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# Diversity

## Trophy Hunting and Conservation in Africa: Problems and One Potential Solution

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### Introduction

Lack of scientific data on the ecological and economic impact of trophy hunting precludes objective assessment of its role as a conservation tool in Africa (Mayaka et al. 2004). Discussion of trophy hunting in popular media is emotive and polarized, with animal welfare and animal rights groups on one side and hunters and pragmatic conservationists on the other. The small network of conservationists with specialized knowledge of the African trophy-hunting industry typically shares knowledge through verbal communication and gray literature. Here we provide a brief overview of African trophy hunting and its role as a conservation tool and present a potential solution to problems associated with the industry.

### Scale of the Industry

Trophy hunting is conducted in 23 African countries, with large hunting industries in southern and East Africa and smaller industries in Central and West Africa. South Africa has the largest hunting industry, generating revenues of US\$100 million/year (i.e., total fees paid to operators and taxidermists; PHASA 2006). Namibia, Botswana, and Zimbabwe also have sizable hunting industries, generating US\$28.5, US\$20, and US\$16 million/year, respectively (Booth 2002; Chardonnet et al. 2002; Damm 2005). Some hunting occurs in Zambia (generating approximately US\$5 million/year, ZAWA 1999), Mozambique ( $\geq$ US\$0.5 million/year, Lindsey 2005), and Swaziland. In East Africa trophy hunting is limited primarily to Tanzania and Ethiopia and generates

approximately US\$27.6 and approximately US\$1.4 million/year, respectively (J. Roussos, Ethiopian Rift Valley Safaris, pers. comm.; Baldus & Cauldwell 2004). In Central and West Africa most trophy hunting occurs in Central African Republic, Cameroon, and Burkina Faso, generating approximately US\$1.4, US\$2, and US\$0.57 million/year, respectively (Roulet 2004). Some hunting also occurs in Benin. Trophy-hunting industries are expanding in southern Africa (except Zimbabwe) and Tanzania but remain static or are declining slightly in Central and West Africa (Lindsey 2006). Approximately 18,500 foreign hunting clients now visit sub-Saharan Africa annually, compared with 8,000 in 1990 (Roulet 2004), and generate approximately US\$201 million/year (without considering economic multipliers) (Lindsey 2006). Trophy-hunting operators are custodians of at least 1.4 million km<sup>2</sup> in sub-Saharan Africa, exceeding the area encompassed by national parks in the countries where hunting is permitted by 22% (Roulet 2004; Lindsey 2006).

### Conservation Role of Trophy Hunting

Several characteristics of trophy hunting enable the industry to play a key role in conservation. Offtake rates are typically only 2–5% of male populations, so trophy hunting is sustainable and low risk if well managed (Bond et al. 2004). Trophy hunting can play a role in endangered species conservation and in the rehabilitation of wildlife areas, permitting income generation without jeopardizing wildlife population growth (Bond et al. 2004). For example, hunting revenues played a key role in the recovery of white rhinoceros (*Ceratotherium simum*) populations

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in South Africa (Leader-Williams & Hutton 2005) and are facilitating the rehabilitation of the *Coutada* hunting areas in Mozambique (Lindsey 2005).

Trophy hunting generates more income per client than tourism (Baker 1997) and has potentially lower environmental impact through disturbance, fossil fuel use, and habitat conversion. Hunting operations do not rely on the costly infrastructure required for ecotourism and can generate revenues where ecotourism may not be viable, such as remote areas (e.g., northern Mozambique), degraded areas with low wildlife densities (e.g., ranches during early stages of game ranching), areas where people and livestock are present (e.g., Zambian game management areas), and in politically unstable areas (e.g., Central African Republic). Trophy hunting thus creates economic justification for wildlife as a land use in areas that might otherwise be used for livestock or agriculture (Lindsey et al. 2006). Hunting revenues are generated across a diversity of land tenures, including state, private, and communal land. For example, in Tanzania trophy hunting generates 92% of revenues for the 48,000 km<sup>2</sup> Selous Game Reserve (Baldus & Cauldwell 2004). In southern Africa revenues from trophy hunting were largely responsible for the development of the game-ranching industry (Bond et al. 2004). On communal land trophy hunting creates 90–95% of campfire revenues in Zimbabwe, and has provided incentives for the creation of approximately 70,000 km<sup>2</sup> of community conservancies in Namibia (Weaver & Skyer 2003).

