AUTONOMOUS PROVINCE OF TRENTO

2011 BEAR REPORT

WITH LYNX AND WOLF APPENDIXES

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AUTONOMOUS
PROVINCE OF TRENTOO

FORESTRY AND WILDLIFE
DEPARTMENT

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2011
BEAR REPORT

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CONOSCI L'ORSO BRUNO
Servizio Foreste e Fauna

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" Bear in the forest" . Brenta mountains, October 2011.
Photo by Matteo Zeni - ABNP (with photo trap).

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Presentation

As is known, management of the brown bear in Trentino is carried out on the basis of consolidated operational guidelines approved by the provincial government. The administration has assigned the **Forestry and Wildlife Department** with the task of acting as the organisation of reference in relation to carrying out specific programmes of action.

The Department's main partner at operational level is the Adamello Brenta Nature Park, (ABNP) which promoted the *Life Ursus* project during the second half of the 1990s, while the institutional and technical-scientific partners involved in carrying out projects are 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).

An important **process of reviewing management decisions** was started up with these partners in 2011, starting from the indications provided in a study drawn up by Prof. Marco Apollonio and the late lamented Prof. Guido Tosi. This considered not just carrying capacity from an ecological point of view, but also the social context, in order to provide concrete answers to a series of problems emerging in this phase of the project.

This edition of the Bear Report coincides wit " **International Year of Forests**" . Hence the report also aims to make a specific contribution in this context, considering the special relationship linking the bear species with the forest habitat and its nutritional resources, and the clearly-defined institutional and technical role of the administration in terms of ensuring the integrated management of forests and wildlife. It is certainly not by chance that in 2011, despite the positive dynamics of the bear population, there has been a decrease in damage: this is rather the result of good availability of food in the woods, in addition to the application of management methods which are gradually being perfected.

With an awareness of how important it is to succeed in providing appropriate and prompt responses to all those involved, the year which has just ended was also marked by the starting up of a **round table with the categories concerned**. The dialogue established has made it possible to draw up an initial balance sheet, distinctly positive in many ways, also following the approval and application of the **new criteria for damage compensation**.

Certainly we remain convinced that there is still a long way to go in order to achieve the effective **inclusion of the project within a broader context**, with reference not only to the other two large carnivores in the Alps, the **lynx** and the **wolf**, but also more generally to the **alpine environment**. The objective is also to recognise in this way the value of the species, from various points of view, including the **economic returns** for the area playing host to the bear. In this context a significant commitment will thus continue to be required in the future.

To conclude, our heartfelt **thanks** must go once again to all those who in various ways have collaborated in order to carry out the individual initiatives specified in the programmes of action, in particular to the Science Museum, the forestry and technical staff of the Forestry and Wildlife Department, the forest wardens, park wardens, gamekeepers and volunteers, along with the other Regions and Provinces which participate in the project in order to put the programmes into effect and to gather and make available the data contained in this report.

DOTT. MAURIZIO ZANIN
Manager of APT's Forestry and Wildlife Department

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, environmental changes 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 ISPRA (formerly INFS), co-funded by the European Union. Between 1999 and 2002 this led to the release of 10 bears (3 males and 7 females), giving rise to the population to which this report refers. The release of the bears was preceded by a detailed feasibility study supervised by ISPRA, 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 and countries.

Photo 1 - Tracks in the snow of the three large carnivores of the Alps. From left to right: wolf, eurasian lynx and brown bear (M. Krofel-2012)

Following the conclusion of the phase involving the release of the animals, the phase dedicated to the conservation and standard management of the bear population, perhaps even more demanding, began in 2002. For this purpose the provincial government set out the operational guidelines 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 programmes of action were identified (monitoring, damage management, management of emergencies, staff training, communication and extra-provincial links), which represent the underlying structure 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 survey techniques in the field have been supplemented by radiotelemetry (a method first used in Eurasia, in the second half of the 1970s), automatic video controls by remote stations, photo-traps and finally, since 2002, by genetic monitoring.

The latter technique is based on the collection of organic samples (hairs and excrement) and takes place using two methods commonly described 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 found in the area during routine service activities. In the last few years, genetic monitoring has represented the most crucial technique for collecting information regarding the bear population present in the province.

Genetic monitoring was coordinated for the tenth consecutive year by APT's Forestry and Wildlife Department, with the collaboration of ISPRA, ABNP, the Science Museum and volunteers.

It is nevertheless implicit that the monitoring techniques cited do not guarantee that **all the bears present** will be detected, so the data in this Report must be read bearing in mind this **intrinsic limitation**.

Finally it should be recalled that monitoring of the other two species of large carnivores in the Alps (the **eurasian lynx** and the **wolf**) began following their reappearance in the province, hence from the end of the 1980s for the lynx and from 2009 for the wolf.

Genetic Database

A total of **587 organic samples** (383 hair, 200 excrement, 3 urine and 1 tissue sample), were collected using the opportunistic system in the province of Trento in **2011**, bringing the total number of samples collected and subjected to genetic testing since 2002 to **4,306**.

The fact that **genetic monitoring** has now been carried out for **ten consecutive years** makes the " Trentino case" particularly interesting, as the medium-long term timescale for these activities (generally difficult to keep up and hence rare), makes certain types of analysis possible which would be unthinkable with more fragmentary monitoring.

The 587 samples were collected by the staff of the Autonomous Province of Trento (277; 47.9%), ABNP (174; 30.1%), the Paneveggio Pale di San Martino Nature Park (2; 0.3%) and by volunteers (125; 21.5%).

Further samples were collected outside the province, contributing towards determining the total number of bears from this population identified; the data was kindly provided by the **Autonomous Province of Bolzano**, the **Lombardia Region**, the **Veneto Region** and the **Autonomous Region of Friuli Venezia Giulia**.

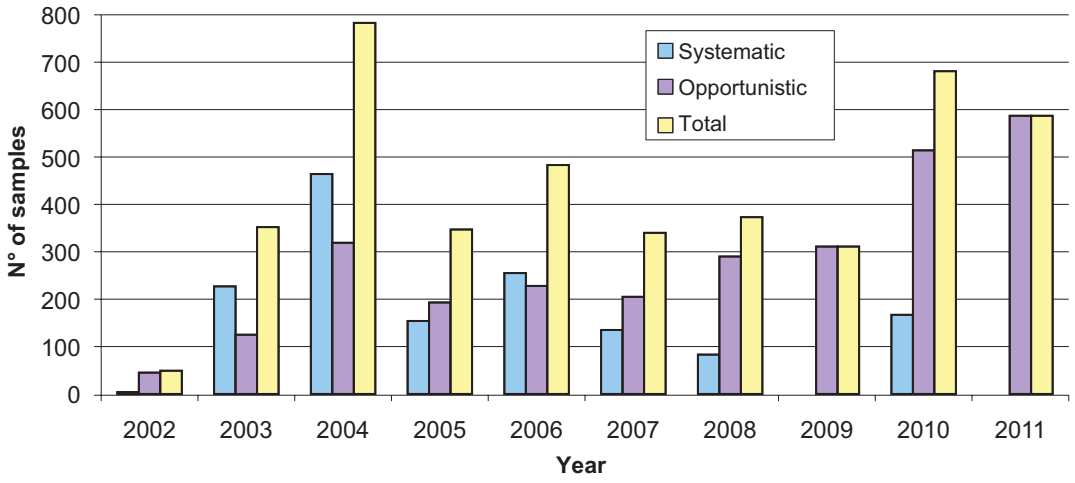
In 2011 genetic testing was again carried out by technicians from the conservation genetics laboratory at **ISPRA**. The samples collected (hairs and faeces) were sent to the laboratory for genetic tests, carried out using standard protocols, while the data was validated using population genetics software. The organic samples collected can be analysed according to the standard procedure (551 in 2011), or in more urgent cases (36 in 2011), using a faster system, providing results within a couple of weeks from receipt of the sample. The methods developed, in accordance with the provisions of PACOBACE (Plan of Action for the Conservation of the Bear in the Central-Eastern Alps), provide for amplification of ten different genomic regions (DNA microsatellites) and molecular sexing of all hair and faeces samples collected by staff and sent to the institute's laboratory. The high risk of error associated with analysis of samples collected using non-

invasive techniques demands the use of laboratory procedures designed to minimise the risk of genotyping errors. With this scope the multiple amplification approach was adopted (Taberlet et al., 1996). This involves repeating a series of tests until a genotype considered to be reliable is obtained. Reliability was established using statistical evaluation, carried out using the Reliotype programme (Miller et al., 2002). This calculates the likelihood of the particular genotype observed effectively belonging to the population, based on the allele frequency observed in the population of reference and on the number of repeat tests providing concordant results. If the reliability of the genotype arrives at or exceeds 95% it is accepted and the sample identified is added to the database. Following processing of the initial results of genetic tests, the combination of genotypes identified is subjected to careful quality control carried out subsequently, through comparison of genetic data, sampling and data coming from other activities in the field (telemetry, sightings etc.) designed to identify samples potentially subject to error. Further tests were used for these samples in order to clarify any uncertainty.

The trend in relation to the number of samples collected in Trentino over the last ten seasons can be seen below (Graph 1).

Graph 1

N° of organic samples collected by method



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	TOT.
Opport.	45	125	319	193	228	205	290	311	514	587	2817
System.	4	227	464	154	255	135*	83	-	167	-	1489
TOTAL	49	352	783	347	483	340	373	311	681	587	4306
N° of traps	4	39	41	42	47	17*	57	-	57	-	

* only within ABNP

During 2011, alongside traditional opportunistic monitoring, the Forestry and Wildlife Department again carried out **monitoring of rub trees**, namely plants on which bears leave signs of their presence by leaving their odour and hair on the bark, an activity begun in 2010. This took place with the part-time support of an external professional and in collaboration with ABNP (Box 1).

BOX 1 - Monitoring of rub trees in 2011

*Monitoring of a total of **110 trees** was carried out systematically, with the objective of collecting organic samples, assessing the significance of the use of these trees by bears and consequently understanding how useful they may be in monitoring the population. The **checks**, carried out **monthly** from April until November, provided for collection of samples of organic material for each positive rub tree (collected exclusively from the barbs of the barbed wire). In order not to change the habits of bears, no lures were used. Identification and monitoring of the sites was possible thanks to the support of staff from the Wildlife Office, the wardens of the Adamello Brenta Nature Park, the staff of the Trentino Forestry Service and forest wardens.*

*During the season **258 hair samples** were collected, representing almost half of the organic samples collected in an " opportunistic" manner during the year. A total of **10 bears** were genotyped, **6 males and 4 females** (representing 50% of males and 38% of females known to be present in 2011 in the area studied). In the two years of monitoring (**2010 and 2011**), a total of **14 bears** actively frequented the rub trees.*

Photo A - Female with three cubs around 16 months old examining a rub tree - Paganella - Gazza mountains (C. Groff, APT Forestry and Wildlife Dept. Archives)

*It was confirmed that there is a significant difference between the sexes in the use of rub trees: **males** made significantly more use of rub trees than **females** and this activity was concentrated in the spring-summer months (during the period of reproduction). The use of rub trees by females would instead appear to be more sporadic and limited to the autumn months. Furthermore, **young bears** would only appear to make marginal use of rub trees in comparison to adults: all this suggests that bears may use the activity to establish a sort of social hierarchy, in order to avoid direct conflict.*

Obtaining samples from bears by collecting hair left naturally on rub trees would thus appear to be a promising addition to monitoring methods providing for opportunistic collection of samples and the use of hair traps with lures. The monitoring of rub trees is indeed an efficient, safe, flexible, non-invasive and relatively cheap method for the collection of data useful for estimating the extent of the population investigated and population trends.

*The use of **photo traps** on some rub trees made it possible to study the behaviour not only of bears, but also of other wild and domestic species. Some trees would appear to act as a form of " mail box" , enabling intra and inter-specific communication. In most cases, carnivores made active use of the trees (by marking), while quarry species used them passively (for controls).*

(M. Tiso)

Photo B - Adult male photographed while marking the rub tree - Brenta mountains (M. Tiso, APT Forestry and Wildlife Dept. Archives)

Photographic monitoring continued at an experimental level, with the positioning of photo traps at certain sites (mostly rub trees known to be regularly frequented by bears). These made it possible to obtain, among other things, images and footage of **bears** (Box 2) and **lynxes**.

BOX 2 - Photographic monitoring in 2011

*In 2011 the experimental photographic monitoring of **brown bears** and the eurasian lynx started up in 2010 was continued.*

The activities were coordinated by the Forestry and Wildlife Department with the participation of Trento Science Museum and a number of volunteers.

The number of photo traps used simultaneously during the year within the area most frequented by the bear and lynx (Brenta and Paganella-Gazza mountains) varied from a minimum of 4 to a maximum of 14. This fluctuation in the number of devices in the field was the result of technical problems arising with some of the equipment (also used in extreme weather conditions), the availability of volunteer staff and thefts (three photo traps disappeared).

