

Workshop on Human Dimension in Large Carnivore Conservation

**Contributions to the Workshop 26.11.97 at Landshut,
Switzerland
with Prof. Dr. Alistair J. Bath**

KORA

Koordinierte Forschungsprojekte zur Erhaltung und zum Management der Raubtiere in der Schweiz
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The Human Dimension in Large Carnivore Conservation

Workshop 26.11.97 at Landshut, Switzerland
with Prof. Dr. Alistair J. Bath

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Preface

The Human Dimension in Large Carnivore Conservation

Urs Breitenmoser

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Managing wildlife means managing humans. Especially the restoration and maintenance of large carnivore populations can only be successful with the cooperation and integration of people. Large carnivore management is as much a socio-political issue as a biological one, and understanding the public and gaining its acceptance is crucial to the success of conservation and management programmes. Therefore, the human dimension must be an integral part of any scientific programme for carnivore management. Professor Alistair Bath explains the background and the methods used in human dimension research, using examples such as the re-introduction of the wolf in Yellowstone NP, and the public attitudes towards polar bears.

Aims of the workshop:**General goal:**

- Urs Breitenmoser: To reduce the conflict between people and carnivores.
Alistair J. Bath: To promote coexistence between people and carnivores.

Objectives:

- To provide background information to all participants about the situation of certain carnivores and their management.
- To provide background information concerning human dimension research.
- To provide a forum for expert discussions on research methods, public involvement mechanisms, and communication messages.
- To review the status of human dimension research in carnivore management in Switzerland.
- To decide how to continue...

Recent Development of Carnivore Populations in Switzerland and in Adjacent Countries

Urs Breitenmoser

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The brown bear *Ursus arctos*, wolf *Canis lupus*, and Eurasian lynx *Lynx lynx* vanished during the 18th and 19th centuries from all regions of high human activity in Europe because of direct persecution and environmental changes. Bear, wolf, and lynx were vulnerable in different ways to deforestation and the destruction of wild ungulate populations. The large carnivore populations all disappeared during the 18th and 19th centuries; individual lynx were still observed in the western Swiss Alps and single bears in the Engadine up to the first years of the 20th century. Today the return of large predators into semi-natural areas, such as the Alps, is possible, as the forests have expanded, and wild ungulate populations increased. Lynx re-introduction in the Alps started in the 1970s. Since then, lynx have expanded over the western part of the Swiss Alps, but have not yet colonised the eastern part. Wolves returned to the south-western Alps (Mercantour National Park) from the central Italian population in the early 1990s. In 1994, at least two wolves reached the Swiss Alps north of the Grand St. Bernard pass. The brown bear has survived in a population no longer viable today in the Trentino (Italian Alps), and was re-introduced in 1992 into the Austrian Alps. Additionally, the bear is re-colonising the Austrian and Italian Alps from Slovenia. Single individuals have ventured as far west as the Dolomites and the area of Bolzano, about half-way between the Slovenian border and the Engadine.

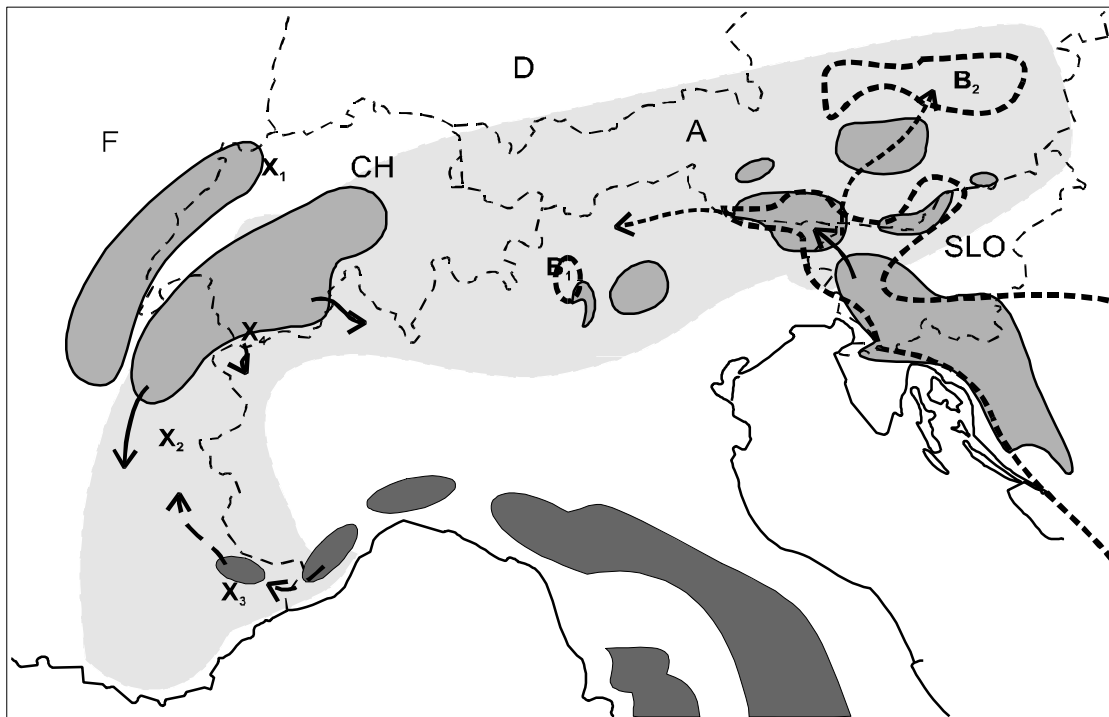


Fig. 1. Distribution of wolf (dark grey), lynx (medium grey) and bear (dotted lines) in the Alps (light grey).

The red fox *Vulpes vulpes* never disappeared in spite of extreme persecution by all methods. The fox seems to be outstanding in its capacity to adapt to living in human dominated areas. In Switzerland, a slow increase in the fox population has been observed since the early 1930s, when Federal statistics became available. From about 1970 to 1985, the fox population was depressed by a rabies epizootic. After successful application of rabies control measures, fox density started to increase again. From hunting records and animals found dead, it can be estimated that the fox population of Switzerland increased about four-fold from 1985-95. The increase was most noticeable in urban areas, such as the cantons of Geneva, Basel-Stadt, and the city of Zurich. Foxes seem to invade Swiss cities.

The Return of the Wolf to Switzerland

Urs Breitenmoser and Jean-Marc Landry

In the fall of 1994, an unidentified animal killed 12 sheep in the Val Ferret and the Val d'Entremont, two valleys north of the Grand St. Bernard pass in the western Swiss Alps. From July 1995 to May 1996, another 119 sheep were killed in the same region. (For more details see J.-M. Landry, "*La bête du Val Ferret*", KORA Report 1997.) The authorities of the canton of Valais, backed by the Federal Office of Environment, ordered the shooting of the predator. In February 1996, J.-M. Landry and a colleague took a picture of a wolf by means of an automatic camera installed along a path in this area. From fall 1995 to spring 1996, game wardens shot at the wolf on several occasions and obviously wounded it, but the carcass was never found. In summer 1996, no depredation occurred in the two valleys, though there were still rumours of wolf observations. In summer 1995, when collaborators of the *Swiss Lynx Project* tried to capture the unknown beast, we collected two dog- or wolf-like scats near two dead sheep. These samples have been analysed for their mitochondrial DNA structure in the frame of an investigation about the origin of the Mercantour wolves by Pierre Taberlet and his group at the University of Grenoble. The results revealed that (1) the two scats from the Swiss Alps were wolf, not dog, (2) the genetic structure was the same as found in the Italian wolf population, and (3) the samples depicted two different haplotypes, hence there must have been at least two wolves. The results indicate that this was the first natural re-colonisation of the Swiss Alps by wolves from the expanding Italian population. A natural immigration is the most likely explanation from the geographical situation of the region of the Grand St. Bernard, which forms one of the best corridors between the Italian and the Swiss Alps.

Predation by Lynx on Sheep in the Swiss Alps

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Current situation

The lynx was eradicated in Switzerland by the end of the last century. In 1962 it was given legal protection by Swiss federal law. In 1971, the first lynx were reintroduced in the canton of Obwalden. Up to 1980 there had been several lynx released in the Alps and in the Jura (Breitenmoser 1983). In the first ten years after the re-introduction the presence of the lynx was hardly perceptible. Livestock losses have never become significant so far, although the attitude of certain interest groups would suggest the contrary. Livestock losses per farmer were never high and pastures were not affected chronically. In several parts of Switzerland there were times of an increase, followed by a decrease in the number of total losses of livestock due to lynx (Fig. 1). In the north-western Alps, the number of livestock killed by lynx remained at a moderate level from the early eighties until it increased in the nineties with a maximum of 100 animals killed in 1997 (Fig. 1). In the meantime the focus of livestock killed moved from central Switzerland to the north-western Alps (Fig. 2). Because of this development, the cantonal authority of Fribourg applied to the federal authority (FOEFL) for a special permit to eliminate some lynx to defuse the problem. The FOEFL then charged the Swiss lynx project with investigating the current situation of lynx and sheep in the north-western Alps before intervening in the Swiss lynx population.

System of compensation

Livestock claimed to have been killed by lynx is investigated by state game wardens and a specialist from the Swiss lynx project. If the owner of the lost animal doubts the decision of the game warden, the carcass is sent to the Institute of Veterinary Pathology at the University of Bern for a final verdict. From 1973-1988, compensation was paid by the Swiss League for Protection of Nature, a non-governmental organization. Since 1988 all owners of livestock killed by lynx have been firstly compensated by the cantonal authority. At the end of the year, the accepted claims are passed to the FOEFL, which then reimburses about 50-70% of the compensation to the canton (Capt and Breitenmoser 1993).

Situation of the sheep

From 1971 to 1995, sheep raising increased enormously from 291'000 to 436'000 (Federal Office of Statistic). In 1996, a total of about 25'000 sheep summered in the study area (Cantonal Office of Agriculture). In Switzerland sheep are generally left unattended and are checked only once or twice per week. For that reason the carcasses are sometimes found too late for a reliable diagnosis. This is what is driving some sheep breeders mad because they sometimes get no reimbursement. The number of losses never exceeded 0.4% of the total number of sheep which summered every year in the north-western Alps. There About 20'000 CHF (9'000-28'000) on average per year has been paid in compensation since 1987. For comparison: in 1996, 33'000'000 CHF was paid to subsidize sheep and goat rearing.

