

BROWN BEARS IN AUSTRIA
10 Years of Conservation and Actions for the Future

Andreas ZEDROSSER
Norbert GERSTL
Georg RAUER

MONOGRAPHIEN
Band M-117
M-117

Wien, 1999

Projektleiter

Erich Weigand
Maria Tiefenbach (Federal Environment Agency – Austria)

Autoren

Andreas Zedrosser
Norbert Gerstl
Georg Rauer (World Wide Fund of Nature)

Kartenerstellung

Felix Lux (Federal Environment Agency – Austria)

Titelphoto

„Bears IN Austria“ (*Illustration: Sibylle Vogel*)

Impressum

Medieninhaber und Herausgeber: Umweltbundesamt GmbH (Federal Environment Agency Ltd)
Spittelauer Lände 5, A-1090 Wien (Vienna), Austria

Druck: Weitzer & Partner, 8045 Graz

© Umweltbundesamt GmbH, Wien 1999
Alle Rechte vorbehalten (all rights reserved)
ISBN 3-85457-524-6

INHALT

	Seite
SUMMARY	5
1 INTRODUCTION	6
2 A “SHORT” HISTORY OF BEARS IN AUSTRIA	7
2.1 The Ötscher Bear – Corn Telemetry and Rnergy Drinks	8
3 HOW EVERYTHING STARTED	9
4 THE REINTRODUCTION PROJECT	10
4.1 Chronology.....	10
4.2 The Early Years, 1989-1993	11
4.2.1 Central Austria	11
4.2.2 Southern Austria	12
4.3 Mira’s Orphans.....	13
4.4 1994 – The Year of Change	14
4.4.1 Central Austria	14
4.4.2 Southern Austria	15
4.5 Nurmi Changed Everything	15
5 THE LIFE YEARS 1995-1998	17
5.1.1 Central Austria	18
5.1.2 Southern Austria	19
6 THE MANAGEMENT PLAN FOR BROWN BEARS IN AUSTRIA (Summary by Arbeitsgemeinschaft Braunbär LIFE)	20
6.1 Advocates and the Bear <u>E</u> mergency <u>T</u> eam (ET)	21
7 SOME ASPECTS OF BEAR ECOLOGY IN AUSTRIA	22
7.1 Home Range of Released Bears	22
7.2 Damages.....	22
7.3 Scat Analysis.....	24
8 BROWN BEAR CONSERVATION ON A PAN-EUROPEAN LEVEL	25
8.1 The Large Carnivore Initiative for Europe (LCIE) (summary by W. Pratesi Urquhart, LCIE Co-ordinator).....	25
8.2 The European Brown Bear Action Plan – A Summary	26

8.3	Austria and the Action Plan	27
8.3.1	Actions Regarding Species Conservation	27
8.3.2	Actions Regarding Habitat Protection	29
8.3.3	Actions Regarding Conflicts with Humans.....	30
8.3.4	Actions Regarding Nuisance Bears.....	32
8.3.5	Actions Regarding Public Involvement in Brown Bear Management	33
8.3.6	Actions Concerning Public Awareness, Education and Information	34
8.3.7	Actions Regarding Research and Monitoring	35
9	BROWN BEARS IN AUSTRIA – QUO VADIS?	36
10	ACKNOWLEDGEMENT	37
11	LITERATURE	38
	ILLUSTRATIONS	39

SUMMARY

The present report of the Federal Environment Agency – Austria provides a detailed account of the bear's return to Austria. Beginning with a stray migrant from Slovenia in 1972, the Austrian bear project has evolved into an important conservation program. Ten years ago, the World Wide Fund for Nature (WWF Austria) released the first of three bears in the Northern Limestone Alps of Austria. This event marked the start of the reintroduction project and the commencement of the Austrian bear project.

Throughout the last ten years the bear project has gone through various phases and changes:

- The reintroduction project from 1989 to 1993.
- The “trouble year” 1994.
- The LIFE program from 1995 to 1998
- The conservation program according to the guidelines of the management plan.

There were several activities that had to be carried out in order to prepare for the brown bear's natural resettlement of the Eastern Alps: an insurance company had to be found that was willing to compensate for the damages caused by bears; scientific data concerning brown bears in the Alps needed to be collected; and ways had to be found to gain the acceptance of the groups which opposed the project. It took some time but by 1989 Austria was ready to commence its bear project.

In the next four years the bear project would encounter some problems but nothing would compare to the “trouble year” of 1994. The amount of damages caused by bears reached a height never seen before. It was not just the high number of damages that were worrisome it was also the behaviour of the “nuisance” bears as these animals were approaching occupied houses; thus, the public became nervous and their attitude towards the bears changed drastically. WWF had to cancel the reintroduction program and develop new methods to conserve the brown bear population of Austria.

The LIFE program was the next phase in the bear project. The main activities of this program were: development of a management plan; creation of a large scale public awareness program; foundation and training of a bear emergency team; reduction of damage caused by bears; and improvement of international co-operation. The funding from the European Union LIFE program made the development of these activities possible.

After the LIFE program was finished the conservation of brown bears continued due to a co-operation between: the governments (Federal and Provincial); the Ministry of Environment; the Hunter's Association; the Federal Environmental Agency; and WWF Austria. This co-operation secured a nation-wide homogeneous process for bear conservation. There have been financial limitations on the bear project since the end of the LIFE program, however the project has benefited in other ways, such as the implementation of the management plan which was a very important step for bear conservation in Austria.

A Large Carnivore Initiative for Europe was launched in 1995 and WWF Austria was involved in the campaign from the start. This initiative produced an “Action Plan for the Conservation of the Brown Bear”, which identified topics and actions necessary to the survival and protection of the brown bear specific to the countries involved in the initiative. It is hoped that the creation of this initiative will encourage political co-operation on an international level as it has already helped develop strong international relationships between scientists.

There is a good chance that the population of brown bears in Austria can reach a secure level because they have a high reproductive rate and they tend to move across small distances. However, the behaviour of bears has changed due to their interaction with humans resulting in an increase of damages. Their most serious threat is the negative attitude that humans have towards bears. In order to ensure the survival of brown bears in Austria humans have to learn how to live in harmony with these endangered animals.

1 INTRODUCTION

Throughout the ages people's attitude towards the brown bear has been divided between fascination and fear. These large carnivorous beasts have always evoked a sense of awe in human beings for their strength and intelligence as well as their amazing cleverness. Bears stood out among the other animals because of their capability to stand upright and their unusual ability to sleep away the cold season in a den deep inside of the earth. All these qualities have made the bear special and established this animal as a central figure in various mythologies and religions. Bears still survive in legends and myths but their current chance of survival in the real world is very uncertain.

As time went on humans grew more afraid of bears especially with the introduction of agriculture. People not only feared for their lives they were also afraid of the devastating effect these animals could have on their crops and livestock; thus, bears became enemies and they were hunted ceaselessly throughout all of Europe. In some places bears were completely wiped out and in others they were pushed back into the densely wooded highlands far away from human settlements.

Until a few decades ago humans were not very concerned with the bleak fate of the bear but the environmental movement has given these animals a new chance for survival. Yet the return of the bear has elicited conflicting attitudes in people. Most see the survival of the bear as a symbol of an intact nature, a welcome "messenger of the wilderness" while others consider the bear to be a threat to farming and tourism. The brown bear is threatened as long as people are divided on this matter because conservation is dependent on a united human effort. This publication is dedicated to all those people who put so much effort in this project and to those people whose valuable input consisted in their constructive scepticism of this project.

Norbert Gerstl
(WWF-Austria)

Karl Kienzl
(FEA-Austria)

2 A “SHORT” HISTORY OF BEARS IN AUSTRIA

At one time Austria was considered a "bear-country". According to statistics that date from 1500 to 1950, bears were spread all over Austria (RAUER & GUTLEB 1997). Much of the data is derived from the Eastern Alps of Austria. In addition to this evidence, the prevalence of the bear is displayed in the numerous places that have names associated with the word "bear". In total, there are one thousand and three names to be found all over Austria (RAUER & GUTLEB 1997). Once again most of the data is derived from the Eastern Alps, south of the river Danube.

At the beginning of the Middle Ages many social changes took place. These changes had a drastic effect on nature. The human population began to grow and expand into areas that had previously belonged to bears, wolves and lynxes. Improved cultivation techniques were introduced, such as the logging or burning of woods to create farmland. Another common practice was the grazing of livestock in forest.

In those days, there was a small number of nobles and members of the clergy who constituted the ruling class. These people lived a life of luxury. By contrast, the majority of people were very poor and they were forced to work exceptionally hard in order to sustain a meagre existence. A 17th century farmer who owned two cows and three goats would be struggling for survival. His existence would be seriously threatened if he lost any of his livestock to large carnivores. Thus, commoners hated and feared large carnivores because they were the cause of so much damage.

The wealth of the ruling nobles was based on the farmers working their land; so if the farmer's existence was threatened by carnivores, the economic position of the nobles would also be directly threatened. Thus, the hunting of large carnivores was very important to the financial interests of the nobles and it was also considered an exciting source of entertainment. Consequently, bears, wolves and lynx were killed wherever possible, whenever possible; they even became symbols of evil as well as of the devil (LOPEZ 1978).

During times of war or political instability large carnivore populations were usually able to recover to some extent as people were occupied with "different business". However, this was not enough to stop the overall decline. Everybody was allowed to kill large carnivores using any possible means. Some examples are: guns, nets, snares, poison, pitfalls, and spring-guns. By the 16th century, rewards were offered in Austria for killing these "vermin" (BACHOFEN von ECHT 1930). On June 23rd, 1788 a decree was issued which ordered the extermination of bears and wolves in the area of the Austrian empire. The last autochthonous wolves to be found in Austria were killed in the 1860's (ZEDROSSER 1996). The bear did not fare much better. For each Austrian province exact data is available on the killing of the so-called "last bear": 1833 in Upper Austria, 1838 in Salzburg, 1840 in Styria, 1842 in Lower Austria, 1884 in Carinthia and 1913 in Tyrol (BACHOFEN von ECHT 1930). Due to the direct persecution by humans exclusively, the bear and wolf became extinct in Austria during the 19th century.

The situation was not very different in the western neighbouring countries. The last bear was killed in Bavaria in 1835 and in 1904 Switzerland lost its last bear. The idea of nature conservation was conceived in central Europe at the end of the 19th century but it was already too late to save the original bear populations. (RAUER 1995).

Fortunately, the bear populations of eastern and southern European states took a different course of development. Due to nature conservation activities and hunting interests bears in Italy, Slovenia and Slovakia survived beyond the turn of the 19th century into the 20th century. Today, Italy has two bear populations; they survived in the Abruzzo region on the Italian peninsula and in northern Italy in the Trentino region. Unfortunately, the Trentino population declined in spite of conservation activities and currently consists of no more than four animals. Due to this development, bears will be released in this area in 1999 (SWENSON, et al. in prep.).

Conservation efforts were more successful in Slovenia. There were sixty to eighty bears in this area before World War II. The population was boosted due to the prohibition of poisonous baits in 1962. There were approximately two hundred and eighty-eight bears in 1970. Another important factor for this increase in the Slovenian population was that efforts were made to preserve certain animals for hunting purposes. Efforts such as year-round feeding stations provided an artificial food source for roe deer. Currently, there is a population of three to four hundred bears living in Slovenia. There was a similar development in the bear populations in Slovakia; numbers increased from thirty to forty individuals in 1930 to seven hundred in 1996.

2.1 The Ötscher Bear – Corn Telemetry and Renergy Drinks

In spring of 1972, a young male bear started to go north from Slovenia and after travelling 300 km he ended up in central Austria. In the summer of 1973, the bear decided to settle down in an area in the northern Limestone Alps in central Austria, called the Ötscher region. The killing of an earlier migrant in 1971 in Eastern Tyrol had received very negative media coverage. The incident led to the protection of the species in southern Austria. This new migrant bear provided a reason for the immediate protection of the species from hunting in central Austria but the idea of “protection” was very limited in its scope. In the first months after his appearance people tried to tranquilize the bear with a dart gun so they could put him in the zoo. Nevertheless, the bear managed to live in the area for more than 20 years.

People often mused about why this bear had migrated so far to the north and in particular why he had decided to stay there. The reason is most likely a simple one. The young males of the bear species are the members who are most fond of long distance movements. In 1972 the Ötscher bear was a young male which explains why he migrated but it is harder to understand why he stayed in this particular area. The Ötscher region is a densely forested area with only a few people living there. As a matter of fact, the Ötscher region is one of the last remaining patches of primeval forest in Austria. This forest became the centre of the territory of the Ötscher bear. In 1966, a windstorm cleared 2,500 ha of this primeval forest. Then in 1972-73 these large windfall areas were used for prime raspberry production, which provided an excellent food resource for a bear. Perhaps the roe deer feeding sites in this area also helped persuade the bear to stay.

The bear lived a very secretive life throughout the years of his stay. There was only occasional damage, mainly the destruction of bee hives, but this was not enough to raise any major concerns. The bear was fortunate to settle in an area where there was a duke who was fond of roe deer and a forester who loved bears. The duke provided corn for the roe deer and he did not discourage the bear from visiting these feeding sites. For two decades the forester kept track of every sign of the Ötscher bear’s presence. Two buckets of corn were placed in the woods to obtain regular signs of the bear’s presence. There was not enough corn to provide an additional food source but there was enough to encourage the bear to visit on a regular basis. These buckets were checked daily and every sign of the bear was meticulously recorded – corn telemetry!