Photo A - Adult bear intent on checking a rub tree - Brenta mountains (M. Vettorazzi - APT Forestry and Wildlife Dept. Archives)

Monitoring took place throughout the year. The activities effectively involved ***2,743 photo trap nights****. In the periods 1 January - mid March and mid-November - 31 December, during which bears are relatively inactive, the photo traps were positioned in places where the lynx is known to occasionally pass (for details see Appendix I on page 61).*

In terms of results, on ***135*** *occasions the presence of one or more* ***bears*** *was captured on film (from February to December) while on* ***26*** *occasions the* ***lynx*** *known as* ***B132*** *was photographed (from January to May). The following species of wild mammals were also photographed: roe deer, red deer, chamois, mouflon, wild boar, common hare, mountain hare, badger, marten, stone marten, weasel, fox and squirrel.*

The photographic documentation was useful in supplementing the knowledge gained from genetic monitoring, making it possible to ascertain, among other things, that there were two different ***female bears*** *(not identified genetically) accompanied by one-year-old cubs frequenting the south Brenta area, and objectively documenting the* ***presence of the lynx*** *even after its radio collar stopped working, at least until the end of May. It was also possible to acquire interesting information about the* ***periods in which hibernation began and ended, intraspecific interaction****, the different behaviour shown by males and females and adults and young bears/cubs at rub trees, possible pathologies and the distinctive characteristics of the animals monitored.*

Photo B - "White" bear in action at a rub tree - Paganella - Gazza mountains (C. Groff - APT Forestry and Wildlife Dept. Archives)

Photo C - Probably the same bear as in the previous photo filmed at a point of passage - Bondone-Stivo mountains (M. Segata - APT Forestry and Wildlife Dept. Archives)

Status of the population in 2011

Processing of the data collected provided the following information regarding the identification of the bears sampled, estimation of the minimum population, the number of litters during 2011 and the movements of the animals.

It is recalled that starting from 2008, newborn animals and/or bears migrating to the area have been identified with progressive numbering preceded by the letter " F" for females and " M" for males. At all events, information regarding the identity of the parents is known and available in a specific database.

Definitions

- " **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;
- " **adults**" : males over the age of 5 and females over the age of 3;
- " **detected bears**" : bears whose presence has been ascertained during the last year, either genetically or on the basis of unequivocal sightings;
- " **undetected bears**" : bears which were not detected 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, emigrated, taken into captivity or for which no genetic evidence has been found in the last two years;
- " **rediscovered bears**" : bears detected genetically after two or more years during which their presence was genetically not recorded;
- " **dispersion**" : movement outside western Trentino by bears born in this area, without them reaching the territory habitually frequented by bears belonging to the Dinaric-Balkan bear population;
- " **emigration**" : the abandoning of the population present in the province by bears reaching the territory habitually frequented by bears belonging to the Dinaric-Balkan bear population;
- " **immigration**" : the arrival in the province of bears coming from the Dinaric-Balkan bear population.

Overall **31 animals were detected genetically in Trentino and neighbouring provinces during 2011**. All of them were detected using **opportunistic** genetic monitoring. At least **5 cubs**, belonging to three differ-

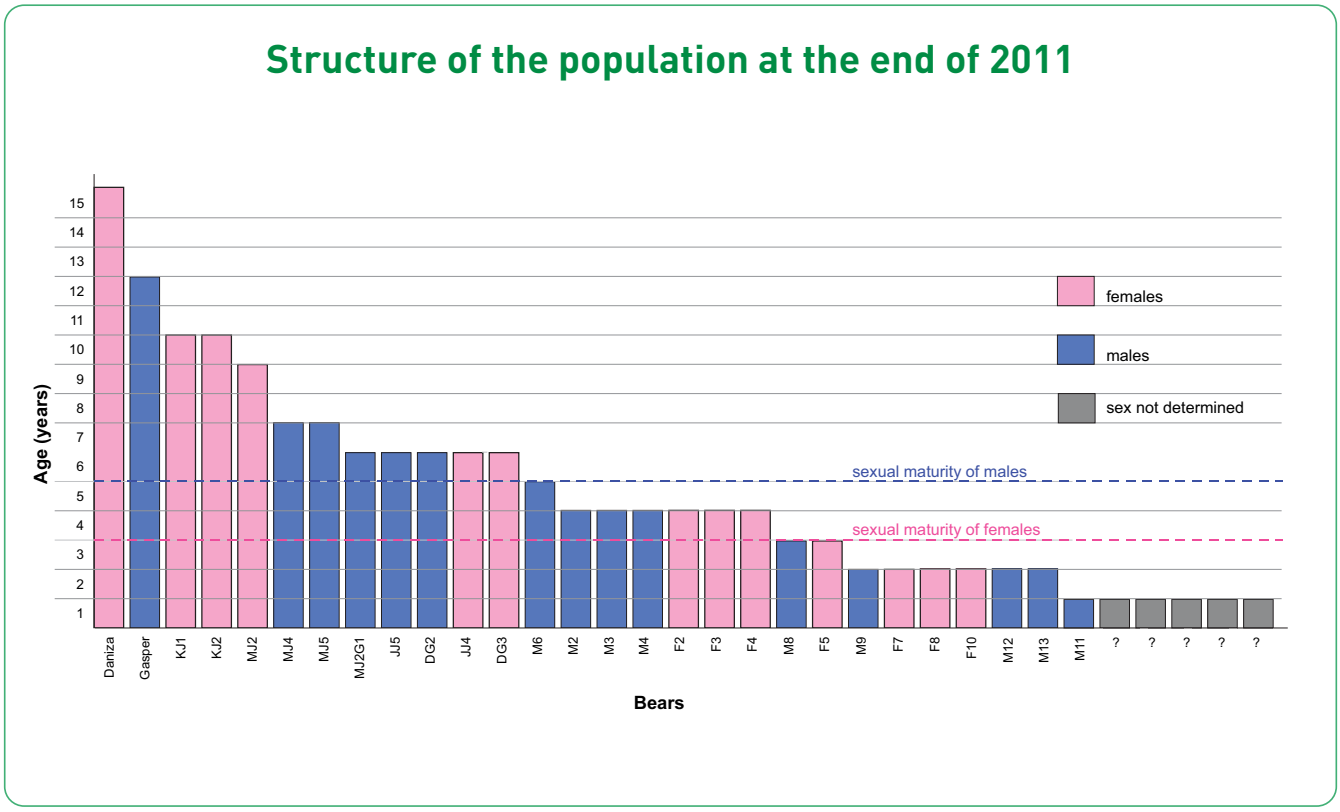
ent litters (3+1+1) must be added to these, as they were repeatedly observed and/or filmed in the company of their mothers during the year, although they were not identified genetically.

It is however necessary to **subtract 3** bears from the total: a seven-year old female, **DJ1**, found **dead** on 2 August 2011; the female **DJ3**, of the same age, **taken into captivity** on 17 May 2011 due to problematic behaviour which she had manifested for some time (see chapter on the management of emergencies) and a six-year-old male bear, **KJ2G2**, who **emigrated**, as he was recorded in Friuli Venezia Giulia in the central-eastern part of the region; the stable presence of a group of bears has been ascertained in this area, representing the most westernly ramification of the Dinaric-Balkan bear population.

Hence a minimum of **33** bears are considered to have been present at the end of 2011, of which **15 males, 13 females and 5 of undetermined sex** (Graph 2) (M-F sex ratio 1: 0.87 - n=28).

Once again this year it is likely that the genetic monitoring carried out did not detect all

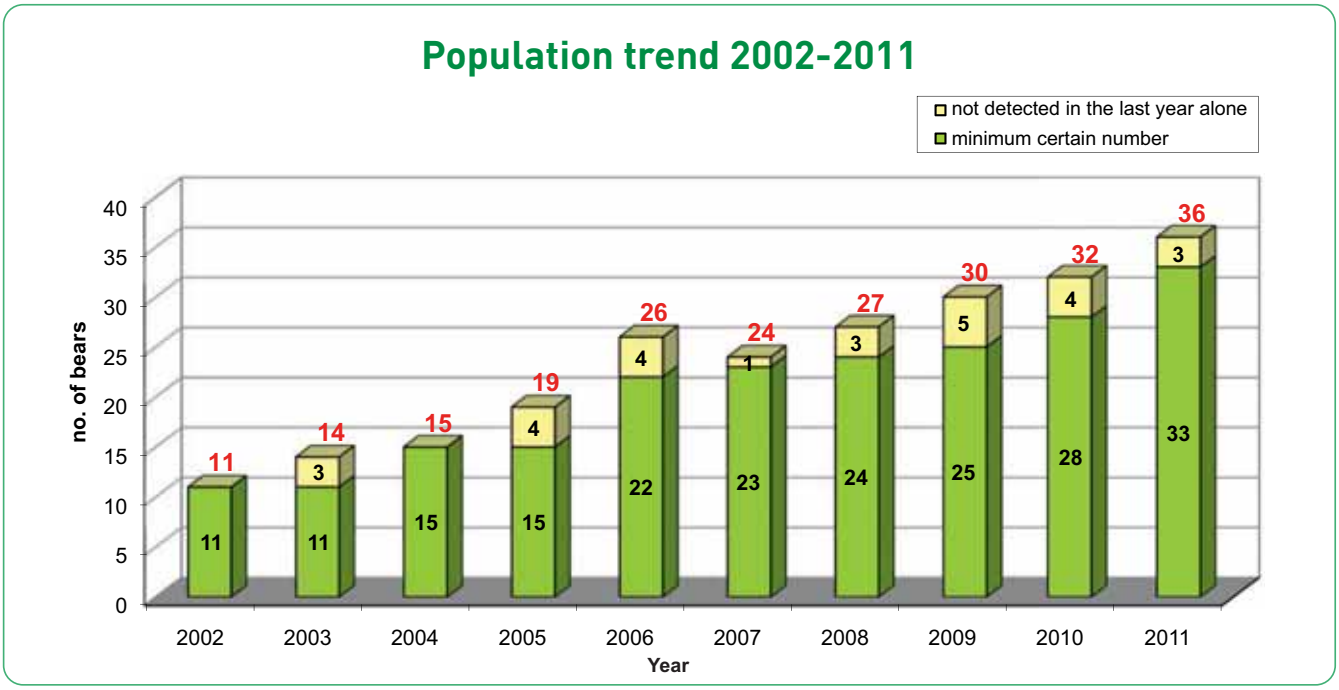
Graph 2



the bears making up the population. Considering the presence of other individuals not detected in the last year alone (3) as likely, and excluding those missing for two or more years (14), the **estimated population in 2011** range from **33 to 36 bears**. It should be underlined that the minimum number (33) represents the number of bears certainly present, whereas the maximum (36) is exclusively an evaluation of probability, based on specific criteria shown to be valid to date, but which have intrinsic limitations. It is therefore essentially a " minimum population estimate" , which is different from a genuine " population estimate" , requiring the use of statistical models for capture, marking and recapture (CMR).

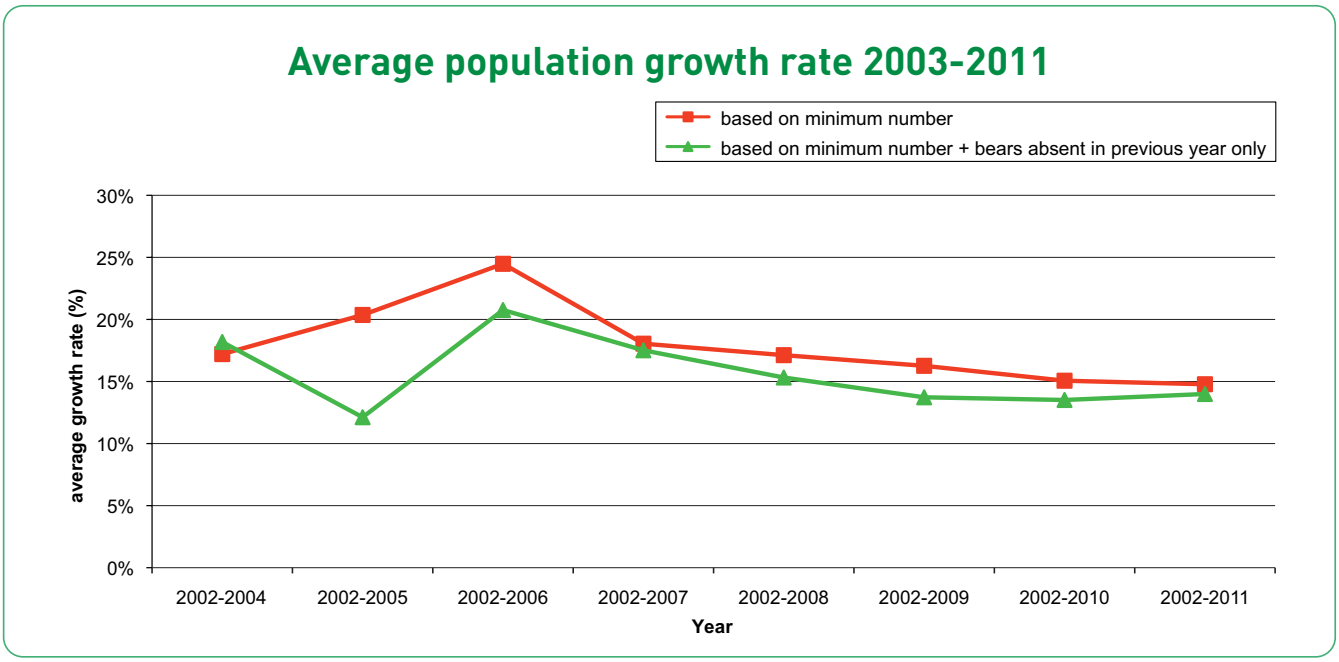
There was thus a slightly increasing population **trend** once again in 2011 (see Graph 3). The **average annual growth** in the bear population in the 2002-2011 period was **14%**,

Graph 3



if referred to the minimum certain population and **14.8%** if referred to the population also including bears absent only in the last year. Graph 4 shows the **evolution of the two annual growth rates** in the 2004-2011 period. Following an initial period, during which the growth rate was even higher than 20%, the rate has progressively flattened out around the current level of 14-15%. This is nevertheless very positive when compared with the data existing in reference material as regards the species.

