

A close-up photograph of a horse's eye, showing the dark iris and the surrounding brown leather of the blinker. The horse's mane is visible at the top and right edges. The image is partially obscured by a semi-transparent white banner at the top and a grid of small image tiles at the bottom left.

Hunting in perspective

Views, motives, and constraints

Hunting in perspective

Visions, motives, and constraints

11 December 2005

Bart van Engeldorp Gastelaars

Supervised by:
Helias Udo de Haes
Hans de Iongh



Colophon

Title:	Hunting in perspective. Visions, motives, and constraints.
Author:	B.H.G. van Engeldorp Gastelaars
Issued by:	Institute of Environmental Sciences, Leiden University
First supervisor:	H.A. Udo de Haes
Second supervisor:	H.H. de Iongh
Design and layout:	ROOTS, www.roots-ices.org
Year:	2005
Edition:	12
Extent	85 pages (without reference list and appendixes)

Photo and picture credits:

Photo front cover: Eye of a dead deer, by J. Brandenburg; 3.1: <http://www.mystudios.com>; 3.2: Cartmill (1993); 3.3: Walter Leonardi; 3.4: Gaston Phoebus; 3.5: Cartmill (1993); 3.6: George Stubbs; 3.7: Bart van Engeldorp Gastelaars; 4.1: Hagai Zvulun; 4.2: <http://www.sneakery.com>; 4.6: <http://www.panamarelocation.com>; 4.7: NOAA, <http://www.fakr.noaa.gov>; 4.9: The Field Museum; 4.13: www.mosaic-conservation.org; 4.15: IFAW; 4.16: www.liberian-connection.com; 4.17: Hans de Iongh; 4.19: Beaverfoot lodge; 5.3: www.WWF.nl; 5.4: <http://www.vriendenvanblijdorp.nl>; 5.5: Freedman, 1995; 5.6: Bernd Heinrich; 5.7: <http://www.information.com>; 6.2: raven, <http://www.adfg.state.ak.us>; common dolphin, <http://www.beverly.k12.nj.us>; elephant, <http://www.seaworld.org>; chimpanzee, <http://www.faunafoundation.org>; pig, <http://clipart.usscouts.org>; kudu, <http://arthurreeve.tripod.com>; rabbit & duck, <http://www.scouting.nl>; 7.1: www.wwf.nl

The contents of this report does not represent the expression of any opinion whatsoever on the part of CML concerning:

- other persons individual sense of hunting.
- the value and meaning of religion, philosophy, and economical systems.
- the legal status of any country, territory, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Acronyms

ADMADE	Administrative Design for Game Management Areas	LCIE	Large Carnivore Initiative for Europe
AWA	Animal Welfare Act	LHI	Large Herbivore Initiative
CAMPFIRE	Communal Areas Management Program for Indigenous Resources	LIRD	Luangwa Integrated Rural Development Project
CBD	Convention on Biological Diversity	MSY	Maximum Sustainable Yield
CI	Conservation International	LNV	Ministry of Agriculture, Nature, and Food safety
CIC	International Council for Game and Wildlife Conservation	N	Species density
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora	NGO	Non-Governmental organisation
CML	Institute for Environmental Sciences of Leiden University	PAC	Problem Animal Control
EU	European Union	PETA	People for the Ethical Treatment of Animals
FAO	Food and Agriculture Organisation of the United Nations	SCI	Safari Club International
IFAW	International Fund for Animal Welfare	UNESCO	United Nations Educational, Scientific and Cultural Organisation
ISSG	Invasive Species Specialist Group	WCED	World Commission on Environment and Development
IUCN	The World Conservation Union	WCS	Wildlife Conservation Society
		WINDFALL	Wildlife Industry's New Development For All
		WWF	The Conservation Organisation
		WSPA	World Society for the Protection of Animals

Terminology

The following terminology is interpreted in this report as:

Alien invasive species:	Species that are 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic damage, environmental harm or harm to human health (U.S. Department of Agriculture, 2004).
Animal damage control:	The hunting of animals that cause economic damage.
Commercial hunting:	The killing of non-domesticated animals primarily to derive monetary benefits.
Conservation management hunting:	The practise of hunting, primarily as an ecological management option that contributes to the preservation and conservation of populations of species and ecosystems.
Human health and safety hunting:	The predetermined killing of non-domesticated animals that can form a threat to human life or health.
Hunting:	The premeditated direct or indirect killing of non-domesticated or semi-domesticated animals in a natural or semi-natural (fenced and/or artificial) environment.
Scientific hunting:	The killing of non-domesticated animals for scientific purposes.
Sport and cultural hunting:	The killing of non-domesticated animals, primarily for recreational and cultural reasons
Subsistence hunting:	The procurement of wild animals (whether legal or illegal) to meet primary household needs.
Sustainable use:	The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations" (CBD, 2004).

Preface

Happy the hare at morning, for she cannot read
The Hunter's waking thoughts

W. H. Auden (1907 - 1973)
The Dog Beneath the Skin

Who are you hunter? Ignorantly placing yourself above your prey, because of teachings centuries old? Are you in the position to judge? Why do you not re-evaluate your traditions? Are not sports only a sport if both sides know they are in the game? Are short-term profits enough of an excuse to drive another species to extinction?

Who are you city dweller? Ignorantly buying your processed chicken meat that has hardly any resemblance with something that was once alive? Are you in the position to judge? What exactly do you think you know? Are the many cartoons and animated movies of talking, thinking, and reasoning animals your sole knowledge about nature?

Emotions are uttered in response to emotions. Food versus Bambi, enjoying the outdoors versus killing, red coats on horses versus... what? Rationality is the only basis for progress when discussing a topic that brings about a legion of conflicting perspectives. A topic, that is an important part of everyday life of millions of people around the world. Important that is, in one way or another. So if hunting is a reality and subject to that many discussions, why is information about the very basics of hunting then missing or scattered? Is a solid basis not required for a fruitful discussion?

Nature conservation is no longer synonymous with protected areas and we only just started to realise that humans will always live together with wildlife. I sincerely hope that this report contributes to a constructive relationship between conservation and hunting that is developing at this very moment. A journey, so to speak, where conservation goals, harvesting strategies, cultural values and human morality can meet. Not as fierce opponents, but as partners with mutual respect and understanding.

Leiden, 26 October 2004

Bart van Engeldorp Gastelaars

Acknowledgements

Hunting is a sensitive topic that often proves difficult for many people to comprehend. Between killing an animal and protesting against it, there exists an entire field of topics that hunting brings about. Four aspects enabled me to discuss the phenomenon of hunting from various perspectives, and to make sure this subject has been described in an objective way and as complete as possible within the timeframe of this assignment:

- Growing up with hunting taught me about human traditions and respecting your prey.
- Living in the society I live in taught me to take nothing for granted and to respect all life.
- Education as an environmental scientist taught me about our place in this world and to observe before speaking out.
- Travelling and meeting people from all over the world made me aware that nature is enjoyed universally, but often in different ways.

I could never have managed to discuss such a complicated and broad subject as hunting worldwide without the help of certain people. I would therefore like to thank Professor Dr. Helias Udo de Haes for his time, advice, and support as first supervisor during my research period on this subject. I would also like to thank my second supervisor, Dr. Hans de Iongh, for his useful recommendations during this assignment, and for his pleasant company during the 6th International Symposium on Wildlife Ranching in Paris.

Last but not least, I would like to thank everyone at CML for providing me with support, advice, and a very pleasant stay during the accomplishment of my graduate thesis.

Summary

Hunting has always been important for the survival of men, although developments like agriculture have led to a change in the reasons behind hunting. At present, people practise various types of hunting around the world for different motives, including reasons of subsistence, commercial gains, or recreation. A somewhat new development has been hunting practises that benefit the conservation of the species in question and the local community involved. Questions are raised however in some parts of world society about certain motives behind hunting, hunting methods, animal rights, and the ecological impact of hunting. This report has been written for the Institute of Environmental Sciences of Leiden University (CML) to investigate the worldwide phenomenon of hunting.

Hunting has been studied within a theoretical framework that has been especially developed by performing desk-research. Describing the history of hunting and the cultural forces religion, philosophy, economy, and science & technology leads to a better understanding of the societal visions on hunting. The statements of international hunting organisations like Safari Club International (SCI), conservation organisations like IUCN, animal welfare/rights organisations like People for the Ethical Treatment of Animals (PETA), and human development organisations like the Food and Agricultural Organisation (FAO) can be seen as a representation of the visions of (mainly) western society on hunting.

The statements of these four international organisational groups have been used to describe hunting in two realities, namely the motives behind hunting and the societal constraints of hunting. Seven motives behind hunting have been distinguished (nutrition, safety, conservation, science, economics, culture, and recreation) that have been used to formulate seven types of hunting:

- subsistence hunting;
- human health & safety hunting;
- conservation management hunting;
- scientific hunting;
- animal damage control;
- commercial hunting;
- sport & cultural hunting.

Three societal constraints of hunting have been distinguished: nature preservation, sustainable use, and animal ethics. By comparing the types of hunting with the constraints on hunting it has been possible to see which types of hunting are allowed within which constraints and under what conditions. A synthesis is proposed that combine nature preservation, sustainable use, and animal ethics with certain types of hunting on a spatial scale. It is recommended from a nature preservation and animal ethics point of view that the hunting of animal species that are threatened, perform a special ecosystem function, have a certain level of intelligence, or perform a certain level of social behaviour should be allowed if it benefits the conservation of the species in question.

The present policy and fieldwork of conservation organisations like WWF correspond with the results of this research, but their communication towards their donors lacks the same consistency. It is therefore recommended that policy and communication should be attuned with each other, in order to prevent miscommunication about the standpoint of WWF regarding the utilisation of species. The framework that is constantly applied during this research enabled discussing the phenomenon of hunting from all predominant perspectives in a neutral manner. This framework provides CML with a sound basis for the further of hunting in their research and education profession.

Samenvatting

Voor de overlevingskans van de mens is jacht altijd belangrijk geweest, alhoewel de motivatie achter de beoefening hiervan veranderingen heeft ondergaan. Op dit moment wordt jacht wereldwijd beoefend om verschillende redenen, zoals: om te overleven, commerciële doeleinden of als vorm van recreatie. Een enigszins nieuwe ontwikkeling is de beoefening van jacht welke het behoud van een soort en de lokale gemeenschap ten goede komt. In verschillende delen van de wereld worden er echter vraagtekens gezet bij de motivatie achter jacht, jachtmethoden, dierenrechten en de ecologische impact van jacht. Dit rapport is geschreven voor het Centrum voor Milieuwetenschappen Leiden (CML) om de achtergronden van het wereldwijde fenomeen "jacht" te onderzoeken.

Het onderzoek is uitgevoerd middels literatuuronderzoek binnen een theoretisch raamwerk dat speciaal hiervoor ontwikkeld is. Het beschrijven van de geschiedenis van jacht en de culturele drijfveren achter jacht (zoals religie, filosofie, economie, wetenschap en technologie) leidt tot een beter begrip van de maatschappelijke visies op jacht. De standpunten van internationale jachtorganisaties (zoals Safari Club International), van natuurbehoudorganisaties (waaronder IUCN), van dierenwelzijn/rechten organisaties (zoals Peoples for the Ethical Treatment of Animals) en van ontwikkelingsorganisaties (zoals de Food and Agricultural Organisation) kunnen gezien worden als een representatie van de visies op jacht van met name de westerse maatschappij.

De standpunten van deze vier internationale typen organisaties zijn gebruikt om jacht te beschrijven vanuit twee invalshoeken, namelijk de motivaties achter jacht en de maatschappelijke beperkingen op jacht. Er kunnen zeven motivaties worden onderscheiden: voedsel, veiligheid, natuurbehoud/-beheer, wetenschap, economie, cultuur en recreatie. Deze zijn gebruikt om zeven typen jacht te onderscheiden, namelijk: jacht om te overleven, jacht ten behoeve van menselijke gezondheid en veiligheid, beheersjacht, jacht voor wetenschappelijke doeleinden, schadecontrole, commerciële jacht en sport & culturele jacht.

Er kunnen drie typen van maatschappelijke beperkingen op jacht worden onderscheiden, respectievelijk natuurbehoud, duurzaam gebruik en dierenethiek. Door de typen jacht te vergelijken met de beperkingen op jacht is het mogelijk om te zien welke typen jacht toegestaan zijn binnen welke beperkingen en onder welke condities. Een synthese is voorgesteld dat natuurbehoud, duurzaam gebruik en dierenethiek combineert, daarbij rekening houdend met verschillende ruimtelijke differentiaties. Het is aanbevolen vanuit het perspectief van natuurbehoud en dierenethiek om de jacht op diersoorten: die bedreigd worden; een specifiek ecosysteemfunctie vervullen; een bepaald minimum niveau van intelligentie vertonen; of een bepaald minimum niveau van sociaal gedrag vertonen, alleen toe te staan als dit het behoud van de soort in kwestie ten goede komt.

Het huidige beleid van en veldwerk van natuurbeschermingsorganisaties zoals WWF komt overeen met de resultaten van dit onderzoek. Echter, in hun communicatie naar de leden ontbreekt dezelfde consistentie. Het is daarom aanbevolen om het interne beleid en de communicatie op elkaar af te stemmen, om miscommunicatie wat betreft het standpunt van WWF over de jacht op dieren te voorkomen. Het raamwerk dat voortdurend gebruikt is gedurende dit onderzoek, maakt het mogelijk het fenomeen "jacht" vanuit alle dominante perspectieven op een neutrale manier te bediscussiëren. Dit raamwerk biedt CML vanuit educatief- en onderzoeksoogpunt een gezonde basis voor het verder onderzoeken van jacht.

Table of contents

Acronyms / terminology	III
Preface	V
Acknowledgements	VII
Summary	IX
Samenvatting	XI
1. Introduction	17
1.1 Backgrounds	17
1.2 CML	18
1.3 Objective & research questions	18
1.4 Reading guide	19
2. Working methods	21
2.1 Framework	21
2.2 Working scheme	22
3. Hunting in context	25
3.1 Hunting defined	25
3.2 European history of hunting	26
3.3 Cultural forces	27
3.3.1 Religion	27
3.3.2 Philosophy	28
3.3.3 Economy	29
3.3.4 Science and technology	30
3.4 Societal visions	30
3.4.1 International conventions	32
3.4.2 Conclusions	32
4. Forms of hunting	35
4.1 Motives behind hunting	35
4.2 Overview of types of hunting	36
4.3 Subsistence hunting	37
4.3.1 Definition	37
4.3.2 Stakeholders & scale	37
4.3.3 Impacts on biodiversity	38
4.4 Human health & safety hunting	39
4.4.1 Definition	39
4.4.2 Stakeholders & scale	40
4.4.3 Impacts on biodiversity	40
4.5 Conservation management hunting	40
4.5.1 Definition	40
4.5.2 Stakeholders & scale	41
4.5.3 Impacts on biodiversity	43
4.6 Scientific hunting	44
4.6.1 Definition	44
4.6.2 Stakeholders & scale	44
4.6.3 Impacts on biodiversity	44
4.7 Animal damage control	44
4.7.1 Definition	44
4.7.2 Stakeholders & scale	45
4.7.3 Impacts on biodiversity	46

4.8	Commercial hunting	46
4.8.1	Definition	46
4.8.2	Stakeholders & scale	47
4.8.3	Impacts on biodiversity	50
4.9	Sport & cultural hunting	51
4.9.1	Definition	51
4.9.2	Stakeholders & scale	51
4.9.3	Impacts on biodiversity	53
4.10	Types of hunting compared	53
4.10.1	Motives compared	53
4.10.2	Impacts compared	54
4.11	Hunting methods	55
5.	Constraints of hunting	57
5.1	Societal constraints	58
5.2	Criteria and management tools	59
5.3	Nature preservation	59
5.3.1	Intrinsic value	59
5.3.2	Threatened status	59
5.3.3	Ecosystem function	60
5.3.4	Attractiveness	60
5.3.5	National & international legal protection	61
5.4	Sustainable use	62
5.4.1	Threatened status	63
5.4.2	Market & cultural forces	63
5.4.3	Hunting quota's & regulations	64
5.5	Animal ethics	65
5.5.1	Intrinsic value	66
5.5.2	Attractiveness	66
5.5.3	Perception of pain	66
5.5.4	Intelligence	67
5.5.5	Social behaviour	68
5.5.6	Bans on hunting species & methods	68
6.	Motives versus constraints	71
6.1	Perspectives in balance	71
6.2	Types of hunting versus constraints	72
6.2.1	Nature preservation	72
6.2.2	Sustainable use	74
6.2.3	Animal ethics	74
6.3	Methods of hunting versus constraints	76
6.4	Compatible perspectives	78
6.4.1	Compatible types of hunting	78
6.4.2	Spatial and temporal aspects	78
6.4.3	Synthesis	79
7.	Discussion, conclusions, and recommendations	81
7.1	Discussion	81
7.1.1	Attractiveness	81
7.1.2	Nature preservation	81
7.1.3	Sustainable use	82
7.1.4	Animal ethics	82
7.2	Conclusions	83
7.3	Recommendations	83
7.3.1	Recommendations for conservation organisations	83
7.3.2	Recommendations for research institutes	84
7.3.3	Recommendations for further study & research	85

References

Appendixes

- Appendix I: A short history of hunting
 Appendix II: Major world religions and nature
 Appendix III: International organisations
 Appendix IV: Complete framework

Figures

2.1: Framework	21
3.1: Lascaux cave painting of a bison hunt	26
3.2: Lion hunt of Ashurnasipal II	26
3.3: Roman hunting	26
3.4: Hunting scene during the middle ages	26
3.5: Aristocratic hunting in Spain	26
3.6: Fox hunting in England	26
3.7: Hunting in France	26
4.1: Hadza boy practising hunting skills	35
4.2: Just playing with water?	35
4.3: Primary motives	36
4.4: Primary motives and types of hunting	36
4.5: Motives behind subsistence hunting	37
4.6: Embera indian hunting	38
4.7: Inuit subsistence hunting	38
4.8: Motives behind human health & safety hunting	40
4.9: One of the man eaters of Tsavo	40
4.10: Motives behind conservation management hunting	41
4.11: Motives behind scientific hunting	44
4.12: Motives behind pest control	45
4.13: Damage to crops by elephants	45
4.14: Motives behind commercial hunting	47
4.15: commercial seal hunter in Canada	48
4.16: Commercial hunting for bush meat	48
4.17: Breeding of lions	49
4.18: Motives behind sport & cultural hunting	51
4.19: Trophy hunter in Canada	51
4.20: Direct and indirect hunting methods	55
5.1: Schematical projection of the interaction between motives and constraints	57
5.2: Visions & constraints	57
5.3: Ursus maritimus	60
5.4: Gyps fulvus	60
5.5: MSY	64
5.6: Problem solving by a raven	67
5.7: A trapped fox	68
6.1: Relative importance of different visions on nature	71
6.2: Order of animal intelligence / behaviour	75
6.3: Example of a source – sink situation	78
7.1: Images of WWF campaign	84

Focus

1.1: Description of the CML	8
4.1: Subsistence hunting and the utilisation of bush meat	38
4.2: The CAMPFIRE Program	43
5.1: The African elephant: between nature preservation and sustainable use	62

Tables

4.1: Safari types, bag composition & charged fee	52
4.2: Overview of motives & hunting methods	54
4.3: Overview of threatened mammal and bird species	54
4.4: Types & methods of hunting	56
5.1: Constraints, criteria, and tools	58
6.1: Constraints, criteria, and management tools	72
6.2: Compatibility of the types of hunting & nature preservation	73
6.3: Compatibility of the types of hunting & sustainable use	74
6.4: Compatibility of the types of hunting & animal ethics	75
6.5: Compatibility of the method of hunting & constraints	76
6.6: Compatibility of the types of hunting & constraints	78

1

Introduction

1.1 Background

The technical, social, and psychological dimensions of hunting have dominated the course of human evolution for hundreds of thousands of years (cf. Washburn et al., 1999). The possibility for humans to be able to hunt and gather species from their environment has been of great importance for both the survival and development of men. The utilisation of species however has a profound effect on biodiversity, because of its influence on population size and population dynamics. Natural history has numerous examples of species that became endangered or even extinct due to unsustainable harvesting practises. The IUCN Global Red List of Threatened Species (see also § 5.3.2) has currently listed hunting and gathering as the third biggest threat to biodiversity, after habitat fragmentation and alien invasive species (cf. IUCN, 2003).

Certain developments like more intensive forms of livestock keeping have led to a modern world that does not depend that much on the gathering of species from the wild anymore (see § 3.2). This and other developments (see § 3.3) have led to the current diversity in hunting, as hunting is practised worldwide for different motives and in various forms (see § 4.1 & § 4.11). Hunting is continued as sport for instance, even if it is not longer necessary for reasons of subsistence. But there is more to hunting, as it also includes hunting for commercial gain or to control animal numbers. Notably, the last two decades a new development has originated that combines hunting with nature conservation and human development, like the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) in Zimbabwe; the Administrative Design Management for Game Management Areas (ADMAGE) Program in Zambia (Child, 2000); and Community Based Natural Resource Management (CBNRM) in Namibia (Skyer, 2004). These initiatives aim to demonstrate that wildlife utilisation can be a sound economically and ecologically form of land use (cf. Kiss, 1990).

There exists a social resistance against some of the motives behind hunting and hunting methods, due to the wide range of perspectives on hunting (see § 3.4). These perspectives have led to conflicts about hunting in which the ecological impact of hunting, and aspects of animal welfare, and animal rights are questioned (see § 5.1). This is illustrated by the ongoing debate about whaling. So when discussing hunting, a biological and cultural phenomenon encounters a society with continuously changing ideas about ecology, culture and ethics. Hunting is therefore a topic that is quite diverse and difficult to deal with. Although hunting is largely debated, there does not seem to exist a single study in which these different aspects of hunting have been examined in relation to each other (see § 6.2 & § 6.3). There is a lack of encompassing information on this topic that indicates the relevancy of this report.

1.2 CML

The Institute of Environmental Sciences of Leiden University (CML) has contributed to the realisation of this report. This institute is active on different levels in the field of nature conservation and human development, and has a keen interest in the subject of hunting.

CML (see focus 1.1) frequently encounters hunting in its research and education profession, varying from game-ranching practices for the benefit of nature conservation (cf. Iongh et al., 2000) to the recent debate about to which extent controlled whale hunting should be allowed by the International Whaling Commission (IWC) to support the conservation of whale species (cf. Aarden, 2003). CML frequently encounters the question whether one can utilise the species that one strives to protect.



Focus 1.1: Description of the CML

CML is an institute of Leiden University whose main area of work is research and education in the field of environmental science. The keyword for CML's research as well as education is multidisciplinary. Some research projects encompass contributions both from natural and social sciences. Other projects are interdisciplinary within natural sciences or within social sciences. Field research (carried out jointly with students) takes place both in Western and non-Western countries. CML has three research departments:

- Environmental Biology, dealing with sustainability and biodiversity in rural areas;
- Industrial Ecology, dealing with research in the field of Industrial Ecology;
- Environment and Development, dealing with co-management of natural resources in natural areas in developing countries

Source: CML (2004)

1.3 Objective & research questions

The information in § 1.1 & § 1.2 leads to the introduction of the following objective:

"The main objective of this research is to give a global overview¹ of the phenomenon of hunting that enables CML and any other organisation to determine its standpoint regarding the various types of hunting."

It should be noted that the purpose of this research is not to define any policy standpoint for CML, but rather to provide relevant information. Using the above information, the following central research question can be formulated:

"What are the different types of hunting and their motives globally, and what are the most important and relevant constraints of hunting, and can these constraints be expressed in criteria and management tools?"

From this central research questions the following individual research questions can be derived:

- 1) What is the definition of hunting?²
- 2) How has hunting developed through history?
- 3) Which visions on hunting do exist, and in which aspects do they resemble or differ?
- 4) Which forms of hunting (types and methods) can be distinguished, what is their (geographic) size, and what are their motives and stakeholders?

¹ This research aims to give an accurate overview and not a detailed description of the phenomenon of hunting, due to the amount of time available for this research as well as the magnitude of the subject

² In the scope of this research.

- 5) What are the impacts of these different forms of hunting on biodiversity?
- 6) What constraints on hunting (like ecological, ethical and economical constraints), and which criteria and management tools (including sustainable yield theories, the attractiveness of a species, and animal cognition) can be distinguished?
- 7) How applicable are these criteria and how effective are the management tools?
- 8) How do these forms of hunting and constraints of hunting relate to each other?
- 9) What are the recommendations for conservation organisations and research institutes regarding these results?

1.4 Reading guide

The structure of this report is as follows:

- chapter two explains the framework that has been developed and that has made it possible to discuss the phenomenon of hunting;
- chapter three describes the history of hunting and the cultural forces in order to understand the present-day societal visions on hunting;
- chapter four gives an overview of the phenomenon of hunting by describing the motives behind hunting, the types of hunting, and methods of hunting;
- chapter five deals with the constraints of hunting and the criteria and management tools that determine to which species these constraints apply and how;
- chapter six compares the types of hunting and methods of hunting with the constraints on hunting, and shows which combinations are compatible;
- chapter seven discusses some of the results and assumptions in this report, presents conclusions, and makes recommendations regarding further study and research.

2

Methods

2.1 Framework

In chapter one it is indicated that hunting is a complex subject. In order to answer the research questions in § 1.3 a theoretical framework has been developed that consistently has been applied within the structure and contents of this report. Figure 2.1 describes the framework in which hunting has been examined.

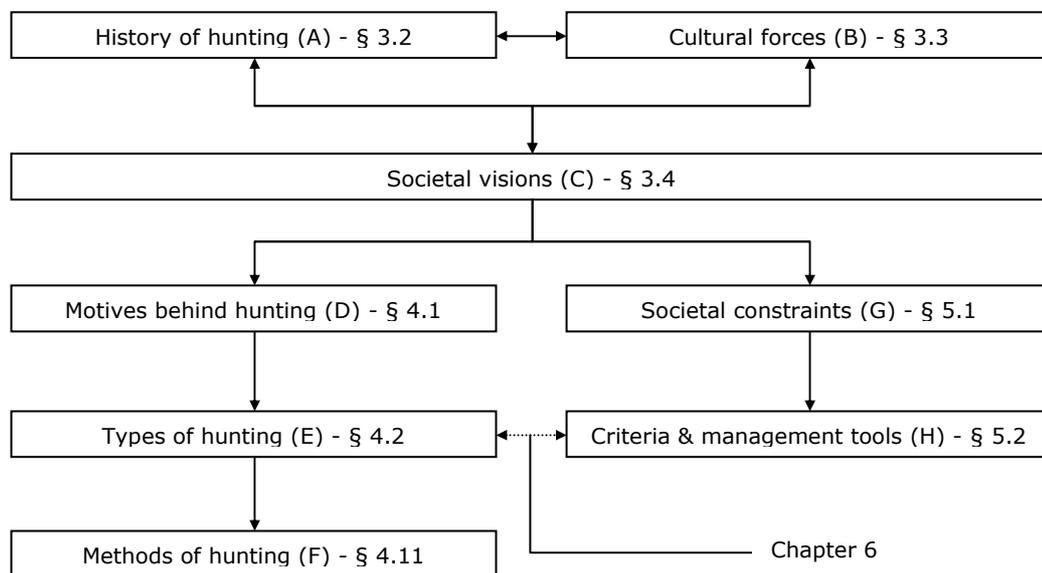


Fig. 2.1: Framework

Societal visions on hunting (C) are partly influenced by the history of hunting itself (A), but their origin is mainly founded in the underlying forces of culture (B), like religion. Statements of international hunting, conservation, animal welfare/rights and human development organisations are seen as a representation of the visions on hunting that exists in society.

From the societal visions on hunting, the phenomenon of hunting can be described by approaching it from two realities: motives behind hunting (D), and societal constraints of hunting (F). This division must not be regarded as a simple pro / contra distinction, but rather as a dual description of hunting in which arguments intertwine. The motives behind hunting are represented by the statements of hunter organisations, but the societal constraints are derived from the statements of all four types of international organisations (hunting, conservation, animal welfare/rights and human development organisations).

Within the motives that cause humans to hunt (for both hunter and facilitator), there are some primary motives that help to determine types

(and subtypes) of hunting (E). The various methods of hunting (F) can be derived from the types of the hunting, and are relevant when discussing the ethical side of hunting.

The constraints on hunting (G) are the opposite of the motives behind hunting in such a way that they limit hunting. The criteria (H) determine to which species or which type of hunting a constraint applies, but one criterion can apply to multiple constraints. Management tools can be seen as the implementation of the criteria and determine how a constraint applies. By comparing the motives behind hunting/types of hunting with the constraints of hunting/criteria and management tools it is possible to discuss where hunting is compatible within the various existing perspectives. It should be noted that this framework makes it possible to describe and discuss any form of hunting, but that it does not divide the subject of hunting that strictly. There are always cases in which types of hunting and its motives may interconnect, and these should be looked at individually. A representation of this framework with the obtained results of this study can be found in Appendix IV.

2.2 Working method

This report has been accomplished by a describing and exploratory investigation using existing literature (desk-research). Literature has been obtained in various ways ranging from digital article databases to library searches. The framework itself has been developed first by reviewing literature on hunting and by input of various experts, before looking for answers on the research questions (see § 1.3).

In addition to the description of the framework in § 2.1, some additional comments can be found in this section that describe some additional methods used to select the world religions and calculate the impact of hunting on biodiversity.

The major world religions³ that have been studied are selected on the basis of their number of adherents (cf. Adherents, 2004), in order to research their teaching about the relationship between man and nature.

Section 4.10.2 compares the impacts of the various types of hunting on biodiversity using the online IUCN Global Red List of Threatened Species (IUCN, 2004). The total amount of threatened mammal and bird species has been calculated by using the categories of threat of "critically endangered", "endangered", and "vulnerable". Only certain types of hunting (see § 4.2) correspond in a simplified way with the IUCN threat types⁴, so that:

- "Subsistence hunting" (see § 4.3) corresponds with Food - subsistence use / local trade, Medicine - subsistence use / local trade, and Materials - subsistence use / local trade.
- "Animal damage control" (see § 4.7) corresponds with Persecution.
- "Commercial hunting" (see § 4.8) corresponds with Food - sub-national / national trade, Medicine - sub-national / national trade, Materials - sub-national / national trade, Food - regional / international trade,

³ Whether religions like Buddhism and Hinduism are actually religions is open to debate, but they have been discussed as such in this report.

⁴ Accidental mortality by indirect methods of hunting like trapping (see also § 4.11) have only been taken into account in § 6.2, as they do not correspond with a certain type of hunting.

Medicine - regional / international trade, and Materials - regional / international trade.