The Ötscher bear was the inspiration for the reintroduction of bears in Austria. Before the release of the first female, (“Mira” in 1989) the public often wondered if this old hermit still had the sexual energy to be the ancestor of a bear population. Would he be interested in this young Croatian “gal” presented to him? It was a relief to the public when Mira had three cubs in 1991. The only possible father was the Ötscher bear. The old loner had proven all the doubters wrong!

The last signs of the Ötscher bear were found in 1994. He had become an Austrian legend and in later years, a local energy drink was even named after him. The drink was called “Ötschi” and the slogan for it was “No Ötschi – no energy!”

3 HOW EVERYTHING STARTED

After World War II, there were very few sightings of bears in Austria. Usually these animals were long-distance immigrants from the Slovenian bear population. Between 1950 and 1971 four bears were killed in southern Austria. Each of these bears attracted a great deal of attention and their deaths received extensive coverage by the media. Although it was legal, the killing of these bears became increasingly unaccepted by the public.

In 1972, the Ötscher bear immigrated from Slovenia. In the 1970s and 1980s the activities of this bear were closely followed by the regional forester who was previously mentioned (see chapter 2.1). The initial idea to reintroduce bears into central Austria was first conceived by this forester. It was not difficult to find support for this idea due to the immense popularity of the Ötscher bear. Hunters and nature conservation organisations were excited about the idea of restoring a part of Austria's original faunal heritage.

In 1982 an initiative, called “Aktion Bärwild”, was founded by the Lower Austrian hunters association and Lower Austrian governmental officials. The goal of this initiative was to reintroduce additional bears into the Ötscher region, which appeared to be a suitable environment. As well, the Ötscher bear provided a convincing argument for the initiative because he had only caused a small amount of damage. In all the years that he had been in Austria there were just a few sheep killed and cattle had not been effected. It was only bee hives that were destroyed on a fairly regular basis.

In their first meetings, the members of the initiative agreed to follow certain steps: a feasibility study of the area had to be carried out; ways to prevent and compensate for damage caused by bears had to be found; and an application for the release of bears according to the law had to be sent to the state legislator.

A Slovak scientist, who was familiar with the situation of bears in the Mala Fatra region in the former Czechoslovakia, was asked to conduct the feasibility study and provide ideas for the reintroduction. The results of this study supported the reintroduction of bears into Austria as the Ötscher region proved to be a suitable habitat. The reintroduction of ten bears (four adult females, two adult males, four sub-adults) was suggested. It was considered necessary to obtain a scientific evaluation of the bear population by consistent monitoring of their activities. The Department for Wildlife Biology and Game Management (IWJ) at the University of Agricultural Sciences in Vienna agreed to take over the scientific monitoring. Fortunately, there was no need to obtain legal permission for the reintroduction as a single specimen of the species naturally occurred in the proposed area.

Although everything seemed to be in favour of the project, the “Aktion Bärwild” still failed in 1986 because the Lower Austrian Hunters Association left the initiative. They had stipulated that they would support the initiative only if the livestock owners and bee keepers were also in agreement. The latter group demanded the enactment of a law that would guarantee compensation for any damage that was caused by bears. However, the government did not create this kind of legislation. The liability insurance for the hunters association had generously agreed to compensate for damages but they were not required to do so by law. Consequently, the livestock owners and bee keepers opposed the idea of reintroduction and the hunters association had to leave the initiative due to their previous agreement.

This was a major setback but these events did not stop the reintroduction of bears into Austria. A non-governmental organisation, World Wide Fund for Nature (WWF) Austria, took full control of the initiative and found a solution for damage compensation. They discovered an insurance company that was willing to compensate for damages that were caused by the bears and WWF agreed to pay the insurance premiums. This arrangement reduced the opposition of livestock owners and bee keepers to some extent; thus, the reintroduction project could finally begin.

4 THE REINTRODUCTION PROJECT

4.1 Chronology

Table 1: Chronology of the Austrian Brown Bear Project 1989-1998.

Year	Population size in Austria	what happened
1971	Occasional Migrants	Southern Austria: <ul style="list-style-type: none"> • Migrant bear legally killed in Eastern Tyrol; public is strongly opposed to the death of the bear
1972	1-?	Central Austria: <ul style="list-style-type: none"> • young male migrated from Slovenia into central Austria, settled in the latter region (later named "Ötscher bear")
1982	1-?	Idea of releasing bears in central Austria was conceived
1989	~ 3-5	Central Austria: <ul style="list-style-type: none"> • "Mira", sub-adult female, released • start of scientific monitoring
1990	~ 4-6	Southern Austria: <ul style="list-style-type: none"> • sighting of a female with cub (unverified)
1991	~ 7-10	Central Austria: <ul style="list-style-type: none"> • "Mira" has three cubs Southern Austria: <ul style="list-style-type: none"> • sighting of a female with two cubs (unverified) • start of scientific monitoring
1992	~ 8-11	Central Austria: <ul style="list-style-type: none"> • "Cilka", adult female, released Southern Austria: <ul style="list-style-type: none"> • sighting of a female with yearling (verified) • increased data due to monitoring
1993	~ 15-19	Central Austria: <ul style="list-style-type: none"> • "Mira" has three cubs; she dies in September, cubs survive • "Cilka" has two cubs • "Djuro", sub-adult male, released • appearance of nuisance bear Southern Austria: <ul style="list-style-type: none"> • further increase in data due to monitoring
1994	~ 20-25	Central Austria: <ul style="list-style-type: none"> • disappearance of "Ötscher bear" • "Mira's" cubs survive the winter • "Cilka" disappears in fall, possibly poached • amount of damages explodes, possibly two-three nuisance bears in the area; media-uproar; permits for killing the bears issued, two bears shot • sub-adult female "Mariedl" trapped, radio collared Southern Austria: <ul style="list-style-type: none"> • no damages

Year	Population size in Austria	what happened
1995	~ 20-25	<p>Start of Brown Bear LIFE project, establishment of bear advocates and bear emergency team</p> <p>Central Austria:</p> <ul style="list-style-type: none"> • “Mariedl” shows signs of human-habituation, trapped again, subjected to aversive conditioning • “Djuro” loses radio collar • sub-adult female, “Mona”, trapped when trying to recapture “Djuro”, she shows signs of human-habituation, subjected to aversive conditioning <p>Southern Austria:</p> <ul style="list-style-type: none"> • bear observations from the whole triangle of Austria-Italy-Slovenia; some damages
1996	~ 20-25	<p>Central Austria:</p> <ul style="list-style-type: none"> • “Mona” has two cubs, shows signs of human-habituation, attempts are made to trap her
1997	~ 20-25	<p>“Management plan for Brown Bears in Austria” finished</p> <p>Central Austria:</p> <ul style="list-style-type: none"> • two human-habituated yearlings at roe deer feeding site; one captured, “Christl”, fitted with ear-transmitter, subjected to aversive conditioning • “Christl” loses ear-transmitter, starts to cause rape oil damages
1998	~ 25-30	<p>Central Austria:</p> <ul style="list-style-type: none"> • “Mona” and “Mariedl” have three cubs each • “Christl” causes a lot of damage in connection with rape oil; recaptured in spring, fitted with a radio collar and subjected to aversive conditioning; signal disappears in summer, likely poached • “Mona” shows signs of human-habituation, she is trapped and fitted with a radio collar; aversive conditioning is applied to her and her cubs

4.2 The Early Years, 1989-1993

4.2.1 Central Austria

1989: Everything was ready for the reintroduction of bears into central Austria. On June 4th, 1989 two collaborators from the Department for Wildlife Biology and Game Management left for Croatia. They were going to assist in trapping the bears who would be used in the project. In Delnice, former Yugoslavia, Aldrich spring snares were set at a feeding station with fresh bear tracks. On June 8th, they successfully captured a three year old female who weighed 79 kg. The bear was sedated, fitted with a radio collar and placed in the transport vehicle which immediately left for Austria. The bear had to be sedated three more times during the trip. It was decided that the bear would be called Mira. Twelve hours later the “bear-convoy” arrived in the release area, the Ötscher-region in the northern limestone Alps of central Austria. On June 9th at 00.41 Mira jumped out of the transport cage and entered her new domicile.

1990: It was a quiet year in central Austria as the old Ötscher bear and Mira roamed the area. Occasional observations suggested that they had already met each other. Surprisingly, an additional bear had been observed further west in the province of Upper Austria. This bear had to be an immigrant from Slovenia.

The series of reintroduction were supposed to continue throughout this year but they were postponed after an unfortunate accident. There was a five year old, male bear trapped in Croatia. He was sedated and placed in the transport vehicle. The bear had suffered a leg injury from the snare but he seemed to be lively and in very good physical condition. At 14.00 the car left for Austria. The bear was inspected at several checkpoints during the drive and he seemed to be fine. However, at another checkpoint at 22.38 the bear was found dead in the transport box. What had happened? The autopsy at the Veterinary University of Vienna revealed that the bear had been in poor physical condition but this could not have been determined from the external appearance of the animal. The trappers had not made any mistakes which could have caused the death of the bear so it seemed that the trapping and sedation had caused too much stress on the “weak heart” of the bear. Although this was a setback to the project, it was decided that the series of reintroduction should continue after the traps had been successfully modified .

1991: The first success of the reintroduction program was apparent as Mira was seen with three cubs in spring of this year. The father had to be the Ötscher bear since he was the only other bear in the reintroduction area. Unfortunately, the two cubs disappeared during the summer leaving Mira with only one cub. During the fall there was some damage caused by bears in districts south of the reintroduction area.

1992: The series of reintroduction continued and on June 9th, a six year old, 92 kg female was trapped in Croatia. The bear was fitted with a radio collar and given the name Cilka. She was then transported to Austria and released in the Ötscher region.

There was a bear who was attracting attention because of damages in the general region of the release area. Most of the bears from the reintroduction project could be tracked through their radio collars and they did not appear to be responsible for the problems. Consequently, it was thought that the damages were probably caused by a migrant bear from Slovenia.

1993: The year started with a bang as both females, Mira and Cilka, had cubs. Mira had three cubs and the Ötscher bear was again considered to be the father. Cilka had two cubs and it was obvious that she had already been pregnant when she was brought over from Croatia.

On May 11th Djuro was released in the Ötscher region. He was a sub-adult male (four years old, 114 kg) who had been captured in Slovenia. The series of unusual damages, which had started in 1992 continued throughout this year. They were spread over a very large area so it seemed that a very mobile bear was causing all the problems.

Although the year had started with success it did not end very well. In September Mira was found dead in an alpine valley. Her death was caused by internal injuries, due either to a rock slide or a car accident. Fortunately, the three cubs had survived their mothers accident without any injuries. The future fate of these cubs was discussed with a great amount of emotion in the media.

4.2.2 Southern Austria

1971-1991: Bears had never really been extinct in Carinthia, Austria's southernmost province. Migrating animals were occasionally observed due to the proximity of the Slovenia bear population. The media named these animals “Karawanken bears” in reference to Austria's southernmost mountain range.

In these two decades there were three hundred and forty-five bears seen in a main migration corridor. This corridor extends north from the Slovenian-Croatian source population. It enters

the province of Carinthia at the triangle which is formed by Italy, Slovenia and Austria. The majority of these sightings came from Slovenia (RAUER & GUTLEB 1997).

In 1991 there were eighteen observations of bears in southern Austria. This was very encouraging but all the observations were unverified. There was also a sighting of a female with a cub in September 1990 and another female with two cubs in 1991 but these could not be confirmed. All of the sightings that were reported in southern Austria came from mountain ranges along the borders of Italy and Slovenia. As a result of the high number of sightings WWF Austria hired a scientist to start a brown bear monitoring program in Carinthia.

Another development took place in the adjacent country of Slovenia which changed its bear hunting policy in 1991. In previous years, bears could be hunted anywhere in this country including the core migration area along the border of Slovenia and Austria. The new policy banned the killing of bears outside of the core bear area. Consequently, there was no hunting along the migration route which headed north towards Austria.

1992: The events that took place in 1991 had a great affect on the development of the reintroduction project in 1992. Due to the monitoring program and the new hunting policy there was an increased number of bear observations in southern Austria in 1992. There was even a report of a female with a yearling and this time it was verified.

In late spring the bear population was estimated to be about three to seven individuals. This estimation was fairly reliable due to the intensive monitoring that was being done. In the same season, a bear killed twenty sheep which attracted a great deal of negative attention. Efforts were made to obtain a permit to kill the bear but the Carinthian authorities would not issue it.

1993: For the first time observations of bears came from large parts of southern Austria including the mountain ranges. According to the data there were seven to ten bears in this area. This increase in the number of bears observed is probably due to the improved monitoring program rather than more migrants from Slovenia. Although a relatively high number of observations (sixty-one) was recorded there were only a few damages reported in this year.

4.3 Mira's Orphans

Mira was the first bear to be released in June 1989. She had three cubs in the spring of 1991 and another three in 1993. Positions of the radio collared female were taken on a regular basis in 1991. Then in 1992 the radio transmitter suddenly failed, even an aerial search could not provide a "beep". By chance, Mira's frequency was checked again in spring, 1993 and surprisingly her signal was picked up again. In May a forester was able to take pictures of her and her three playful cubs. Then suddenly in mid-September Mira's signal stopped changing positions. Since the radio transmitter had no mortality switch it could not be determined if the radio collar had simply fallen off or if something was wrong with the bear. It was thought that a sudden change in frequencies meant that the bear was moving so it seemed as if she was alright. However, after a short time the signal did not change frequencies for an unusual length of time. It was decided that someone should walk in and check the bear. They found Mira dead in a small alpine valley. An autopsy at the Veterinary University of Vienna determined that she died from a number of injuries, including broken ribs and heavy internal bleeding but there were no bullet wounds found on her body. The heavy injuries must have been caused either by a rockslide or a car accident. The bear's body had slid halfway down the slope until it was stopped by fallen trees. It had seemed that Mira was still alive because the collar would be activated as her body continued to slowly move down the slope.