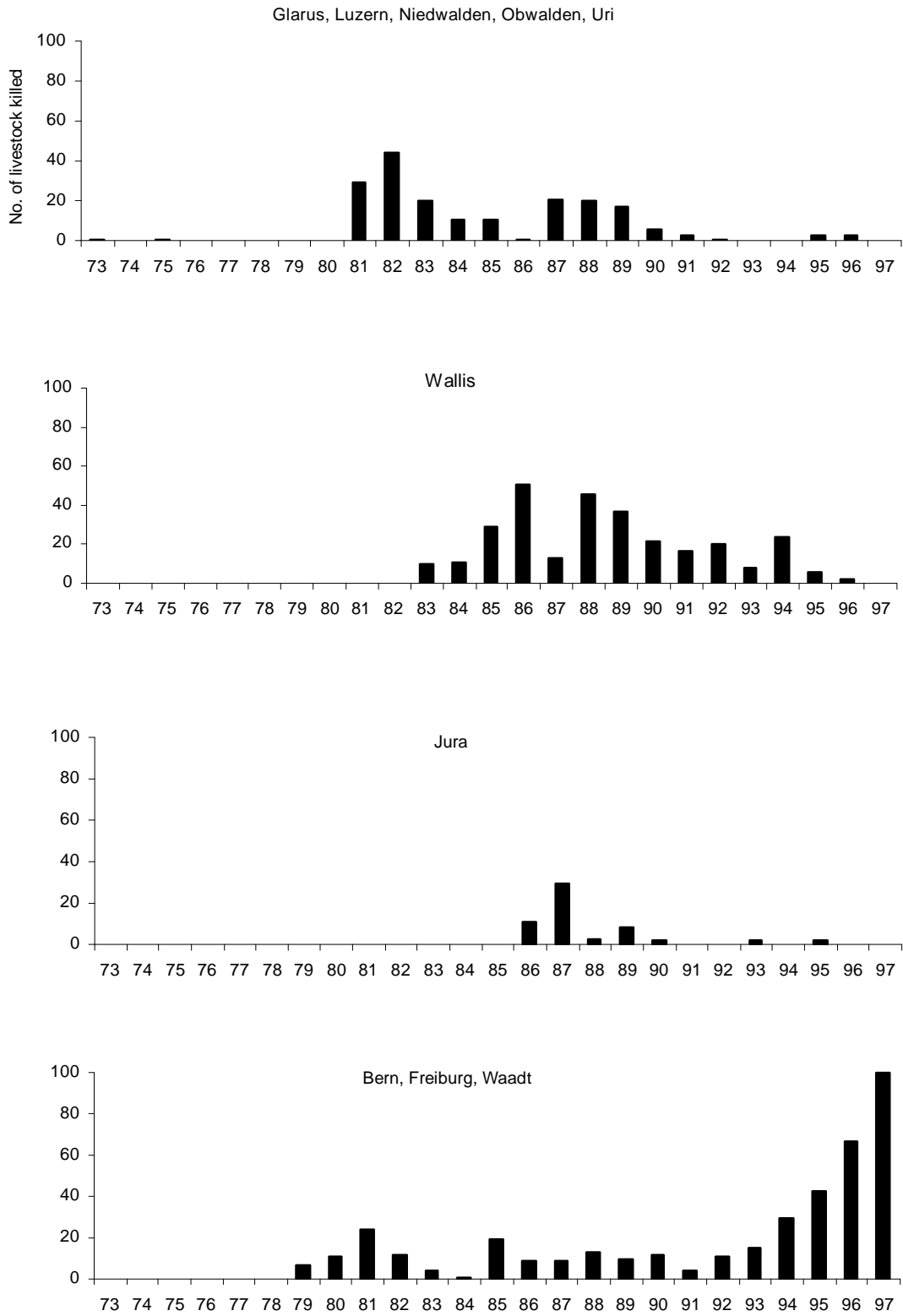


Fig.1: Number of livestock killed by lynx in four regions of Switzerland from 1973-1997.

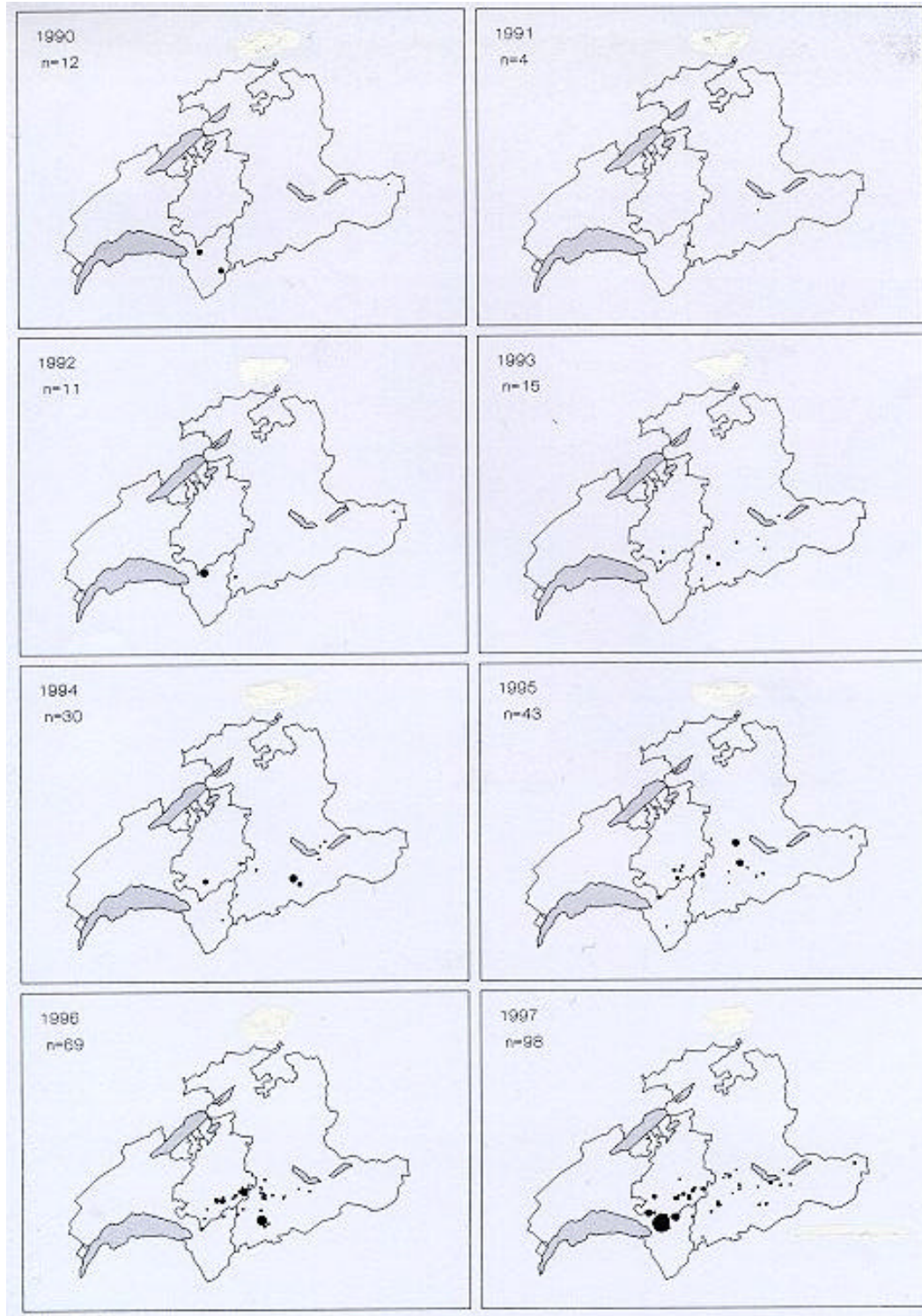


Fig. 2: Locations of livestock killed by lynx from 1990 to 1997 in the north-western part of the Swiss Alps. The size of the points indicates the number of animals killed on the same pasture. The largest point on the figure for 1997 is the location where the first lynx in Switzerland was shot with permission from the FOEFL, after it had killed about 17 sheep on the same pasture.

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Public Involvement in the Lynx Project in the North-Western Swiss Alps

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Public involvement is the main goal of the information work in the project "Lynx and sheep in the north-western Swiss Alps": Local people who are affected by the presence of the lynx *Lynx lynx* should be involved in lynx management, which guarantees the protection of the species in viable and expanding populations by limiting conflicts with hunting and sheep and goat husbandry.

The controversy over the lynx in the Swiss Alps has an economic and social background: the crisis in the rural regions, especially in the mountains. Agriculture is under great pressure. The number of Swiss mountain farms has been reduced by more than a third in the last 30 years and many farmers will retire in the coming years. The state policy of sustaining peripheral areas lacks the financial resources more and more. That is also the case in Simmental and Saanenland in the Bernese Oberland, which is part of the project area: Schools, hospitals and other public services are closed, jobs in public enterprises - railway, army, forestry - are reduced.

Moreover, the rural population is losing part of its cultural identity. People feel abandoned and ruled by foreign decision-makers: by urban centres, by the capital Berne, by decision-makers abroad. Also, the reintroduction of lynx is regarded as an act of foreign dominance. For a better acceptance of the lynx it is necessary to give back responsibility for lynx management to the regions - as well as part of the responsibility for the general goals of conservation.

Information work with this goal cannot be restricted to working with the media only. The most important part is discussion with persons involved: hunters, stockmen, people engaged in conservation, forestry, tourism, education, politics and so on. The discussions not only deal with lynx, wildlife and husbandry, but also with general issues such as the prospects of regional development, mountain agriculture, tourism, conservation, and so on.

Opinions are controversial, but it has to be said that no group would openly claim that the lynx be eradicated again. However, hunters argue that lynx have strongly reduced wild ungulate populations. The guards are suspected to underestimate the number of lynx present in the region or not to tell the truth about it. These accusations are also directed against the lynx project.

Hunters want a reduction in the lynx population. One of their ideas is to capture some lynx and release them in another region of the Alps. In this way, it could be possible to establish new populations and to accelerate the expansion over all the Alps, which is the aim of conservation.

Some lynx have been shot and no hunter would denounce a poacher. But you also find hunters fascinated by lynx.

Stockmen want lynx shot. Sheep farming in the Bernese Oberland is more a hobby than a job. Most stockmen work full-time in another job. But is financially supported by the state. Stockmen see themselves as representatives of a rural tradition and culture which is based on a (vanishing) agriculture and they also regard sheep farming as a manner of preserving landscape. By attacking livestock, the lynx - introduced from outside - appears as a destroyer of the rural lifestyle.

Conservation groups want to preserve the strict protection of lynx, except in cases, where a lynx specialises in sheep predation. On the other hand, they blame sheep farming for destroying the vegetation and to acting negatively on wild ungulate populations, and this is true.

Forestry also supports protection of the lynx. At the beginning of the nineties, the wild ungulate population was too high in the eyes of the foresters. Now the situation has improved and young trees are less damaged.

In **tourism** there is some activity to adopt the lynx as a symbol for the rich and beautiful landscape in the Bernese Oberland. In an advertisement of the Lenk-Bettelberg-Bahnen, a cable-railway enterprise, the lynx is associated with nature, but also with "fun" which is a principal term in the publicity for the Bernese Oberland as a tourism destination.

The opinions of the groups directly involved in the lynx-issue may not be representative of the opinion of the rural population as a whole. There is some evidence, that the general attitude towards the lynx is not as negative as it seems to be, when you listen to the discussions in the pubs.

At the beginning of this month, the **Lynx-contact group Simmental and Saanenland** was established, with representatives provided information of all the involved groups. Collaborators of the project informed about the first results of the new research in the north-western Swiss Alps, namely about radiotelemetry and protection of sheep against attacks by the lynx.

The tasks of the contact group are:

- To become permanently informed about the project, to discuss results, and to suggest, if necessary, further investigation.
- To act as a forum of discussion about all issues connected with lynx, hunting and sheep farming and to suggest solutions in case of conflict.
- To improve the level of information about all these issues within the groups represented.

At the first session, stockmen voted clearly for shooting some lynx - a demand not clearly supported by the hunters.

The chairman of the contact group is a state representative who is highly respected in the region. He is also involved with tourism.