- "Scientific hunting" (see § 4.6) and "Sport and cultural hunting" (see § 4.9) correspond with Cultural / scientific / leisure activities.

3

Hunting in context

3.1 Hunting defined

Formulating a definition of hunting is absolutely critical for the scope of this research.⁵ The Oxford English Dictionary (Oxford English Dictionary, 2004) defines hunting (the noun of hunt) as:

Pursue and kill a wild animal for sport or food.

Hunting is only one element of the term "hunting and gathering", which means the systematic collection of vegetable foods; the hunting of game; and fishing. In doing so, the killing of fishes is excluded from the term hunting. Fishing is often traditionally distinguished from hunting (cf. Bennett et al., 2000a), but this report includes fishing in the definition of hunting as primarily it is both about the killing of animals. The word "game" refers to terrestrial animals, especially wild⁶ mammals and birds (Oxford English Dictionary, 2004).

Cartmill (1993) on the other hand defines hunting as:

The deliberate, direct, violent killing of unrestrained wild animals.

Types of animal killing that do not meet Cartmill's criteria⁷ (like certain hunting ethics), includes fishing, trapping, slaughter, vandalism, religious sacrifice, self-defence, animal damage control or a road kill.⁸ This research however, also deals with indirect and "non violent" methods of hunting like trapping and falconry, and the killing of animals (bred for this purpose) in an enclosed environment like canned trophy hunting. "Hunting" is therefore regarded in the scope of this research as:

The premeditated direct or indirect killing of non-domesticated or semi-domesticated animals in a natural or semi-natural (fenced and/or artificial) environment.

⁵ Hunting is seen and experienced by people in many different ways. Some hunters for example make a clear distinction between hunting and shooting, and the definition of hunting in this chapter can or may not coincide with these definitions.

⁶ The use of the word "wild" can be confusing: the human notion that it is normal for animals to flee, the whole concept of animals being wild, is the result of man's habit of hunting (Washburn et al., 1999).

⁷ The criteria for Cartmill (1993) his definition are: a) the animal must not be docile (walking towards a tame deer and shooting it is not hunting); b) the animal must be able to flee (hence, shooting tigers in a zoo is not hunting); c) hunting has to involve violence (putting out poisoned food is not hunting); d) the fatal violence must be inflicted directly (not with snare or a trap); e) the assault must be premeditated; f) it must be undertaken at the hunters initiative (shooting an animal in self-defence is not hunting).

⁸ Most definitions only focus on the eventual killing of an animal, whereas Storaas et al. describes hunting as a process consisting of the phases: planning, tracking, killing, and utilisation.

This definition includes the killing of animals on a premeditated base; it excludes the capturing of live animals for trade or scientific collections; hunters that pay to tranquillise game for research (so-called "eco-hunting" or "green hunting"; Save the elephants, 2004); the killing of an animal in direct self-defence; and also the killing of domesticated animals in strict captivity like the bio-industry or battery production of crocodiles (cf. Kiss, 1990).⁹ Fishing is included in the above definition of hunting, but the aim of this research is mainly limited to the hunting of mammals and birds only, due to the magnitude of this subject and the available time.

3.2 European history of hunting

It is important to learn something about the practise of hunting throughout human history, because this is of significant influence on the societal visions towards hunting (see § 3.3). A short overview of the practise of hunting from prehistoric until present times is given in Appendix I and fig. 3.1 ^{t/m} 3.7. Appendix II describes this development through history from a European perspective, because of the influence of occidental history on the current functioning of industrialised society and world economy in general (cf. White, 1996).¹⁰



Fig. 3.1 – 3.7; 3.1: Lascaux cave painting of a bison hunt (16,000 to 15,000 BC); 3.2: Lion hunt of Ashurnasipal II (\pm 850 BC); 3.3 Roman hunting (\pm 320 AC); 3.4 Hunting scene during the Middle-Ages (1400 AC); ; 3.5: Aristocratic hunting in Spain (17th century); 3.6: Fox hunting in England (18th century); 3.7: Hunting in France (2003)

⁹ Obviously the motives behind hunting are not mentioned in this definition, as this is one of the research questions to be answered. This definition is therefore an ecological one, based on the extraction of the wild animal from its environment regardless of the method (cf. Bennett et al., 2000a).

¹⁰ By the end of the nineteenth century, fully two-thirds of the habitable surface of the planet was either administered from Europe or occupied by European colonists who had driven the native peoples from their land. Most of the world's peoples and cultures that were not derived from Europe or under direct European control were reeling under the impact of European

Summarised, the following main conclusions regarding the history of hunting can be distinguished:

- Dependence on hunting and gathering itself is a constraint on human population growth, but humans have escaped the short-term and often small-scale principles that constrain populations of most species, due to technical and cultural developments. History also shows that when hunting techniques and tools become more efficient, the scale and intensity in which hunting takes place and therefore the amount of impact increases. This is illustrated by the development of whaling in which a certain demand, together with the development of the harpoon gun, explosive harpoon, and eventually factory ships almost led to the extinction of certain whale species (cf. Whipple, 1979).
- The motive behind hunting changed as well, because food could increasingly be acquired in other ways. Gradually there was a growing emphasis on the process of hunting itself. Hunting changed from a way to obtain food, towards a way of practising skills of warfare, and eventually to a sport. This change in underlying motives is especially seen in the way the upper class practised hunting¹¹, although common people remained to see hunting as a way to obtain food or to achieve economical profits (cf. Cartmill, 1993). A second differentiation can be made between hunting and shooting; because of the invention of fire weapons, shooting sometimes became the actual element of hunting.¹²
- Agriculture, a differentiated society, and hunting privileges led to different perspectives of hunting. An anti-hunting movement originated that opposed to hunting because of the connected aristocratic privileges, later on because of concerns about animal welfare/rights, and eventually hunting itself was questioned. As the impact of decades of intensive continuous hunting became obvious, hunter associations' themselves became aware of the effects of their practise. This change did not only occur because animal species (thus game) were getting scarce, but also because of the process of hunting was changing.¹³

3.3 Cultural forces

Societal visions on hunting (and nature in general) are mostly determined by a number of cultural aspects: religion (§ 3.3.1), philosophy (§ 3.3.2), economy (§ 3.3.3) and in a broader sense science and technology (§ 3.3.4). These aspects have been described from a "western" perspective, because of enduring western influence on current day thinking (cf. White, 1996; see also footnote 10), but this is done without disregarding the importance of non-western cultures and religions.

3.3.1 Religion

Our present-day attitude towards the non-human animal world has a history with mainly religious roots, because the largest world religions (see § 2.2) provide explanations about the meaning of life on earth, its beginning and its purpose (Cliteur, 2001). Appendix II illustrates that most

political and military pressure, technology, religion, political ideas, intoxicants, and money (Cartmill, 1993).

¹¹ As Washburn et al. (1968) states: "man enjoys hunting and killing, and these activities are continued as sports even when they are no longer economically necessary."

¹² Note that the definition of hunting in this report includes shooting.

¹³ Hunting was moving away from having the kill as its primary objective. This was a fundamental turn-around in the basic premise of hunting that the sport and pleasure lay in the run and the opportunities to see your hounds work, and that the quarry was a valuable creature to be cherished and nurtured, rather than persecuted (Isaacson, 2001).

of the major world religions like Islam, Buddhism and Hinduism see humans as part of nature, with an emphasis on respect and sustainability. Christianity on the other hand is perhaps the only religion, which introduces dualism between humanity and nature (cf. Thomas, 1983; cf. White, 1996). The expansion of occidental nations led to influences of especially Christianity on other cultures, including their religion. The 700 years of foreign cultural domination over India for example, show that other beliefs (and economic factors) displaced existing values (cf. Dwivedi, 1996). In other parts of the world Christianity assimilated into new environments, like many African diasporic religions (cf. Adherents, 2004).¹⁴

Christianity has had probably the most important influence on the industrialised world. The anthropocentric view of this religion (nature as legacy of mankind) led to a natural acceptance of hunting as a pastime. Although western thinking and language have largely ceased to be Christian, and the message or context of Christianity has changed¹⁵, the substance often remains akin to that of the past (cf. White, 1996).

3.3.2 Philosophy

Until the 14th / 15th century, philosophy existed solemnly in the service of traditional Christian theology. In Renaissance times however Copernicus (1473-1543) and Kepler (1571-1630) argued on theoretical grounds for a more heliocentric view of the universe. Humanists such as Bruno (1548-1600) and Erasmus (1466-1536) helped shift attention away from arcane theological disputes towards more productive avenues of classical study and natural science (Kemerling, 2004). Human beings however were still seen as separate from the rest of the natural world, although the aristocratic rituals of the hunt were ridiculed by some philosophers (cf. Cartmill, 1993).

Scholastic philosophy was eventually replaced by Cartesian philosophers, like Descartes (1596-1650) who in trying to defend Christianity, made a distinction between an "external" world perspective (the body) and the human subject (the human mind). This form of thinking was carried through in the period of enlightenment during the 18th century (cf. Pratt et al., 2000), in which the traditional anthropocentric view of the universe was eventually challenged and with it the anthropomorphic conception of God (Jones, 2004). Although the barrier between humans and animals was lowered (and even led to discussions about animal rights in the 1750s; cf. Cartmill, 1993), nature was still seen as subordinate and of service to humanity (Opschoor, 1994). One of the most important consequences of utilitarianism as formulated by Bentham (1748-1832) is the acknowledgement of rights to "non-human animals".¹⁶ These formed the basis for the ideas of Singer (1946-) about animal liberation (cf. Cliteur, 2001). The late 1700s brought also the first legal punishments against animal cruelty, in Germany and England for example (cf. Cartmill, 1993).

¹⁴ Although other perceptions of nature than Christianity have not operated in prevention of massive pollution, destruction of natural resources and environmental disasters, this does not mean that these problems were an unknown phenomenon before western thinking reached other parts of the world. Low population densities and few resources available might have been the key to relatively low environmental impacts in Asia for example, instead of conscious resource conservation (cf. Bruun et al., 1995).

¹⁵ There is a growing emphasise of the 'greening' of world religions, in which perspectives of ecological wisdom, respect and sustainability are adopted (cf. Capra, 1999; cf. Nash, 1996).

¹⁶ 'The question is; can they (=animals) suffer?' – Bentham, 1789.

The Romantic movement that originated in the 19th century as a response on the enlightenment rejected this passive view of nature, and the ideas of materialism and wealth. (cf. Pratt et al., 2000). Although the romantic view of nature was still egotism in many ways, they shared some common ideas with enlightenment thinkers about the “repulsive” and “barbaric” process of hunting and flesh eating (cf. Cartmill, 1993).

Kant (1724-1804) on the other hand saw human dignity as the very thing that makes us different from other species. In doing so he separates man from the animal kingdom (just as Fichte, 1762-1814). His ideas had a major impact on human ethics.¹⁷ Schopenhauer (1788-1860) on the other hand rejected this distinction between humans and the animal world, by developing an idealistic vision that describes the differences between humans and non-human animals as gradual and not as essential (cf. Cliteur, 2001).

Ideas in philosophy (especially on the status of man in nature) led to an acceptance of hunting, and hunting practises in the past. Nowadays, the traditional western Christian view on life has been largely changed or has been replaced in many parts of society, under the influence of philosophers like Schweitzer (1875-1965) with his philosophy to respect all life, or like Singer who defines a person as a rational and conscious being (cf. Cliteur, 2001), and promotes rights for suppressed non-human “minorities” (cf. Nash, 1989). This does not imply that the anthropocentric view on nature ceased to influence the current functioning of human society. Some of these views still influence the way natural resources (like biodiversity) are exploited (see also § 3.3.3). The “deep ecology” movement illustrates perhaps best some of the current visions (“environmental ethics”) on man and nature. The deep ecology movement erases the barrier between the human and non-animal world by promoting ecological awareness (ecocentric), with an emphasise on harmony, hence sustainability (cf. Devall et al., 1985). Nietzsche (1844-1900) already remarked that nature experience through history often shifts between Dionysos (representing uncontrollable, chaotic nature) and Apollo (representing design, equilibrium and peace; Schouten, 2003).

3.3.3 Economy

Certain economic factors have their roots in cultural aspects like anthropocentrism and Protestantism (cf. Weber, 1930). These aspects still determine most of the industrial exploitative attitude. History shows that the attitude towards economic growth leads to new scarcities, including scarcities of certain natural resources (cf. Hueting, 1980), as illustrated by the commercial hunting on elephant ivory and rhinos horn (cf. EIA, 2000). This trend towards growth explains (together with cost minimisation and the neglect for environmental side effects) the tendency of the current world economy towards unsustainability (cf. Opschoor, 1994).

Natural resources as biodiversity are goods with a certain value, traditionally determined by the amount of labour involved. Although scarcity is a known phenomenon in the market of supply and demand, the ecological scarcity of natural resources in relation to future demands and the vitality of an ecosystem is often not taken into account. “Nature” is therefore often wrongly valued (cf. Pearce et al., 2001). Growing

¹⁷ The ethical ideas of Kant also had a major influence on the Universal Declaration of Human Rights.

awareness among certain economists led to a call for change in the current functioning of the world economy. This call for change was triggered by the implications of the term "sustainability" as introduced in the 1992 United Nations Conference on Environment and Development in Rio de Janeiro (see also § 3.4.1); by the "Limits to Growth" report by the Club of Rome in 1972; by the 1972 United Nations Stockholm Declaration on the Human Environment; and by the 1987 report "Our Common Future" by the World Commission on Environment and Development (WCED; cf. Hawken et al., 1999; cf. Pearce et al., 2001). Reforming in the field of economy is perhaps slow, but nevertheless occurring as illustrated by economic movements as "ecological economics", "green economics", and "environmental economics".

But economy itself has also an influence on the development of hunting through history. The amount of spare time increased, because of a gradual reduction of labour time due to increasing standards of welfare. This might have offered the possibility to rich middle-class, and finally also for common man to go hunting (for sport).

3.3.4 Science and technology

The increasing interest in animal morphology in the 17th century by scientists like Harvey (1578-1657), Borelli (1608-1679), and Boerhaave (1668-1738), and the increasing information about the similarities between human and non-human animal organs eventually led to different views on animal welfare (cf. Cartmill, 1993). Although science produced a lot of knowledge that contributed to both the exploitation of the environment as well as understanding and conserving the environment, the scientist that probably had the greatest influence on the human view on nature was Darwin (1809-1882). His unifying biological theory of evolution had an important influence on the human view on its position in nature (Cliteur, 2001), but did not stop museums of natural history of collecting specimens for their collections. Posey (1999) however states that science is far behind in the environmental movement. It still sees nature as objects for human use and exploitation ('components' of biodiversity is the term the Convention on Biological Diversity uses, see also § 3.4.1).

History shows that whenever humans cause extensive damage to their natural environment the use of technical equipment usually played an essential role (see also § 3.2). Our present day environmental problems, as well as the population explosion, can be considered to be the unintended and unforeseen side effects of modern technological development (van der Wal, 1994). Technology is closely related to economy and might even be subjected to economy.¹⁸ Therefore it can be concluded that technology itself is not a primary factor, as it is all about the way it is used and the motive behind this. Note that increasing technical possibilities often have an even higher impact on biodiversity (see also § 3.2).

¹⁸ In a broader sense however, technology also influenced the dualistic anthropocentric view, as technology is used to control, dominate and sometimes push the environment aside (cf. Tijmes, 1994).

3.4 Societal visions & consequences

Present day societal visions on hunting (hereafter visions on hunting) are influenced by the practise of hunting through history (§ 3.2), and the above cultural forces (§ 3.3.1 to 3.3.4). These underlying influences may intertwine in the sense that history influences culture; religion influences philosophy; philosophy influences the functioning of economy, but also ideas in science and technology; and vice versa. These influences led to concerns about human impacts on the environment: on the one hand resulting in fear for species becoming extinct due to human influences, and on the other hand resulting in ethical questions regarding the treatment of animals.

Four types of international organisations can be distinguished, which have specific views on the acceptability of hunting. The standpoints of international conservation organisations, including WWF, Greenpeace, IUCN, Conservation International (CI), Wildlife Conservation Society (WCS); of international animal welfare/rights organisations, like the International Fund for Animal Welfare (IFAW), the World Society for the Protection of Animals (WSPA), and People for the Ethical Treatment of Animals (PETA); of international hunting organisations as Safari Club International (SCI), Conservation Force, and the International Council for Game and Wildlife Conservation (CIC), and of international human development organisations like the Food and Agriculture Organisation of the United Nations (FAO) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO) can be regarded as a representation of the different opinions which exist in society about hunting.¹⁹ These standpoints (see appendix III) can be summarised as follows:

- *International conservation organisations*
All the described international conservation organisations emphasise that hunting must be sustainable as first overall requirement. Some organisations like IUCN and WCS state that hunting contribute to the conservation of species and habitats, and is only acceptable under that condition. WWF is one of the few conservation organisations that stresses that consumptive use of wildlife should protect the wildlife from cruelty and to the extent possible, from suffering.
- *International animal welfare/rights organisations*
The selected organisations recognise the importance of subsistence hunting, under the condition that it is practised on a sustainable basis. IFAW, WSPA, and PETA both reject sport hunting and commercial hunting (or hunting not essential to humans), and are absolutely opposed to cruelty against animals and unnecessary pain and suffering.
- *International hunting organisations*
All the selected international hunting organisations emphasise the importance of the sustainable use of natural resources, but also the importance of preserving human heritage of hunting. It is remarkable that these organisations see hunting as an important tool for the conservation of species, because of the economic and social benefits related to hunting.
- *International human development organisations*
Both FAO and UNESCO point out the importance of the utilisation of natural resources for human development in a sustainable way.

¹⁹ This report does not pretend to give a complete overview of visions on hunting, rather an illustrative selection. Indigenous peoples and/or subsistence hunters are underrepresented, as the above organisations come "mainly" from industrialised countries. Cultural aspects also influence the view of subsistence hunters on hunting, especially with regard to prey selection (see also 5.4.2).

3.4.1 International conventions

Laws and international conventions regarding the preservation, conservation, and exploitation of species and ecosystems can be seen as expressions/consequences of the above cultural forces and societal visions (cf. Heijnsbergen, 1997). International conventions act in fact as the practical implementation of constraints on hunting (see § 5.2). The most important treaties in this aspect that are relevant worldwide are:

- The objectives of the 1992 Convention on Biological Diversity (CBD) are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources. The CBD addresses the sustainable use of natural resources, meaning: "the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations" (cf. CBD, 2004).
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants (including parts of animals and plants) does not threaten their survival. Since 1975, 162 parties joined CITES, which was adopted on a meeting of IUCN. Roughly 5,000 species of animals and 28,000 species of plants are protected by CITES against overexploitation through international trade. They are listed in the three CITES Appendices²⁰ (CITES, 2004a & b), and trade in these species is closely monitored by TRAFFIC the joint wildlife trade monitoring programme of WWF and IUCN (TRAFFIC, 2004).

3.4.2 Conclusions

The four groups of international organisations that represent the societal visions on hunting can be characterised in order of acceptance:

- Hunting organisations: hunting as conservation tool is desirable, when undertaken in a sustainable way.
- Human development organisations: the use of natural resources is necessary for human development, but should be undertaken in a sustainable way.
- Conservation organisations: hunting is acceptable in general, under the condition that it is carried out in a sustainable way. Some organisations see hunting as a tool for conservation.
- Animal welfare/rights organisations: no hunting, unless for reasons of subsistence/absolutely critical for humans, while avoiding cruelty, unnecessary pain and suffering of animals.

It can be concluded that the sustainable use of resources, as defined by the CBD (see § 3.4.1), is embedded in the statements of most organisations. The IUCN, CI, WCS, Conservation Force, CIC, FAO, and UNESCO point out that hunting/use of natural resources is important in terms of human development, provided that it is sustainable and there is equitable benefit sharing. Animal welfare/rights organisations and hunting organisations/human development organisations can be regarded as two

²⁰ Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilisation incompatible with their survival. Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.

extremities of each other. Animal welfare is only embedded in the statements of animal welfare/rights organisations, in the statement of WWF, and in the statements of SCI (fair chase) and CIC (respect for all live). It should be noted that there is a difference between animal welfare and animal rights, as described in § 5.1.

4

Forms of hunting

4.1 Motives behind hunting

To distinguish between the motives behind hunting is most important, as these motives determine which types of hunting exist (see also § 2.1). When looking at the historical practise of hunting in Europe (§ 3.2) it becomes obvious that hunting primarily was a way to obtain food. At present some people are still dependent on hunting to meet subsistence needs (cf. Bennett, et al. 2000a; cf. Prescott-Allen et al., 1982; see § 4.3). Another important primary motive to go hunting is for reasons of safety (see § 4.4). Because these two primary motives attribute to basic necessities of life (Maslow theory of needs; cf. Hoyer et al., 2001), hunting is embedded in many cultures. If a certain behaviour is important to the survival of a species (as hunting was for man), then it must be both pleasurable and easily learned, as illustrated by the ease with which boys can be interested in hunting, fishing, fighting, and games of war (see fig. 4.1 and 4.2). It is not that these behaviours are inevitable, but they are easily learned, are satisfying, and are socially rewarded in most cultures.



Fig. 4.1: Hadza boy practising hunting skills



Fig. 4.2: Just playing with water?

Because hunting is continued as a sport even when hunting is no longer necessary for direct survival (cf. Washburn et al., 1999), it can be concluded that there are additional motives behind hunting (cf. Bennett et al., 2000a; cf. Hitchcock, 2000; see fig. 4.3):

- Cultural motives, including spiritual and religious meanings (since there exists a close relation between the hunter and its prey); certain traditions; the acquisition of animal trophies as cultural artefacts, for personal adornment, or to obtain raw materials for clothing; and social meanings (like establishing a band, gaining respect, achieving manhood, and winning a bride).
- Recreational motives: the practise of hunting itself (cf. Caldecott, 1988). Sometimes this also includes the acquisition of a trophy.

These two additional motives makes hunting continue even if no longer necessary for survival. Sport hunters (see § 4.9) often experience it as

difficult to express their motives to outsiders.²¹ Although many of the emotions sport hunters face while hunting can be experienced when practising other wildlife associated activities (like wildlife photography), the kill is the culmination of the hunt.²² Some sport hunters also enjoy the nutritional value of their practise, and prefer wild meat above the products they can buy in stores (cf. Cartmill, 1993; Chastain, 2004 a & b). Other motives behind hunting are:

- Economical: obviously, animals are also hunted for their economical value (including skins, and other trophies like tusks; see § 4.8) or because of the economic damage they cause (see § 4.7).
- Science: hunting as means to conduct research to the collected specimen (§ 4.6).
- Conservation: hunting is also used as a management tool for conservation purposes (see § 4.5).

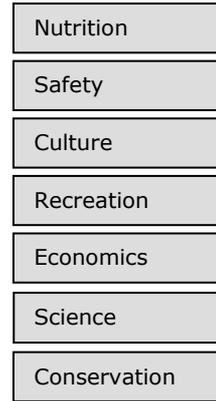


Fig. 4.3: Primary motives

4.2 Overview of types of hunting

Paragraphs 4.3 t/m 4.9 include definitions of the seven types of hunting (see fig. 4.4), overviews of motives and stakeholders, scale, and their impact on biodiversity.

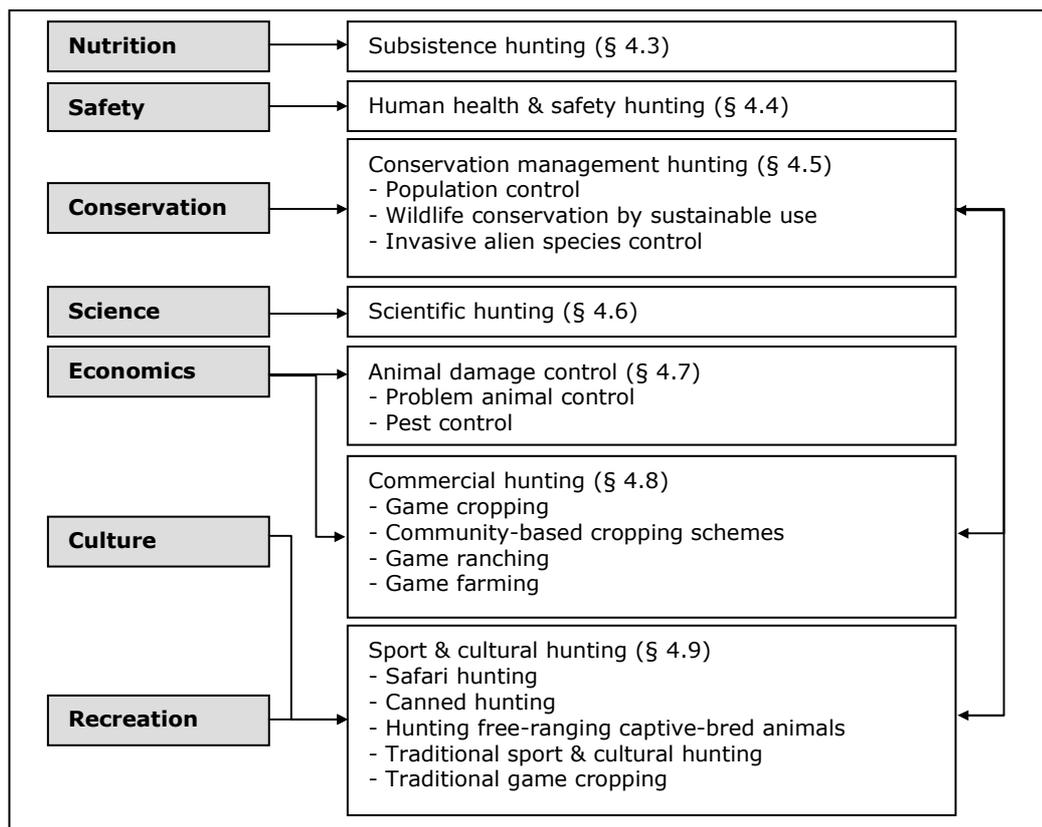


Fig. 4.4: Primary motives and types of hunting

²¹ One hunter describes hunting as "freedom, a tie to our ancestors, peace, contentment, happiness, joy, sweat, close calls, exploring, hiking, stealth, boring, exhilarating, tiring, satisfying, challenging and a thousand other things".

²² "To the sportsman the death of the game is not what interests him; that is not his purpose. What interests him is everything that he had to do to achieve that death - that is, the hunt... To sum up, one does not hunt in order to kill; on the contrary, one kills in order to have hunted." (Gasset, 1985).

It should be noted that the motives behind the types of hunting in this paragraph often intertwine and that boundaries are not sharp. Some subsistence hunters for example would say that they like to hunt, yet they also hunt to fulfil their nutritional and economical needs, to obtain trophies, to obtain wild meat because they prefer it to other forms of protein, and because it is part of their culture (cf. Bennett et al., 2000a). Also note that a distinction should be made between motives behind hunting: a safari hunter will hunt for mainly recreational purposes, the safari operator has mainly economical reasons, but the owner of the hunting zone might be a conservation organisation that conserves wildlife by allowing sustainable utilisation. This difference in primary motives is taken into account in this section (see also § 4.10.1).

4.3 Subsistence hunting

4.3.1 Definition

Subsistence can be defined as “resource dependence that is primarily outside the cash sector of the economy” (Huntington, 1992). Hitchcock (2000) however claims that virtually all Africans for example, including those in remote rural areas, are integrated into the market economy. Subsistence hunting is therefore defined as (cf. Hitchcock, 2000):

Subsistence hunting is the procurement of wild animals (whether legal or illegal) to meet primary household needs.

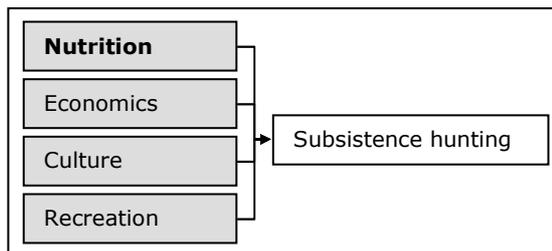


Fig. 4.5: Motives behind subsistence hunting

This is a rather broad definition in which several motives intertwine (see fig. 4.5): parts of a hunted animal might be used for clothing, as a trophy or sold; subsistence hunting can be important for every day social relations; for cultural and ritual purposes; and can have a recreational value. The predominant motive of subsistence hunting however is to provide the hunter with his/her own nutritional demand (see bold font in fig. 4.5). This definition does not include hunting for the sole intention of culture (including spiritual, religious, social, and traditional values). For the purpose of this report, a distinction will be drawn between subsistence hunting and hunting for cultural reasons, in which the latter is considered to be a form of sport and cultural hunting.²³

4.3.2 Stakeholders & scale

Because subsistence hunters primarily hunt for their own nutrition demand, the only stakeholders involved are the hunters themselves, and any other social reference groups they might support (including kinship, friends, and community). In at least 62 countries world-wide, wildlife (and wild fish) contribute a minimum of 20% of the animal protein in rural diets (Bennett et al., 2000a; cf. Prescott-Allen et al., 1982). In the Amazon area

²³

Although subsistence hunting often includes a mix of nutritional and cultural motives, hunting sole for cultural reasons does not directly contribute to primary means of survival. In essence there is little difference between cultural hunting by Miskito Indians, the traditional hunting of partridges in Germany, or fox hunting in Britain. Only its place in the environment it is practised in is different.

for example wildlife contributes significantly to the rural communities in the form of proteins (see fig. 4.6): the rural population in Amazonas State, Brazil, annually kills about 3,5 million vertebrates for food (cf. Bennett et al., 2000a). In Kenya, Africa, traditional hunter forest dwelling people rely heavily on bush meat protein supply (cf. Barnett, 2000; see also focus 4.1), as also in Cameroon (cf. Njiforti, 1997), and in Sarawak, Malaysia, the annual harvest of wild meat by subsistence hunters has been estimated at 23,500 tons of meat (Bennet et al., 2000b). In temperate regions there are also people that directly harvest



Fig. 4.6 Embera indian hunting



Fig. 4.7 Inuit subsistence hunting

meat from the wild for reasons of subsistence: in Arctic and Sub-Arctic regions where local communities depend on traditional subsistence harvests, like the Inupiat in Alaska, and the Inuit in Canada and Greenland (see fig. 4.7). It should be noted that the killing of animals by military troops who are left to support themselves "off the land" can also be considered to be subsistence hunting (cf. Kiss, 1990).