Graph 4



Reproduction

In **2011** the presence of **4 litters** during the year was ascertained (genetic monitoring plus certain sightings), with a total of **6 cubs**. In three cases there was a single cub, whereas in the fourth case the litter was made up of three cubs (1+1+1+3).

The only cub identified was **M11**, whose parents were the female DJ3 and the male JJ5 (for the first time reproduction by a male born in Trentino was recorded, namely JJ5, who was only 4.5 years old when he mated with the female). For more information about the unusual story of this bear cub see Box 3.

BOX 3 - " M11" , the story of a courageous cub

Starting from the beginning of May, a solitary bear cub wandering around the southern Brenta mountains was sighted and reported on several occasions. Initially it was not possible to confirm that it was effectively a cub of the year, despite several visits to the site.

Confirmation was only possible around the middle of the month, when the cub was sighted and photographed by several people in the Val di Manez, not far from the village of Montagne.

*A week later, on **23 May**, the cub was once again spotted, numerous motorists having had the chance to observe it as it made its way along the side of the Val Rendena provincial road, close to Verdesina, apparently disorientated (Photo A).*

*The cub's debilitated state and the high risk of it being involved in a car accident led to the decision to **capture** the cub (picked up by the staff of the Trentino Forestry Service) and transport it to the wildlife area at the Casteler forestry centre near Trento.*

Photo A - The cub M11 shortly before capture (V. Calvetti, APT Forestry and Wildlife Dept. Archives)

The cub arrived at the centre at 22.30. It weighed in at barely seven kilos and was visited by the veterinary surgeon of the Provincial Health Services: the animal was weak, underweight and its right eye was suffering from serious over lachrymation, but it had no other injuries.

*This marked the beginning of the first **experience of rehabilitating a bear cub** in Trentino. A strategy for ensuring the animal's full recovery was agreed that very night, with the idea of subsequently releasing the cub into the wild again, albeit with some major reservations. It was also surmised, as subsequently confirmed by DNA testing, that the cub's mother was DJ3, the problem bear taken into captivity a few days earlier. She had been seen around from the beginning of May, no longer accompanied by the cub, in the company of a male bear (MJ5), which had probably attempted to kill the cub so that the female would once again become available for mating.*

When preparing the recovery plan the most important contribution was made by the guidelines of the W.S.P.A., World Society for the Protection of Animals. Thanks to more than twenty years' experience of recovering bear cubs, the guidelines provide information about

Photo B - The bear cub M11 at the Casteler centre
(A. Stoffella, APT Forestry and Wildlife Dept. Archives)

diet, but above all about appropriate methods for dealing with bears in order to minimise imprinting with man, fundamental if the bear was to be once again released into the wild.

Useful suggestions also came from colleagues working with bears in Scandinavia and the Balkans.

The bear's diet was based on food providing an adequate calorie intake but also offering a wide variety and was as natural as possible. Food was given to the bear cub twice a day, in different places within the holding area, possibly hidden inside a hollow tree trunk and/or in " natural conditions" (e.g. fruit still hanging on branches).

The holding area had an internal and external zone; some plants, hollow tree trunks, and a tank filled up daily with fresh clean water were placed in the external area.

This tank immediately excited the interest of the cub, which enjoyed prolonged daily bathing sessions and games.

*During the **period of recovery**, which lasted a total of **38 days**, care of the cub was entrusted to a single person who remained in the area only for the time necessary for cleaning and to provide food. After the first critical days, when the survival of M11 appeared to be seriously in doubt, he recovered very rapidly, tripling his weight.*

Thirty-five days after being brought to the Casteler centre and having made a full physical recovery, the bear's behaviour suddenly changed. Up till then he had been calm, but he now began to refuse food and move frenetically and repetitively around the holding area looking for a way to escape. This was the sign that it was time to release the cub into the wild.

*Aware of the risk that the bear cub had become too accustomed to man, but determined to reduce the danger that the bear would have to spend its whole life in captivity and trusting in the advice given by his warden, on the morning of **1 July**, M11 was drugged and transported by helicopter to the southern Brenta mountains and **freed** (Photo C). Just to be certain, a small store of food was left at the place he was released, however this was not adopted by the cub.*

M11 was not fitted with any type of radio transmitter, but only with a microchip.

*For two months there was no trace of him; however on **1 September** there was a sighting of a solitary cub, precisely in the **southern Brenta** area, while on **9 Sep***

Photo C - The bear cub M11 shortly after release
(P. Zanghellini, APT Forestry and Wildlife Dept. Archives)

Photo D - The bear cub M11 sighted on the Paganella (L. Giovannini, APT Forestry and Wildlife Dept. Archives)

tember *some people succeeded in photographing him (Photo D) near the Roda refuge, on the* ***Paganella*** *mountain.*

A number of distinguishing features made it possible to recognise the cub with certainty, confirming that more than two months after his release he was still alive and healthy and above all without ever approaching villages.

Two further sightings of a " lone bear cub" were attributed to M11, but in these cases it was not possible to be certain due to the lack of clear images: on ***16 September*** *at* ***Lake Cei*** *(Bondone-Stivo mountains) and on* ***21 October*** *at* ***Loppio*** *(southern limit of the Stivo mountain to the north of the Altissimo).*

In the wild, bear cubs may remain on their own for various reasons. If this does not happen too early it has been shown that there are concrete possibilities that they can survive. The courageous cub M11 is taking his chances.

(A. Stoffella)

The **other three litters** were not identified genetically, but were repeatedly sighted and/or photographed/filmed (Photos 1 and 2).

A **further litter** made up of 1-2 cubs may be present in the northern Brenta mountains, but there is insufficient evidence to be able to confirm this and therefore this is **not considered** to be present.

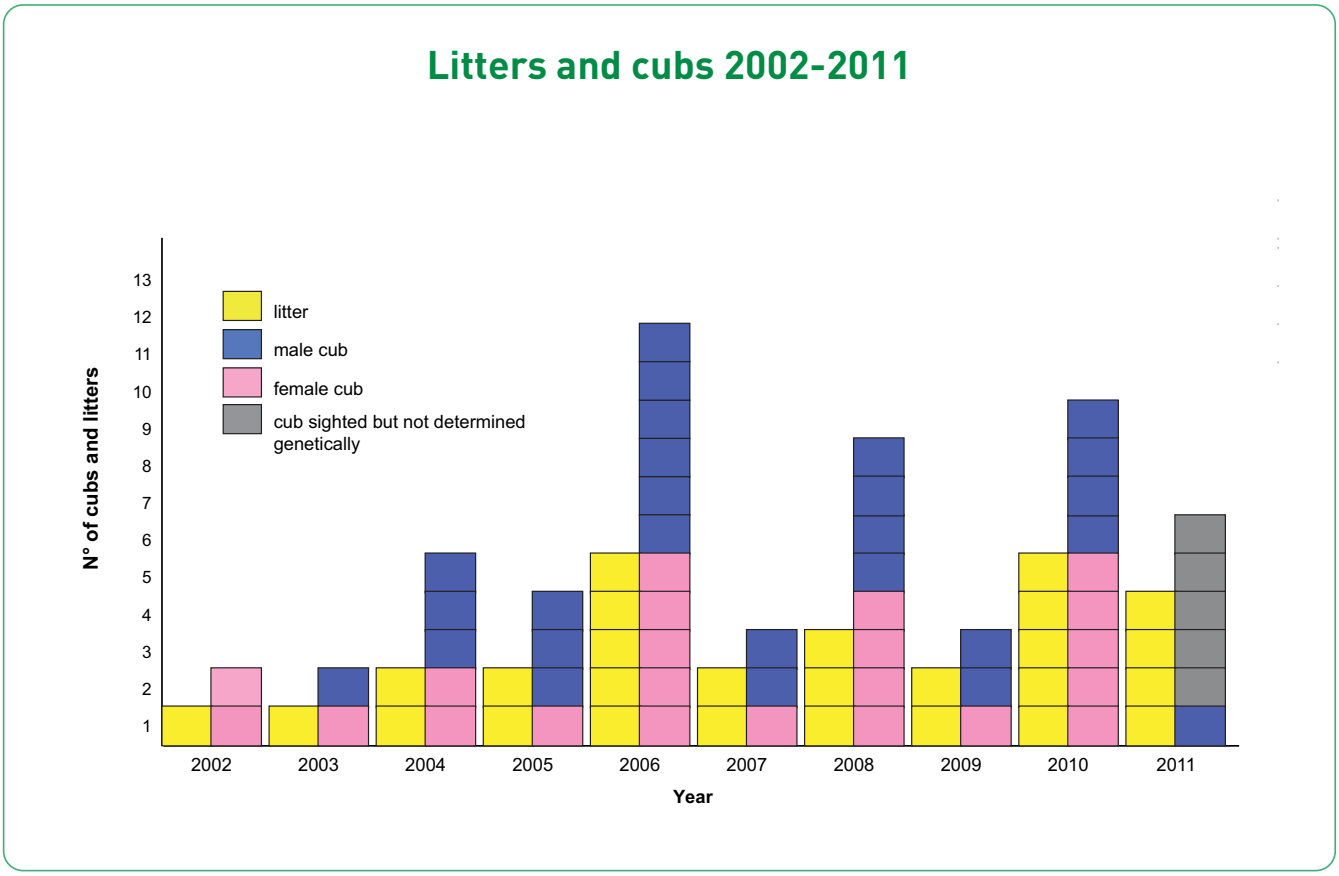
Photo 1 - Female bear with cub born that year, above Lake Molveno (M. Tiso, APT Forestry and Wildlife Dept. Archives)

Photo 2 - Female bear with cub born that year, in the Val d'Algone (M. Vettorazzi, APT Forestry and Wildlife Dept. Archives)

On the other hand, genetic testing has made it possible to identify a ***litter***, probably **born in 2010**, made up of at least two males, **M12 and M13**, born to KJ2 and Gasper.

There have therefore been at least **27 litters** ascertained to date in Trentino (24 genetically and 3 repeatedly sighted) in the last **ten years**, and at least **53 cubs** have been born (26 males, 22 females and five of unknown gender) - (see Graph 5), **M-F sex ratio 1:0.85** (2002-2011, n=48).

Graph 5



The **average number of cubs per litter** is **1.96** (2002-2011, n=27).

Only **3** of the 21 **litters** ascertained to date (12%) are the **result of mating between blood relatives** (between father and daughter in two cases and between bears with the same father in the third case). As regards this, a comparative study currently being concluded would appear to confirm the validity of reintroduction projects based on at least 9 founder animals, whereas inbreeding has manifested itself for example in the Austrian case (4 founders), both in relation to the smaller number of cubs per litter recorded and the survival rate of the cubs. The data available for the French Pyrenees (6 effective founders) is instead conflicting and the influence of inbreeding has still to be determined in detail (Knauer F., Groff C., Quenette P.Y., Rauer G., unpublished data).

Reproductive animals

There are **7** sexually mature **males** present at the end of 2011.

There are **10** sexually mature **females** present at the end of 2011.

