

**Perspectives for Voluntary Certification Program of Game Management
in the Eurasian Market**

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ABSTRACT

The Eurasian recreational hunting market generates more than €10 billion a year in economic value. Each year about 600,000 European hunters who travel abroad to hunt in Europe and Asia spend approximately €1.98 billion. The value of trophy hunting trade in the region annually achieves €40-50 million. However, environmental impacts of hunting and game management on wildlife species, other than game, are controversial. Some studies show adverse impacts on ecosystems, especially forests, as well as depletion or extirpation of wildlife species. Other studies demonstrate that hunting may contribute to species conservation and economic development of local communities.

I propose Sustainable Game Management Certification a program designed to reverse negative environmental impacts and to introduce conservation efforts into game management and recreational hunting, as well as to create steady marketing incentives for these purposes. Sustainable Game Management Certification is based on principles of sustainable management and models of certification programs in forestry, agriculture, fisheries, and ecotourism to apply to game management. Key institutional players and their roles are discussed, as well as possible risks of implementation and recommendations for further development.

Sustainable Game Management Certification will be a useful instrument for landowners, forest companies, hunting clubs, and other game management entities. Overall, Sustainable Game Management Certification will help to assess and improve management, to stabilize and

enlarge recreational hunting market share and access. Hunters and general public will obtain a guarantee of environmentally friendly game management in a form of internationally recognized management standards and principles. Governments and agencies will get an extra voluntary commitment from providers of recreational hunting to adhere to responsible game management and conservation practices. Hunting tour organizers will be able to expand their marketing power.

DEDICATION

To my dad, Piotr, who was the first to introduce me to hunting, and
to my mom, Galina, who helped me understand an importance of choice.

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ABBREVIATIONS/SYMBOLS

€	Euro
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
FACE Europe	Federation of Associations for Hunting and Conservation of the European Union
FSC	Forest Stewardship Council
GNI	Gross National Income
IUCN	The World Conservation Union
NGO	Non-governmental organization
SGMC	Sustainable Game Management Certification
UNEP	United Nations Environmental Programme
WISPER	Wild Species Resources Working Group of the IUCN
WRI	World Resources Institute
WWF	World Wide Fund for Nature

1. INTRODUCTION

Recently, hunting gained new functions as a tool for conservation of biodiversity. As the Parliamentary Assembly of the Council of Europe expressed in its Resolution 882, hunting is important both as a source of income for rural development and for financing conservation programs throughout Europe's rural regions and transitional economies in developing countries. The World Conservation Union recognized sustainable use of game species as a basis for wildlife conservation because benefits derived from sustainable use of game resources encourage people to conserve them (World Conservation Union, 2000).

Nevertheless, hunting and game management still require more research, experience, and policies on how to incorporate conservation objectives in management programs and plans (Hoffer, 2002; Lecocq, 2002). I argue that together with traditional regulatory approaches in game management, new market incentives can become an important tool to encourage conservation efforts, especially when dealing with recreational hunting by non-resident hunters. This research proposes the development and implementation of a third-party Sustainable Game Management Certification (Hoffer, 2002; Zakharenka, 2005) as a step towards creating incentives for conservation of biodiversity. Certification may serve as a marketing tool for addressing environmental and conservation issues in game species management, as well as supporting non-game species and their habitats.

1.1. Background

This study deals specifically with game management policies. For purpose of this paper, "game management" is used to connote any management activity involving officially recognized wildlife species that are hunted. Such management activities may involve manipulation of game populations or single animals and alteration of their habitats, such as forests, wetlands or

agricultural fields. Popular game species hunted include deer, waterfowl and other birds, and predators such as wolves or bears (Pinet, 1995; Deutscher Jagdschutz-Verband, 1999).

It is important to understand that hunting as a form of game management is used to shape the size and structure of game populations, through removing (often randomly) wanted or unwanted individual animals from populations (Leopold, 1933). The term "Recreational hunting" is used in this paper when speaking of hunting from a market or commercial perspective – people pay to hunt on someone else's land. This term embraces a broad scope of hunting activities, including market-oriented trophy hunting by non-resident hunters, as well as domestic hunting activities. Recreational hunting, by definition, excludes subsistence hunting by indigenous or local people. Hence, recreational hunting is a hunting activity for a certain species by a foreign or domestic hunter who is willing to pay a fee for a special hunting experience and/or trophy.

Studies of recreational hunting have shown the importance of integrating economic, legal, and environmental aspects of game management (Hurt and Ravn, 2000; Haule et. al, 2002). Recreational hunting also contributes to species conservation, poaching prevention, economic development of local communities, and stabilization of their social welfare (Haule et al., 2002). Baker (1997) and Leader-Williams (2000) argue that recreational hunting has already become a powerful conservation tool.

However, uncontrolled recreational hunting can frequently lead to population depletion or species extinction (Teer, 1997; Freese, 1998). By 2003, hunting and harvest exploitation were considered a major reason for the threatened status of 13% of mammals, 7% of birds, 31% of reptiles, and 68% of marine fish species (Holechek et al., 2003). Freese and Trauger (2000) stress that large commercial markets for wildlife can be a double-edged sword for biodiversity: if

well managed, they can be a tool to conserve biodiversity; if poorly managed, they can lead to its loss.

The Federation of Associations for Hunting and Conservation of European Union (FACE Europe), a representative body of more than 7 million hunters in Europe, is seeking to reduce negative effects of hunting (Federation of Associations for Hunting and Conservation of European Union, 2002). The goals of FACE Europe include: wildlife management conservation through sustainable use; conserving biodiversity through integrated agriculture and forestry sector policies; promoting judicious management of wild birds; advocating co-existence between large carnivores and people; integrating conservation in hunting activities; establishing objective animal welfare criteria; requiring humane trapping; regulating quality of wild game meat; allowing hunters to travel more freely throughout the European Union, and maintaining a countryside style of living.

In 2002, a comprehensive review of the Eurasian hunting market, supported by World Wide Fund for Nature (WWF) and the European Commission, concluded that initiation of trophy hunting certification would contribute to gradual introduction of game management conservation programs and encouragement of dialog between hunting stakeholders (Hoffer, 2002). Mallet (2002) describes certification as a market-based verification system when resource-harvesting operations are measured against a standard set of criteria.

In my view, certification of game management and recreational hunting would be a reasonably useful instrument for recreational hunting stakeholders to improve management, introduce conservation efforts into game management, and to contribute to authentic hunting culture and social aspects of rural life. Another argument for certification in game management and recreational hunting is global adoption of voluntary third-party certification in forestry, fisheries, tourism, and agriculture.

Forest certification was designed under pressure from professionals and the public to address a number of global issues in forest management and climate change using market incentives (Upton and Bass, 1996). Forest certification is a voluntary market-based system providing opportunities for preserving biological diversity, addressing social and economic issues of people depending on forests, and assuring customers that they are buying products from well-managed forests. In the late 1990's, forest certification grew rapidly as a forest conservation paradigm, increasing the area of certified forests tenfold to nearly 200 million hectares (Figure 1).