Focus 4.1: Subsistence hunting and the utilisation of bush meat

To which extent can the illegal killing of wildlife for meat (the so-called trade and use of "bush meat") be regarded as subsistence hunting? Research has shown that wildlife, traditionally viewed as a dietary supplement, has become a key source of food in eastern and southern Africa, thereby having a great impact on wildlife populations. Historically, bush meat has and still is been perceived as a purely subsistence activity undertaken by traditional hunter/gatherer societies. Increasing human populations and decreasing standards of living have resulted in people increasingly relying on what naturally occurs around them (80% of the researched rural households in Kenya for example). Because of endemic poverty, recurrent famine, low wages, infertile land, erratic weather patterns, and insufficient livestock yields, some people rely directly on the land for their livelihoods, and this can be regarded as subsistence hunting. Other groups though, like the pastoral Ngoni, Chewa, and Sambura regard their livestock herds as both cultural and capital assets. Lots of groups' refrain from consuming or trading their livestock when bush meat is available. This and the illegal commercial utilisation of bush meat, like the supply of bush meat to logging companies (cf. WSPA, 2000), is considered in this report to be commercial hunting (§ 4.8).

Source: Barnett (2000)

4.3.3 Impacts on biodiversity

Indigenous and traditional peoples (\pm 300 million people world wide) inhabit many of the areas of highest biological diversity on the planet, and frequently view themselves as guardians and stewards of nature (Posey, 1999). Among those peoples there are people who hunt for reasons of subsistence (hunting/gathering societies). Because of the spiritual relation that often exists between nature and those people, there exists a widely accepted opinion that those people have uniformly a genuine attitude of respect towards animals (cf. Désveaux, 1995), which gives the idea that subsistence hunting is therefore sustainable by definition (cf. FitzGibbon, 1998). This is not always the case as human history shows (cf. Denevan, 1992): the relentless harvest of wild meat by subsistence hunters around the tropics has resulted in conspicuous population declines and extinctions

from local to global scales for many species of birds and mammals world wide (cf. Peres, 2000).

Densities of game animals tend to be significant lower in hunted than in unhunted areas as several researches indicate (cf. Hart, 2000; cf. Mena et al., 2000; cf. Peres, 2000). The encounter rate of game animals also increases with the distance from settlements (Hill et al., 2000; cf. Mayaka et al., 2002a). Surely, some hunter/gatherer societies harvest animals at a sustainable rate, like the Ju/'hoansi San in the Kalahari Desert (cf. Hitchcock, 2000); several subsistence hunters in Amazonia (cf. Peres, 2000); the hunting of armadillos by the Aché in Paraguay (cf. Hill et al., 2000); and the hunting of bearded pigs in Upland Central Sulawesi, Indonesia (cf. Alvard, 2000). Other subsistence hunters however, harvest certain animal species at an unsustainable rate, examples include the hunting of certain primates by the Huaorani in Ecuador (cf. Mena et al., 2000); the overharvesting of certain duiker species in the Arabuko-Sokoke Forest in Kenya (cf. Fitzgibbon et al., 2000); the overharvesting of the crowded monkey in Bioko Island, West Africa (cf. Fa, 2000); and the unsustainable harvesting rates of species like the babirusa and anoa in North Sulawesi (cf. Brien et al., 2000). These unsustainable harvest rates are correlated with the size (change on detection) of the prey (cf. Mena et al., 2000), and the reproduction rates of those species (cf. Fitzgibbon et al., 2000). It should be taking into account that other factors like increasing deforestation, the hunting method used (see § 4.11), and an increasing demand / growing human population certainly play a role in the question whether subsistence hunting is sustainable (cf. Brien et al., 2000; cf. Hill et al., 2000). Subsistence hunters are rapidly aided by technology and commercialisation (cf. Bennett et al., 2000c), thereby entering other types of hunting, like commercial hunting (§ 4.8).

The species harvested vary from mammals, to birds, fish, and reptiles, but large ungulates (including duikers) and primates often make up most of the quarry of subsistence hunters (in percentage biomass) in tropical forests (cf. Bennett, 2000a; cf. Bodmer, 1995). The total number of species hunted may go as much as 51 bird species by the Maracá Indians in Colombia for example, and 33 mammal species in the Southwest of the Central African Republic (cf. Bennettb, 2000).

4.4 Human health & safety hunting

4.4.1 Definition

Hunting for reasons of safety is the primary motive behind hunting (see § 4.1). A new term is introduced in this report to describe this type of hunting, namely "human health & safety hunting", which can be defined as:

Human health & safety hunting is the predetermined killing of non-domesticated animals that can form a threat to human life or health.

This does not include the killing of a wild animal out of self-defence (since this is not included in the definition in § 3.1), but it does include the killing of animals that have killed or injured people, or animals that are seen as disperses of diseases to humans. So the primary motive behind this type of hunting is human health and safety, though a secondary motive might be culture (see fig. 4.8). Mythology, folklore, and events in the past might

lead to a negative attitude towards certain animal species leading to psychological fear. This is illustrated by the incentives (payment of boundaries etc.) that lead to the massive eradication of wolves in North America that started around 1800. The boundaries between this type of hunting and hunting as a means of animal damage control (crop raiding by agricultural "pest" species for example, see § 4.7) are sometimes unclear, as one of the justifications of wolf eradication programs was an economical motive (cf. Linnell et al., 2002).

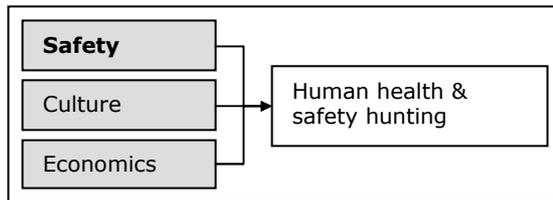


Fig. 4.8: Motives behind human h. & s. hunting

are sometimes unclear, as one of the justifications of wolf eradication programs was an economical motive (cf. Linnell et al., 2002).

4.4.2 Stakeholders & scale

Hunting because of concern about human health & safety includes the (non-effective) eradication of African wildlife in the past to prevent dispersion of the tsetse fly (cf. Grootenhuis, 2000)²⁴. Elephants are responsible for wounding and killing approximately 43 people each year in North Bengal in India (Deodatus, 2000), after which actions are undertaken. This type of human-animal conflicts often includes carnivores (man-eaters). But although predators such as lion see (fig. 4.9) and crocodile are dangerous to humans, most incidents of human death in Africa due to wild animals are caused by large herbivores, like elephant, hippopotamus, and buffalo (Deodatus, 2000). Another example of human health & safety hunting is the killing of 10,000 civet cats in China designed to stem a suspected, but unproven, link to SARS, or the hunting of hares and birds on airforce bases/airports to minimise safety hazards. Stakeholders involved are the human population under treat, hunters, and government officials who make up policy, and offer boundaries/licenses.



Fig. 4.9: One of the man eaters of Tsavo

4.4.3 Impacts on biodiversity

The mass prosecution of animals will have a great negative impact on the species at stake, but the effects of individual killings can be neglected (assuming that the species in question is not rare to begin with).

4.5 Conservation management hunting

4.5.1 Definition

The aim of conservation (in the sense of conserving nature and the natural environment) is to ensure the continuing existence of species, habitats, biological communities, and ecosystems (cf. Spellerberg, 1996). Conservation management hunting can be defined as:

²⁴ Although another motive in this matter was economical (a possible disease transmission from wildlife to livestock).

Conservation management hunting is the practise of hunting, primarily as an ecological management option that contributes to the preservation and conservation of populations of species and ecosystems.

This definition does not necessarily have the same meaning as preservation in the sense of preventing any kind of human impact (cf. Spellerberg, 1996; cf. Makombe, 1993). Protecting species and ecosystems can range after all from total protection (preservation) to the conservation of wildlife by sustainable use (cf. IIED, 1994), as illustrated by the community-based approaches to wildlife management outside protected areas in Africa (cf. Prins, et al., 2000). This type of hunting is quite complex in terms of stakeholders and motives as explained in the next section.

4.5.2 Stakeholders & scale

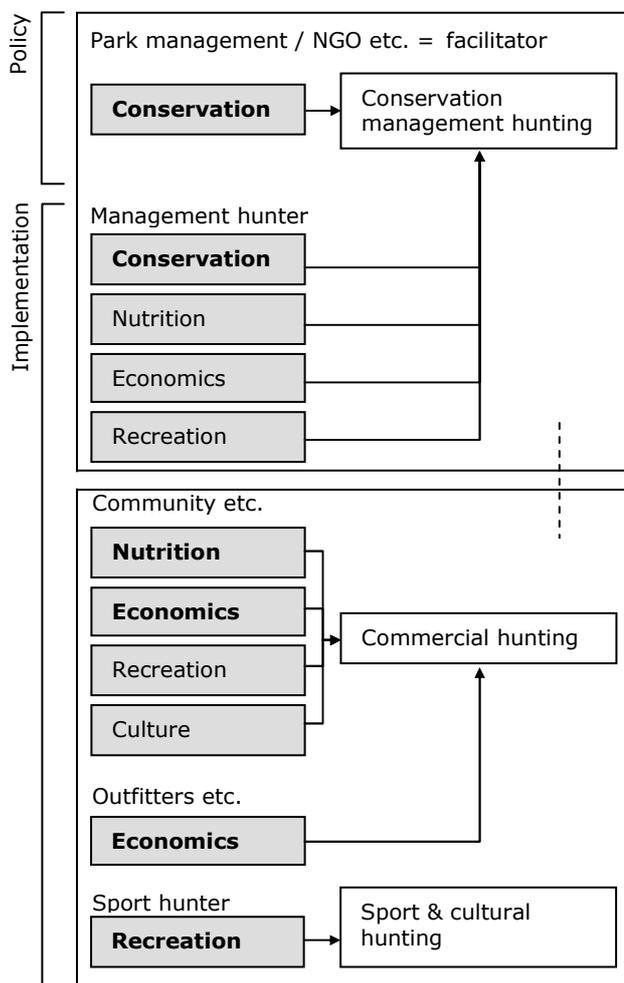


Fig. 4.10: Motives behind conservation management hunting

This type of hunting distinguishes two levels of stakeholders: policy and of implementation, in which the latter includes several types of hunting (see fig. 4.10). The first stakeholders are the ones that make up the policy for a certain area with the objective of conservation. These can include government agencies, the managers of a protected area, non-governmental conservation groups (NGO's), and local institutes. Second level stakeholders are the ones that implement the policy and carry out the actual hunting. This can be an employee of the protected area itself for example.²⁵ The implementation of the intended policy can also be contracted out to third parties, like the local community, outfitters, or to sport hunters directly. The primary motive for these stakeholders is not conservation, and is therefore regarded as either commercial (§ 4.8) or sport hunting (§ 4.9).²⁶

²⁵ Although the primary motive is still conservation, meat from ecological culling programmes (the practise of hunting for population control; cf. IIED, 1994) in Africa is distributed and utilised by local communities, and is seen by the protected area as a beneficial by-product (Barnett, 2000). So conservation management hunting might have certain nutritional and economical values for the hunter, or community.

²⁶ Some safari outfitters are the initiator of community based conservation programmes, that minimise poaching activity and create goodwill. Although such programmes attribute to conservation efforts, this report considers it commercial hunting, as the primary motive is still economical.

The primary motive for practising hunting as a ecological management tool is conservation, it including the following sub-types:²⁷

- Population control of certain animal species (often referred to as culling), because the area is limited or naturally occurring predators are lacking. Population control is practised especially in protected area, because the primary goal of such an area is the protection of the biotopes and the species within it (cf. Barnett, 2000; cf. Kiss, 1990).²⁸ The goal of population control is either preventing overpopulation (and therefore preventing or reducing habitat degradation caused by high densities of herbivorous animals), or as a species protection strategy (e.g. in cases where there is competition between a locally abundant and a rare species): in the latter case a proportion of the population of the abundant species may be culled to reduce the competition (Ntiamoa-Baidu, 1997). Examples of this kind of hunting is the killing of elk in Yellowstone National Park (cf. Gilbert et al., 1987), and the discussion about culling elephants in protected area in South Africa and Zimbabwe, because of overpopulation (cf. AITVM, 2003).
- Allowing the regulated harvesting of animal species for conservation purposes (= wildlife conservation by sustainable use). Wildlife conservation by sustainable use is practised especially outside protected area with the motive to change the unsustainable harvesting of species into the controlled harvesting of these animal species to ensure their protection. This is claimed to be the best conservation option between two extremes: total development (the complete conversion or loss of natural areas and wildlife) or preservation²⁹ (cf. Barbier, 1992; cf. Pearce et al., 1994). Wildlife conservation by sustainable use includes game ranching practise on private land and cropping schemes on communal land. Wildlife populations are kept at optimum levels to ensure that wildlife habitat is not degraded due to excessive numbers of animals over and above the sustainable carrying capacity of the land (Barnett, 2000). Examples of this kind are the Lewa Wildlife Conservancy in Kenya (Szapary, 2000), The Cullman Wildlife Project in Tanzania (Hurt et al., 2000), the Administrative Design for Game Management Areas (ADMAGE), the Luangwa Integrated Rural Development Project (LIRDP) in Zambia (Kiss, 1990), Wildlife Industry's New Development For All (WINDFALL) and the most famous example: the Communal Areas Management Program for Indigenous Resources (CAMPFIRE) in Zimbabwe (see Focus 4.2.).

The realisation that wildlife extinction is due to the lack of incentive for local people to support conservation efforts has led to a shift from state-imposed preservation to utilitarian conservation. This approach provides private landowners and local communities alike with the right for commercial use of wildlife in the dispersal areas, thus ensuring in-situ conservation (cf. Mayaka, 2002a). It has to be taken into account that game ranching is also often practised as a purely economic enterprise (see § 4.8), and conservation per se is not always the main driving factor behind conservation management hunting (Hearne, 2000). Because wildlife utilisation often can be recognised as the most profitable form of land use in Africa (cf. Grootenhuis et al., 2000), it can

²⁷ Although the hunting of problem animals (hunting to minimise human-animal conflicts) is also often a part of wildlife management of a protected area, this report considers this to be part of pest control (see § 4.7).

²⁸ Although hunting for population control outside protected area might also occur, this intertwines often with wildlife conservation by sustainable use.

²⁹ Total preservation of species and ecosystems might increase illegal activities, which happened in Kenya in 1978 when hunting and trade in all wildlife products was banned (cf. Stiles, 1994).

serve both purposes as illustrated with the Madikwe Game Reserve (Davies, 2000).

Focus 4.2: The CAMPFIRE Program

The theory behind CAMPFIRE is that communities will invest in environmental conservation if they can exploit these resources on a sustainable basis for their own benefit. CAMPFIRE is based on creating appropriate institutions under which resources can be legitimately managed and exploited by the resident communities (communal land). Profits from the enterprise may be used for communal benefits or distributed to individual households, at the discretion of the community. A successful implementation of the Program depends on:

- 1) obtaining legal proprietorship over the wildlife by the community;
- 2) developing awareness of the value of wildlife by district leadership;
- 3) marketing wildlife effectively to earn money;
- 4) ensuring that the money was devolved following procedures that ensured full participation, accountability, and transparency;
- 5) proper management of wildlife, through setting quotas, monitoring and managing problem animals, anti-poaching, selling hunting concessions etc.

Because wildlife is management partly by managing resources such as trees, grass, and water, communities began to manage these when wildlife was sufficiently valuable. The Kanyurira community in Zambezi Valley used the revenues of safari hunting in 1988 to build a school. Z\$ 47,000 in 1990 was allocated to a fund for a clinic, the purchase of school furniture, and a dividend to each household. By an active participation into decision making, Kanyurira community has shown that community based management is possible.

Sources: Prescott-Allen et al. (1996); Child (2000); Kiss (1990); Metcalfe (1994); Murphree (1993)

- The eradication of invasive alien species that cause ecological damage. The threat to biodiversity due to invasive alien species is considered second only to that of habitat loss (CBD, 2004). Alien invasive species are species that are 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic damage, environmental harm or harm to human health (U.S. Department of Agriculture, 2004). So this group as a whole refers not only to conservation management hunting, but also to human health & safety hunting (§ 4.4) and animal damage control (§ 4.7). This subtype only to those species that cause environmental damage. When prevention of the introduction of invasive alien species is not successful, eradication, containment, and control are advised according to the IUCN guidelines for the prevention of biodiversity loss caused by invasive alien species (Invasive Species Specialist Group (ISSG), 2000). Islands or other isolated ecosystems are especially vulnerable to invasive alien species, as illustrated by the efforts of the New Zealand and Australian governments to control invasive alien species.

The species that are involved in conservation management hunting vary: the first two subtypes encompass often the larger ungulates like deer, or predators like wolves (cf. Gilbert et al., 1987). According to the Global Invasive Species Database of the ISSG at present there are 7 bird species and 20 mammal species (out of a total of 217) that are registered as invasive alien species (ISSG, 2004).

4.5.3 Impacts on biodiversity

Because the main motive behind this type of hunting is conservation, it can be assumed that no long-term harmful effects will occur, as prevented by proper monitoring and adjustment of management. This does not apply for the subtype "conservation by sustainable use" as different management regimes in protected area and adjacent hunting zones, combined with other anthropogenic effects, can have a serious impact on

densities of animal populations (cf. Mayaka et al., 2002a). Some game ranching schemes (see also § 4.8.2) for example value a restricted number of species, often at the expense of other indigenous wildlife (cf. Luxmoore et al., 1992), which are seen as predators or competitors (cf. Macnab, 1991).

4.6 Scientific hunting

4.6.1 Definition

This type of hunting occurs at present only on a small-scale basis. The main motive behind this type of hunting is science (a need for information), including conducting (genetic) population research, morphological research, or collecting specimens for natural historic collections. The definition is as follows:

Scientific hunting is the killing of non-domesticated animals for scientific purposes.

Although science is the main motive behind this kind of hunting (see fig. 4.11), hunting can sometimes take place under this heading but is in fact more motivated by/or intertwined with economical reasons. Examples of this kind are respectively the hunting for whales by Japan, Norway, Iceland, and Greenland (Greenpeace, 1999), and the collection of animal species for medical experimentation, like mammalian cells as tissue cultures (cf. Ten Kate et al., 1999).

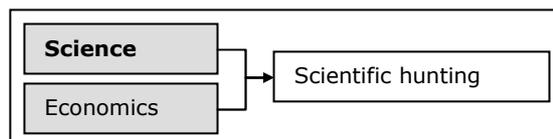


Fig. 4.11: Motives behind scientific hunting

4.6.2 Stakeholders & scale

Stakeholders include individuals, domestic or foreign institutions, and companies in the private sector (cf. Ojasti, 1996). Except for examples like Japanese whaling, it can be assumed that the scale of this type of hunting is (still) rather limited, as is the impact on biodiversity. Although 23 per cent of all compounds contained in prescription drugs dispensed in the USA are derived from animals, these often include snakes, spiders and insects and rarely mammals and birds (cf. Ten Kate et al., 1999).

4.7 Animal damage control

4.7.1 Definition

A pest can be defined as an animal that attacks crops, food, or livestock (Oxford English Dictionary, 2004), thereby causing loss of property and income. This type of hunting can therefore be defined as:

Animal damage control is the hunting of animals that cause economic damage.

The main motive behind this type of hunting is economical (see fig. 4.12), although the constant prosecution of certain animal species can eventually be imbedded in cultures, thereby reinforcing the pressure on the species in

question.³⁰ Some other terms for this type of hunting are problem animal control, animal damage control, animal damage management, vertebrate animal damage control, problem animal control, wildlife animal damage control, and wildlife damage management (cf. Schmidt et al., 1997).

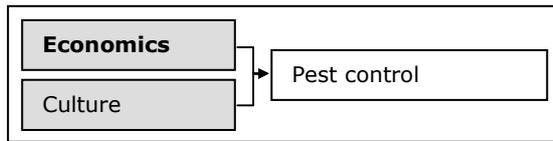


Fig. 4.12: Motives behind pest control

4.7.2 Stakeholders & scale

For this type of hunting a distinction can be made between:

- problem animal control (PAC), which often consists of larger vertebrates;
- animal damage control, which refers to common small pest species like mice.

Problem animal control is often the result of competition for natural resources and space between men and animals. Increasing human populations and associated demand for land have led to an increase of conflicts between humans and wildlife. Wildlife migration in Africa for example, is becoming more and more restricted, and crops of farmers offer a good alternative food resource for wildlife (cf. Deodatus, 2000). Effective strategies to reduce wildlife / human conflict are often lacking, and a mechanism such as fencing can be too expensive. Problem animal control consists therefore often of the culling of these animals through legal or illegal actions, and the meat of these animals is often sold or given to stakeholders as a form of compensation (cf. Barnett, 2000).

Damage can be classified in four categories (apart from human life and injury, see § 4.4; cf. Deodatus, 2000):

- Loss of agricultural crops. In Malawi there is an annual loss of 29 million US\$ in the crop production sector alone (see fig. 4.13). Crop loss seems to be correlated with the distance from protected areas. Crop loss in east and southern Africa near protected areas is of the same order as kangaroo damage in the Bungunya District in Australia, and as crop damage caused by deer near protected areas in the United States. The 1.5 million geese who spend the winter in the Netherlands, caused a damage of 7.6 million Euro per year to the agricultural sector (AgriHolland, 2004).
- Loss of forest products. Forest plantations are especially subject to animal pests, similar to agricultural crops. Bark stripping by Samango monkeys in a pine tree plantations in South Africa for example, resulted in about US\$ 145,000 production loss to this country per year. The impact of wildlife, particular elephant, on the structure of natural vegetation in Africa has been widely studied.
- Predation on / competition with livestock, including the following typical forms:



Fig. 4.13: Damage to crops by elephants

³⁰

To which extent is hunting in order to protect livestock or crops also subsistence hunting (cf. Deodatus, 2000)?

- Several carnivore species, ranging from lions to genets, predate on livestock and poultry. Livestock in Kenya with a value of 19,000 US\$ was lost in 1994. Lions out of Tsavo East National Park for example kill roughly 2.4% of the herd each year with a value of 7,532 US\$ (290 US\$ per farmer, which is a considerable sum for subsistence farmers), adding extra pressure on the remaining lion populations because of farmers protecting their livestock (cf. Patterson et al., 2004). 5000 sheep are killed at a yearly basis by the Eurasian lynx in Norway (Breitenmoser, 2000). Wolverines kill 10,000 sheep and 12,000 semi-domesticated reindeer in Norway on an annual basis (Landa, 2000).
- Competition for food or water between wild herbivores and livestock can occur when the demand for the resources exceeds the supply, but it seems that especially wildlife numbers are negatively affected because of human activities, including habitat modification (cf. Ottichilo, 2000; cf. Prins, 2000). There are numerous examples of extermination efforts of wildlife by humans because of believed competition; an example concerns competition with wildebeests in Botswana (Prins, 2000). Seals and whales are hunted in the Northern Hemisphere, because these species are claimed to compete with fish populations.
- Wildlife is sometimes also responsible for the dispersal of diseases to livestock and poultry. An example of this kind is the extermination of large ungulates in Africa to prevent the spread of the tsetse fly (Grootenhuis, 2000).
- Damage to constructions. Wild animals can be responsible for a variety of damage to human property. Examples of this kind are the killing of elephants in North Bengal (India), and nutria in the Netherlands. Although the nutria sustains economic damage to crops, it particularly affects dikes and other water defence systems.

Participants involved are aggrieved persons (ranging from farmers, other producers, agriculture processing industry, traders, government agencies, to owners of damaged goods), individuals, land owners, or government agencies who make up the policy for handling the problem, and the actual (legal and illegal) hunters. Regarding the species involved in this kind of hunting, a distinction should be made between naturally occurring species that are considered a pest (like certain large carnivores and herbivores), and invasive alien species like the rabbit in Australia.³¹

4.7.3 Impacts on biodiversity

Sustainability is often not a keyword in this type of hunting, as the goal of animal damage control is either the total extermination (animal damage control) or control of the pest species in question (problem animal control). Problem animal control is considered to be the largest conservation issue facing countries like Malawi and Kenya (cf. Barnett, 2000).

³¹ Note that, although this report only deals with hunting on mammals and birds, there are a significant amount of other animals, like insects that either damage crops or constructions.

4.8 Commercial hunting

4.8.1 Definition

If subsistence (see § 4.3) is defined as “resource dependence that is primarily outside the cash sector of the economy” (Hitchcock, 2000), then commercial hunting can be defined as:

Commercial hunting is the killing of non-domesticated animals primarily to derive monetary benefits.

The main motive is economical, following a market demand for meat, or other parts of the species in question, like the skin, head, tusks, bones³², and organs (see also § 4.8.2).

4.8.2 Stakeholders & scale

This type of hunting contains a number of participants who can be divided into several levels with different motives (see also fig. 4.14)^{33 34}, including:

- Harvester: on the executive level there are the hunters who either hunt by assignment of another stakeholder level (see fig. 4.14), like professional hunters and their assistants in safari tourism operations (cf. Cumming, 1989), or who hunt to be able to sell their quarry themselves (see fig. 4.16). The main motive is economical but might also include nutrition, recreation, and culture. Hunters who have actually bought the hunting experience, hunting license and/or trophy are considered to be sport hunters (see § 4.9).
- Managers, organisers or outfitters: this second category of stakeholders are those entities who have the right to sell hunts to hunters

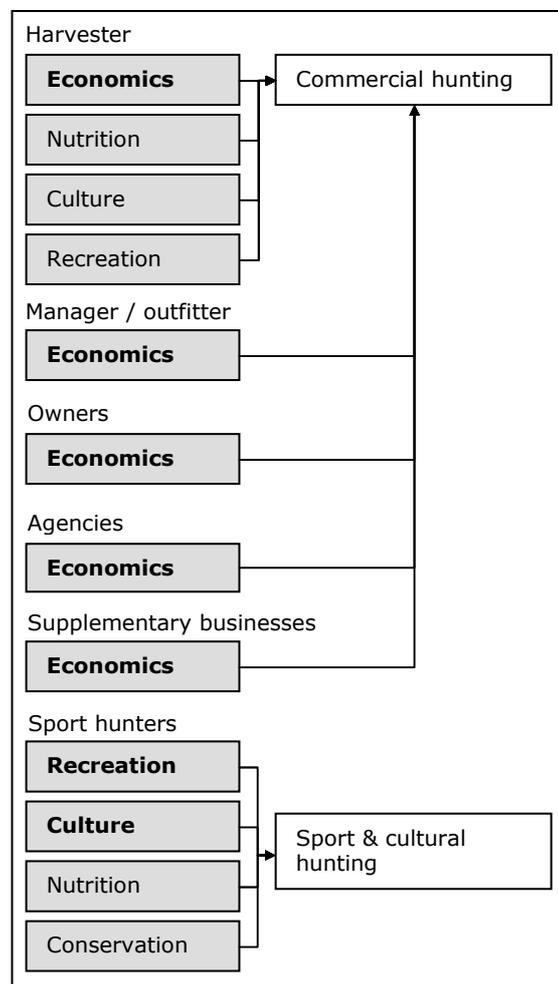


Fig. 4.14: Motives behind commercial hunting

³² China for example exported 1.563 kg of tiger bones to South Korea in the first nine months of 1993, thereby having a huge impact on the remaining wild tiger populations (cf. Mills et al., 1994).

³³ Note that conservation or habitat management (cf. Benson, 1991) is also of importance for commercial hunting (see § 4.5), but that this refers in this context to ensuring the continuing existence of natural resources to meet future demands and thus economical benefits (hence a goal and not a motive).

³⁴ It should be noted that one reason why certain animal species are utilised is because of their nutritional value, but the very existence of such a nutritional value creates an economic motive.

in the respective destination countries. There can be private persons, a community, government agencies or commercial enterprises (Hofer, 2002).

- Owners of the wildlife in question: including the government, the community, NGO's, or private landowners.³⁵
- Agencies: agencies arrange, offer, and sell hunts via advertisements and contacts. They function as agents who find and market those offers that best meet the client's requirements (Hofer, 2002).
- Supplementary businesses: those who provide special services, such as equipment, guides, trophy transport, taxidermy or transport, accommodation, translocation, guides and related services in the destination country (Hofer, 2002).

There are several strategies in which resources are commercial utilised:

- *Game cropping*

Game cropping refers to a systematic harvesting of free-ranging animals for meat, hides and live animals, but with little or no direct management to concentrate these animals or increase populations (cf. Kiss, 1990). The present report considers this strategy equal to wild harvesting (cf. Luxmoore et al., 1992). The hunting of seals (see fig. 4.15) is an example of this subtype of commercial hunting. So are some aspects of the utilisation of bush meat (see focus 4.1): 61% of the bush meat harvested in Western Serengeti in Tanzania was traded on the market (cf. Barnett, 2000), and communities in Guyana may also sell up to 61% of their catch (Van Andel, 2000).



Fig. 4.15: Commercial seal hunter in Canada



Fig. 4.16: Commercial hunting for bush meat

- *Community-based cropping schemes*

This involves the management of free-ranging wildlife populations located in controlled communal land areas of the region (see also focus 4.2). This subtype is comparable with game ranching on private lands and/or privately leased government owned lands in that these schemes are based on sustainable harvesting criteria where a proportion of a wildlife population is cropped at regular intervals (usually once a year) for the sustained production of game and trophies (cf. Barnett, 2000).

³⁵

Land ownership is by no means universal for allocating the rights to use resources, especially wild resources. Although farmers and ranchers in Africa for example are usually permitted to manage the renewable resources on the surface of the land as they please and to sell the produce to best advantage, but in many countries this does not extend to the hunting of wildlife. The lack of proprietorship over wildlife has been a major contributor to the decline of Africa's wildlife, involving difficult to monitor activities like poaching (Child et al, 2000). Focus 4.2 gives an illustration of an alternative for these problems.

The difference is that the management in game ranching schemes is that of private persons/businesses and in community-based cropping schemes the management is of the community.

- *Game ranching*

Game ranching comprises the maintenance of wild animals in defined areas delineated by fences, and is defined by Conroy and Gaigher (1982) as the economic use of game (meat, hides and live animals) within the farm confines. It is a form of husbandry similar to cattle ranching (cf. Barnett, 2000; cf. Heath, 2000), the animals are managed on natural vegetation although the habitat may be manipulated to improve production efficiency. Animals on ranches may be exploited for meat, but most ranches aim for the added value of sport/trophy hunting, live animal sales and ecotourism (Ntiamoa-Baidu, 1997; cf. Kiss, 1990). Currently, the wildlife ranching industry in eastern and southern Africa reflects the wildlife multi-use and mixed farming approach, with no ranches relying solely on game meat production, but by harnessing the broad range of consumptive and non-consumptive wildlife use options like photographic tourism. Safari hunting results in the greatest economic return per animal, but such use is restricted to only a small proportion of all available wildlife species on a ranch like male trophy animals or particular preferred species such as the Cape Buffalo. Game meat production is the primary option for many ranches that do not have the species composition, capital or management expertise needed for other use options. Game meat ranches in Zimbabwe have produced meat with a value of 1,7 million US\$ in 1998, but the game-ranching industry remains undeveloped by a lack of permanent devolution of wildlife user rights to private landholders (Botswana for example produced 91,982 US\$ of meat in 1998, but could earn 2 million US\$ if all allocated quotas were effectively utilised; Barnett, 2000).