It was decided to meet again in six months. In the short term, the meetings will be mainly information and discussion meetings, without taking decisions. In the longer term, the contact-group should be engaged in a lynx management programme which, on the one hand, promotes conservation of the species and on the other hand, is well accepted in the region. The group should also have some responsibility for decision-making. The group still has to find the right structure to carry out these tasks.

One problem is that the contact group has no legal basis. Legally, there is no possibility to give to it any responsibilities for decisions in lynx management. For instance, only the Federal government has the right to give a permit to capture or to shoot a lynx, and this only in rare, special cases (when a lynx kills many sheep or goats). In addition, agricultural policy - especially farming policy - is made in Berne. In order to permit effective work by the contact group, some change is needed also at the level of legislation and state administration.

The mountain regions are in crisis. The policy of globalisation and deregulation has strong effects in all peripheral regions. To give more power to the regions could be a good answer to this development.

Information on Foxes in Zurich's Backyards: the INFOX Programme

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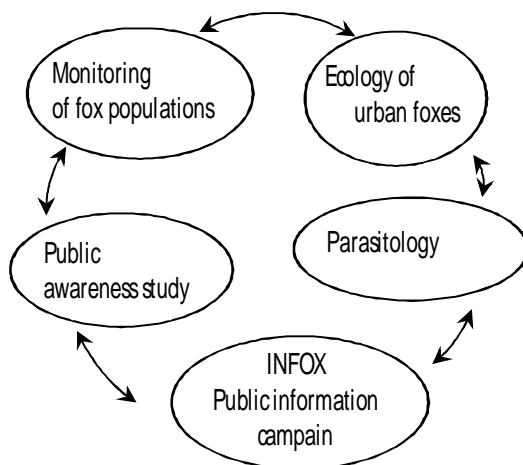
Abstract. In Switzerland the dramatic growth of the red fox population is most noticeable in urban areas. This has a number of ecological and epidemiological implications. The Integrated Fox Project includes scientific research and an information campaign - named INFOX - to enhance public comprehension about urban foxes. Based on public attitudes towards urban foxes, we describe objectives and target groups of the INFOX programme. In a preliminary overview we show methods and materials used in the first year of the campaign and try to evaluate the effect of the efforts.

The Integrated Fox Project: Interdisciplinary research on Fox Ecology and Epidemiology in Switzerland

The red fox (*Vulpes vulpes*) is the most widespread and abundant predator on earth, living in almost all habitats of the Northern Hemisphere, such as woodlands, mountains, deserts or even suburban and urban environments. Moreover, the red fox is the main carrier and vector species of the two most important endemic zoonoses, rabies and fox tapeworm. This makes the fox a highly controversial and emotional species with a great potential public involvement and of fundamental importance as far as management issues are concerned.

Over the past ten years there has been a four-fold increase in the red fox population in Switzerland. This growth was most noticeable in suburban and urban areas. In 1996 we started an integrated research and education project on the dynamics of the red fox population in Switzerland, involving basic ecological and epidemiological research, monitoring and surveillance procedures for epizootics, applied management, and a public information programme called INFOX. Scientists and specialists in wildlife research, veterinary medicine, social science and public relations are involved in the project.

Integrated Fox Project



The integrated Fox Project IFP includes five modules, each working on different aspects (Fig 1). The modules are tightly connected by a strategic frame, shared infrastructure and the exchange of material, data and results.

Fig. 1: Organisation of the project

Three major problems: echinococcosis, wildlife management and public opinion

In Switzerland rabies was a major problem from the late sixties until the early eighties. In 1978, a fox vaccination campaign was started. Since then it has been possible to get rabies under control. No wild animal with rabies has been found for the past year.

Alveolar echinococcosis: The fox tapeworm *Echinococcus multilocularis* is a fox parasite. Human beings can be infected by the eggs of the tapeworm and fall ill with alveolar echinococcosis. The risk of infection is extremely small (eight to ten persons are affected in Switzerland each year). However, the illness is most serious and cannot be cured, although it can be treated by surgery and/or chemotherapy. There is no high-risk group known, although people living in the countryside tend to fall ill with echinococcosis more often. Despite the dramatic increase of fox population, the increase of foxes in suburban and urban areas could promote the spread of fox tapeworm in these areas and may increase the risk for human beings in the future.

Fox control and management problems: Foxes are believed to be increasingly responsible for damage to livestock and pets, or on crops, gardens and buildings by digging dens. In Zurich and other Swiss cities, there has been a long-standing policy of fox control, usually in response to specific complaints from local residents. Despite of intensive control efforts, the fox population is growing. Moreover, the control activities often result in considerable public debate.

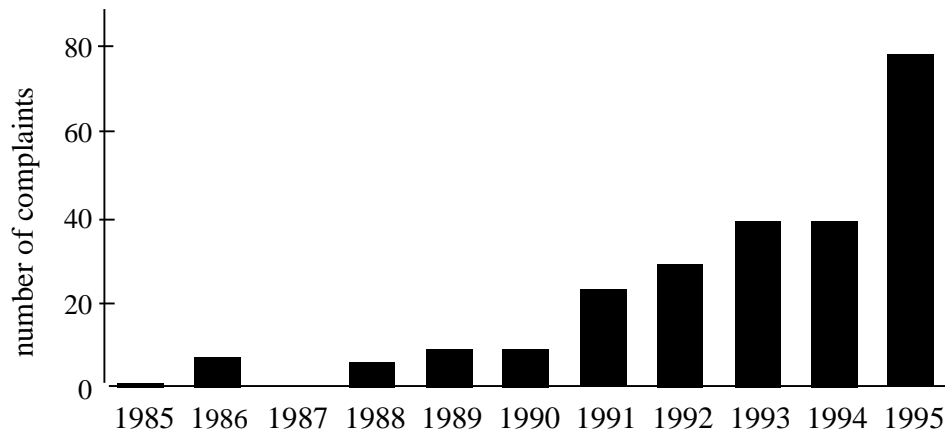


Fig. 2: In Zurich the growth of the urban fox population can be shown by the increase of sightings and complaints of inhabitants reported by one of the three urban game wardens

Public opinion problems: There is a wide spectrum of public attitudes to the presence of foxes. Some people treat foxes like pets and feed them, while others are worried about the presence of an unknown, wild predator in their vicinity. This fear is often related to zoonoses associated with foxes.

Human attitudes towards urban foxes

We evaluated the spectrum of public attitudes towards urban foxes in a non-representative way by personal contacts with inhabitants during biological field studies; by public calls for

fox sightings in news papers and on radio and TV; and by the Fox phone, where anybody can call for information or to report sightings or complain about foxes

Tab. 1: Main cause of negative attitudes towards foxes (n=62).

Fox tapeworm	31%
Disorder in garden	25%
Fear	18%
Concerned about pets	18%
Request for shooting foxes	8%

Public attitudes towards urban foxes are about half positive (41%), half negative (38%), the rest neutral requests for information (n=162).

Objectives of INFOX: Ways of coexistence for inhabitants of cities and urban foxes

Foxes are "neighbours", but not pets

A lot of people like foxes, maybe because they look so similar to dogs, maybe because of their beautiful fur or their image of cleverness.

Ü INFOX wants to provide information about this wild animal by making it possible to observe it or its traces in town. INFOX tries to show people the difference between wild animals and pets.

Communication of the results of the study

We frequently find, that people often know more about foxes from fairy tales and stories than from their own experience. Therefore, we believe that a lot of conflicts between people and foxes are based on insufficient knowledge about foxes.

Ü By keeping the public informed about the current study on urban foxes, about methods and preliminary results, the INFOX campaign wants to improve and correct the of people's knowledge about foxes.

Possibilities of an adapted management of urban foxes

A lot of people think that it would be possible to control fox populations by hunting. Because foxes can be the source of rabies and echinococcosis, some people call for severe control efforts.

Ü INFOX wants to about rabies and echinococcosis and how we can act to minimize the risk of being infected. INFOX also provides information about the possibilities and limits of fox management.

Foxes as a symbol of urban nature

A lot of people are fascinated by the fact of foxes living in cities. More than any other urban species, foxes are identified as a part of real wildlife. Therefore, foxes can be perceived as a symbol of urban nature.

Ü The INFOX-information about the life of urban foxes wants to give people in town the possibility experiencing nature in their immediate vicinity.

Target groups

- All inhabitants of urban , particularly in Zurich
- multipliers (teachers, children, doctors, veterinarians)
- people, who feel afraid of, or have problems, with foxes (Fox phone).

Information materials and procedures

- Fox phone: open to the public for questions, sightings, etc., "communication centre".
- A leaflet with brief information about the current project and fox biology, addresses and phone numbers for more information
- Information on Swiss television: the TV program "Menschen-Technik-Wissenschaft" (Men - Technique - Natural science) provides information about the Integrated Fox Project in 1997/98. Later, a book and a video cassette are planned.
- Scientific publications and information for doctors and veterinarians.
- School surveys and drawing competitions: to obtain a picture of the relative abundance of foxes throughout Zurich about 100 school classes were asked to record all sightings of foxes between May and July 1997. Teachers are asked to make urban foxes a subject in school. We offer teaching materials. A drawing competition takes place for all children in the town.
- Foxes in culture: as a co-production of the theatre group M.A.R.I.A. and the Integrated Fox Project the play "Woman in Fox" by David Garnett is performed. A exhibition about urban foxes, including drawings from the competition is shown.

First evaluation of the effect

In Tab. 2 we present our estimate of the effect of the different communication channels. This evaluation is based on personal experience during the INFOX campaign, not on quantitative data. It is proposed as a background for further discussion. The criteria on which we evaluated the effect on different media are the following:

Television. Television makes it possible to reach almost every inhabitant in Switzerland. The Swiss television programme on the urban foxes of Zurich was very successful and led to top viewing figures. On the other hand, the contributions about foxes were quite short (6 to 14 min.). Therefore the information was rather superficial. In our experience, most people who saw the urban fox programme remember only some pictures which were very emotional.

Print media. Provided the articles were long enough it was possible to communicate more complex contents. It is possible to adapt the information level and language chosen to the distinctive readers of each newspaper.

School children. They like and remember mostly emotional content. Children are multipliers of information because they talk about their experience at home in their families, too.

Personal contact. This is the most time-consuming way to communicate about urban foxes and reaches only a few people. Nevertheless, it is very often the only way to solve problems individually. Often it was possible to find suitable solutions for the problems of people who are afraid of foxes, or of zoonosis connected with them, or who feel angry about foxes.

Tab. 2: Our personal evaluation on the effects of different information "channels" of the INFOX-campaign.

medium	television	print medias	school children / other multipliers	cultural events	pers. contact
Foxes are „neighbours“, but no pets	●	●	◐	●	●
Communication of the results of the study	◐	●	◐	○	●
Possibilities of an adapted management of urban foxes	○	●	○	○	●
Foxes as a symbol of urban nature	●	◐	●	●	●
audience					
# of contributions	7	>50	3	3	500
reached persons (total, only Switzerland)	4.7 Mio	>3.3 Mio	1000	1500	500



strong effect



medium effect



weak effect

Acknowledgements. We are grateful to all members of the Integrated Fox Project for their contributions to INFOX. For financial support for INFOX we thank: Waldamt der Stadt Zürich, Zürcher Tierschutz, Beitrag aus dem Reinerlös von 10 Prozent des Verkaufszuschlages auf den Pro Patria-Marken 1996, Familien-Vontobel-Stiftung, Schweizerische Akademie der Naturwissenschaften SANW, WWF Zürich, WWF Schweiz, Helen-Bieber Fonds, Zürcher Hochschul-Verein, Ernst Göhner Stiftung, Präsidialdepartement der Stadt Zürich, Genossenschaft Migros Zürich, Ella & J. Paul Schnorf Stiftung, Henry Ford European Conservation Awards 1997. This is contribution no. 1 of the Integrated Fox Project IFP.

