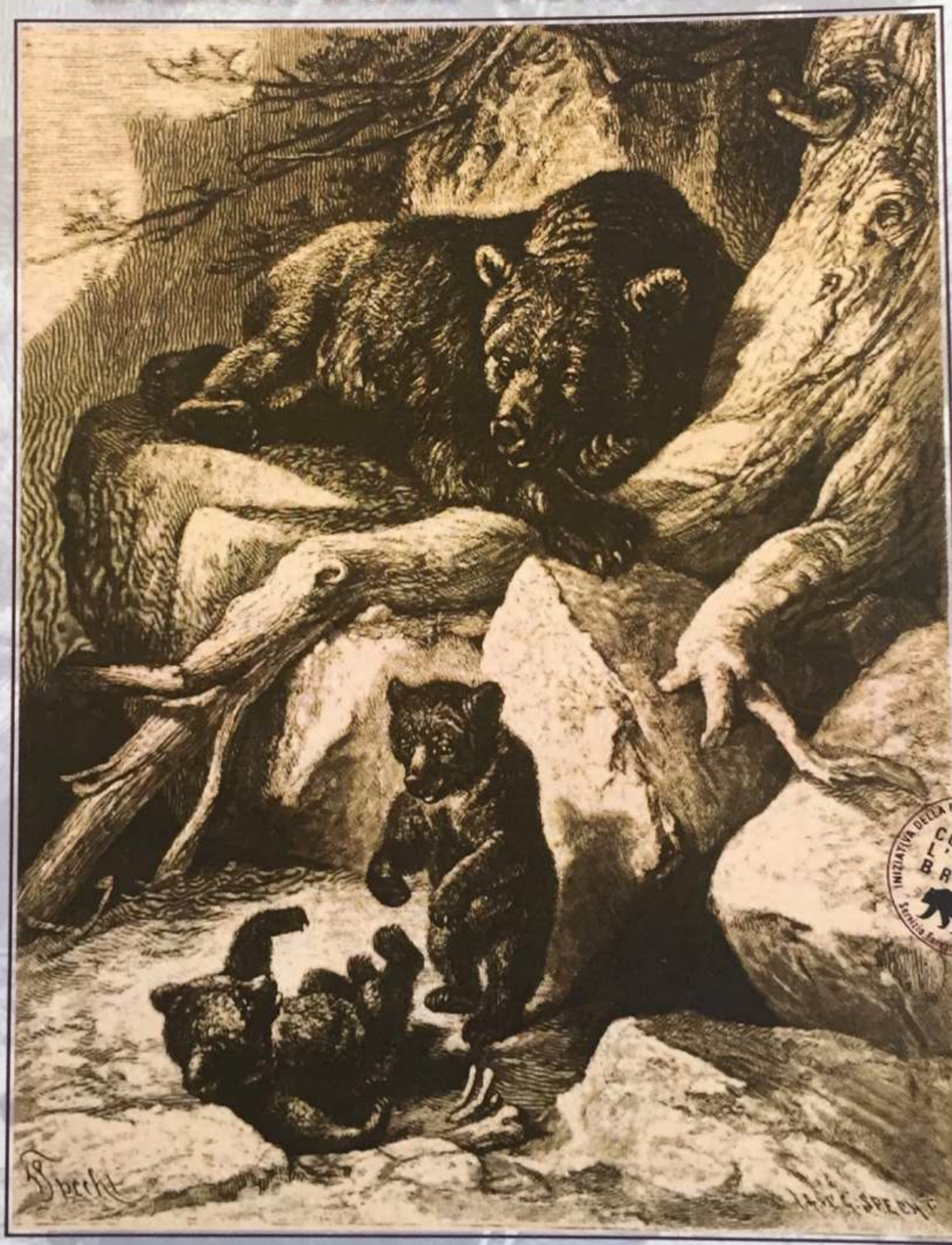
AUTONOMOUS PROVINCE OF TRENTO

BEAR REPORT 2008



AUTONOMOUS PROVINCE
OF TRENTO

FORESTRY
AND WILDLIFE DEPARTMENT
WILDLIFE OFFICE

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CERTIFIED

2008
BEAR REPORT

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Presentation

Management of the brown bear in Trentino is carried out by the provincial administration through the Forestry and Wildlife Department, on the basis of its statutory responsibilities and existing regulations regarding the protection of wild fauna.
The Department's main partner at operational level is the Adamello Brenta Nature Park, (ABNP) which promoted the Life Ursus project during the latter part of the 1990s, thanks to which the survival of the bear in our mountains was ensured. The park collaborates in various activities, particularly in the field of research, monitoring and communication.
Given the national and international importance of managing a species such as the bear, the Ministry for the Environment and the Safeguarding of Land and Seas (MESLS) and the Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA) also represent indispensible institutional and technical-scientific partners.
Ten years after it was started, the project is now entering a new and more mature phase, due to the expansion taking place over time in the population originating in the bears released and thanks to the experience gained meantime in the field by the organisations and staff involved in management activities.
As stated on several occasions, the final objective is however still a long way off, also due to the emergence of problems linked to social acceptance, requiring further efforts in terms of communication and the refinement of operational strategies.
In this context, the second Bear Report, a technical document drawn up by the Wildlife Office, intends first of all to provide accurate, clear, up-to-date and detailed information on the status of the bear population roaming over western Trentino and neighbouring regions and nations. Secondly, it aims to record in a precise and analytical manner a range of data illustrating the management techniques implemented, in order to make it possible for those in the field to make use of this data.
The first objective falls fully within the context of the information campaign "Getting to know the brown bear", started up by the provincial administration in 2002, the Report representing one of the most important elements in terms of technical and scientific communication, whereas the second objective is more specifically related to operational and management aspects. However, both respond to the need to provide the technical staff and authorities concerned with new and improved knowledge, in order to facilitate decision-making and provide the community with a greater awareness of the technical and cultural significance of the project.
In addition to the main partners nominated previously, our heartfelt thanks also go to all those, in particular Trento Natural Science Museum (TNSM) (Vertebrate Zoology and Education Department), who in various ways have collaborated in order to realise the individual initiatives in the programmes of action, above all to the staff of the Wildlife Office, the forestry personnel working in forestry districts and stations and the custodians, park wardens, gamekeepers and volunteers who have made a concrete contribution towards the realisation of the projects and gathering the information without which this Report could not have been written.
Finally, this year an appendix to the Report also provides the presence in western Trentino of a lynx coming from Switzerland, taking a further step in a direction which could over time result in this document becoming a more extensive report on the presence of large alpine carnivores in the province.

DOTT. MAURIZIO ZANIN
Manager, Forestry and Wildlife Department, APT

Introduction

The brown bear has never completely disappeared from Trentino, which is thus the only area in the Alps that can proudly affirm the continuous presence of bears.
However, protection of bears, which began in 1939, has not eliminated the risk of their becoming extinct. Direct persecution by man and, to a lesser extent, modifications to the environment taking place in the last two centuries, reduced the original population, bringing it to the threshold of extinction. At the end of the 1990s there were probably no more than three or four bears remaining, confined to the north-eastern Brenta area. However, just when all seemed lost, there was turn in fortunes, originating in the action taken by ABNP, which started up the Life Ursus project, together with APT and INFS. Between 1999 and 2002 this led to the release of 10 bears (3 males and 7 females), giving rise to the population which is the object of this report. The release of the bears was preceded by a detailed feasibility study supervised by INFS, which ascertained the environmental suitability of a sufficiently large area to play host to a viable bear population (40-60 bears), which is the ultimate aim of the project. This area extends well beyond the confines of the province of Trento, also involving neighbouring regions.
Following the conclusion of the phase involving the release of the animals, the phase of ordinary management of the bear population, perhaps even more demanding, began in 2002. For this purpose the provincial government laid down the operational policy on which these management activities should be based in resolutions no. 1428 and no. 1988 of 26 June 2002 and 9 August 2002. In particular, six action programmes were identified (monitoring, damage management, management of emergencies, staff training, communication and supra-provincial links), which also represent the main guidelines followed in this report.

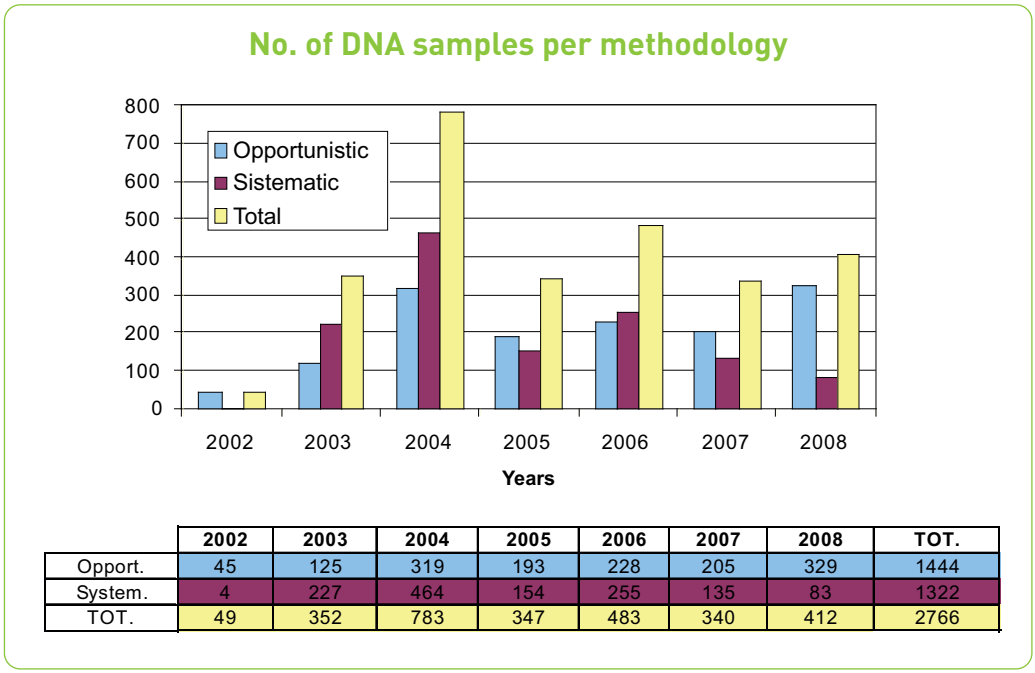
1. Monitoring

Monitoring of the bear has been carried out continuously by the Autonomous Province of Trento for more than 30 years. Over time, traditional naturalistic techniques have been supplemented by radiotelemetry (the first radio collars were used in Eurasia, in the second half of the 1970s), automatic video controls by remote stations, photo-trapping and finally, in the last few years, by genetic monitoring.
This last technique is based on the collection of organic samples and takes place using two methods commonly defined as **systematic monitoring**, based on the use of traps with scent bait, designed to "capture" hairs using barbed wire, and on **opportunistic monitoring**, which is based on the collection of organic samples (hairs and excrement) found in the area during departmental activities. Since 2006, systematic monitoring in the area constantly frequented by bears has taken place in alternate years and was started up again on a broad scale in 2008. Genetic monitoring was carried out for the sixth consecutive year with the coordination of the Forestry and Wildlife Department of APT and the collaboration of ISPRA and ABNP.

Genetic database

A total of 412 organic samples were collected in the province of Trento in 2008, of which 329 in an opportunistic manner and 83 using the systematic method with scent traps.
Graph 1 shows the trend, with the number of samples collected in the last seven seasons.

Graph 1



	2002	2003	2004	2005	2006	2007	2008	TOT.
Opport.	45	125	319	193	228	205	329	1444
System.	4	227	464	154	255	135	83	1322
TOT.	49	352	783	347	483	340	412	2766

The 412 samples were collected by the staff of the Forestry Service of the Autonomous Province of Trento (FS) (254 - 62%), by ABNP (148 - 36%), by volunteers (9 - 2%) and by the staff of the Associazione Cacciatori Trentini (ACT) (1). A further 38 samples were collected outside the province (in the provinces of Bolzano, Brescia, Bergamo, Verona and Vicenza), contributing towards determining the total number of bears identified.

Genetic analysis was carried out by technicians from ISPRA. The samples collected, mostly hairs and faeces, but also tissue and blood from bears found dead or captured, were sent to the laboratory for genetic analysis. The first phase of the analysis involves extraction of the DNA. In the case of hairs the DNA is obtained from the cells found at the root, whereas in the case of faeces it comes from cells sloughed off during digestion and contained there. The DNA isolated in this way is amplified using the polymerase chain reaction technique (PCR) to identify the individual using microsatellite markers, the sex using markers linked to sexual chromosomes and in order to distinguish bear samples from those of other species of mammals using mitochondrial DNA. Analysis of kinship was then carried out to identify new cubs and the respective parents and to reconstruct the pedigree of the population. The tests were carried out on the basis of standard protocols and the data was validated using population genetics software. The organic samples collected can be analysed in the standard manner (results at the end of the season) or in more urgent cases, using faster methods (results within one week of receipt of the sample).

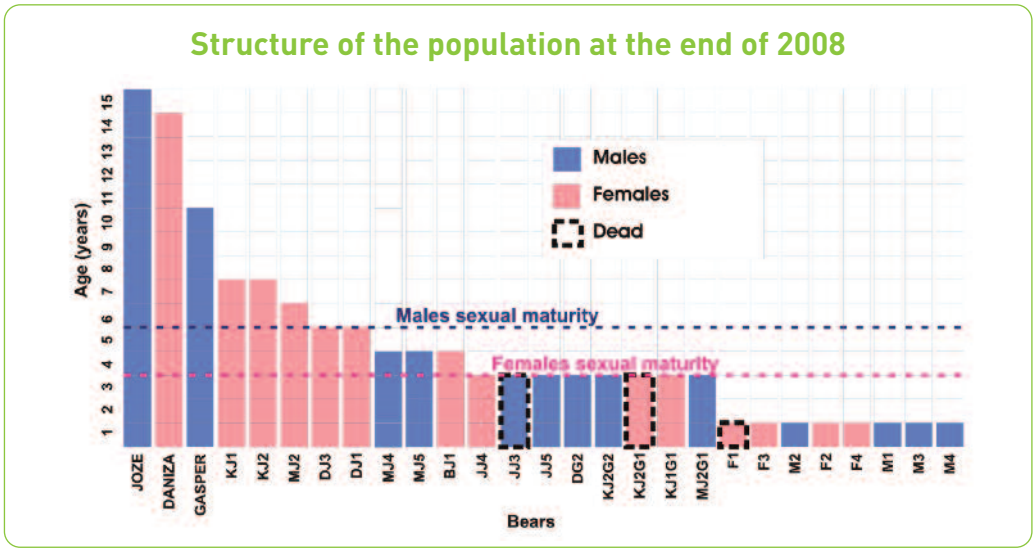
Status of the population at the end of 2008

Processing of the data collected has provided the following information regarding the brown bear population present in Trentino and neighbouring regions in 2008.
From this year, newborn animals have been identified with progressive numbering preceded by the letter "F" for a female and "M" for a male. Information regarding the identity of the parents is at all events known and available in a specific database.

Definitions

- **"recorded bears"**: bears whose presence has been ascertained genetically or by unequivocal observations during the last year;
- **"unrecorded bears":** bears for which no genetic evidence has been found in the last year alone;
- **"missing bears":** bears certainly or most likely no longer present within the population, as they have been found dead, killed, taken into captivity or for which no genetic evidence has been found in the last two years;
- **"cubs":** bears aged between 0 and 1;
- **"young bears":** males between the age of 1 and 5 and females between the age of 1 and 3;

Graph 2



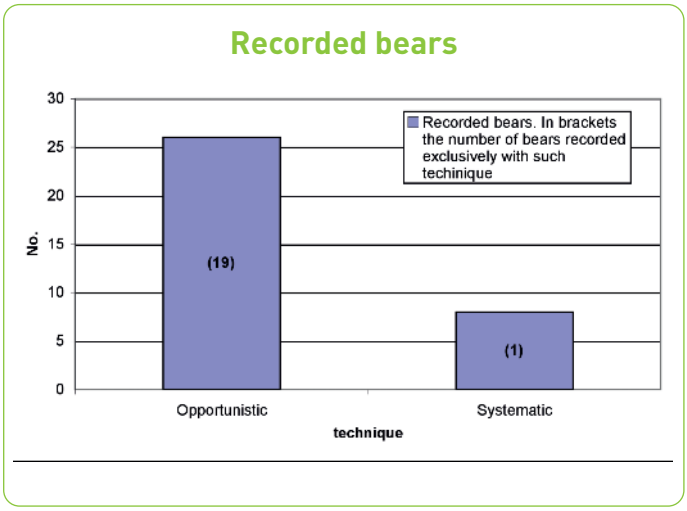
- **"adults":** males over the age of 5 and females over the age of 3.

Overall **27 animals were traced genetically during 2008**; however three of these died during the year (JJ3, a male aged 2.5; KJ2G1, a female aged 2.5 and F1, a female cub). The minimum number of bears present during 2008 was therefore 24 (see Graph 2); 12 females and 12 males - sex ratio F-M 1:1 (n=24). It is believed that in 2008 almost all the bears making up the population were traced genetically. If bears not genetically traced in the last year alone (4) are considered and those missing for two or more years (8) are excluded, **it can be estimated that there is a population of 24-28 bears**. The **opportunistic monitoring** technique was again shown to be fundamental in 2008. Indeed, in total (also considering the samples gathered outside the province) no lessthan 26 bears were identified, of which 19 exclusively using this technique, whereas 12 bears were recorded using **systematic monitoring**, of which only 1 exclusively using this method (see Graph 3).