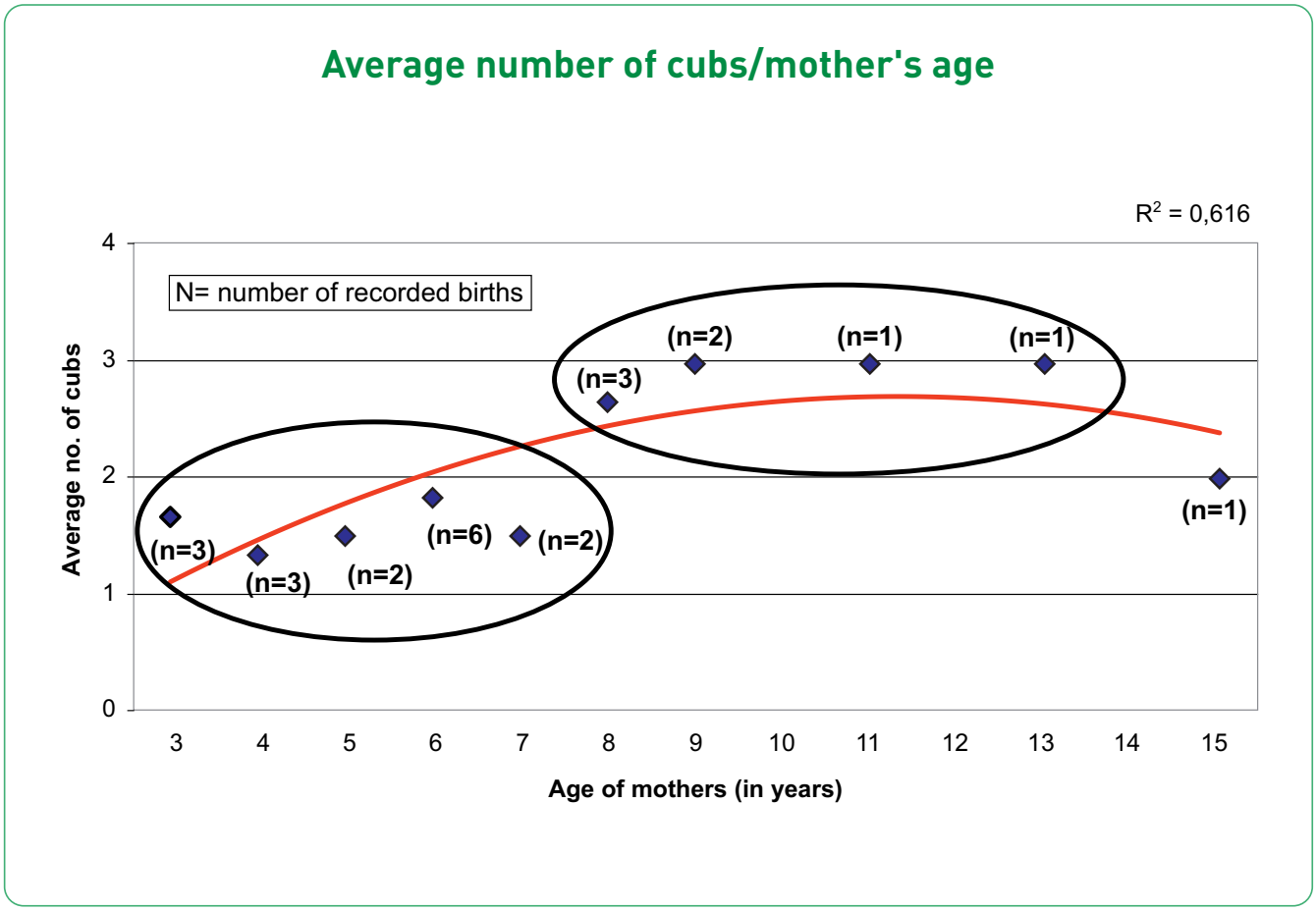
The **average age of primiparous females** in the period 2006-2011 (n=6) has to date been **3.67**.

The **average space between consecutive**

litters for the same female, recorded in the period 2002-2011 (n=12 spaces, referring to 7 females), is **2.08 years**.

The number of litters ascertained genetically (24) also makes it possible to highlight how on average the **number of cubs per litter** to date has essentially been related to the age of the mother, with 2 or less cubs for females aged 3-7 and 3 for females aged 8 or over (see Graph 6). The link between the average number of cubs per litter and the age of the mother is represented with a certain degree of approximation by the red polynomial regression line in the graph, with a coefficient of determination of 0.616.

Graph 6



" Missing" bears detected again in 2011

During 2011 **one bear**, the female F4 who had been missing in the two previous years (2009 and 2010) was " rediscovered" genetically. This is the first time that a bear missing for two successive years has been detected once again.

Bears undetected in 2011

Three bears present in 2010 **were undetected for the first year** in 2011 (F9, M10 and BJ1). They have not yet been classified as " missing" bears (see definitions on page 11), as there is a concrete possibility that they are still present.

Missing bears

As mentioned above, in 2011 it was possible to ascertain one case of " **emigration**" (see Box 4), involving the male bear **KJ2G2**.

BOX 4 - For the first time a bear born in Trentino reached the Dinaric-Balkan bear population

*During the year, the 6-year-old bear **KJ2G2** was detected genetically in the **eastern part of Friuli Venezia Giulia** (Fig. A), namely in an area which has seen the stable presence of the most north-westerly group of bears belonging to the extensive Dinaric-Balkan population. This is made up of around 3,000 animals in a territory stretching from Greece to Friuli V. G. and Carinthia (A).*

*KJ2G2 was in fact already present in Friuli V. G. in September 2009 and Spring 2010, but this was only ascertained by genetic tests carried out by the F.V.G. Region and ISPRA in 2011. His movements have already been recounted in the **2009 Bear Report (page 20)**, which details his journey from Monte Baldo (VR) to the Asiago tableland (VI), the Belluno area and up to eastern Tyrol. In September of the same year (2009) he was then detected in Carnia (Friuli V. G.), where he was also present the following spring (2010); last Autumn he was also detected in the Tarvisio area, close to the frontier with Austria (where he was detected genetically in 2011) and Slovenia.*

***Two further bears** reached Friuli V. G. during 2011, apparently without making contact with the Dinaric-Balkan population and continuing to gravitate around the Trentino population. One of these was **DG2** (another 6-year-old male), the last certain data regarding him dating back to 2009 in the province of Bolzano. In April 2011 the bear was detected in Carnia (Friuli V. G.), while in June he was detected further east, in the municipality of Trasaghis, to then return to the Belluno area where he was once again detected in September (in the municipality of Ospitale) and in December (in the municipality of Castellavazzo). The second bear was **MJ4** (a 7-year-old male), who made his way a few kilometres over the Friuli border in 2011, but continued to move mostly around the Belluno area (most recently, In November, in the Municipality of Ospitale). Both bears are thus still considered to be " satellites" of the Trentino population.*

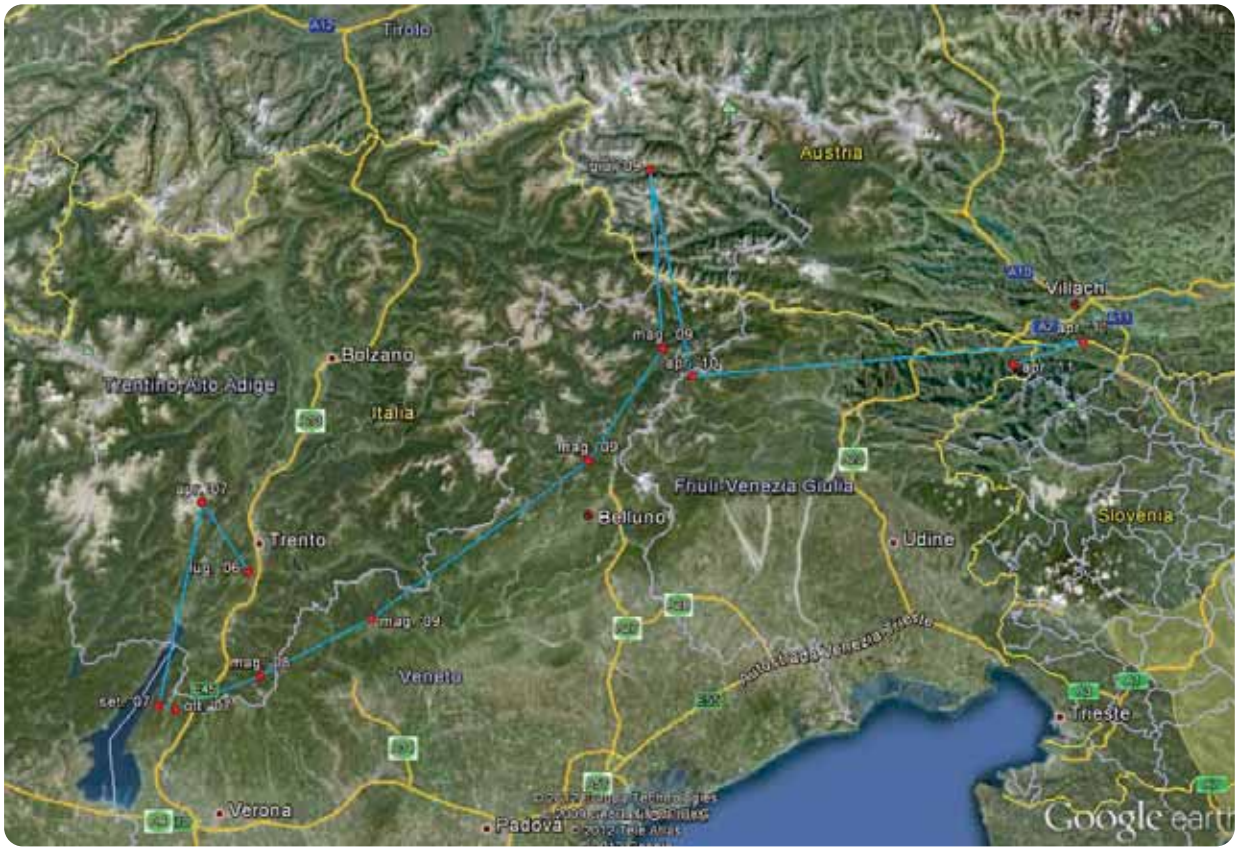
The fact that bears born in the central Alps have reached the Dinaric-Balkan population, although it is not known whether this migration is definitive or only temporary, means that they are no more considered to be present, at least in 2011, within the population of " Trentino" or more accurately of the " central Alps" .

*However, what is most interesting is that the migration of these animals has demonstrated the **possibility**, already clear today, **of a link** between the small population in the central Alps and the Dinaric-Balkan population and this undoubtedly represents an **important and positive sign** for the future of the bear in the Alps.*

On the other hand it should be recalled that the migration hoped for would involve movement in the opposite direction to that recorded in 2011, namely from East to West, from the large population to the small isolated population. At all events, to date such migration has only regarded male bears, while the central territories of the females in the two populations remain relatively distant from one another.

*Furthermore, it should be noted that the two migrations from East to West ascertained to date (" **Friz**" in 1999-2001 and " **M5**" in 2009-2010) came to a halt when the bears were faced with the major barrier represented by the Adige valley, before they were able to reach the females in the Trentino population. What is more, in both cases it was possible to document the return to Slovenia of the two bears going on the long journey.*

Figure A
The journey of KJ2G2. Genetic traces are shown in red



Two new bears (the female **KJ1G1** and the male **M7**) are instead considered to be **missing**, as they have not been genetically detected in the last two years.

When calculating the number of " missing" bears in 2011 it is also necessary to consider the **death** of the **7-year-old** female **DJ1** (Photo 3). She was discovered by a warden of the Adamello Brenta Nature Park on 2 August 2011, at the bottom of an avalanche path in the lower Val Ambièz (southern Brenta area, municipality of S. Lorenzo in Banale). The site where the corpse was found and the condition of the carcass (several months old and with numerous fractures) suggest that the bear fell down the steep slopes, probably having been hit by an avalanche: however, the autopsy, carried out at the Istituto Zooprofilattico delle Tre Venezie in Trento, was not able to establish with cer-

Photo 3 - The carcass of the bear found dead on 2 August 2011 in the lower Val Ambièz (C. Groff, APT Forestry and Wildlife Dept. Archives)

tainty the cause of the fall and hence of death.