This was a heavy blow to the project. It was not just the huge loss of a released bear, it was also the loss of one of the few, and thus very precious, females. As well, her death had left her three cubs orphaned, drastically reducing their chances of survival. The cubs were quite

disoriented and they were often observed in strange places, such as orchards that were close to houses. They stayed in the area where they had roamed with their mother the week before her death. After a week, one of the cubs left his siblings and found a dead red deer which provided him with enough food for three weeks.

The development in the media was very interesting. The “poor little orphans” were adopted by the public; newspapers were full of ideas and proposals of what to do with the cubs. The ideas ranged from supplemental feeding to catching the bears so they could hibernate in a zoo. The telephone lines in the WWF office were constantly ringing with questions or ideas from concerned people. WWF decided to leave the cubs in the wild so that they could survive on their own. Although the organisation received a great amount of negative media as a result they felt that this decision offered the cubs their best chance of survival.

In the middle of November the cubs disappeared only to show up again next March. Their survival was celebrated in the media. The orphans, now yearlings, chose the simplest way to stay alive; they fed on the corn in roe deer feeding stations. On the one hand, the presence of this easy food source might have saved their lives but on the other hand it had created food-habituated bears. They behaved very boldly at these feeding sites and did not appear to be frightened of approaching humans. Consequently, “bear-watching” became an attraction for local hunters and their guests.

It is possible that two future nuisance bears were created by these events; Mona and Mariedl are believed to be Mira’s cubs of 1993. Later in the project both females required a great amount of attention from the bear emergency team. Aversive conditioning had to be applied again and again. The problem was not just the food-conditioning and human-habitation of the two females but it also became evident that this tradition was passed on to their cubs; thus, another generation of human-habituated bears was created.

4.4 1994 – The Year of Change

4.4.1 Central Austria

In 1994 there were approximately twenty to twenty-five bears living in central and southern Austria. There were no more signs of the Ötscher bear along his traditional spring routes. It seemed that the old guy had passed away during hibernation. Mira’s orphaned cubs had survived the winter and in March they were observed on a regular basis at roe deer feeding stations.

In April, a bear moved from Upper Austria to the release area in central Austria leaving behind eighteen instances of damage. In the following months damages increased dramatically, reaching a maximum of forty-nine instances in August; sheep were killed, bee hives destroyed and bears approached houses with people inside. Due to the amount of damages it became evident that there had to be more than just one bear who was causing all these problems. The public mood escalated and the media reports were full of nuisance bears. In several districts there were permits issued to kill these bears. As a result, two bears were killed in the fall and the damages immediately stopped.

On September 12th, a 55 kg female was captured in a box trap. Although it seemed unlikely that this animal had caused any damage, plans were made to get rid of her. There was the oddest idea to offer this bear to the French Government for transplantation in the French Pyrenees. Finally, WWF Austria and the Munich Wildlife Society (WGM) convinced the authorities to release the animal. She was fitted with a radio transmitter, given the name “Mariedl” and set free. Luckily, the bears from the project who had radio collars did not cause any damage. However, in October the signal from Cilka’s radio collar suddenly disappeared. The signal was never picked up again and rumours spread that Cilka had been poached.

This year brought about many changes for the bears in Austria. The media had usually supported the bears but since they had caused so much damage the media was now opposed to them. There was also an obvious difference in the public's attitude towards these animals. Although people accepted bears who had naturally migrated back into Austria, they were strongly opposed to the bears who were reintroduced into the country by WWF. It was very interesting that this particular standpoint developed since it had been proven that it was actually the "naturally migratory" bears that caused the damage and not the bears who had been reintroduced.

WWF Austria was often held responsible for any problems related to the bears. As a result of the developments in 1994 they had to cancel their plans for additional releases of bears from Croatia or Slovenia. The initial decision to release ten animals was no longer viable. The public opinion in Austria had become so opposed to bears that the reintroduction of additional animals at any date in the future seemed impossible.

4.4.2 Southern Austria

The southern bear area of Austria did not have such a busy year in 1994. Carinthia did not seem to be effected by the media uproar over the damage caused by bears in the rest of Austria. Carinthian bears appeared to be smart enough to stay away from trouble as the only damage was the killing of two sheep.

4.5 Nurmi Changed Everything

The first signs of Nurmi possibly date back to 1992. In this year there were some damages in the province of Styria, close to the reintroduction area. Nurmi appeared to be the cause of these unusual damages. A bag of chicken food was stolen from a pickup truck and a few canisters of rape oil were destroyed. A short time later a young, human-habituated bear was filmed while he was visiting a roe deer feeding station. A hunter approached the bear only to have the animal charge towards him. Fortunately it was only a bluff and the hunter was not hurt.

In 1993 there was a series of damages spread over large parts of Austria but the bear had left a distinctive route. There were fifty bee hives destroyed while twenty sheep and several rabbits were killed. The bear had even figured out how to pull the plugs out of small fish ponds in order to easily reach the fish. All of these damages could be attributed to a single animal - Nurmi. This bear had been named after the popular Finnish long-distance runner Paavo Nurmi because he made many long-distance movements.

In 1994 there were damages of an amount never seen in Austria. It was obvious that more than one bear had to be involved considering the extent of the destruction. At least two to three food-conditioned and human-habituated bears were acting very boldly and the situation was becoming potentially dangerous for humans. Bears approached houses that had people inside of them at the time. There was even one night where a bear destroyed a rabbit cage, killing and eating the rabbits while there were children inside a tent only five meters away. Several districts issued permits to kill these bears. At the same time the media turned against them to the point where the term "nuisance bear" was later selected word of the year for 1994. The general attitude towards bears was escalating into a frenzy.

This excitement finally subsided after two bears were killed. On September 10th a bear approached a hunter on a forest road. Although the hunter yelled and waved at the animal it continued to move towards him. From a distance of ten meters the hunter shot and killed the

bear in self-defence. This animal was a four year old, 181 kg male. The other bear, a 100 kg, two year old male, was killed on October 11th at a deer feeding station. He was killed legally in accordance with the permits.

Consequently, the damages came to a sudden halt. It seemed that the animals who had been killed were in fact the nuisance bears. Yet the small two year old bear was too young to be the infamous Nurmi. Although the size and age of the other bear fit Nurmi's description, the bear who was killed was very dark whereas Nurmi had always been described by eye-witnesses as a light coloured bear. Was Nurmi still alive? Although the difficulty with the nuisance bears was resolved the identity of Nurmi still remains a secret.

5 THE LIFE YEARS 1995-1998 FROM A REINTRODUCTION PROJECT TO A CONSERVATION PROGRAM

In 1995 WWF Austria submitted a proposal to the LIFE program of the European Union concerning a large conservation program for bears in the Eastern Alps. Due to the difficulties that had arisen and the problematic year of 1994 it was necessary to find better methods of managing the bear population. The bear project had entered a new stage, advancing from a re-introduction project to a conservation program.

The main activities of this program were:

- **Development of a management plan;**
- **A large scale public awareness program;**
- **Foundation and training of an emergency team;**
- **Reduction of damage caused by bears;**
- **Improvement of international co-operation.**

The program was carried out by the working team “Brown Bear LIFE” which included: WWF Austria; the Munich Wildlife Society; and the Department for Wildlife Biology and Game Management of the University of Agricultural Sciences in Vienna. The team “Brown Bear Life” created and implemented a management plan which addressed the needs of brown bear conservation as well as the needs of humans who were having difficulties with the bears. The development of this plan was carried out in co-operation with the authorities of the provinces concerned in the matter, the Ministry of Environment and different interest groups: hunters; farmers; bee keepers; tourism; and school associations. It took about one year before the final version of the management plan was accepted.

The implementation of the plan included the foundation of a co-ordination group which was composed of: hunting and nature conservation authorities of the provinces; the Ministry of Environment; the Federal Environmental Agency; and the Hunters Association. Based on the experience of recent years it seemed that the most limiting factor for bears in Austria was the lack of a positive public attitude towards these animals. A program was created to address target groups and the general public. Several folders, brochures, videos and a bear exhibit were produced. It was very important to convince local people that the bears were valuable. The best method to accomplish this goal was to establish personal contacts in the bear regions.

The role of the scientific researchers was redefined in the course of the LIFE program. Their job had a double function: to collect scientific data about bears and be a mediator between bears and humans. As a means of conveying this message researchers were called “bear advocates” (see chapter 6.1). As well, a bear emergency team was established in order to avoid any possible problems that people might have with human-habituated bears. The team consisted of a group of experts who were trained in the methods of trapping and handling bears as well as subjecting them to aversive conditioning. Another implementation was the installation of one hundred and fifty electric fences for bee hives within the bear areas. These fences were provided by Brown Bear Life in co-operation with the bee keepers association. This development reduced the amount of damage while it was also an important step in the acceptance of bears.

Brown Bear Life hosted the 11th International Conference on Bear Management and Research in Graz in an attempt to improve the exchange of information between the EU and Eastern European countries. They wanted to present Austria as a “new” bear country and they hoped

to demonstrate the importance of brown bear conservation and management to the Austrian authorities. About 120 experts from 19 different countries participated in this conference and discussed the following topics:

- **Brown bears in the European Union and their source populations.**
- **Are nuisance bears a result of conservation without hunting?**
- **Bear reintroduction and habitat analysis evaluation – what can we learn for the future?**
- **Human dimensions in European bear management.**

5.1.1 Central Austria

1995: The bear emergency team was created in this year and its first mission was Mariedl, the small female trapped in 1994. This bear always remained close to a roe deer feeding station and she showed no fear of approaching humans. She was subjected to aversive conditioning twice with fire cracker and rubber bullets but these measures were only successful for a month. In March, Mariedl was trapped again and fitted with a new radio collar. The aversive conditioning was more successful this time as Mariedl began to avoid humans.

In July the emergency team tried to trap Djuro, the male who was reintroduced in 1993, so that they could replace his radio transmitter. For one hundred and forty-four nights the team waited for Djuro but unfortunately he lost his radio collar before he could be trapped. Instead a two year old, 74 kg female was caught in a snare. She was thought to be Mariedl's sibling because they looked so similar. The team gave her the name Mona and released her with a radio collar. Yet within a month the bear had managed to get rid of it.

Although there were no dramatic damages in 1995 there were still some troublesome events. Bears approached houses on six different occasions and twice they crossed the courtyard of different farm houses.

1996: Mona surprised the scientists and gave birth to two cubs. She was an exceptionally young mother for a bear as she was only three years old at the time. Unfortunately, she showed signs of food-conditioning and human-habituation so the bear emergency team took control of the situation. However, it was impossible to trap her as she constantly avoided the snares. Strangely, these attempts appeared to achieve the original goal. Even though the team was not able to subject her to aversive conditioning she became more wary of humans.

1997: Two food-conditioned and human-habituated yearling bears were seen at a roe deer feeding site in spring of this year. The emergency team was called immediately as they did not appear to be afraid of humans. The team succeeded in trapping one of the yearlings but the other bear escaped despite several attempts to capture it. The bear who had been captured was a 39 kg female. The team named her Christl and attached a transmitter to her ear. They also exposed her to aversive conditioning upon her release.

During the summer Christl began a series of rape oil damages which continued into the fall. Rape oil is used by Austrian forest workers as an ecological lubricant in chain saws and the canisters are left in the working area during the night. This bear specialised in foraging for these canisters and she was very bold in her attempts to obtain her beloved rape oil. She approached forest workers in the daytime and destroyed chain saws directly in front of them. She also opened huts and cars in search of her favourite food. Christl's most outrageous attempts included the "butchering" of a motorcycle and the destruction of the driver's cabin of a steamroller.

1998: Christl continued her destructive search for rape oil and it was decided that she would have to be trapped again. The emergency team captured her in May by using rape oil as bait! They put a radio collar around her neck and shot rubber bullets at her when she was released. In the following weeks she was tracked down through her signal and exposed to more aversive conditioning. She learned to run away from humans but this did not stop her attempts to reach the rape oil. Then in June, Christl's signal disappeared and the rape oil damages came to a sudden halt. It is assumed that she was poached because she was not seen again and her death is the only possible explanation for her sudden change of behaviour.

Rape oil continues to be a reason for damages at the local level so it is very important that a solution is found to this increasing problem. The easiest answer would be to store the chain saws and oil canisters in a tree, which has been done in North America. As well, an additive that is disliked by bears could be combined with the rape oil. This alternative is currently being tested on zoo animals.

In this year, Mariedl and Mona each had three cubs. Unfortunately both females showed signs of food-conditioning and human-habituation. Both bears, accompanied by their cubs, were seen at feeding stations several times. In November, Mona was trapped, radio collared and released after being subjected to aversive conditioning. It will not be known if this treatment is a success until 1999.

5.1.2 Southern Austria

1995: The bears roamed over wider parts of Carinthia. For the first time a larger amount of damage was recorded in southern Austria compared to central Austria. There were forty one sheep, four goats and two calves killed. A human-habituated bear was observed several times but there was no way to determine if this was the bear who was causing all the damage.

The population was estimated to be about ten to twelve bears. There were approximately fifteen animals estimated to be in the entire triangle of Italy, Slovenia, and Austria. In Italy there were sightings which placed a female and her cubs close to the Austrian border.