Reproduction

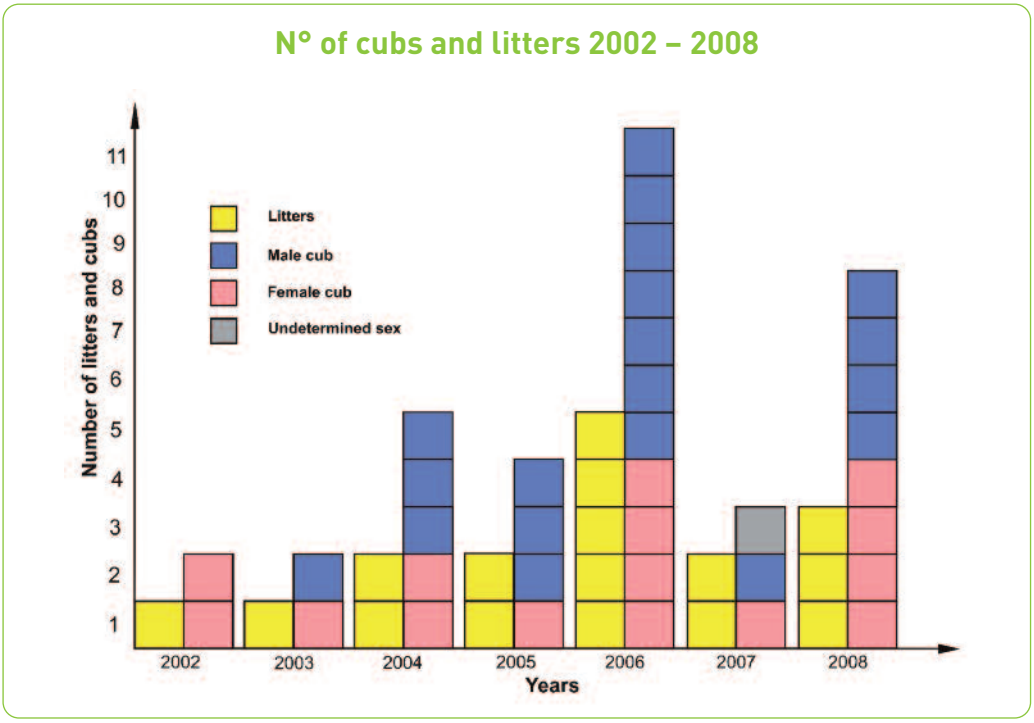
In 2008 there were three certain **litters**, with a total of eight cubs. Daniza gave birth to three cubs (two females, F1 and F3 and a male, M2), KJ1 gave birth to three cubs (two females, F2 and F4 and a male, M1) and KJ2 gave birth to two cubs (two males, M3 and M4).
This was Daniza's third litter in Trentino (she is the only bear to have given birth three times), all being made up of three cubs (2004, 2006, 2008). For KJ1 and KJ2, both now seven years old, this

Graph 3



was their second litter (both having given birth to a total of four cubs). There have therefore been 16 litters recorded in Trentino in the last seven years and at least 35 cubs have been born (18 males, 16 females and 1 of undetermined gender) (Graph 4). The average number of cubs per litter was 2.19 (n=35) and the M-F sex ratio is 1.12:1 (2002-2008, n=34).

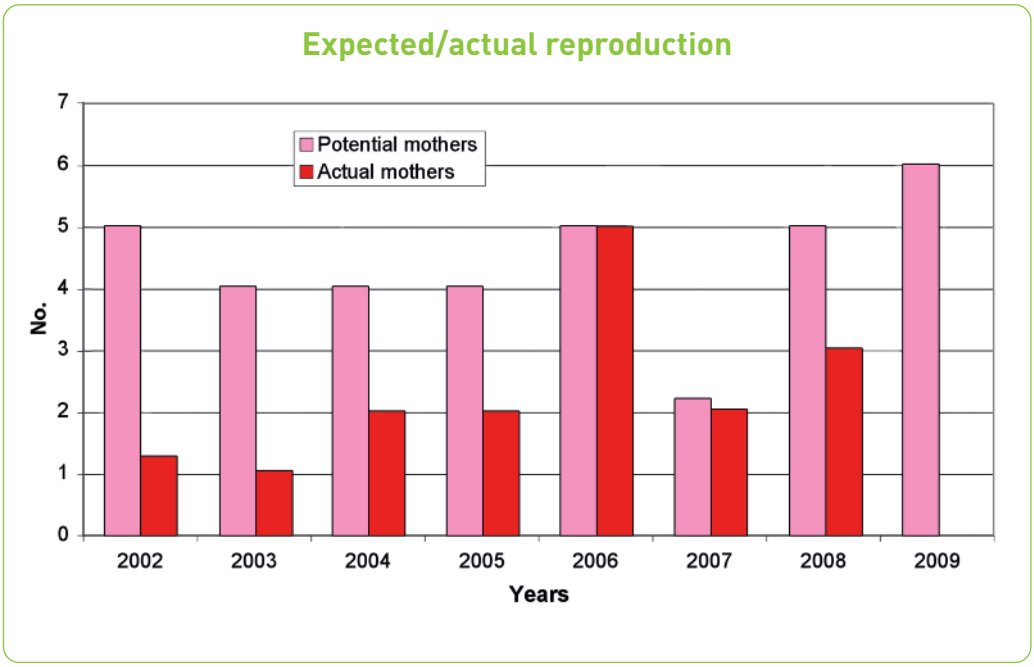
Graph 4



Reproductive animals. There are still only two sexually mature **males** and there will probably not be any others in 2009 at least, as the oldest males recorded this year, (excluding Joze and Gasper) are only four years old (MJ4 and MJ5). Joze has reproduced in six years, whereas Gasper only in the last three. The first bear has reproduced nine times with seven different females (for a total of 19 cubs), whereas the second has reproduced eight times with six different females (for a total of 15 cubs). Daniza, MJ2 and KJ2 are the only females to have mated with both males; Kirka, Jurka, Maja and Brenta have only mated with Joze; KJ1, DJ1 and DJ3 only with Gasper.
There have been ten reproductive **females** to date: the five founders (Jurka, Daniza, Maja, Brenta and Kirka) and five bears born in Trentino (KJ1, KJ2, MJ2, DJ1 and DJ3).

As already stated, Daniza has given birth three times (with a total of 9 cubs); Maja (five cubs), Jurka (five cubs), KJ1 (four cubs) and KJ2 (four cubs) have reproduced twice, always in alternate years; Kirka (two cubs), Brenta (one cub), MJ2 (two cubs), DJ3 (two cubs) and DJ1 (one cub) have given birth only once. Two females of reproductive age no longer seem to be present (Kirka and Maja), a third has died (Brenta) and a fourth was taken into captivity (Jurka). However, this year a further two females have become potentially mature (JJ4 and KJ1G1), bringing the number of reproductive females currently present to nine. As shown in Graph 5, six female bears will potentially be able to reproduce in 2009, as the remaining three gave birth in 2008 and would not normally be expected to give birth again before 2010.

Graph 5



Bears not recorded in 2008

Four bears present in 2007 **were unrecorded** for the first year in 2007 (DG3 a female born in 2006 and DJ1G1, DJ3G1 and DJ3??, respectively a male, a female and a cub of undetermined gender born in 2007). They have not yet been classified as "missing" bears (see Definitions), as there is a concrete possibility that they are still present.

Missing bears

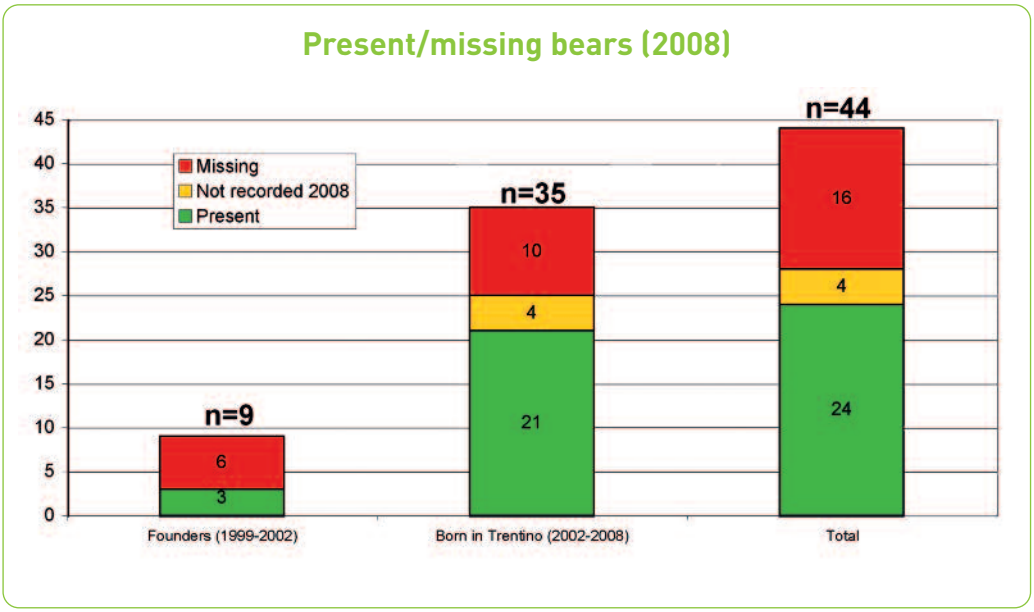
A further bear (MJ2J1, born in 2006), has instead been added to the list of missing bears, as for the second year running no genetic traces were recorded in 2008. Genetic monitoring has also highlighted the absence of all seven bears already missing during 2007.

In 2008 three deaths were also ascertained: JJ3, a male born in 2006, F1, a female cub and KJ2G1, a female born in 2006.

Considering that in previous years a further five bears were already absent, having been found dead (3), killed (1) or taken into captivity (1), there were a total of sixteen **missing bears** at the end of 2008. It should at all events be borne in mind that it is theoretically possible, albeit unlikely, that some of these (8) are still present.

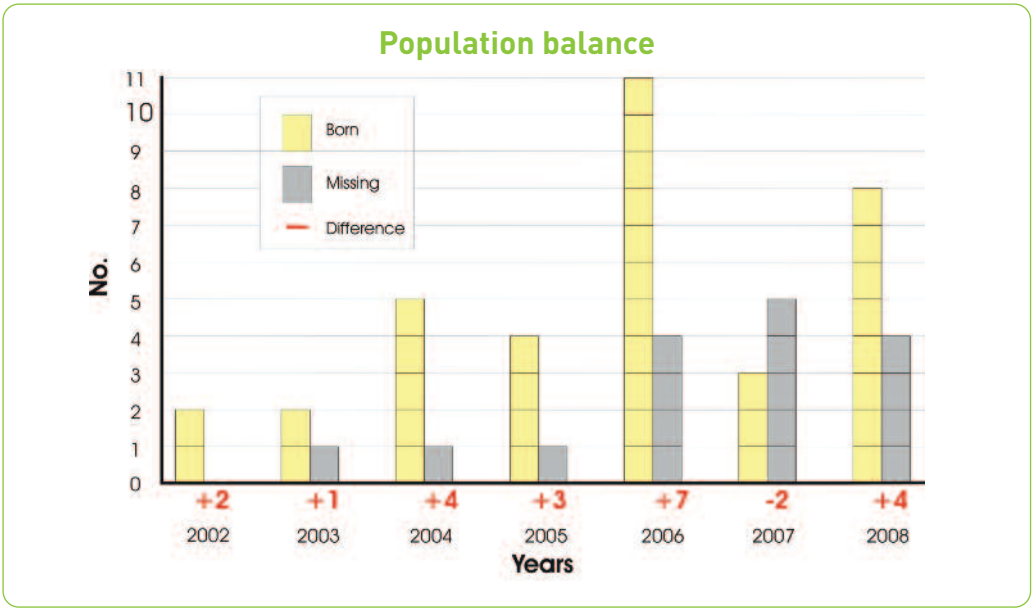
Thus 3 out of the 9 founder animals (Joze, Gasper and Daniza) and 21 out of the 35 bears born in Trentino were certainly present in 2008 (so in total at least 24 bears out of the potential 44). Considering that some of the animals not recorded may nevertheless be present (this is especially valid for the four bears unrecorded in 2008 alone), it is possible to estimate the percentage of "missing bears" (dying from natural causes, killed, unrecorded for at least two years, taken into captivity) at around 36% of the theoretically possible population (see Graph 6).

Graph 6



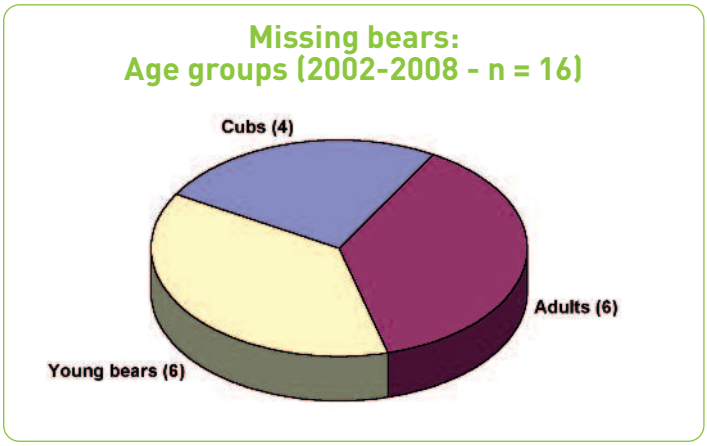
Graph 7 highlights the **balance between births/missing** bears year by year. In 2008 there was a positive balance (+4). This was the result of eight births, three deaths and a new bear considered to be missing. The total balance between births/missing bears in the period 2002-2008 is +19; by adding the 9 founder bears to these we arrive at a total of 28 bears, including the 24 bears present and the four animals unrecorded in the last year alone, as shown in the third column of Graph 6.

Graph 7

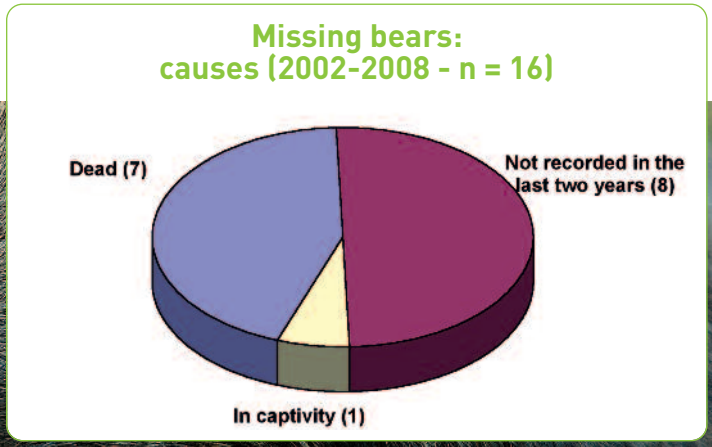


Of the **missing bears** six are **adults**, six are young animals and four are cubs (Graph 8).
Furthermore, **no genetic traces have been found for eight of the missing bears** in the last two years, seven **have died** and one has been **taken into captivity** (Graph 9).
The cause of the **deaths** (Graph 10) was natural in three cases (MJ1, DG1 and Brenta) and linked to humans in the other four cases (JJ1 and JJ3 killed legally abroad, KJ2G1 died in an accident during a capture operation and F1 following a road accident).

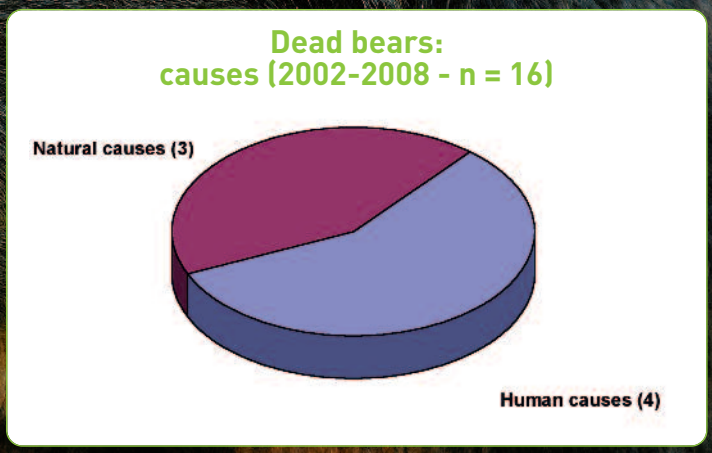
Graph 8



Graph 9



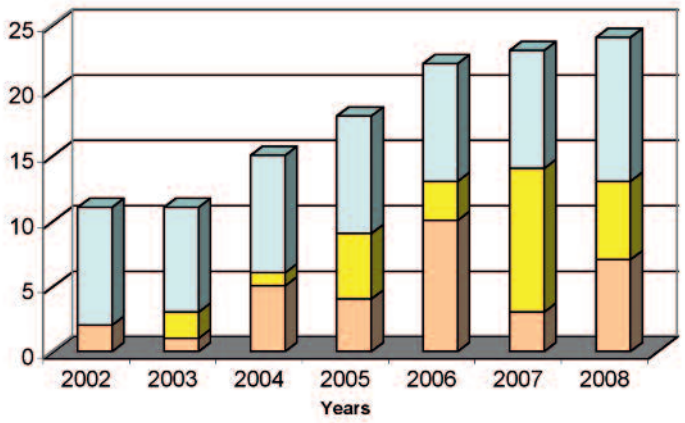
Graph 10



Structure of the population

As regards the structure of the population (at least as regards the animals ascertained), eleven adults (nine females and two males), six young bears (all males) and seven cubs (four females and three males) were recorded at the end of 2008. Graph 11 shows the trend for the 2002-2008 period. The fact that all the young animals in 2008 were males can also be explained by considering that the females are classified as young animals for only one year of their life, the second, whereas the males are classified as young animals for three years (see Definitions).