Mutual Trust As The Key for Successful Large Carnivore Conservation

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Abstract. Human dimensions dominate the lynx (*Lynx lynx*) issue in Eastern Bavaria. Failures in the past still linger in present discussions and block objective and fact-based dealings with the recolonizing species. These human-related conflicts cause strong resentment towards the lynx. Work in the region therefore focuses on building up mutual trust between all interest groups. The goal is to form an objective and fact-based platform for future interdisciplinary discussions. This platform is seen as the most important prerequisite to guarantee the longterm survival of lynx in the region.

Lynx are recolonizing Eastern Bavaria. Extirpated during the 19th century, this large cat has been reintroduced, first into Bavaria in the early seventies (Festetics 1981), then into the Bohemian forest during the eighties (Cerveny and Bufka 1996). Apparently, lynx can not only cope with the large and coherent forests along the Czech-Bavarian border, but also with the forest-field patchiness of human-dominated habitat down to the lowlands of the river Danube (Wölfl et al., in prep.). However, man-induced mortality, mainly road kills and poaching, hinders the species from settling permanently in these more open habitats (Wölfl 1997a).

Why are lynx being poached in Bavaria?

In general, most farmers and livestock-owners still strongly resent predators. This resentment is based mainly on traditional lore and stories, not on facts or knowledge. The lynx is therefore seen as a real danger for livestock (e.g. sheep, goats).

Moreover, local hunters fear the species as a strong competitor, preying on roe deer. The German hunting system allocates each hunter a certain area to hunt year round. After 150 years as top predators in the woods, human hunters have come to believe they actually own all game species within their hunting ground. However, according to German hunting law, game species only become hunters' property if they actually kill them, or if game is found dead within the hunting area (Doerenkamp 1994).

In recent times, forest recovery action plans (e.g. Bayerisches Staatsministerium für Ernährung, Landwirtschaft und Forsten 1998) acted as a catalyst for the strong resentment towards lynx. These plans aim at strongly reducing ungulate populations to ensure a fast natural regrowth of trees. These reduced ungulate densities, especially in roe and red deer populations, nourish the dread of lynx as a competitor.

Apart from all these aspects, dishonest and secretive behavior of *pro lynx groups* has caused a situation where distrust and emotions dominate the mutual relationship. Especially the illegal release of lynx in Bavaria during the seventies still dominates - even more than 25 years ago - most of the discussion today. Based on this mistake of the past, lynx friends are still criticised for supposedly supporting illegal release of young zoo animals.

How to overcome distrust?

Basic and objective information about lynx and roe deer ecology, linked with successful forest management, can reduce the prejudices towards lynx inherent in the land users. Additionally, a compensation system for actual damage by lynx on livestock has to be installed (Wölfl 1997b). The main effort, however, should focus on building up mutual trust between the interest groups. The manner by which lynx were reintroduced into Bavaria during the early seventies still prevents an objective and honest discussion. Existing prejudices of land users towards GOs and NGOs have been strengthened, resulting in overwhelming distrust towards conservationists and authorities. The conservation of lynx therefore needs the strengthening of trust again. This only can be done with honest and scientifically-based information. Searching for arguments to persuade land users should be done with caution and strong self-criticism. Personal wishful thinking often implies a key role of lynx in the ecosystem (e.g. lynx preys only on sick individuals, lynx can regulate roe deer populations and therefore helps the forest to recover; Kalb 1994). However, to argue with hypotheses is not a useful tool for regaining mutual trust.

Who can transfer the information?

We need persons who are objective, experienced, sensitive, not involved in local problem history and interest groups, but living in the region. They should actually visit local people. They need to be good and patient listeners, and they should understand land users' arguments and way of life.

As a preliminary result of two years' work in the region it can be assumed that the person *who will transport the information* in a successful longterm management of large carnivores should be somebody who

- is familiar with the species (field experience is most important);
- is present in the region year round;
- can deliver honest information in a non-arrogant manner;
- addresses all interest groups with the same information;
- takes land users' opinions seriously.

How can it work?

In Bavaria, the first steps towards mutual trust are on the way. For the past two years, the Naturpark Bayerischer Wald e.V., an NGO not involved in the controversial regional lynx history, provides professional advice in the case of problems related to lynx issues (e.g. judging kills of livestock and game species) and actually leads the information campaign. The campaign includes lectures and field trips for all interest groups and the distribution of written information (e.g. Wölfl & Hofmann 1997). The goal of this campaign is not necessarily to persuade people that the lynx is an important part of the ecosystem, but to form a sound and fact-based platform where the lynx issue can be discussed by all interest groups, and widely accepted guidelines for the future of the lynx in Bavaria could be developed. Moreover, the Naturpark functions as a center of horizontal and vertical communication between single individuals in the region, interest groups, media, institutions and government. By doing so,

interdisciplinary discussions and meetings are stimulated (e.g. Landesjagdverband Bayern e.V., in press). As a result of these interdisciplinary discussions, a damage compensation fund for loss of domestic animals was implemented recently. Present discussions focus on the potential influence of lynx predation on ungulate densities and its consideration in future ungulate management.

Acknowledgements. This study is financed by the districts Regen, Freyung-Grafenau and Deggendorf, the Government of Lower Bavaria, the Bavarian Ministry of Environment and the European Community. The Naturpark Bayerischer Wald e.V. logistically supports and coordinates the project. I would like to thank Heinrich Schledorn (†) from the Government of Lower Bavaria for his initiative in getting things started.

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Return of Predators: Reasons for Existence or Lack of Public Acceptance

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Abstract. Rural as well as urban areas of Switzerland are currently experiencing an increase in predator populations. This study about people's attitudes towards predators provides the necessary prerequisites for successfully performing PR-campaigns to further public acceptance of the predator invasion. Qualitative interviews, standardised questionnaires as well as further investigation techniques are applied. Preliminary findings show that, besides knowledge about predators, people's perception of nature is a key factor governing the attitudes towards predators.

Introduction

Many European regions are experiencing an increase in predator populations (Meyer 1996): Species once exterminated, such as the lynx, have been reintroduced - or have returned without human help - such as the wolf. The phenomenon of the return of predators is primarily known from rural areas. However, urban areas are confronted with the invasion as well (Harris & Rayner 1986): The increase of the red fox population in Switzerland particularly is taking place in sub-urban and urban areas (Hotz et al. 1995).

Nature conservationists may welcome these developments as a sign of successful nature restoration efforts, but the public in general may be ambivalent on this topic (Bath 1991; Boitani & Zimen 1979; Kellert 1985; Mutter 1996; WWF Schweiz 1994): On the one hand, the invasion of wolf and lynx in rural zones leads to specific problems of public acceptance, since the local population - in particular sheep farmers - is directly and negatively affected by predation on domestic animals. On the other hand, the majority of citizens in Central Europe - who predominantly live in urban areas - might accept an increase of predator populations in remote rural zones.

The predator invasion in urban areas provokes ambivalent reactions in the urban population as well: some treat foxes like pets and feed them, whereas others are confused about the presence of an unknown, wild predator in their immediate vicinity. This fear is often related to the (small) risk of infection with dangerous zoonoses by contact with fox excrement and is most present among family gardeners, i.e. in the group which is most affected by the fox invasion and most endangered by the zoonoses.

Public agencies and NGOs are therefore challenged to conduct public relation campaigns to increase acceptance of the predator invasions; to ensure predators' presence in the long run; and to enable friendly coexistence of humans and predators. The success of such campaigns depends strongly on the following *prerequisites*:

- knowledge of the frequency and distribution of a lack of acceptance in the population;
- thorough knowledge of the dimensions of the relationship between humans and predators in general and, in particular, of the underlying reasons for a lack of acceptance;
- knowledge of adequate approaches for public campaigns.

Since these prerequisites do not entirely exist in the specific context of Switzerland, the aim of our project is to elaborate on the lack of knowledge and thus to answer the following *research questions*:

- What is the frequency of lack of acceptance in the Swiss population?
- What is the regional distribution of this phenomenon?
- What is the distribution of the phenomenon regarding socio-economic factors?
- What are people's ideas about predators?
- Which role does mythology play?
- How do people cope with the presence of predators in their vicinity?
- In particular: What are the driving forces for the lack of acceptance?
- And: Are acceptance problems connected with direct involvement, or are they shared by the majority of the population?
- How should a public relations campaign be designed to have a long-lasting positive effect?

Methods

Three research phases can be distinguished in our social science study, namely an inductive, a deductive and a transfer-control phase.

In the *inductive research phase*, which has not yet been completed, we conducted three case studies, each considering the acceptance problems of the presence of one species, i.e. wolf, lynx and 'urban' fox. These case studies are performed in collaboration with other projects.

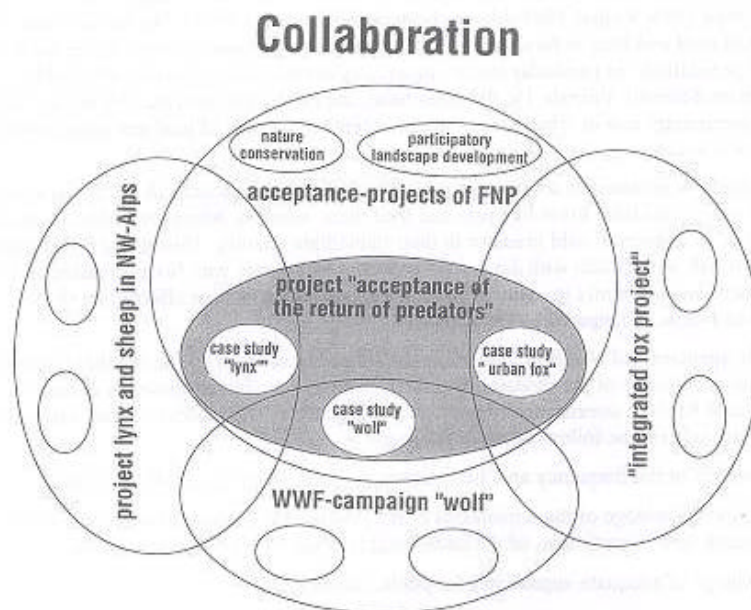


Fig. 1. The case studies and related projects.

The purpose of this inductive phase was to explore the problem and to gain deep insight into various forces that cause the existence or lack of acceptance. The investigations were conducted with the aid of qualitative interviews (i.e., a procedure similar to the 'focused interview' of Merton & Kendall (1956) was chosen). This technique was most appropriate for

exploration due to its principle of the greatest possible openness and flexibility. According to a check-list, open-ended questions were asked. They served as an incentive for the interviewees to report on attitudes and feelings. Follow-up probes were used to get more details about the statements and paraphrases for their verification.