## Limitations to the Conservation Role of Hunting

There are, however, a variety of ethical, social, and biological problems associated with trophy hunting that hinder the conservation role of the industry.

### Ethical Problems

Some hunting activities, conducted by a minority of operators, undermine the public's perception of trophy hunting as a conservation tool and have prompted legal restrictions in several countries. Many of these activities have little relevance for conservation per se, but attract negative press and foster support for hunting bans. These include shooting from vehicles; shooting young or uncommon animals; luring animals from parks; use of bait, spotlights, and hounds; canned hunting (i.e., where captive-bred animals, typically lions [*Panthera leo*], are hunted in small enclosures); and put-and-take hunting (where requested trophies are purchased and released immediately prior to the hunt; Damm 2005). Few data exist on the prevalence of such practices. Damm (2005) suggests that 90% of lions shot in South Africa are canned, although the practice is probably rare or nonexistent elsewhere.

### Social Problems

The greatest threat to the sustainability of trophy hunting on communal land is the failure of governments and hunting operators to devolve adequate benefits to local communities, which reduces incentives for rural people to conserve wildlife. Inequitable distribution of hunting revenues is caused by inadequate legislation to enforce community benefits, failure of governments to devolve ownership of wildlife to communities, or to develop skills among communities that would enable greater participation in the hunting industry (Lewis & Alpert 1997; Mayaka et al. 2004; Child 2005; Lindsey 2005; Mbwaia 2004).

Corruption is an additional problem that affects all levels of the industry from government scouts paid to overlook overshooting to politicians paid to favor certain operators when granting concessions (Lewis & Jackson 2005). There are problems associated with the allocation of hunting concessions in various countries, with the effect that they are sometimes sold too cheaply, allocated for periods too short to promote responsible custodianship, and occasionally given to unlicensed operators (Baldus & Cauldwell 2004; Mayaka et al. 2004). In several countries large citizen quotas are provided to urban residents at low prices, reducing revenues from trophy hunting and reducing incentives for communities to conserve wildlife (ZAWA 1999; Baldus & Cauldwell 2004).

### Biological Problems

The establishment of quotas is often based on guesswork because most wildlife departments lack resources to conduct accurate game counts (Baker 1997). For lions the removal of young males may have significant population effects even where quotas appear conservative (Whitman et al. 2004). In some countries high profit margins create pressure for increased quotas and smaller hunting areas (Baldus & Cauldwell 2004), whereas in other countries static pricing has encouraged increased offtake to sustain revenues (Roulet 2004). The impact of these problems is, however, usually limited by inherent self-regulation. Offtakes are usually lower than reproductive rates, and in the event of excessive offtake a reduction in trophy quality would result, which would reduce the number of clients willing to hunt in the area.

Emphasis placed on trophies by some hunters reduces the conservation role of sport hunting in some instances. In South Africa and Namibia where game ranches are required by law to have high fences, the value of wildlife as trophies has inhibited the removal of fencing between neighbors, stifling the formation of conservancies and maintaining the division of ranchland into small blocks (e.g., 11–19 km<sup>2</sup> in South Africa) (Bothma 2002). In South African ranching areas dominated by trophy hunting, few properties belong to conservancies (e.g., 0% in Limpopo Valley), whereas conservancies are more common where

ecotourism is more prevalent (e.g., Zululand 48% and central Lowveld 23% of ranches, Lindsey et al. 2005). Although owners of fenced game ranches contribute to conservation through habitat protection and by reintroducing wild ungulates, they are rarely tolerant of predators, often overstock their properties, and commonly introduce exotic species, such as fallow deer (*Dama dama*), and manipulate genetics to create aberrant varieties such as white blesbok (*Damaliscus dorcas*) to increase the diversity of saleable trophies (Lindsey 2006). By contrast, owners of ranches within conservancies are more tolerant of predators and generally manage for intact guilds of indigenous species (Lindsey et al. 2005). Legislation that promotes the formation of conservancies and waives the requirement for game ranches to have high fences would likely improve conservation prospects on private land in South Africa and Namibia.

## Potential Solutions

Problems associated with trophy hunting have resulted in increasingly negative publicity and opposition to the industry (even from within the hunting community) at a time when there is widespread public discomfort with the concept of hunting for sport. Failure to address these problems may result in increased pressure for hunting bans. Trophy hunting was banned in Kenya in 1977, in Tanzania during 1973–1978, and in Zambia from 2000 through 2003 (Leader-Williams & Hutton 2005; Lindsey 2005). Each of these bans resulted in an accelerated loss of wildlife due to the removal of incentives for conservation (Baker 1997; Lewis & Jackson 2005). Avoiding future bans is thus vital for conservation.