Graph 11

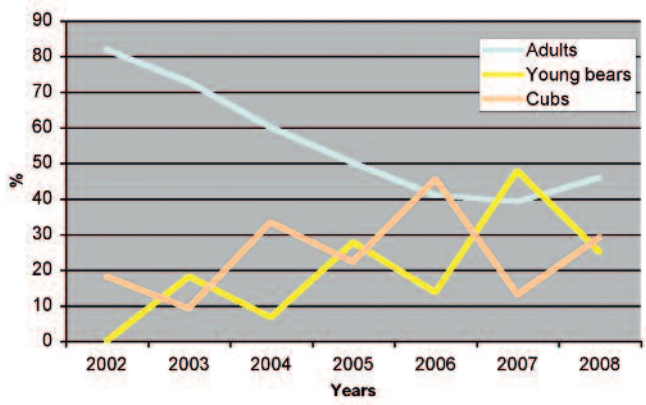


	2002	2003	2004	2005	2006	2007	2008
Adults	9	8	9	9	9	9	11
Young bears	0	2	1	5	3	11	6
Cubs	2	1	5	4	10	3	7
Totale	**11**	**11**	**15**	**18**	**22**	**23**	**24**

The **trend** for the small population remains positive despite the losses recorded and estimated. As the numbers are small the population is still at risk; we are still at the stage in which even casual individual episodes could compromise development.

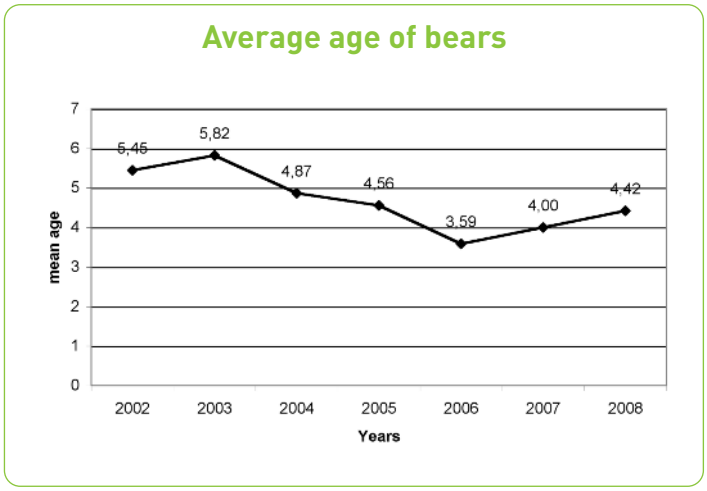
The **percentage of bears in the three age groups (adults, young bears and cubs)** in the period 2002-2008 is shown in Graph 12. For the first time there was a percentage increase in the adult age group.

Graph 12



It is also interesting to note the evolution in the average age of the bear population over the six years examined (Graph 13); in 2008, for the second consecutive year, there was a slight increase in average age (now 4.42).

Graph 13

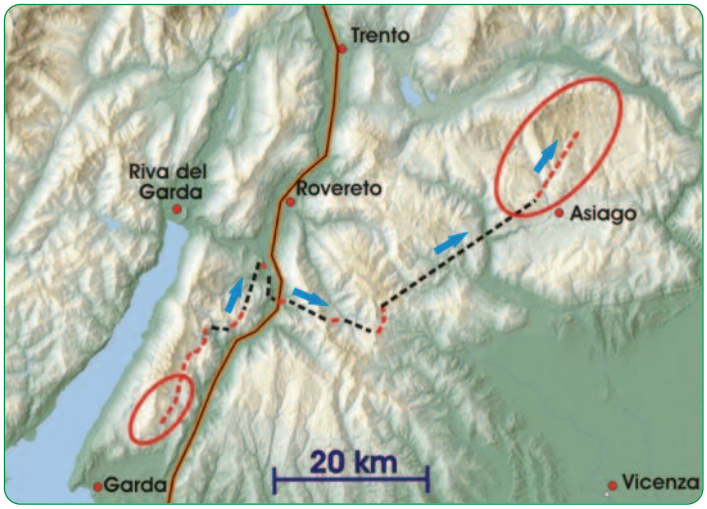


Use of the territory

2008 was again characterised by the **dispersion** of young bears. The Val d'Adige, situated to the east of the area usually frequented by the bears, was crossed for the first time south of Bolzano by a young male (KJ2G2), just to the north of Ala. Indeed on 25 April there was the first certain recording of a bear in eastern Trentino (Vallarsa), several years after the last reports, which however concerned an individual from the eastern alpine area; genetic analysis carried out on samples of hair collected on site made it possible to ascertain that it was the same animal that had spent the previous months on Monte Baldo in the Verona area (see Figure 1). The bear subsequently moved even further east, frequenting the area of the Asiago tableland (VI) up to the end of the year. In 2008 at least five animals, all young males three or four years old, were recorded with certainty **outside the boundaries of the province: JJ3** in Switzerland, **MJ4** again in Switzerland and the province of Bolzano, subsequently returning to Trentino, **DG2** in the province of Bolzano, **JJ5** in the provinces of Brescia and Bergamo and **KJ2G2** on Monte Baldo (VR) and subsequently, as has already been mentioned, on the Asiago tableland (VI). The fact that these movements concern five out of the six young males believed to be present confirms the tendency for territorial expansion.

It is interesting to observe that the male MJ4, aged 4, after having roamed over southern Tyrol and Switzerland for a couple of seasons, returned at least temporarily to Trentino to the northern Brenta area; the male MJ5, last season noted in the province of Bolzano, also seems to have stayed mostly around the upper Val di Non (TN) this year.

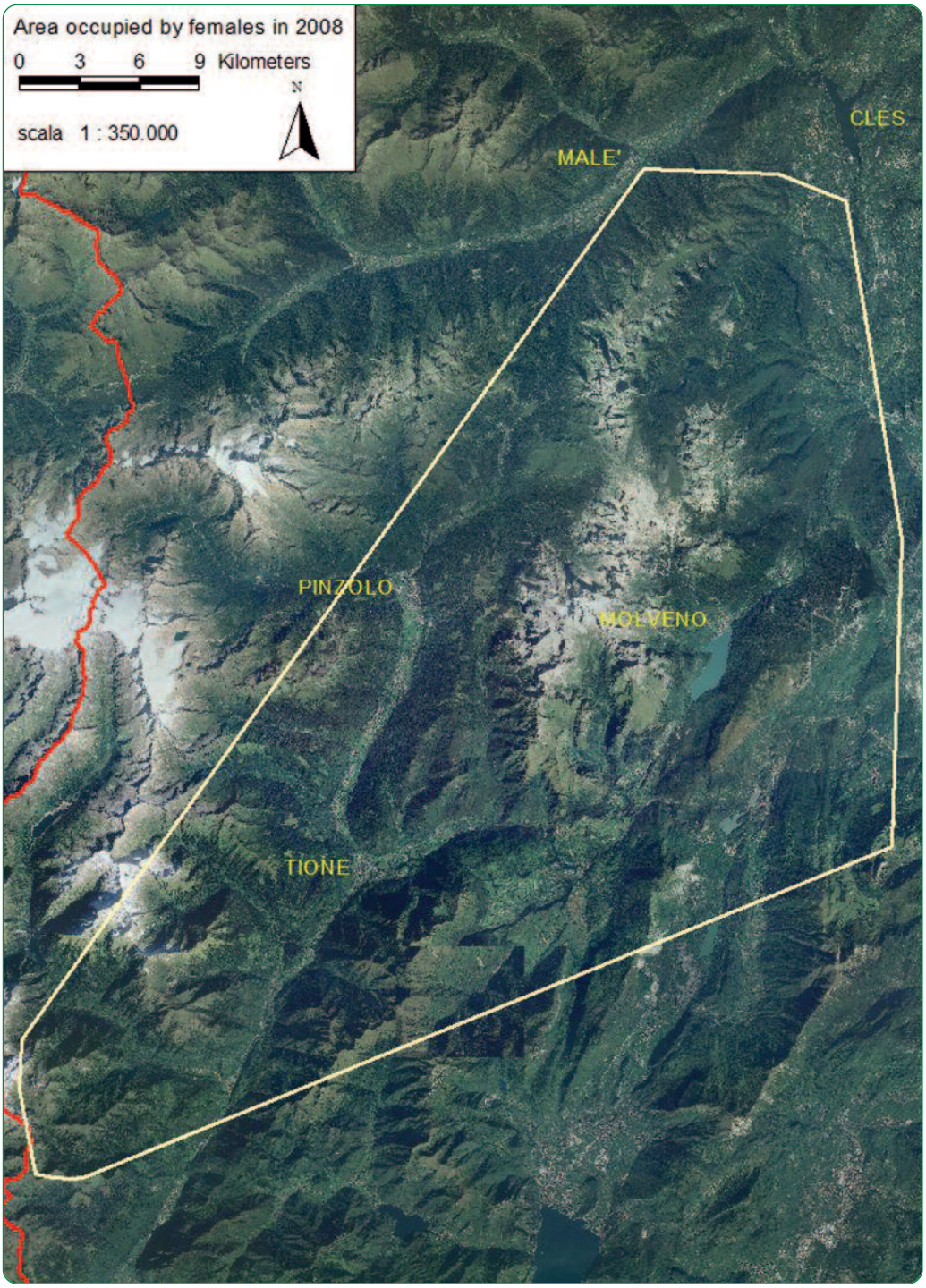
Figure 1.
Movements of the bear KJ2G2 from March to May 2008



Considering also the longest transfers made by young males during 2008, the bear **population** in the central Alps, which retains its centre in western Trentino, can currently be considered **to be distributed over a theoretical area** of around 17,000 Km², although the **area occupied by the females in a stable manner** is definitely smaller (around 1,160 Km²) and situated within the province (see Figures 2 and 3). The areas occupied have been estimated using the minimum convex polygon method, applied to 100% of the locations available. This also led to the inclusion of vast areas which are not suitable and/or not actually used (e.g. Lake Garda), above all within the macro-area including all the movements of the young males. The **average density** recorded in such an enormous area (c. 0.25 bears/100 Km²) thus provides a figure which is not statistically significant. The relative density of the area frequented by the females in a stable manner (c. 20-22 bears over an area of 1,160 Km², namely **1.7 - 1.9 bears/100 Km²**) instead corresponds with the data presented in the bibliography in relation to the alpine environment and the forecasts of the feasibility study which preceded the Life Ursus project.

Figure 2.
Area in which bears were present in the central Alps in 2008 (in red), highlighting the internal area occupied by females in a stable manner (in green)

Figure 3.
Detail of the area occupied by females in 2008



Other monitoring activities in 2008

As will be discussed in more detail in the section regarding the management of emergencies, during 2008 two female bears (DJ3 and KJ1G1) were captured and fitted with radio collars, as their behaviour had made closer monitoring of their movements necessary. The female founder bear Daniza was also monitored using radiotelemetry, but only up until 12 April, when the collar fell off in the Val Brenta. The 2008 **home ranges** (living spaces) of the first two bears extended respectively over 81 km² and 24 km² (respectively 1,216 and 306 GPS locations available for the periods 13 July–31 December and 27 September–31 December) and are shown in Figures 4 and 5.

Figure 4.
Home range of DJ3 in 2008

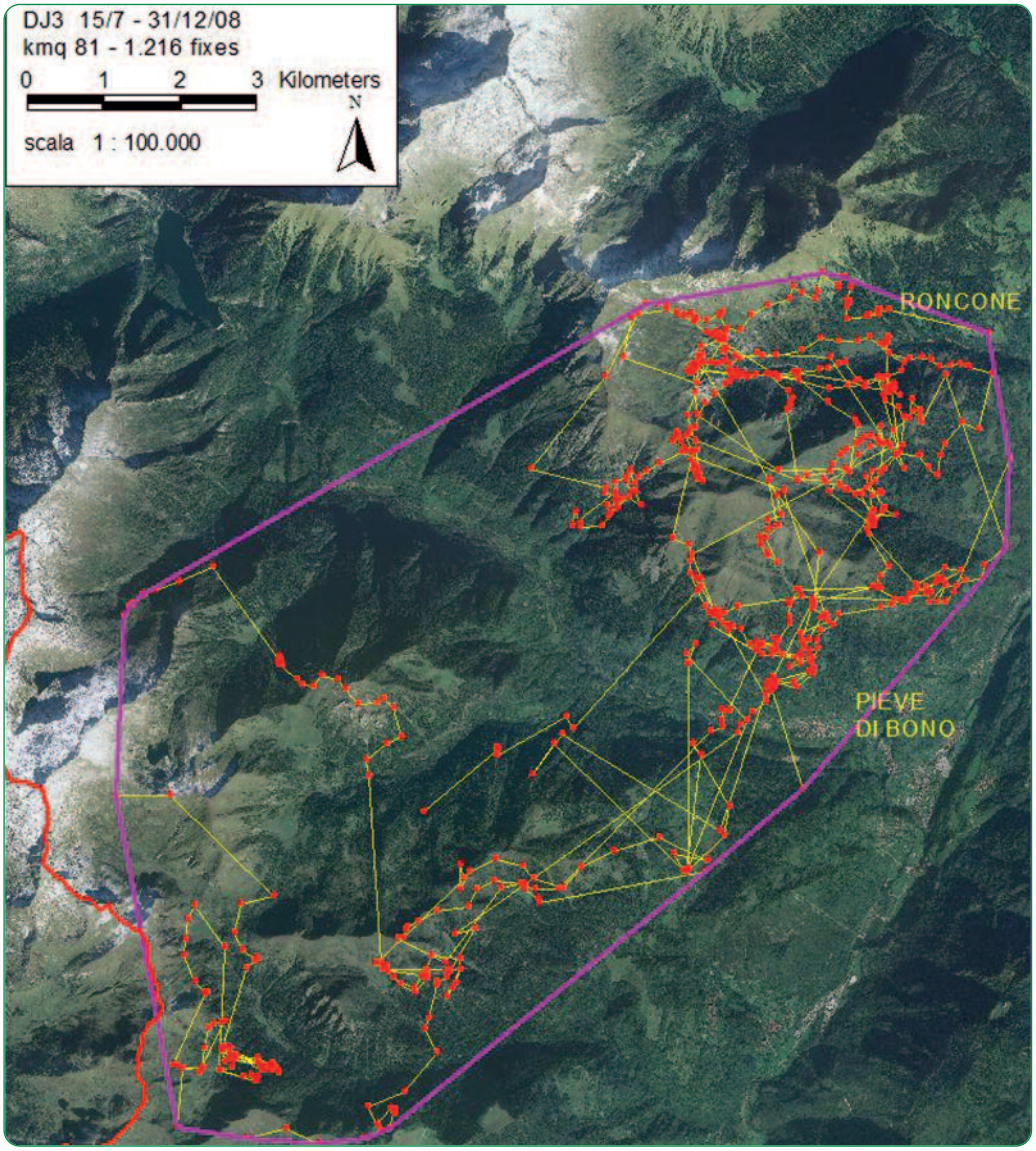
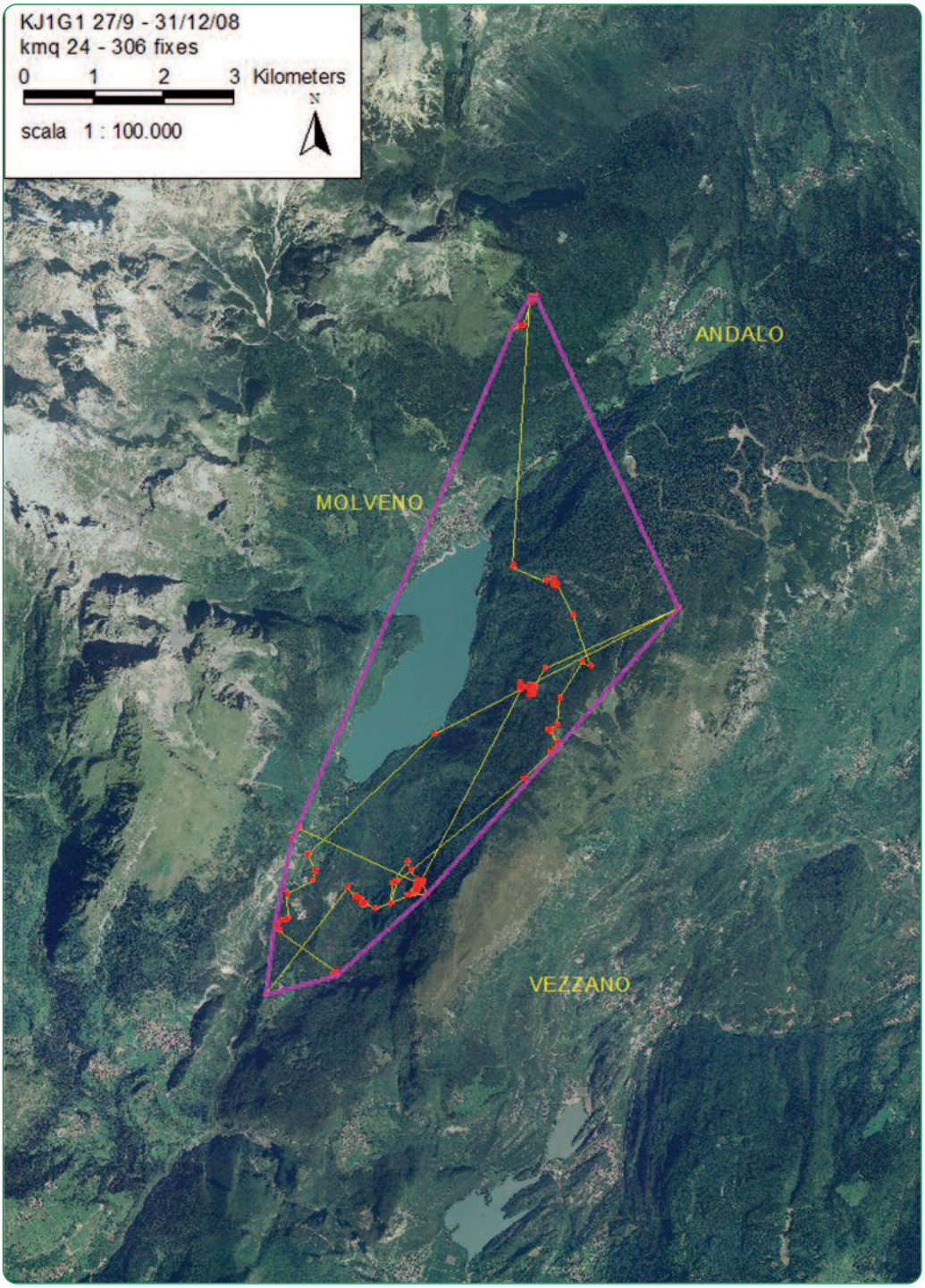