After transcription, the interviews were analysed according to the approach of the 'Grounded Theory' of Glaser & Strauss (1967). The full text was screened line by line in order to generate categories, each representing a generalised concrete aspect of the relationship of humans and predators (Richards & Richards 1994). Dominant categories were cross-checked with the aid of the remaining categories. After necessary revision of the key categories, the text was screened for contributions to this key categories only.

The interviewees were selected according to a 'theoretical-sampling' strategy (Strauss 1991), i.e. persons with widely differing positions or opinions are chosen (Fig. 2). This strategy allowed to investigation of most of the existing attitudes without questioning a representative sample of thousands of persons (Lamnek 1989). This approach, however, principally does not yield data on frequencies and distributions.

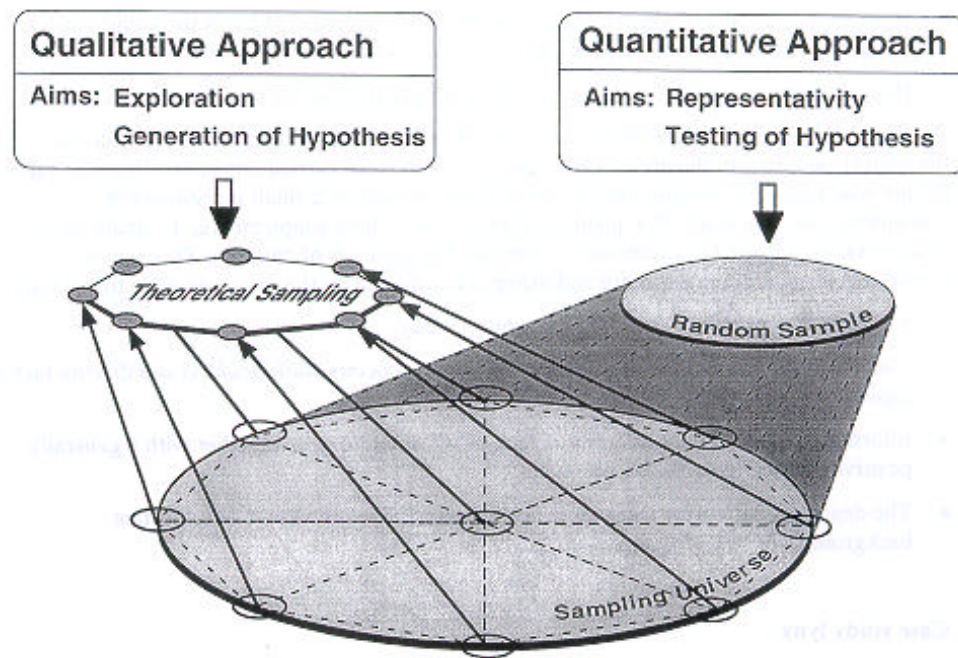


Fig. 2. Sampling strategies in social sciences.

In order to get information on frequencies and distribution of the different attitudes and to test hypotheses derived from the inductive phase a *deductive research phase*, which has not started yet, will be carried out: A representative sample (for Switzerland) of at least 1000 persons will be selected at random. The interviewees will be contacted by telephone and will have to answer questions from a standardised questionnaire. The questions will be constructed according to well established guidelines described in the literature (Atteslander 1984). Sampling and interviewing will be performed by a specialised institute which is able to conduct computer-aided telephone interviews. Data will be analysed statistically.

In a final *transfer-control phase* appropriate acceptance-raising-measures (which will be developed, based on the findings of the preceding phases) will be suggested to public agencies and NGO's that are currently running public relations campaigns. Qualitative interviews (see inductive research phase) with persons involved in the transfer process are used to check whether the suggested measures have a positive effect or not. Thus, the results of this phase aim at further improving the acceptance-raising +measures.

Case study 'urban' fox

The phenomenon of the return of predators is primarily known from rural areas. But, as stated above, urban areas are also confronted with the invasion. And there seem to be similar acceptance problems as with the wolf and the lynx in rural zones. Thus, public and private institutions are also making efforts to increase acceptance of the urban fox and therefore need basic knowledge about the relationship between fox and man.

Besides the general research questions some specific aspects were also analysed, i.e.:

- How do city people - who may agree with predator invasions in rural areas - cope with direct confrontation with 'pure nature'?
- How do they cope with the small but real threat of zoonoses? What is the weight of this threat compared with imagined threats, such as 'wolf-attacks'?
- How do they react to the given fact that it is simply impossible to exterminate the fox?

The close collaboration with the 'infox'-module of the 'integrated fox project' allowed theoretical sampling in the investigation area (Zurich) to be carried out very efficiently since people who contacted the 'fox hot line' were characterised by a small questionnaire. Continuing this case study, the qualitative interviews will be supplemented by analyses of school essays in order to specifically investigate the attitudes of children. This step is important, since children are more and differently affected by the fox's presence than adults.

Some *preliminary findings* of the (on-going) study:

- The perception of the risk of infection with *echinococcus multilocularis* is a driving factor against fox acceptance.
- Informing people is only effective if lack of information goes together with a generally positive attitude towards fox presence.
- The degree of autonomy that nature is allowed to have represents an important background for 'fox-attitudes'.

Case study lynx

The presence of the lynx in rural zones leads to specific problems of public acceptance since the local population - in particular sheep farmers - are directly and negatively affected by predation on domestic animals. On the other hand, the majority of citizens in Central Europe - who predominantly live in urban areas - seem to accept the lynx; at least there are no indications of problems. Therefore, this case study focused on the attitudes of the rural population, particularly sheep farmers, in the investigation area (Simmental). The main reason, why the Simmental was chosen, is that the lynx is a real problem there.

The selection of interview partners followed the principles of theoretical sampling (Fig. 2). As this case study focused on the attitudes of the sheep farmers and breeders, only persons among this group were considered who represent extreme, average, and very special positions. To find such persons, the collaboration with the 'lynx project' and some wildlife wardens of the region was very helpful.

Preliminary findings from the first interviews suggest that knowledge, perception of nature and materialism are key factors governing attitudes towards the lynx among sheep farmers:

- Knowledge and attitude seem to be closely related: the more a person knows about the lynx and its behaviour, the better is the acceptance. But there is something else that interferes with this fact. Some sheep farmers are quite suspicious of what the scientists tell them and others are not really interested in what is said and written about this matter. One possible reason for this suspicion could be the classic conflict between scientists and laymen. This needs to be better substantiated, but it is certainly of importance in improving acceptance of the lynx.
- Another very important factor is the perception of nature. If people saw nature as an absolute power on which we depend almost helplessly, then the lynx and its introduction would be one of the very unpleasant facts, which one cannot change or do anything against. On the other hand, if nature were seen as beautiful, for one's personal pleasure and use, then the lynx would not fit in, for it disturbs the use of nature. If one saw both parts, the power of nature as well as its beauty and use, as equals, then the lynx belongs to nature. It is not very welcome either, but it is given a right to be there. What is considered as a problem is merely the question, whether there is still room for this animal in our civilised world.
- The third factor is materialism. The more materialistic people are, the more they are against the lynx, for the animal causes losses. This seems logical, but it also needs more proof in further data.

There are several other factors, which could influence acceptance of the lynx, such as fear for oneself or others (children), or of economic depression, if the person is a local. These all need to be more substantiated in the pursuit of this work.

Case study wolf

The invasion of the wolf leads, just as the lynx's presence, primarily to acceptance problems with the rural population, i.e. with sheep farmers. In addition, the return of the wolf leads to opposition in the wider population as well. It may be, that people are more frightened by the wolf than by the lynx. One reason for this might be the role that predators play in mythology. Thus, in this case study, we focus on the image of the wolf in the wider population (not only in those parts directly affected), in particular on the influence of mythology on attitudes.

Since 'theoretically sampling' interviewees out of the entire Swiss population is rather difficult, 'expert-interviews' with representatives of sheep farmers' and hunters' associations, nature conservation groups, and the tourism industry are conducted as a first step in order to get the necessary knowledge about the principal positions and opinion that exist. In a second step, 'theoretically sampled' laymen will then be interviewed. Since this case study has just started there are no results to be presented at this time.

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The Role of Fox, Lynx and Wolf in Mythology

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Abstract. The role animals play in mythology might be one reason why people seem to be more frightened of the wolf than of the lynx or the fox. The lynx is hardly non-existent in mythology and the fox is a well-known cunning figure in fables. But the wolf plays various different roles, ranging from a demonic, evil figure, and werewolf myths to the nursing wolf of the city founders of Rome.

The study of public acceptance of the wolf is another part of the research of existing or lacking acceptance towards predators in Switzerland. Interviews will be conducted with representatives of sheep farmers' and hunters' associations, nature conservation groups and the tourism industry. Since this study has just started there are no results to be presented at this time, but it may be true, that people will be more frightened by the return of the wolf than of the lynx. One reason for this might be the role predators play in mythology. A very short overview of the role of the fox, the lynx and the wolf in mythology is given here. Since it was hard to find material about the lynx, and most material about the fox focuses on fables, the statements about these two animals are rather short. A lot of material exists about the mythological role of the wolf, and therefore there are some more lengthy explanations concerning the wolf.

The Fox

In pre-Christian times the fox was seen as a symbol of gods, for example, as a symbol of the god of vegetation or as a symbol of forest and mountain spirits. This changed in Christian times, whereafter the fox was seen as a demonic creature. The fox is a very famous figure in fables and usually is described as greedy, dishonest and tricky. At the same time, of all the helpful animals in fairy tales, the fox is said to be the most helpful one. Most fables tell about how the fox tricks other animals to get food, but no legends or fairy tales have been found telling about the fox attacking humans.

The lynx

The lynx is not a very prominent figure in mythology. No fables or legends concerning the lynx have been found. There are a few proverbs concerning the lynx like for example "to wangle something out of someone" in German means "jemandem etwas abluchsen", which reminds us that the lynx is a very intelligent and quick hunter (Schenda 1995).

The wolf

The big, bad wolf is very well known from fairy tales like "Little Red Riding Hood" or "The Seven Little Goats". According to those fairy tales, the wolf is evil, vicious, cunning and rapacious. Numerous proverbs also depict the wolf as a bloodthirsty killer, especially as one that kills more lambs than it can actually eat. And there is no hope that he will ever change, for "the wolf may lose his teeth, but never his nature" (Limpach 1993). Wilhelm Grimm has even described the wolf as the most evil animal of all (Bächtold-Stäubli & Hoffmann-Krayer 1927-1942).

Indo-European mythology generally describes the wolf as being of demonic origin. In the Edda, the ancient Icelandic sagas, for example, the wolf is the symbol of mysterious powers: Odin, the god of war and death, was accompanied by two wolves; it was a wolf, Fenrir, that played an important role in the destruction of the world; two wolves chased the sun and the moon and at the end of the world they caught up on their prey (Grimm 1887). Today, at the eclipse of the sun, some people still say that the wolf is eating the sun (Lenz 1974). In Egypt, the wolf was seen as the guardian of the underworld and as god of death. The earliest legends of India described the wolf as deceitful and evil, and Christianity went even further and set the wolf equal to the devil. There are various legends from East European countries, Russia and Scandinavia telling about the devil's creation of the wolf (Dähnhardt 1912).