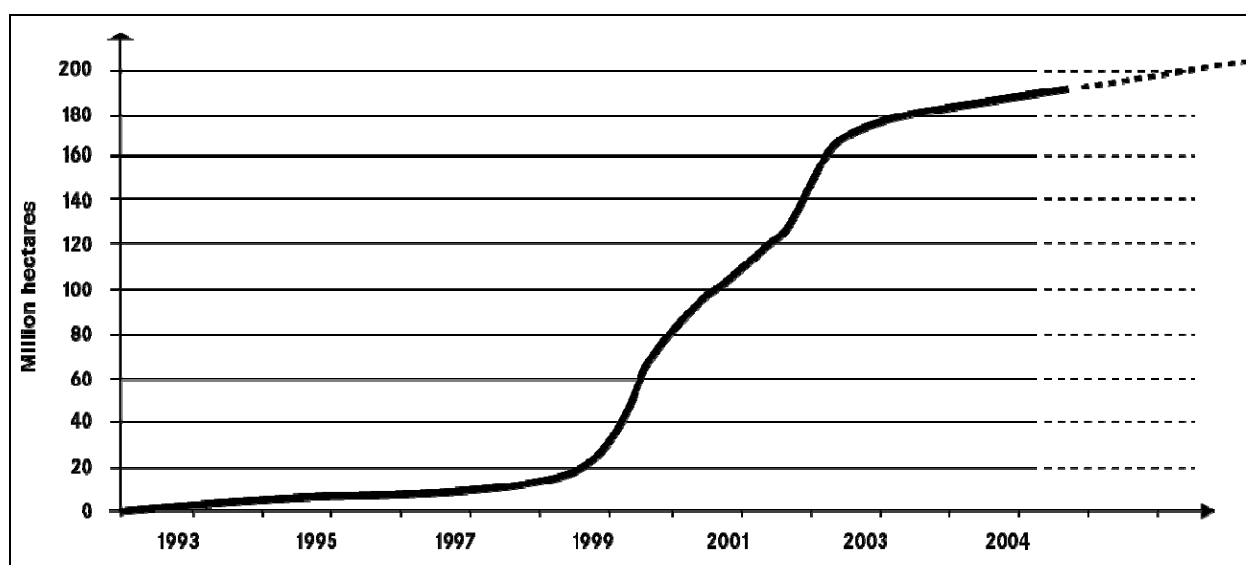


Figure 1. Total area of certified forests, million hectares

Source: Confederation of European Paper Industries, 2005

Tourism industry has a long history of programs leading toward environmentally friendly and sustainable tourism. Ecotourism, defined as a responsible travel to natural areas which conserves the environment and sustains the livelihood of local people, evolved by market demand. It is a tool for conserving natural areas, educating visitors about sustainability, and benefiting local people. Ecotourism destinations are often fragile ecosystems, and therefore,

rely on environmental policies with high standards for maintaining the ecosystems. Ecotourism certification or eco-labeling provides stakeholders and customers with assurance that a certified program is supported by a commitment of quality ecotourism experience and ecological sustainability. Ecotourism is similar to a purpose of game management certification goal to go beyond what is required by national or regional law in environment preservation. Ecotourism certification is becoming common for European destinations, reaching 10% of the tourism market in some countries such as Denmark or the United Kingdom. The World Tourism Organization recently reported over 100 certification processes of ecotourism in Europe (United Nations Environmental Programme, 2002).

Globally depleting fisheries in the recent decades sparked discussions on how to control over fishing and restore sustainable way of fish harvesting. Certification of fisheries is a recent initiative aimed to benefit from some consumers who are willing to buy legal marine products. Legal and certified fisheries do not contribute to over harvest of fish populations and other destructive practices (Kura et al., 2004). These issues of sustainable harvest in game management and fisheries certification would be similar in both cases with free-living animals that have natural ranges different from imposed management boundaries.

National organic farming programs are additional examples of market incentives for environmentally benign products. Organic farming has a steadily growing market for products produced without using chemicals, herbicides, antibiotics, and other unnatural components. Such activity employs environmentally friendly cultural, biological, and mechanical practices. To assure organic food buyers of product origins and quality, there are several established state and independent third-party certification schemes (Green and Kremen, 2003).

The experience of programs for sustainable management and certification of forest, organic agriculture, ecotourism, and maintaining fish stocks include regulated harvest within the

limits of average annual growth, consideration of biological diversity, and socio-cultural aspects in management objectives. It seems obvious that these practices could be useful models for programs that encourage sustainable game management. In this study, I argue that development and introduction of sustainable game management certification in the Eurasian recreational hunting market would help address important economic and environmental issues by creating market incentives for initiation of sustainable game management, as well as public assurance in quality management and services related to recreational hunting.

1.2. Problem statement, objectives and scope of research

A number of key stakeholders influence the policies and practices of game management. These include landowners, hunters, hunting clubs, game managers, hunting tour organizers, as well as regulatory and government institutions. At the same time, international market demand and non-resident hunters' preferences place additional, often unregulated, pressures on game resources. As a result, recreational hunting may meet national and local regulatory standards but game management usually fails in sustainable use of game species and conservation of other wildlife species due to lack of market incentives for conservation on international scale (Baker, 1997; World Conservation Union, 2000; Bennett and Robinson, 2001; Hoffer, 2002; Zakharenka, 2002).

Based on the arguments expressed above, the goal of this research is to investigate the implementation of game management certification programs to provide both sustainable incomes and wildlife conservation in the Eurasian region. The topics I investigated are:

- current trends in natural resource management;
- policies towards sustainable game management and recreational hunting;
- concepts of certification in forest management; and
- perspectives for introduction of certification in game management.

The scope of the research is limited to 53 countries in the Eurasian recreational hunting market as shown in Figure 2. It includes 38 supply countries (those that provide recreational hunting opportunities) and 18 demand countries (those that provide recreational hunting participants) with 3 countries (Finland, Norway and Sweden) considered as both supply and demand countries.