- *Game farming*

Ntiamoa-Baidu (1997) defines game farming as the confinement of wild animal species in a semi-domestic state where they are fed and grown to require weight and exploited for consumptive use.³⁶ Game farming encompasses attempts to domesticate various wildlife species (Kiss, 1990), like ostriches, crocodiles, and various duiker species (Ntiamoa-Baidu, 1997). But these species are often held in very intensive, high-input, closely confined production farms. This can be defined as battery production (cf. Kiss, 1990), and this report does not regard the breeding of animal species (similar to stall-or cage rearing of livestock) as hunting. Although meat production is often the primary output, there is a shift toward utilising these areas for tourism and safari hunting. A specific example of this last form of utilisation is "canned" hunting: the killing of animals by hunters in an enclosure.³⁷ Animals like lions (see fig. 4.17) and European boars are bred in captivity,



Fig. 4.17: Breeding of lions

³⁶ Game farming involves the intensive management on a sustained basis of one or a few species within fenced areas usually not larger than 2000 hectares (cf. Kiss 1990; cf. Barnett, 2000).

³⁷ "Canned" hunting is different from safari hunting, because safari hunting is the change of the chase with no guarantee of success (cf. Hurt et al., 2000).

purchased from animal dealers, or retired from zoos and circuses.³⁸ This kind of hunting can be practised in certain African countries as well as in at least 25 different states in the USA (Humane Society of the United States, 2004).

Licensed safari hunting is practised on several of the above wildlife exploitation strategies, and is therefore not distinguished as a subtype of commercial hunting. It should be noted that although safari hunting is not a sub-type of commercial hunting it is for sport and cultural hunting (see § 4.9). With sport and cultural hunting the motive is a certain hunting experience/trophy and for commercial hunting as a means to obtain meat, hides and an extra source of income. Regarding safari hunting a distinction can be made between the owner and the manager of the land (including a community, a private landowner or the government) and the facilitator of the safari hunt, like a safari tour operator who utilises the actual resources (cf. Barnett).³⁹ Outfitters in hunting concessions (contracted out by the state) around the Bénoué National Park-Complex in Cameroon sell bags of game, like a 18 day lion safari in which the rights on 1 lion and several other animals can be bought for 2,100 US\$, and a additional trophy fee for each successful kill (1,540 US\$ for a lion). In 5 years time, safari businesses can have disbursed a total sum up to ± 1 million US\$ (cf. Mayaka et al., 2002b). Because the prey animals are free roaming animals this example is considered to be game cropping.

Which animal species are utilised, depends on the demand for the animal in question (or part of it) and/or the experience of hunting them. The species utilised range from mini-fauna species, like small birds and rodents to mega-fauna species, like large ungulates.

4.8.3 Impacts on biodiversity

History has many examples of the unbridled commercial overexploitation of animal species, often with disastrous effects, like the bison in North America, and several other figureheads like whales, elephants, rhinoceros, and tigers. Current large scale hunting practises like the Atlantic seal hunt are often submissive to management plans which include objectives like long-term sustainability (cf. Fisheries Resource Management, 2002). The subtype "Wildlife conservation by sustainable use" of conservation management hunting even has a positive effect on biodiversity (see § 4.5.2). But other (more random) hunting operations like the current bushmeat procurement (see focus 4.1), have a great impact on biodiversity as shown by the over-harvesting of several species in the Equatorial Guinea (cf. Fa, 1995). Market demands for meat have even led to a transition from subsistence hunting to commercial hunting, like the Mbuti in the Ituri Forest of Zaire (cf. Hart, .1978).

Game ranching practises (but also large cropping schemes) can have a diminishing effect on the diversity of wildlife species as only a small number of natural occurring species are valued (see also § 4.5.3). However, there might be a negative effect on other species, because of

³⁸ According to Eltrigham (1984) wild animal species that are farmed are no longer truly wild and represent an intermediate stage between wild and domesticated species. The killing of semi-domesticated animals is still considered hunting in this report, because of the difference between killing "canned" hunting game and the normal meat production industry.

³⁹ Case-studies have shown that the distribution of financial benefits, derived from safari hunting practises, to the local community can diminish the scale of illegal hunting (cf. Barnett; see also Focus 4.2).

habitat manipulation in order to benefit the favoured species. But commercial game enterprises that rely on trophy hunting rather than cropping for meat tend to encourage a wider variety of species and habitats. Game ranching might have a negative effect on biodiversity, because the area is fenced, possibly leading to genetic isolation (cf. Luxmoore et al., 1992), loss of local adaptation, and increased exposure to disease of domestic stock (Luxmoore, 1985).

4.9 Sport & cultural hunting

4.9.1 Definition

Sport and cultural hunting is the most debated and discussed type of hunting (cf. Cartmill, 1993; cf. Edwards et al., 1992), because of its primary motives. Hunting after all is often carried on as a sport when it is no longer needed for survival (as stated in § 3.2 and § 4.1). This means that the primary motive behind sport hunting is different than the other types of hunting, with emphasis on recreation and culture instead of nutrition, safety, economy or conservation alone. Although there is no accepted definition, this report defines sport and cultural hunting as:

Sport and cultural hunting is the killing of non-domesticated animals, primarily for recreational and cultural reasons.

Although the main motives are cultural (including traditions, spirituality, prestige, obtaining a trophy or cultural artefacts) and recreational values (see fig. 4.18), there are also hunters who hunt because they prefer meat that they caught themselves. Because the nutritional value is not directly essential for their survival, this motive is not highlighted as a primary motive, although the nutritional value can be quite high: the amount of moose meat generated in 1987 in Sweden was about 13 million kg (cf.

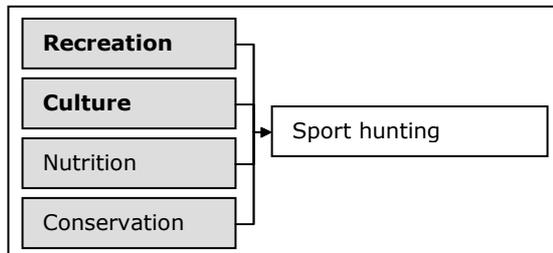


Fig. 4.18: Motives behind sport & cultural hunting

Mattsson, 1990). Motives are often intertwined with each other, like traditional and recreational values with conservation motives, as is argued by supporters of fox hunting (cf. Isaacson, 2001) or as illustrated by case-studies in Canada and Zimbabwe (cf. Edwards et al., 1992).

4.9.2 Stakeholders & scale

Within sport and cultural hunting several subtypes can be distinguished:

- *Safari hunting*

This subtype is taking a paying customer into the field for the purpose of sport hunting for hire and reward to the professional safari operator and the professional hunter (Hurt et al., 2000). In practise, the term is



Fig. 4.19: Trophy hunter in Canada

frequently used to express the willingness of the hunter to pay for a special hunting experience and/or trophy (Hofer, 2002). Although the definition of Hofer (2002) of trophy hunting includes the term "foreign hunter" and the definition often only relates to hunting in tropical areas (safari hunting originated in East Africa), this report considers any form of hunting in which a hunter primarily hunts for a certain hunting experience/trophy as safari hunting (see fig. 4.19).

- *Canned hunting*

Although canned hunting enterprises (see § 4.8.2) also use the term safari or trophy hunting (cf. Hofer, 2002), this report considers this different from safari hunting operations exercised in game cropping and game ranching schemes, because game in canned hunting doesn't have a fair chance to escape.

- *Hunting free-ranging captive-bred animals*

This new term includes the hunting of captive-bred animals that are introduced in the wild to ensure the availability of game or to minimise negative ecological effects (it does include re-introduction programmes). Examples of this kind are pheasant hunting in England, and partridge hunting in Spain.

- *Traditional sport & cultural hunting*

This subtype encompasses sport hunters in both western and non-western countries who hunt because of cultural reasons (way of life), like falconry in Europe and the Middle East.

- *Traditional game cropping*

This subtype intertwines with traditional sport hunting. Besides traditional values (again way of life) this subtype also includes nutritional motives: harvest something out of nature. It should be noted that this subtype is sometimes also practised in a game ranching scheme (see § 4.8.2) and might involve certain management efforts because of fragmentation of nature in an urban environment, like the Netherlands for example.

Table 4.1: Safari types, bag composition & charged fees

Species	Bags				
	18 day	18 day	14 day	10 day	7 day
Lion	1	0	0	0	0
Elephant	0	0	1	0	0
Eland	0	1	0	0	0
Buffalo	1	0	1	0	0
Hippopotamus	0	1	0	0	0
Roan antelope	1	0	0	1	0
Hartebeest	1	1	0	1	1
Waterbuck	1	0	0	1	1
Kob	0	1	1	0	0
Bushbuck	1	0	0	1	1
Reedbuck	0	1	1	0	1
Warthog	0	1	0	0	0
Oribi	0	0	0	0	1
Grimm's duiker	0	0	0	0	1
Red-flanked duiker	0	0	0	0	1
Baboon	0	0	0	0	1
Daily prize (US\$ day) - scale 1	2100	1800	1500	1400	1200
- scale 2	2600	2300	2000	1900	1700
Daily cost (US\$ day)	590	530	515	500	455

Source: Mayaka et al., 2002b

Stakeholders involved in sport hunting are mainly the hunters themselves self as facilitators of safari hunting for example are considered to be stakeholders of commercial hunting (see § 4.8). Sport hunting does not only involve hunters, as fox hunting in Britain for example is host to a whole company, and hunting parties including drivers. In 29 European

countries there are about 7.3 million hunters, associated with hunter interest group or known by the national governments in 2004 (cf. Face, 2004; consisting of the 25 EU countries and the 5 additional countries of the Council of Europe). Estimates are that European hunters spend € 10,000 million per year within Europe. The expenditures for hunting abroad is estimated at € 131 million. About 20-30% of the European hunters travel abroad for hunting (Hofer, 2002). In 1996 the USA was home to 14 million hunters, of which the average individual spent 18 days hunting and \$1,475 on their sport (US Fish and Wildlife Service, 1996). South Africa hosts 4500 safari hunters annually, and is the most accessible and cheapest country in Africa for trophy hunting. Table 4.1 gives an overview of safari fees in Cameroon. Prices for canned hunting in the USA range from 10,000-20,000 US\$ for a rhinoceros to 250-500 US\$ for a Corsican sheep (Humane Society of the United States, 2004).

4.9.3 Impacts on biodiversity

History also shows that for sport hunting valued game could decrease significantly in numbers and density, because of unsustainable exploitation, like the complains of 18th and 19th century English hunters who complaint about the absence of partridges and other game animals in the countryside (cf. Brander, 1971). Although nowadays the 14 million traditional sport and cultural hunters in the USA kill 42 million mourning doves, 30 million squirrels, 28 million quail, 25 million rabbits, 20 million pheasants, 14 million ducks and 6 million deer on an annual base (cf. U.S. Fish and Wildlife Service, 1996), there exists a certain awareness about sustainable harvesting. Most governments require the hunter to buy a hunting licence, to take a special exam to be allowed to hunt certain species (like for wild boar in the Netherlands), or set up quotas and hunting seasons to protect wildlife. Case studies from Tanzania, Zimbabwe and other African countries illustrate that with a sufficient management plan sport hunting can attribute to the conservation of the species and habitats in question (cf. Edwards et al., 1992). Makombe (1993) states that sport hunting is generally considered a conservative wildlife consumptive use, because mainly adult male animals are cropped by trophy hunters with a cropping rate far lower than other wildlife consumptive uses such as traditional hunting and wildlife ranching.

This does not mean that sport hunting does not have an effect on animal populations: it has an effect by definition as the human hunter acts as a predator. Whether sport hunting has a negative impact depends on the management system in question, as is illustrated by the over-use of quotas by resident license hunters in Zambia (cf. Barnett, 2000). The ecological disadvantage of trophy hunting is that especially male animals are valued highly, which can lead to a disturbed sex-ratio. Trophy hunting resulted for example in a declining number of male lions in Hwange (Zimbabwe) where 67% of the tagged male lions were shot by sport hunters, compared to 38% of the tagged female lions (cf. Loveridge, 2004; see also article "Tot in de genen" in NRC of 15-5-2004). Often there also exists a conflict between sport hunters and conservation groups about natural predators, which form a limiting factor for hunted populations of deer and other quarry (cf. Luxmoore, 1992). A study to predation of bears and wolves in North America on moose for example showed that predation is often limiting (cf. Van Ballenberghe et al., 1994), and the natural predator acts as competitor with the hunter.

4.10 Types of hunting compared

4.10.1 Motives compared

The previous paragraphs have illustrated that motives behind the hunting types often intertwine, but that for each type of hunting one or two primary motives can be distinguished (see table 4.2). These primary motives have contributed to identifying the types of hunting.

There is an overlap between conservation management hunting, commercial hunting, and sport hunting. The subtype of conservation management hunting "wildlife conservation by sustainable use" is practised primarily from conservation motives, but the implementation of this policy can be in the hands of commercial hunting companies, carried out by sport hunters. A small difference perhaps, but nevertheless not one to be neglected.

Table 4.2: Overview of motives & hunting methods

Types of hunting	Motives						
	Nut.	Saf.	Cul.	Rec.	Eco.	Con.	Sci.
Subsistence hunting	X ¹		X	X	X		
Human health & safety hunting		X	X		X		
Conservation management hunting	X			X	X	X	
Scientific hunting					X		X
Animal damage control			X		X		
Commercial hunting	X		X	X	X		
Sport & cultural hunting	X		X	X		X	
Total	4	1	5	4	6	2	1

¹ X in a bold font are the primary motives.

4.10.2 Impacts compared

Using the online IUCN Global Red List of Threatened Species (IUCN, 2004) it is possible to get an indication of the environmental impact of the various types of hunting in relation to each other (see also § 2.2). Out of 1130 red list mammal species: 3.5% are (among other threats) under the influence of animal damage control, 2.5% under the influence of commercial hunting, 2.4% under the influence of sport hunting and scientific hunting, and 2.1% is under the influence of subsistence hunting. For 1194 red list bird species this was respectively: 0.5% for subsistence hunting, 0.25% for sport and cultural hunting and scientific hunting, 0.17% for commercial hunting and 0.1% regarding animal damage control.⁴⁰ These numbers lead to believe that hunting has a bigger impact on mammals than on birds. However it should be noted that for some species in the IUCN Global Red List of Threatened Species there has been made no subdivision regarding the specific level of threat. This means that of 1130 mammal species and of 1194 bird species, respectively 150 mammal (13%) and 407 bird (34%) species are under the influence of hunting/gathering and persecution. Table 4.3 gives an overview of the number of species being threatened by hunting practices.

However, it should be noted that these impacts are linked to the sort of management in which hunting takes place. Commercial hunting for example does not have a negative influence on biodiversity per se. Also, for some species in the IUCN Global Red List of Threatened Species there has been made no subdivision regarding the threat level, so that of 1130 mammal species 150 are under the influence of hunting/gathering and

⁴⁰ Human health & safety hunting and conservation management are not taken into account, because of their relatively small size or absence of negative effects (see also § 2.2).

persecution. Unfortunately it is not possible with the use of this database to rank the types of hunting regarding their impact on biodiversity, as numbers are not absolute here, and thus deceiving. The impact for the different types of hunting on "All Evaluated (excluding Least Concern)" mammal and bird species is 37 for subsistence hunting, 63 for animal damage control, 165 for commercial hunting, and 146 for sport and cultural hunting / scientific hunting.

Table 4.3: Overview of threatened mammal and bird species

Types of hunting	Mammal species			Bird species			Total
	CR ¹	EN ²	VU ³	CR	EN	VU	
Subsistence hunting	6	12	6	1	2	3	30
Human health & safety hunting	-	-	-	-	-	-	-
Conservation management hunting	-	-	-	-	-	-	-
Animal damage control	3	13	24	0	1	0	41
Commercial hunting	4	12	12	0	1	1	30
Sport & cultural hunting / Scientific hunting	6	12	9	1	1	1	30
Total	19	49	51	2	5	5	131

¹ Critically Endangered. ² Endangered. ³ Vulnerable.

4.11 Hunting methods

42.000 years of hunting experience have resulted in a quite substantial amount and variety of hunting methods (meaning instruments for capturing and/or killing game). The aim of this section is to give a general overview of hunting methods and their subtypes, and compare these methods with the types of hunting as presented in table 4.4.⁴¹ Regarding hunting methods a distinction can be made between direct and indirect methods (see fig. 4.20). This difference between direct and indirect methods is based on the facts that with indirect methods, in contrast to direct methods:

- the activity is not specifically aimed on the achievement of a desirable quarry;
- the hunter does not carry out the actual killing him/herself.

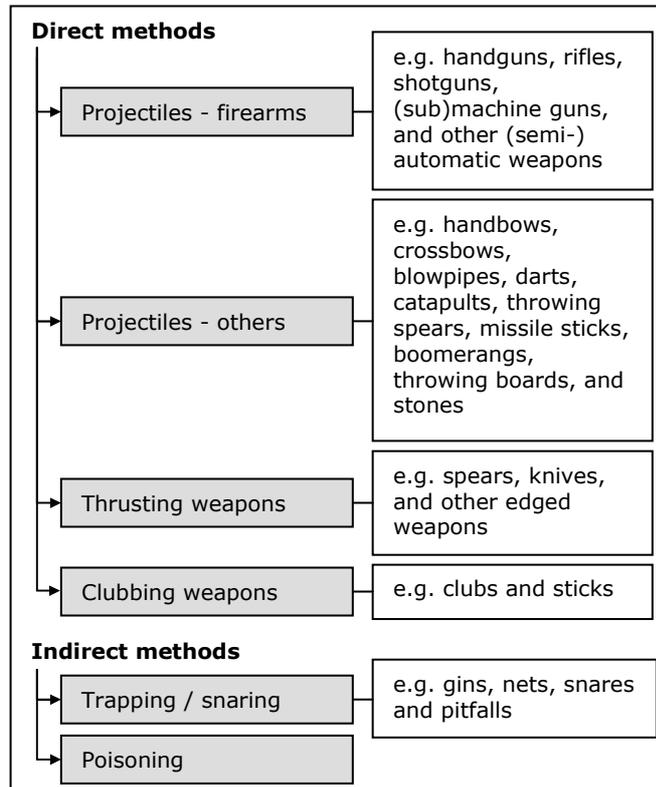


Fig. 4.20: Direct & indirect hunting methods

⁴¹

A third sub-type of an indirect method is the use of explosives, although this method can also be regarded as a direct method. Due to the focus of this report on mammals and birds, the use of explosives is not discussed in this section, as its only known to be used for killing fish.

In addition, there are also numerous attributes that can be used during hunting, ranging from fire, horses, dogs (pointers / gundogs, flushing dogs, retrievers, earthdogs, and hounds) to birds of prey, decoys, treestands. There also are numerous strategies for hunting, including stalking, tracking, still-hunting, driving, sitting up, calling, and co-operative drives. The use of box traps to trap an animal has not been taken into account in this report as the actual killing is performed using a different method.

After the invention of the first guns in 1587 AC in Europe, using firearms became more and more popular in the western world (cf. Brander, 1971). This trend is also seen with subsistence hunting, as subsistence hunters mainly used their own hunting methods before coming in contact with the western world. These traditional hunting methods ranged from projectiles (other than firearms), thrusting weapons, clubbing weapons to trapping and snaring (cf. Oswalt, 1973). The Huaonorani in Ecuador's south-central Amazon region traditionally used the blowgun and the spear, but this was rapidly replaced in thirty years time by shotguns. Shotguns were used by the Huaonorani in 1994-1995 to take 87% of the biomass and 85% of the total individuals. The use of firearms instead of traditional weapons has led to a higher kill rate, strongly suggesting a higher impact on biodiversity (cf. Mena et al., 2000). Some governments grant the right to hunt only to subsistence hunters as long as they use their traditional weapons (cf. Hitchcock, 2000).

For all types of hunting it applies that hunters in general use firearms. Only in specific cases like the commercial seal hunt (see fig. 4.15) or sport hunting with the use of a bow, other methods of hunting are practised. Section 3.2 already showed that when hunting techniques and tools become more efficient, the scale and intensity in which hunting takes place and therefore the amount of impact, increases.

Table 4.4: Types & methods of hunting

Types of hunting	Direct methods				Indirect methods	
	Proj. - firearms	Proj. - others	Thrust. weapons	Club. weapons	Trapping /snaring	Poiso- ning
Subsistence hunting	X	X	X	X	X	X
Human h. & s. hunting	X				X	X
Scientific hunting	X				X	
Con. manag. Hunting	X				X	
Animal damage control	X				X	X
Commercial hunting	X	X	X	X	X	
Sport & cul. Hunting	X	X			X	

¹ X in a bold font is the primary method for that type of hunting.

5

Constraints of hunting

5.1 Societal constraints

Chapter four has illustrated that there are several motives behind hunting. Opposite these motives there exist societal constraints that control its impact on biodiversity. The absence of these societal constraints can eventually lead to the extinction of species (see fig. 5.1), as has happened already many times in history. Determining the constraints of hunting is quite relevant, because the extinction of species (see § 4.10.2) benefits neither hunters nor anyone else involved.

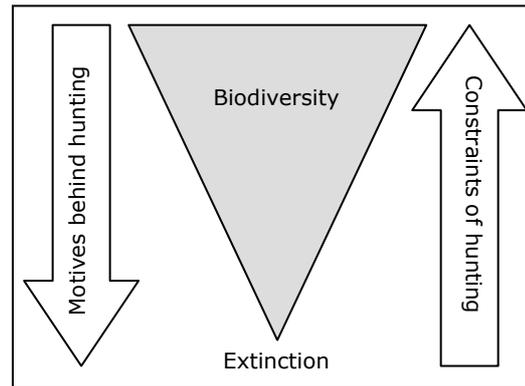


Fig. 5.1: Schematic projection of the interaction between motives and constraints

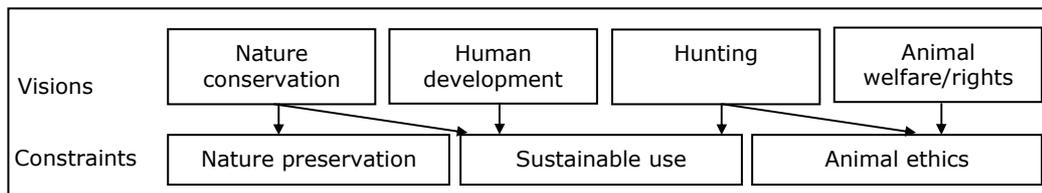


Fig. 5.2: Visions & constraints

The societal constraints (hereafter constraints) as formulated here are derived from the societal visions on hunting (§ 3.4), or the statements on hunting of the international conservation organisations, international animal welfare/rights organisations, international hunting organisations, and international human development organisations. Following the statements of these organisational groups, we can distinguish at least three types of constraints (see also fig. 5.2):

- *Nature preservation*

§ 4.5 already introduced a definition of nature conservation (cf. Spellerberg, 1996), that covers the entire area from total protection to sustainable exploitation (cf. Barbier, 1992; see § 3.4.1).⁴² Nature preservation is therefore one of the two constraints that can be derived from the definition of nature conservation, that focuses on the total protection of certain species and ecosystems. This constraint is applicable on the level of populations, as its criteria mainly deal with population size (see § 5.3).

⁴²

Because the answer on the question "what is exactly protected?" ranges from species and ecosystems to natural resources, it becomes clear that nature conservation intertwines in biological as well as in economic sense.

- *Sustainable use*
Sustainable use is the second constraint that can be derived from the definition of nature conservation. The motivation behind the sustainable utilisation of resources ranges from commercial to conservation. This constraint is applicable on the level of populations, as their criteria and tools deal with population size (see § 5.5).
- *Animal ethics*
This constraint encompasses the concepts of animal welfare and animal rights. On the one hand animal welfare is concerned with the humane treatment of animals, in the sense that animals should be treated in such a way that they do not suffer unnecessarily (cf. Thomas, 1983). This means that hunting can be allowed from an animal welfare point of view only on the condition that certain humane conditions are met.⁴³ Animal rights on the other hand theories encompass the philosophical point of view that animals must be included within the same system of morals that is applied to people. Animal rights theories share the central and distinguishing tenet that animals (like humans) have interests that cannot be sacrificed or traded away, simply because good consequences will result. The animal rights position does not hold that rights are absolute though regarding subsistence hunting (cf. Francione, 2004). The constraint of animal ethics focuses especially on animal rights, because the issue of animal welfare is generally accepted within conservation, animal veterinary, and hunting circles (personal communication of Hutton, J., Hopcraft, D. & Wilson, G. during the 6th International Wildlife Ranching Symposium in Paris, 2004). This animal ethics constraint is applicable on the level of the individual animal, because it focuses on the treatment of individual animals

Table 5.1: Constraints, criteria, and tools

	Sustainable use § 5.4 Population level	Nature preservation § 5.3 Population level	Animal ethics § 5.5 Individual level
Criteria	Intrinsic value		
	Threatened status		
		Ecosystem function	
		Attractiveness	
	Market & cultural values		Perception of pain
			Intelligence
			Social behaviour
Tools	Hunting quota's & regulations	National & international legal protection	Bans on hunting of certain species & methods

5.2 Criteria and management tools

To prevent the constraints from being an abstract formulation only, an underlying field of criteria and management tools can be distinguished (see table 5.1) that gives expression to these constraints. The criteria

⁴³ Mission statements of animal welfare organisations per se like IFAW and WSPA (see III.2) also encompass animal rights philosophies, despite the names of these organisations.

determine to which animal species these constraints apply or do not apply and the management tools determine how these three constraints apply.

The following sections discuss the individual criteria and management tools grouped per type of constraint, respectively nature preservation (§ 5.3), sustainable use (§ 5.4), and animal ethics (§ 5.5). It is also discussed whether the described criteria are applicable and whether the tools appear to be effective. It should be noted that some criteria apply to more than one constraint. How these constraints and criteria relate to the various types of hunting is discussed in chapter 6.

5.3 Nature preservation

Nature preservation implies the intention of a guarantee against the loss of a species by defending it against external threats (cf. van Heijnsbergen, 1997). Nature preservation as such originated by establishing Yellowstone National Park in 1872 as the first national park in the world (cf. Mackintosh, 1999), although hunting reserves are known since the early 16th century (cf. Dobson, 1995). Especially the 1970s and 1980s have seen an increase in the number of areas given a protected status (cf. Spellerberg, 1996). Habitat/ecosystem protection was eventually followed by the protection of certain species. § 5.3.1 ^t/_m 5.3.4 describe the criteria behind the constraint of nature preservation and whether they are applicable. 5.3.5 discusses whether the tools for nature preservation are effective.

5.3.1 Intrinsic value

The criterion of an intrinsic value of species both applies to nature preservation and animal ethics (see § 5.5.1). The idea that every animal has an intrinsic value regardless of its usefulness to human society is closely related to ideas in philosophy (see § 3.3.2), and more specifically to Schweitzer (1875-1965). According to these views it is wrong for humans to cause the extinction of any species,⁴⁴ thereby implying that humans have an ethical responsibility to protect animal species from becoming extinct as a result of human activities. The Bern Convention (1979) was the first to mention the intrinsic value as one of the grounds for the preservation of wild fauna and flora, followed by the World Conservation Strategy (1978), the World Charter for Nature (1982), and Caring for the Earth (1991; cf. van Heijnsbergen, 1997).

Because of the wide use of the term "intrinsic value of animal (and plant) species" in international policy papers regarding biodiversity, it can be concluded that this criterion is applicable to the constraint of nature preservation.

5.3.2 Threatened status

The criterion of threatened status is somewhat related to that of intrinsic value. The endangered status of an animal species gives information about how much that species is threatened with extinction. Well known in this area of expertise is the IUCN Global Red List of Threatened Species that catalogues and highlights those taxa that are facing a higher risk of global

⁴⁴ This sentence makes clear there is also a link with sustainable use, and that boundaries between the constraints are not that sharp.

extinction, by placing them in one of the following three red list categories of threat (IUCN, 2003):

- Critically Endangered
- Endangered
- Vulnerable.

The IUCN Global Red List of Threatened Species promotes the establishment of regional and national red lists that make people aware of the risk of extinction of certain species. It can be said that this criterion is applicable, as illustrated by the very existence of the IUCN Global Red List of Threatened Species and the Appendices of CITES (see also 5.4.1; cf. van Heijnsbergen, 1997). The threatened status of animal species may imply which animals have a priority with regard to conservation efforts.

5.3.3 Ecosystem function

The very niche an animal species occupies in an ecosystem can be a criterion for its protection or special management attention. Herbivore and carnivore mammals for example play a key role in maintaining natural processes like grazing and predation. A change in the population size of these species could seriously alter the state of an ecosystem, because of an impact on the speed of succession for example. Conservation efforts with a special focus on these kind of keystone species in Europe are the Large Herbivore Initiative (LHI, 2004) and the Large Carnivore Initiative for Europe (LCIE, 2004). Invasive alien species are also relevant according to this criterion.

5.3.4 Attractiveness

The amount of attractiveness of animal species is determined by whether a species possesses a certain "petting" value (see fig. 5.3 & 5.4). This is illustrated by the focus of conservation organisations on attractive animals in the early years of their existence, but also by the amount of research done on relatively attractive animal species if compared to "unattractive" species (van Nieukerken et al., 1995; cf. van Strien, 2000). Even today, conservation organisations use mainly images of highly attractive animals in their campaigns. The WWF for example has particular attention to a small number of globally important endangered species, which they call flagship species. According to WWF (2004b) these charismatic creatures inspire conservation efforts for themselves, and for the thousands of lesser known, but vitally important, plants and animals with which they co-exist.



Which is more attractive? Fig. 5.3: *Ursus maritimus* or Fig. 5.4 *Gyps fulvus*

This criterion is certainly applicable, because of the “political reality that support and funding can be won for soft, cuddly, and attractive animals,⁴⁵ but not for slimy, grubby, and ugly creatures (of potentially greater evolutionary interest and practical significance) or for habitats” (Gould, 1990). Using attractive species as an ambassador that support other “less” attractive species. might be a financially sound concept, but there is a risk of neglecting “less” attractive species in conservation that are ecologically far more relevant to preserve and protect. The vulture species in fig. 5.4 for example plays an important role in the functioning of ecosystems, but has little attractiveness to the general public. This criterion is therefore potentially conflicting for the constraint of nature conservation, acting as an intermediary filter between the level of support and species (see also § 7.1.1).