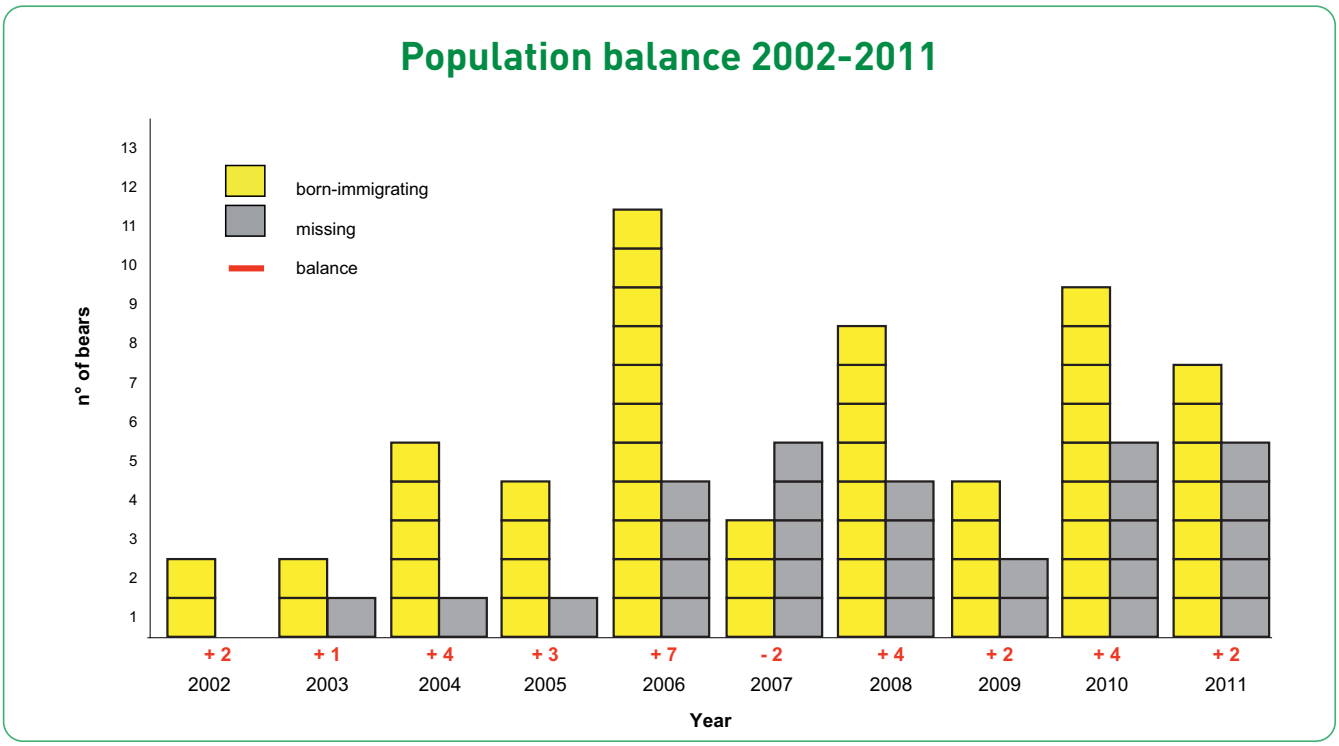
Despite the fact that two mature females were subtracted from the population during the year (in addition to DJ1 there was also the bear called **DJ3**, of the same age, **removed** in spring and taken into captivity, due to repeated forays into local villages), the growth rate of the bear population remained essentially unchanged in 2011, as can be seen below, and included at least 10 sexually mature females.

Thus at the end of 2011 there were **14 bears undetected genetically for at least the last two years, 9 dead bears** (7 corpses discovered and 2 killed deliberately), **2 taken into captivity** and **one emigrating bear**.

Thus there were a total of **26 missing bears** at the end of 2011. As regards this figure, see the considerations in the " survival rates" section on page 24.

Graph 7 shows the **balance between births-immigrating/missing** bears year by year. In **2011** there was **a positive balance** (+2). This was the result of six births, 1 " rediscovered" bear (i.e. missing in the previous two years but detected once again in 2011), 1 death, 1 bear removed, 1 emigrating bear and 2 new bears classified as miss-

Graph 7



ing. It should be noted that 4 out of the 5 new missing bears in 2011 were adults.

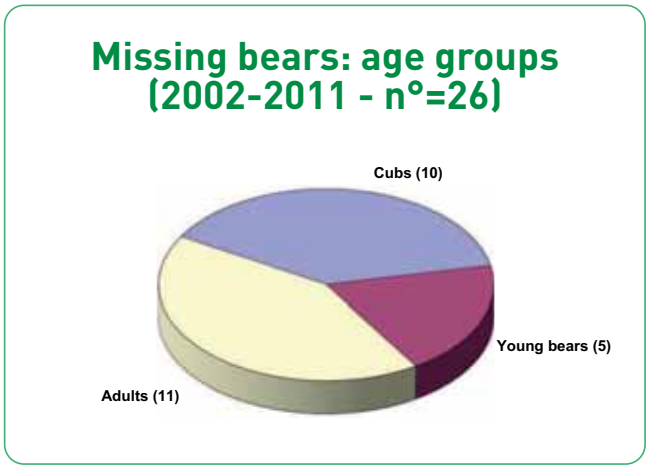
In the year of their disappearance the **missing bears** (n=26) included 11 adults, 5 young bears and 10 cubs (see Graph 8).

Of the **missing bears**, nine have died, two have been taken into captivity and fourteen have not been detected genetically in the last two years, (see Definitions on page 12), (Graph 9).

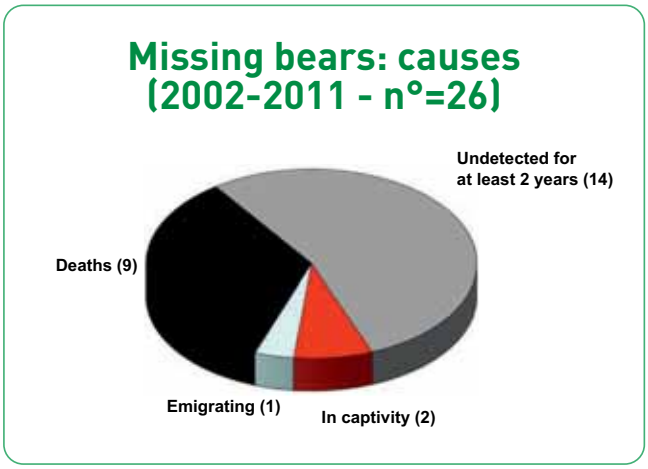
The **dead** bears (n=9) belonged to the following age groups: cubs (4), young bears (3) and adults (2), the shares being shown in Graph 10.

The **deaths** (Table 1) were the result of natural causes in three cases, unknown in two cases and as a result of action by man in the other four cases (Graph 11).

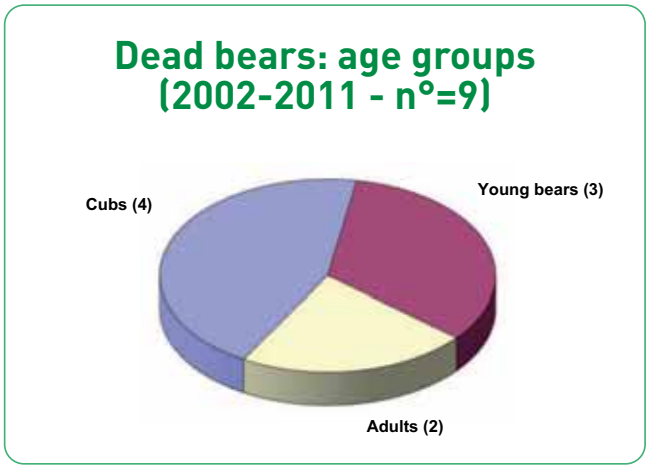
Graph 8



Graph 9



Graph 10



Graph 11

Table 1
Mortality-causes *in Germany **in Switzerland, ad=adult, juv=young bear, cub=cub

year	natural causes	road accident	shot down for management	management accident	unknown	total deaths
2002						0
2003	1 cub					1
2004						0
2005						0
2006	1 cub, 1 ad		1 yb*			3
2007						0
2008		1 cub	1 yb**	1 yb		3
2009						0
2010					1 cub	1
2011					1 ad	1
TOTAL	**3**	**1**	**2**	**1**	**2**	**9**

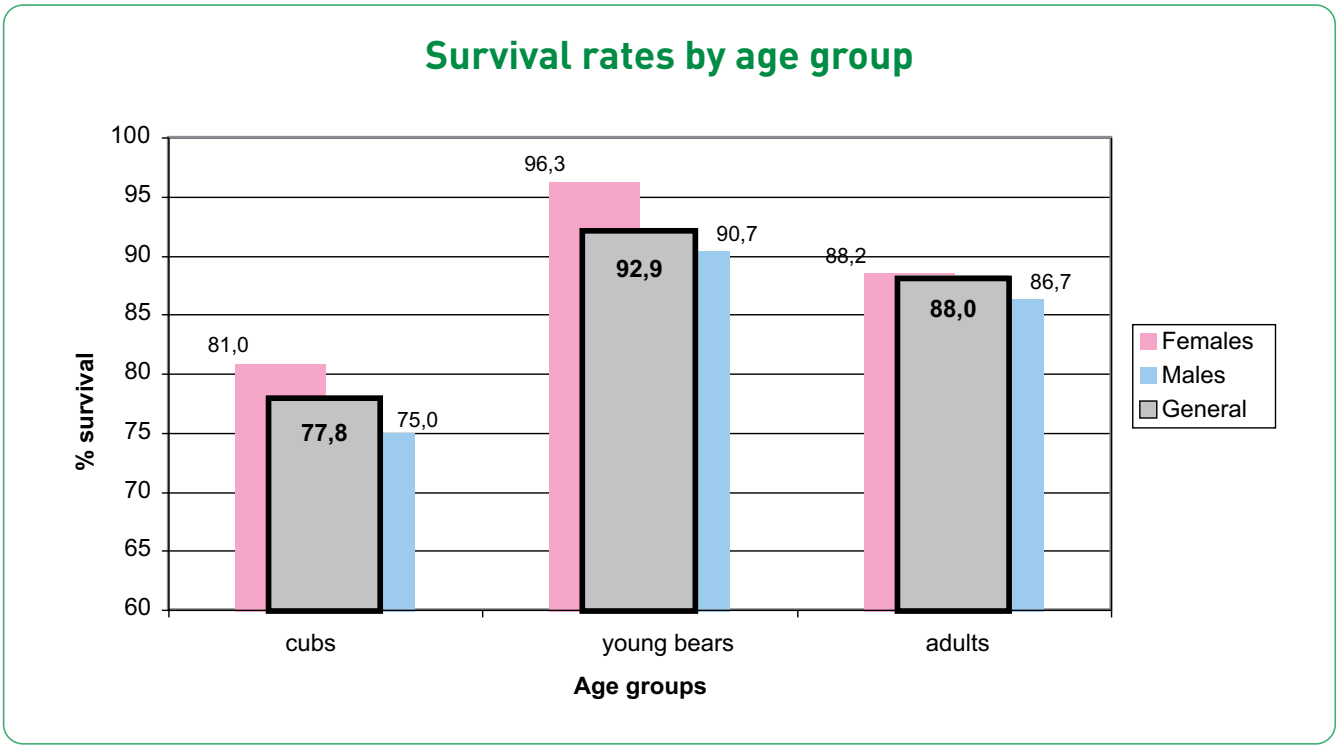
Survival rates

The new data available makes it possible to update the survival rates for the three different age groups (cubs, young bears and adults, according to the definitions on page 12) as compared to 2010, differentiated for the two sexes (Graph 12).

The data refers to a period of **10 years** (2002-2011), during which it was possible to record the survival or death of **55** different **bears**, with 197 passages from one year to another (**197 bear-years**). The " mortalities" category, considered in the broader sense, also includes bears undetected in the last two years or taken into captivity, confirming the criteria used for " missing" bears.

Excluding the four bears killed or removed following management decisions and referring

Graph 12



thus exclusively to **" natural" causes of death**, one can note an increase in the survival rate for young males (from 90.7% to 94.9%) and adult females (from 88.2% to 89.3%).