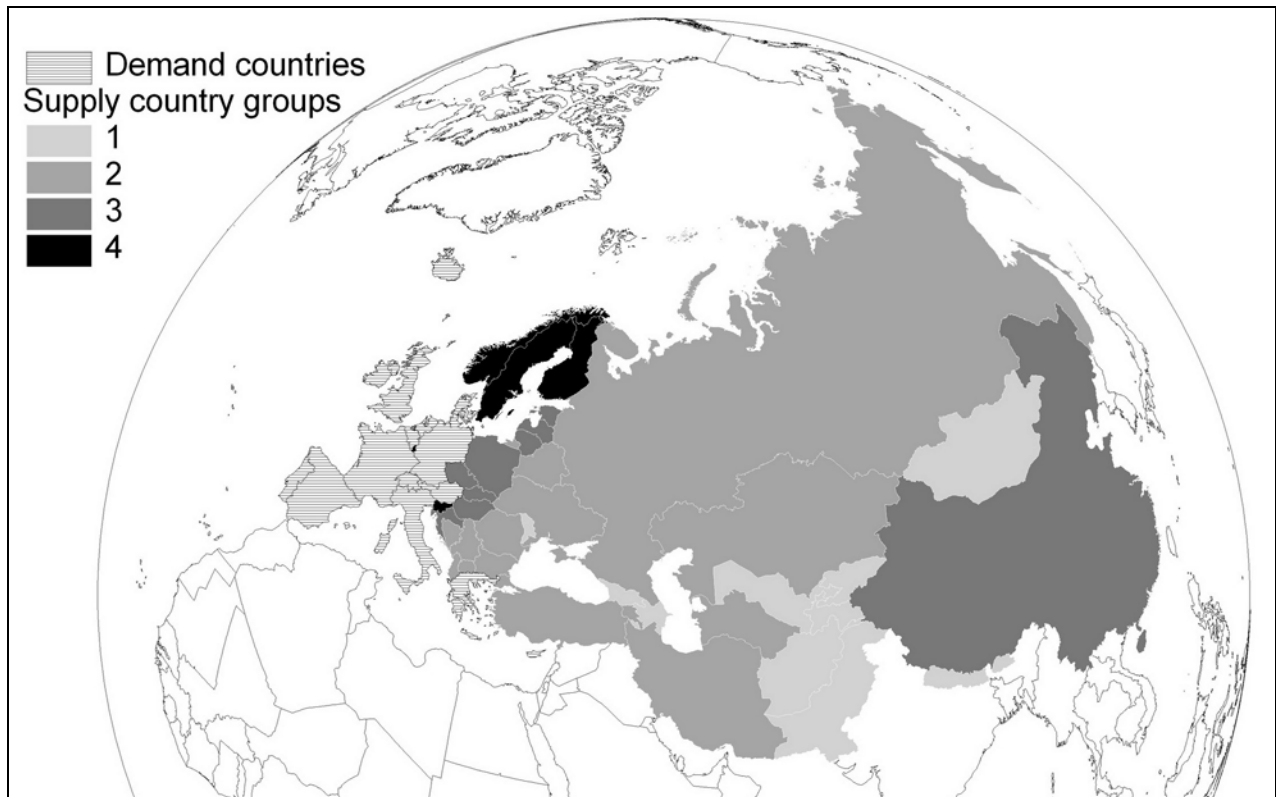


Figure 2. Geographic scope of the study.

Source: Hoffer, 2002

To examine the potential for game management certification, I divided supply countries into 4 economic groups according to annual Gross National Income per capita according to the World Bank's Gross National Income country classification: 1st group (n=11)—low income countries, US\$825 per capita or less; 2nd group (n=13)—lower middle income countries, US\$826 - US\$3,255 per capita; 3rd group (n=9)—upper middle income countries, US\$3,256 -

US\$10,065 per capita; and 4th group (n=5)—high income countries, more than US\$10,066 per capita. This arrangement will be used in further analysis of possible implementation risks of certification program in game management.

1.3. Environmental, economic, and socio-cultural dimensions of sustainable game management

Why is it important to manage game species in a sustainable way? Game species play a valuable role in ecological processes of ecosystems, as well as in the economic and socio-cultural life of people. Game animals are primary consumers, whose ecological functions include consumption of annual primary production. These species are a renewable resource for game management. However, manipulating selected game species and their habitats often lead to adverse ecological effects with further economic and socio-cultural consequences. Thus, there is a need to reduce negative effects and address issues resulting from game management, such as issues of genetic diversity, impact on game and non-game species, habitat issues, damage to agricultural crops, invasive species, as well as economic and socio-cultural issues.

Genetic Diversity Issues result from game management practices. For example, selective hunting changes genetic diversity and populations of game species. Game management, favoring certain game species and controlling or eliminating certain other wildlife species, predators, for instance, changes genetic diversity of wildlife species as well. Altered balance between game and other wildlife populations may also impact plant and tree species genetic diversity.

Habitat Issues result from game management and recreational hunting oriented on big ungulates species, mostly deer. Such management may contribute to severe issues affecting forest and adjacent open habitats. High densities of deer, for example, put browsing pressure

on young forest stands, often changing tree and understory herbaceous composition at stand and regional scales. Over time, this lack of sustainable management changes forest succession, impoverishes natural floral diversity and results in forest community composition that is predominantly deer-tolerant species (Teer, 1997; Angelstam, 2003; Bergquist et al., 2003). Other ecological issues of game management may vary depending on management objectives, game species and their densities. These may include damaging of agricultural crops on adjacent fields, introduction of new, potentially invasive species, spreading of infectious diseases to humans and livestock (Bolen and Robinson, 2003).

Economic Issues are part of a balance as sustainable game management focuses on producing income and profits, while maintaining game populations at levels that do not degrade habitats and surrounding environment. It is conceivable, therefore, that higher economic returns may be achieved by removing part of the annual allowable harvest through commercial trophy hunting by non-resident hunters. This practice, however, requires a high standard of population management to assure that sustainable populations will be maintained. Some countries also require liability insurance for damaged agricultural crops and forest stands, which can be a sensitive economic issue for game management in conflict situations with forestry or agriculture.

Socio-Cultural Issues may include balancing interests between recreational hunters and non-hunting societal groups, changing farmers' attitudes towards big predators such as wolves and bears, animal humane handling, preserving local traditions and cultural heritage, and introduction of code ethics for hunting. Another important issue is expanding educational programs that can show the links between local cultural heritage, sustainable game management, and conservation of wildlife and their habitats.

From broad perspective sustainable game management should be based on principles that incorporate wildlife species conservation practices, sustainable harvests of desirable game

species, cross-sectoral cooperation with forestry and agriculture, and socio-cultural dimensions of hunting. However, when dealing with specific management plan objectives, there is a need to reduce negative impacts of game management that can be reached by addressing game management issues mentioned above.

2. METHODS

Recently, natural resource management has experienced fundamental changes related to bringing conservation concerns into broad practice. Concepts of sustainability, landscape and ecosystem approaches, certification, market incentives for biodiversity conservation, use of renewable energy and biofuels made their way into daily life and management practice. Game management, however, experienced little change both in practice and policies as compared to other branches of natural resource management. Therefore, the objectives of this work are to analyze relevant contemporary experience in natural resource management, to explore current understanding of sustainable game management, to evaluate certification in forest management and market incentives for conservation, and to examine perspectives for introducing of certification programs into game management. Methods used to achieve these objectives were selected to collect relevant information, and to analyze perspectives to apply existing experience into the game management field.