Figure 5.
Home range of KJ1G1 in 2008



Monitoring of dens

In spring 2005, the Adamello Brenta Nature Park began a survey designed to provide information about the areas used by bears for hibernation, using a standard procedure. The research was carried out within an area in the Brenta Dolomites and the Gazza-Paganella Mountains, (coinciding with the Adamello Brenta Nature Park and the surrounding areas).

In 2008 a survey was carried out with the scope of analysing microclimatic conditions inside dens used or potentially exploitable, with the conviction that temperature and humidity orient the ecological winter choices of the species. The study made use of i-button temperature and humidity sensors (DS1923 Hygrochron Temperature/Humidity Logger i-Button model).

In summer 2008, 59 sensors were placed inside 58 hollows: 27 of these were actually used as dens (with the presence of bedding material) while 31 hollows were potentially usable (two buttons were placed in one of these, which was particularly large). The ultimate scope of this phase of the investigation is to monitor all known hibernation sites by 2010, together with a significant number of potential hollows, in order to gain more information about the climatic characteristics of the hollows in the months during which the bears hibernate, also including surveying of the period immediately before and after. At the same time the search for and monitoring of new hibernation sites and potential hollows continued. During exploratory activities in 2008 4 new hibernation sites were discovered and described and were added to the 59 discovered during exploration of the territory (1988-2007) over a period of 20 years. 4 new potential hollows were also discovered, which were added to the 72 found during previous exploratory activities.

Figure 6.
Positioning of a sensor to survey temperature and humidity inside a den in the Brenta mountains.

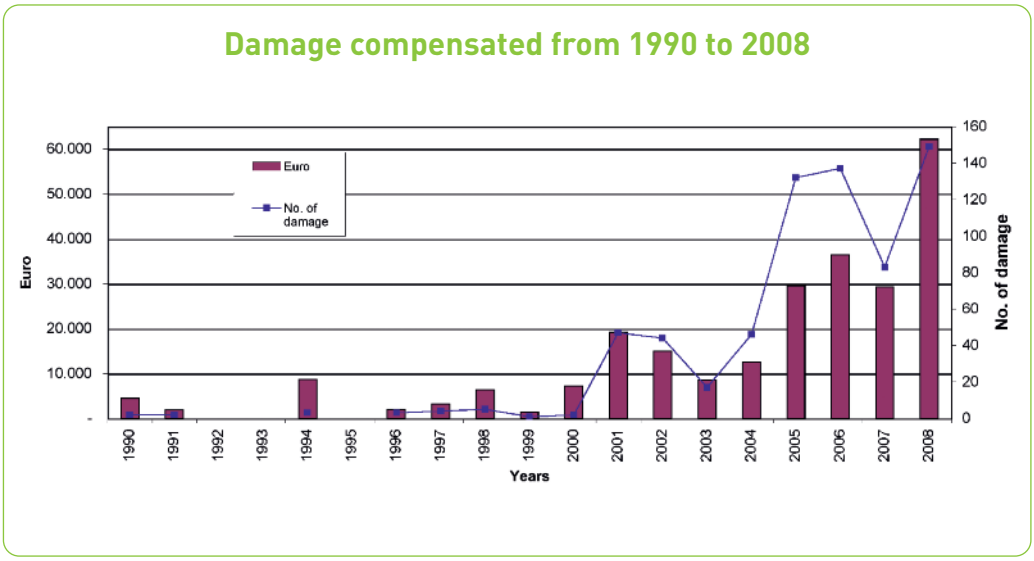
2. Damage compensation and prevention

APT has gained more than thirty years' experience as regards compensation and prevention of damage caused by brown bears. Indeed, since 1976 100% of all damage has been reimbursed and it is possible to acquire preventive works (mostly electric fencing), either with funding covering up to 90% of costs or through a system of gratuitous loans. The relative regulations, dealt with in article 22 of provincial law no.24/91, have been revised several times and updated over the years, most recently with Provincial Government resolution no. 2296 of 3 November 2006, also on the basis of the directives imposed by the Provincial Government in the previously mentioned resolution no. 1988 of 9 August 2002. The regulations regarding works for the prevention of damage were instead last updated with resolution no. 232 of 5 May 2006 of the manager of the Forestry and Wildlife Department.

Compensation for damage caused by bears

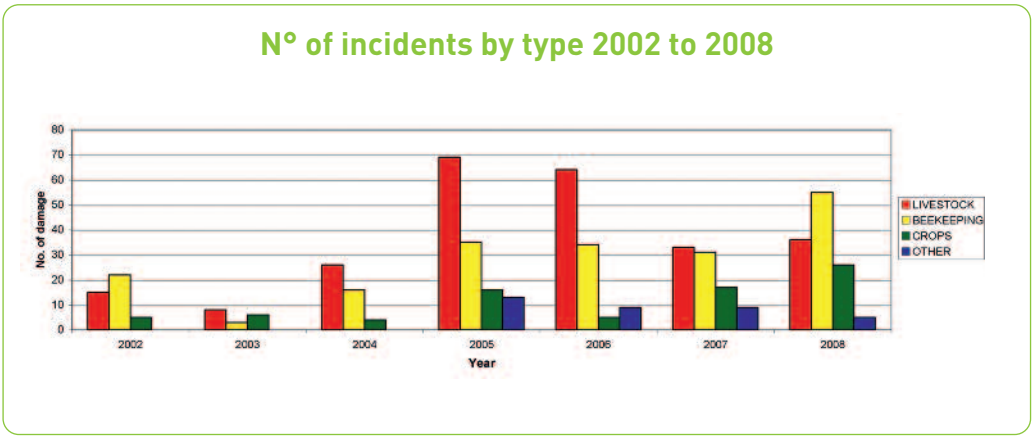
In 2008 149 **notifications of damage** were forwarded to the department and 127 **claims for compensation** were received. 22 notifications were not followed by formal presentation of claims for compensation (for 5 of these the relative report certified that the damage had been caused by dogs rather than bears, in one case the report concluded that bears had no responsibility for the damage as the cause of death of the cow was an accidental fall from the rocks, in one case of damage to crops it was shown that deer were responsible, whereas in the other 14 cases the limited extent of the damage discouraged those damaged from requesting compensation). All the 127 claims made have been processed, 122 were accepted and 5 refused (in three cases the prevention works provided by APT had not been mounted, in one case the inspectors found that dogs were responsible for the damage and in one case the carcasses of the animals said to have been preyed on have not been found). In 84% of cases inspections were carried out to check on the damage reported, followed up by specific reports ascertaining the damage.
Overall, € 62,168.02 **compensation** was paid. To date, 2008 is thus the year seeing the largest amount of damage. Closer examination of the figures shows that the beekeeping sector was the mean factor in this increase, also due to the fact that damage to beehives continued into the

Graph 14

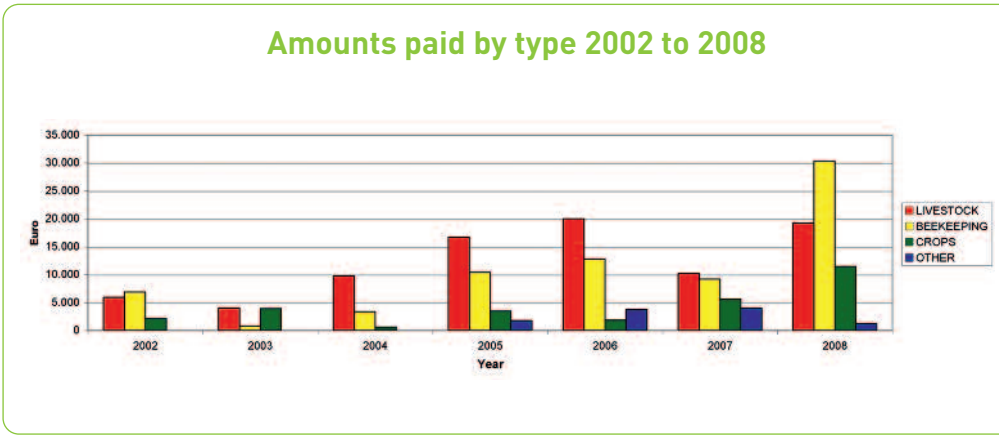


late summer and autumn, in contrast with previous seasons.
On the other hand, it is worth noting that where **prevention works** were correctly installed and used (both for livestock and the beekeeping sector) these allowed the damage to be reduced significantly. It is sufficient to recall, for example, that there were two large herds with a total of 2,500 animals present throughout the summer in the southern Brenta mountains; despite the almost constant presence of bears, only 4-5 animals were lost as a result of action by bears.
Graph 14 shows the trend in the damage recorded over the years, whereas graphs 15, 16, 17 and 18 show the chronological distribution of this damage in 2008 and in the period 2002-2008, both as regards the number of incidents and the compensation paid. In all cases they refer to four types of damage: "livestock", "beekeeping", "crops" and "other".

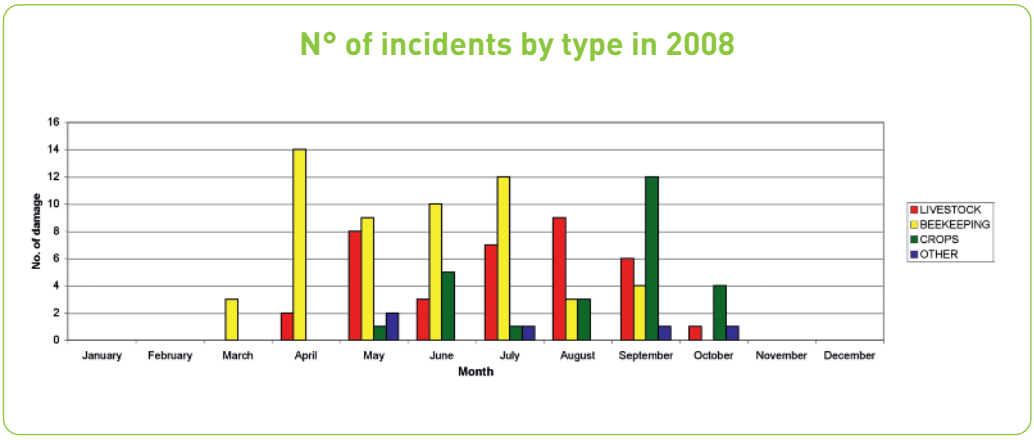
Graph 15



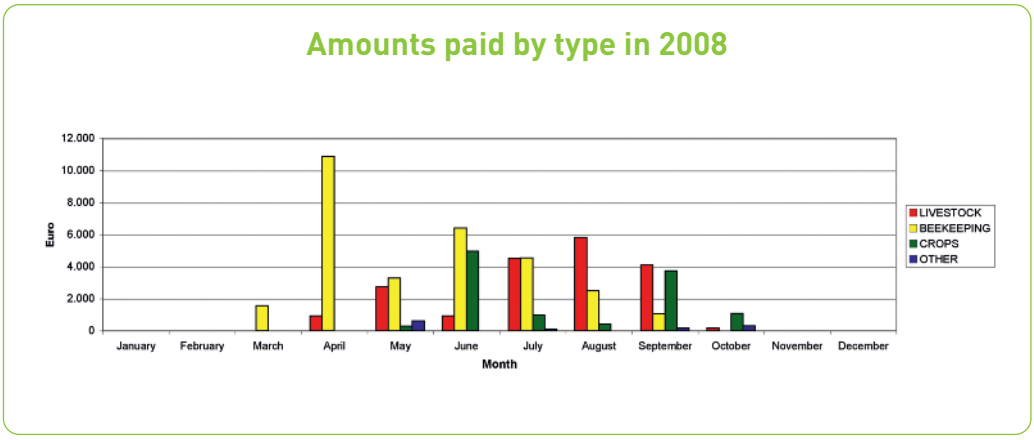
Graph 16



Graph 17



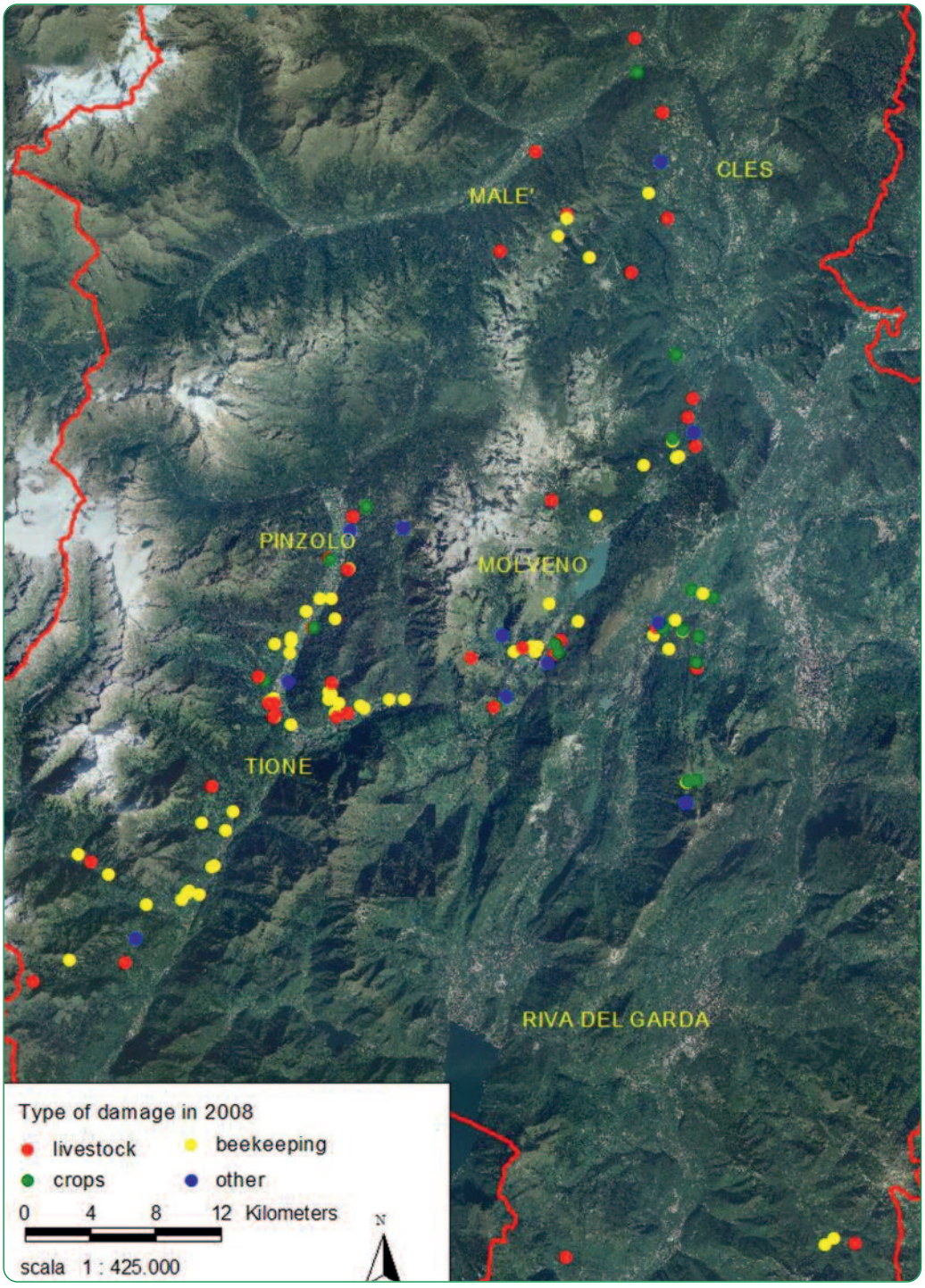
Graph 18



In 42 cases, namely for around 30% of the damage recorded, genetic monitoring made it possible to **identify the bears involved** with certainty. The data shows that two female bears (DJ3 and Daniza) alone caused around 50% of the damage for which the author was identified. By adding a further three bears it is possible to attribute around 80% of the damage in question to this group. This reinforces the theory that a few bears tend to cause damage on a regular basis, with a few bears causing damage on rare occasions.