1996: There was no damage registered in this year. The population number of bears did not change and it seemed that these bears had become familiar with the natural resources of their respective areas as they did not go near humans.

1997: It was a quiet year for southern Austria as there were no damages and the population numbers continued to stay the same. Unfortunately, there were no sightings of females with cubs.

1998: This year began with a sighting of a female with a yearling; both were probably immigrants from Slovenia. There was some damage but no major problems. Seven sheep were killed and seven bee hives destroyed. Approximately the same number of bears roamed Carinthia. However, a larger amount of damage was reported in northern Slovenia. Permits were issued which allowed the hunting of nuisance bears. Consequently, five bears were killed close to the Austrian border.

6 THE MANAGEMENT PLAN FOR BROWN BEARS IN AUSTRIA

(Summary by Arbeitsgemeinschaft Braunbär LIFE)

The Austrian Ministry of Environment along with the governments of Lower and Upper Austria, Styria, and Carinthia contracted a working group to develop a bear conservation program and create methods to raise funds. This working group was composed of: the Munich Wildlife Society; WWF Austria; and the Institute for Wildlife Biology and Game Management/University of Agriculture Vienna. The first step of the conservation program was the development of a management plan for brown bears in Austria. The Munich Wildlife Society had to initiate the development of this plan because it was not possible for the other members to do so. While this was being developed the working group provided an emergency team to handle any immediate problems with human-habituated and food-conditioned bears.

The expertise of the working group was recognised by government representatives, interest groups, and the public. Some interest groups did not accept every partner within the group but they were satisfied with the alliance in general and the group's function as a consultant. As consultants, the group was supposed to involve all the interest groups in their proposals for conservation measures. However, the group was not meant to make any final decisions. As well, it was hoped that the government would continue to take some responsibility for bear management.

A workshop, with a project advisory board, was held two weeks after signing the contract. This workshop would identify the needs of the Ministry and the local governments. As well, they would compose a list of members so that a specific interest group could be formed. Eight weeks later, this interest group met in a workshop in order to obtain basic information about the management plan and the participation of other interest groups.

Within four months another workshop was held with the working group, the advisory board and the interest group. They began to develop guidelines for the future of bear management in Austria. Each member was asked to join different working groups and develop special items for the draft. In the tenth month the draft was presented and the final version was introduced in the fifteenth month. Along with the workshops there were many dialogues that integrated the needs and suggestions of the interest groups and the employers. These dialogues were especially valuable when the first draft was written and the final version revised. At the same time, lobbying of various organisations was started in order to join the various groups, recommended in the workshops, and to obtain agreement from the different members on suggested actions.

Before the management plan could be implemented it was necessary to analyse certain aspects of the project. The ecological status of bears in Austria was analysed in terms of abundance, reproduction, distribution, and population trends. Habitat was analysed in terms of suitability (forests, roads, disturbance by tourists and locals) and potential conflicts (sheep, tourists, and locals). There were reports on: the historical development of the bear population in Austria; the role of further development of the Slovenian source population; and the corridors that link the Austrian population with Slovenia. As well, other European bear populations were compared in terms of status, population trends, major problems, and management. Economic damage in Austria, status of damage prevention and close encounters with people since 1989 were taken into account. There was also an analysis of the national and international laws as well as the responsibilities and activities of GO's and NGO's. Finally, the media's role in influencing the public attitude towards bears was analysed while information was collected on the public knowledge of dangerous situations and people's opinions about the problems in 1994.

The final version of the management plan suggested the implementation of new organisational structures. These suggestions included a co-ordination group for Austria which would be com-

posed of: members from the governments of each province that had a bear population; field workers (so called bear advocates) who would help to analyse critical situations and consult with the local people; and an emergency team which would handle human-habituated or food-conditioned bears. As well, routine monitoring of the bears could obtain reliable and up-to-date information for the management structures. Another proposal was the implementation of a uniform damage regulation system for all provinces that could attempt to avoid damages through prevention measures but this system should also provide the means for compensation if needed. Finally, public relations would be an important tool which could involve people with the plight of the bears while providing information about bear management.

6.1 Advocates and the Bear Emergency Team (ET)

At the beginning of the reintroduction project WWF hired two scientists whose responsibilities were geographically separated. In central Austria, radio collared project bears had to be followed while the development of a new bear population had to be monitored. Southern Austria established a monitoring program to gather information about the natural migration of bears from Slovenia to Austria. Both scientists checked bear damages on a regular basis thereby keeping close contact with the local people in bear areas.

The Brown Bear LIFE project was created in 1995 in response to the unusual damages that occurred in 1994. The scientists from WWF were in the midst of this chaos and had to deal with upset farmers, hunters and concerned locals. Now their job included more than just scientific monitoring; most of their time was spent reassuring frustrated people and attempting to facilitate a better understanding of the bears so that the situation would not escalate any further. Thus, a new position was created for the scientists with the beginning of the Brown Bear LIFE project – they were now called bear advocates.

The role of the bear advocates was to act as mediators between bears and humans, particularly for the people who lived in the bear areas. They instructed people on: how they should behave when they encountered a bear, what steps to take in order to prevent damages, and the negative effects of feeding the bears. In order to convey this information in the most effective manner the bear advocates conducted presentations in bear areas. They also published articles in local and regional journals while keeping in good contact with the media. These steps were very successful, allowing bear advocates to be readily accepted by the local people.

The bear emergency team (ET) was formed in order to deal with nuisance bears. The main goal of the ET was to have a group of experts on hand who could react quickly to the problems caused by bears. The team required skilled personnel as the job of an ET has the potential to be quite dangerous. It is important that the members can: judge a bear's behaviour; trap a bear and attach a radio collar to the animal; apply aversive conditioning; and, if absolutely necessary, kill the bear. For these purposes, the Department of Wildlife Biology and Game Management trained a small group of people at a bear project in Slovenia. The group was purposely kept small so that a higher educational standard could be attained at a faster rate. The bear advocates have become integral members of the ET since it is very important to address the needs of the people as well as the animals in order to ensure the survival of bears in Austria.

So far the ET has had ten missions. There have been three bears trapped a total of five times and they were all released with radio transmitters. There has also been fourteen instances of aversive conditioning using techniques such as rubber bullets and fire crackers. Each mission has been carried out in agreement with the local people as well as the hunters. The creation of the bear emergency team was a very innovative step which has brightened the future of bears in Austria.

7 SOME ASPECTS OF BEAR ECOLOGY IN AUSTRIA

Scientists have been following the Austrian bear project since the beginning of its conception. Below are some of their observations on interesting aspects of bear biology (all data from RAUER & GUTLEB 1997).

7.1 Home Range of Released Bears

There were three bears from Slovenia and Croatia released into Austria. Mira (female, three years old) was the first to be reintroduced and she constantly stayed close to the release site. Based on this experience, it was expected that Cilka (female, seven years old) would have a similar home range but she roamed a huge area in the first two years after her release. It was thought that Djuro (male, four years old) would use the largest area of all the bears but he also surprised the experts as he never reached the dimensions that Cilka set in her first year.

It is suspected that the variations in behaviour are probably a result of the difference in age between the three animals. Mira was a young female when she was released. Her home range was relatively small at the beginning of her reintroduction but it expanded successively over the years. Cilka was much older and her behaviour was similar to adult females who had been released in the French Pyrenees. Djuro was a male who was just reaching sexual maturity; thus, his behaviour is most likely due to his search for females during the breeding season.

Table 2: Size of home ranges of the released bears Mira, Cilka and Djuro.

Bear	time period of radio-tracking (dd/mm)	number of positions	home range size	Maximum distance from release site
Mira	1989: 09.06. ^a -17.10. ^b	97	115 km ²	13 km
	1993: 08.05. ^c -15.09. ^d	81	355 km ²	17 km
Cilka	1992: 29.06. ^a -07.11. ^e	117	4730 km ²	67 km
	1993: 12.05. ^c -31.12. ^e	111	1248 km ²	49 km
	1994: 12.03. ^c -25.10. ^b	44	551 km ²	35 km
Djuro	1993: 11.5. ^a -18.11. ^e	115	430 km ²	22 km
	1994: 05.02. ^c -27.11. ^e	58	2376 km ²	65 km
	1995: 20.02. ^c -04.08. ^f	50	389 km ²	28 km

^a release; ^b radio transmitter failure; ^c leaving of den; ^d accident; ^e entering of den; ^f radio transmitter lost

7.2 Damages

From 1990-1998 there were four hundred and seventy-five instances of damage that was caused by brown bears. It seems evident that in Austria the amount of damage is not correlated to the size of the bear population rather it appears to be related to the existence of individual nuisance bears. The exploits of the infamous Nurmi can be clearly recognised in the distribution of damages over the years (peak of damages in 1994).

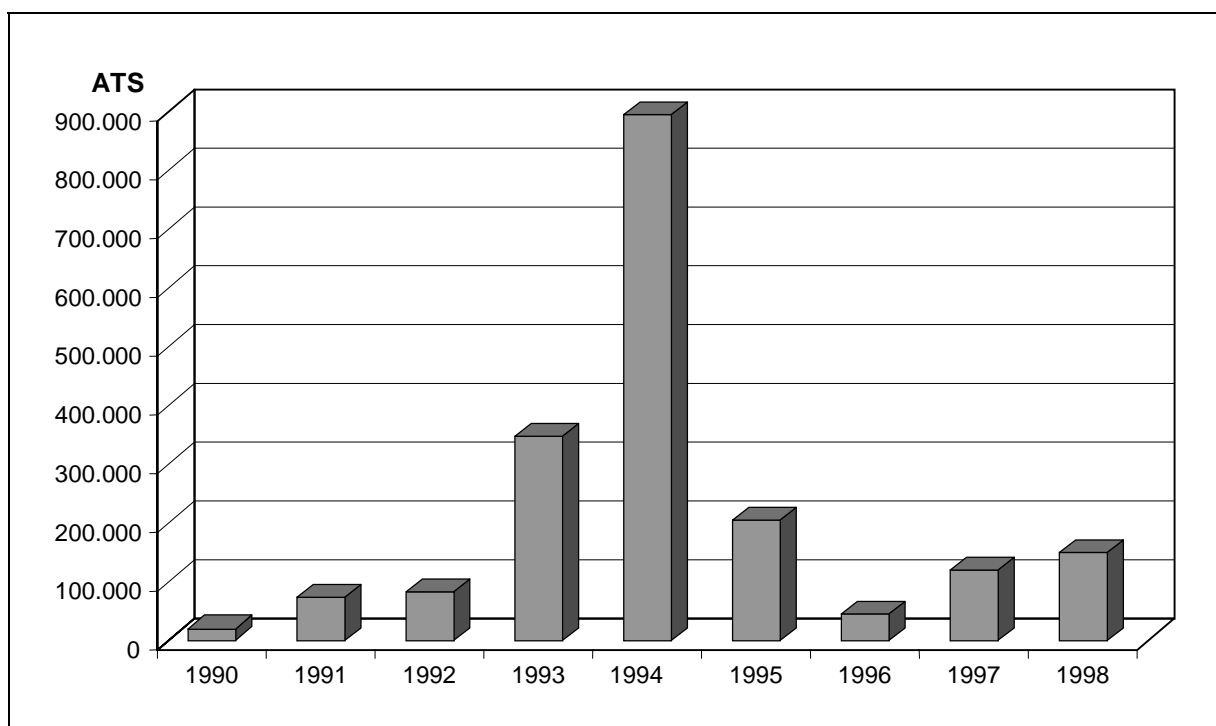


Illustration 1: Brown bear damages in Austrian Schilling 1990-1998.

Although bears in Austria have caused damage to numerous things, bee hives receive more damage than any other. At greatest risk are the hives that are farther away from human settlements. In the course of one hundred and forty-five raids, two hundred and eighty-three bee hives were destroyed. Second, is the number of sheep that have been killed with the majority of deaths occurring in Southern Austria. It is suspected that the reason for such high numbers is the form of sheep husbandry that is practised in this area. Bears have easy access to sheep because they are usually allowed to graze in large, unattended flocks in the forest or on alpine meadows. Fortunately, there has been very few attacks on cattle and goats in Austria.

The remaining damages are correlated to the existence of nuisance bears. Besides the rape oil problem, which was discussed in an earlier section, there is also the damage that has been inflicted on fish ponds. In sixty-five instances of damage, fish food was eaten thirty-three times while the actual fish (trout) were eaten a total of thirty-two times. There were even eight occasions where a bear succeeded in pulling out the plugs of small fish ponds in order to get an easier grasp on the fish.

Frequency distribution of brown bear damages in Austria. (n = 436)

Bee hives	40 %
Sheep	21 %
Rape oil	15 %
Fish ponds	14 %
Silo bulks	4 %
Rabbits	3 %
Geese	1 %
Cattle	1 %
Goats	1 %

7.3 Scat Analysis

There is a difference between the bears of Central Austria and those of the Southern region and this is most noticeable in their food habits. A scat analysis of Southern Austria shows the “usual” distribution of food items for brown bears; grass and herbs comprise the majority of their diet. By contrast, the bulk of the bear diet in central Austria is supplemental deer food. This food component is not important in southern Austria quite simply because it is not available due to the different hunting laws of these provinces. Roe deer are provided with a supplemental food source of corn year round in Styria, Lower and Upper Austria, as well as the provinces of Central Austria. However, Carinthia, the southern Austrian bear range, does not permit this artificial food source to be used. Since bears are attracted to this type of food it is not surprising that the scat analysis of central Austria displays the bear’s dependence upon this artificial food source. The general success of the reintroduced bear population in Austria is closely related to the availability of corn. The female bear, Mona, is a good example because she bore her first cubs at the exceptionally young age of three years. This could only be possible through the availability of this excellent food source along with a low population density.