The word "wolf" itself has a very negative meaning: The Swedish and Norwegian term for wolf is *varg*, in Icelandic *vargr*, which not only means wolf but also is used for a wicked person. The Gothic word *vargs* (*warg* in Old High German, *warc* in Middle High German, *verag* in Anglo-Saxon) stands for murderer, strangler, outlaw, and evil spirit. The verdict "thou art a warg" declared the culprit an outlaw. Those people were banished forever from human society and were forced to live in the wild. Some authors argue that the werewolf traditions of Germany and Scandinavia arose from this practice, since the convicted person was thought to be no longer a human being. It was forbidden to help him with anything, be it food or shelter, even if the giver was his own wife. Witches were also closely associated with wolves: Witches were believed to appear disguised as wolves. And the Latin word *lupus* is an abusive word for witch.

But there are also positive traits of the wolf found in mythology. In one of the early legends of India, for example, the wolf is described as a sympathetic and helpful animal. There are several legends telling about female wolves nursing children, the most famous being the legend of Romulus and Remus, the founders of Rome. The Mongols viewed themselves as "sons of the blue wolf", descended through Genghis Khan from a mythical wolf that came down from heaven. For the Romans, the wolf was the symbol of the god of war. Connecting the wolf with war and death was not meant in a deprecatory way, it rather referred to the death of a big warrior or chief, and warriors have been called raging wolves, so there has also been something heroic about the wolf, which could also explain the numerous personal names connected with the word wolf, like for example Wolfgang, Wolfdietrich, Wolfram (Ward 1987).

In *native North American mythology*, the wolf was often looked upon favourably. Some tribes identified their clans with particular animals and looked to them for guidance or inspiration. Especially on the north-west coast the wolf was used as a totem. The wolf was revered because it is a good hunter. It is often associated with the special spirit power that man had to acquire to become a successful hunter (Stewart 1979). Some tribes also have a creation myth in which wolves play an important part, for example, the Kwakiutl of British Columbia. One of their myths tells how the ancestors of the people took off their wolf masks and became humans (Steinhart 1996). According to the Ute, a tribe from the Rocky Mountain area of Colorado, the wolf played a major role in how people came to the earth. The wolf had carried a heavy bag on his back and therefore could only move very slowly. After a while the bag became so heavy he hardly could walk any further and decided to lay it down. While he was doing so, the bag burst and all the people poured out and went to the different places on earth (Läng 1989). But some tribes saw the wolf as dangerous and evil. The Navajo, for example, feared wolves as human witches in wolves' clothing, and the belief in werewolves provides them with explanations of otherwise inexplicable phenomena (Lopez 1987). Other tribes believed that the nether regions of their spirit world were inhabited by wolves, which, in this context, were enemies.

Of course, native North American mythology does not influence the European public in its acceptance of the wolf, most probably it doesn't even influence the non-native North Americans. But the comparison between Indo-European and native North American mythology showed that there are very similar images of the wolf in different parts of the world. It could be assumed that the images of the wolf in Indo-European mythology and the fairy tales constructed out of them influence the public's acceptance of the wolf. This however, still has to be proven by empirical studies.

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"Who's Afraid of the Big Bad Wolf?"

A hiking tour through the Alps tracing human attitudes towards large predators

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The project is supported by a scholarship obtained from a project-competition of the International Commission for the Protection of the Alps (CIPRA) and by sponsoring funds of the World Wide Fund for Nature (WWF Switzerland).

Introduction

Wolf, lynx and bear are returning to the Alps. While the wolf is approaching Switzerland from the Apennines via Liguria and southern France, the bear is spreading from Slovenia towards the Dolomites. Alpine lynx populations are increasing following to successful reintroduction projects. But whether wolf, bear and lynx can re-establish themselves in the entire Alpine region depends to a large degree on the attitude of the human inhabitants. To reduce conflicts between predators and humans, and to increase the chance for large predators to survive in the Alps, public information campaigns will be necessary.

This project will prepare the ground for successful organisation of public information campaigns about large predators. It focuses on school children. This is for several reasons: first of all, experience shows that children are capable of a large range of feelings towards predators. Images range that of a wild monster to the symbol of a reborn, intact nature. Secondly, school provides an ideal organisational framework. Last but not least, it is our children's generation who will have to cope with the arriving predators.

The goals of the project are:

- to analyse children's attitudes towards large predators.
- to evaluate different environmental education strategies in numerous schools in the entire Alpine region and to find the strategy which is most suitable to increase the children's interest and their enthusiasm for this subject.

The key element of the project will be a long hike from Ljubljana to Nice between June and November 1998. Along this hiking tour through the Alps, about 40 schools in Slovenia, Austria, Italy, Switzerland and France will be visited. It is hoped that this hiking tour will help close contact with the mountain inhabitants; that there will be time for spontaneous interviews with selected adults; and that it will attract the attention of the media.

In the schools, the project has two parts:

On the one hand, to explore children's attitudes towards large predators, children's drawings will be used. Before a visit to a school, the children will be asked to draw their own interpretation of "One day in the life of a wolf, bear or lynx". The analysis of the drawings will show the underlying dimensions of the children's attitudes.

On the other hand, a sensitizing program will be conducted on the spot to increase the acceptance of large predators in the Alps. After a short introduction, three types of interventions will be tested:

- a scientific slide show
- an animation program
- a modern fairy tale

After one of these presentations a group discussion will follow. A protocol of this discussion will serve to evaluate the intervention types.

After the hiking tour, the data sets (i.e. the drawings and discussion-protocols) will be analysed with qualitative and quantitative methods. The results will permit to give scientifically-based recommendations to be provided for successful environmental education programs.

It is planned to develop a teacher's manual and/or a touring exhibition for schools. But these steps depend on the availability of sufficient resources.

Results of Group Discussion Work at the KORA Workshop

Alistair J. Bath

Wednesday, 26. November 1997, 14:30-17:00

After the lunch break, participants were divided into three groups of approximately the same size to discuss specific issues on how to improve the situation in Switzerland. Each group was assigned a leader, a specific topic and a set of questions to stimulate discussion. Each group topic (research, public involvement and education) is an aspect of beginning to put together a human dimensions research topic, and results from these discussions provide some initial information towards designing and planning human dimensions research in Switzerland. Each group leader then reported the results of their group to all participants for comment and further discussion. Alistair Bath visited each group and helped, where necessary, in facilitating the group discussion. He was also responsible for facilitating the session when each group presented their results to the larger group.

Group A: Research methods - how can we learn about people's opinions?

Group A was asked to consider several items focused upon where to begin with human dimensions research studies in Switzerland. This group attempted to focus their discussion around the following questions:

- What human dimension studies currently exist in Switzerland?
- What are the attitudinal concepts to measure?
- Who can/should carry out human dimensions research?
- What are the instruments for investigating people's attitudes?
- Which approach can we pragmatically choose?

Discussion suggested that there had been very little human dimensions research of a scientific quantitative nature completed in Switzerland. There are a few proposals to do research and some current research in progress but basically human dimensions as a concept is in its infancy in Switzerland.

Any existing literature is hard to find and often is considered "grey literature".

A need was identified to collect baseline data on public attitudes towards large carnivores in Switzerland.

Attitudes towards the large carnivores specifically is only one aspect of the kind of attitudinal information needed to begin to understand people's values and attitudes.

It is important to look at public attitudes towards nature, examining whether the public sees nature as dynamic or static, what is natural and unnatural, and if nature is good or bad.

Predator problems were to be explored, but within the context of other societal problems. How important are predator issues in relation to other environmental issues, unemployment, etc?

There is a need to explore how the public thinks, if at all, about large predators and tourism. Are there potential benefits in having predators for tourism or more negatives?

There is a need to look at public values as well as attitudes towards the specific predator.

What is the true meaning of the animal, species or worth of a population?

There is a need to identify and document the extent of fascination and fear of large carnivores and what beliefs are behind these feelings of fascination and fear.

When examining fear and fascination, issues of existence, past experiences with material losses, extent of demonic images of predators should be explored.

It is also important to identify where people are obtaining information about these predators and whether they believe the information they are exposed to; thus credibility issues are also worthy of examination.

Experts should carry out the research independent of larger predator projects. It is very important to be seen as neutral and not tied to the biological researchers and their projects.

Many research mechanisms exist to collect data from the various publics. Qualitative and quantitative approaches each have their own advantages and disadvantages, depending upon the types of information required and research questions to be explored. Approaches really depend on the nature of the objectives. A combination of techniques will often work best to address multiple stakeholders and multiple objectives.

Group B: Implementation - how can we involve people in predator management?

Group B were asked to focus their discussion particularly on issues of public involvement, and to address the following items:

- Who are the decision-makers?
- How willing are the decision-makers to redistribute power to the public?
- Who are the interest groups?
- What are the instruments and procedures of public involvement that may work?

This group first discussed who are the decision-makers, identifying the federal government, cantonal government, hunters, sheep farmers, etc., and community residents. There is a need to define these groups in more detail (How many of each? Over what geographical area?)

Group B felt that willingness to redistribute power needed to be defined before addressing the issue of whether decision-makers were willing to redistribute power.

The group discussed top-down versus bottom-up approaches without reaching a clear consensus on the answer to the question; a question which perhaps only a group of decision-makers can answer.

At European level, the governments set the time frame for discussions about lynx; at the moment there is a need for a completed management plan. Some initiatives from the federal to the cantonal level have occurred, but the group was unsure about the results of such initiatives. A need exists to talk with both sides about their feelings of success and/or failures of such initiatives.

Interest groups at regional levels are under-represented, thus limiting a bottom up approach to decision-making. Other interest groups at the national level should be involved.

Various NGOs exist that should be involved, including but not limited to conservationists, hunters, farmers, tourism, cultural groups, and the silent majority.

Scientists were considered not an interest group but as advisors to management decision-making.

There was some discussion on the role the scientist should play in large carnivore management particularly public involvement.

Contact names for each interest group and lists of individuals belonging to each group will be required to collect quantitative data from each group so to assemble the attitudinal spectrum.

Group B discussed the idea of advisory groups as a possible mechanism of public involvement, but struggled with issues of who selects the individuals for such groups and how much power they should have. Selecting the correct number of people was seen as very difficult as getting too many people could lead to confrontation. Other thoughts involved having a large group, but one that could be split into smaller groups so that work could be done and objectives reached.

There need to be some initiatives put in place to begin and then to encourage the process. Local government has to play a strong role in this process.

Local contact groups were seen as having potential if they were used for true decision-making rather than just consulted in a token manner.

Field workers by their presence in the community can help provide information, an early phase of public involvement. It is important that common messages are communicated to the public in those cases where there may be several field researchers.

Exhibitions, open-houses and lectures could all be used. However, at present, there is a lack of knowledge on what to communicate, the purpose of such efforts, and the overall concept or strategy of public involvement.

Group C: Education - how can we work towards coexistence of predators and people?

This group were asked to think about specific issues related to the educational efforts required to bring the various publics to a level where informed discussion and consent could occur concerning issues of predator management. The discussion focused upon the following items:

- What messages are important to communicate (prioritize messages)?
- Who should be informed, and who should inform, and how?
- How can we measure the effect of any efforts?

Biological and ecological facts about predators need to be communicated. This needs to be broken down into detailed messages. The group began to explore this to a small degree, suggesting that a number of individuals need to be communicated with. From an attitudinal perspective, understanding how the public feels about these numbers is required. What is the wildlife acceptance capacity of the public for large predators (how much is too much)?