To gain information on current trends in natural resource management, a review of literature and policies was used. Materials of different global and regional management, monitoring, development and conservation organizations such as TRAFFIC Europe, World Conservation Union, Federation of Associations for Hunting and Conservation of European Union, Safari Club International, World Bank, and World Wide Fund for Nature were reviewed.

Current sustainable game management practices were studied through a literature review, personal observation of forest and game management operations in Baltic region,

specifically in Sweden, Poland, Belarus, Russia, Germany, discussions during scientific and management forums and conferences, interviews with hunters, private and state holders and landowners of habitats, officials of ministries and wildlife management associations. I was especially fortunate to participate in the Wild Species Resources Working Group of IUCN, where I conducted advocacy interviews with leading researches.

Concepts of certification were studied through a review of literature and policies, including Forest Stewardship Council's principles and criteria. Interviews with country FSC officers, and curricula and seminars at the Virginia Polytechnic Institute and State University were also used. Interviews with FSC officers were conducted to acquire knowledge on how forest certification according to the FSC Principles practically recognize different set of issues caused by game management and recreational hunting, and how much those issues are recognized in forest certification.

Perspectives for introduction of certification in game management were evaluated during the interviews with hunters, habitat landowners, ministries and wildlife management associations' officers, reviews of literature and reports, analyses of policies and data provided by agencies of statistics, as well as in case studies of historic, ownership, legal, environmental, and educational aspects of game management in Sweden and Belarus.

Criteria used for reviewing certification programs were either policies on sustainable ecosystem management approaches or knowledge of biodiversity conservation programs introduced into current management operations. Certification in game management is a new and little covered field of knowledge, therefore for analysis of perspectives on their introduction to recreational hunting and game management, I used consultations with scientists, policy writers, and regulators, as well with practitioners, landowners, and hunters.

Finally, in delivering Sustainable Game Management Principles, I took into consideration ecosystem integrity, twelve principles of ecosystem management (Handbook of the Convention on Biological Diversity, 2001), biological diversity conservation in game management, principles of sustainability and adaptive management, and non-deterministic, traditional and user knowledge (Sayer and Maginnis, 2005).

3. RESULTS

I would like to emphasize that in an appeal to environmental ethics, this study implements a shifting from utilitarian values and anthropocentrism towards ethical holism, biocentrism, and ecosystem management approaches. These trends indicate an emerging post-modern era in natural resource management (McCay, 2000; Des Jardins, 2001).

3.1. Current trends in natural resource management

My literature review revealed shifting trends from patterns of a progressive era to a *post-modern* era (Fairfax and Fortmann, 1990; McCay, 2000; World Conservation Union, 2000; Schelhas, 2003; World Bank, 2004). These two periods with their different management approaches provide us with a broader perspective on how we might plan to manage particular components, whether wild game or forests, of the entire natural resource system.

The post-modern era brings less anthropocentric views about the complexities of ecosystem, succession state value recognition of biodiversity and role of non-economic species in management approaches, as well as incorporation of humans as active participants in ecosystem management. From the literature review, I gathered the following tenets of post-modern era that were used as criteria for evaluating the feasibility of a game management certification program: utilitarian values of the greatest good for the greatest number exist together with less anthropocentric values of biodiversity and ecosystem integrity; tendency to look at a whole system, capable of complexities and discontinuities; scientific uncertainty

creating room for other sources of knowledge; formalization of uncertainties into scientific methods, such as adaptive management; recognition of local and user knowledge; people as active participants in the system (Fairfax and Fortmann, 1990; McCay, 2000).

3.2. Review of certification in forest management

One objective of my study was to determine if existing forest certification programs would be compatible with wildlife conservation objectives. Certification programs in organic farming, forestry, fisheries, and ecotourism certify a relatively low percentage, usually 3-5%, of a sector. However, certification is important because it has several distinctive features enabling new incentives to be introduced to both customers and producers. Forest certification is defined by four key features: (i) it has twin objectives—working as a market incentive to improve forest management and improving market access and share for the products of such management; (ii) it is a voluntary, market-based instrument; (iii) it is done by evaluating management activities against previously agreed standards acceptable to the stakeholders; and (iv) it is undertaken by third party organization with no particular interest in a specific forest activity (Upton and Bass, 1996).

These features of forest certification created several advantages of certified forest management: improved planning and performance of forest management; public confidence in environmentally sensitive management; better community relations; maintenance of existing markets; employee satisfaction and pride, shareholder satisfaction and value, price premium in some cases of business to business relations; market advantages; and improved access to capital (Upton and Bass, 1996). It is possible that such advantages of certified forests and their management make forest certification attractive and popular procedure.

However, an important reason for introduction of certification is its principles for conservation of biological diversity. According to global assessments, forests are important

habitats for 80-90% of terrestrial biological diversity on the planet (World Bank, 2004). This is why forest certification considers wildlife species and introduces special principles reflecting their importance in forest ecosystems (Upton and Bass, 1996). Yet, game management has stronger primary impact on game and other wildlife populations if compared with forest management, which mostly affects populations through habitats alteration. But in the course of literature review and discussions with major hunting and wildlife management associations, I found only a few policies that promote sustainable hunting in Eurasia and no hunting or game management certification programs that would assess and accredit environmental impacts of game management.

3.3. Current policies towards sustainable game management and recreational hunting

Current trends in game management, especially in the European demand countries, indicate that hunting organizations are likely to support concepts of sustainability. The most advanced and historically rich game management traditions are in countries such as Germany, Austria, Hungary, Poland, and Scandinavia. These countries have been participating in the development of policies on sustainable hunting and game management during the last decade (Lecocq, 2002; Hoffer, 2002; Forstner et al., 2003).

There are a number of ongoing studies and unpublished reports dealing with the concept of sustainable hunting in Europe. The Wild Species Resources Working Group (WISPER) of the European Sustainable Use Specialist Group of the World Conservation Union evaluates mechanisms to enhance sustainable hunting management and practices in Europe. This cooperative multi-stakeholder effort under supervision of FACE Europe proposes a set of principles, targets, and guidelines for European introduction in the near future. The outcome could be of high relevance for game management certification as a concept of sustainable hunting.

The importance of incorporating conservation issues and projects into game management is emphasized by IUCN in its Policy Statement on Sustainable Use of Wild Living Resources. This concept of sustainable game management certification would also be consistent with current strategies of WWF, a close partner of IUCN and the World Bank. WWF's forest conservation strategies are based on integrating of three related approaches: forest protection, management and restoration in a consistent landscape level approach. This landscape-based approach implies a principle for balancing a mixture of protection, management and restoration to provide biodiversity, ecological, economic and societal benefits while resisting detrimental change (World Wide Fund for Nature, 2004).