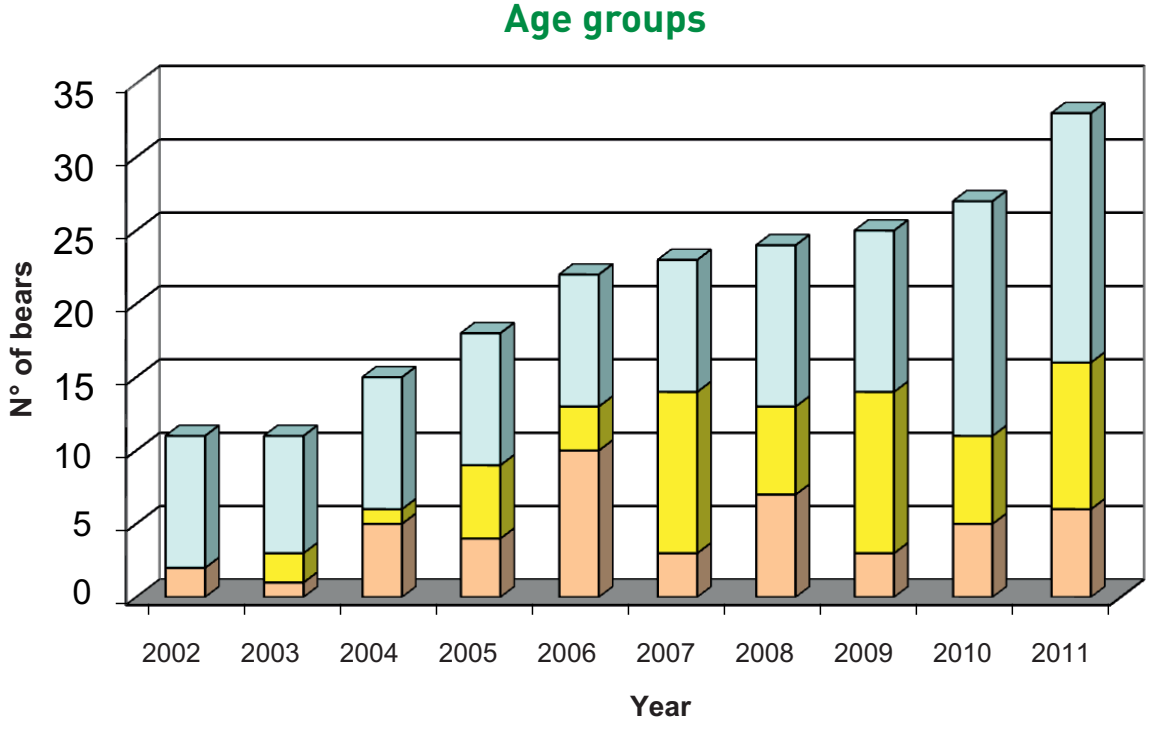
Cubs are therefore confirmed as the category with the lowest survival rate (fewer than 3 out of 4 cubs reach their first birthday). Furthermore, it should also be considered that it is very likely that the calculation excludes a number of cubs not arriving at their first birthday whose presence is not detected by genetic monitoring. The survival rate for young and adult bears (around 90%) instead shows that around one out of 10 individuals (young/ adult bears) disappears from the population each year.

Structure of the population

At the end of 2011 the population ascertained was made up of **17 adults** (10 females and 7 males), **10 young bears** (3 females and seven males) and 6 cubs (1 males and 5 undetermined). Graph 13 shows the trend for the 2002-2011 period. It should be noted that this shows only the data acquired each year thanks to monitoring during the same year; any bears only detected in subsequent years are considered exclusively from the year in which they are detected.

The **percentage of bears in the three age groups (adults, young bears and cubs)** in the period 2002-2011 is shown in Graph 14.

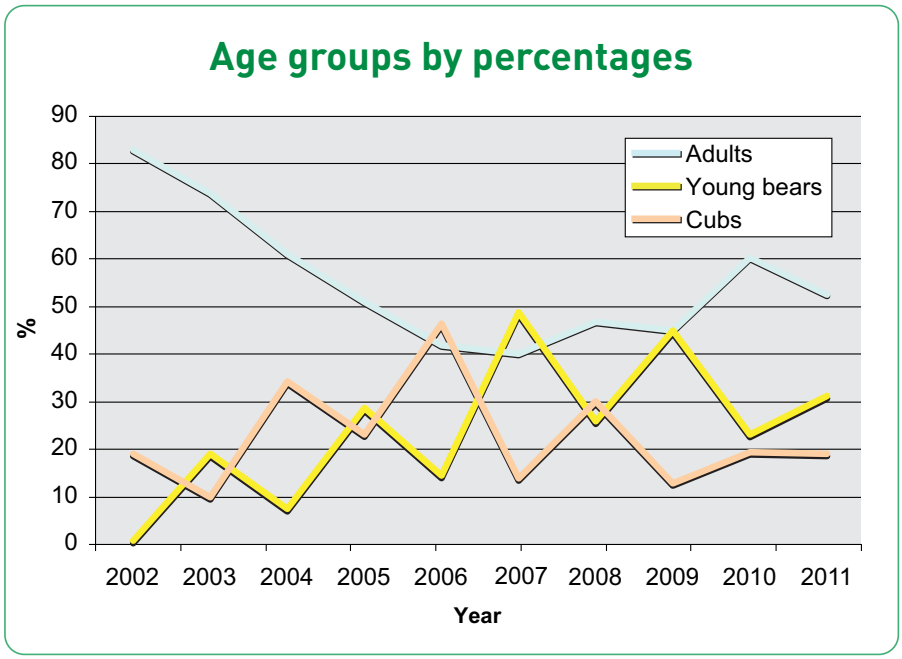
Graph 13



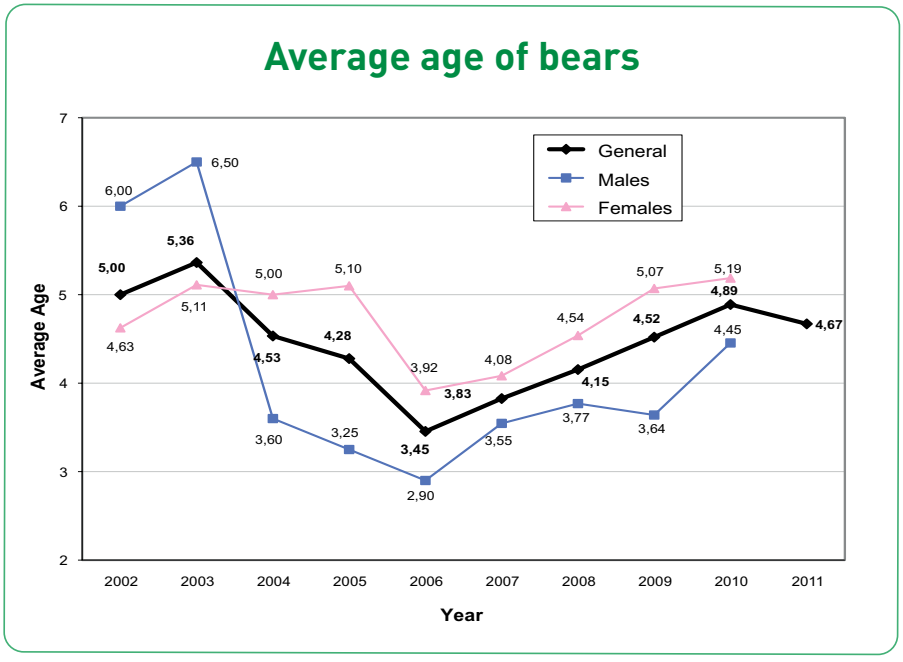
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Adults	9	8	9	9	9	9	11	11	16	17
Young bears	0	2	1	5	3	11	6	11	6	10
Cubs	2	1	5	4	10	3	7	3	5	6
Total	**11**	**11**	**15**	**18**	**22**	**23**	**24**	**25**	**27**	**33**

There was a slight fall in the percentage of adults in terms of the overall population, as their number did not increase between 2010 and 2011, although the overall population increased. Furthermore there seemed to be less fluctuation in terms of the number of cubs and young bears, although the latter continued to be closely linked to the former (and succeed-

Graph 14



Graph 15



ing them chronologically).

It is also interesting to note the **evolution in the average age of the bear population** over the ten year period examined (see Graph 15); in 2011 there was a slight fall in average age **(now 4.67)**, whereas the figures were not differentiated for males and females, given that we are not aware of the gender of 5 cubs born during the year, as noted previously.

Use of the territory

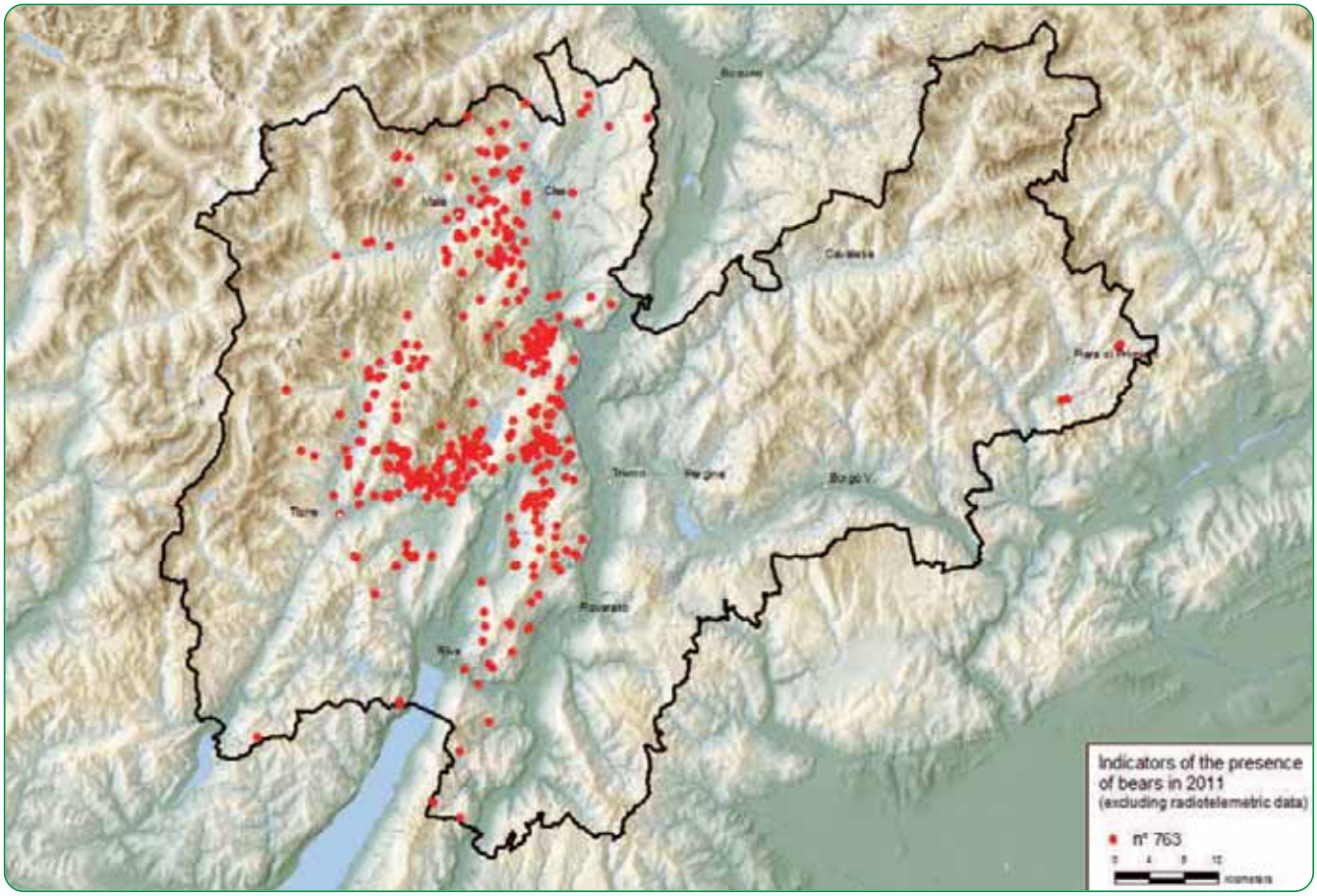
The **30** out of the 33 bears detected in 2011 were present exclusively (24) or also (6) within **Trentino**. The other 3 were only de-

tected in neighbouring regions: 1 in the **province of Bolzano** (M8), 2 in **Veneto and the western part of Friuli V. G.** (MJ4 and DG2). All 9 bears identified partly or completely outside the province in 2011 were males.

The **763 area localizations** related to the presence of bears collected within the province during 2011 (all recorded indicators of presence, with the exception of those coming from satellite monitoring of three bears) are shown in Figure 1.

The Brenta and neighbouring Paganella-Gazza mountains still represent the core area for the small population, along with the outer Giudicarie mountains. 2011 also saw the increasing presence of bears in the area on the left hand side of the River Noce, between the

Figure 1
Reports of bears in the province of Trento in 2011



Val di Sole and the Val di Non (Maddalene mountains) and on the Bondone-Stivo mountains. The upper Val di Sole, Presanella, Ledro Alps and the rest of western Trentino still saw relatively sporadic frequentation.

There were very few reports of bears in eastern Trentino and these few probably concerned only the male bear MJ4, also identified genetically and reported in the province of Belluno and in Friuli Venezia Giulia during the year.