Information on the relationship between humans and predators, this could involve facts about damages to people and livestock, followed by an assessment of public willingness to tolerate the damage. It may also be of interest to explore perceptions of risk as well as tolerance to these risks by various interest groups.

Information on human/human interactions. It is important for each group to understand the perspectives of the other groups. Only after such listening occurs can groups then begin to work together towards finding solutions through consensus, team building and acceptable

compromises. Emotional messages are effective in initially changing attitudes and could be considered along with factual information to increase the positive image of the predators.

The decision on who delivers these messages is very important. Acceptance of the information depends on the deliverer.

There is a need for a combined group of experts to communicate messages, people who know the business.

From past experience, getting individuals from a group to communicate to other members of the group works best. Livestock producers from Montana were informed by livestock producers in Minnesota about the realities of living with wolves. The success of these meetings in influencing attitudes of Montana ranchers is debatable, but ranchers did move from a "hell no" position on wolf restoration to Yellowstone National Park to a "no, but" position.

Group C identified several interest groups who need to be informed: hunters, farmers, children, ordinary people, sheep breeders, tourist agents, opinion leaders, politicians, nature conservationists, wildlife managers and game wardens.

The group also realized that each group would need different messages. There is a need then to define particular weaknesses in knowledge for each group and link these weaknesses in knowledge with attitudes so that communication efforts can be specifically targeted to those beliefs most strongly influencing attitudes.

Direct contact with people who are directly affected by large predators was considered very important in addressing how such messages are communicated. It was stated that reaching each target group may require a different mechanism, and that a generic educational effort and method of delivering messages was not appropriate, given the many stakeholders, each with various levels of knowledge and different concerns.

Wrap-Up Discussion and Where do we go from here?

Alistair Bath took approximately 20 minutes at the end of the workshop to comment on the conclusions drawn by each group and share some ideas on where to go from here. The workshop began with several individuals offering presentations on existing research; these morning presentations provided an effective background to the issue of large predators in Switzerland. Several speakers stressed the importance of involving the public and how having a supportive public was a key element to the success of any large carnivore effort. All participants expressed a definite need for continued discussions and exchange of ideas in a workshop format. In evaluating the workshop, nearly all participants rated very highly their experience in the workshop indicating they had had an enjoyable experience and that a great deal of content was covered. A recommendation was made to have another facilitated workshop early in 1998.

The next meeting should build upon the issues that began to be explored in the group sessions and presentations at this workshop. The key target group or groups still need to be identified and prioritized. There seemed to be some agreement amongst participants that children should be the target group. However, others suggested the importance of having those stakeholders closest to the resource and directly affected by the predators as the highest priority for research. There was some discussion of the advantages and disadvantages of quantitative and qualitative research approaches. To begin to integrate the human component into decision-making and involve the public, participants realized that there was a need for

both qualitative and quantitative research. It is important that the next workshop continue to explore in more detail the nature of research required to increase the coexistence of large predators and humans, and to prioritize the research questions.

There will be a need to develop a public involvement and human dimensions research strategy to focus, coordinate and guide future work. Such a strategy could also include a set of standards for human dimensions research. At the next workshop, participants could help design this set of standards and perhaps have working sessions to examine and improve specific questionnaires and methodologies that are planned to be implemented in the near future.

Communicating with various sections of the public was identified as extremely important. Designing education efforts that are targeted to those specific weaknesses in the knowledge that are most directly linked to attitudes was discussed. The next workshop should produce a list of belief items that could be important in influencing public attitudes towards large carnivores. Gaining specific information about each predator, and linking beliefs to attitudes towards individual predators will help develop the contents of educational programs, brochures and videos. Such research efforts will also ensure that educational material is not focused too high, too low, or on items that have little or no influence on changing attitudes.

Human dimensions research is one aspect of future work that will contribute to the better coexistence of large predators and humans. However, it is also important to involve the public in a meaningful way. This is difficult to do without understanding how much managers and decision-makers are willing to redistribute power to the various sections of the public. The next workshop could involve a special session with invited decision-makers to discuss willingness to involve the public and to explore which public involvement mechanisms may be most appropriate for implementation. Dr. Alistair Bath discussed the importance of involving the public early in the planning process and towards this end it may be beneficial to include other stakeholders at the next workshop, or at least part of it. A facilitated discussion with several stakeholders will provide managers with a better understanding of these stakeholder concerns. Having several stakeholders participate in parts of the next workshop will also begin the trust building between stakeholders and add credibility to the decision-makers and researchers.

First Conclusions after a Year of Trouble-Shooting in the Lynx Core Area

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Problems with lynx in Switzerland are mainly emotional

One of the most important target groups for any human dimension research in Switzerland is believed to be the sheep breeders. Most of the group do not rear livestock for a living, but have another job and do not depend on sheepbreeding for existence (H. J. Baumgartner in this report, Marty 1996, Kvaalen 1995). This group has strongly negative attitudes towards the lynx. Although compensation is paid for sheep killed by lynx, and losses due to lynx are small (Angst, in this report), these people believe that the lynx is a serious threat to their existence. There is a tendency to associate lynx with sociopolitical threats to agriculture (Kvaalen 1995). The western European agricultural scene is changing; economic pressure is not caused by wild animals but, among other things, by the reduction of financial resources to sustain the infrastructure (schools, hospitals, public services) in peripheral areas (Baumgartner, in this report). In our times, lynx and other large carnivores possibly take the role of the scapegoat that represents the loss of a lifestyle, the hated outside interference from "the Government" (Kvaalen 1995) or the general feeling of discrimination against rural people.

Farmers have a long tradition of seeing themselves as the preservers of the political independence of Switzerland. For many decades, farmers have been a very strong lobby group and have had the full support of the government. This political strong position has been weakened step by step. Rapid changes in traditional values have also caused identity problems and loss of orientation in rural society (Bätzing 1991). Today, only 3.5% of Swiss people are working in agriculture, this figure representing people who actually earn their living with agriculture (Bundesamt für Statistik 1998). Most of the sheep breeders, however, are a kind of "farmers at heart"; they are not able to build an existence as farmers, but they see themselves as representatives of a rural lifestyle, and the lynx as a threat to their way of life (H. J. Baumgartner in this report). From a point of view grounded in a certain life style, a threat is something that represents a change in this way of life (Douglas 1982 in Kvaalen 1995) Problems with lynx in Switzerland are therefore mainly emotional.

Rural people deal with a multitude of problems, large carnivores are hardly the most crucial. Depicting wild animals as the key problem in a world with problems that are too difficult to deal with has a long tradition. For example, the first Euro-American settlers developed a pathological hatred towards wolves. There were of course many other problems such as weather, disease, rustling, or fluctuating beef prices (Kellert et al 1995). Shooting and poisoning wolves was an act that allowed an individual apparent control over an utterly uncontrollable world.

A closer look at damage caused by lynx

It is crucial to see the sheep-lynx conflict in this context. The psychological aspect of sheep losses caused by lynx is much more important than the economic losses and has to be taken into consideration. The "selection of risks", the selected perception of danger, seems to be crucial (Kvaalen 1995). Dogs, lightning, rock slides and diseases are hazards that sheep are exposed to. At least 4-5% (some 1000 animals) of the summered sheep in the north-west Alps

are estimated to be lost due to such events (Marty 1996), whereas only some 0.4% (100 sheep in 1997) of all the summered sheep in this region are lost because of the lynx (Ch. Angst, this report). In France, 100,000 domestic animals alone are lost every year due to stray dogs (Landry 1998). In Switzerland, many people report sheep lost because of dogs (Kvaalen 1995, Marty 1996) and nobody has demanded the extirpation of the dog population. An example that also nicely illustrates the somehow irrational perception of danger provides data on sheep losses from Bavaria: since the re-introduction of lynx in 1989, four sheep have been killed by lynx (Wölfl, pers.com.). Nevertheless, "*farmers and livestock-holders still strongly resent predators*" (Wölfl, in this report). Once more, the negative attitude towards lynx is evidently not correlated with actual losses of livestock and economic pressure.

The lynx is too strongly connected to negative issues

It is important not to focus solely on the problems that lynx or other large carnivores can cause, such as loss of livestock or predation on game. Most probably, the "silent majority" is not very well informed about the ecology of the lynx. In the media, the lynx always appears in connection with losses, damage, angry sheep-breeders and hunters. Although the fears and problems of local people should be taken seriously, it is counter-productive to make their concerns the main topic of all discussions. This negatively influences the attitude of people who essentially would be positive about the lynx. When the lynx appears as a factor that substantially threatens the existence of farmers and sheep-breeders, people will readily agree that coexistence is not possible: Nobody would readily accept a threat that destroys income and with it their very existence. A more positive picture of lynx than that of a sheep- and game-killer has to be established.

Solutions on a short term are necessary to prevent immediate damage to the lynx population

When lynx have been released in Switzerland 25 years ago, the human component for the success of reintroduction was neglected. Understanding the various sections of the public and gaining their acceptance is crucial to the success of conservation and management programmes (Bath, this report). However, local people never have been involved in wildlife management in their region.

No public attitude survey has been carried out so far in the lynx core area in the north-western part of the Swiss Alps (parts of the Cantons of Bern, Vaud and Fribourg). It is therefore not possible to base decisions for wildlife management on data which reveal attitudes of different groups representative of the whole wildlife constituency. Public attitudes towards the lynx are only known from meetings, reactions from affected sheep breeders, or opinions heard in pubs (Baumgartner, this report). Distribution and frequency of attitudes are based rather on beliefs than on sound data. The conclusion from this narrow range of opinions is that coexistence with lynx seems to be impossible. Sheep breeders and hunters ultimately demand a reduction in the lynx population; some openly threaten to kill lynx illegally. It is not known, if those "cheerleaders" against the lynx represent a majority of the local people or if they are simply the most active at meetings. However, decisions in wildlife management should not be based only on a small but vocal lobby group, but should be supported by the whole public of the area (Bath 1994).

It is difficult to foresee if the men (women rarely contribute an opinion) who hold strongly negative attitudes against the lynx are able to get rid of the whole "problem" by killing the lynx. Since it is not clear whether the lynx is in immediate danger, management options have to treat the situation as dangerous. Urgent problems with lynx have only been in the past year, so there has been no time to develop a management plan concerning acceptance of the lynx by local people. The present situation requires more of a "trouble-shooting" management that prevents immediate damage to the lynx population.

There has been no time to carry out surveys; problems have had to be handled immediately; and public involvement has not been considered until recently. Public involvement in the lynx core area has not been planned beforehand. The *Kontaktgruppe Luchs*, as presently constituted, consists of people engaged in hunting, sheepbreeding, forestry, nature conservation, tourism, education and politics. This group represents a first step towards public involvement, but it has no official responsibility (Baumgartner, this report). Changes on the level of legislation progress very slowly. This could lead to mere "talkism"; people are allowed to talk, but are not involved in any kind of decision-making. Honest information about the aims and limited possibilities of this group are therefore important. Otherwise too high expectations of the people involved might impair the cooperation.

A possible option for changing or even improving the perception of lynx by the public in the short term, is to contact and support local people who already have positive attitudes towards the lynx. Changing the strongly negative attitude of a (possibly) rather small part of the local people is probably impossible, but improving the attitude of people who are generally not against lynx might be more efficient. There might be some people, who have a genuine interest in maintaining a viable lynx population in their region. To give voice to positive attitudes of local people towards the lynx might reduce the influence of the small, but militant anti-lynx group.