5.3.5 National & international legal protection

National and/or international protection of a certain species can be considered as a management tool for the constraint of nature preservation and the implementation of its criteria. This protection can occur in two ways: either through the protection of a habitat by establishing protected areas, or by giving the species themselves a protective status. How effective these two methods are is discussed in this section:

- *Protected areas*

The basic purpose of protected areas is to separate the components of biodiversity from the interventions (including hunting) that threaten their very existence. The establishment and management of protected areas covers a spectrum of arrangements from strict preservation exclusively for nature conservation to various combinations of conservation and extractive use. Effectiveness is by no means guaranteed when a protected area has been established. Without effective management, legal title, or clear boundaries there exists nothing more than a ‘paper park’ (Pressey, 1996).⁴⁶ Although there are examples of protected areas that either are a success or a complete failure, the tool of a protected area can be effective in principle (cf. Bruner et al., 2001). It has to be realised however that most of biodiversity is outside protected areas,⁴⁷ and that wildlife numbers outside protected areas are diminishing because of poaching and other forms of land use (cf. Prins et al., 2000). So protected areas (the “fortress approach”) in the sense of IUCN Protected Area Management Category II (Chape et al., 2003) can not act as the only successful constraint to hunting (cf. Hutton, 2004), but can be well used in combination with other approaches to wildlife conservation (see also § 6.4).

⁴⁵ Implying that mammal and bird species in general tend to have a higher attractive value than other species groups.

⁴⁶ The size, location, and complementarities with other protected areas all have an impact on the effectiveness of the protected area in relationship to its goal: protecting biodiversity. A WWF assessment of the management effectiveness of almost 200 forest protected areas in 34 countries made clear that poaching is one of the four critical threats to biodiversity (the others being encroachment, logging and the collection of non-timber forest products). A well-funded, appropriately staffed protected area, with good environmental education and community outreach, and also with excellent enforcement capacity seem to be the minimum critical ingredients for effective management (WWF, 2004c).

⁴⁷ Protected area make up 6% of the land surface in South Africa for example (cf. van der Merve, 2004).

- *Protected species*

Species protection occurred first in 1875 by the Bird Protection Declaration and gradually developed from the protection of species with a certain economical usefulness, to the protection of endangered species in general (cf. van Heijnsbergen, 1997). In a European context this accumulated into the Bird Directive and Appendix II of the Habitat Directives, and within an international context into CITES (see § 3.4.1). Several species, including rhinoceros and sturgeon species have benefited from a ban on the trade of these species. Case-studies have illustrated that the effective implementation and enforcement of CITES is possible (cf. Allan, 1997), although illegal markets still remain for certain species like the African elephant (see Focus 5.1).

Focus 5.1: The African elephant: between nature preservation and sustainable use

The illegal trade in elephant ivory was largely responsible for reducing the African elephant populations. Poaching was generally well organised and difficult to control because of the availability of automatic weapons. The 7th meeting of the Conference of the Parties to CITES in 1989 declared a total ban on international trade in African elephant products, thereby placing the African elephant on Appendix I of CITES. Although the CITES ban effectively halted legal commercial trade in ivory, the continued loss of elephants appeared to be the result of the inability of the part of the range states to protect them. Zimbabwe on the other hand seemed the only country providing efficient protective measures and law enforcement. Some elephant populations, especially in southern Africa, have demonstrated signs of recovery, and habitat destruction seems to become a more important threat to the survival of the African elephant than poaching. Elephant populations are unequally distributed in Africa, resulting in different opinions on their conservation. Some countries with large elephant populations have suggested a legal and controlled trade in ivory. On the 10th meeting of the Conference of the Parties to CITES in 1997, the elephant populations of Botswana, Namibia, and Zimbabwe have been transferred to Appendix II of CITES, allowing a "once-off" consignment of a specific quantity of legally acquired ivory to Japan. This was followed by the decision in 2002 to an once-off sale of ivory from Namibia, Botswana and South Africa to Japan. While the question with CITES is now whether a sustainable off take of ivory is possible, other authors claim that currently depressed markets have the resilience to rebound of and when the buyers return (meaning increased poaching in the future). Conservation groups like Save the Elephants still support a total ban on elephant ivory, because of the higher order consciousness of the species in question.

Sources: Dublin et al. (1995); EIA (2000); Martin et al. (2000); STE (2004)

5.4 Sustainable use

The constraint of sustainable use refers to the sustainable utilisation of species. The term of sustainability for international environmental policy was first introduced in the World Conservation Strategy of 1980, and its implication was further developed in the reports *Our Common Future* of 1987, *Caring for the Earth* of 1991, and in the 1992 Convention on Biological Diversity (see also § 3.4.1). This indicates that the concept of sustainability is widely embraced in international policy circles. The concept of sustainable use was preceded in history by terms like "wise use" and "rational use" (cf. van Heijnsbergen, 1997). Sustainable use means in general, the safeguarding of living resources, thereby maintaining its potential to meet the needs and aspirations of present and future generations (see also § 3.4.1). Although the sustainable utilisation of resources would prevent species from being over-exploited and eventually from going extinct, the motivation behind this is not so much based on an intrinsic value (see § 5.3.1), but much more founded on a rational or economic approach. This economic approach is based on production while retaining production capacity (cf. van Heijnsbergen, 1997), as emphasised by the phrase "future generations" in definitions of sustainable use. § 5.4.1 and § 5.4.2 describe the criteria that determine to

which animal species this constraint applies. There is more emphasis on the management tools of sustainable use (5.4.3) than the criteria, as the theory behind sustainable use is more focused on management as illustrated by the Addis Ababa Principles and Guidelines for the Sustainable use of Biodiversity for example (cf. CBD, 2004).

5.4.1 Threatened status

§ 5.3.2 describes the criterion of threatened status for the constraint of nature preservation. The IUCN Global Red List describes the extinction risk / threatened status of species, but has no international legal status. The CITES appendices (see also § 3.4.1) which determine which species can not be utilised (see focus 5.1) have legal implications and thus are relevant in the context of sustainable use. This criterion is applicable as illustrated by the fact that Appendix I of CITES protects 228 mammal and 145 bird species from exploitation for international trade (CITES, 2004b).

5.4.2 Market & cultural values

“Sustainable use” is a general philosophy that applies in principle to all animal species, but not all species are prone to be utilised. The criterion of “market & cultural values” refers to the simple mechanism of why certain species become utilised and others not. As long as there is a demand for a product of a certain species, utilisation will continue within the field of economics as long as the costs of harvesting do not exceed the income (except in the case of reverse incentives such as subsidising). This is of course also the general mechanism that eventually can lead to the overexploitation of animal species (see § 5.1), but one that nonetheless applies within the concept of sustainable use as well. But why some species are utilised and others not is not explained by the market mechanism alone (the forces of supply and demand). § 4.1 explains that because there are more values attributed to animal species, there exist motives behind the hunting of these species. From all motives mentioned in § 4.1, it is worth to take a closer look at that of nutrition and culture:

- *Nutrition*

Nutrition is the primary motivation within subsistence hunting, where economical motives and therefore a market mechanism are not that important (§ 4.3.1).⁴⁸ Relative large mammals like primates and ungulates (including duiker species) provide most of the meat in subsistence hunting, because of their size and the fact that they are relatively easy detected (see also § 4.3.3). The preference for larger prey (as long as the handling costs do not increase in proportion to body weight) depends partly on prey abundance, with smaller prey becoming more profitable when large prey have a lower abundance (FitzGibbon, 1998). Taste will also play a role by selecting prey species.

- *Culture*

Some animal species are preferred above others from a cultural point of view, because they provide people with certain trophies (skin, feathers etc.) or because religion influences whether animals are considered suitable food (cf. FitzGibbon, 1998).⁴⁹ Cultural aspects (including spirituality and religion) also determine why some animal species are not hunted for, like the widespread taboos on hunting the orang-utan in

⁴⁸ Although an increasingly commercialisation is rapidly excavating the very definition and existence of subsistence (Bennett et al., 2000c).

⁴⁹ So on the level of the individual there is also some selection as males are often preferred above females regarding trophy size, but this has already been described in § 4.9.3.

the upper Ai and Delok, Sarawak (cf. Caldecott, 1988), the totem concept in Ghana and other African countries (cf. Kpelle et al., 2004), and many Pemón indians who only hunt on birds and deer among the higher vertebrates (cf. FitzGibbon, 1998). These cultural implementations of sustainability are becoming less and less applicable though, because of a changing social-economic environment (cf. Leeuwenberg et al., 2000).

5.4.3 Hunting quota's & regulations

Sustainable harvest can potentially be made from all populations of non-endangered species, without causing a substantial degradation of the capability for renewal of the resource. In all species, potential fecundity and productivity are larger than the actual recruitment, growth, and maturation of new individuals and biomass, thus creating a harvestable fraction. Thus intrinsic biological parameters like the individual growth rate, recruitment rate, and natural mortality rate determine how much can be harvested of a certain species (harvesting mortality rate; cf. Freedman, 1995). Although sustainable harvesting might be a relatively new term, the concept has already been practised since at least the classic period (see Appendix I). By killing only male individuals, individuals within a certain size range, area, or by limiting the hunting effort or the hunting season to particular times of the year, some form of sustainability can be achieved (cf. Freedman, 1995).

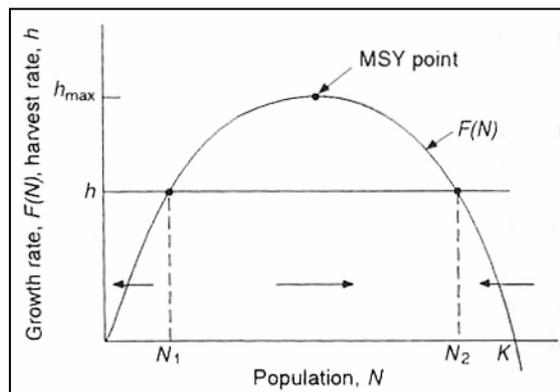


Fig. 5.5: MSY - When the population density (N) is on the carrying capacity (K) there is no excess production available for harvesting, and obviously there is also no growth when the population is on zero. MSY is the point where growth rates are maximal and where the Maximum Yield can be achieved. A fixed harvested rate like h creates two population equilibria in the curve. Harvesting from the population when it is smaller than N_1 represents over-harvesting. Harvesting on rate h from a population that is actually larger than N_2 will drive the resource towards N_2 and is a sustainable practise. Harvesting from a population that is $> N_1$ and $< N_2$ will allow the population to grow toward N_2 and is also sustainable. It should be noted that every point on the curve in fig. 5.5 is sustainable.

The modern day term which gives expression to sustainable harvesting is that of Maximum Sustainable Yield (MSY), which has its basis in the 1957 Interim Convention on the Conservation of North Pacific Fur Seals (cf. van Heijnsbergen, 1997), but has been especially developed within the fisheries sector (the term MSY is first mentioned in the 1982 UN Convention on the Law of the Sea). Klemm (1981) defines the MSY as "the greatest harvest that can be taken from a self-regenerating stock of animals year after year while still maintaining a constant average size of the stock."^{50 51} Fig. 5.5 explains the mechanism of MSY that is used for example to base yearly quota's on for forestry, fishery and wildlife utilisation sectors. Before this tool can be applied however, it is absolute crucial to know the population size or

⁵⁰ This definition emphasises that the MSY theory is especially an economic approach (see also § 5.4).

⁵¹ Quite a number of populations typically vary widely under fluctuating environmental conditions however (cf. Rosenberg et al., 1993), so a constant average stock size might not exist.

density (N) of the species in question, and it is often difficult to determine the stock size of an animal species (cf. Rosenberg et al., 1993). It is therefore appropriate to harvest 25% below the estimated maximum sustained yield, and even more when year-to-year variation in weather is above average (cf. Caughley et al., 1994).

So far, the predominant result of bioresource harvesting (even with management) has been overexploitation, which suggests that the tools of sustainable use are not very effective (cf. Ludwig et al., 1993). Reasons behind overexploitation include (cf. Caughley et al., 1994; cf. Freedman, 1995; cf. Milner-Gulland et al., 1998):

- the unreliable prediction of population densities, which could be mitigated by conservative decisions about harvesting intensities (= the precautionary principle; cf. Bodansky, 1991; cf. Curtis, ?; cf. Dovers et al., 1995), even though the harvest might be smaller than the potential MSY.
- the predominance of shorter-term considerations and values over longer-term ones (cf. Ludwig et al., 1993), as well as common property competitive exploitation and private-property maximisation of profits (Clark, 1973).
- shortcomings of MSY models, because interactions with other species or age classes are not included for example;
- difficulties to model the real world because of unpredictable changes in environmental parameters (noise) like temperature, or a population size that oscillates / behaves chaotically (cf. Frid et al., 2002).

Although it is possible to determine whether sport hunting (cf. Jensen, 2002) and subsistence hunting practises (see § 4.3.3) have been truly sustainable in the past, it can be discussed whether this (in theory effective) tool is effective to achieve a multiple criteria quota setting. Economic mechanisms that have a biased influence on the concept of sustainable use (see also § 3.3.3), rather than the MSY theory itself seem to make this constraint ineffective at times (cf. Barbier, 1989; cf. Barbier, 1992; cf. Heal, 2000 & cf. Pearce et al., 2001). Sustainable yield models are more developed for fish and marine mammals, than for terrestrial mammals (Njiforti, 1997). Sustainable yield theories apply to terrestrial forms of hunting like commercial and sport hunting as well, but have been used so far in a trial and error method, due to the uncertainties of the MSY concept. The recent use of models for estimating sustained harvesting of markhor and ibex in Pakistan however are a good example that sustainable yield theories can be effective for terrestrial ecosystems as well. The population sizes of these locally highly endangered species have increased tremendously after introducing and managing a tourist hunting system, using trend data and quotas (cf. Iftikar, 2004). Furthermore: models for the harvest of Buffon's kob (cf. Mayaka et al., 2002c) and helmeted guineafowl (cf. Njiforti, 1997) in Cameroon look promising.

5.5 Animal ethics

Ideas about animal welfare originated mainly with Bentham who questioned whether animal species had interests just as human beings (cf. Cliteur, 2001). The first animal welfare groups were created in Britain and the USA in the 19th century, as well as the first anti-cruelty laws. Singer but also Regan (1938-) can be considered as the founding fathers of the animal rights movement that originated (see also Appendix I and § 3.3.2). It should be noted that the animal rights movement does not accept the use of animal species except for reasons of subsistence (=nutrition), as

also stated in § 5.1. The criteria of § 5.5.3 ^{t/m} 5.3.5 are described from a more practical point of view, and describe why certain animals have rights. § 5.3.6 discusses the effectiveness of the tools for animal ethics, and thereby the implementation of this constraint in practise.

Prior to discussing whether animal rights should be applied or not, it should be realised whether animal rights are ours to give in the first place (personal communication B. Beekmans). This report has been written from the understanding that (unlike Christianity (see § 3.3.1) and early philosophy (see § 3.3.2)) humans are part of the natural world.

5.5.1 Intrinsic value

§ 5.3.1 describes the criterion of intrinsic value and its origin in philosophy. If animal species have an inherent right to exist, just as human beings have equal rights on existence, Singer (1979) argues that the system of moral human values also applies to the treatment of non-human animals. This criterion is applicable to the constraint of animal ethics in the sense that animal welfare laws, as illustrated by the 1966 Animal Welfare Act in the USA (AFA, 2004), recognise that animals have an intrinsic value.

5.5.2 Attractiveness

§ 5.3.4 describes the criterion of attractiveness that helps to determine the priority of the efforts of animal welfare/rights organisations. That this criterion is applicable and even can overrule other criteria is illustrated by the relative lack of support of animal rights issues regarding pig farms. Pigs are a highly intelligent (see § 5.5.4) and socially developed species (§ 5.5.5), but unfortunately not that attractive to most of human society. Attractiveness also determines to which species research is done in the field of animal intelligence (see § 5.5.4) for example. Attractive animals like dolphins and primates have been the primary subjects for study for a long time. "Less" attractive species like ravens and jackdaws have only recently been researched regarding their intelligence.

5.5.3 Perception of pain

Mammals and birds possess, just as humans, a well developed central nervous system and can therefore experience pain. For this reason it is likely that they are also capable of suffering (cf. Singer, 1975). That higher animal species experiences pain and are capable of suffering is underlined with studies regarding the behaviour, physiological and physical conditions of animal species under "stressful" conditions (cf. Dawkins, 1985). So this criterion is the very basic for animal welfare. To which extent members of phylum's other than that of the phylum Chordata, like Arthropoda can also experience pain is not clear yet.

This criterion is applicable as shown by the general acceptance of the humane treatment of animal species. This is illustrated, for example, in the European Union, which recognise that animals are sentient beings. The general aim of the European Union is to ensure that animals need not endure avoidable pain or suffering and obliges the owner/keeper of animals to respect minimum welfare requirements (EU, 2004). This statement is in line with the animal welfare view as described in § 5.1. Recent research to implement this aim is a study on the killing or catching

practises of the commercial and sport fishery in the Netherlands (cf. Ministry of LNV, 2002).

5.5.4 Intelligence

Research on animal intelligence has been regarded as a controversial topic by the scientific community for a long time, because of the anthropocentric view of nature (see § 3.3.1 and § 3.3.2). "Intelligence" has been selected as a criterion for animal ethics to provide a more pragmatic approach to animal ethics (see also § 5.5). The implication of animal intelligence is that animals with a certain degree of intelligence have more value than other animal species (see § 6.2.3 & § 7.1.3) and experience pain differently. The question whether animals are intelligent is synonymous to the research on animal cognition: "the ability of an animals nervous system to perceive, store, process, and use information, gathered by sensory receptors" (Campbell et al., 2002). The research field of animal cognition includes subjects like (Wynne, 2001):

- *Tool use*
Several species are known for using tools, like several species of corvids (Weir et al., 2004) or like chimpanzees that are "fishing" for termites.
- *Reasoning and problem solving*
Closely related to tool use is the study of reasoning and problem solving. It is clear that animals of quite a range of species (including corvids (see fig. 5.6), primates, and parrots) are capable of solving a range of problems that are argued to involve abstract reasoning.
- *Language*
There have been successful attempts to teach language or language-like behaviour to some primate species, cetaceans, parrots, and great spotted woodpeckers.
- *Consciousness*
Self-awareness has been reported for cetaceans (Marten et al., 1995), apes, elephants, pigs and several bird orders like parrots and corvids. Some people however see animal consciousness or a self-concept as a controversial issue, no doubt connected to the anthropocentric view in Christianity (see § 3.3.1) and in philosophy (see § 3.3.2).



Figure 5.6: Problem solving by a raven

The question of whether animals are intelligent is not a very applicable criterion so far, because the interpretation of results of studies to animal cognition is difficult and it is a relatively new research field. Animal cognition is a study that looks promising however, and might change relationships between humans and some non-human species. It might even open up a link to research on emotions by animals, but difficulties remain (see § 7.1.4).

5.5.5 Social behaviour

The criterion of social behaviour, like the criterion of intelligence (see § 5.5.4), is practical by nature, and has the same implications: highly socially developed animal species can have a higher value and might perceive pain and death differently from "lower" developed animal species

(see also § 6.2.3 & § 7.1.3). Social behaviour can be broadly defined as any form of interaction between two or more animals, usually of the same species (Campbell, 2002). Social behaviour is of course related to the study of animal cognition, as both are included in the research field of behavioural biology. Social behaviour includes many subjects ranging from competition for resources, mating systems, to co-operation and altruistic behaviour, but the use of social behaviour in this section refers particularly to animals that live in groups. Especially birds (corvids for example; Emery et al., 2003) and mammals (for example: a herd of elephants (cf. Moss, 2000), a pack of wolves (cf. Packard, in press), a pod of dolphins (cf. Samuels et al., 2000), or primates (cf. Strier, 2003)) have developed more or less permanent social groups that often express complex social behaviour like reconciliation, a dominance hierarchy, social play, vocal communication, mourning, or even reciprocal altruism. For example: it is therefore unethical to kill only one elephant individual out of a herd of elephants.

5.5.6 Bans on hunting species & methods

Bans on the hunting of certain animal species like whales and elephants have been introduced because of the threatened status of these species (§ 5.3.2), acting as a tool for nature preservation. Despite discussions about bans on the hunting of certain species that are attractive, show signs of intelligence, and/or perform complex social behaviour, on basis of these criteria no actual bans has ever been introduced. Human thinking is still too one-sided focused on economy and intrinsic value alone (see also § 3.3.3). When looking at the development in philosophy about man's position in nature (see § 3.3.2), it can be assumed that the implication of these criteria in actual bans will only start in this century. This does also apply to the implementation of the above criteria (especially that of the perception of pain, see § 5.5.1) into a ban on the use of certain hunting methods. The EC for example adopted Council Regulation No. 3254/91 in 1991. This prohibited the use of leghold traps (see fig. 5.7) within the EC and also banned imports of pelts and manufactured goods from 13 wild species originating from any country that had not banned leghold traps or which permitted trapping methods which did not meet international humane trapping standards (Tyler, ?). This ban on the use of traps is implemented only in national legislation in the Netherlands so far as known at the moment (Ministry of LNV, 1998). The Wildlife and Countryside Act out of 1981 in Britain



Figure 5.7: A trapped fox

prohibits the use of self-locking snares, bows, explosives or use of live mammals or birds as decoys, for capture and killing of any wild animal. It also prohibits the use of traps, snares, nets, poisons, electrical devices, dazzling devices, automatic weapons, night shooting devices, gas or smoke for killing, injuring or taking only certain animals (including badger, bats bottle-nosed dolphin, hedgehog, common otter, shrews, and red squirrel). The use of sound recordings as decoys and pursuit with mechanically propelled vehicles are also prohibited for certain animals (Naturenet, 2004). It can be discussed however whether this last ban is not simple a tool for nature preservation instead, as it excludes common "game" species.

It can be concluded that the management tool of animal ethics is effective to some extent regarding the issue of animal welfare. Unethical hunting practises as slicing open conscious seals and the dragging of live seals with boathooks during the commercial hunt of seals in Canada (see fig. 4.15) still continues up to this date however (cf IFAW, 2004c). The issue of animal rights is still not implemented in national or international legislation, despite ongoing discussions about the hunting of animals like whales and elephants.

6

Motives versus constraints

6.1 Perspectives in balance

The phenomenon of hunting is captured in the motives behind hunting (§ 4.1) and the constraints of hunting (§ 5.1). By comparing these motives with these constraints it is possible to see whether perspectives of hunting are compatible. The statements of the selected international nature conservation, hunting, animal welfare/rights, and human development organisations however, already summarise this in some way (see § 3.4.2). Actually, the statements of these four groups of organisations have led to the formulation of the motives and constraints as described in § 2.1. It is therefore better to compare the constraints and the criteria and management tools (§ 5.2) with the types of hunting (see § 6.2) and methods of hunting (see § 6.3).

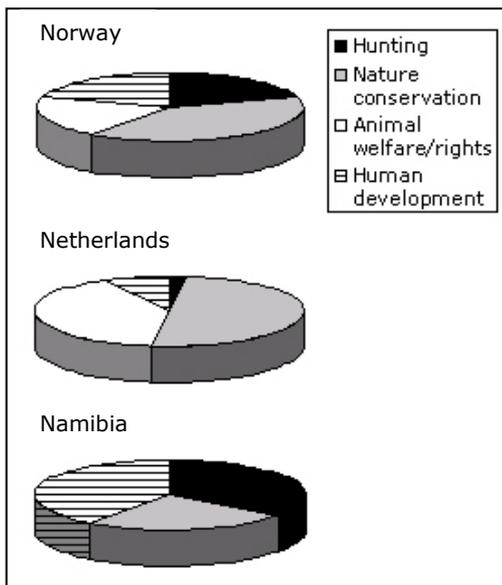


Fig. 6.1: Relative importance of different visions on nature (personal assessment by the author)

It is important to realise that in every country or region a fixed set of societal visions exist that consists of hunting, nature conservation, animal welfare/rights and human development organisations. The relative importance however that is attributed to these visions is different in every country or region, as illustrated in fig. 6.1. These differences are related to extent in which hunting is accepted in that country or region. In areas where subsistence hunting (see § 4.3), and commercial hunting (see § 4.8) like the utilisation of bush meat and game ranching practises involving safari hunting, are common practise there is more support for hunting, nature conservation, and human development, and less emphasise on animal welfare/rights. In certain

areas of Pakistan, for example, where people depend on wildlife, the general consensus might be "for a man with an empty stomach, food is God" (Iftikhar, 2004). In developing countries the general consensus is probably "human given animal rights, are rights taken away from people" (Hutton, 2004). In other areas where people are less depending on wildlife, there exists a different distribution of significance to these societal visions, and therefore to the motives and constraints. In developed urbanised countries like the Netherlands and Belgium, that have a relatively low percentage of hunters (both 0.2% of the total population; FACE, 2004), there is more emphasise on nature conservation and animal welfare/rights then on hunting. The Scandinavian countries, on the other

hand, have the highest percentage of hunters in Europe (cf. Lecocq, 2004; the percentage of hunters in Norway, Sweden, Finland and Denmark are respectively 4.7, 3.6, 5.8, and 3.2% of the total population, FACE, 2004), and the utilisation of wildlife is an important factor that provides meat for households (cf. Mattsson, 1990). Hunting is far more accepted in those countries than in Belgium or the Netherlands. There is also a difference in which subtypes of sport & cultural hunting (see § 4.9) are practised in European countries. Traditional sport & cultural hunting in England, for example, can count on a greater resistance against hunting, than traditional game cropping in Central European countries where hunter numbers are relatively low but nevertheless more accepted. Animal welfare, for example, seemed to play a more important role in British parliament than hunting, with regard to the decision to vote for a ban on fox hunting with dogs in England and Wales.

6.2 Types of hunting versus constraints

This section assesses the types of hunting with the criteria and management tools of every individual constraint (see table 6.1). § 6.4 combines these individual constraints, in which certain types of hunting are compatible within all three constraints.

Table 6.1: Constraints, criteria, and management tools

	Sustainable use Population level	Nature preservation Population level	Animal ethics Individual level
Criteria	Intrinsic value		
	Threatened status		
		Ecosystem function	
		Attractiveness	
	Market & cultural values		Perception of pain
			Intelligence
		Social behaviour	
Tools	Hunting quota's & regulations	National & international legal protection	Bans on hunting of certain species & methods

All criteria and management tools that are displayed in table 6.1 have been taken into account in this chapter, except for the criterion of attractiveness (§ 5.3.4 & § 5.5.2). This criterion is considered to have a biased influence on the constraints of nature preservation and animal ethics, by attributing unequal values to species based on relatively subjective choices (see § 7.1.1). It should be realised that this section is written from a theoretical and philosophical point of view. Further research on this criterion in relation to the other criteria is highly recommended however (see § 7.3.3).

6.2.1 Nature preservation

Nature preservation tries to avoid the loss of populations or species by defending them against external treats (see § 5.3). This philosophy is implemented through the management tools of nature preservation (see §

5.3.5) by the protection of areas and/or species. Although this constraint focuses on the total protection of species, it is only relevant for species to which the criteria of nature preservation apply. The criteria of threatened status (§ 5.3.1) and ecosystem function (§ 5.3.2) mean that populations of species with an IUCN global threatened status (like critically endangered, endangered, and vulnerable) and/or those animals with a specific ecosystem function should theoretically not be utilised.⁵² The constraint of nature preservation is therefore not relevant to species that are not threatened and/or have a specific ecosystem function, meaning that all types of hunting are allowed for these species within the constraint of nature preservation as illustrated in table 6.2. This statement is opposed to nature preservation in the sense of total exclusion of utilisation per se, but this is explained in § 6.4.2.

Table 6.2: Compatibility of the types of hunting & nature preservation

Types of hunting	
Subsistence hunting	Allowed under conditions ¹
Human health & safety hunting	Allowed under conditions
Conservation management hunting	
- Population control	Allowed under conditions
- Wildlife conservation by sustainable use	Allowed under conditions
- Invasive alien species control	Allowed under conditions
Scientific hunting	Allowed under conditions
Animal damage control	
- Problem animal control	Allowed under conditions
- Pest control	Allowed under conditions
Commercial hunting	
- Game cropping	Allowed under conditions
- Community based cropping schemes	Allowed under conditions
- Game ranching	Allowed under conditions
- Game farming	Not applicable
Sport & cultural hunting	
- Safari hunting	Allowed under conditions
- Canned hunting	Not applicable
- Hunting free-ranging captive-bred animals	Not applicable
- Traditional sport & cultural hunting	Allowed under conditions
- Traditional game cropping	Allowed under conditions

¹ Allowed under conditions = allowed with respect to the criteria and management tools.

The hunting subtype “wildlife conservation by sustainable use” is also allowed for populations of species that are threatened or have a special ecosystem function. But utilisation of population of species that are threatened or have a special ecosystem function is only allowed here when it really benefits the survival of these species (by introducing a certain hunting scheme, certain threats like poaching can be minimised because there are additional benefits of conserving the wildlife in question). It is possible that people object to this approach, but in those cases another constraint is influencing their opinion as explained in § 7.1.2.

It is necessary to make some additional comments regarding this comparison, although table 6.2 illustrates which types of hunting are allowed within the constraint of nature preservation:

- Invasive alien species control can include the total eradication of certain species, but this is still compatible with nature preservation as it defends against the loss of native species.
- The subtype of population control does often involve the management of animals with a special ecosystem function like deer, but the aim of population control is to benefit this ecosystem function.

⁵² In practise this criterion is not held that rigidly, as certain fish or tree species are utilised despite their IUCN Global Red List status.

- The constraint of nature preservation is not applicable to the practise of “game farming”, “canned hunting”, and “hunting free-ranging captive-bred animals” as long as those individuals hunted are especially bred for these types of hunting.

6.2.2 Sustainable use

The constraint of sustainable use (§ 5.4) is going one step further than nature preservation by stating that utilisation is allowed, but its potential to meet the needs and aspirations of present and future generations should be maintained. This means that the option of sustainable use applies in principle to every species that has a certain value (§ 5.4.2), unless it has an IUCN Global Red list status (§ 5.4.1), and is protected in practise by national and/or international law. Almost all types of hunting are therefore theoretically allowed within the constraint of sustainable use as illustrated in table 6.3, as long as the criterion of threatened status and the management tools of sustainable use (including sustainable yields, quota’s monitoring, and the precautionary principle; see § 5.4.3) are respected.

Table 6.3: Compatibility of the types of hunting & sustainable use

Types of hunting	
Subsistence hunting	Allowed under conditions ¹
Human health & safety hunting	Allowed under conditions
Conservation management hunting	
- Population control	Allowed under conditions
- Wildlife conservation by sustainable use	Allowed under conditions
- Invasive alien species control	Not applicable
Scientific hunting	Allowed under conditions
Animal damage control	
- Problem animal control	Allowed under conditions
- Pest control	Allowed under conditions
Commercial hunting	
- Game cropping	Allowed under conditions
- Community based cropping schemes	Allowed under conditions
- Game ranching	Allowed under conditions
- Game farming	Allowed under conditions
Sport & cultural hunting	
- Safari hunting	Allowed under conditions
- Canned hunting	No objections
- Hunting free-ranging captive-bred animals	No objections
- Traditional sport & cultural hunting	Allowed under conditions
- Traditional game cropping	Allowed under conditions

¹ Allowed under conditions = allowed with respect to the criteria and management tools.