Distribution of various food components in bear scat of southern Austria (n = 63)

Grass/herbs	33 %
Carrion	32 %
Insects	22 %
Fruits/berries	13 %

Distribution of various food components in bear scat of central Austria (n = 539)

Supplemental deer-food	65 %
Fruits/berries	13 %
Insects	12 %
Grass/herbs	11 %
Carrion	2 %

8 BROWN BEAR CONSERVATION ON A PAN-EUROPEAN LEVEL

8.1 The Large Carnivore Initiative for Europe (LCIE) (summary by W. Pratesi Urquhart, LCIE Co-ordinator)

Goal: “To maintain and restore, in coexistence with people, viable populations of large carnivores as an integral part of ecosystems and landscapes across Europe.”

Large carnivores are enigmatic animals who always elicit strong emotions, either very positive or very negative. The negative views are often based on misconceptions that are fuelled by the myriad of myths that exist about these animals. In order to gain public acceptance of large carnivores there is a need for increasing public awareness in order to address the misconceptions about these animals.

Large carnivores are wide-ranging species' and their effective conservation demands adequate protection of large areas to ensure: availability of sufficient habitat for breeding, an adequate amount of prey species, and enough land for the dispersion of their young. If their habitat can be successfully preserved this will contribute to the conservation of many other animal and plant communities as well as some of Europe's most important habitats and ecosystems. Top predators are an important part of fully functioning ecosystems and they play an important role in maintaining natural equilibria. Indeed viable populations of large carnivores can be a demonstration of Europe's contribution to the conservation of global biodiversity.

Conservation of large carnivores is a complex issue but it offers multiple benefits. The future of Europe's large carnivores is dependent firstly on cross-border co-operation between nations. Although conservation of large carnivores is an international issue success can not be obtained without the support of local people. It is essential to manage their interaction with human activities on a local level. The challenge of conserving large carnivores is very intricate and it must involve a wide range of interest groups including land managers, local communities, governments, and NGOs.

In response to this challenge WWF, together with partner organisations and experts in seventeen European countries, launched a Large Carnivore Initiative for Europe (LCIE) in June 1995. To date, over three dozen partners are present in over twenty-five countries and the number of interested parties and individuals is still growing rapidly. The aim of this initiative is: to support and build on existing activities or projects across the continent; avoid duplication of effort; and make the most efficient use of the available resources.

The LCIE developed a Mission, based on an overall goal, which sets the objectives for the Strategic Plan. Four main areas were identified to support large carnivore conservation:

- **Protection of large carnivore populations and habitats;**
- **Integration of large carnivores with local development;**
- **Support for large carnivores through legislation, policies and economic instruments;**
- **Gain public acceptance for the existence of large carnivores in Europe.**

A set of key activities within these four areas was then developed to help address these targets. As well, a co-ordinator has been put in place who works with a Co-ordination Group made up of experts in all aspects of carnivore conservation, land use and social sciences.



**A LARGE
CARNIVORE
INITIATIVE
FOR EUROPE**

8.2 The European Brown Bear Action Plan – A Summary

As a result of the LCIE an “Action plan for the Conservation of the Brown Bear (*Ursus arctos*) in Europe” was produced. It was based on a world-wide action plan for bears by Servheen, et al. (1998). The following is an adapted version of the executive summary of the European Brown Bear Action Plan by SWENSON, et al. (in prep.).

In this action plan Europe is defined as all countries west of the border of the former Soviet Union and Turkey but it includes the Baltic countries and the Ukraine. This area presently hosts a population of about 14,000 brown bears in an overall area of approximately 800,000 km². In some countries the bear population is certainly viable whereas in other countries it is on the verge of extinction.

This action plan for the conservation of the brown bear in Europe is based on a pan-European approach. The concept of managing at the population level was applied even though management must be implemented by national political entities. Since populations are being shared, international co-operation is needed from several countries to ensure the long term future of the species in Europe.

The purpose of this action plan is to help countries, on a national and international level, establish management actions for the conservation of the brown bear. Bear populations have been presented on a European or population level in relation to their biology and the factors that threaten their existence. In addition, specific actions have been suggested for individual countries. The overall goal of the action plan is the same as the overall goal of the LCIE, “to maintain and restore, in coexistence with people, viable populations of brown bears as an integral part of ecosystems and landscapes across Europe.”

Objectives to reach the above goal were defined as:

- 1. To conserve the present viable brown bear populations in Europe and allow them to expand into suitable habitat, thereby increasing their population numbers and range to the limit that can be sustained given socio-economic realities.**
- 2. To secure the viability of the presently small, isolated brown bear populations by increasing their population numbers and range.**
- 3. To reduce the conflict between brown bears and humans and promote activities that secure a positive public attitude towards brown bears to realise objectives 1 and 2.**

The most important issues, threats and obstacles for the conservation of the brown bear were identified as:

- human-caused mortality (bear hunting, legal killing of nuisance bears, poaching);
- the relationship of brown bears and humans (public attitudes, threats to humans, damage to livestock, orchards and crops);
- biological realities (demographic viability, genetic viability);
- habitat fragmentation, habitat loss and related issues;
- livestock husbandry and farming;
- fragmentation of management authority;
- artificial food sources.

The required actions that need to be adopted by countries in order to reach the above goal and objectives include the following topics:

- species conservation;
- recovery of acutely endangered populations;
- habitat protection;
- conflicts with humans;
- nuisance bears;
- public involvement in brown bear management;
- public awareness, education and information;
- research and monitoring.

Of major importance is the promotion and establishment of monitoring programs on a national and international level.

This Action Plan was endorsed by the International Union for the Conservation of Nature (IUCN)-Bear Specialist Group and the International Association for Bear Research and Management (IBA). The endorsement by the Council of Europe and the Standing Committee of the Bern Convention is in progress. The Action Plan for the Conservation of the Brown Bear in Europe presents a major step to conserve bear populations in coexistence with people across Europe.

8.3 Austria and the Action Plan

In the European Action Plan, the twenty-five to thirty bears living in Austria today are by definition a part of the Dinaric-Eastern Alpine bear population. The southern Austrian sub-population consists completely of migrants from Slovenia. In central Austria, three bears were re-introduced into an area with a naturally occurring male bear. As well, it has been proven that bears naturally migrate to the central Austrian release area; thus, a connection exists to the southern Austrian sub-population and even further to the source population in the Dinaric Mountains. It is evident that the future fate of the small Austrian bear population is directly dependent on the population development in Slovenia.

Within the action plan the following topics and actions have been identified as necessary in Austria.

8.3.1 Actions Regarding Species Conservation

Action 4.1.1: The Bern Convention adopts this European Brown Bear Action Plan.

Brown bear management should be at the population level. Because most populations are transnational in distribution, the conservation and management of brown bears should be carried out co-operatively across national borders. The conservation and reestablishment of brown bears in many countries depends on the management of brown bears in neighbouring countries. To secure cross-border co-operation, cross-border management plans and formal agreements between countries sharing brown bear populations are required. The signatory countries of the Bern Convention should adopt this Action Plan and thereby make brown bear recovery/conservation a political goal for all member countries (SWENSON, et al. in prep.).

Austria is a signatory state of the Bern Convention since 1983. An adoption of this Action Plan by the Bern Convention will certainly help bear conservation in Austria. On a national level, governmental organisations will be forced to deal with brown bear conservation and lobbying groups will have a more powerful tool to achieve their goals. Also, cross-border co-operation, which is essential for bear conservation in Austria will be easier to achieve.

Action 4.1.2: All countries identify and establish national brown bear management groups and empower them to design and produce national brown bear management plans on the population level according to this Action Plan. Countries sharing a brown bear population produce these national management plans co-operatively to secure cross-border management.

In Austria a national bear management plan has been produced (“Managementplan für Braunbären in Österreich” by Arbeitsgemeinschaft Braunbär LIFE), but it has not yet been implemented. It is very important that it is implemented if bear management in Austria is going to be successful.

Still missing is an official governmental agreement with the neighbouring states, especially Slovenia, for cross-border conservation activities regarding large carnivores. However, scientists have already established good cross-border co-operation.

Action 4.1.3: The brown bear is protected by law and hunting is only allowed in populations that are documented to be viable and where management plans have been completed listing population goals and how hunting will be used to realise the goals.

The term “hunting”, as used in this action plan, must occur within the framework of international law and the Habitat Directive of the European Union. This allows limiting the growth rate of the population, the numbers of bears, and their distribution. People living in bear areas may feel that this is a positive aspect and will more readily accept bears. Also hunters may be more accepting of bears if they are a game animal and not just a competitor for their game animals. Hunting may also provide a positive economic benefit (SWENSON, et al. in prep.).

At this point in time hunting of the small Austrian bear population is certainly not viable. If the recent development of the population continues and it keeps growing, at some point in the future hunting might become a necessary management tool to reach the population goal. Hunting might also be an efficient tool in teaching bears to be afraid of humans. The identification and definition of population goals is crucial for this development but they can only be obtained once the Austrian bear population is considered viable. Basic data on the bear population is scarce in Austria. Knowledge about reproductive rates, survival rates and other population parameters needs to be improved. Thus, intensive research is needed to obtain this kind of information. If hunting ever becomes a management tool for bears in Austria questions about the appropriate laws, hunting regulations and baiting of bears will need to be discussed.

8.3.2 Actions Regarding Habitat Protection

Action 4.3.2: Identify and maintain or recreate linkage zones in fragmented populations.

The fragmentation of bear habitat is one of the most serious threats to maintaining viable brown bear populations. Further habitat fragmentation should be stopped to secure the continuity of viable brown bear populations. Future highway or railway upgrades or construction projects should not be built through bear habitat unless an adequate number of wildlife passages are built to avoid transportation-related mortality, minimise fragmentation of the brown bear population, and promote dispersal. Linkage zones will enhance the viability of populations separated by some distance by facilitating the exchange of individuals and maintaining demographic vigour and genetic diversity. Linkage zones should receive special attention and be protected against human interference and habitat degradation. (SWENSON, et al. in prep.).

The above action is probably the most crucial for the long-term survival of brown bears in Austria. The bear population in the Dinaric Mountain Range is the source for Austria's bear population. This can be determined by the fact that bears are coming from Slovenia and re-settling in southern Austria. The Ötscher bear who migrated into central Austria in 1972 was also derived from this population. A separation from this source population in Slovenia would be fatal for bears in Austria. Wolves and lynxes have used and will continue to use the same migration corridors as bears (HUBER 1995, ZEDROSSER 1996). Currently a major migration corridor is in danger of being destroyed by highway construction in Slovenia and Austria. Action has to be taken to maintain immigration paths for large carnivores. There is a need for intensive research within Austria and especially in areas close to Austria's source populations in order to gain further knowledge about this important topic.

Action 4.3.4: Carefully control or prohibit human activities proven or suspected to be detrimental to brown bears in the brown bear core areas and linkage zones.

Easy access to bear habitat has been shown to result in increased human-caused bear mortality in many areas and generally reduces the habitat quality for bears. To prevent this situation, access to areas that are critically important to bears should be regulated during critical seasons. The construction of forestry roads and other roads for resource extraction should be restricted in critically important areas, and be closed for public traffic in areas where high human-caused mortality is a problem. This will reduce easy access for people in bear habitat, at least in the areas where this traffic is detrimental to bears.

New localities for recreational activity that result in substantially increased human activity should not be placed in important bear habitat or in travel corridors between important bear habitats (SWENSON, et al in prep.).

Bears are forced to live close to humans since Austria has a very small amount of remaining wilderness. Another basic problem is that humans have general access to bear habitats. This reduces the amount of retreat areas for bears thereby increasing the chance that bears will become habituated to humans. It will be important to identify the areas that are critically needed by bears. Only then can plans be made for a reduction or prohibition of human access to these parts of the bear area. As well, laws need to be created in order to keep people away from bear habitat, especially during critical time periods.

Close contact to tourism associations and infrastructure developers has to be established in order to reduce the impact of new recreation localities on the bear areas. Plans to include bears in tourism concepts could prove helpful. A scientific argument for these measures has to be created.

8.3.3 Actions Regarding Conflicts with Humans

Action 4.4.1: Establish compensation programs with built-in measures to minimise cheating.

Action 4.4.2: Link these compensation programs to the individual farmer's use of preventive measures.

Coexistence of brown bears and domestic livestock without some depredation is probably impossible. Limited livestock losses may be acceptable for conservation purposes, but extensive damages are unlikely to be tolerated. In areas where livestock farming in bear range is a threat to bear conservation, effective guarding techniques should be adopted or livestock farming should be abandoned in favour of other forms of production that are compatible with bear conservation. Economic incentives to reduce conflicts with livestock holders may be necessary for successful brown bear conservation and incentives should be given to encourage farmers to adopt forms of livestock husbandry that are compatible with bears in important bear habitat.

Compensation programs should be designed with certain precautions and conditions:

- a. Payment of compensation for damage alone is passive. Prevention is active and is the only system that will help to diminish damages. Thus, compensation has to be linked with prevention (electric fences, night enclosures, livestock guarding dogs etc.).
- b. The prices paid as compensation should be equal for damage done by different predators living in the area. Identifying the predator that is responsible is very important (Swenson, et al. in prep.).

