80.