The World Bank, implementing its core mission of poverty reduction, views the Forest Strategy as an effective multifunctional tool. The World Bank also acknowledges that reform and investment impacts focused outside the forest sector are equal to, or even greater than, its forest sector activities. (World Bank, 2004). The World Bank further supports and encourages independent monitoring and certification of forest operations, as is stated in its Operational Policy 4.36 on forest certification (World Bank, 2002). Introduction of game management certification would be a logical in follow-up to the policies recommended by the World Bank on independent monitoring and certification of forest resources.

The Wildlife Conservation Society, with support of the World Bank and Safari Club International, has already launched a project on Tiger-Friendly Certification in Far East Russia. The goal of this first species-oriented certification program is to provide economic incentives for local communities to conserve tigers, *Panthera tigris*, and their habitat by recognizing sustainably harvested forest products with a Tiger Friendly Certification. For this purpose, tiger will be used as a "charismatic" symbol to add a premium to sustainable harvested forest products. The fact that the certification program has found support could be a good indicator for the potential success of sustainable game management certification. The existing efforts in

developing guidelines for sustainable hunting and game management together with the efforts on introduction first certification programs considering wildlife species conservation may serve as a logical policy background for introducing sustainable game management certification.

3.4. Perspectives for game management certification

The final objective of the study was to examine perspectives on development and introduction of certification programs in Eurasian hunting market. First, I characterize both value and species hunted in supply countries, and then I present a system of certification in game management, and mechanisms to develop such a system. Finally, the Sustainable Game Management Principles are presented for deer species application in the Eurasian recreational hunting market.

Eurasian Hunting Market Features

The total number of European hunters, representing mostly demand countries, consists of approximately 6.4 million people (Deutscher Jagdschutz-Verband, 1999). Their annual spending reaches €10 billion. Pinet (1995) estimated that approximately 10% of the hunters in European demand countries regularly go abroad for hunting and another 10-20% travel occasionally to hunt. This group of hunters spends approximately €1.98 billion annually. Hoffer (2002) projected that only €40-50 million are reinvested into 38 supply countries of the Eurasian market.

Carnivora and *Artiodactyla* are the most important groups of game species for recreational hunting in the supply countries, containing 15 and 57 species, respectively, based on surveys of advertisements, catalogs, and price lists in 1998/99. However, several reports indicated available licenses for hunting endangered species. For example, two licenses for Bactrian Deer, *Cervus elaphus bactrianus*, (CITES Appendix II) were granted by Uzbekistan in 1995; one hundred licenses for Kulan, *Equus hemionus*, (CITES Appendix I), and two licenses

for Leopard, *Panthera pardus*, (CITES Appendix I) were granted by Turkmenistan in 1993/1994. Offers for Tiger hunting, *Panthera tigris*, (CITES Appendix I) and an American hunter bid (USD 250,000) for Tiger hunting have recently been found in Russian advertisements. Offers for Snow Leopard hunting, *Uncia uncia*, (CITES Appendix I) can be found in Russian advertisements; and offers for Tien Shan Brown Bear hunting, *Ursus arctos isabellinus*, (CITES Appendix I) may be offered in Tadjikistan (Hoffer, 2002).

Despite these conflicting with CITES practices, the majority of recreational hunting offeres are based on a narrower spectrum of game species, mostly deer, wild pigs and waterfowl. Preferences to hunt certain groups of game species (Table 1) potentially focus efforts on development of game management certification oriented on these groups.

Table 1. Species preferences of German tourist hunters

Species group	Share of hunters who have already hunted abroad, %	Share of hunters who would like to hunt abroad, %
Deer	81.8	41.5
Wild pigs	60.3	30.7
Small game, waterfowl	45.8	19.4
Antelopes, gazelles	28.7	17.4
Wild sheep and goats	28.4	17.6
Big predators	18.5	15.7
Horses	9.0	3.8
Wild cattle	9.2	13.9
Other	8.4	3.3
Elephants	2.0	2.6

Source: Deutscher Jagdschutz-Verband, 1999.

This fact provides a great perspective for a balanced, economically viable and environmentally friendly way to utilize such commonly hunted species to meet the demand of recreational hunters and to provide an opportunity for conservation of endangered or rare wildlife species.

Sustainable Game Management Certification

Considering previous analysis of trends and perspectives for development of game management certification, I suggest that “Sustainable Game Management Certification” could define a concept for developing an international framework of standards for sustainable game management; for assessing and certifying game management according to these standards; for regional/national principles and criteria, and for verifying management's adherence to the standards and principles over time. Recreational hunting as a part of game management would also be certified through this system.

Based on common certification features and advantages in the forest sector, I argue that development and introduction of Sustainable Game Management Certification would contribute to improving of game management through conservation of other wildlife species; restoring and raising public credibility with quality game management programs; and facilitating cross sectoral cooperation with other branches of natural resource management (Zakharenka, 2001, 2005).

The following is a list of advantages and incentives for Sustainable Game Management Certification:

- improved planning and performance of game management;
- higher genetic and population-level diversity of game species, together with the higher diversity of other wildlife species;
- public and hunters confidence in the up-to-date environmentally friendly management, improving relations between hunters, general public and conservationists;

- better community relations and communications;
- maintaining existing markets and gaining new markets for recreational hunting, thus improving the economic situation for game management and for the countryside as a whole;
- satisfaction and pride of employees and shareholders, working and managing their business according to internationally recognized principles of Sustainable Game Management; and
- potential for possible price premium, market advantages, improved access to capital, from sustainable management.

Sustainable Game Management Certification would be a new market tool in game management and recreational hunting organizing to use by stakeholders such as landowners, hunters, hunting clubs, game managers, hunting tour organizers, as well as regulatory and governmental institutions. Its introduction will bring new opportunities and incentives to manage game resources on a sustainable base. However, development of the Sustainable Game Management Certification program would require more detailed policy research and practical involvement of various stakeholders.

How can we develop Sustainable Game Management Certification?

Developing and implementing of a policy for the Sustainable Game Management Certification and the identification of key public institutions could be accomplished through application of existing experience in conservation programs. In this context, the latest joint initiative of key conservation institutions developing and implementing the Open Standards for the Practice of Conservation (Conservation Measures Partnership, 2004), would be an appropriate methodology for conceptualizing and developing the Sustainable Game Management Certification. Together with a framework for development and implementation of new conservation policies and projects these Standards describe relevant phases and

processes. Derived from the Open Standards for the Practice of Conservation, the phases for Sustainable Game Management Certification development would include the following initial steps: conceptualization process; organization of key institutional players and establish their roles; initiation of research on current and future markets; assessment of risks and opportunities for implementation; development of standards, principles and criteria.

Sustainable Game Management Principles

Sustainable Game Management Principles have been developed, published, and could be used for game management certification focused on deer species (*Alces alces*; *Capreolus capreolus*; *Cervus albirostris*, *C. elaphus*, *C. nippon*; *Dama dama*) within the Eurasian recreational hunting market (Zakharenka, 2001, 2002, 2005). Sustainable Game Management Principles are separated in five groups that address legal, ecological, economic, and social aspects to promote and verify sustainable game management.