The geographical distribution of the damage recorded can be seen in Figure 7. For graphic reasons this does not include an incident of damage in the municipality of Grigno (eastern Trentino).

Figure 7.
Geographical distribution of damage caused by bears in 2008

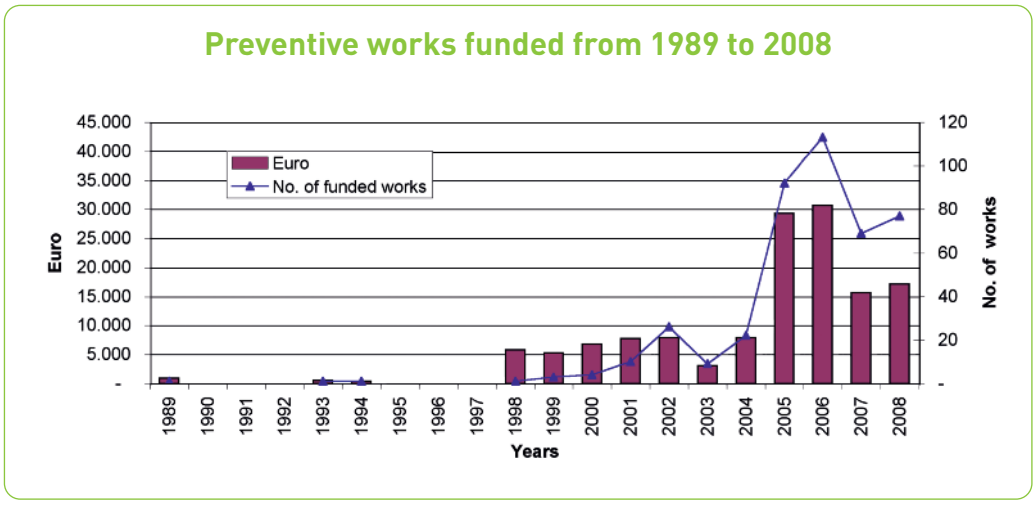


Prevention of damage by bears

In 2008, 95 applications for funding were presented for prevention works designed to protect assets from damage by brown bears; 6 were withdrawn by the applicants and 89 have been processed, for a total of 77 works (31 designed to protect beekeeping and 46 to protect livestock), with an overall expenditure of € 18,413; almost all of these involved the stipulation of gratuitous loans; 8 applications were rejected and the others are still being processed. Below it is possible to see the trend for prevention works over a number of years (Graph 19), the different types of work in the period 2002-2008 (Graph 20) and the distribution of such works over the different months in 2008, with reference to animal husbandry and beekeeping. (Graph 21).

The geographical distribution of the works set up in 2008 can be seen in Figure 8.

Graph 19



Graph 20

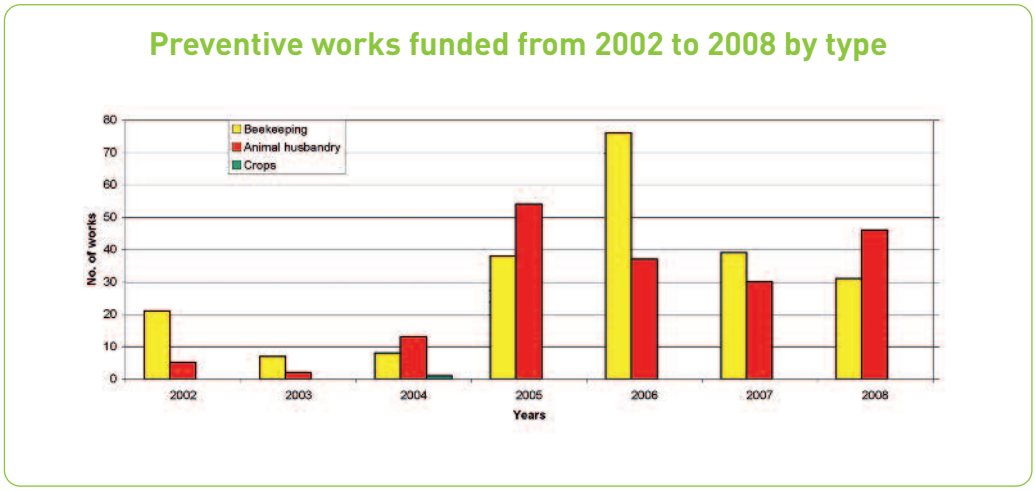
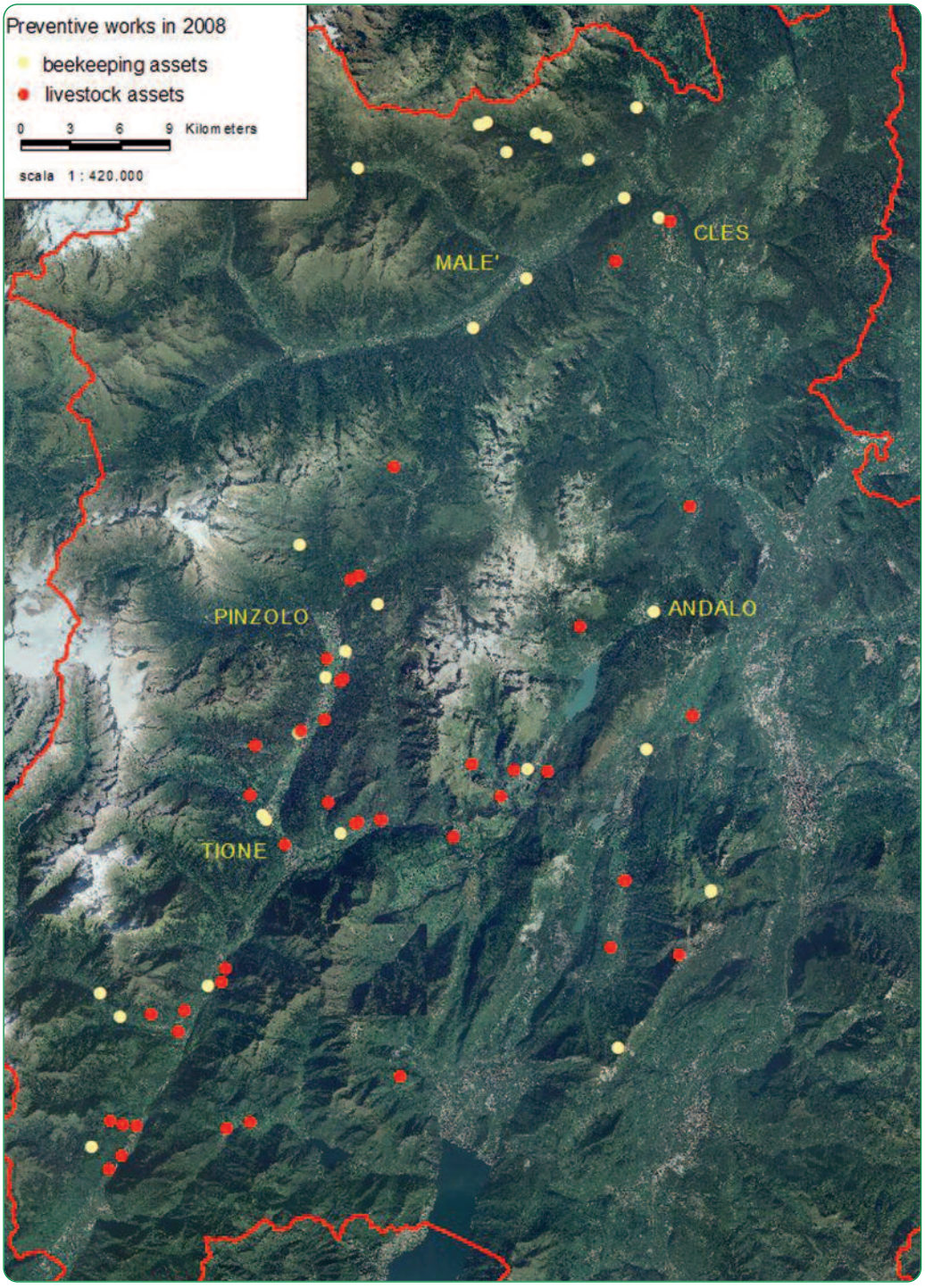
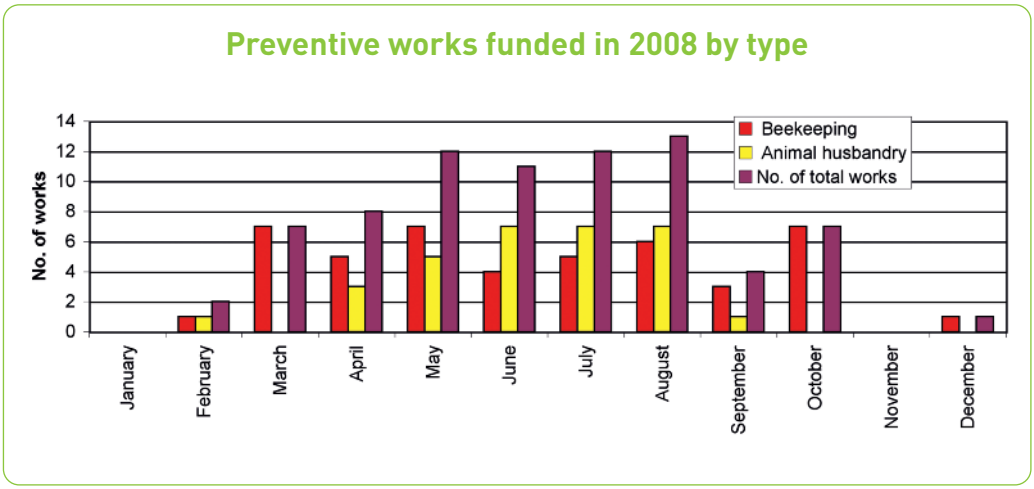


Figure 8.
Geographical distribution of preventive works



Graph 21



On 7 June 2008 and 18 June 2008, two **prefabricated structures** were transported by helicopter in order to allow shepherds to remain close to two large flocks throughout the mountain grazing season (at Valandro and Prada, respectively in the municipalities of Stenico and Dorsino); on 25 September 2008 these were once again taken back down to the valley.

3. Management of emergencies

The law of 11 February 1992 no. 157 includes the brown bear among the species granted special protection (art. 2, paragraph 1).
The D.P.R. of 8 September 1997 no. 357 (subsequently amended and supplemented by D.P.R. 120/03), implementing the 92/43/EEC directive regarding the conservation of natural and semi-natural habitats and wild flora and fauna, includes this species in enclosures B (species of EEC interest, whose conservation requires the designation of special areas of conservation) and D (species of EEC interest which require strict protection), thus considering the brown bear as a priority species.
The current national legal framework therefore forbids the disturbing, capture and killing of large predators (D.P.R. 357/97, art. 8).
However, action may be taken to control problem bears in critical situations, in accordance with the provisions of national, regional and provincial regulations (D.P.R. 357/97, art. 11, paragraph 1; L. 157/92, art. 19, paragraph 2; L. 394/91, art. 11, paragraph 4 and art. 22, paragraph 6).
Indeed, in order to avoid conflict with human activities and for reasons of public safety or for other compelling reasons of relevant public interest, the possibility of an exception to the ban on the capturing or killing of animals is provided for, subject to the authorisation of the Ministry for the Environment, Land and Seas, having consulted ISPRA, on condition that there are no other practicable solutions and that departure from the rules does not prejudice the satisfactory conservation of the populations of the protected species, (D.P.R. 357/97, art. 11 paragraph 1).

In the **province of Trento** the management of emergencies represents a field of action in which it has only been necessary to operate in the last few years, given the considerable expansion in the bear population and more specifically as a result of the presence of a few animals considered to be "problematic".
In July 2003 the Ministry for the Environment, Land and Seas authorised the Autonomous Province of Trento, according to D.P.R. 357/97 and subsequent amendments, to intervene as provided for in the special "protocol for action regarding problem bears and intervention in critical situations".
This protocol provides the technical guidelines on the basis of which the Forestry and Wildlife Department, which represents the provincial organisation of reference, has identified, trained and equipped the staff in charge of intervening in these situations. Operational management in Trentino is based on the use of staff from the provincial forestry service, to which the Forestry and Wildlife Department makes recourse, through the setting up of a special unit which is on call.
This has been operational since 2004 and is active each year from March to November. In 2008 it was made up of 9 coordinators, who have the support of an emergency team made up of two units, on call in turn, with a group of specially chosen staff made up of 14 members.
When necessary the team is joined by a veterinary surgeon. In this context, in 2008 collaboration was started up for the first time with the veterinary staff of the provincial health services, who were provided with special training.

Activities of the emergency team

During 2008 the most critical situations involved on the one hand two young female bears (KJ1G1 and KJ2G1, aged 2), which frequented the area around the towns on the Paganella tableland for several weeks starting from the spring, searching for sources of food (mostly organic waste, also in the towns of Andalo and Molveno) (see Figures 9 and 10), and on the other a further female bear (DJ3, aged 4) which preyed on numerous beehives close to towns during the spring and a number of sheep at mountain pasture during the summer.

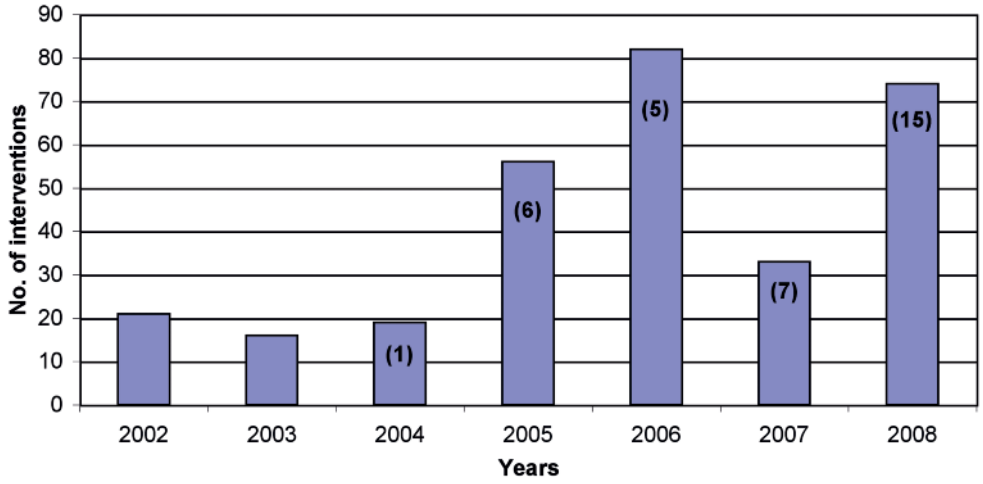
Figure 9.
The town of Andalo. The organic waste bins are indicated in red, while the points visited by the bear are shown in green

Figure 10.
The town of Molveno. The organic waste bins are indicated in red, while the points visited by the bear are shown in green

The bear DJ3 instead displayed an overconfident attitude towards man, even attempting to prey on sheep during the day and in the presence of people.
On the basis of these elements and bearing in mind the provisions of the crisis plan for the capture of problem bears, it was decided to **capture and fit radio collars** to the three female bears in question. The following paragraph summarises the main data regarding the phases of capture.