Area occupied by the population

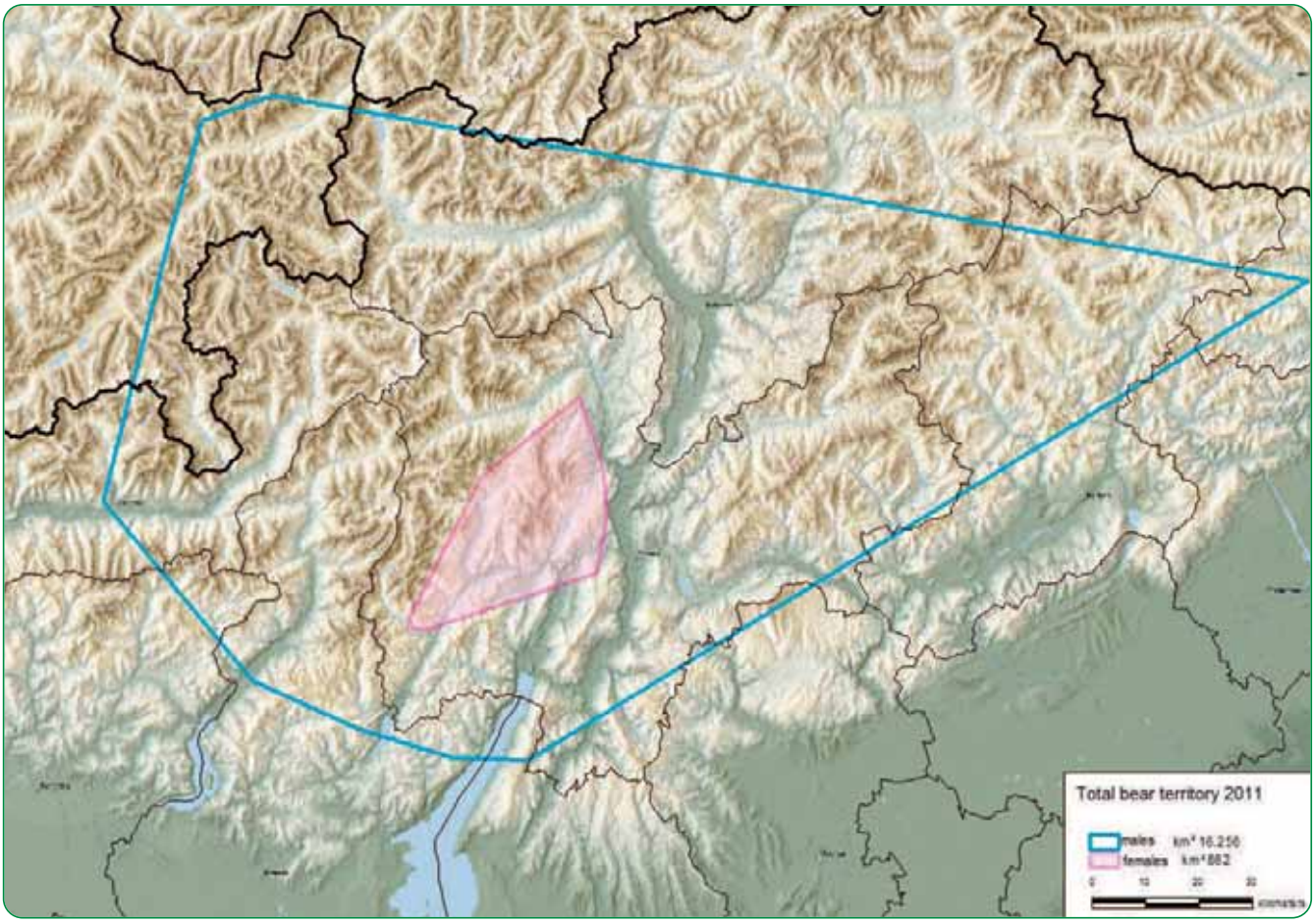
Considering also the longest journeys made by young males during 2011, the **population** of brown bears present in the central Alps, which is mainly centred around western Trentino, **in 2011 was distributed over a theoretical area stretching out over 16,256 km²**. The area **occupied by the females in a stable manner** (Figure 2) is decidedly smaller **(862 km²)**, still entirely situated within the

province. The areas occupied were estimated using the minimum convex polygon method (MCP), applied to 100% of the fixes available. This also leads to the inclusion of vast areas which are not suitable and/or not actually used, especially within the macro-area including the movements of young males. The **area occupied by the females** was significantly smaller than in the previous year, but it is believed that this is still influenced annually by factors linked to the movements of individual animals rather than by other factors linked to population dynamics.

Population density

The population **density** in the area frequented by the bears in a more stable manner in 2011 was **3 bears/100 km²** 26 bears identified genetically within the area occupied by the females in a stable manner in 2011, i.e. 862 km²). It should be considered that this figure is to some extent underestimated, given that the territory also includes areas which are unsuitable and indeed not used (e.g. valley floor with urban development, rocky peaks). At all events, it is in line with the data presented in the bibliography in relation to the alpine environment and the forecasts of the feasibility study preceding the *Life Ursus* project.

Figure 2
Area occupied by the bears in the central Alps in 2011 (in blue), highlighting the area within this occupied by females in a stable manner (in pink)



Dispersion

In the period 2005-2011 it was possible to document the **dispersion** (understood as movement outside western Trentino - Photo 4) involving **16 bears** (all young males). **2** of these were killed following management de-

cisions in foreign countries, **1 disappeared** in 2005 in the frontier area between Engadina (CH) and the province of Bolzano and 1 was **undetected** in the last year. The **other 12** were still **present** in 2011: most of them **(8)** have returned (although it is not possible to say whether definitively or not) or have remained in areas straddling the province of Trento, **3** have remained outside the province to date and **1** has been considered to have emigrated to the Dinaric-Balkan population.

It should be underlined that the fate of a further **6 males disappearing** between the ages of one and three is not known. They may have roamed into other areas.

To date no **dispersion of females** born in Trentino has been documented.

Other monitoring activities in 2011

On 16 May 2011 the female bear **Daniza** was captured in Val Algone and fitted with a

Photo 4 - Bear tracks along a ridge between the Val di Non and the Val d'Ultimo (BZ), in the background (C. Groff, APT Forestry and Wildlife Dept. Archives)

radio collar, during attempts to capture the problem bear DJ3. The bear was tracked using satellite telemetry throughout the year.

Furthermore, the male **M13** was monitored using **radiotelemetry** in the period 17 October-31 December 2011. As explained in the chapter regarding the management of emergencies, the bear was captured in the Val d'Ultimo (BZ) by the staff of the Hunting and Fishing Office of the Autonomous Province of Bolzano, in collaboration with the Autonomous Province of Trento. This bear was repeatedly sighted in November and December, both in the province of Trento and in the

province of Bolzano, accompanied by another slightly smaller bear, probably another young bear (Photo 5).

Finally the female bear **DJ3** was monitored using radiotelemetry from 1 January to 17 May 2011.

The **2011 home-ranges** of Daniza, DJ3 and M13, calculated using the minimum convex polygon method (MCP), stretched respectively over 153 km², 165 km² and 247 km² (re-

Photo 5 - The male M13 fitted with a radio collar, below, in the company of another bear (I. Albertini, APT Forestry and Wildlife Dept.)

Figure 3
Home-range of Daniza in 2011 (MCP)

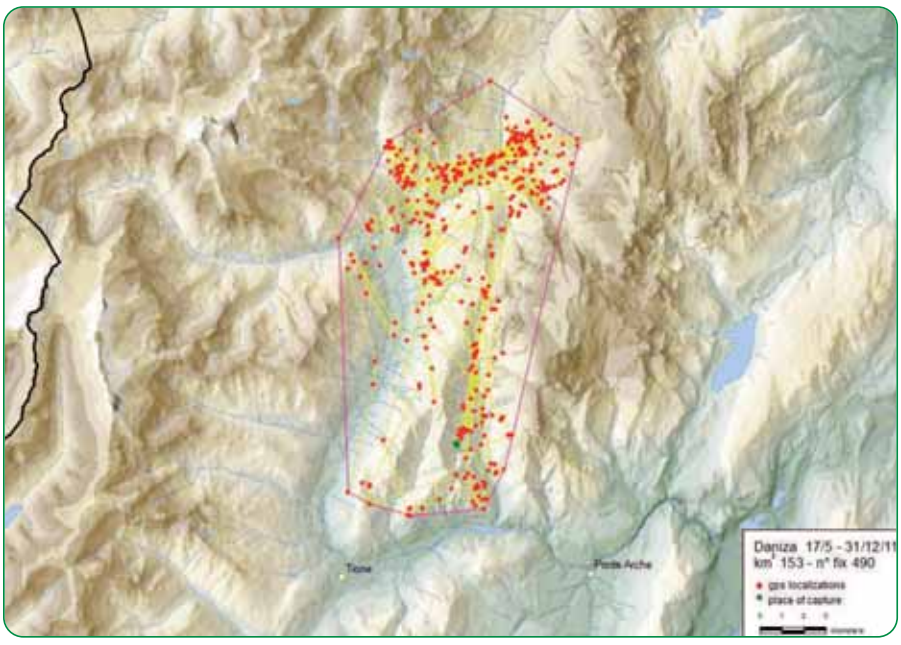


Figure 4
Home-range of DJ3 in 2011 (MCP)

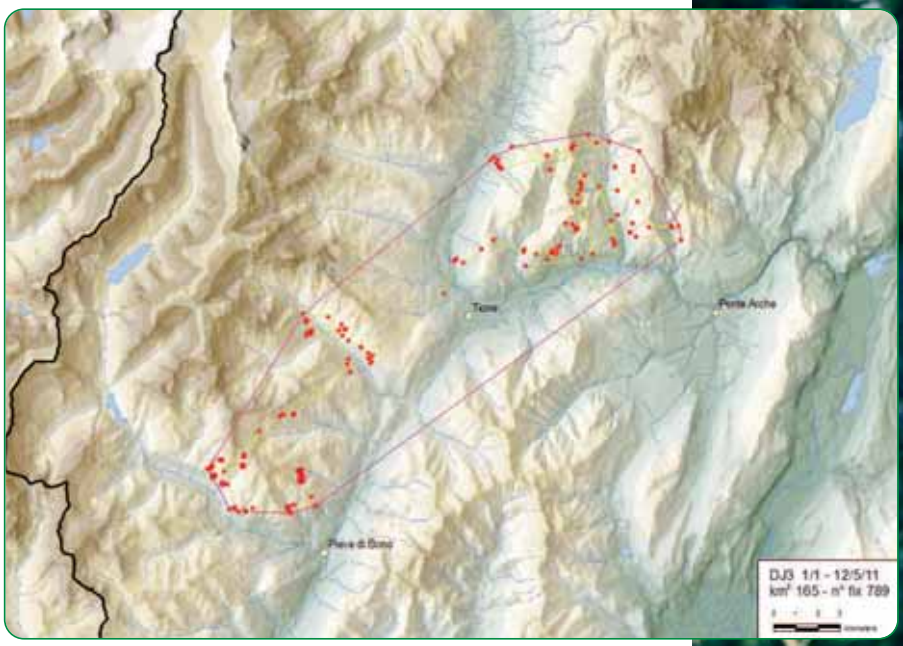
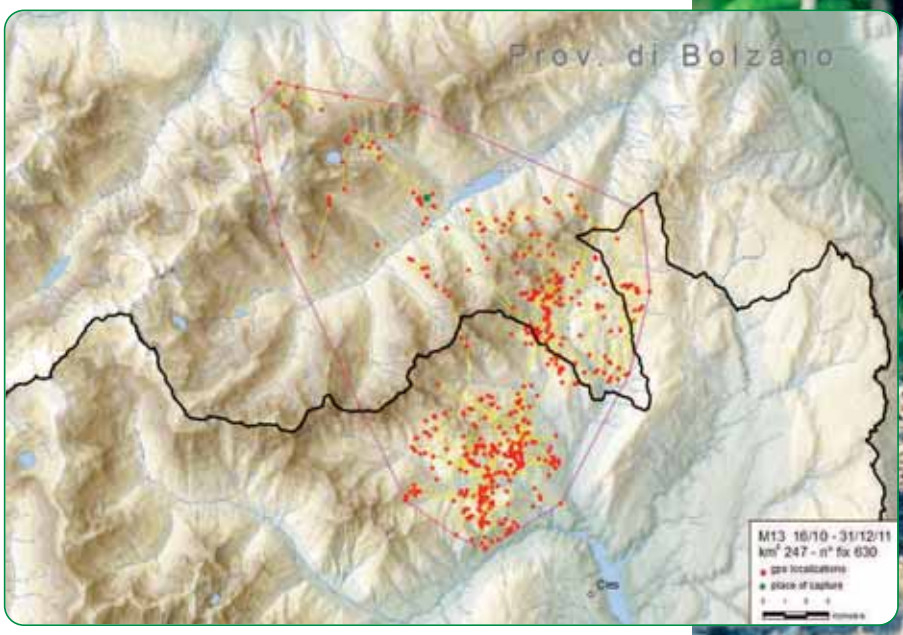


Figure 5
Home-range of M13 in 2011 (MCP)



spectively 490, 789 and 630 GPS fixes in the periods 1 January - 12 May 2011, 17 May-31 December 2011 and 16 October-31 December 2011) and are shown in Figures 3, 4 and 5.