Resolving problems associated with trophy hunting will require coordinated efforts from the hunting industry, conservationists, and governments. Regulatory and legislative frameworks governing the trophy-hunting industry must be improved, and there are increasing calls for the introduction of independent certification of hunting operators (Balduş & Cauldwell 2004; Lewis & Jackson 2005; Packer 2005).

There is a significant market among U.S. clients for conservation-friendly hunting (Lindsey et al. 2006). In a survey of prospective clients 45–99% were unwilling to hunt under various scenarios if conservation objectives would be compromised, and 86% were more willing to purchase a hunt if local communities would benefit. Certification would enable clients to select operators on the basis of their commitment to conservation and community development and could create economic incentives for hunting operators to conduct their activities more in line with conservation objectives. Incentive-based compliance is likely to be more effective than trying to regulate operators in vast, remote hunting concessions in nations struggling with corruption and poor governance.

Certification would involve rating of operators based on their fulfillment of the following: (1) conservation criteria adherence to quotas and requirements for sex, age, and minimum size of trophies (Balduş & Cauldwell 2004), contributions to antipoaching efforts, stocking land only with indigenous, wild-caught animals, and tolerance of predators; (2) governance and landowner benefit criteria, provision of benefits to and empowerment of local communities, and cooperation with neighboring land owners/communities to form conservancies, where relevant; and (3) adherence to national legislation, registration with national hunting associations, and adherence to agreed-upon ethical standards.

Certification programs have been attempted for the forestry, fisheries, agriculture (e.g., coffee), and ecotourism industries (Cashore 2003). Although certification projects have had some success, their efficacy has been limited by proliferation of conflicting certification programs, excessive input from the profit-driven private sector, difficulties of implementing consistent certification across diverse scenarios, debate surrounding who constitutes local communities and what represents adequate benefits, and overemphasis on social issues at the expense of conservation (Cashore 2003; Bennett 2004; Medina 2005).

Certification for hunting should be simpler than for the larger, more complex ecotourism and forestry industries, and the development process could benefit from experiences of these industries. Key outputs such as sustainability of offtake and improved community benefits should be easily measurable. Nevertheless, establishing criteria for trophy-hunting certification will be challenging and would involve answering the following questions: What constitutes ethical hunting? How would required contributions to communities and antipoaching efforts vary with land tenure? How can operators working under diverging scenarios be compared fairly? Answers to such questions would require dialog among state wildlife officials, conservation organizations, hunting operators, and hunting associations.

The development of a certification program should be a gradual learning process. Implementation of certification for hunting would be most effective if it were conducted by a single independent body working locally in Africa in liaison with all stakeholders. Cooperation from the organizers of international hunting conventions, where most African hunts are booked, would be vital. They could ban uncertified operators, bar their trophies from record books, and provide incentives such as price reductions or optimal booth placement for certified operators.

A certification system has been suggested in the past, but has not yet been accepted by the hunting industry (Lewis & Jackson 2005). Cooperation with the development of such a system would be a major step toward convincing conservationists, African governments, and a skeptical public of the legitimacy of trophy hunting as a conservation tool.