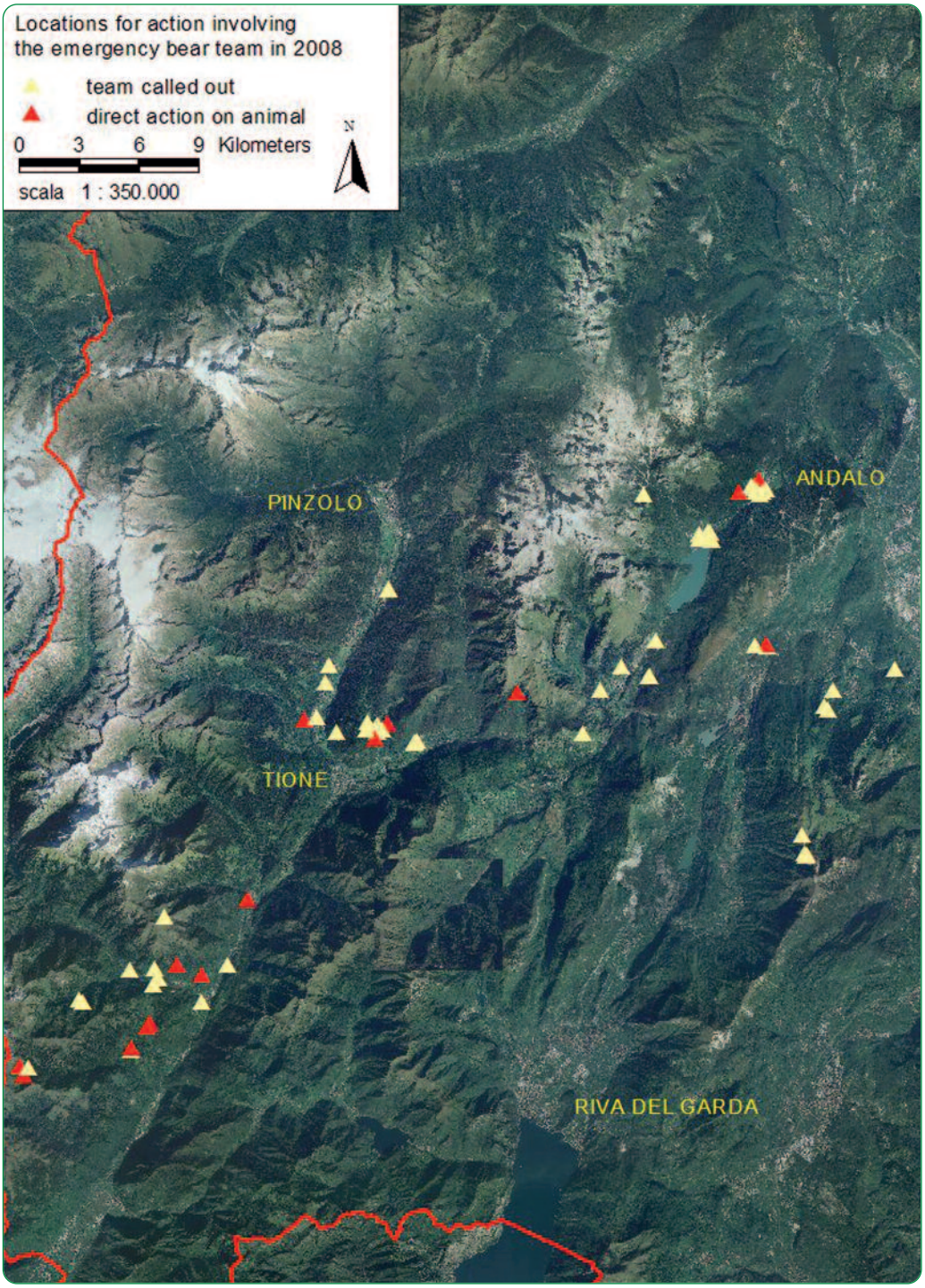
The **emergency team** intervened 74 times during 2008, in 15 cases with direct intervention involving firing rubber bullets at the animal (nine times at DJ3 , twice at KJ1G1 and KJ2G1 and four times at unidentified bears, including a female with cubs – see Graph 22).

Graph 22



In the other cases the intervention was limited to guarding the area and providing information to the population.
Action to dissuade bears fitted with radio collars, before and after capture, therefore represented most of the direct action taken on bears carried out by the emergency team in 2008 (on 11 occasions out of 15, namely 73%).
The locations where intervention involving the emergency bear team took place in 2008 are shown in Figure 11 (direct action on animals in red).

Figure 11.
Locations for action involving the emergency bear team in 2008



Captures

In order to organise the management of emergencies there is a "capture team" made up of staff specially trained for these activities. This team is supported by the veterinary staff of the provincial administration.

In 2008 it was necessary to capture the bears displaying the critical behaviour described in the previous paragraph, in order to fit them with radio-collars.

On the evening of 13 July in the Valle del Chiese a 95 Kg female bear which had repeatedly attacked herds in the municipality of Castel Condino was captured using the free-ranging technique (namely by shooting the animal with an anaesthetic dart from a capture gun without previously immobilising her) and fitted with a radio-collar. Rapid genetic testing showed that the bear was DJ3 (aged 4.5).

On the night of 26 September on the Paganella tableland a young female (aged 2.5) weighing 130 Kg, which had been feeding off organic waste and compost, also close to the towns of Andalo and Molveno, was instead captured using Aldrich snares and fitted with a radio-collar. Rapid genetic testing showed that the captured animal was KJ1G1. During a further attempt at capture using the free-ranging technique on the night of 12 June, a female bear (KJ2G1, aged 2.5, which had also visited organic waste-bins close to towns) died by drowning in Lake Molveno following an accident. In the period of time between the administration of the anaesthetic and the search for the animal (15', provided for in the capture procedure in order to ensure the safety of personnel), the bear slid down a particularly steep slope on the banks of the lake, ending up in the water, presumably at precisely the time the narcotic began to take effect.

During the capture procedures two further techniques were also adopted: automatic snares with bait (foot snare) and tube traps. The three capture procedures took a total of seven days in order to prepare the sites (four-five persons on average) and twelve days for the capture (three-four people on average). The supplying of the sites equipped with snares or tube traps (four sites) involved around fifteen days' work overall.

Close encounters with female bears defending cubs

In at least two cases there were situations in which females accompanied by cubs born that year took action to defend their young from persons they considered to be a possible menace.

On 13 May 2008 at Prà Antich-Giustino a female accompanied by three cubs born that year (most probably Daniza) came within 8-10 m of a forest warden who had approached unintentionally; when the man began to move away the bear turned back, following the cubs which had in the meantime moved away from the area. According to the report of the warden, the bear also left thanks to the intervention of his dog, which briefly followed the bear. However, there is no certain evidence that the presence of the dog led to the departure of the bear, whether this was irrelevant or whether it may even have contributed towards the alarm of the bear.

On 14 October 2008 at Baselga del Bondone, Trento, a female bear (probably KJ2), accompanied by cubs, as it was later possible to ascertain from the tracks left on the ground on the site, twice approached the owner of a field of maize rapidly in the period of a few seconds. He had come to the field to check for damage. The bear apparently exhibited aggressive behaviour, growling at the man in order to encourage him to leave the area. Again in this case the departure of the person concerned brought the close encounter to an end. In both cases the behaviour of the bears was compatible with the experience noted in the bibliography or recorded for European bear populations and did not therefore require any particular intervention, except for the intensification of monitoring in the period immediately following.

Another situation leading to potential emergencies regards **road accidents involving collisions with bears**. During 2008 there were four road accidents, bringing the total number of collisions recorded from 2001 to nine. The relevant information regarding these is given in the following table, which sums up all the cases recorded to date.

Road accidents

N°	Date	Location	Bear/s involved	Sex and age	Fate of bear/s
1	30 August 2002	Laives (BZ) (A22 motorway)	Vida	Female aged 4.5	Injured quite seriously but survived
2	4 November 2005	Preore (prov. road 34)	DJ3	Female aged 2	Survived and went on to reproduce*
3	28 June 2006	Fai (prov. road 64)	MJ2	Female aged 3.5	Survived and went on to reproduce
4	28 October 2006	Caldes (highway 42)	Unknown	Unknown	Unknown**
5	29 October 2007	Ciago (prov. road 18)	Unknown	Unknown	Unknown**
6	18 July 2008	Villa Rendena (prov. road 34)	Daniza + 3 cubs	Female aged 13 with 3 cubs born that year	Death of a female cub
7	22 July 2008	Nembia (prov. road 421)	KJ1G1	Female aged 2.5	Survived without any consequences
8	16 August 2008	Strembo (prov. road 236)	Daniza + 2 cubs	Female aged 13 with 2 cubs born that year	One cub injured, probably survived
9	15 October 2008	Bus de Vela (highway 45 bis)	Unknown	Unknown	Unknown**

* The identity of the bear was ascertained genetically
**An inspection was carried out promptly using dogs, suggesting that the animal or animals moved way autonomously

Transport of Jurka to Casteler

On 13 April 2008 , Jurka was transported to the new enclosure at Casteler (photo on the right). Furthermore all activities relating to the care of the bear and maintenance of the enclosure were dealt with, including work designed to improve the management of the animal in captivity. Subsequently authorisation for the possible holding of a second and third bear inside the enclosure was obtained.

Waste management and signposting of road-crossings

In collaboration with the **Waste Management Department**, action was taken to guarantee an initial distribution of bear-proof waste bins in the most vulnerable areas by the spring of 2009, also with experimentation of different types of bins.

A similar initiative was directed at the **Roads Department** in order to request the placing of appropriate signs along the roads most frequently crossed by bears.

Training of bear dogs

During 2008 the training of the two **Russian-European Laika bear dogs** and their handlers continued, based on a special training programme making reference to the literature available and to the experience of the suppliers (see section on Training). Further material necessary to maintain the dogs was also purchased.

It is still intended to acquire two more dogs in the future, to be entrusted to a further two handlers, bringing the number of animals able to work simultaneously to four.

The "case" of JJ3

JJ3, the son of Jurka and Joze, born in 2006, frequented the area of the Grigioni Canton (CH), mainly around Lenzerheide, the Albula valley and Savognin, starting from June 2007, after having made his way through the Stelvio national park (Trafoi – BZ, May 2007). Starting from the summer of the same year he also began to look for food insistently close to in towns (mostly in waste bins) and did not display any fear of man.

In an attempt to modify his behaviour the Swiss authorities captured the bear on 12 August 2007 and fitted him with a radio-collar (see photo below – www.kora.ch). This was followed by various attempts to dissuade the bear

(mostly through the firing of rubber bullets), both in autumn 2007 and spring 2008, which however did not obtain the effect hoped for, as they failed to modify its behaviour. It was thus classified as a "dangerous bear", in accordance with the provisions of the "Swiss plan for bear management – 2005", as it represented a "risk for the safety of people". In accordance with the measures provided for in the aforementioned plan, the authorities of the Swiss Federation and the Grigioni Canton decided to have the animal destroyed and this took place on the evening of 14 April 2008. Throughout the process described above there was constant communication with the Forestry and Wildlife Department of APT.

4. Communication

Communication is considered by the provincial administration to be an aspect of fundamental importance in the management of bears and represents one of the six action programmes referred to in the previously mentioned resolution of the provincial government no. 1988 of 9 August 2002.
Considering this, starting from 2003 a specific information campaign was started up called "Getting to know the brown bear", which continues to involve numerous initiatives. This report, which among other things also has an informative role, is one of the initiatives designed to allow the wider public to better understand this animal, with the conviction that only knowledge can lead to harmonious coexistence with the bear in the medium to long-term.
With regard to communication activities, the Forestry and Wildlife Department has always been supported by the Adamello Brenta Nature Park, which has been active in this field for many years in its area and by the Natural History Museum of Trento, which has offered educational activities on bears for schools from the very beginning.
The main activities undertaken during 2008 are summarised below.

Place	Date	N° of participants
Trento Natural Science Museum	6 February	80
Mezzana	4 April	80
Avio	10 April	75
Spormaggione*	9 May	26
Vallarsa	15 May	90
Denno*	16 May	50
Massimeno*	30 May	18
Breguzzo*	13 June	15
Andalo*	5 June	14
Molveno*	19 June	25
Dorsino*	7 August	12
Castel Condino*	20 August	100
Arco	15 September	65
Baselga del Bondone	21 November	110
Luserna	30 December	35

* promoted by the Adamello Brenta Nature Park

Evening sessions and meetings

15 evenings were organised within the context of the information campaign "Getting to know the brown bear", some of which promoted by the Adamello Brenta Nature Park. The table below shows the locations and dates on which they were held; a total of 800 people participated.

Informative material produced and distributed

3,810 copies of the brochure "In the land of the bear" were distributed and 3,000 new ones were printed. Furthermore 500 new posters entitled "The bear: part of our history" were printed and a further 1,000 renewed graphically (with a photographic rather than a pictorial image).

Communication project for schools: "Getting to know the brown bear", in collaboration with the Trento Natural Sciente Museum

For the fifth consecutive year the TNSM continued to offer a programme of tried and tested educational activities on the subject of brown bears in Trentino. The activities are kept up-to-date thanks to coordination with the Wildlife Office of APT, which guarantees updated information and

consultancy on the content. The 2008-2009 edition of the guide to the educational activities of the museum also published all the educational initiatives realised in collaboration with the Forestry and Wildlife Department, as has taken place since the 2003-2004 edition. In 2008 the guide was again subdivided into three volumes dedicated to three different stages in schooling (nursery schools, primary and middle schools, secondary schools and "over 14s"). There were five types of activity offered:

- "Hands-on museum" a guided visit to the mammals room, with particular emphasis laid on the bear and other large carnivores, with the opportunity to see and touch particular types of materials (skulls, casts of footprints, hairs etc.);
- "Laboratory", a 3 hour interactive activity, partly providing information on the bear and other large carnivores (powerpoint, various materials) and partly practical (simulation of radio-tracking, realisation of plaster cast of footprints, recognition of mammal hair through the use of educational worksheets);
- "Travelling Museum", an activity divided into three sessions, two in the classroom and one (the middle one) involving a trip to an area frequented by bears to look for any signs of their presence;
- "From the Museum to nature", a guided trip lasting a morning to an area frequented by bears to look for any signs of their presence;
- "Meeting the expert", a seminar taking a more detailed look at the subject, in the form of a conference lasting 2.5 hours and reserved for secondary school pupils.

In the period 1 January 2008 - 31 December 2008 the following educational activities were carried out, involving a total of 233 participants:

- 7 guided visits to the exhibition hall on the theme "The bear and other mammals in Trentino", with 105 participants;
- 5 interactive laboratories on the theme "The bear and other large carnivores in the Alps, with 86 participants;
- 2 trips "On the trail of the brown bear", with 42 participants.

Press releases

11 press releases concerning bears were issued.

N° 41 of 10 January 2008
23 bears were identified in Trentino and neighbouring regions last season
THE BEAR: THE FORESTRY AND WILDLIFE DEPARTMENT ISSUES DATA REGARDING GENETIC MONITORING IN 2007
6 animals (young males) also frequented areas outside the confines of the province

N° 201 of 1 February 2008
The document edited by the Forestry and Wildlife Department of the Province
PRESENTATION OF THE "2007 BEAR REPORT" ON WEDNESDAY 6 FEBRUARY AT THE NATURAL SCIENCE MUSEUM

N° 246 of 5 February 2008
The Forestry and Wildlife Department of APT and the Adamello Brenta Nature Park will provide an update on the status of the population and research underway
THE BEAR: A SUMMARY OF THE SITUATION TOMORROW EVENING AT 20.45 AT THE TRENTO NATURAL SCIENCE MUSEUM
On this occasion the "2007 Bear Report" will also be presented and distributed

N° 257 of 7 February 2008
Edited by the Forestry and Wildlife Department of the Autonomous Province of Trento
THE "2007 BEAR REPORT" HAS BEEN ISSUED AN IMPORTANT INFORMATIVE AND ANALYTICAL DOCUMENT
It was presented yesterday evening at Trento Natural Science Museum.
It is divided into seven sections and can already be consulted on the internet

N° 409 of 22 February 2008
The Province provides information on the presence of bears in Trentino
2007 BEAR REPORT: PRESENTATION OF THE STUDY SUMMING UP THE CURRENT SITUATION

N° 1719 of 13 June 2008
The bear was shot with an anaesthetic dart
BEAR DIES IN LAKE MOLVENO DURING AN ATTEMPT TO CAPTURE IT

N° 2034 of 14 July 2008
BEAR CAPTURED AND FITTED WITH RADIO COLLAR IN VALLE DEL CHIESE
The action was taken to allow better control of the animal, which had displayed over-confident behaviour

N° 2082 of 18 July 2008
BEAR CUB HIT BY CAR IN THE LOWER VAL RENDENA

N° 2298 of 17 August 2008
COLLISION BETWEEN SUV AND FAMILY OF BEARS AT BOCENAGO

N° 2319 of 20 August 2008
Following the bear cub hit in the Val Rendena the Province calls for greater respect for regulations
COLLISIONS INVOLVING WILD ANIMALS: ATTENTION MUST BE PAID TO SIGNS AND LOW SPEED IS COMPULSORY FOR EVERYONE
Almost 400 cases a year in Trentino, a phenomenon depending on the large numbers (more than 50,000 ungulates) and mobility of the animals and the extent of the road network

N° 2580 of 27 September 2008
BEAR VISITING WASTE-BINS ON THE PAGANELLA TABLELAND CAPTURED AND FITTED WITH A RADIO-COLLAR
The trap was prepared by the staff of the provincial forestry service and sprang into effect at 3.30 last night

Other initiatives related to communication

Consultancy and information was supplied by the Forestry and Wildlife Department in the following cases to the **press, media and television channels**:

- Article "L'orso bruno in Trentino: la situazione a fine 2007" in "Terra trentina" no. 4 of April 2008;
- Article "L'orso bruno in Trentino: aggiornamento 2007" in "Bollettino SAT" no. 1, first quarter of 2008;
- Article "Die Bären kommen" in "Schweizer Familie" no. 33, 14 August 2008 (Swiss magazine published monthly);
- Article in "Lo scarpone" magazine of the Club Alpino Italiano - December 2008;

- Article “L’orso: patrimonio delle Alpi”, in “Il cacciatore trentino” no. 72, June 2008
- Article “Genetic monitoring of bears in Trentino - Italy (2007)” in “I.B.A. news”, vol. 16 no. 2 – June 2008;
- Participation in a debate on the brown bear during “Filmfestival della Montagna”, held in Trento on 29 April 2008;
- Interview with TCA, 15 and 16 November 2008 (News programme of the Cimbrian linguistic minority)

In the year underway, the activities of the Park have made it possible to publish the following articles regarding bears.