There exist certain subtypes of hunting that is looked upon differently, within the constraint of sustainable use:

- The constraint of sustainable use is simply not applicable for the hunting subtypes “invasive alien species control”, “canned hunting” and “hunting free-ranging captive-bred animals”, as it does not interfere with maintaining the potential of the species (as long as species for canned hunt are specially bred for this purpose or obtained in a sustainable manner from nature).
- The subtypes “problem animal control” and “pest control” are only allowed when practised in a sustainable way in order to keep economic damage below a certain level.

6.2.3 Animal ethics

The constraint of animal ethics (§ 5.5) consists of an animal welfare and animal right point of view as explained in § 5.1. All types of hunting are

allowed from the animal welfare point of view, as long as cruelty, unnecessary pain and suffering are avoided. The animal rights point of view only allows "subsistence hunting" and "human health & safety hunting", when there are no reasonable alternatives. This section however, presents a more practical implementation of the constraint of animal ethics, through the criteria of intelligence (§ 5.5.4) and social behaviour (§ 5.5.5) that give expression to the idea of animal rights. By categorising the animal kingdom on the basis of these criteria it is possible (in theory) to divide between intelligent and/or social animals and less intelligent and/or social animal species as is shown in fig. 6.2. With respect to these criteria it is possible to allow certain types of hunting within the constraint of animal ethics as illustrated in table 6.4, but only for those species that are below a certain level with regard to animal intelligence and behaviour. This approach has, of course, uncertainties to it and some people might also object to this approach because they consider animal rights as absolute and valid for all species, as discussed in § 7.1.2.

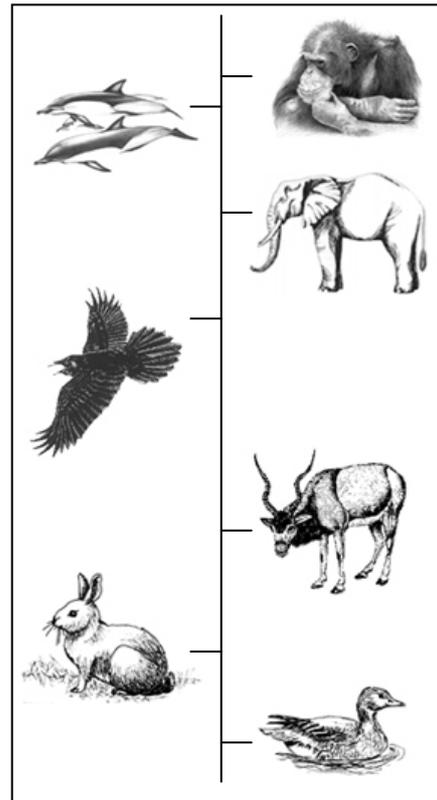


Fig. 6.2: Order of animal intelligence / behaviour (personal assessment by the author)

Table 6.4: Compatibility of the types of hunting & animal ethics

Types of hunting	
Subsistence hunting	Allowed under conditions ¹
Human health & safety hunting	Allowed under conditions
Conservation management hunting	
- Population control	Allowed under conditions
- Wildlife conservation by sustainable use	Allowed under conditions
- Invasive alien species control	Allowed under conditions
Scientific hunting	Allowed under conditions
Animal damage control	
- Problem animal control	Allowed under conditions
- Pest control	Allowed under conditions
Commercial hunting	
- Game cropping	Allowed under conditions
- Community based cropping schemes	Allowed under conditions
- Game ranching	Allowed under conditions
- Game farming	Not allowed
Sport & cultural hunting	
- Safari hunting	Not allowed
- Canned hunting	Not allowed
- Hunting free-ranging captive-bred animals	Not allowed
- Traditional sport & cultural hunting	Not allowed
- Traditional game cropping	Not allowed

¹ Allowed under conditions = allowed with respect to the criteria and management tools.

There are, however, some types of hunting that are not allowed within the constraint of animal ethics or that requires some additional comments:

- "Sport & cultural hunting" in itself is not allowed, because the motive of recreation is not acceptable within the idea of animal rights (see also 7.1.2).
- "Game farming" is not allowed within the constraint of animal ethics, because the only strategy in which game farming is practised, that is

relevant in the scope of this research, is canned hunting. Canned hunting is fully incompatible with the constraint of animal ethics.

Within the constraint of animal ethics it is strongly recommended that types of hunting (like animal damage control) are only allowed after alternative options have been studied.

6.3 Methods of hunting versus constraints

Section 4.11 has illustrated that there are direct and indirect methods of hunting. These methods can be compared with the constraints on hunting to determine which methods are allowed within which constraints (see also table 6.5):⁵³

- *Nature preservation*

For the types of hunting that are allowed within the constraint of nature preservation (§ 5.3) it does not matter which direct methods of hunting are being used. Only indirect matters of hunting are not allowed for the constraint of nature preservation. Trapping, snaring and poisoning kill randomly and are often not selective enough. The IUCN Global Red List of Threatened Species (see also § 2.2) shows that these practises have contributed to 11 mammal species becoming critically endangered, endangered or vulnerable (respectively 2, 3, and 6). Although there are no bird species listed in the IUCN database as threatened due to trapping or poisoning, poisoning can have the additional effect that it accumulates in an ecosystem as illustrated by the effect of DDT on birds of prey worldwide. Using hunting methods like poison and trapping is only allowed for the hunting subtype of "invasive alien species control" when it is absolutely proven that these methods are truly selective.

- *Sustainable use*

It also does not matter for the constraint of sustainable use (§ 5.4) with which method animals are being killed. Only indirect methods are not allowed within this constraint, because of the random non-target impacts that might not be sustainable. It should be noted though that the chance of over-harvesting increases with the method of hunting (like firearms) used (cf. Mena et al., 2000).

Table 6.5: Compatibility of the methods of hunting & constraints

Methods of hunting	Nature preservation	Sustainable use	Animal ethics
Direct methods			
Projectiles – firearms	Allowed	Allowed	Allowed
Projectiles – other	Allowed	Allowed	Allowed
Thrusting weapons	Allowed	Allowed	Allowed
Clubbing weapons	Allowed	Allowed	Allowed
Indirect methods			
Trapping / snaring	Not allowed	Not allowed	Not allowed
Poisoning	Not allowed	Not allowed	Not allowed

- *Animal ethics*

All hunting methods inflict a certain degree of pain on the hunted animal, but if hunting is allowed within the constraint of animal ethics (§ 5.5), the question is then which hunting methods cause the least pain and suffering. Before discussing the lethality of hunting methods, it should be noted that this also depends on the hunter's abilities. A deer, for example, might be dead in several seconds due to a well placed single bullet, but may suffer if the bullet is less well placed and the hunter needs to track the wounded animal down.

⁵³

Additional methods and strategies (see § 4.11) are not being discussed in this section.

Animals should be killed as quickly as possible to prevent any unnecessary pain and suffering, according to the constraint of animals ethics. When firearms are compared with other projectiles, it can be assumed that firearms have the preference, as the impact of a bullet or pellets is quite large due to its velocity. Hunting should always occur using the correct calibre that is adjusted to the intended quarry. When comparing between firearms and thrusting and clubbing methods, a distinction should be made between larger animals, like deer and elephants, and smaller animals like ducks and rabbits. Although the chance to of hitting an animal with a smaller body size is larger when the animal is not moving, the chance of only causing injury is relatively substantial, because the impact of pellets on a small body in a tense condition is much severe then on a small body in a relaxed state (cf. Antonisse, 1977). Shooting moving larger animal species in any other area then the hart or brain will, in general, only cause injuries and no death. Larger animals should therefore only be shot at when the animal is in a stationary condition. This form of hunting ethics and animal welfare is the reason that the hunt on moving wild pigs is not allowed anymore in the Netherlands. Other forms of hunting ethics, including fair play, are directly against animal welfare, as they only increase stress of the animal or the chance of wounding an animal.

The chance to only wound and not to kill a stationary small animal species with a projectile, compared to trusting and clubbing methods, is larger. Trusting and clubbing methods can only be deployed when used in the direct vicinity of an animal, which means that clubbing seal for example (see fig. 4.15) can be thought of as a "brutal" method (the perceived humanity), but is in fact quite effective (the actual humanity). Veterinarians concluded that the large majority of harp seals taken in Canada (at best 98%) are killed in an acceptably humane manner. This method is therefore to be preferred method over the use of firearms (cf. Daoust et al., 2002). Direct hunting methods are thus allowed within the constraint of animal ethics, as long as the criteria and philosophy regarding animal welfare are respected.

Trapping and snaring are not allowed within the constraint of animal ethics, as it causes severe suffering and pain. Whether poison is humane or not depends on the toxicity of the poison used and the susceptibility of the animal species targeted. Although it is possible in theory for a poison to be "humane", the most generally used poisons have animal welfare related issues. Sodium monofluoroacetate or compound 1080, for example, is one of the most widely used pest control agents in the world, but causes convulsions, muscle spasms, and animals that are struggling for breath. It takes animals between 3 and 44 hours to die after poisoning (cf. Animal Liberation, 2004). Poisoning as such is therefore not allowed within the constraint of animal ethics.

It should be realised that the issue of humane hunting methods is still continuously studied, as illustrated by the recent workshop on hunting methods for seals and walrus (cf. NAMCO, 2004) and is a promising field of research in the future.

6.4 Compatible perspectives

Although every constraint has other meanings, there are several types of hunting for which the three constraints are compatible with each other, by combining the results of § 6.2. The (sub)types "subsistence hunting", "human health & safety hunting", "population control", "wildlife conservation by sustainable use", "invasive alien species control", "scientific hunting", "problem animal control", "pest control", "game cropping", "community based cropping schemes", and "game ranching" are allowed under conditions within the constraints of nature preservation, sustainable use, and animal ethics as illustrated in table 6.6 (see grey shading). From a theoretical point of view, these (sub)types of hunting are only allowed within these constraints if the animal species utilised (see also § 7.1):

- have no IUCN Global Red List status;
- have no special ecosystem function;
- are utilised in a sustainable manner;
- are below a certain degree of intelligence and social behaviour;
- are killed in a humane manner, and unnecessary pain, suffering and cruelty are prevented;
- are utilised when there are no reasonable alternatives to hunting.

Regarding the latter point, prevention and compensation systems, for example, seem to work better than hunting in the case of problem animal control (conflicts with predators) in harmonising the various constraints with each other (cf. Federal Environment Agency, 1999).

Table 6.6: Compatibility of the types of hunting & constraints

Types of hunting	Nature preservation	Sustainable use	Animal ethics
Subsistence hunting	Allowed ¹	Allowed	Allowed
Human health & safety hunting	Allowed	Allowed	Allowed
Conservation management hunting			
- Population control	Allowed	Allowed	Allowed
- Wildlife conservation by sustainable use	Allowed	Allowed	Allowed
- Invasive alien species control	Allowed	Not applicable	Allowed
Scientific hunting	Allowed	Allowed	Allowed
Animal damage control			
- Problem animal control	Allowed	Allowed	Allowed
- Pest control	Allowed	Allowed	Allowed
Commercial hunting			
- Game cropping	Allowed	Allowed	Allowed
- Community based cropping schemes	Allowed	Allowed	Allowed
- Game ranching	Allowed	Allowed	Allowed
- Game farming	Not applicable	Allowed	Not allowed
Sport & cultural hunting			
- Safari hunting	Allowed	Allowed	Not allowed
- Canned hunting	Not applicable	Not applicable	Not allowed
- Hunting free-ranging cap.-bred animals	Not applicable	Not applicable	Not allowed
- Traditional sport & cultural hunting	Allowed	Allowed	Not allowed
- Traditional game cropping	Allowed	Allowed	Not allowed

¹ Allowed under conditions = allowed with respect to the criteria and management tools.

6.4.2 Spatial and temporal aspects

Certain types of hunting are thus compatible within all three constraints. Some types of hunting or the utilisation of certain animal species, however, are not allowed within every constraint. This does not mean that these hunting practises cannot coexist next to each other. Several authors, for example, have concluded that nature preservation in the sense of protected areas, are not successful in protecting wildlife alone, because of

continuing human pressure on wildlife (cf. Barnett, 2000; cf. Bennett et al., 2000a; cf. Hutton, 2004; cf. Kiss, 1990; cf. Prins et al., 2000). The solution to this is a spatial and temporal land and management zoning that combines societal visions. A protected area (§ 5.3.5), for example, can act as a core area of wildlife with additional sustainable hunting zones around it (see fig. 6.3), with money flowing from the hunting zones to the protected area (and the local community). Or in other words: wildlife from inside to outside and money from outside to inside, thereby supporting both nature preservation and human development (personal communication H.A. Udo de Haes). This connection is gradually starting to be deployed and researched worldwide, as illustrated by several projects in Africa (cf. Iongh et al., 2000; cf. Mayaka, 2002b; Szapary, 2000). The

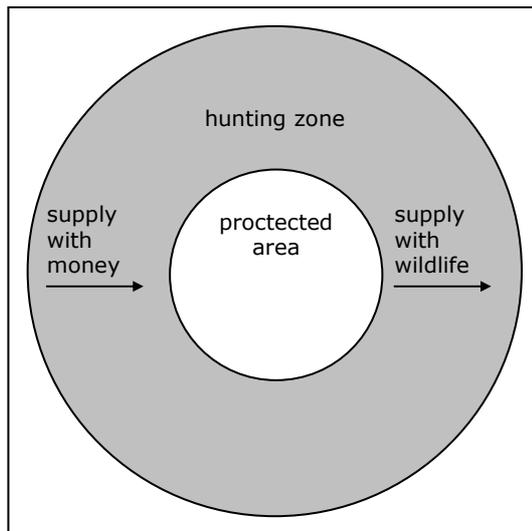


Fig. 6.3: An example of zoning

nature preservation, sustainable use and animal ethics regarding the practise of hunting, as a next step following the current process in which the constraints of nature preservation and sustainable use are implemented in a compatible manner. Nature preservation will continue to exist in the form of protected areas where utilisation of wildlife is not allowed and hunting zones or agricultural areas where sustainable use is allowed. When the philosophy of the constraint of animal ethics is also respected, it is possible to come to a new setting of hunting that might contribute to a way of wildlife conservation that may have the potential to receive broad societal support.

temporal aspects of this idea includes breeding seasons of certain animal species and changing management regimes / levels of utilisation. Even international nature organisations like WWF are actively participating in developing this idea. They are involved in the Jengi project in Cameroon that includes overlapping hunting zones with several degrees of utilisation around a national park (cf. WWF, 2003).

6.4.3 Synthesis

This report recommends a further synthesis of the constraints of

7

Discussion, conclusions & recommendations

7.1 Discussion

This report has attempted to discuss the phenomenon of hunting as completely as possible, but there are always certain topics that remain open to discussion. The following topics are discussed in the respectively corresponding sections:

- *Attractiveness*
Attractiveness is a criterion that has not been taken into account when comparing the types of hunting with the constraints of nature preservation and animal ethics.
- *Nature preservation*
There exists an influence of another constraint when discussing the option of allowing to hunt animal species that are threatened and/or have a keystone function, for the benefit of their conservation. It is also discussed whether the constraint of nature preservation should only be relevant to species that comply with the criteria.
- *Sustainable use*
There is no doubt that the concept of sustainable use is well known, as illustrated by the use of this term in international conventions, but it is also really implemented.
- *Animal ethics*
There are some practical as well as theoretical implications of ranking animal species regarding their intelligence and social behaviour, and allowing the utilisation of species within the constraint of animal ethics.

7.1.1 Attractiveness

The criterion of attractiveness (§ 5.3.4 & § 5.5.2) has not been taken into account when comparing the types of hunting with the constraint of nature preservation and animal ethics (see § 6.2.1 & § 6.2.3), because it attributes values to animal species based on relatively subjective factors. Animal species with a high value of attractiveness make only up a small proportion of biodiversity, and this report considers criteria like threatened status and animal intelligence as a more objective and fair criteria for the selection of species. However, it can be discussed whether attractiveness can be based on measurable aspects like eye-size. Furthermore, it can be questioned to which extent attractiveness is linked to animal intelligence and social behaviour. For relative charismatic animals like dolphins and elephants this is certainly the case, but does this also apply to corvids?

Attractiveness is nevertheless a criterion that is used in practice and one that also has been carefully cultivated by certain conservation organisations which apply it in their campaigns (see also § 5.3.4). It is suggested here that it will be dealt with in a different manner as explained in § 7.1.4. It can be assumed that if the criterion of attractiveness would have been taken into account while comparing types of hunting and its constraints, a different outcome would have resulted (see also § 7.3.7).

7.1.2 Nature preservation

The constraint of nature preservation only allows the utilisation of populations of species if the species in question is not threatened nor performs a special ecological function. Utilisation of species that do not meet these criteria is only allowed for the subtype "conservation by sustainable use" as explained in § 6.2.1. It should be realised that if utilisation really contributes to the conservation of the species, then objections to this approach are purely made from within the constraint of animal ethics. The constraint of nature preservation has no serious objections if this subtype of hunting benefits the existence of the species in question.

The constraint of nature preservation is, in theory, only relevant to those species that are either threatened in their existence or have a special ecological function. It can be discussed whether this constraint should apply to all species in the sense of total protection, per se, or to allow the utilisation of species that do not meet the two criteria as is done in this report. To prevent the constraint of nature preservation from becoming only relevant when a species is locally threatened with extinction, red listed, and protected by national and international law, all types of hunting that are allowed should therefore be performed in a sustainable manner. This interpretation is given to the meaning of nature preservation in this report, because it seems the most realistic as total preservation itself is not compatible with social economic pressures (cf. Barbier, 1992). This is a choice however, that is made in this report and other peoples' / organisations' their opinion might not coincide with this interpretation.

7.1.3 Sustainable use

It can be questioned whether the SY theories are not more than a myth, as the amount of examples in which SY theories are successfully applied are relatively scarce. Although it is possible to set quotas with respect to increasing or declining trends, by monitoring populations and applying the precautionary principle (see § 5.4.3), uncertainties always remain.

A second point is that SY theories can easily be misused, certainly if individuals of the animal species targeted have a high market value. The implementation of a proper control system is often lacking or insufficient. The constraint of sustainable use remains a concept that is supported by society, but one should distinguish between the practical use of a concept and the risk of idealising it.

7.1.4 Animal ethics

The approach of ranking animal species with regard to their intelligence and social behaviour as described in § 5.2.3 can be subject to discussion. The main question regarding this approach is where one is going to draw the line between animal species that are considered intelligent and perform complex social behaviour and animals that are less intelligent and perform less social behaviour.

A second point is whether the constraint of animal ethics allows the subtype of "wildlife conservation by sustainable use" for animal species that are intelligent and perform complex social behaviour. This report allows this type of hunting when it really benefits the conservation of the

species in question. This is of course a choice made in this report, just as the decision to allow this same subtype within the constraint of nature preservation (see also § 7.1.2).

A third point is that the constraint of animal ethics does not allow any subtypes of "sport & cultural hunting", because animal ethics is not compatible with the motivation of recreation. "Wildlife conservation by sustainable use" and certain subtypes of "commercial hunting" can involve the participation of sport hunters (see also § 4.5.2 & 4.8.2) however, and the question remains whether that is allowed within this constraint: Is it really possible within this framework for the constraint of animal ethics to allow conservation by sustainable use practises to be carried out by sport hunters? This report recommends to be allowed for the involvement of sport hunters in "wildlife conservation by sustainable use". Conservation possibilities will decrease when sport hunters are excluded from this subtype of hunting, because of less financial benefits for nature conservation and the local community. The opinion of people / organisations that hold animal rights as absolute might not coincide with this interpretation of animal ethics in this report.

7.2 Conclusions

There are several conclusions that can be made regarding the contents and results of this report. The framework (§ 2.1) that is consistently applied within this report enabled a discussion of the phenomenon of hunting from all major perspectives in an objective manner. All research questions (§ 1.3), has been answered using this framework, as illustrated in appendix IV:

- 1) Four societal visions (see § 3.4) can be distinguished representing the predominant statements of international hunting, nature conservation, animal welfare/rights and human development organisations on hunting.
- 2) The societal visions on hunting can be used to formulate seven motives (nutrition, safety, conservation, science, economics, culture, and recreation) behind hunting (see § 4.1) and three constraints (nature preservation, sustainable use, and animal ethics) on hunting (see § 5.1).
- 3) The seven motives behind hunting lead to an equal number of types of hunting (see § 4.2) and several hunting methods (see § 4.11).
- 4) Within the constraints of hunting there are several criteria and management tools (see § 5.2) that determine to which species these constraints pertain and in which way.
- 5) It has been proven possible to compare the types of hunting and methods of hunting with the constraints on hunting (see § 6.2 & § 6.3), and to illustrate that the constraints of nature preservation, sustainable use, and animal ethics are compatible with certain types of hunting (see § 6.4).
- 6) Hunting types and the constraints on hunting can also be combined in a spatial and temporal way, using land zoning and different management regimes.
- 7) It is also possible, however, to make other choices with regard to allowing certain types of hunting within certain constraints. The synthesis of the phenomenon of hunting and the three constraints that is proposed in this report is a recommendation and not the only possible result.

7.3 Recommendations

This chapter makes several recommendations to respectively the conservation organisation WWF, the research institute CML, and recommendations about further study and research. WWF is chosen as an example, because of their global activities and pragmatic view towards hunting in the field. However, the same recommendations can be applied to other conservation organisations as well.

7.3.1 Recommendations for conservation organisations

The current statement of WWF on hunting (1993; see also appendix III) is compatible with the analysis and conclusion as presented in this report. WWF-international and the IUCN (through the World Conservation Strategy) are the only international nature conservation organisations that combines all three constraints in their statement on hunting, by promoting nature preservation, sustainable use, and animal welfare. This means that the statement of WWF represents the societal visions on nature conservation, human development, and animal welfare. The policy of WWF regarding hunting seems therefore justifiable, although a few recommendations can be made:

- the participation of WWF in the hunting subtype of “conservation by sustainable use” should be continued as it seems a realistic approach to contribute to the conservation of species as described in § 6.4;
- the animal rights part of the constraint of animal ethics (consisting of an animal welfare and animal rights point of view) should be included in the statement of WWF on hunting;
- when discussing certain hunting practises, one should first discuss the specific type of hunting within the three constraints and only then the hunting method involved. There is a risk of unequal attention on the constraint of animal ethics if the hunting method is discussed first. Hunting methods deal mainly with the constraint of animal ethics after all, but all constraints are of equal importance.

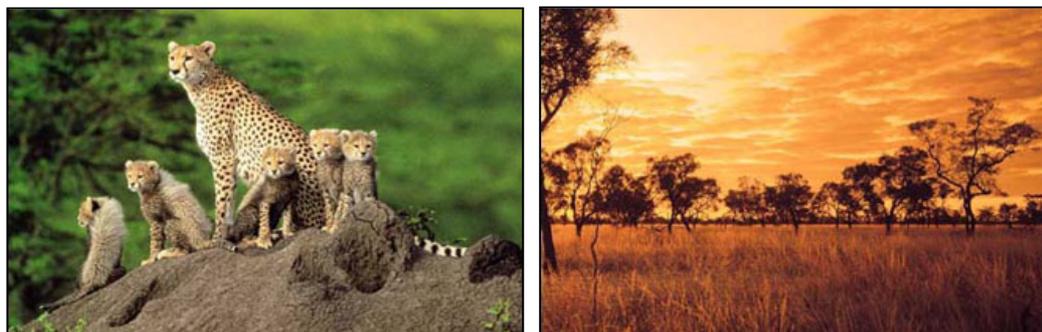


Fig. 7.1: Images of WWF campaigns

Although the three constraints of hunting, i.e. nature preservation, sustainable use, and animal ethics are well taken into account in WWF policy and fieldwork, this balanced strategy is missing in the campaigns of WWF-Netherlands. The campaigns of WWF only represent the nature preservation part of their policy by showing animals and uninhabited landscapes (see fig. 7.1). Humans live together with wildlife, as WWF frequently encounters in their fieldwork, and humans will continue to live with wildlife. Policy and communication towards donors should therefore be attuned with each other, in order to prevent miscommunication about the standpoint of WWF regarding the utilisation of species and regarding hunting as a means for conservation. It is therefore recommended to

incorporate the other constraints on hunting in the communication towards donors and supporters. 2006 update: as of 2005/2006 WWF also incorporates images of human babies alongside images of baby animals. Although this might be considered a first step in taking up the previous recommendation, it's only an first step.

Section 7.1.1 describes why the criterion of attractiveness (§ 5.3.4) is conflicting when discussing a topic like hunting. It is understandable that images of animals (see fig. 7.1) with a high attractiveness (§ 5.3.4) have a high public relationship -value as flagship species and ambassadors, but it is extra difficult to explain the killing of these attractive looking animal species towards an audience that is not accustomed to death. Communication between WWF and society about hunting will always prove to be a delicate, difficult, and (often) emotional subject, but can be somehow mitigated by explaining what can be expected from a nature conservation organisation like WWF. It should be emphasised that being a nature conservation organisation does not automatically mean that hunting should always be allowed, as WWF should also strive to direct their efforts towards nature preservation in the sense of total exclusion of utilisation. The interpretation of the meaning of the constraints of especially nature preservation and animal ethics (see also § 7.1.2 & § 7.1.3) is entirely the choice of the organisation in question. This report, however, pleads for a synthesis between nature preservation, sustainable use, animal ethics, and hunting, and recommends furthermore to prevent any discrepancies between policy and communication.

7.3.2 Recommendations for research institutes

It is recommended to a research institute like CML to continue research on hunting in Kalimantan, the Philippines and Cameroon, within the framework that is presented in this report. Using this framework allows the CML to:

- decide whether the types of hunting they encounter in their research and education profession are compatible within the constraints on hunting.
- determine the standpoint of CML on certain types and methods of hunting.
- continue with research on the subject of hunting in a fashion that takes all facets of debates on hunting into account;
- continue with research and education on the synthesis between the constraints on hunting and the phenomenon on hunting itself.

7.3.3 Recommendations for further study & research

Discussing hunting on a worldwide scale is quite a challenge and inevitably results in lack of either time or knowledge. It is recommended to perform more study on the following questions:

- what really appeals to sport and cultural hunters in hunting? For example, is it the kill or the hunting experience itself (see also § 3.1 & § 4.1)?
- to which extent does the practise of "traditional game cropping" (§ 4.9) contribute to the standard of living?
- which alternatives exist before "human health and safety hunting" (§ 4.4) or animal damage control (§ 4.7) should be applied?
- to which extent is the constraint of sustainable use (§ 5.4) really applied within the types of hunting (§ 4.2)?

It is also recommended for CML to perform more research on the following topics:

- do the societal visions in this report coincide with the visions on hunting of non-western society, and is this related to the different attributes of importance of nature as explained in § 6.1?
- what are other implications of using the criteria of animal intelligence (§ 5.5.4) and social behaviour (§ 5.5.5) for certain areas of present-day society, like the breeding and consumption of livestock?
- can a science-based line be drawn between animal species with relative high intelligence and/or social behaviour and relative low intelligence and social behaviour?
- which animal species can be utilised and which can not, on the basis of the constraint of animal ethics?
- to which extent are the criteria of animal intelligence and social behaviour compatible with each other, regarding the selection of species?
- to which extent are the criteria of animal intelligence and social behaviour linked to the criterion of attractiveness?
- what are the implications of the constraint of nature preservation for hunting practises in Africa, where IUCN Global Red List Species are often the main attraction to trophy hunters?
- what are the implications of the constraint of animal ethics for hunting practises in Africa, where large and perhaps intelligent animals are often the main attraction to hunters?
- which other outcomes are possible using this framework, but by attributing different meanings to constraints like nature preservation or taking into account a criterion like attractiveness?