Previously, the compensation system in Austria differed from province to province. This was due to the legislative system in Austria which allows each federal province to create their own hunting laws. Each province was responsible for its own compensation system since the bear was mentioned in hunting laws in most of the Austrian provinces (exceptions: Vorarlberg, Vienna). Currently, compensation of bear damages is paid via the third party insurance of federal hunting associations. Livestock owners and bee keepers are satisfied with this system. There are some measures built into the compensation system that help to prevent cheating but they are not infallible. In order to apply for compensation, large carnivore damage has to be verified by an expert. This is usually done by the bear advocates or a lynx researcher. However, if populations of large carnivores continue to grow in Austria more people will be needed who are trained in the identification of the animals which are killed by bears. This type of identification is not only important for compensation purposes but also for monitoring of carnivore populations.

Another problem in Austria is the lack of preventative measures. WWF Austria has taken the initiative by issuing electric fences to bee keepers in bear areas. However, sheep continue to roam unattended on pastures but not to the extent that is seen in Switzerland or Norway. Sheep are occasionally killed by bears (RAUER & GUTLEB 1997) but so far this has not been a

major problem in Austria. Yet, this problem will be of major importance as soon as wolves start migrating to Austria, which is likely to happen in the near future (ZEDROSSER 1996). It is very important that preventative measures are developed which are specific to Austria. These measures have to be accessible to every livestock owner and bee keeper in Austria before compensation measures can be linked to preventive methods. Incentives must be offered in order to ensure that the livestock owners and bee keepers employ these methods.

Presently, two large carnivore species, bear and lynx, can be found in Austria (RAUER & GUTLEB 1997, HUBER 1995). A third species, the wolf, is likely to appear again in the future (ZEDROSSER 1996). The identification of animals which are killed by large carnivores is necessary for a proper compensation program and there is a need for monitoring systems. If it is possible to differentiate between the kills made by dogs and those made by wolves, this technique would be of particular importance. Some experts are available for this task in Austria but there are not enough for a large scale compensation and monitoring program.

Action 4.4.4: Make garbage dumps and other human waste inaccessible to brown bears.

Action 4.4.5: Abandon artificial feeding that may create food- or human-habituated bears.

No artificial food should be available to bears in or near settlements. Artificial feeding, in any form that may create food-conditioned and human-habituated bears, should be avoided, including compost that is not bear-proof. This means that garbage dumps in bear range must be inaccessible for bears, and that feeding areas for bears or baiting areas must be located far from settlements and in areas closed to general human use (SWENSON, et al. in prep.).

Currently, garbage dumps do not present a problem as they are usually fenced and at a distance from bear areas in Austria. Baiting bears for hunting purposes does not happen in Austria simply because bear hunting does not exist. Yet, the existence of feeding stations for roe deer in central Austria does create a major problem. At some of these feeding sites food (often corn) is available year-round and illegal baiting sites for red deer do exist. This is an “all you can eat for as long as you want” situation for a bear; maximum food intake with minimum energy loss. A feeding site is a very attractive place for a bear but it is also a place that is often visited by humans. Bears at feeding stations have already been local attractions in Austria with hunters and locals going there on a regular basis for “bear-watching”.

These problems greatly increase the chance of human-habitation, particularly for young animals. Bears that become food-conditioned and human-habituated at a young age will most likely lose their fear of humans and females might pass this tradition on to their cubs. This problem already exists in Austria (RAUER pers. com.). Females with cubs are also known to be potentially dangerous for humans. If they are surprised at a feeding site they might attack a person as a means of defending their cubs and their food resource. If a brown bear killed a human being it would drastically affect the future of bears in Austria.

The “bear emergency team” has been created in reaction to these possibilities. This team of experts tries to discourage potential and known nuisance bears from becoming human-habituated by using repellent actions. Unfortunately this treatment is not always successful (RAUER pers. com.). The development of nuisance bears is a major problem in Austria. Some solutions do exist; food that is disliked by bears could be used in deer feeding sites and the feeding period could be shortened. However, every change has to be in agreement with local hunters and hunting associations which poses a complex problem.

8.3.4 Actions Regarding Nuisance Bears

Action 4.5.1: Minimise the creation of nuisance bears through actions Action 4.4.1-4.4.4 and Action 4.7.1.

This action refers to “Actions regarding conflicts with humans”, which is discussed above and “Actions concerning public awareness, education and information”, which is discussed later in this chapter.

Action 4.5.3: Carry out cost (for the population in short and long term) – benefit (for the society and bear population in the long term) analysis before considering removal of nuisance bears in threatened populations.

Bears that cause agricultural damages, visit garbage dumps, or bears involved in injuries/killing of humans are collectively called nuisance or nuisance bears, as these activities lead to conflicts with humans. If preventive efforts to minimise conflicts have failed, other solutions must be considered. In large viable populations such individuals should be removed. In small threatened populations, each bear constitutes a significant proportion of the population, and therefore the effect of removing a nuisance bear must be weighed against the negative effect on population size. Removed animals can be killed or translocated, although few translocations have been successful (SWENSON, et al. in prep.).

The year 1994 proved that a single nuisance bear can have a very negative impact on the future of bears in Austria. The option to remove single animals in order to save the population as a whole has to be seriously evaluated. The term “removal” needs to be defined for Austria, as transplantation of bears is almost impossible in a small country. The only alternative for Austria will be to kill the bears who cause too much damage and are a serious threat to humans. Hence a strict policy must be created to deal with this situation as it arises. Before removal, i.e. killing of a nuisance bear, becomes an option there must be an effort to reverse the bear’s behaviour through aversive conditioning. If this action is not implemented it is possible that people may take care of the problem themselves by simply poaching a problematic bear. If this happens poaching could become a serious threat to the survival of the bear.

When removing a bear it will be important to view the terms “cost” and “benefit” in the manner used in Action 4.5.3. It is not just human, economical costs and benefits that need to be evaluated but particularly the costs and benefits for the bear population in the short and long term. Due to the extremely small size of Austria’s bear population the removal of a single bear might have a major impact on the entire population especially if this animal is one of the few females.

8.3.5 Actions Regarding Public Involvement in Brown Bear Management

Action 4.6.1: Identify opinion leaders and stakeholders in brown bear management; set up local management boards and involve them in management planning and implementation.

Action 4.6.2: Establish a protocol of consultations with local people about their needs and the management actions to be implemented in their area.

If people affected by brown bears oppose their presence or reestablishment, this will result in their eradication or expensive guarding systems to enforce legal protection. Acceptance of brown bears by locals is increased if they have been part of the management process. Local involvement is best achieved through a public participation program. The idea is that people support decisions they helped make. A board with local stakeholders or representatives for the values that exist in the area (agriculture, hunting, environment, tourism etc.) will ensure that the planning process is responsive to local conditions and needs (SWENSON, et al in prep.).

Action 4.6.1 has already been addressed in the creation of the Austrian brown bear management plan. An interest platform was created with participants from agriculture, forestry, hunters associations, tourism, livestock growers association, and several other governmental and non-governmental organisations. This platform was directly involved with every step in the development of the plan and they were able to offer their arguments and needs during the formation of the management plan.

To date no official steps have been taken for Action 4.6.2. A protocol of consultation is still missing. As was previously discussed, WWF Austria has taken the initiative and created the “bear advocates” in 1995. Two scientists work in the field in the southern and central Austrian bear areas. They are responsible for population monitoring but their work also includes contact with locals. They are contacted by people in the bear areas whenever bears are sighted, if there are any damages, or if people have any questions. The idea of creating “bear advocates” was a very successful step by WWF Austria. It is necessary that the government makes a similar step but to date this has not happened.

8.3.6 Actions Concerning Public Awareness, Education and Information

Action 4.7.1: Initiate information campaigns designed for different target groups following the guidelines listed in the management plan.

In order for the brown bear conservation strategy to be successful, the public must be committed to making it work. Only an informed public will be able to share a commitment to brown bear conservation. People living in or frequenting bear habitat must be educated about the presence of bears, how to avoid contact with bears, how to keep bears out of garbage and other human food sources, and what to do when they meet a bear in a threatening situation. This information should be directed to decision makers, those with commercial interest within bear habitat, and the public in general.

A good educational campaign should be prepared and conducted by going through the following steps:

- a. Find a lead agency, group or person, who raises the funding for all the other necessary steps following.
- b. Identify target groups, their existing knowledge levels and attitudes as well as assess the current educational information.
- c. Design efforts and messages targeted by group.
- d. Identify individuals within the different target groups to deliver the messages in order to increase the chance of a successful implementation.
- e. Implement the educational campaign.
- f. Conduct an evaluation of the educational efforts. What effects did they have? What has to be improved? How far were attitudes of the target group changed and what brought about the change? etc.
- g. Monitoring: Attitudes and beliefs of the target groups as well as the goals of the campaign have to be reassessed in a continual process. In other words, after running an educational campaign for some time one must go back to step "b" again and start the process over again.

A campaign to inform the public should be an integral part of the conservation program. Several aspects have to be covered in an information campaign, including bear ecology, damage to livestock and how to limit damages, human safety, and waste management (SWENSON, et al. in prep.).

In 1995 the most limiting factor for bears in Austria was the lack of their acceptance by local people. Information campaigns, which addressed different target groups and the general public, produced several folders, brochures, videos, reports and a bear exhibit. Yet a large scale evaluation of these educational efforts and a monitoring of the attitudes and beliefs of the target groups is still missing. Also, the plan to once again start the process of a public information and education program has not yet been formulated.

8.3.7 Actions Regarding Research and Monitoring

Action 4.8.1: Co-ordinated scientific research on brown bears in Europe.

Action 4.8.2: Co-ordination of gathering necessary data to monitor management and biological conditions of brown bears in European countries.

Most brown bear populations in Northern and Eastern Europe have increased in numbers and expanded their range during the last 50 years, although other populations are at the edge of extinction. In order to manage this species properly, specific research about several aspects of brown bear ecology is needed. It is important to create a body that can co-ordinate scientific research on brown bears at the European level, and maintain a close link among all researchers working on brown bears in Europe. Co-ordinated research implies that research funds, such as European Union funds, should be made available at the European level, including adjacent non-EU countries that can conduct relevant research. This proposed body should also co-ordinate the regular gathering of all necessary data to monitor the management and biological conditions of brown bears in European countries. For this type of co-ordination to function, it is important that the ownership of data be properly respected and that questions of authorship of publications be resolved early in the process. It is recommended that future research be concentrated on the following topics (not necessarily in order of importance): population dynamics, dispersal, genetic studies, brown bear prey relationships, habitat use, brown bear behaviour and human activities, public opinion, monitoring, prevention and limitation of damages (SWENSON, et al. in prep.).

The importance of the research and monitoring of brown bears can not be overemphasised. The knowledge about bears in Austria is relatively scarce yet this knowledge is absolutely necessary in order to properly manage the bears. The most important research steps for the near future will probably be the gathering of basic knowledge about population dynamics, dispersal, genetics, and the influence of artificial feeding sites (i.e. roe deer feeding stations) on bears. A close link has to be established or existing links have to be deepened between the countries that have bear populations. This is especially important with researchers in neighbouring countries that host source populations of large carnivores for Austria (i.e. Slovenia, Croatia, Czech Republic, Slovakia, Switzerland, France and Italy). Currently there is very good contact with the southern and western neighbouring countries, however better contacts need to be established with the northern neighbouring countries of Slovakia and the Czech Republic.

9 BROWN BEARS IN AUSTRIA – QUO VADIS?

Although ten years have passed since the beginning of the Austrian bear project it is still too early to call this program a complete success. From the perspective of population development the future does look promising but Austria must now develop a long term plan for large carnivores with particular emphasis on brown bears. In previous years, conservation management was usually just a reaction to immediate events but this attitude has changed drastically. Concepts for future management have taken shape in the forms of the “Action Plan for the Conservation of Brown Bears in Europe” and the “Management Plan for Brown Bears in Austria”.

The long term goal for Austria is to establish a viable bear population. The bear population is forced to live in close proximity to humans since this country has such a small amount of remaining wilderness. The major task of future bear management will be to discover the means of preventing bears from becoming habituated to humans even though they must live so close to areas that are inhabited by humans.

Currently, the small bear population of Austria is far from being viable, especially in regards to the scarcity of female bears. The possibility of further reintroduction has been strongly opposed which leaves the future of the Austrian bear population completely dependent on immigrants from Slovenia. However, female bears expand their home range quite slowly because the sub-adult females usually establish their range either directly in or very close to the home range of their mothers. Thus, it could take a long time before the female bears from Slovenia immigrate to Austria. According to the Austrian brown bear management plan, at least twenty-five females are needed if the population is to reach a secure level. The present status of bear hunting politics in Slovenia is conducive to this need but a change in politics could delay or even prevent the immigration of bears, particularly the females. Consequently, it is essential to keep in close contact with Slovenian researchers, managers, and politicians as well as the associates of other countries that are adjacent to Austria. There is a serious need for a committed alliance if a practical vision of the recovery and conservation of large carnivores in the Alpine mountain range is to be created.

Austria has a very unique situation because brown bear management is currently directed by a private nature conservation (WWF Austria) rather than the official authorities. This situation creates a number of problems for the success of the bear project. However, if these measures are going to be successful in this country then it is necessary that the government takes financial and decision making responsibility for the management of bears.

The bear emergency team will play an important role in the future as they must attempt to avert the progress of nuisance bears as early as possible through the application of aversive conditioning techniques. In the more extreme cases it will be necessary to remove these bears from the rest of the population. It is also essential to remove the factors that contribute to the creation of food-conditioned and human-habituated bears. The year round availability of corn in roe deer feeding stations is a major obstacle within central Austria. The use of alternative types of supplemental food should be encouraged while it would also be possible to shorten the feeding periods of deer. The implementation of these changes could have a very positive impact on the survival of the Austrian bear population.