- Article “Gli orsi in Trentino” in “Parchi e Riserve. La rivista della Natura” no. 2 of April 2008;
- Article “Una nuova convivenza” in “Adamello Brenta Parco” no. 2 of May 2008;
- Article “Adamello Brenta Nature Park e ATIt fanno il punto sui mammiferi d’Italia e del Trentino” in “OASIS-Rivista di cultura ambientale” of May 2008;
- Article “Die Umsiedelung – eine Methode für Artenschutz“ in “Wildbiologie“ no. 2 of June 2008;
- Article “Le tane degli orsi. Studi del Parco Naturale Adamello Brenta e consigli per gli escursionisti“ in “Rivista agraria.org“ no. 63 of July 2008;
- Article “Der Bär ist los!“ in “Schweizer Familie” no. 33 of 14 August 2008;
- Article “De grands voisins à la force tranquille” in “Pro Natura magazine” no. 4 of August 2008;
- Article “Vita da Orso“ in “SABATOSERAONLINE” of 15 October 2008;
- Article “Dieci domande sugli orsi” in “Adamello Brenta Parco” no. 3 of November 2008;
- Article “Un’altra chance dopo l’estinzione” in “Darwin-Bimestrale di Scienza” no. 28 of November/December 2008;
- Article “Storia di orsi in Trentino” in “Pro Natura magazine” in print.

“I Fogli dell’Orso”. During 2008 the Adamello Brenta Nature Park continued to produce the bulletin/newsletter “I Fogli dell’Orso”, publishing three issues: no. 17 (April), no. 18 (August) and no. 19 (December). The number of people registering in the relative mailing list has exceeded, 1,000, a sign of the constant interest that the bear arouses among the general public.

The "Bear centre" at Spormaggiore. During 2008, the "Bear centre" in Spormaggiore was visited by a total of 4,756 people.

Accompanied visits. Within the context of the Adamello Brenta Nature Park Summer 2008 programmes the "Bear trails" initiative was realised in two different valleys in the park (Val Brenta and Val di Tovel).
During the activity the objectives of the project in terms of conserving the bear and the main techniques adopted by staff to understand the movements and habits of the bears were explained. There were 45 sessions with a total of 420 participants.

Intervention in schools. In the context of activities with schools, the Park realised three initiatives:

- "Bear Project: the return of the bear to the Alps and coexistence with man" - educational project with 2 classroom sessions and 1 trip to the Bears Visitors' Centre at Spormaggiore – 39 classes from 21 schools with a total of 591 pupils participating;
- "Large Carnivores Project" – an educational project with 2 classroom sessions and 1 trip – 5 classes from 5 schools with a total of 85 pupils participating;
- "A day with the bear" – a visit to the Bears Visitors' Centre at Spormaggiore – 56 classes from 23 schools with a total of 980 pupils participating.

Web sites. The site www.orso.provincia.tn.it was further updated and all sections completed; monthly updating was also guaranteed. It is currently organised into 124 pages and receives more than 20,000 visitors a year. The site also contains this report and the documents mentioned it.

During 2008 implementation and updating of the content in the section of the ABNP web site (www.ABNP.it) dedicated to the bear (20 pages overall) continued. In addition to information on the history of the bear, the project for its reintroduction and the research carried out by the Park Brown Bear Research and Conservation Group, it is also possible to download a number of documents regarding the surveys carried out by the park.

Stand. During the **ExpoRiva** fair, dedicated to hunting, fishing and the environment (29-30 March 2008), a stand was set up regarding wildlife in the province of Trento, with particular attention being paid to the bear. On this occasion 800 brochures about the bear were also distributed.

Questions and motions

The following replies were given in response to questions and motions regarding bears.

Question no. 3111 of 05/02
Security measures to protect from the danger deriving from the presence of bears at Ciago playground

Question no. 3338 of 21/05
On damage caused by bears to beekeeping in the Vallarsa

Motion no. 634 of 06/08
"Amico Orso": a special campaign to inform and educate the Trentino people

5. Training

The correct management of the bear population is inextricably linked to the availability of staff specially trained and prepared to deal with any problems of a technical and non-technical nature that may arise during activities in the field, above all as regards the management of emergencies, dealing with damage and, to a lesser extent, monitoring. Training represents one of the six action programmes referred to in the previously mentioned resolution of the provincial government no. 1988 of 9 August 2002.
APT's staff are given specific training which is constantly updated. The training opportunities realised during 2008 are given below.

Main training initiatives for APT staff

- Meeting to check on the progress of **training for the dogs and handlers** of the forestry service (Casteler, 9 February 2008). This took place within the context of the initiative involving the purchasing of a certain number of Russian-European Laika bear dogs, for the purpose of monitoring and for the dissuasion of problem bears. The dog-handler evaluation sheet drawn up by the supplier of the dogs on this occasion gave an extremely positive assessment of the level of training reached;
- **Training for dogs and handlers** (Spormaggiore, 26 February 2008), with simulation of action to deal with bears, using a stuffed bear;
- **Training for dogs and handlers** (Mattarello, 17 March 2008), with simulation of helicopter flight;
- **Direct dog-bear contact**; first with a visit to Jurka's enclosure (in spring) and following the release of the two bears fitted with radio-collars on 13 July and 26 September;
- Training course for ASL's veterinary staff and for **veterinary staff** acting as figures of reference for the department for questions regarding bears (11 March 2008); a further meeting with ASL vets was held on 8 July 2008;
- Coordination and training session for **contacts in the animal husbandry sector** (10 July 2008);
- **Visit to Banff** (Canada, 21 May – 3 June 2008). The trip allowed the participants to acquire useful information and exchange opinions about the best techniques to adopt in activities related to the management of bears (communication, emergencies, damage and monitoring), with particular reference to issues relating to the management of emergencies and damage. On two different evenings the Trentino experience was also illustrated to the local public. The visit was returned by Canadian colleagues from 20 to 27 October; during the week in Trentino informative evening meetings were held for the public (at Trento Natural Science Museum) along with trips in the field with the staff of the forestry service involved in the management of the bear.

6. National and international links

Links with neighbouring regions and states take on a strategic importance in the management of such a highly mobile species as the brown bear. Bearing this in mind, even before the start of the *Life Ursus* project, official contact was made with neighbouring regions, it being clear that the area of western Trentino was not sufficiently large to house a viable population of bears. Over time these relationships have been strengthened and consolidated, with regard both to the territorial expansion of the small population that has effectively concerned neighbouring regions and states and the effective policy coordination implemented by the Provincial Government with the previously mentioned resolution no. 1988 of 9 August 2002.

Following this, links transcending provincial boundaries were institutionalised and with the input of the Ministry for the Environment, Land and Seas and the coordination of APT the **Action Plan for the Conservation of the Brown Bear in the Central-Eastern Alps (PACOBACE)**" was recently approved (summer 2008) by all the partners (Lombardia and Veneto being the last two); in addition to the Autonomous Province of Trento this also involves the Autonomous Province of Bolzano and the Lombardia, Veneto and Friuli Venezia Giulia Regions. In particular, during 2008 APT also coordinated the latest and **definitive phase of approval for the Plan of Action mentioned**.

Activities designed to guarantee **transnational coordination** also continued, in light of the extensive movement of young bears recorded in neighbouring areas in the last three years.

In the context of international collaboration, the following meetings with colleagues from other regions or nations took place:

- **Munich** 28-30 April 2008: (fourth transalpine coordination meeting for the management of problem bears; on this occasion APT was the only Italian representative);
- Life-Interreg initiative: meetings held on 14 May in the **Pyrenees** and on 11 December in **Trento**, to evaluate the possibility of starting up an Interreg or Life project for the management of man/bear conflict (Trentino, Abruzzo, Greece, France, Spain);
- Collaboration as regards systematic genetic monitoring with the Autonomous Province of **Bolzano** (Spring 2008);
- Meeting in **Asiago** (14 July 2008): the presence of a bear on the Asiago tableland starting from last summer led to numerous meetings and exchanges of information with colleagues in Veneto. On the request of the provincial administration in Vicenza, the department participated in a public meeting, providing technical support along with images and information regarding the Trentino experience of managing bears;
- A Swiss technician visited Trentino (22-25 July 2008) within the context of collaboration with the Swiss authorities;
- Study trip to **Switzerland** (Grigioni) – 5-6 August 2008;
- Meeting in **Innsbruck** on 15 September 2008, to evaluate the possibility of using the Convention of the Alps as a platform for discussion of the management of large carnivores, also at policy level;
- **German** and **Swiss** visitors came to view Jurka's enclosure on 29-30 September 2008;
- Visit of a delegation from the province of **Bolzano** (17 October 2008): a delegation made up of representatives from the management bodies of the nature parks in the Autonomous province of Bolzano was accompanied to the Val di Non for a study trip designed to raise awareness of the methods adopted in the province of Trento for the management of bears. The day was organised in collaboration with the Adamello Brenta Nature Park;
- Meeting of the Lombardia bear group, to which APT belongs (**Milan**, 4 December 2008).

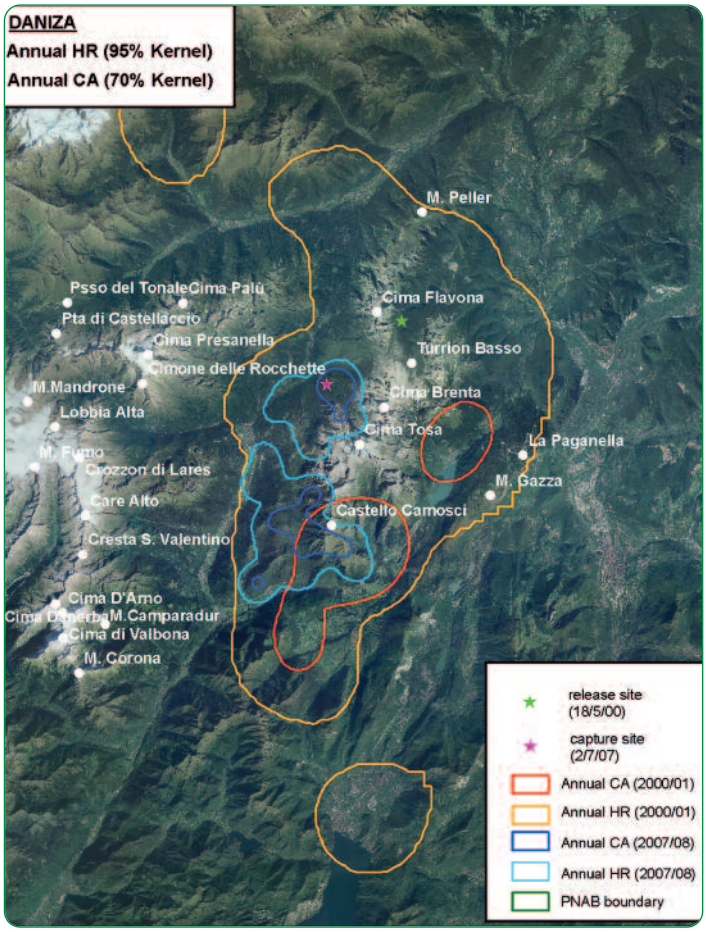
7. Research and conferences

Research

Following the recapture and subsequent fitting of a radio-collar (VHF and GPS transmitter) to the female bears Jurka (2006) and Daniza (2007) by the Forestry and Wildlife Department, it has been possible to undertake new analysis and comparison with previous datasets, calculating and comparing the home ranges, core areas and selection of habitat of the bears released. This has taken place with particular reference to the changes that have taken place in the two bears, comparing the period immediately after release in Trentino with the period following the fitting of the second radio-collar (i.e. at a distance of 5-6 years).

The comparison between the two datasets carried out by the ABNP on the request of the Autonomous Province of Trento highlighted considerable differences in the way the different bears made use of the space and habitat and in the different periods of time considered. As an example the home-ranges of Daniza are given below (see Figure 12).

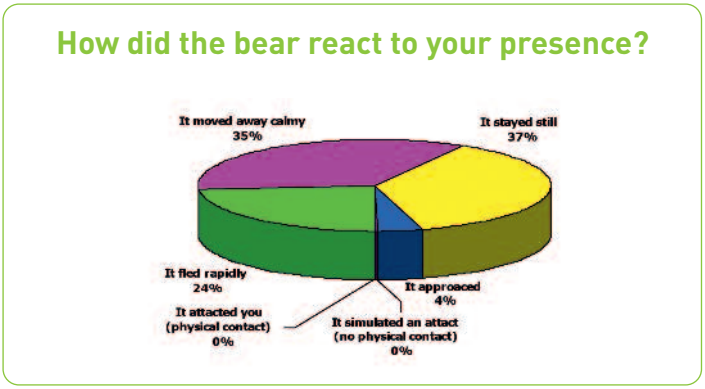
Figure 12.
Home range of Danza in 2001-2002 and 2006-2007



Survey into man-bear encounters. In order to further investigate encounters between men and bears, the Wildlife Office of ABNP has undertaken a specific two-year survey. The study was carried out using a questionnaire, completed in person or on the telephone, by all those who have had casual meetings with bears in the area studied (represented by the whole of the province). This survey is of considerable interest in terms of gaining greater knowledge of the ethology of the bear and in particular as regards its behaviour when it comes into contact with man. The ultimate aim of the research is to encourage coexistence between the two species, demonstrating that the bear is not an aggressive animal through statistical sampling of the bear's reactions to man. Furthermore, the study intends to investigate the emotional changes that may take place in man following a close encounter with a bear, namely any modifications that direct experience may have on the attitudes of those in favour or against the presence of the bear in the area. Finally, the study is intended to gather tales of "extraordi-

nary" encounters demonstrating how coming face to face with a bear may be an intense and emotionally enriching experience.
The work carried out to date has involved contact with 185 people, with a total of 355 questionnaires completed (each meeting with a bear was dealt with in a separate questionnaire). The data was then inserted in a special database, in order to carry out appropriate statistical analysis. Graph 23 shows the results for the question regarding the reaction of the bear to contact with man (355 cases), as an example of the results that could be deduced from the processing of the questionnaire in the next few months.

Graph 23 - Example of preliminary results obtained from analysis of the questionnaires



Conferences

With the participation of APT staff

- communication at the conference in **Udine** (10 May 2008) "Sustainable transfrontier management of wildlife resources", within the context of Interreg III A Italy - Slovenia;
- communication at the conference in **Luchon** in the Pyrenees (14-16 May 2008) "Bears, wolves and men: European initiatives for coexistence and development";
- communication at the conference at PNS (**Prato allo Stelvio - BZ**, 17 May 2008) "Coexisting with the bear: problems and experience in Europe";
- communication at the conferences in **Banff** – Alberta (CAN) at Lake Louise on 25 May and at Banff Natural Science Museum on 27 May 2008 with the title "Living with bears in the Italian Alps (Trentino): status of the population and management activities";
- communication at the conference in **Postumia** (SLO) 10-11 June 2008 "Pan European Conference on Population Level Management Plans for Large Carnivores";
- communication at the meeting in **Klagenfurt** (29 October – 1 November) "Coexistence between bears and man: comparing experiences".

With the participation of ABNP staff

- communication at the conference "Knowledge and conservation of biodiversity in protected natural areas in the Dolomites (Belluno Dolomites National Park)" in **Rivamonte Agordino** (11-12 April 2008) entitled "Conservation of biodiversity and the presence of man: 'managing' the bear";
- communication at the 6th Italian Conference on Theriogenology: Research and Conservation of mammals: a multidisciplinary approach (Adamello Brenta Nature Park, Associazione Teriologica Italiana, Società Italiana di Ecopatologia della Fauna)" in **Cles** (16-18 April 2008) entitled "The conservation of the brown bear (Ursus arctos) in Trentino: 20 years' monitoring of hibernation dens in the Adamello Brenta Nature Park".
- poster at the "6th Italian Conference on Theriogenology: Research and Conservation of mammals: a multidisciplinary approach (Adamello Brenta Nature Park, Associazione Teriologica Italiana, Società Italiana di Ecopatologia della Fauna)" in **Cles** (16-18 April 2008) entitled "Anthropic disturbance and conservation of the brown bear (Ursus arctos) in the Adamello Brenta Nature Park" evaluation of the influence of anthropic activities through expert-based opinion";
- presentation at the "First International Wildlife Reintroduction Conference" in **Chicago** (15-16 April 2008) entitled "Survey about Mammalian Reintroduction";
- communication at the conference "Management of the Natura 2000 network (Liguria Region)" in **Genoa** (20-21 November 2008) entitled "The bear project and exploitation of the area"-

Appendix

Figure 1 (photo: H Haller)

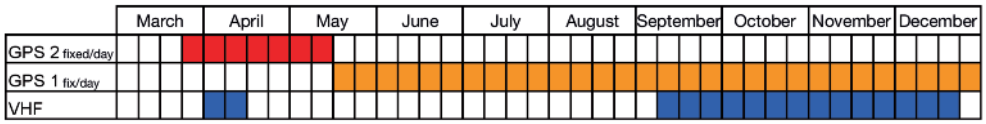
The presence of the lynx in Trentino in 2008

On 23 March 2008 a young male Eurasian lynx *(Lynx lynx)* weighing 24 kg entered Trentino by crossing the upper Val di Sole. It arrived from the neighbouring Engadin valley (CH), where its presence had been noted from the beginning of December 2007. It was captured there on 22 February 2008 by the staff of the Swiss National Park, to be fitted with a radio-collar and thus better monitored (Figure 1).