References

- Aarden, M. (8 November 2002). *Beetje jagen doet walvissen mogelijk goed*. De Volkskrant
- Adherents (February, 2004).
http://www.adherents.com/Religions_By_Adherents.html
- AFA (June, 2004). <http://www.aphis.usda.gov/ac/info.html>
- AgriHolland (2004). *7,6 miljoen euro schade door ganzen in winter 2002/2003*.
<http://www.agriholland.nl/nieuws/artikel.html?id=42581>
- AITVM (2003). *Expert consultation on 'The control of wild elephant populations'. Conclusions and recommendations Managing African Elephant Populations: Act or Let Die?* AITVM, Utrecht
- Alvard, M. (2000). *The Impact of Traditional Subsistence Hunting and Trapping on Prey Populations: Data from Wana Horticulturalists of Upland Central Sulawesi, Indonesia*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- Allen, C. (1997). *Making CITES Work: Examples of Effective Implementation and Enforcement*. TRAFFIC, Cambridge
- Andel, T.R. van (2000). *Non-timber forest products of the North-West District of Guyana. Part I*. Tropenbos-Guyana Programme, Georgetown
- Antonisse, J. (1977). *Jacht in Nederland*. H.J.W. Becht's Uitgeversmaatschappij, Amsterdam
- Animal Liberation (September, 2004).
<http://www.animalliberation.org.au/feralpois.html>
- Ballenberghe, V. Van & Ballard, W.B. (1994). *Limitation and Regulation of Moose Populations: the Role of Predation*. Canadian Journal of Zoology 72: 2071-2077
- Barbier, E.B. (1989). *Economics, Natural-Resource Scarcity and Development. Conventional and Alternative Views*. Earthscan Publications Limited, London.
- Barbier, E.B. (1992). *Economics for the Wild*. In: Swanson, T.M. & Barbier, E.B. *Economics for the Wilds*. Earthscan Publications Ltd, London
- Barnett, R. (2000). *Food for Thought: the Utilisation of Wild Meat in Eastern and Southern Africa*. TRAFFIC East/Southern Africa; Nairobi
- Bauer, E. (red, 1980). *Hunting*. Gothenburg, Nordbok
- Bennett, E.L. & Robinson, J.G. (2000a). *Hunting for the Snark*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- Bennett, E.L., Nyaoi, A.J. & Sompud, J. (2000b). *Saving Borneo's Bacon: The Sustainability of Hunting in Sarawak and Sabah*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- Bennett, E.L. & Robinson, J.G. (2000c). *Hunting for Sustainability: The Start of a Synthesis*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- Benson, D.E. (1991). *Values and Management of Wildlife and Recreation on Private Land in South Africa*. Wildlife Society Bulletin 19: 491-510
-

- Bodansky, D. (1991). *LAW. Scientific Uncertainty and the Precautionary Principle*. Environment 33(7): 4-5, 43-44
- Bodmer, R.E. (1995). *Managing Amazonian Wildlife: Biological Correlates of Game Choice by Detribalized Hunters*. Ecological Applications 5(4): 872-877.
- Boersema, J.J. (1994). *First the Jew, but also the Greek. In Search of the Roots of the Environmental Problem in Western Civilization*. In: Zweers, W. & Boersema, J.J. *Ecology, Technology and Culture. Essays in Environmental Philosophy*. The White Horse Press, Cambridge
- Brander, M. (1971). *Hunting & Shooting. From earliest times to the present day*. Weidenfeld & Nicolson, London
- Breitenmoser, U. (2000). *Action Plan for the Conservation of the Eurasian lynx (Lynx lynx) in Europe*. Convention on the Conservation of European Wildlife and Natural Habitats. Oslo, 22-44 June 2000.
- Bruner, G.A., Gullison, R.E., Rice, R.E. & da Fonseca, G.A.B. (2001). *Effectiveness of Parks in Protecting Tropical Biodiversity*. Science 291: 125.
- Bruun, O. & Kalland, A. (1995). *Images of Nature: An Introduction to the Study of Man-Environment Relations in Asia*. In: Bruun, O. & Kalland, A. *Asian Perceptions of Nature: a Critical Approach*. Curzon Press, Richmond
- Brusewitz, G. (1969). *Hunting. Hunters, Game, Weapons and Hunting Methods from Past to the Present Day*. George Allen & Unwin Ltd, London
- Caldegott, J. (1988). *Hunting and Wildlife Management in Sarawak*. IUCN, Gland and Cambridge.
- Campbell, N.A. & Reece, J.B. (2002). *Biology*. Pearson Education, San Francisco.
- Capra, F. (1999). *Reconnecting with the Web of Life: Deep Ecology, Ethics and Ecological Literacy*. In: UNEP. *Cultural and Spiritual Values of Biodiversity*. Intermediate Technology Publications, London
- Cartmill, M. (1993). *A View to a Death in the Morning: hunting and nature through history*. Harvard University Press, London
- Caughley, G. & Sinclair, A.R.E. (1994). *Wildlife harvesting*. In: *Wildlife Ecology and Management*. Blackwell Science, Cambridge
- CBD (February, 2004). *Sustainable Use of Biodiversity. Addis Ababa Principles and Guidelines*. <http://www.biodiv.org/programmes/socio-eco/use/addis-principles.asp>
- CBD (April, 2004). *Alien Species Introduction*. <http://www.biodiv.org/programmes/cross-cutting/alien/>
- Chalmers, P. (1951). *The History of Hunting*. Seeley, Service & Co. Limited, London
- Chape, S., Blyth, S. Fish, L., Fox, P. & Spalding, M. (2003). *2003 United Nations List of Protected Areas*. IUCN, Gland & Cambridge, UK
- Chastain, R. (February, 2004a). *Why hunt?* <http://hunting.about.com/library/weekly/aa022899.htm>
- Chastain, R. (February, 2004b). *Why do Hunters Kill?* <http://hunting.about.com/library/weekly/aa122299.htm>
-

-
- Child, B. (2000). *Making Wildlife Pay: Converting Wildlife's Comparative Advantage into Real Incentives for Having Wildlife in African Savannas, Case Studies for Zimbabwe and Zambia*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Child, G. & Chitsike, L. (2000). "Ownership" of Wildlife. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- CI (March, 2004). http://www.conservation.org/xp/news/press_releases/2002/090502.xml
- CIC (March, 2004). http://www.cic-wildlife.org/e_info.html
- CITES (March 2004a). <http://www.cites.org/eng/disc/what.shtml>
- CITES (March 2004b). <http://www.cites.org/eng/disc/how.shtml>
- Clark, C.W. (1973). *The Economics of Overexploitation. Severe depletion of renewable resources may result from high discount rates used by private exploiters*. *Science* 181: 630-634
- Clason, A.T. (1975). *Jacht en Veeteelt. Van Prehistory tot Middeleeuwen*. Fibula-van Dishoeck, Haarlem
- Cliteur, P. (2001). *Darwin, Dier en Recht*. Boom, Amsterdam
- Convention on Biological Diversity (March, 2004). *Convention Text*. <http://www.biodiv.org/convention/articles.asp>
- CML (January, 2004). www.leidenuniv.nl/cml/index.html
- Conroy, A.M. & Gaigher, I.G. (1982). *Venison, aquaculture and ostrich meat production: action 2003*. *South African Journal of Animal Science* 12: 219-233
- Conservation Force (2002). *Conservation Force 2002 in Review*. Conservation Force, Metairie
- Conservation Force (August 2004). <http://www.conservationforce.org/>
- Cumming, D.H.M. (1989). *Commercial and Safari Hunting in Zimbabwe*. In: Hudson, R.J., Drew, K.R., Baskin, L.M., Eltringham, S.K., Harwood, J., Pimentel, D., Sinclair, A.R.E. & Sissenwine, M.P. *Wildlife Production Systems : Economic Utilisation of Wild Ungulates*. Cambridge University Press, Cambridge
- Daoust, P., Crook, A., Bollinger, T.K., Campbell, K.G. & Wong, J. (2002). *Animal welfare and the harp seal hunt in Atlantic Canada*. *Canadian Veterinary Journal* 43: 687-694
- Davies, R. (2000). *Madikwe Game Reserve: a Partnership in Conservation*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Dawkins, M.S. (1985). *The Scientific Basis for Assessing Suffering in Animals*. In: Singer, P. *In Defence of Animals*. Blackwell Publishers
- Deen, M.Y.I. (1996). *Islamic Environmental Ethics, Law, and Society*. In: Gottlieb, R.S. *This Sacred Earth: Religion, Nature, Environment*. Routledge, New York
- Denevan, W.M. (1992). *The Pristine Myth: The Landscape of the Americas in 1492*. *Annals of the Association of American Geographers* 82 (3): 369-385.
-

- Denny, F.M. (February, 2004). *Introduction to Islam; Islam and Ecology: A Bestowed Trust Inviting Balanced Stewardship*.
<http://environment.harvard.edu/religion/religion/islam/index.html>
- Deodatus, F. (2000). *Wildlife Damage in Rural Areas with Emphasis on Malawi*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Désveaux, E. (1995). *Les Indiens Sont-ils par Nature Respectueux de la Nature?* *Anthropos* 90: 435-444.
- Devall, B. & Sessions, G. (1985). *Deep Ecology. Living as if Nature Mattered*. Gibbs Smith, Layton
- Dijk, P. van (1994). *Theological-Anthropological Reflections on the Environmental issue*. In: Zweers, W. & Boersema, J.J. *Ecology, Technology and Culture. Essays in environmental philosophy*. The White Horse Press, Cambridge
- Dobson, A.P. (1995). *Conservation and Biodiversity*. The Scientific American Library, New York
- Dovers, S.R. & Handmer, J.W. (1995). *Ignorance, the Precautionary Principle, and Sustainability*. *Ambio* 24(2): 92-97
- Dublin, H.T., Milliken, T. & Barnes, R.F.W. (1995). *Four Years After The CITES Ban: Illegal Killing of Elephants, Ivory Trade and Stockpiles*. IUCN/SSC African Elephant Specialist Group
- Dwivedi, O.P. (1996). "Early Buddhist Views on Nature." In: Gottlieb, R.S. *This Sacred earth: Religion, Nature, Environment*. Routedledge, New York
- Edwards, S.R. & Allen, C.M. (1992). *Sport Hunting as a Sustainable Use of Wildlife*. IUCN, Washington D.C.
- EIA (2000). *Lethal Experiment. How the CITES-approved ivory sale led to increased elephant poaching*. Emmerson Press
- Eltringham S. K. (1984). *Wildlife Resources and Economic Development*. John Wiley & Sons, New York
- Emery, N.J. & Clayton, N.S. (2003). *Comparing the complex cognitive abilities of birds and primates*. In: Rogers, L.J. & Kaplan, G *Comparative Vertebrate Cognition: Are primates superior to non-primates?* Kluwer Academic Publishing.
- EU (June, 2004). http://europa.eu.int/comm/food/animal/index_en.htm
- Fa, J.E., Juste, J., Perez del Val, J. & Castroviejo, J. (1995). *Impact of Market Hunting on Mammal Species in Equatorial Guinea*. *Conservation Biology* 9 (5): 1107-1115
- Fa, J.E. (2000). *Hunted Animals in Bioko Island, West Africa: Sustainability and Future*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- FACE (2004). *Census of the Number of Hunters in Europe*.
<http://www.face-europe.org/fs-hunting.htm>
- FAO (1996). *Conservation and use of biological diversity and genetic resources*.
<http://www.fao.org/sd/EPdirect/EPRe0007.htm>
- FAO (April, 2004). http://www.fao.org/UNFAO/about/index_en.html
- Federal Environment Agency (1999). *Brown Bears in Austria. 10 Years of Conservation and Actions for the Future*. Umweltbundesamt GmbH, Vienna
-

-
- Fink, D.B. (February, 2004). *Introduction to Judaism and Ecology; Judaism and Ecology: A Theology of Creation*.
<http://environment.harvard.edu/religion/religion/judaism/index.html>
- Fisheries Resource Management (2002). *Atlantic Seal Hunt. 2002 Management Plan*. Fisheries Resource Management, Ottawa
- FitzGibbon, C.D. (1998). *The management of Subsistence Harvesting: Behavioural Ecology of Hunters and Their Mammalian Prey*. In: Caro, T. *Behavioural Ecology and Conservation Biology*. Oxford University Press, Oxford.
- FitzGibbon, C.D., Mogaka, H. & Fanshawe, J.H. (2000). *Threatened Mammals, Subsistence Harvesting, and High Human Population Densities: A Recipe for Disaster?* In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Columbia University Press, New York
- Francione, G.L. (July, 2004). *Animal Rights and Animal Welfare: Five Frequently Asked Questions*. <http://www.animal-law.org/library/quests.htm>
- Freedman, B. (1995). *Environmental Ecology. The Ecological Effects of Pollution, Disturbance, and Other Stresses*. Academic Press, Inc., San Diego.
- Freeze (?). *The Commercial, Consumptive Use of Wild Species: Managing it for the Benefit of Biodiversity*. WWF-US / WWF-International
- Frid, C. & Dobson, M. (2002). *Ecology of Aquatic Management*. Pearson Education Ltd, Harlow
- Gadgil, M. & Iyer, P. (1989). *On the Diversification of Common-Property Resource Use by Indian Society*. In: Berkes, F. *Common Property Resources. Ecology and Community-Based Sustainable Development*. Belhaven Press, London
- Gasset, J.Y. (1985). *Meditations on Hunting*. Charles Scribner's Sons, New York
- Gilbert, F.F. & Dodds, D.G. (1987). *The Philosophy and Practise of Wildlife Management*. Robert E. Krieger Publishing Company INC, Malabar
- Gould, S.J. (1990). *The Golden Rule – a proper scale for our environmental crisis*. *Natural History* 99: 24-30
- Greenpeace (2004). www.greenpeace.org
- Greenpeace (1999). *Japan: Whaling Becomes an Industry out of Control*. Greenpeace, Amsterdam
- Grim, J.A. (February, 2004). *Introduction to Indigenous Traditions. Indigenous Traditions and Ecology*.
<http://environment.harvard.edu/religion/religion/indigenous/index.html>
- Grootenhuis, J.G. (2000). *Wildlife, Livestock and Animal Disease Reservoirs*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Grootenhuis, J.G. & Prins, H.H.T. (2000). *Wildlife Utilisation: a Justified Option for Sustainable Land Use In African Savannas*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Hart, J.A. (1978). *From Subsistence to Market: a Case Study of the Mbuti Net Hunters*. *Human Ecology* 6(3): 325-353
- Hawken, P., Lovins, A.B. & Lovins, L.H. (1999). *Natural Capitalism. The Next Industrial Revolution*. Earthscan Publications Ltd, London
-

- Heal, G. (2000). *Nature and the Marketplace. Capturing the Value of Ecosystem Services*. Island Press, Washington D.C.
- Hearne, J. & McKenzie, M. (2000). *Compelling Reasons for Game Ranching in Maputaland*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Heath, B. (2000). *Ranching: an Economic Yardstick*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Heijnsbergen, P. van (1997). *International Legal Protection of Wild Fauna and Flora*. IOS Press, Amsterdam.
- Hart, J.A. (2000). *Impact and Sustainability of Indigenous Hunting in the Ituri Forest, Congo-Zaire: A Comparison of Unhunted and Hunted Duiker Populations*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- Hill, K. & Padwe, J. (2000). *Sustainability of Aché Hunting in the Mbaracayu Reserve, Paraguay*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- Hilton-Taylor, C. (2000). *2000 IUCN Red List of Threatened Species*. IUCN, Gland and Cambridge
- Hitchcock, R.K. (2000). *Traditional African Wildlife Utilisation: Subsistence Hunting, Poaching, and Sustainable Use*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Hofer, D. (2002). *The Lion's Share of the Hunt*. TRAFFIC Europe, Brussel
- Hoyer, W.D. & MacInnis, D.J. (2001). *Consumer Behaviour*. Houghton Mifflin Company, Boston
- Hueting, R. (1980). "New scarcity and economic growth". North-Holland, Amsterdam
- Hughes, J.D. (1996). *From American Indian Ecology*. In: Gottlieb, R.S. *This Sacred Earth: Religion, Nature, Environment*. Routledge, New York
- Humane Society of the United States (April, 2004). *Canned Hunts*. <http://www.hsus.org/ace/12017>
- Huntington, H.P. (1992). *Wildlife Management and Subsistence Hunting in Alaska*. University of Washington Press, Seattle
- Hurt, R. & Ravn, P. (2000). *Hunting and its Benefits: an Overview of Hunting in Africa with Special Reference to Tanzania*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Hutton, J. (2004). *Sustainable Use – concepts, confusion, and controversy*. Presentation during the 6th International Wildlife Ranching Symposium in Paris, France
- IFAW (March, 2004a). *Hunting*.
- IFAW (March, 2004b). *Policy on Hunting of Wild Animals by Indigenous Peoples*.
- IFAW (June, 2004c). *A cruel hunt*. <http://www.ifaw.org/ifaw/general/default.aspx?oid=82078>
-

-
- Iftikhar, A. (2004). *Potential Role of Conservation in the Socio-economic Uplift of the Rural Areas of Pakistan*. Presentation during the 6th International Wildlife Ranching Symposium in Paris, France
- IIED (1994). *Whose Eden? An Overview of Community Approaches to Wildlife Management*. IIED, London
- Iongh, de H. & Prins, H.H.T. (2000). *Managing the dry African Savanna. Options for conservation and sustainable use*. Backhuys Publishers, Leiden
- Isaacson, R. (2001). *The Wild Host. The History and Meaning of the Hunt*. Cassell & Co, London
- ISSG (2000). *IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species*. IUCN, Gland.
- ISSG (April, 2004). <http://www.issg.org/database/welcome/>
- IUCN (2001). *Sustainable Use. IUCN policy statement*. IUCN, Gland
- IUCN (February, 2004). <http://www.iucn.org/themes/sustainableuse/>
- IUCN (2003). *2003 IUCN Red List of Threatened Species*. <http://www.redlist.org/>
- Jensen, A. (2002). *Analysis of harvest and effort data for wild populations in fluctuating environments*. *Ecological Modelling* 157 (1): 43-49
- Jones, R. (Februari, 2004). *The Enlightenment*. <http://www.philosopher.org.uk/>
- Kabilsingh, C. (1996). "Early Buddhist Views on Nature." In: Gottlieb, R.S. *This Sacred Earth: Religion, Nature, Environment*. Routeledge, New York
- Kate, K. ten & Laird, S.A. (1999). *The Commercial Use of Biodiversity. Access to Genetic Resources and Benefit-sharing*. Earthscan Publications Ltd, London
- Kemerling, G. (February, 2004). *Philosophy Pages*. <http://www.philosophypages.com/>
- Kinsley, D. (1996). "Christianity as Ecologically Harmful" and "Christianity as Ecologically Responsible". In: Gottlieb, R.S. *This Sacred Earth: Religion, Nature, Environment*. Routeledge, New York
- Kiss, A. (1990). *Living with Wildlife*. The International Bank for Reconstruction and Development/The World Bank, Washington, D.C.
- Klemm, C. de (1981). *Living Resources of the Sea*. In: Johnson, D.M. *The Environmental Law of the Sea*. Erich Schmidt Verlah, Berlin
- Kpelle, D. & Ampadu-agyei, O. (2004). *Using traditional conservation norms to compliment modern conservation efforts*. Poster presentation during the 6th International Wildlife Ranching Symposium in Paris, France
- Landa, A. (2000). *Action Plan for the Conservation of the Wolverine (Gulo gulo) in Europe*. Convention on the Conservation of European Wildlife and Natural Habitats. Oslo, 22-44 June 2000.
- LCIE (June, 2004). <http://www.large-carnivores-lcie.org/>
- Lecocq, Y. (2004). *Game Management and Hunting in an Enlarged European Union*. Presentation during the 6th International Wildlife Ranching Symposium in Paris, France
- Leeuwenberg, F.J. & Robinson, J.G. (2000). *Traditional Management of Hunting by a Xavante Community in Central Brazil: The Search for Sustainability*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- LHI (June, 2004). <http://www.largeherbivore.org/>
-

- Linnell, J.D.C., Andersen, R., Andersone, Z., Balciauskas, L., Blanco, J.C., Boitani, L., Brainerd, S., Breitenmoser, U., Kojola, I., Liberg, O., Loe, J. Okarma, H., Pedersen, H.C., Promberger, C., Sand, H., Solberg, E.J., Valdmann, H. & Wabakken, P. (2002). *The Fear of Wolves: A Review of Wolf Attacks on Humans*. NINA, Trondheim
- Ludwig, D., Hillborn, R. & Walters, C. (1993). *Uncertainty, Resource Exploitation, and Conservation: Lessons from History*. Science 260: 17-36
- Luxmoore R. (1985). *Game farming in South Africa as a force in conservation*. Oryx 19: 225-231
- Luxmoore, R. & Swanson, T.M. (1992). *Wildlife and wildland utilization and conservation*. In: Swanson, T.M. & Barbier, E.B. *Economics for the Wilds*. Earthscan Publications Ltd, London
- Loveridge, A. (2004). *Does Sport Hunting Impact Lion Populations? A Case Study from Zimbabwe*. MTUK Conference, Sherwood Forest
- Mackintosh, B. (1999). *The National Park Service. A Brief History*. <http://www.cr.nps.gov/history/hisnps/NPSHistory/npshisto.htm>
- Macnab, J. (1991). *Does Game Cropping Serve Conservation? A Reexamination of the African Data*. Canadian Journal of Zoology 69: 2283--2290
- Makombe, K. (1993). *Sharing the Land: Wildlife, People and Development in Africa*. IUCN / ROSA Environmental Issues Series No.1, IUCN/ROSA, Harare, Washington D.C.
- Marten, K. & Psarakas, S. (1995). *Evidence of self-awareness in the bottlenose dolphin (*Tursiops truncatus*)*. In: Parker, S.T., Mitchell, R.W. & Boccia, M.L. *Self-awareness in Animals and Humans: Developmental Perspectives*. Cambridge University Press, New York
- Martin, E. & Stiles, D. (2000). *The Ivory Markets of Africa*. Save the Elephants, Nairobi
- Mattsson, L. (1990). *Hunting in Sweden: Extent, Economic Values and Structural Problems*. Scandinavian Journal of Forest Research 5: 563-573
- Mayaka, T.B. (2002a). *Conservation, Resource Utilisation, and Sustainable Development in the Bénoué National Park-Complex, Cameroon*. In: Mayaka, T.B. *Value Wildlife! An Ecological and Economic Assessment of Wildlife Use in Northern Cameroon*.
- Mayaka, T.B. (2002b). *Wildlife co-management in the Bénoué National Park Complex, Cameroon: A bumpy road to institutional development*. In: Mayaka, T.B. *Value Wildlife! An Ecological and Economic Assessment of Wildlife Use in Northern Cameroon*.
- Mayaka, T.B., Udo de Haes, H., Iongh, H. de, Loth, P.E. & Prins, H.H.T. (2002a). *Impact of Three Management Regimes on Wildlife Abundance in the Bénoué National Park-Complex, Cameroon*. In: Mayaka, T.B. *Value Wildlife! An Ecological and Economic Assessment of Wildlife Use in Northern Cameroon*.
- Mayaka, T.B., Hendriks, T., Wesseler, J. & Prins, H.H.T. (2002b). *Optimisation of Social Benefits from Wildlife Harvesting in Bénoué National Park-Complex, Cameroon*. In: Mayaka, T.B. *Value Wildlife! An Ecological and Economic Assessment of Wildlife Use in Northern Cameroon*.
-

-
- Mayaka, T.B., Stigter, J.D., Heitkönig, I. & Prins, H.H.T. (2002c). *A Population dynamics model for the Management of Buffon's Kob (Kobus kob kob) in the Bénoué National Park-Complex, Cameroon*. In: Mayaka, T.B. *Value Wildlife! An Ecological and Economic Assessment of Wildlife Use in Northern Cameroon*.
- Mbiti, J.S. (1996). "African Views of the Universe." In: Gottlieb, R.S. *This Sacred Earth: Religion, Nature, Environment*. Routledge, New York
- Mena, P.V., Stallings, J.R., Regalado, J.B. & Cueva, R.L. (2000). *The Sustainability of Current Hunting Practises by the Huaorani*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- Merwe, P. van der (2004). *Factors that Determines the Price of Game in South Africa*. Presentation during the 6th International Wildlife Ranching Symposium in Paris, France
- Metcalfe, S. (1994). *The Zimbabwe Communal Areas Management Programme for Indigenous Resources (CAMPFIRE)*. In: Western, D., Wright, R.M. & Strum, S.C. *Natural Connections. Perspectives in Community-based Conservation*. Island Press, Washington D.C.
- Mills, J.A. & Jackson, P. (1994). *Killed for Medicine. A Review of the Worldwide Trade in Tiger Bone*. TRAFFIC East Asia, Hong Kong
- Milner-Gulland, E.J. & Mace, R. (1998). *Conservation of Biological Resources*. Blackwell Science, Oxford
- Ministry of LNV (1998). *Wet van 25 mei 1998, houdende regels ter bescherming van in het wild levende planten- en diersoorten (Flora- en faunawet)*. Ministerie van LNV, 's-Gravenhage
- Ministry of LNV (2002). *De Waarde van Vis. Achtergronddocument bij de Beleidsbrief Welzijn Vis*. LNV, Den Haag
- Moss, C. (2000). *Elephant Memories*. University of Chicago Press, Chicago
- Murphree, M.W. (1993). *Communities as Resource Management Institutions*. IIED, London
- NAMCO (September, 2004). <http://www.nammco.no>
- Nash, R.F. (1989). *The Greening of Philosophy*. In: Nash, R.F. *The Rights of Nature. A History of Environmental Ethics*. The University of Wisconsin Press; London.
- Nash, R.F. (1996). "The Greening of Religion." In: Gottlieb, R.S. *This Sacred Earth: Religion, Nature, Environment*. Routledge, New York
- Naturenet (June, 2004). *The Wildlife and Countryside Act 1981*. <http://www.naturenet.net/law/wca.html>
- Nieukerken, E. J. van & A.L. van Loon (1995). *Biodiversiteit in Nederland*. Nationaal Natuurhistorisch Museum, Leiden & KNNV Uitgeverij, Utrecht
- Njiforti, H.L. (1997). *The Biology and Management of Wild Helmeted Guineafowl (Numida meleagris galeata Pallas) in the Waza Region og North Cameroon*. CEDC, Maroua
- Ntiamoa-Baidu, Y. (1997). *Wildlife and food security in Africa*. FAO, Rome
- O'Brien, T.G. & Kinnaird, M.F. (2000). *Differential Vulnerability of Large Birds and Mammals to Hunting in North Sulawesi, Indonesia, and the Outlook for the Future*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
-

- Ojasti, J. (1996). *Wildlife Utilization in Latin America: Current Situation and Prospects for Sustainable Management*. FAO, Rome
- Opschoor, H. (1994). *Market Forces as Causes of Environmental Degradation*. In: Zweers, W. & Boersema, J.J. *Ecology, Technology and Culture. Essays in Environmental Philosophy*. The White Horse Press, Cambridge
- Oswalt, W.H. (1973). *Habitat and Technology. The Evolution of Hunting*. Holt, Rinehart, and Winston, New York
- Ottichilo, W.K., Leeuw, J. de, Skidmore, A.K. Prins, H.H.T. & Said, M.Y. (2000). *Population trends of large non-migratory wild herbivores and livestock in the Masai Mara ecosystem, Kenya, between 1977 and 1997*. *African Journal of Ecology* 38 (3) 202-216
- Oxford English Dictionary (2004). <http://www.askoxford.com/?view=uk>
- Packard, J. (in press). *Social behavior of wolves: reproduction and development in family groups*. In: Mech, L.D. & Boitani, L. *The Ecology and Behavior of the Wolf*. The University of Chicago Press, Chicago.
- Patterson, B.D., Kasiki, S.M., Selempo, E. & Kays, R.W. (2004). *Livestock Predation by Lions (*Panthero leo*) and Other Carnivores on Ranches Neighbouring Tsavo National Parks, Kenya*. *Biological Conservation*: Article in Press
- Pearce, D. & Moran, D. (1994). *Conservation versus Development*. In: Pearce, D. & Moran, D. *The Economic Value of Biodiversity*. Earthscan Publications Ltd, London
- Pearce, D. & Barbier, E.B. (2001). *Blueprint for a Sustainable Economy*. Earthscan Publications Ltd, London
- Peres, C.A. (2000). *Evaluating the Impact and Sustainability of Subsistence Hunting at Multiple Amazonian Forest Sites*. In: Bennett, E.L. & Robinson, J.G. *Hunting for Sustainability in Tropical Forests*. Colombia University Press, New York
- PETA (July, 2004a). <http://www.peta.org/about/>
- PETA (July, 2004b). <http://www.peta.org/factsheet/files/FactsheetDisplay.asp?ID=53>
- PETA (July, 2004c). <http://www.peta.org/about/faq-wild.asp>
- PETA (July, 2004d). <http://www.peta.org/about/faq.asp>
- Posey, D.A. (1999). *Introduction: Culture and Nature*. In: UNEP. *Cultural and Spiritual Values of Biodiversity*. Intermediate Technology Publications, London
- Pratt, V. Howarth, J. & Brady, E. (2000). *Environment and Philosophy*. Routledge, London
- Prescott-Allen, R. & Prescott-Allen, C. (1982). *What's Wildlife Worth?* International Institute for Environment and Development, Washington, D.C.
- Prescott-Allen, R. and Prescott-Allen, C. (1996). *Assessing the Sustainability of Uses of Wild Species. Case Studies and Initial Assessment Procedure*. IUCN, Gland
- Prescott-Allen, R. (2001). *The Wellbeing of Nations. A Country-by-Country Index of Quality of Life and the Environment*. Island Press, Washington, D.C.
-

-
- Pressey, R.L. (1996). *Protected Areas: Where Should They Be and Why Should they Be There?* In: Spellerberg, I.F. *Conservation Biology*. Longman, Harlow
- Prins, H.H.T. (2000). *Competition Between Wildlife and Livestock in Africa*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Prins, H.H.T. & Grootenhuis, J.G. (2000). *Introduction: the Value of Priceless Wildlife*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Rosenberg, A.A., Fogarty, M.J., Sissenwine, M.P., Beddington, J.R. & Sheperd, J.G. (1993). *Achieving Sustainable Use of Renewable Resources*. *Science* 262: 828-829
- Samuels, A. & Tyack, P. (2000). *Flukeprints: A history of studying cetacean societies*. In: Mann J., Connor R., Tyack P. & Whitehead, H. *Cetacean Societies: Field studies of whales and dolphins*. University of Chicago Press.
- Save the Elephants (April, 2004). *Green Hunting*.
<http://www.savetheelephants.org/protection.htm>
- SCI (March, 2004). www.scifirstforhunters.org
- SCIF (April, 2004). <http://www.safariclubfoundation.org/>
- Senanayake, R. (1999). *Voices of the Earth*. In: UNEP. *Cultural and Spiritual Values of Biodiversity*. Intermediate Technology Publications, London
- Schmidt, R.H. & Beach, R. (1994). *Keeping Wildlife at a Safe Distance*. *Wildlife Control Technology magazine* 1(1):4-5
- Schouten, M.G.C. (2003). *Tussen Socrates en Bacchus: Natuurbeleving in de 21e Eeuw*. In: *De Verbeelding van de Natuur*. Auteursdag 2003 KNNV
- Singer, P. (1975). *Animal Liberation*. Avon Books, NewYork
- Singer, P. (1979). *Practical Ethics*. Cambridge University Press, Cambridge.
- Skyer, P. (2004). *New Approaches for Involving Local Communities: The Case for CBNRM in Namibia*. Presentation during the 6th International Wildlife Ranching Symposium in Paris, France
- Spellerberg, I.F. (1996). *Themes, Terms and Concepts*. In: Spellerberg, I.F. *Conservation Biology*. Longman, Harlow
- STE (June, 2004). <http://www.savetheelephants.com/aboutus.htm>
- Stiles, D. (1994). *Tribals and Trade: A Strategy for Cultural and Ecological Survival*. *Ambio* 23 (2): 106-111
- Storaas, T. & Punsvik, T. (1998). *Den gode jakta. En håndbok i jegeretikkk*. Landbruksforlaget
- Strien, A.J. van (2000). *Mode in Natuurbewoud*. In: *De Levende Natuur* 101 (5): 162-164
- Strier, K.B. (2003). *Primate Behavioral Ecology*. Allyn & Bacon
- Sussman, R.W. (1999). *The Myth of Man the Hunter / Man the Killer and the Evolution of Human Morality*. In: Sussman, R.W. *The Biological Basis of Human Behaviour. A Critical Review*. Prentice Hall, New Jersey
-