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## Literature Cited

- Baker, J. 1997. Trophy hunting as a sustainable use of wildlife resources in southern and eastern Africa. *Journal of Sustainable Tourism* 5:306-321.
- Baldus, R., and A. Cauldwell. 2004. Tourist hunting and its role in development of wildlife management areas in Tanzania. Tanzanian-German Development Cooperation, Dar es Salaam, Tanzania. Available from <http://www.wildlife-programme.gtz.de/> (accessed October 2006).
- Bennett, E. 2004. Timber certification: where is the voice of the biologist? *Conservation Biology* 14:921-923.
- Bond, I., B. Child, D. de la Harpe, B. Jones J. Barnes, and H. Anderson. 2004. Private land contribution to conservation in South Africa. Pages 29-61 in B. Child, editor. *Parks in transition*. Earthscan, London.
- Booth, V. 2002. Analysis of wildlife markets. Report. World Wildlife Fund, Harare, Zimbabwe.
- Bothma, J. 2002. Some economics of game ranching. Pages 23-40 in B. Penzhorn, editor. *Proceedings of a symposium on game ranch management 2002*, South Africa. Wildlife Group of the South African Veterinary Association, Onderstepoort, South Africa.
- Cashore, B. 2003. Forest certification (eco-labeling) programs and their policy-making authority: explaining divergence among North American and European case studies. *Forest Policy and Economics* 5:225-247.
- Chardonnet, P., B. des Clers, J. Fischer, R. Gerhold, F. Jori, and F. Lamarque. 2002. The value of wildlife. *Revue Scientifique et Technique Office International des Epizooties* 21:15-51.
- Child, B. 2005. Principles, practice and results of CBNRM in southern Africa. Sand County Foundation, Monona, Wisconsin. Available from <http://sandcounty.net/assets/chapters/assets.pdf> (accessed February 2006).
- Damm, G. 2005. Hunting in South Africa: facts, risks and opportunities. *African Indaba* 3:1-14.
- Leader-Williams, N., and J. Hutton. 2005. Does extractive use provide opportunities to reduce conflicts between people and wildlife? Pages 140-162 in R. Woodroffe, S. Thirgood, and A. Rabinowitz, editors. *People and wildlife: conflict or coexistence?* Cambridge University Press, Cambridge, United Kingdom.
- Lewis, D., and P. Alpert. 1997. Trophy hunting and wildlife conservation in Zambia. *Conservation Biology* 11:59-68.
- Lewis, D., and J. Jackson. 2005. Safari hunting and conservation on communal land in southern Africa. Pages 239-251 in R. Woodroffe, S. Thirgood, and A. Rabinowitz, editors. *People and wildlife: conflict or coexistence?* Cambridge University Press, Cambridge, United Kingdom.
- Lindsey, P. 2005. A review of the economic contribution of the trophy-hunting industry in Africa. Safari Club International, Washington, D.C.
- Lindsey, P., M. Mills, and J. du Toit. 2005. Attitudes of ranchers towards African wild dogs: conservation implications on private land. *Biological Conservation* 125:113-121.
- Lindsey, P., R. Alexander, L. Frank, S. Romañach, and A. Mathieson. 2006. Potential of trophy-hunting to create incentives for wildlife conservation in Africa where alternative wildlife-based land uses may not be viable. *Animal Conservation* 9:283-291.
- Lindsey, P., P. Roulet, S. Romañach. 2006. Economic and conservation significance of the trophy hunting industry in sub-Saharan Africa. *Biological Conservation*: in press.
- Mayaka, T., T. Hendriks, J. Wesseler, and H. Prins. 2004. Improving the benefits of wildlife harvesting in northern Cameroon: a co-management perspective. *Ecological Economics* 54:67-80.
- Mbwaia, J. 2004. Socio-economic benefits and challenges of a community-based safari hunting tourism in the Okavango delta. Botswana. *Journal of Tourism Studies* 15:37-50.
- Medina, L. 2005. Ecotourism and certification: confronting the principles and pragmatics of socially responsible tourism. *Journal of Sustainable Tourism* 13:281-296.
- Packer, C. 2005. Savannas forever: a certification program for lion trophy-hunting. *African Indaba* 3:7-8.
- PHASA (Professional Hunting Association of South Africa). 2004. South African hunting guide, 2004. Professional Hunting Association of South Africa, Octagon, Johannesburg.
- PHASA. 2006. General hunting information. Professional Hunters Association of South Africa, Centurion, South Africa. Available from <http://www.phasa.co.za>. (accessed September 2006).
- Roulet, P. 2004. La chasse sportive en Afrique Centrale. Ph.D. thesis. University of Orleans, Orleans, France.
- Weaver, C., and P. Skyer. 2003. Conservancies: integrating wildlife land-use options into the livelihood, development, and conservation strategies of Namibian communities. Paper presented at the 5th world parks conference, Durban, South Africa. U.S. Agency for International Development, Windhoek, Namibia. Available from [www.usaid.org/na/pdfdocs/WPC%20AHEAD\\_2.pdf](http://www.usaid.org/na/pdfdocs/WPC%20AHEAD_2.pdf) <http://pdf.dec.org/pdf.docs/Pnacx280.pdf> (accessed July 2006).
- Whitman, K., A. Starfield, H. Quadling, and C. Packer. 2004. Sustainable trophy-hunting of African lions. *Nature* 428:175-178.
- ZAWA (Zambian Wildlife Authority). 1999. Future directions for the safari hunting industry of Zambia: at a crossroad of opportunity. Report. Wildlife Conservation Society, New York.