The lynx crossed the upper Valtellina, in Lombardia, then reaching the Pejo valley in western Trentino by crossing the Sforzellina pass at an altitude of more than 3,000 m (probably the highest altitude ever documented in the Alps for the feline). The presence of the lynx in Trentino, documented mainly through the GPS locations transmitted by the radio-collar, was immediately communicated by the Swiss National Park to the Forestry and Wildlife Department of the Autonomous Province of Trento. Contact was made the day after the fitting of the radio-collar, in view of the possibility of the young lynx moving over the border. The Associazione Cacciatori Trentini was immediately involved in monitoring of the animal, given the importance of hunting as an element in the future of the species in the Alps, together with the Stelvio National Park and the Adamello Nature Park, their territories being concerned by the presence of the lynx.

In the initial phases and subsequently only occasionally (at all events during the hunting season) the staff of the Forestry and Wildlife Department also monitored the presence of the lynx from the ground, using traditional radiotelemetry (VHF) (see Graph 1).

Graph 1 - Telemetric monitoring of the lynx in 2008 using different techniques

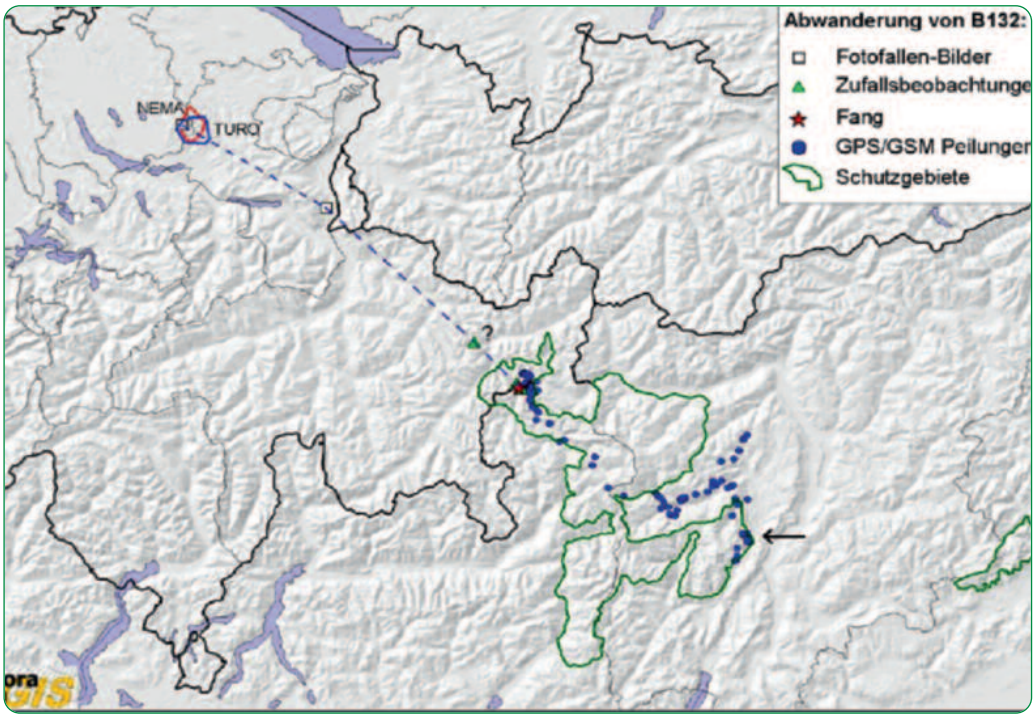


The lynx, whose identifying code is B132, spent its first few weeks in Trentino on the left-hand slopes of the Val di Sole, then moving into the upper Val di Non and briefly into the southern Tyrol (Lauregno-Proves). It then moved decidedly south, visiting the Brenta mountains and establishing itself there.

The reappearance of the lynx in Trentino led some to speculate that it had been released illegally; in fact this was completely disproved first by radiotelemetric monitoring and then by genetic tests, which demonstrated the natural and wild origin of the young animal in the area. Indeed, genetic analysis has shown that it was born in 2006 in north-eastern Switzerland, in the S. Gallo canton, where a small population of lynxes has been established since 2001, following the launch of the *Luno* project, which led to the release of at least 12 lynxes coming from the Swiss Alps and the Jura area.

Between November 2006 and February 2007 lynx B132 was photographed three times using photo traps, together with its sister and mother, in the area where it was born. In the subsequent months, B132 moved significantly away from its area of origin and from the area where the species is present in a stable manner in north-eastern Switzerland, making its way to the Engadin valley. Finally, from there its last major migration brought it first into Lombardia and then into Trentino (see Figure 2).

Figure 2
The area of origin of B132 (top left), the sites where it was caught in the photo traps (white squares), casual reports (green triangles, the capture site (red star) and radiotelemetric locations (blue circles) (data: www.kora.ch)



At the end of 2008, B132 was still in the woods of the eastern Brenta mountains, around 200 km from the place it was born. This is the furthest migration ever documented in the Alps for this species. The monitoring carried out in the province during 2008 made it possible to gather and process data on the ethology of the young animal, summarised below.
Figures 3, 4 and 5 highlight its home range.

Figure 3
Home range of lynx B132 in Trentino from 23/3/2008 to 31/12/2008 calculated using the minimum convex polygon method (MCP)

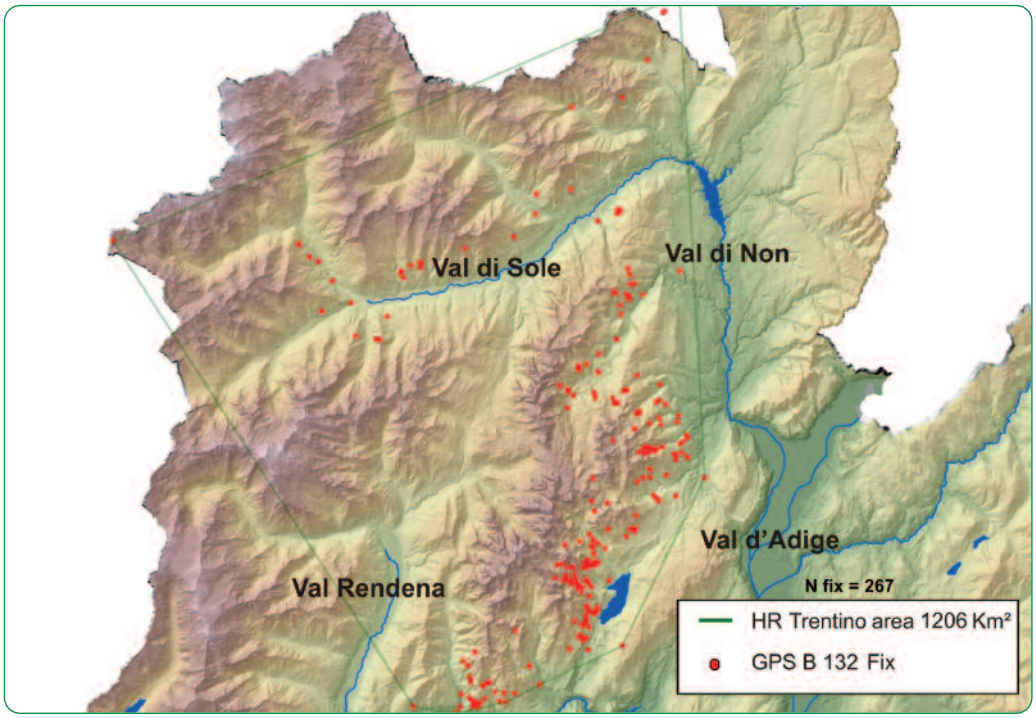


Figure 4
Home range of lynx B132 in the Brenta mountains from 17/4/2008 to 31/12/2008 calculated using the minimum convex polygon method (MCP)

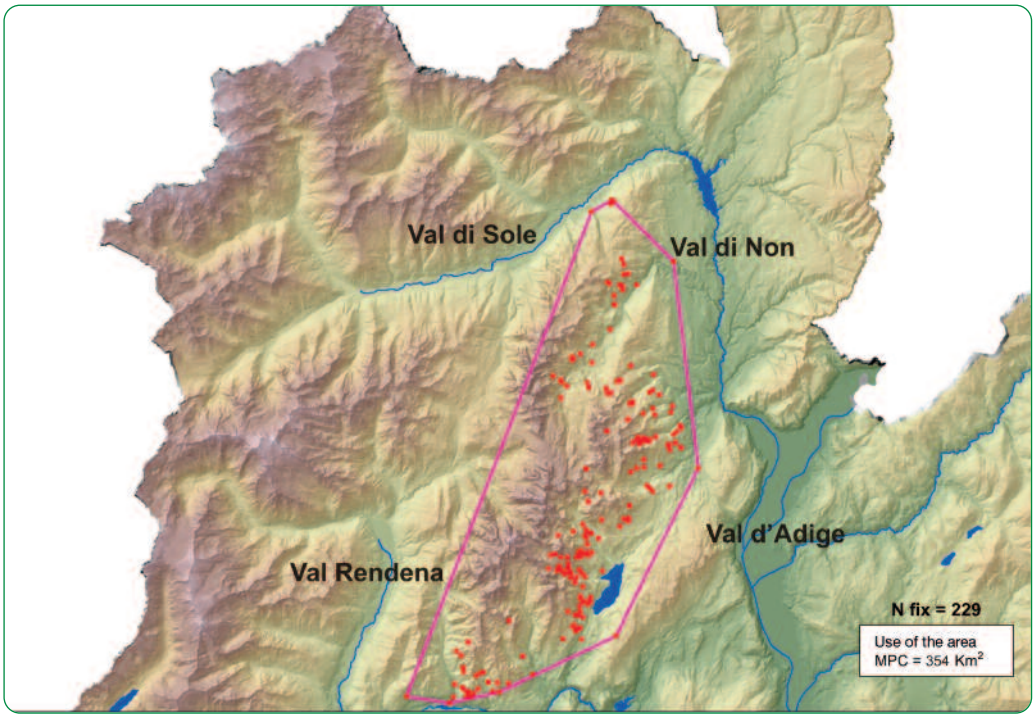
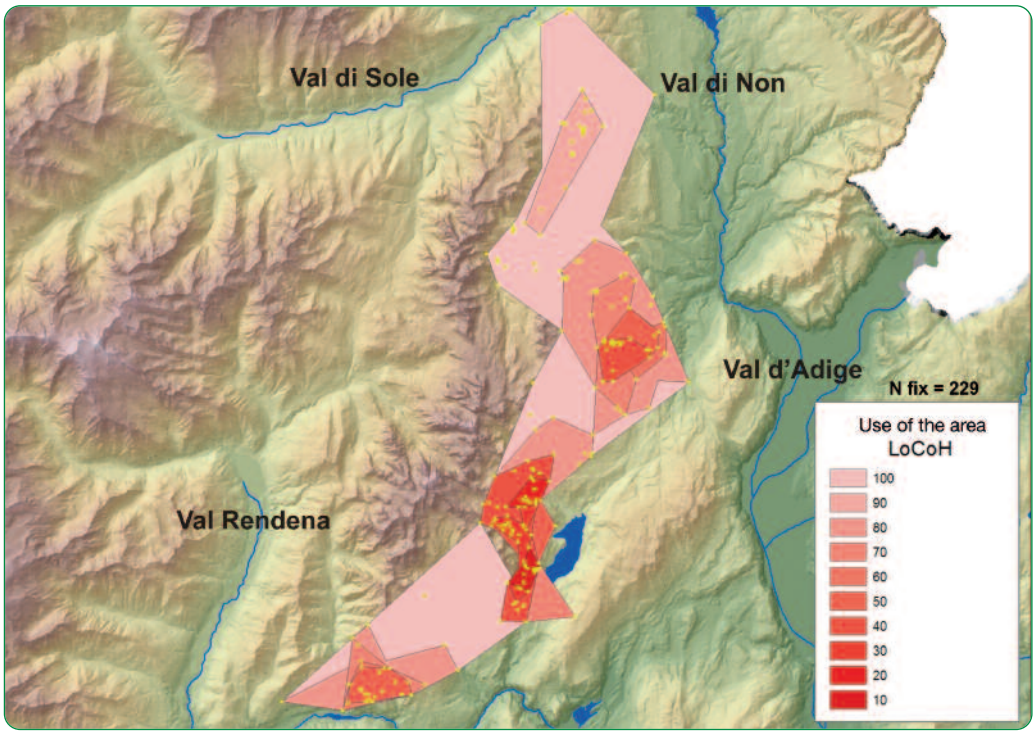
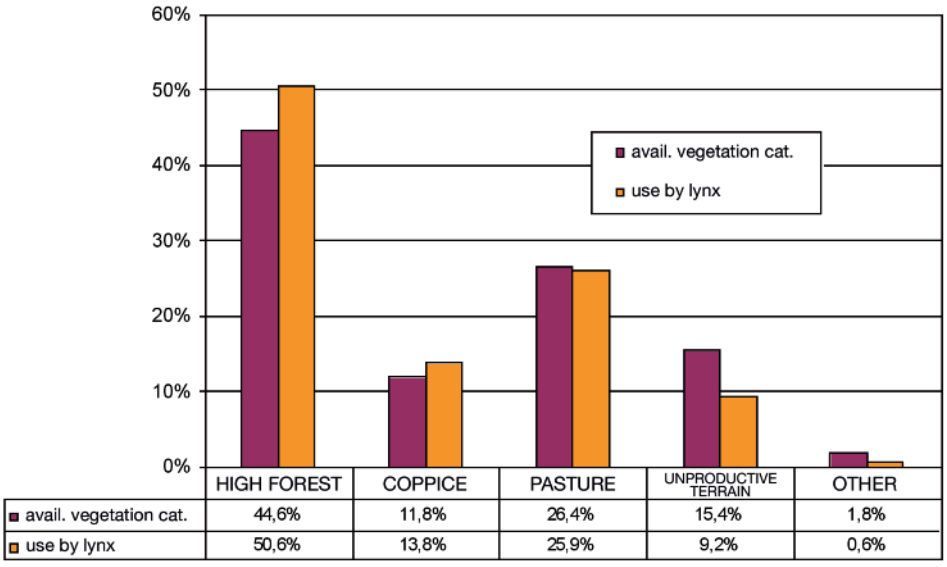


Figure 5
Home range of lynx B132 in the Brenta mountains from 17/4/2008 to 31/12/2008 calculated using the LoCoH method



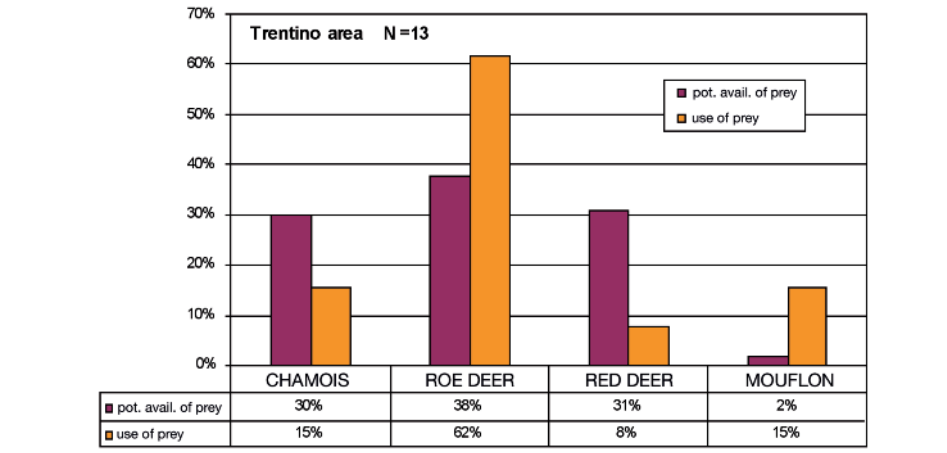
Graphs 2 and 3 highlight respectively percentages related to the presence of lynx B132 in different habitats and categories of vegetation (with reference to the home range calculated using the LoCoH method which can be seen in Figure 18) and the prey of the lynx throughout western Trentino. Both graphs compare use with relative availability.

Graph 2 - Percentage presence of lynx B132 in different categories of vegetation



	HIGH FOREST	COPPICE	PASTURE	UNPRODUCTIVE TERRAIN	OTHER
avail. vegetation cat.	44,6%	11,8%	26,4%	15,4%	1,8%
use by lynx	50,6%	13,8%	25,9%	9,2%	0,6%

Graph 3 – Use of prey by lynx B132



	CHAMOIS	ROE DEER	RED DEER	MOUFLON
pot. avail. of prey	30%	38%	31%	2%
use of prey	15%	62%	8%	15%

Finally, as shown in Figure 6, the home range used in a stable manner by the lynx from April to December 2008 falls almost completely within the area occupied in a stable manner by the brown bear population in 2008.

Figure 6
Comparison between the *home range* of lynx B132 (in pink) and the core area of the brown bear population in 2008