The legal group

1. *Compliance with national laws and international agreements.* Game management shall respect all applicable laws of the country and international treaties and agreements to which the country is a signatory, and comply with all the Principles of Sustainable Game Management.

2. *Tenure and use rights and responsibilities.* Long-term tenure and use rights to the land and game resources shall be clearly defined, documented, and legally established.

The ecological group

3. *Coordination of Game management, forestry and agriculture.* Game management measures shall encourage efficient and rational use of habitats based on the achieved balance

of forestry, game management and agriculture to ensure a wide range of environmental and social benefits and economic viability of game management entities.

4. *Environmental impact.* Game management shall conserve biological diversity and its associated values, unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

5. *Game census, habitat monitoring and assessment.* The enumeration of game population and monitoring of habitats shall be conducted—appropriate to the scale and intensity of game management—to measure the response of game populations to changes in their environment and to evaluate the condition of habitats, chain of custody, management activities and their environmental impacts.

6. *Selection work in game populations.* Game management shall maintain and enhance game populations quality through employing selection and creating an appropriate gender and age population structure. Decisions regarding hunting animals of high trophy quality shall always be considered in the context of a precautionary approach.

The economic group

7. *Management plan.* A wildlife management plan—appropriate to the scale and intensity of the game management activities—shall be written, implemented, and kept updated. The long-term goals of management, and the means of achieving them, shall be clearly stated.

8. *Game breeding and intensive use of fenced habitats.* Fenced habitats and breeding of game species shall contribute to satisfying social and economic needs for hunting products, complement the management of, reduce pressure on, and promote the restoration and conservation of adjacent open game habitats, when appropriate.

The social group

9. *Conservation and protection of Cultural heritage.* Sites of special cultural, ecological, economic or religious significance to the region and/or the whole country shall be recognized and protected by game managers in cooperation with forest workers.

10. *Community relations and Employees' rights.* Game management activity shall maintain or enhance the long-term social and economic well-being of employees and local communities.

4. DISCUSSION

First, Sustainable Game Management Certification must evolve as an institution to fulfill its role with major stakeholders or key institution players. Second, certain risks may affect development and introduction of the Certification.

4.1. Key institutional players

Conceptually, the goal of Sustainable Game Management Certification is to assess current game management performance, to compare it to standards, principles and criteria, and to provide a basis for making decisions on granting a certificate. Certification should also provide a verification mechanism for previously certified management units, landowner, hunting club, etc., after a certain time period.

Eurasian recreational hunting market encompasses a vast geographical region; therefore, regional and national principles and criteria will be developed to comply with local conditions and hunted species (Table 1), different economic performance, culture and traditions of the countries (Figure 2), as well as varying management approaches. Nevertheless, there are common features that will keep Sustainable Game Management Certification functioning as

a recognizable certification system in the Eurasian market. Among them are key institutional players that will support the Certification operations:

Consumers (in this case hunters) following their preferences will be in charge of responding to alternative recreational hunting destinations and making a choice to buy/use a hunt from the certified management or not.

Non-governmental organizations (NGOs) will set standards and define the preferences of hunting market, as well as raise public awareness on issues of game management and biodiversity conservation. There are many and varied NGOs pursuing different objectives (i.e., environmental, conservation, development, social, etc.) that define a diversity of interests in recreational hunting and game management.

Producers or game managers (hunting clubs, land owners, associations, and community groups) will be expected to comply with Sustainable Game Management Certification standards and principles to be certified. Hunting clubs, as formal or informal organizations of neighboring landowners and hunters can play a special promotional role for sustainable game management certification or become a group interest organization, in cases where certification of members' small properties will not be efficient.

Certifiers or anyone not interested in the direct results of a producer organization. Certifier will be an independent third-party that assesses producer performance against a set of standards and principles. Certifiers are usually international or national NGO's that were trained to collect and analyze data and information on game management performance according to procedures of accreditation organizations.

Accreditation Organizations will set evaluation and verification requirements for game management performance, train and approve certifiers, and provide quality assurance for

Certifiers' accreditation and certification of producers. In some cases accreditation organizations may serve as the certifier, as well.

And, finally, a Standards Committee will define and verify international and regional standards and principles, performance measures for certifiers and accreditation organizations, and represent stakeholders. Founding a Standard Committee and its Board is an important first step in launching of Sustainable Game Management Certification. This initiation would require involvement of major stakeholders in regional recreational hunting market, including professional associations, governmental and non-governmental bodies together with conservation organizations.

4.2. Possible risks in implementation of Sustainable Game Management Certification

Development and introduction of the Sustainable Game Management Certification will likely take several years to establish functional certification programs. Such a lag period will be needed for launching the initiative, establishing working relations between certification stakeholders, and developing the standards, principles, and criteria.

However, it is unlikely that Certification will be risk-free due to internal and external factors at different levels. These may include, but are not limited to, slow Certification introduction rates in developing countries, high travel costs for non-resident hunters due to world oil production demands undermining the economic base for recreational hunting, and poaching by locals.

Slow introduction rates in developing countries

Based on a similar situation in forest certification, one may predict slower introduction rates for Sustainable Game Management Certification in developing countries. Rice et al. (1997), Sachs (2001), and Becker (2004) analyzed institutional and infrastructure conditions to adoption of certification in developing countries and found that FSC's forest certification

experienced much slower introduction rates. According to Becker (2004), direct barriers to forest certification, in developing countries, include lack of landownership and tenure rights; unfavorable land taxes and rentals, levies on harvest, licensing; antidemocratic and corrupt government with a low priority to maintain the diversity of societal institutions and stakeholders; closed markets; and high costs of the forest certification.

Where the state dominates landownership and management, difficulties exist with NGO establishment and functioning, underdeveloped civil society and low governmental accountability and corruption, it would be expected that third party independent certification will not be always effective. In such conditions, internal governmental second party certification might also play a substantial role towards contributing to the introduction of conservation programs and responsible management according to regulations. Such governmental certification programs may reflect practical knowledge, national research and standards. However, the process of assessment and certification would be carried out by the same or different but still governmental branches increasing risks of corruption and inappropriate assessment. The third party certification carried out by independent international certifiers is likely to be advantageous in developed high income countries.

To project trends of the FSC certification on the Sustainable Game Management Certification, I conducted an analysis to see the link between the amount of certified forest area and economic performance of countries, where forests were certified. Economic performance in this case was simplified to country's annual Gross National Income (GNI) according to the World Bank's GNI country classification: low income, US\$825 or less; lower middle income, US\$826 - US\$3,255; upper middle income, US\$3,256 - US\$10,065; and high income, US\$10,066 or more. Using global distribution of the FSC certified forest area, which is 67.2 million hectares by November 2005 (Forest Stewardship Council, 2005), and country's economic performance, my grouping analysis revealed that over 90% of this forest area is

located in the upper middle and high income countries with annual GNI of US\$3,256 or more per capita (Figure 3). In my opinion, this fact reflects a trend of the FSC scheme of forest certification to favor rather already well-regulated and managed forests in developed economies than poorly-managed forests of the developing world.