Experience from other socio-economic problems could be taken into consideration, for example, from national campaigns against racism. Professionals of public relations campaigns should be consulted to lead an effective and professional information campaign. As the lynx is a protected species, it should be the task of the government to enable professional campaigns to call the attention of people to the issue of wildlife management. Public involvement is more effective when the public is well informed about an issue (Bath 1989).

At the same time, compromises in the strict legal protection of lynx must be discussed. One option is to plan translocation of lynx to regions of the Alps at present unoccupied. Most probably, people with very negative attitudes would agree to a long-term solution, if the aim of such management is to decrease the lynx density in their region. People with positive attitudes would probably agree because of the chance to link up sub-populations and re-colonize the whole of the Alpine arc (Breitenmoser 1997, *in press*).

In the unoccupied regions, public information and involvement must start at an early stage of the planning process.

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Appendix I: Attitude Surveys in Europe

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There are two distinct parts to wildlife management: there is a biological and a human component. In particular, the introduction and management of species which create strong emotions such as large predators, is as much a socio-political issue as a biological one. The public increasingly wants to participate in decision-making. Today, successful wildlife management involves an understanding of public attitudes towards the species (Bath 1994). Attitude surveys concerning the general public and special interest groups should become common tools for natural resource managers.

Attitude surveys, however, have not been carried out to a large extent in Europe so far. The attitude surveys in this overview have not been published in refereed journals, some of them are Diploma or Master theses. Any existing literature is hard to find and is considered "grey literature" (Bath, in this report), and often is not available in English. Consequently, this overview is not complete.

Italy

Attitude surveys on brown bears

Attitudes of Human Population towards the Re-Introduction of the Brown bear in Italian central Alps: Preliminary result of a survey

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The National Wildlife Institute has been charged by the Adamello Brenta Natural Park to carry out a feasibility study for translocation of the brown bear in the Central Alps of Italy. So far, 0.5% (1512) of the inhabitants of the study area (Lombardia/South Tyrol/North Trentino/SouthTrentino) have been interviewed by telephon. Twenty-three questions were asked regarding different topics related to the bear and possible trouble deriving from its presence.

The evaluation of this study shows a globale good acceptance of the bear and its recovery. There are some indications that the most important actions before releasing the bears are:

- to provide information on the status of bears in the area and of the exact consequences of its recovery
- to pay attention to the evolution of the attitude of breeders, bee-keepers and hunters
- to inform and advertise compensation possibilities.
- to aim the information campaign at reducing differences in Lombardy, because the situation is more uncertain there than elsewhere (less information, less positive attitude, more risky hunting methods).

The original report of this survey will be in Italian and be about 300 pages.

The preliminary results of the survey (in English) are available at the KORA office.

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Norway

Attitudes of the Norwegian Public towards Bear and Lynx 1997

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Diploma thesis

This study identifies and documents the Norwegian general public's attitudes towards, and knowledge about, bear and lynx.

A questionnaire was mailed to a representative sample of residents in a bear core area (n=400) and residents in a control area, where none of the species occurred (n=400); there was an average response rate of 52% .

Participants in the survey held neutral to negative attitudes towards the two species, but were more positive towards the species lynx. The basic attitude does not differ by sample group, but differences in their attitude towards management options were found. Residents in the core area held more negative attitudes towards management options favouring the two species.

This research study begins to offer to wildlife management some information about Norwegian public attitudes towards management options, and some direction for education and discussion topics with local sheep farmers. The study also establishes the importance of examining attitudes and beliefs by region.

Further information in the Diploma thesis:

An opinion poll, conducted among the Norwegian public (sample size 1000) in 1997 on *The future in our hands* reveals that the majority of the respondents (74%) give priority to the existence of natural fauna in Norway, even if they are in conflict with economical interests. Some 62% support a change in sheep farming in order to maintain the current population of large carnivores. There is no reference on this subject available in the Diploma thesis.

The Diploma thesis (1997) is available at the KORA

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Slovenia

Investigation into the public opinion on the conservation management of the brown bear in Slovenia

Poster presentation at the 11th international conference on bear management and research, September 1997, Graz, Austria, Book of Abstracts

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To investigate public opinion towards conservation management, two distinct sample areas have been selected (initial Alpine bear area/core bear range in south-central Slovenia). (Sample size and method of questioning is not indicated)

According to the answers, people were aware of the consequences arising from the conservation of the brown bear.

People from the core area thought that bears were too numerous. Among the key reasons for this attitude was predation on sheep and a bear attack upon an inhabitant of a village in the core area. People from the outer sample area held a different opinion.

The proceedings of the conference are *in press*, a paper on this issue was not available.

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Human attitude towards large predators

Alenka Korenjak, Miha Adamic

In *Gozdarski vestnik*, Vol 54 No 3, Ljubljana 1996, paper in Slovene, summary in English

The differences in human attitude towards large predators in Slovenia and Austria have been investigated. The poll focused on five most affected target groups: zoo-visitors, tourists, foresters, hunters and farmers (n = 1000, (Austria /Slovenia 500), method of questioning is not available from the summary).

According to the answers, zoo-visitors, tourists and foresters of both countries expressed the most positive attitudes towards brown bears. Hunters in Slovenia had positive attitudes. That was not the case among Austrian Hunters. Farmers in Austria had noticeable aversion towards coexistence with brown bears, but this was not established among Slovenian ones.

Human attitudes towards large predators largely depends on the experience of coexistence, which differs according to the regions and to traditional ways of rural activities. In Slovenia, the brown bear has never been extirpated, in Austria, all large predators disappeared in the 19th century. The author assumes that, taking into account the degree of habitat preservation and public attitudes towards the brown bear, the chances for a viable population of brown bear are more promising in Slovenia than in Austria.

Obviously, there were problems with sheep farmers in 1994/95, when bears intruded in a region in north-west Slovenia, where the bear had been eradicated a hundred years ago. Public attitudes were also negative in a core bear area in south-east Slovenia, where a bear attacked an inhabitant of a village (Poster presentations at the 11th international bear conference in Graz, September 1997, Book of abstracts, see above). Most probably, human attitudes in Slovenia differ considerably from region to region.

The paper is available at the KORA office

Austria

Public relation strategies in brown bear conservation in Austria

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Poster presentation at the 11th international conference on bear management and research, September 1997, Graz, Austria, Book of Abstracts, and personal communication

In 1989, WWF started a reintroduction project on brown bears in the eastern Alps in Austria. In 1994, problems occurred due to an increase of damage, close encounters with inhabitants, and negative reporting in the media.

A study of public attitudes has never been carried out, but a communicating strategy is now providing information about behaviour and biology as well as tips for better coexistence. The bear is now almost accepted in the affected regions. Discussions with farmers or bee-keepers, who had the strongest opposition to bears, are focussing on strategies of dealing with problems and not on the question of whether to conserve the bear in Austria or not.

This assessment is due to the personal experience of Norbert Gerstl and two bear-lawyers during the three-year period of the LIFE- programme of the WWF (Gerstl, pers. com.). As the Slovenian study of Korenjak/Adamic showed a negative attitude towards bears in Austria (see above), it is possible that the WWF team only got in contact with people that had a positive attitude, the others probably never contacted the WWF.

In Austria it is planned to carry out a survey of public attitudes on the brown bear in the core areas. Data will be available later in 1998.

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Romania

Working document, Large carnivore core group, 1st meeting, 16-17 October in Bialowieza, Poland

A public attitude survey has been carried out in the transborder area of Albania-Greece-Macedonia. No sample size or method are indicated. Most people think bear is harmful, but have positive attitudes towards dancing bears.

No paper was available

The Working document is available at the KORA office

Sweden**Vilt och Jakt; Sociala och ekonomiska värden, 1981**

Ingemar Norling, Christer Jägnert, Bengt Lundahl

Jordbruks departementet, Stockholm

Paper in Swedish, no English summary,
Short abstract in the Working document, Large carnivore core group (LCCG), 1 st meeting, 16-17 October in Bialowieza, Poland

An opinion survey was carried out in Sweden in 1981. According to the Working Document of the LCCG (see above), no scientific survey has been carried out since then. Bears enjoy a high degree of support among the Swedish public, and hunters appreciate it as a big game animal. Public support for bears in regions where reindeer husbandry occurs is generally low, in these regions poaching of bears has happened.

The paper of Norling et al. (1981) is available at the KORA office

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Acceptance of Lynx by sheep farmers - a sociological comparison

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In: The Re-introduction of the Lynx into the Alps. Proceedings of the 1st SCALP conference Engelberg, Switzerland, 7.-9.12.1995, in press

The themes addressed appear as prominent features in the data material for a Master's thesis in Sociology. As work on the thesis is not yet completed, the findings are preliminary.

On the basis of in-depth interviews (no number quoted), sheep farmers in Norway and Switzerland are questioned about their evaluation of lynx compared to other animals. Sheep being killed by lynx, the compensation system, and arguments in connection with management options for preventing predation on sheep.

From a level of values, part of the problem regarding lack of acceptance of lynx may be found in the aesthetic value orientation. The lynx is rarely seen in the natural environment, it is evaluated rather low.

For both Swiss and Norwegian farmers, spending time and work connected with lynx is a problem.

Among Swiss and Norwegian farmers, there is a tendency to associate the lynx with sociopolitical threats to agriculture. In both countries, the material loss is very low and does not influence the income of the farmers, since compensation is paid.

An important step for reducing the conflict with lynx is to reconsider subsidy arrangements. The measures and policy instruments which could be introduced are not discussed further.

The Draft version of the Proceedings is available at the KORA office

Attitude surveys on wolves

A comprehensive review of public opinion towards the wolf at European level is not available, and even local attitudes are known only from "expert" opinion, rather than from appropriate scientific work (Boitani 1997).

Norway

A paper in Norwegian (Bjerke and Reitan 1994) is mentioned in the diploma thesis of V. Szinovatz (see above). Some 300 people in a Norwegian county were sampled in a telephone survey on attitudes towards wolves. About half of the respondents wanted the wolf population eradicated or reduced, the other half wanted it to be increased or maintained. Farmers were not particularly negative towards wolves, whereas sheepbreeders held quite negative attitudes.

It is not clear how farmers and sheepbreeders are distinguished, and if wolves exist in this county.

Attitudes surveys on Lynx

Germany

Ein Meinungsbild zum Luchs in Bayern

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In Bavaria, an attitude survey was carried out in summer 1990 concerning the re-introduction of lynx. Altogether 170 communal politicians were questioned about knowledge of, and attitude towards lynx. 75% of the respondents would agree to have lynx back, but less than half would like the idea of having lynx in their own vicinity.

The survey expresses an expert opinion, rather than a representative attitude of the local people.

The paper is available at the KORA office

Switzerland

Return of predators: Reasons for existing or lacking public acceptance

M. Hunziker, Eva Egli & Astrid Wallner

Paper in this report, pp 25-30

A public attitude survey was started recently. A representative sample of at least 1000 persons will be selected randomly in order to get information on frequencies and distribution of the different attitudes and to test hypotheses derived from the first (inductive) phase). Qualitative interviews, standardised questionnaires, as well as further investigation techniques are applied.

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Appendix 2: List of Participants at the Workshop on Human Dimension in Large Carnivore Conservation

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