Even if these suggestions become a reality, the future of brown bears is greatly effected by people’s opinion of them. The lack of acceptance that is felt towards these animals is a limiting factor in the success of their conservation. If this predicament is to be avoided then it is imperative that public relations plays an integral role in bear management through information campaigns and chronicling of their success.

Humans have accomplished a remarkable feat in nature conservation by bringing the Austrian bear population back from extinction. Yet it is also our responsibility to ensure that the bear population is given the chance to continue on its path of renewal. Brown bears are an important part of Austria's natural heritage as well as our vision of tomorrow. With the approach of the new millennium we must find a way to live in harmony with the bear if we hope to pass on our heritage and our dreams to future generations.

10 ACKNOWLEDGEMENT

WWF Austria is grateful to those people who have assisted in the preparation of this study and their participation in the Austrian Bear Project. We would like to thank Miha Adamic, Christoph Aste, Konrad Brandstätter, Björn Dahle, Gabriele Fieber, Hartmut Gossow, Bernhard Gutleb, Kurt Hemmelmayr, Dexter Hodder, Djuro Huber, Thomas Huber, Petra Kaczensky, Felix Knauer, Erhard Kraus, Peter Lebersorger, Gerhard Loupal, Bruce McLellan, Annette Powell, William Pratesi, Tussnelda Rottenburg, Bernhard Schön, Wolfgang Schröder, Enrica Seltenhammer, Chris Servheen, Karl Sirowatka, Karl Splechtna, Gottfried Stadlmann, Jon Swenson, Maria Tiefenbach, Reinhold Turk, Chris Walzer, Cynthia Woods.

11 LITERATURE

- Arbeitsgemeinschaft Braunbär LIFE (1997): Managementplan für Braunbären in Österreich, Wien, 157 Seiten.
- BACHOFEN Von ECHT, R. v. & W. HOFFER (1930): Jagdgeschichte Steiermarks, III. Band, Jagdstatistik und Geschichte des Steirischen Wildes. Leykam Verlag, Graz.
- HUBER, T. (1995): Luchse in Österreich – zurückgebracht und eingewandert. Stapfia 37, zugleich Katalog des OÖ. Landesmuseums, Neue Folge 84: 251-254.
- LOPEZ, B. H. (1975): Of Wolves and Men. Charles Scribner's Sons, Macmillan Publishing Company, New York.
- RAUER, G. (1995): Stürmische Heimkehr – der Braunbär in Österreich. Stapfia 37, zugleich Katalog des OÖ. Landesmuseums, Neue Folge 84: 251-254.
- RAUER, G. & B. GUTLEB (1997): Der Braunbär in Österreich. Umweltbundesamt, Monographie, Band 88, Wien, 64 Seiten.
- SERVHEEN, C., S. HERRERO & B. PEYTON (1999): Bears. Status, Survey, and Conservation Action Plan. IUCN/SSC Bear and Polar Bear Specialist Groups. IUCN, Gland, Switzerland, and Cambridge, UK. 309 Seiten.
- SWENSON, J. E., N. GERSTL, B. DAHLE & A. ZEDROSSER (in prep., 1999): Final Draft Action Plan for the Conservation of the Brown Bear (*Ursus arctos*) in Europe. Council of Europe, Strasbourg.
- ZEDROSSER, A. (1996). Der Wolf in Österreich. WWF-Studie 25, Wien, 34 Seiten.

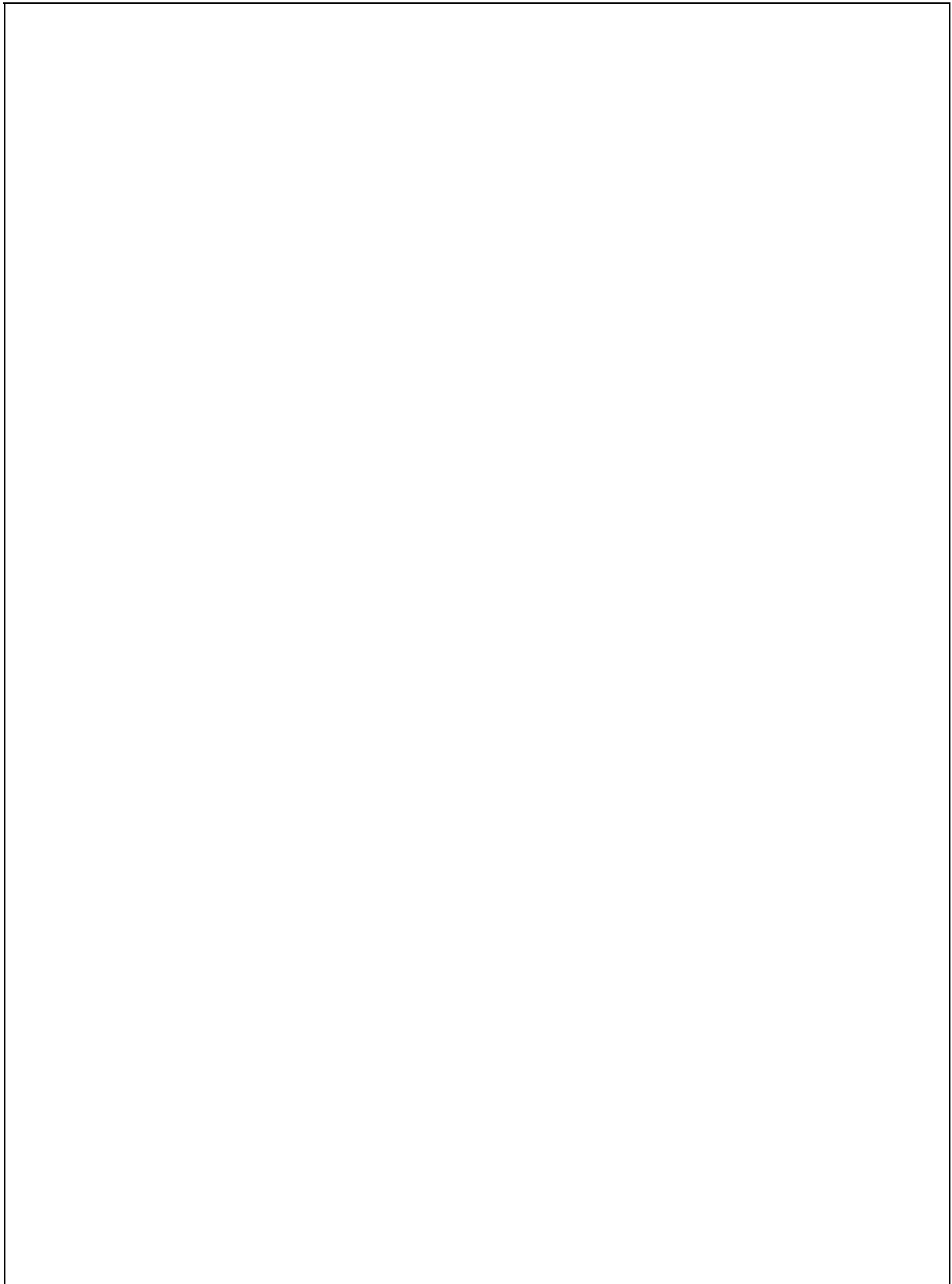


Illustration 2: According to research (Corsi et. al 1998), Austria's Eastern Alps provide plenty of habitat for brown bears. The Ötscher-Hochschwab region and the Upper Austrian Limestone Alps in the north and the Weissensee and Karawanken region in the south are core-areas of bear activity in Austria.

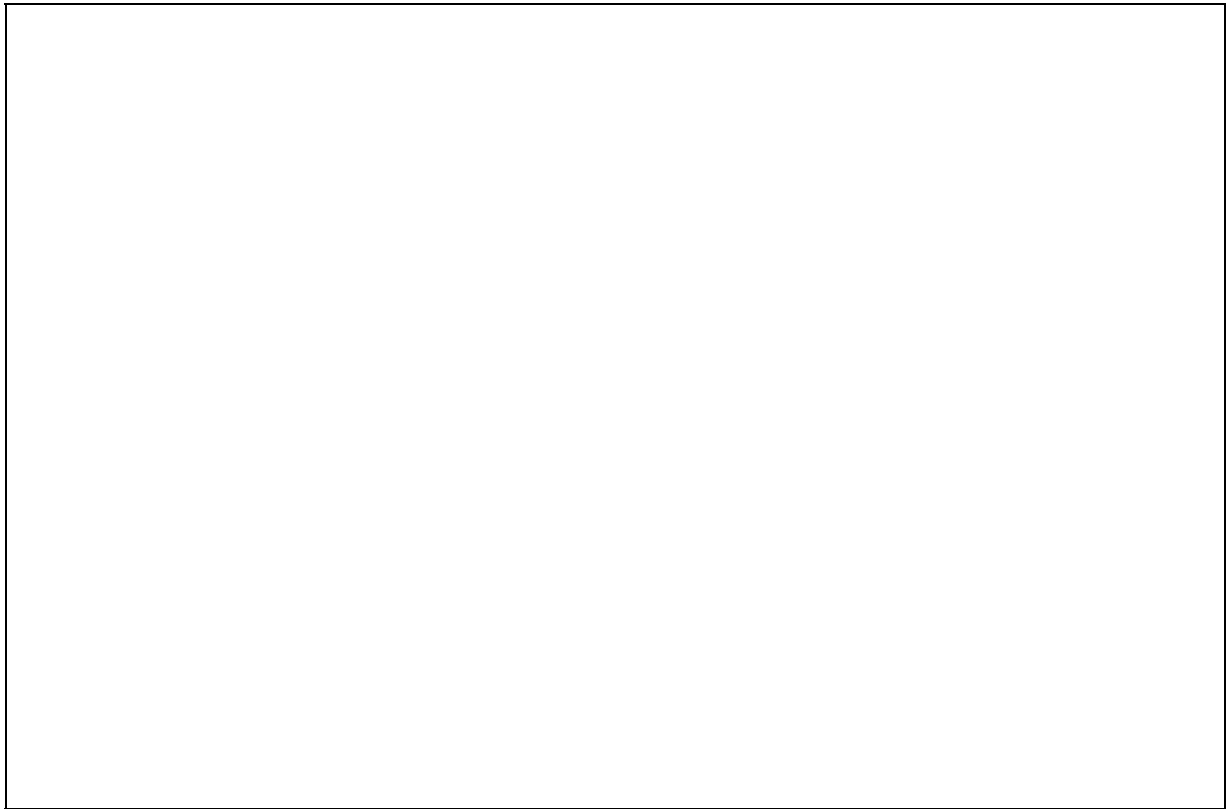


Illustration 3: Djuro was the only male bear released during the project. (Photo: N. Gerstl/WWF)

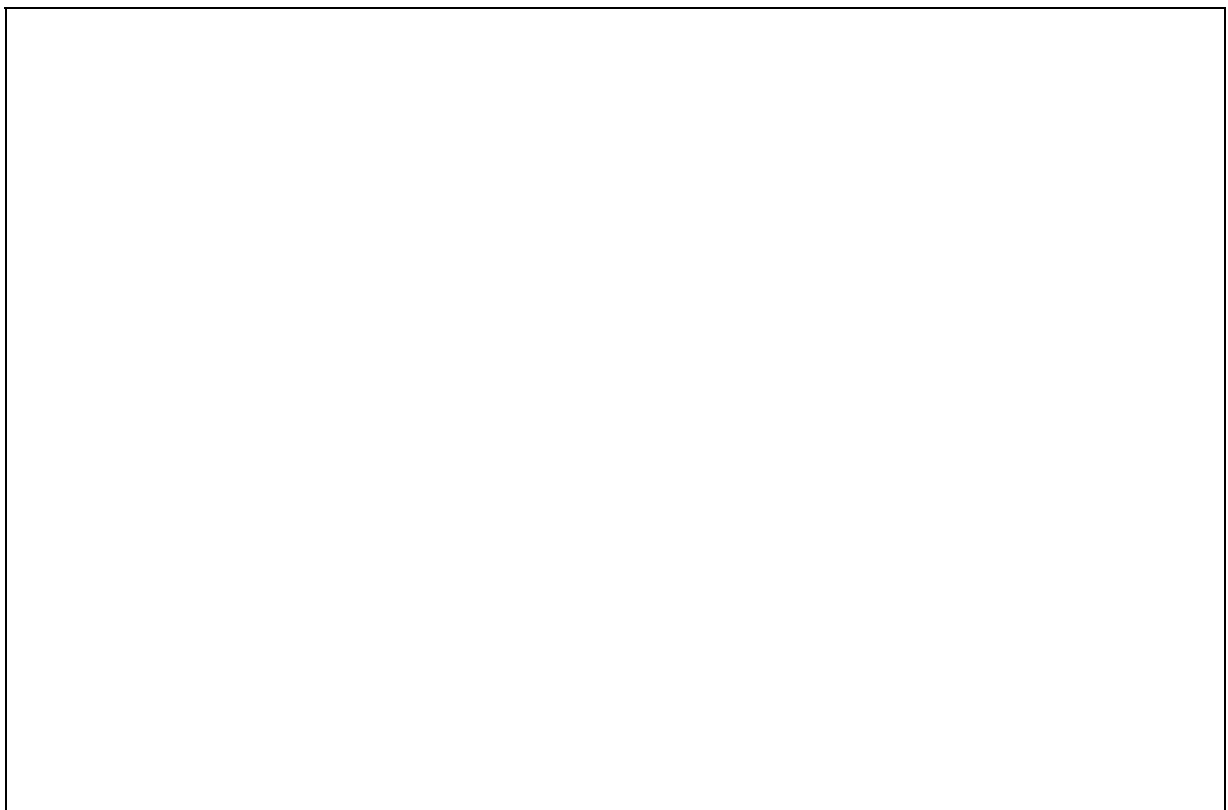


Illustration 4: Mira and her cubs in early fall 1993, shortly before the accident. (Photo: K. Splechna)