Projecting similar trends for Sustainable Game Management Certification and its Eurasian supply market, this could mean certification programs were slowly introduced in developing economies of 11 low income and 13 lower middle income countries (Figure 3).

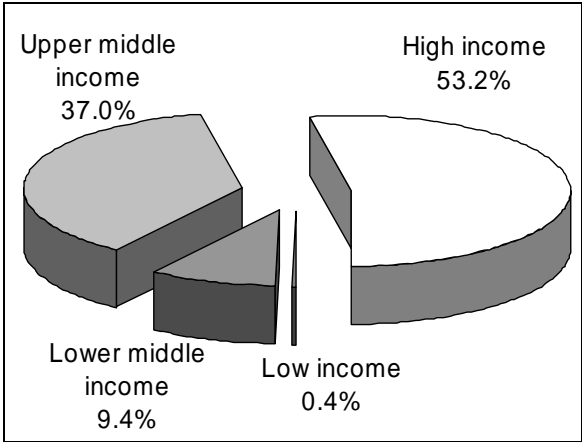


Figure 3. Structure of FSC certified forest area by income group countries

Source: Forest Stewardship Council (2005)

The difficulties can be generally related to specific factors that are found in common in developing countries: political complexity and land tenure disputes, high level of corruption, underdevelopment of transport and communication infrastructure, remote access to world markets, and burden of disease (Becker, 2004).

High travel costs related to a peak in world oil production

According to some estimates, world crude oil production may reach its peak at the end during the first decade of the 21st Century. During the next 45-50 years, global oil production

will likely decline to the level of oil production in mid 1960s, approximately 2-2.5 times less than today (Deffeyes, 2005). This could potentially affect travel opportunities for non-resident recreational hunters. Travel costs make up to 1/3 of total hunting costs (Hoffer, 2002). Therefore, it is likely that a decline in oil production will negatively impact recreational hunting markets through high air travel costs, if there are no new alternative ways to travel.

Poaching by locals and corruption

Additional risks to Sustainable Game Management Certification are due to corruption and poaching. These issues may slow introduction rates of Certification, in general, due to lack of law enforcement, unclear regulations, high local demand for game, and conflicts of recreational hunting by non-residents with subsistence hunting by locals. Russia and Central Asia is the region that is likely to be affected the most by this type of risk due to a current high level of these issues (Chestin, 1998).

5. CONCLUSIONS

Game management to sustain a desired level and type of harvest, favors certain game species and controls others, to reduce unnecessary competition or predation. Negative effects of game management and recreational hunting on other wildlife species and their habitats are not well studied, but generally include damage to young forest stands and agricultural crops, changes in tree and herbaceous species composition, spread of infectious diseases, introduction of new species, degradation of genetic diversity of game and wildlife species, and extirpation of some of them due to overexploitation.

The Eurasian recreational hunting market relies on abundant game species, such as deer, wild pig, waterfowl, antelope, and various predators. Nevertheless, there are several threatened species listed in CITES Appendix I and II that still can be found for sale on the hunting market, such as, tiger, leopard, kulan, and snow leopard (Hoffer, 2002).

Both game management and recreational hunting are regulated in the demand and supply countries discussed in this paper. However, international demand puts extra pressure on game management in supply countries that compete or conflict with conservation efforts. Unfortunately, there are no market tools or incentives to balance that pressure, to create opportunities for sustainable game management or to introduce conservation programs.

Sustainable Game Management Certification has the potential to create such market incentives. Certified habitats and management will benefit from consumer desires to choose recreational hunting providers who run game management according to internationally agreed standards. This will contribute not only to game species but also to conservation of other wildlife species.

Sustainable Game Management Certification, proposed in this paper, is a useful tool to support:

- landowners, forest companies, hunting clubs, and other management entities:
 - to improve current levels of game management,
 - to stabilize recreational hunting market share through better management, and
 - to enlarge market access through new environmentally educated hunters willing to pay for sustainable hunting.
- hunters, non-resident and resident, as well as the general public are assured of high international standards and incorporation of conservation practices in game management;
- governments and agencies will provide voluntary commitment from recreational hunting providers to adhere to responsible game management and conservation practices; and

- hunting tour organizers will expand marketing power through the world.

Development and introduction of the Sustainable Game Management Certification, however, is a challenging task, demanding further research, expertise, and support from many stakeholders. These efforts should initially focus on concepts of sustainable game management and developing the Certification standards and principles, with involvement of international institutions—Safari Club International, Federation of Associations for Hunting and Conservation of European Union, the World Conservation Union, the World Wide Fund for Nature, and the World Bank.

REFERENCES

- Angelstam, P. (2003). Reconciling the Linkages of Land Management with Natural Disturbance Regimes to Maintain Forest Biodiversity in Europe. In: J. Bissonette & I. Storch, *Landscape Ecology and Resource Management: Linking theory with practice* pp. 193-225. Washington, D.C.: Island Press, Ltd.
- Baker, J. (1997). Development of a model system for touristic hunting revenue collection and allocation. *Tourism Management, Vol. 18, No. 5*, 273-286.
- Becker, M. (2004). *Barriers to Forest Certification in Developing Tropical Countries*. Master thesis, University of Toronto. Date accessed—March 2006: www.forestry.utoronto.ca/pdfs/becker.pdf
- Bennett, E., & Robinson, J. (2001). *Hunting of Wildlife in Tropical Forests. Implications for Biodiversity and Forest Peoples*. Washington, D.C.: The World Bank.
- Bergquist, J., Bergström, R., & Zakharenka, A. (2003). Responses of Young Norway Spruce (*Picea abies*) to Winter Browsing by Roe Deer (*Capreolus capreolus*): Effects on Height Growth and Stem Morphology. *Scandinavian Journal of Forest Research, Vol. 18, No. 4*, 368-376(9).
- Bolen, E. G., & Robinson, W. L. (2003). *Wildlife ecology and management*. Upper Saddle River, New Jersey: Pearson Education, Inc.
- Confederation of European Paper Industries. (2005). Date accessed—March 2006: www.forestrycertification.info
- Chestin, I. (1998). *Wildlife Trade in Russia and Central Asia*. Moscow, Russia: TRAFFIC Europe-Russia.
- Conservation Measures Partnership. (2004). *Open Standards for the Practice of Conservation*. Date accessed-March 2006: <http://www.conservationmeasures.org/CMP/Products.cfm>
- Deffeyes, K. S. (2005). *Beyond oil: the view from Hubbert's peak*. New York: Hill and Wang, Inc.
- Des Jardins, J. R. (2001). *Environmental Ethics: An Introduction to Environmental Philosophy*. (3rd edition). New Jersey: Wadsworth, Ltd.
- Deutscher Jagdschutz-Verband (ed.) (1999). *DJV—Handbuch Jagd*. Bonn, Germany.
- Fairfax, S.K., & Fortmann L. (1990). American forestry professionalism in the third world: some preliminary observations. *Population and Environment, 11*, 259-272.
- Federation of Associations for Hunting and Conservation of European Union (2002). *Manifesto to the European Union*. Date accessed—March 2006: http://www.face-europe.org/manifest%20.pdf/manifesto_eng.pdf