- Swartz, D. (1996). "Jews, Jewish Texts, and Nature: a Brief History". In: Gottlieb, R.S. *This Sacred Earth: Religion, Nature, Environment*. Routededge, New York
- Szapary, P. (2000). *The Lewa Wildlife Conservancy in Kenya: a Case Study*. In: Prins, H.H.T., Grootenhuis, J.G. & Dolan, T.T. *Wildlife Conservation by Sustainable Use*. Kluwer Academic Publishers, Dordrecht
- Thomas, K. (1983). *Man and the Natural World, changing attitudes in England (1500-1800)*. Allen Lane / Penguin Books Ltd, Harmondsworth
- Tijmes, P. (1994). *The Technological Universe*. In: Zweers, W. & Boersema, J.J. *Ecology, Technology and Culture. Essays in Environmental Philosophy*. The White Horse Press, Cambridge
- TRAFFIC (March, 2004). http://www.traffic.org/about/what_is.html
- Tucker, M.R. (February, 2004). *Introduction to Confucianism. Confucianism and Ecology: Potential and Limits*. <http://environment.harvard.edu/religion/religion/confucianism/index.html>
- Tyler, A. (?). *Trapping animals for fur*. Care for the Wild & European Federation for Nature and Animals
- UNESCO (April, 2004). www.unesco.org
- U.S. Department of Agriculture (April, 2004). <http://www.invasivespecies.gov/>
- U.S. Fish and Wildlife Service (1996). *1996 National Survey of Fishing, Hunting and Wildlife-Associated Recreation*. US department of Interior.
- Wal, K. van der (1994). *Technology and the Ecological Crisis*. In: Zweers, W. & Boersema, J.J. *Ecology, Technology and Culture. Essays in Environmental Philosophy*. The White Horse Press, Cambridge
- Washburn, S.L. & Lancaster, C.S. (1968). *The Evolution of Hunting*. In: Lee, R.B. & Vore, I. de, *Man the Hunter*. Aldine, Chicago
- Washburn, S.L. & Lancaster, C.S. (1999). *The Evolution of Hunting*. In: Sussman, R.W. *The Biological Basis of Human Behaviour. A Critical Review*. Prentice Hall, New Jersey
- WCS (March, 2004). http://wcs.org/sw-our_mission/sw_aboutwcs
- Weber, M. (1930). *The Protestant Ethic and the Spirit of Capitalism*. Trans. Talcott Parsons, London
- Weir, A.A.S., Kenward, B., Chappell, J., & Kacelnik, A. (2004). *Lateralization of tool use in New Caledonian crows (Corvus moneduloides)*. Proceedings of the Royal Society of London B (Suppl.), Biology Letters.
- White, L. (1996). "The Historical Roots of our Ecological Crisis". In: Gottlieb, R.S. *This Sacred Earth: Religion, Nature, Environment*. Routededge, New York
- Whipple, A.B.C. (1979). *The Seafarers. The Whalers*. Time-Life Books, Amsterdam
- WWF (2003). *Jengi vanbinnen uit. Zo werkt het Wereld Natuur Fonds*. WWF, Zeist
- WWF (January 2004). www.WWF.nl
- WWF (1993). *POSITION STATEMENT ON TROPHY HUNTING*. WWF, Gland
- WWF (February, 2004a). http://www.panda.org/about_wwf/how_we_work/
- WWF (June, 2004b). http://www.panda.org/about_wwf/
-

- WWF (2004c). *How Effective are Protected Areas? A preliminary analysis of forest protected areas by WWF – the largest ever global assessment of protected areas management effectiveness*. WWF International, Gland
- World Trade Organisation (March, 2004). *Who are the developing countries in the WTO?* http://www.wto.org/english/tratop_e/devel_e/d1who_e.htm
- WSPA (2000). *Bushmeat Africa's Conservation Crisis*. WSPA, London
- WSPA (March, 2004a). *Our History*. <http://www.wspa.org.uk/index.php?page=21>
- WSPA (March, 2004b). *Universal Declaration for the Welfare of Animals*. <http://www.wspa.org.uk/index.php?page=139>
- WSPA (March, 2004c). *WSPA Policy 1998*. <http://www.wspa.org.uk/index.php?page=22>
- Wynne, C.D.L. (2001). *Animal Cognition*. Basingstoke, Palgrave
-

APPENDIXES

Appendix I: A short history of hunting

Prehistoric Times (from 40.000 BC – 3500 BC)	
<p>There exists an ongoing discussion about the origin of mans ability and willingness for hunting and killing (cf. Sussman, 1999). After all, the phenomenon of hunting is easily learned, satisfied and rewarded in most cultures, thereby often reinforcing a division of labour between the two genders (Washburn et al., 1999). This discussion about hunting is linked to the evolution of human morality, as war can be regarded in essence as a kind of hunting (Cartmill, 1993) in which other human beings are simply the most dangerous game (Washburn et al., 1999). This discussion also illustrates that there is still a lot unknown about the origin of hunting in human evolution. Maybe acting as a scavenger at first, but man developed the tools that could replace the physical predator qualities that were lacking (Cartmill, 1993). Cave paintings from Lascaux and other archaeological discoveries clearly show that Cro-Magnon man was dependent on the resources its environment had to offer. The main primary goal of hunting was to obtain meat, skins, and bones (Brander, 1971). During the Mesolithic period hunting practises changed from hunting migrating animals like reindeer, to hunting more resident game like red deer. This change occurred because of changing temperatures (hence different vegetation types), and supported the establishment of more permanent settlements (Clason, 1975). Advanced hunting techniques, like the discovery of bow and arrow around 30.000 BC, led to the first human caused extinctions of species, like the large and slowly reproducing mammoth. With the development of even more advanced hunting techniques like the domestication of dog, cheetah, falcon, and horse, man begun to have a decisive effect on the environment even before he fully emerged from the Stone Age. But the cultivation of land and the domestication of animal species around 10.000 BC, offered humans more secure forms of food supply, and thus offered the possibility for population growth (Brander, 1971). Dependence on hunting in itself is a restriction to population growth, as hunting alone can not support more than a few million people in the world (Washburn et al., 1999). Clason (1975) claims that the disadvantages of this mechanism were the actual trigger for the development of agriculture.</p>	
Ancient and Classical Period (3500 BC- 500 AC)	
Upper class	<p>With alternative forms of food supply and the forming of the first urban societies, an aristocratic hunter / warrior class originated that looked at hunting as a sport and pastime itself. The Assyrians and Persians for example, are known for preserving game in enclosures or walled parks (Brander, 1971). Hunting was not a traditional Roman pastime, as the Romans of the early republic regarded hunting as a farm chore. Sportive hunting came to Rome from the Greeks as a rich mans affection. The Greek Xenophon wrote one of the first instructions about the care for horse and hound. He urged hunters to spare very young hares so to preserve the breeding stock (Cartmill, 1993). The Roman Empire (Hadrianus) introduced the first hunting law that forbids the hunting over cultivated fields or near towns. Romans also introduced rabbits and pheasants for hunting purposes. That some parts of society enjoyed the killing of animals themselves is best illustrated with the building of the Colosseum (Brander, 1971).</p>
Commoners	<p>The standard of life of people living in small settlements was still dependent on their ability to hunt with the sling or other weapons (Brusewitz, 1969).</p>
Impacts	<p>By this time the first serious effects on nature became visible as monoculture had transformed soil and landscape, especially around the Mediterranean (Brander, 1971).</p>

Postclassical Period (500 AC – 1500 AC)

Upper class In this period the relation between warrior/upper class and hunter was even further established. Hunting was seen as a way to practise the skills of war in times of peace (Chalmers, 1951). The Frankish king Dagobert laid down the first regulations regarding the hunting of game in Europe in the seventh century: the right to hunt was strictly reserved for the king and his nobles. The first game law (hence forest law) in Britain out 1016 AC forbids hunting in the king's forests on pain of death. Anywhere else the right to hunt game ran with the ownership of the land, or depended on the species in question ("royal game" like red deer for example). Instead of hunting with hedges laid in funnel shape (through which the game was driven to the waiting hunters), hunting the game with dogs "par force" became a trend under European aristocracy. By 1139 BC, more and more ceremony was displayed by the aristocratic hunting parties (Brander, 1971), and hunting became more and more associated with upper-class status (Cartmill, 1993).

Commoners The right to hunt was increasingly taken over by the aristocracy from the tenth century on. Not only were peasants living near game preserves forbidden to hunt; they were also forbidden to attack animals that were devouring their crops. In many parts of Europe, the peasantry was also compelled to serve without pay as beaters and bearers during hunts, and to build and maintain fences and lodges. The grossly unequal distribution of hunting privileges led people of different social classes to think about the hunt in different ways. For the peasant masses barred from the hunt, hunting became associated with freedom, feasting, and rebellion against the authorities (Cartmill, 1993). But peasants suspected of taking game might be blinded, castrated, staked out to die in freezing water, or sewn into the fresh skin of a stag to be chased down and killed by deerhounds (Cartmill, 1993).

Impacts Because of new farming techniques there was an exponential growing population, that led to the fast diminishing of wilderness areas. In Britain for example, wolves and the beaver had disappeared completely from the southern parts, and the surviving red deer and wild boar were largely restricted to royal forests (Cartmill, 1993).

Early Modern Period (1500 AC – 1800 AC)

Upper class In 1587 BC the first guns were invented, but aristocracy was still mainly hunting with the use of dogs. In 1686 the fashion came up to shoot flying birds. This development led to a whole new range of hunting methods and accordingly to a whole range of hounds, still seen today. In the eighteenth century, hunts were organised as grand spectacles in large areas of woodland, fenced so that the game could not escape. The old rules of sports hunting in which the game must be given a honest chance to escape, were neglected in favour of the request from the king and his nobles for even bigger and more exiting events. Another common practise in mainly West-European courts was to drive game down long alleys made of canvas screens and to kill the animals in front of the spectators (Brander, 1971).

Commoners	Doubts about the legitimacy of man's dominion began to surface in the sixteenth century in the writings of Erasmus for example; was hunting first used in literature as a methapore for love and erotica, Shakespeare and other authors began to use it as a methapore for rape, mutilation and murder. But such thoughts weren't common yet, although hunting became a focus for class conflict during the 1500s, resulting in amongst others the Peasants' war of 1524 in Germany. Most commoners were not objecting to hunting as such though, they were simply demanding a fair share of the venison. As hunting was a legal monopoly of the upper class and an aristocratic status symbol, opposition to hunting was especially a middle-class phenomenon (Cartmill, 1993). Those who envied the aristocratic privileges rejected the aristocratic values at the same time, thereby denouncing hunting as cruel or foolish (cf. Cartmill, 1993).
-----------	---

Impacts	Game like red deer and wild boar was growing scarce, because of the excessive aristocracy hunting parties. But the preservation of game for the upper class also some positive effects on biotopes. A 1781 convention between the King of France and the Prince-Bishop of Basel protected the forests and game birds on the borders of their territories against damage by the local population (van Heijnsbergen, 1997). Some of Europe's remaining national parks in the more densely populated urban areas (like the Deelerwoud and the Hoge Veluwe in the Netherlands) are a direct result of the fondness of the aristocracy for hunting.
---------	--

Modern Period (1789 AC –1914 AC)

Upper class	The element of shooting itself became more and more important, as illustrated by the practise of live pigeon shooting in Victorian times. Previously, opposition to hunting and shooting had been based primarily on envy (Brander, 1971), but a growing population also led to a differentiation in opinions in which different political, philosophical, ecthical and social ideas played a role (Bauer, 1980). So eventually because of ethical reasons, live pigeon shooting became clay pigeon shooting. Foxhunting was also gradually seen by a part of society as a cultural phenomenon in which only the pleasure and excitement of the hunt matters. Or as Oscar Wilde said: "The pursuit of the uneatable by the unspeakable." (Brander, 1971). From the eighteenth century on hunting became more and more democratic and less aristocratic, but still restricted to the upper-class and middle-class.
-------------	---

Hunting in Asia was more or less looked the same at as in Europe, due to a common historical background. During the eighteenth century, organised large-scale hunting parties were still conducted by aristocracy. Word of magnificent animals in newly discovered continents as Australia and Africa came to Europe, and attracted al kinds of sports hunters, from the lesser aristocracy to wealthy Americans. In the end of the nineteenth century however, game in North America and Africa was becoming scarce, and the efforts of those striving for conservation begun to take effect (Brander, 1971).

Commoners	One of the principal causes of the French Revolution of 1789 were the excesses of the ruling classes, which had become increasingly evident in the hunting field. The immediate result of the Revolution in France was that most of the large estates fell into a ruinous condition. Game preservation, where it had existed, more or less ceased and poaching became normal (Brander, 1971). Since early Enlightenment more democratic viewpoints towards hunting started to appear though (Isaacson, 2001).
Impacts	Many years of intensive game hunting and poaching with no thought of the future, had radically affected the wildlife of the countryside. Many once common animals had been so hunted and collected for by gamekeepers and naturalists that they were now rare to the point of extinction. A British society for the preservation of fauna was formed as early as 1903 (Brander, 1971). Due to innovations in human thought and natural philosophy, the moral effects of hunting were more and more being questioned (Isaacson, 2001). The first ethic element for the protection of species, besides economic interests, was introduced at the First Ornithological Congress in Vienna in 1884, which took the view that in principle all birds should be protected against massive slaughter (van Heijnsbergen, 1997).
The World Wars (1914 AC – 1945 AC)	
Impacts	Because of the fast diminishing numbers of large game in Africa, big game shooting was strictly controlled in the twenties and thirties. National parks, sanctuaries, and game reserves were also initiated. In the First World War shooting ceased to be a sport in Europe and became again a means of obtaining food. The aristocratic hunting society only gradually recovered from the First and Second World Wars. The gap between “town” and “country” was even more marked and was exemplified by the formation of a league against cruel sports. The after-war atmosphere combined with a hostility towards a class distinction associated with hunting, and an emotional feeling for the hunted animal, all emerged to form a minority group strongly and vocally anti-hunting (Brander, 1971).
Contemporary Period (1945 AC – present-day)	
Impacts	<p data-bbox="445 1388 1359 1693">During the fifties and sixties big game shooting in Asia begun to replace the big game safari’s in Africa. Gradually though, industrailised society became to realise that humans have been exploiting the environment in a way that is far from sustainable. The hunting lobby also realised that if wildlife is threatened, then so is their sport. Actions were taken for strict control of hunting, the fostering of wildlife, and the preserving of habitat (cf. Brander, 1971). This new development was illustrated by the foundation of more game reserves world wide, and organisation like UNESCO, IUCN, and WWF.</p> <p data-bbox="445 1727 1359 1848">Hunting nowadays is still practised word-wide: as means for subsistence, but also as a sport, as a way of life or as nature management tool, but with a growing emphasise on the sustainable use of resources.</p>

Appendix II: Major world religions and nature

- Characteristic for the monotheistic world religions Judaism, Islam and Christianity is the anthropocentric view on man and nature (Cliteur, 2001). Although nature required an aura of holiness since the Middle Ages, the special status of man in Christianity and his claimed dominion over the animal world⁵⁴ has had a strong influence on the exploitation of nature; and the way animals were threaten (cf. Cartmill, 1993; cf. Kinsley, 1996; cf. Dijk van, 1994). Although a common historical background; Judaism and Islam are considered more environmental friendly then Christianity, because Judaism and Islam sees humankind's stewardship of the earth more as a privilege of profound responsibility (cf. Deen, 1996; cf. Denny, 2004; cf. Fink, 2004; cf. Swartz, 1996). So more theocentric then anthropocentric (Boersema, 1994).
- In Hinduism all lives are of equal value and all have the same right on existence. The caste system, despite its questionable position on human rights, functioned more or less as the progenitor of the concept of sustainable development, by disciplining society in partitioning the use of natural resources according to specific occupations (cf. Dwivedi, 1996; cf. Gadgil et al., 1989).
- Buddhism views humanity as an integral part of nature, so that when nature is defiled, people ultimately suffer. From the basic understanding that "when we abuse nature, we abuse ourselves", and the first precept "do not kill" Buddhists in general live a life in harmony with the environment (cf. Kabilsingh, 1996).
- Original Chinese traditional religion, including Confucianism, Taoism and Chinese Buddhism perspectives, value nature as the origin of all that sustains life itself from the basics of food, clothing, and shelter to innumerable sources of employment. Nature should therefore be treated with respect and used with responsibility (cf. Tucker, 2004).
- Most indigenous traditions in relation to their environment are based on respect for, understanding of and acceptance of nature (cf. Grim, 2004; cf. Senanayake, 1999). The traditions of native North Americans for example, show that nature is the larger whole of which mankind is only a part. People stand within the natural world, not separate from it; and are dependent on it, not dominant over it (Hughes, 1996). Some authors separate African traditional religions from other indigenous traditions, because those are primarily tribal and composed of pre-technological peoples (Adherents, 2004). In most African myths of creation man puts himself at the centre of the universe, and consequently sees the universe from that perspective. Therefore African people look for the usefulness of the universe to man, dividing species in those which man can eat, not eat, or can be used for medical, practical, economical or religious purposes (cf. Mbiti, 1996).

⁵⁴ "And God blessed them, and God said to them, "Be fruitful and multiply, and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth." (Gen. 1:26-29)" (Kinsley, 1996).

Appendix III: International organisations

III.1 Conservation organisations



Since its inception in 1961 as fund raising branch for IUCN and later as independent trust fund, WWF has worked to conserve nature and ecological processes through a combination of action on the ground, national and international advocacy work to establish appropriate policies, and international campaigns to highlight and demonstrate solutions to crucial environmental problems (WWF, 2004a). As a conservation organisation WWF is primarily focused on halting the degradation of the environment (see also § 1.3). WWF's position on hunting (WWF, 1993) is as follows: WWF clearly prefers non-consumptive use of wildlife to consumptive use. Nevertheless, in many countries, the consumptive use of wildlife is necessary for the benefit and well-being of people. Any use of wildlife must be sustainable and it is particularly important that consumptive use of wildlife should be scientifically-based, properly managed and should protect the wildlife from cruelty and to the extent possible, from suffering. Sustainable use of wildlife, including products derived from such properly-managed operations, can enhance the conservation of the species or population involved. On present analysis, in WWF's view, trophy hunting can be justified on conservation grounds on condition that:

- a) it is an extension of a comprehensive conservation management plan clearly aimed at enhancing the conservation of the species and habitat concerned. This should be justified by sound scientific evidence, and in no circumstances should the status of the species hunted be adversely affected, either locally or overall;
- b) there is no viable non-consumptive alternative to trophy hunting which could also achieve the revenue required to motivate and fund conservation of the species and habitat concerned;
- c) there is close professional monitoring of the programme so that quotas of species hunted can be adjusted, or the programme halted, if necessary;
- d) killing is carried out under professional guidance and as humanely as possible;
- e) local communities are involved in the establishment and management of the programme and have an equitable share of the benefits in as direct form as possible, additional to current income sources.

In conclusion, WWF acknowledges and appreciates the moral and ethical feelings against trophy hunting which are held by many people, but WWF also accepts that in certain, clearly-defined circumstances it can provide a conservation benefit.⁵⁵



Since 1948 IUCN (the World Conservation Union) combines members from some 140 countries, including over 70 States, 100 government agencies, 800-plus NGOs. More than 10,000 internationally-recognised scientists and experts from more than 180 countries attribute to the mission of IUCN: "to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural

⁵⁵

For an organisation as WWF it is imported to know the standpoints of their supporters, because an organisation (and its political influence) exists merely because of its supporters. These supporters also include members who have no direct knowledge, biased knowledge or only general ideas about hunting, and their opinion should be taken into account when communicating certain (emotional) issues, as illustrated with the discussion on seal hunting.

resources is equitable and ecologically sustainable." The concept of sustainability is embedded in the IUCN Programme Framework, as illustrated by the Sustainable Use Specialist Group (SUGS) within the Species Survival Commission (SSC; IUCN, 2004). The IUCN policy statement on the sustainable use of wild living resources (IUCN, 2001) stresses that both the consumptive and non-consumptive use of biological diversity are fundamental to the economies, cultures and well being of all nations and peoples. Point 7 of this statement is as follows:

- a) use of wild living resources, if sustainable, is an important conservation tool because the social and economic benefits derived from such use provide incentives for people to conserve them;
- b) when using wild living resources, people should seek to minimise losses of biological diversity;
- c) enhancing the sustainability of uses of wild living resources involves an ongoing process of improved management of those resources;
- d) such management should be adaptive, incorporating monitoring and the ability to modify management to take account of risk and uncertainty.

GREENPEACE

Greenpeace is an independent campaigning organisation that uses non-violent direct action and creative communication since 1971 to expose global environmental problems and to promote solutions that are essential to a green and peaceful future. Its goal is to ensure the ability of the Earth to nurture life in all its diversity (Greenpeace, 2004). To work as effective as possible, Greenpeace limits itself to their campaigns:

- Stop climate change;
- Protected ancient forests;
- Save the oceans;
- Stop whaling;
- Say no to genetic engineering;
- Stop the nuclear threat;
- Eliminate toxic chemicals;
- Encourage sustainable trade.

Greenpeace has an active campaign to stop whaling, but does not confirm with any specific statement regarding hunting in general (personal communication N. Aubro, Greenpeace).

CONSERVATION INTERNATIONAL

Conservation International (CI) applies innovations in science, economics, policy and community participation since 1987. The mission of this independent non-profit organisation is to protect the Earth's richest regions of plant and animal diversity in the hotspots, major tropical wilderness areas and key marine ecosystems, and to demonstrate that human societies are able to live harmoniously with nature. CI does not have a specific policy regarding hunting in general (personal communication L. Walter-Cox), but CI is aware of the problems surrounding hunting and has active campaigns about the bush-meat crisis for example (see focus 4.1; CI, 2004).



The Wildlife Conservation Society (WCS) traces its origin to 1895 when New York State chartered the organisation as the New York Zoological Society. The WCS saves wildlife and wild lands through science, international conservation efforts in more than 45 countries, education, and the management of the world's largest system of urban wildlife parks, led by the flagship Bronx Zoo. WCS wants to change the individual attitudes toward nature and help people imagine wildlife and humans living in sustainable interaction on both a local and a global scale (WCS, 2004). WCS does not have an official policy against hunting, and frequently works

with local people who practice sustainable hunting in wild areas, and to a lesser extent, sport hunters. WCS is opposed to illegal hunting or non-sustainable hunting (personal communication S.C. Sautner, WCS).

III.2 Animal welfare/rights organisations



The International Fund for Animal Welfare (IFAW) is founded in 1977 to oppose to the commercial hunt on whitecoat seal pups. Since then IFAW engages communities, government leaders, and like-minded organisations around the world and achieves lasting solutions to pressing animal welfare and conservation challenges-solutions that benefit both animals and people. IFAW opposes hunting as a sport or for recreational or commercial purposes. IFAW believes that hunting only serves the purpose of generating revenue, and will eventually diminish wildlife species (IFAW, 2004a). IFAW recognises the special interests of indigenous peoples, and does not oppose the hunting of wild animals by indigenous peoples for subsistence purposes, provided that such hunting is conducted on a sustainable basis and that reasonable precautions are taken to minimise the infliction of unnecessary pain and suffering on the animals affected. While not opposed to the sale and local distribution of wildlife products from subsistence hunts within indigenous communities, IFAW is against the development of new international markets for wildlife products because in their view history has shown that such trade is extremely difficult to regulate and is rarely ecologically sustainable (IFAW, 2004b).



The World Society for the Protection of Animals (WSPA) was created in 1981 after the merger between the World Federation for the Protection of Animals (WFPA; founded in 1953), and the International Society for the Protection of Animals (ISPA; founded in 1959). WSPA aims to promote the protection of animals, to prevent cruelty to animals, and to relieve animal suffering in every part of the world. WSPA aims to promote humane education programmes to encourage respect for animals and responsible stewardship, and laws and enforcement structures to provide legal protection for animals (WSPA, 2004a). WSPA believes that an international agreement on welfare standards should become a key goal for the animal welfare movement in the 21st Century. The first step in achieving this would be to secure a Universal Declaration for the Welfare of Animals issued by the United Nations (WSPA, 2004b). WSPA its policy regarding hunting is as follows (WSPA, 2004c):

- a) WSPA is in principle opposed to the taking or killing of wild animals or the infliction of suffering upon them. This includes taking and killing of wild animals for the purpose of sport.
- b) WSPA is absolutely opposed to taking and killing wild animals for purposes not essential to humans or the welfare of the animals, particularly when they do not pose a threat to the safety and security of humans.
- c) In circumstances where it is deemed necessary to control wild or stray animal populations, or animals considered to be pests, then WSPA urges that this be achieved without the infliction of avoidable suffering. WSPA considers that an effective method should be employed to avoid the need continually to remove or kill animals. Fertility control or other non-lethal methods should be used whenever possible, rather than 'catch and kill' systems.
- d) Where the taking and/or keeping of wild animals is still permitted, WSPA believes that this should be strictly limited under licence, and controlled at the highest possible humane level.



People for the Ethical Treatment of Animals (PETA) was founded in 1980 and is dedicated to establishing and protecting the rights of all animals. PETA believes that animals deserve the most basic rights, consideration of their own best interests regardless of whether they are useful to humans. Like humans, they are capable of suffering and have interests in leading their own lives; therefore, they are not ours to use for food, clothing, entertainment, or experimentation, or for any other reason. PETA focuses its attention on the four areas in which the largest numbers of animals suffer the most intensely for the longest periods of time: on factory farms, in laboratories, in the fur trade, and in the entertainment industry (PETA, 2004a). PETA absolutely rejects hunting for recreational (sport hunting), population control, and commercial purposes, thereby promoting vegetarianism with the argument that for most people there is no emergency to kill for food. Subsistence hunting however is accepted by PETA, because it provides those hunters with a direct means of survival (cf. PETA, 2004b & 2004c).

III.3 Hunting organisations



Safari Club International (SCI) wants to protect and preserve the human hunting heritage through wildlife conservation, education, legislative and humanitarian efforts. SCI protects hunter's rights by actively lobbying on behalf of hunters. SCI is committed to passing the hunting tradition on through educational programs, hunting experiences and wildlife conservation projects. The community of SCI hunters promotes strong family values and teaches young hunter's about hunting and the role hunters play in sustainable wildlife conservation (SCI, 2004). Part of SCI is Safari Club International Foundation (SCIF), a charitable organisation that funds and manages world-wide programs dedicated to wildlife conservation. SCI hunter's code of ethics comprises of that a hunters recognises his/her responsibilities to wildlife, habitat and future generations, they're pledging:

- to conduct in the field so as to make a positive contribution to wildlife and ecosystems;
- to improve their skills as a woodsman and marksman to ensure humane harvesting of wildlife;
- to comply with all game laws in the spirit of fair chase, and to influence their companions accordingly;
- to accept responsibility to provide all possible assistance to game law enforcement officers;
- to waste no opportunity to teach young people the full meaning of this code of ethics;
- to reflect in word and behaviour only credit upon the fraternity of sportsmen, and to demonstrate abiding respect for game, habitat and property where they are privileged to hunt.

Conservation Force is the culmination of three decades of pro bono wildlife conservation advocacy that started in the early 1970s. In the middle 1990s, Conservation Force was formalised as a non-profit public foundation to continue to attribute to the hunting-conservation community. The mission of Conservation Force is the conservation of wildlife and the natural world. The purpose is to establish and further conservation of wildlife and wild places, by fulfilling the following objectives (cf. Conservation Force, 2004):

- conservation of wildlife and wild places;
- to expand sustainable use for its indispensable value to mankind and the natural world;

- to insure the continued contribution and positive perception of the hunting and angling conservation community;
- to facilitate greater collaboration, co-operation and co-ordination within the hunting and angling conservation community;
- to add exponentially to the bio-political and conservation capacity of the hunting and angling conservation community.

Conservation Force has currently 35 project on four continents, of which most are focused on conservation through hunting (including safari hunting). According to Conservation Force, hunting is an exceptional form of sustainable use that has been proven to create conservation stakeholders, to stimulate conservation incentives and generate operating revenue for conservation budgets; hence, it is one of the foremost forces for conservation (cf. Conservation Force, 2002).



The International Council for Game and Wildlife Conservation (CIC) was established in 1929, and endeavour to advocate at all national and international bodies concerned with management of wild-living resources especially the following, by demanding (CIC, 2004):

- recognition of the global environment as a common concern to all of us;
- respect for all forms of life in their ecosystems;
- conservation of nature, mainly the fauna, in the interest of the present and future generations by preventive and precautionary measures;
- avoidance of the loss of biological diversity, especially through the protection of endangered species;
- sustainable use of natural resources as an important tool for social and economic benefits and therefore as an incentive for their conservation;
- harvesting of game through selective taking while respecting the natural ecosystems;
- improvement of wildlife management and land-use;
- promotion of scientific research, education as well as information to the public supporting our cause;
- provide advice to the public authorities, national and international organisations and answer their demands.

The CIC pledges to undertake everything in its capacity in order to ensure that these objectives are met in an ethical manner and that these principles become the basis for all its orbital interventions and activities. The CIC is divided into several commissions like the Traditional Hunting Commission that aims to better inform the public about hunting with the use of dogs and also to defend it wherever it is threatened.

III.4 Human development organisations

A fourth group of organisations are intergovernmental organisations with an emphasise on human development. Hunting after all, is also a means for obtaining food and therefore important for human welfare. Of these organisations the most important are the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO).



The FAO leads international efforts to defeat hunger. Serving both developed and developing countries, FAO acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. FAO is also a source of knowledge and information. They help developing countries and countries in transition modernize and improve agriculture, forestry and fisheries practices and ensure good nutrition for all. Since

their founding in 1945, we have focused special attention on developing rural areas, home to 70 percent of the world's poor and hungry people (FAO, 2004). One of the main objectives of FAO's programme of work has been long-term food security for the nations and regions of the world, and for an ever growing world population. To achieve food security a number of issues related to biodiversity and genetic resources are addressed, these include:

- the linkages between biodiversity and food security;
- the conservation and use of genetic resources;
- access to genetic resources and new biotechnologies;
- the profitable and safe use of biotechnology.

In 1992, FAO launched a comprehensive programme for the global conservation of natural resources. It includes a global inventory of animal genetic resources with a database to characterize and enumerate all breeds of livestock used in agriculture; an action to identify endangered breeds as well as ways of protecting them; the promotion of programmes in developing countries to conserve endangered breeds in their native habitats; and the improvement of livestock breeding capacities in the developing world. In relation to wildlife, which has always played an important role in food security in rural areas, FAO continues to provide advice to member countries on methodologies for sustainable utilization with emphasis on ecosystem conservation and biological diversity (FAO, 1996).



UNESCO was born on 1945, and focuses on education, social and natural science, culture and communication. UNESCO promotes international co-operation among its 190 Member States and six Associate Members in the fields of education, science, culture and communication. Through its strategies and activities, UNESCO is actively pursuing Millenium Development Goals, especially those aiming to (UNESCO, 2004):

- halve the proportion of people living in extreme poverty in developing countries by 2015.
- achieve universal primary education in all countries by 2015;
- eliminate gender disparity in primary and secondary education by 2005;
- help countries implement a national strategy for sustainable development by 2005 to reverse current trends in the loss of environmental resources by 2015.

Appendix VI: Complete framework