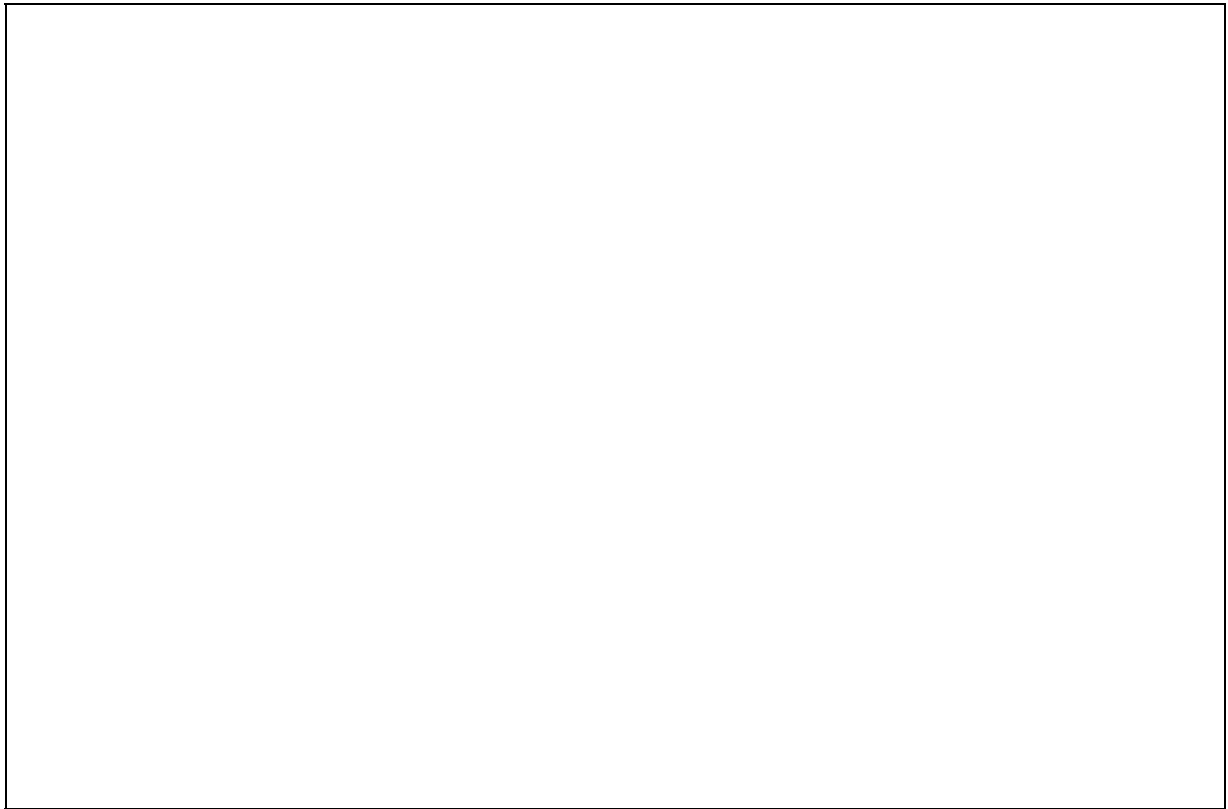


Illustration 5: Damages on bee hives increased dramatically during 1994. (Photo: G. Rauer/WWF)

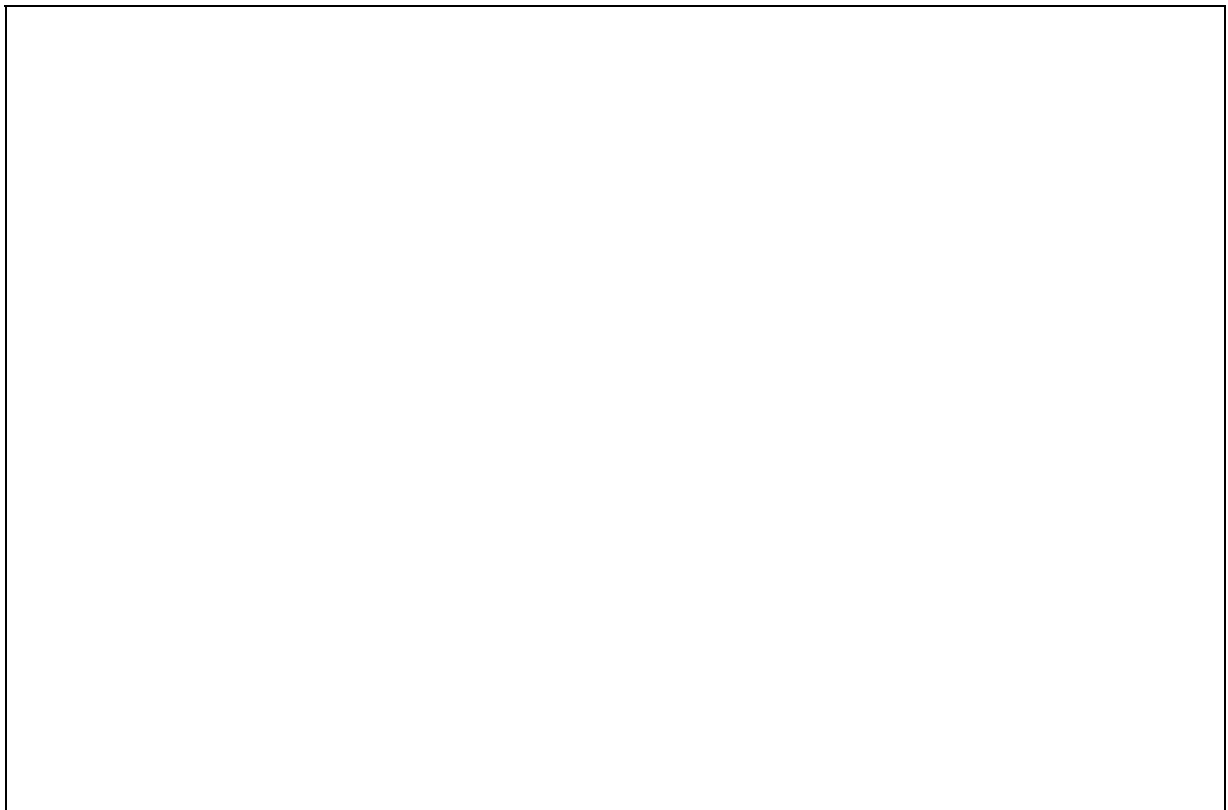


Illustration 6: An immigrant from Slovenia – possibly “Nurmi” himself. (Photo: B. Gutleb/WWF)

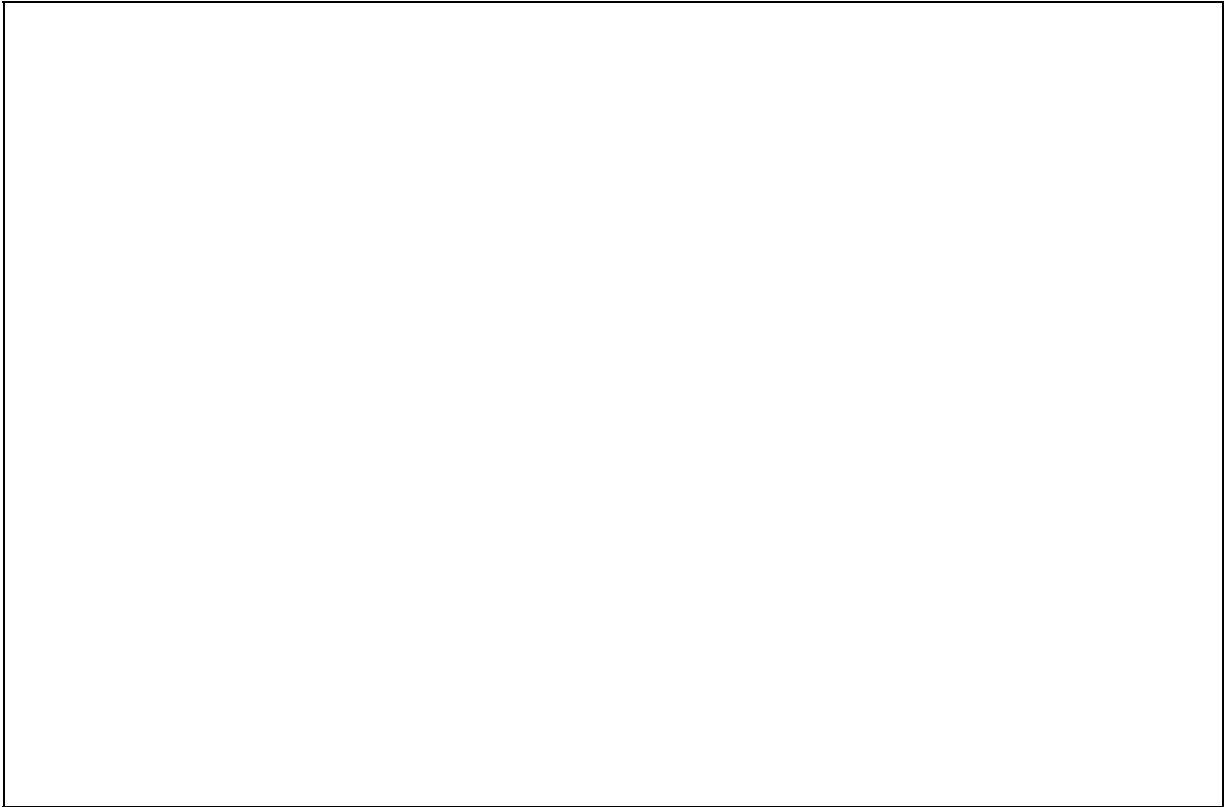


Illustration 7: The Bear Advocates play an important role as communicators between humans and bears in the project. (Photo: T. Dietz/WWF)

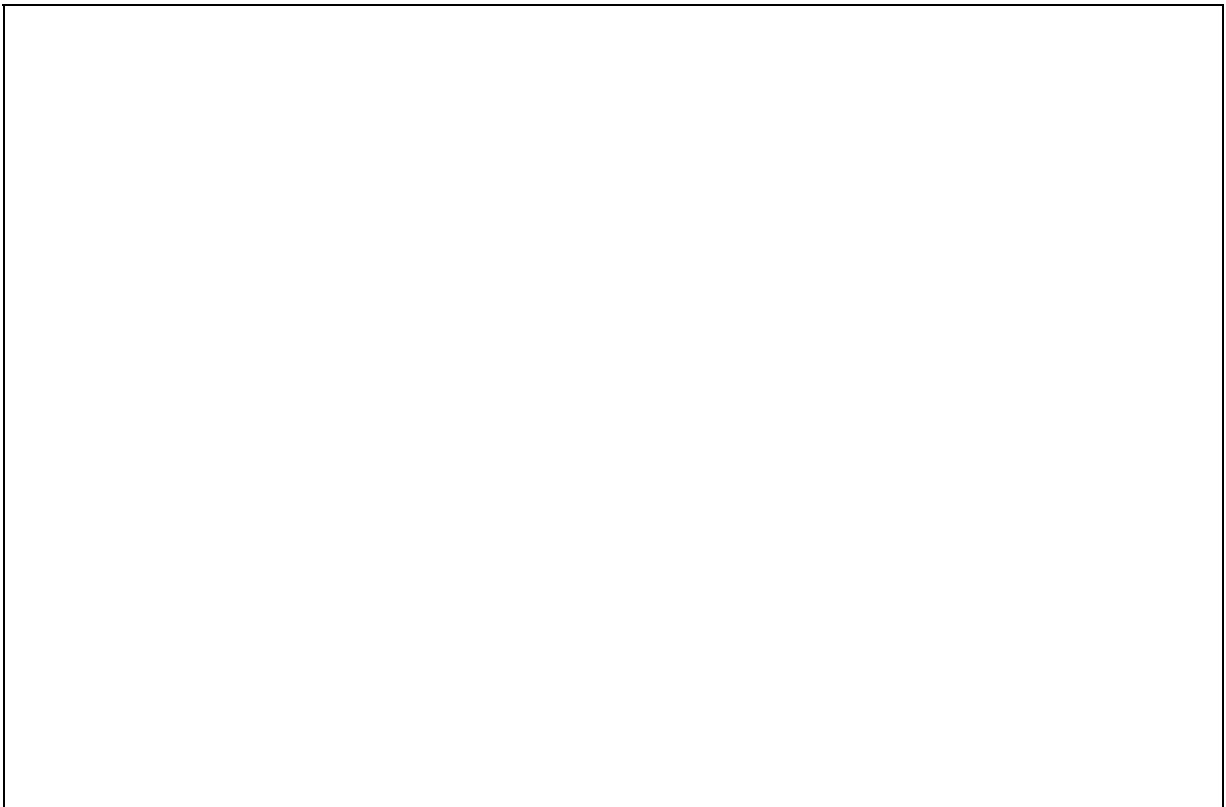


Illustration 8: Rape oil is a nutritious "prey" for brown bears in Austria. (Photo: N. Gerstl/WWF)