- Forest Stewardship Council (2005). Forest Stewardship Council Certified Forests. Date accessed-November 2005: http://www.fsc.org/en/whats_new/fsc_certificates
- Forstner, M., Reimoser, F., Hackl, J., & Heckl, F. (2003). *Criteria and Indicators of Sustainable Hunting*. Austria, Vienna: Federal Environment Agency, Ltd.
- Freese, C. H. (1998). *Wild species as commodities: Managing markets and ecosystems for sustainability*. Washington, D.C.: Island Press, Ltd.
- Freese, C.H., & Trauger, D.L. (2000). Wildlife markets and biodiversity conservation in North America. *Wildlife Society Bulletin*, 28 (1), 42-51.
- Green, C. & Kremen, A. (2003). U.S. Organic Farming in 2000-2001: Adoption of Certification System. U.S. Department of Agriculture, Economic Research Service, Resource Economics Division, *Agriculture Information Bulletin*, No. 780. Washington, D.C.: USDA.
- Handbook of the Convention on Biological Diversity (2001). *Secretariat of the Convention on Biological Diversity (CBD)*. London: Earthscan Publications, Ltd.
- Haule, K., Johnsen, F., & Maganga, S. (2002). Striving for sustainable wildlife management: the case of Kilombero Game Controlled Area, Tanzania. *Journal of Environmental Management*, 66, 31-42. Great Britain: Elsevier Science Ltd.
- Hoffer, D. (2002). *The Lion's Share of the Hunt. Trophy Hunting and Conservation—A review of the legal Eurasian tourist hunting market and trophy trade under CITES*. TRAFFIC Europe. Dreieich, Germany: Octopus Media.
- Holechek, J., Cole, R., Fisher, J., & Valdez, R. (2003). *Natural Resources: Ecology, Economics, and Policy*. Second edition. New Jersey: Prentice Hall.
- Hurt, R., & Ravn, P. (2000). Hunting and its benefits: an overview of hunting in Africa with special reference to Tanzania. In: H. Prins, J. Grootenhuis, & Th. Dolan. *Wildlife Conservation by Sustainable Use* pp. 295-313. Boston: Kluwer Academic Publishers.
- Kura, Y., Revenga, C., Hoshino, E., & Mock, G. (2004). *Fishing for Answers: Making sense of the global fish crisis*. Washington, D.C.: World Resources Institute.
- Leader-Williams, N. (2000). The effects of a century of policy and legal change on wildlife conservation and utilization in Tanzania. In: H. Prins, J. Grootenhuis & Th. Dolan. *Wildlife Conservation by Sustainable Use* pp. 219-245. Boston: Kluwer Academic Publishers.
- Lecocq, Y. (2002). Wildlife Management Policies and Science—A European perspective. *European Journal of Wildlife Research*, Volume 48, Issue 10, VIII–XII.
- Leopold, A. (1933, 1961, 1986). *Game management*. The University of Wisconsin Press.

- Mallet, P. (2002). Certification of Nontimber Forest products. In: E. Jones, R. McLain, & J. Weigand (Eds.), *Nontimber Forest Products in the United States*. Topeka: Kansas University Press.
- McCay, B.J. (2000) Post-modernism and the management of natural and common resources. *The Common Property Resource Digest*, 54, 1-8.
- Pinet, J.-M. (1995). Der Jäger in Europa. In: *Fédération des Associations de Chasseurs del'U.E.: FACE-Handbuch*. Bruxelles, Belgium: FACE.
- Rice, R.E., Gullison, R.E., & Reid, J.W. (1997). Can sustainable management save tropical forests? *Scientific American*, 276, 44-49.
- Sachs, J. (2001). Tropical Underdevelopment. *National Bureau of Economic Research Working Paper No. w8119*. Date accessed—March 2006:
<http://nwww.nber.org/digest/jun01/w8119.html>
- Sayer J.A., & Maginnis S. (2005). *Forests in landscapes: Ecosystem approaches to sustainability*. London: Earthscan.
- Schelhas, J. (2003). New Trends in Forest Policy and Management: an Emerging Postmodern Approach? In: L. Teeter, B. Cashore & D. Zhang (Eds.), *Forest policy for private forestry: global and regional challenges*. New York: CABI Publishing.
- Teer, J.G. (1997). Management of Ungulates and the Conservation of Biodiversity. In: C.H. Freese (Ed.), *Harvesting Wild Species: Implications for Biodiversity Conservation*. Baltimore: The John Hopkins University Press.
- United Nations Environmental Programme. (2002). *Ecotourism: Principles, Practices & Policies for Sustainability*. Division of Technology, Industry & Economics, UNEP: Paris, France.
- Upton C., & Bass S. (1996). *The Forest Certification Handbook*. Delray Beach, Florida: St. Lucie Press.
- World Bank. (2002). *Operational Policies. Forests. Working paper OP 4.36*. Washington, D.C.
- World Bank. (2004). *Sustaining Forests: A Development Strategy*. Washington, D.C.
- World Conservation Union. (2000). *Policy Statement on Sustainable Use of Wild Living Resources. Resolution 2.29*. Date accessed—March 2006:
<http://app.iucn.org/amman/content/resolutions/res29.pdf>
- World Wide Fund for Nature. (2004). *Integrating Forest Protection, Management and Restoration at a Landscape Scale. Forests for Life Programme*. Date accessed—March 2006:
http://www.panda.org/about_wwf/what_we_do/forests/our_solutions/protection/publications/index.cfm

- Zakharenka, A. (2001). *Sustainability aspects of wildlife management on examples of Sweden and Belarus. Working paper No. 3.* Asa Experimental Forest, SLU, Sweden.
- Zakharenka, A. (2002). Perspectives of sustainable development of wildlife management in Belarus in the 21 century. *Scientific papers of Agricultural University of Poznan, Poland. Forestry. Vol. 5, 97-104.*
- Zakharenka, A. (2005). Perspectives for certification of trophy hunting. In: Pohlmeier K (Editor): *Extended Abstracts of the XXVIIth Congress of the International Union of Game Biologists, Hannover.* pp. 524-525. Hamburg, Germany: DSV-Verlag.