The genetic monitoring conducted without interruption since 2002 has made it possible to follow most of the bears in a continuing manner, confirming their presence over

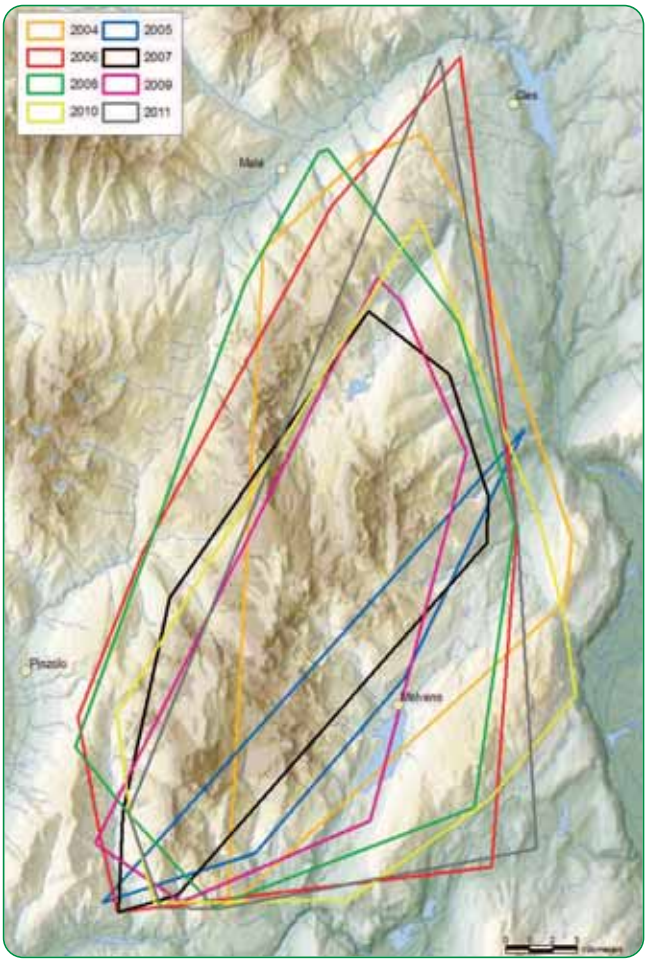


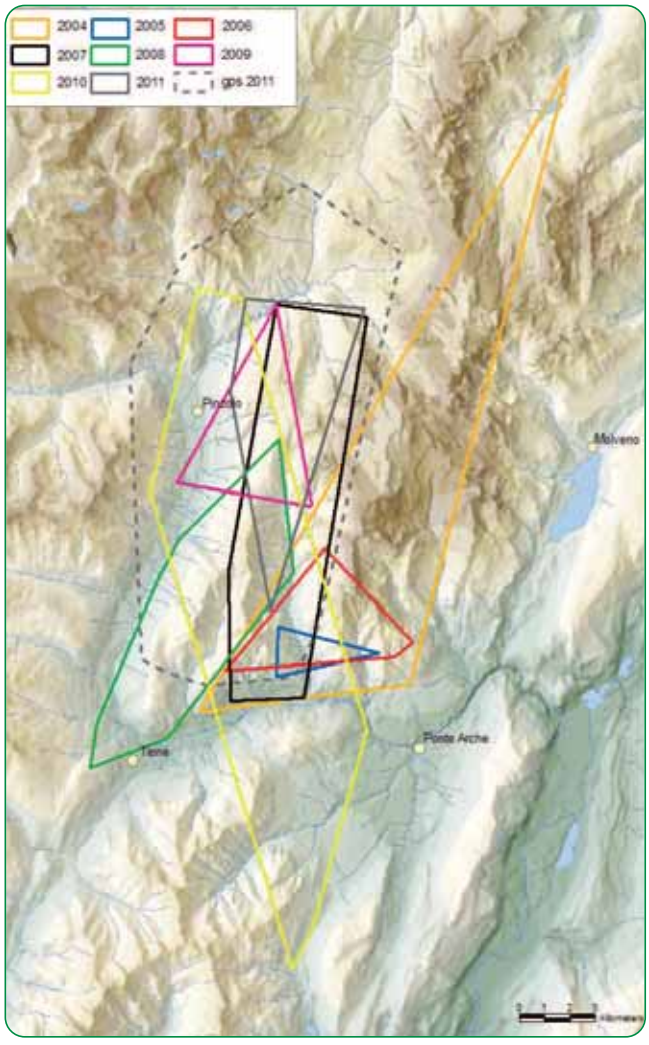
Figure 7
Home-range of Gasper in the 2004-2011 period

ing of animals, as compared to which they are likely to be significantly underestimated.

time and their **home-ranges**, at least partially. These are recorded year by year for each individual animal. As an example, below we give the home-ranges (MCP) of the male Gasper and the female Daniza from 2004 to 2011 (Figures 6 and 7).

Furthermore the **average home-range of males** monitored genetically in Trentino and neighbouring provinces in 2011 (bears for which at least 6 different genetic localizations are available over the year) is **390 km²** (n=8), with a significant difference between the average HR of **adults** (n=4), which is **287 km²** and the HR of **young bears** (n=4), which is **494 km²**. Naturally these figures are indicative and not in any way comparable with those obtained from radiotelemetric monitor-

Figure 7
Home-range of Daniza in the 2004-2011 period. The dotted line shows the 2011 home-range resulting from satellite localizations



2. Damages compensation and prevention

By now APT has gained more than thirty years' experience as regards compensation and prevention of damage caused by brown bears. Indeed, since 1976 100% of the material value of assets damaged has been reimbursed and it is possible to acquire prevention works (mostly consisting of electric fences). The relative regulations, dealt with in article 33 of provincial law no.24/91, have been revised and updated several times over the years, most recently with Provincial Government resolution no. 2296 of 3 November 2006, also on the basis of directives imposed by the Provincial Government with the previously mentioned resolution no. 1988 of 9 August 2002. In this context, it should be recalled that with **Resolution no. 697 of 8 April 2011** the provincial government further reviewed the regulation of **damage compensation**, also providing for compensation of **additional expenses** and extending **100% compensation to damage caused by lynxes and wolves**.

Photo 6 - Damage to a beehive

Bearing in mind the provisions of existing regulations, the Forestry and Wildlife Department promotes the **prevention of damage** to beekeeping and livestock through the adoption of electric fencing or other protective measures considered suitable, with the scope of reducing the damage caused by brown bears to a minimum. This is promoted in two main ways: **funding** covering up to 90% of the cost of works and/or **gratuitous loans** of prevention works for livestock or beehives, along with support and consultancy provided to farmers by technical experts, such as the **livestock liaison officers**. 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 2011, 134 notifications of damage caused by wild predators were forwarded to the Forestry and Wildlife Department. **123** cases of damage were attributed to **brown bears** (122 in western Trentino and 1 in eastern Trentino), with a decrease of 51% as compared to 2010. In **2** cases the predator was identified as a **wolf**, in one case the damage was attributed to dogs, whereas in 8 cases any responsibility of predators was excluded.

117 claims for compensation were received by the Department, which have all been processed (113 accepted, 3 rejected and 1 withdrawn), whereas 17 notifications were not followed up by the claimant.

In 86% of cases of damage, **inspections** were carried out by forestry staff, who were responsible for drawing up a report.

Overall, **43,230.75 euro** compensation for damage caused by **brown bears** and **1,604.17 euro** compensation for damage caused by **wolves** was paid out.

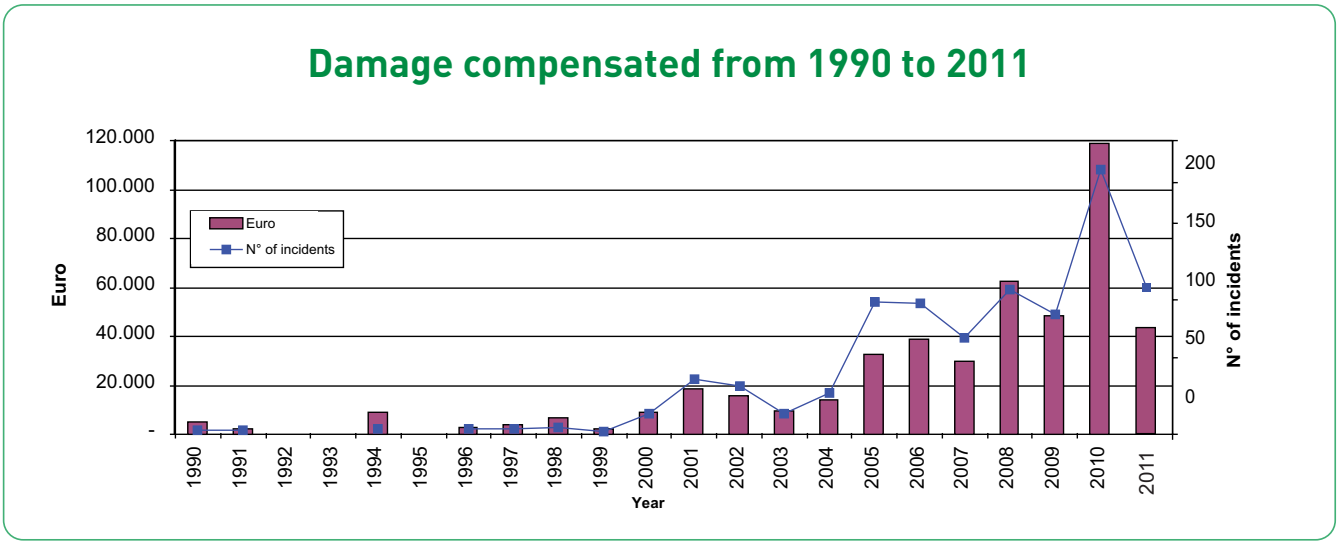
Considering that the bear population did not diminish, indeed there was a further increase, the considerable **reduction** in the

number of incidents as compared to the previous year would appear to be explained by the widespread availability of wild fruit and nuts, both in spring and in summer/autumn (beechnuts). Beechnuts in particular would appear to have an important role in the diet of bears. The importance of sources of natural foodstuffs would seem to be even clearer if it is considered that the most " damaging" bears recorded in 2010 (M6, JJ5, M2 and Daniza) were also present in 2011 (the only exception being DJ3, who was removed in spring).

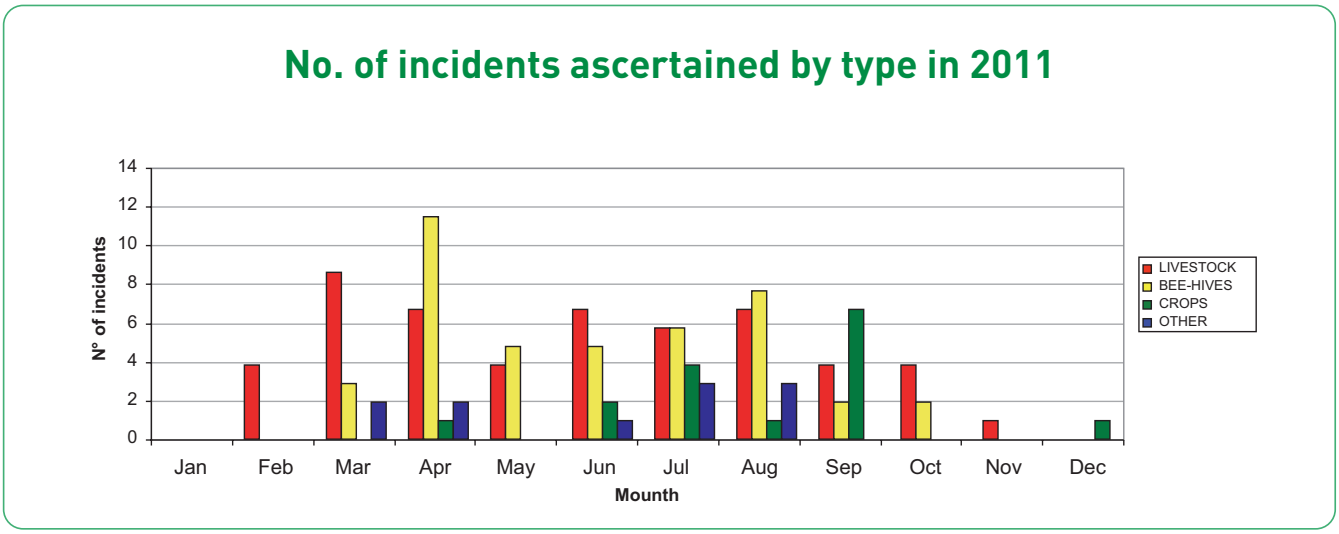
In **42 cases**, namely around 34% of all incidents recorded, genetic monitoring made it possible to determine the **identity of the bears involved** with certainty. The animals causing most damage were, as in 2010, M6 (in 18 cases - 41% of damage in which the bear responsible was identified), JJ5 (10 cases of damage - 23%) and M2 (4 cases of damage - 9%). These bears caused damage in particular to livestock, poultry and rabbits, creating some moments of tension in the Monte Terlago area.

Graph 16 shows the trend for damage caused by brown bears and for which compensation has been paid over several years, whereas graphs 17 and 18 show the chronological distribution of this damage in 2011 and in the period 2002-2011.

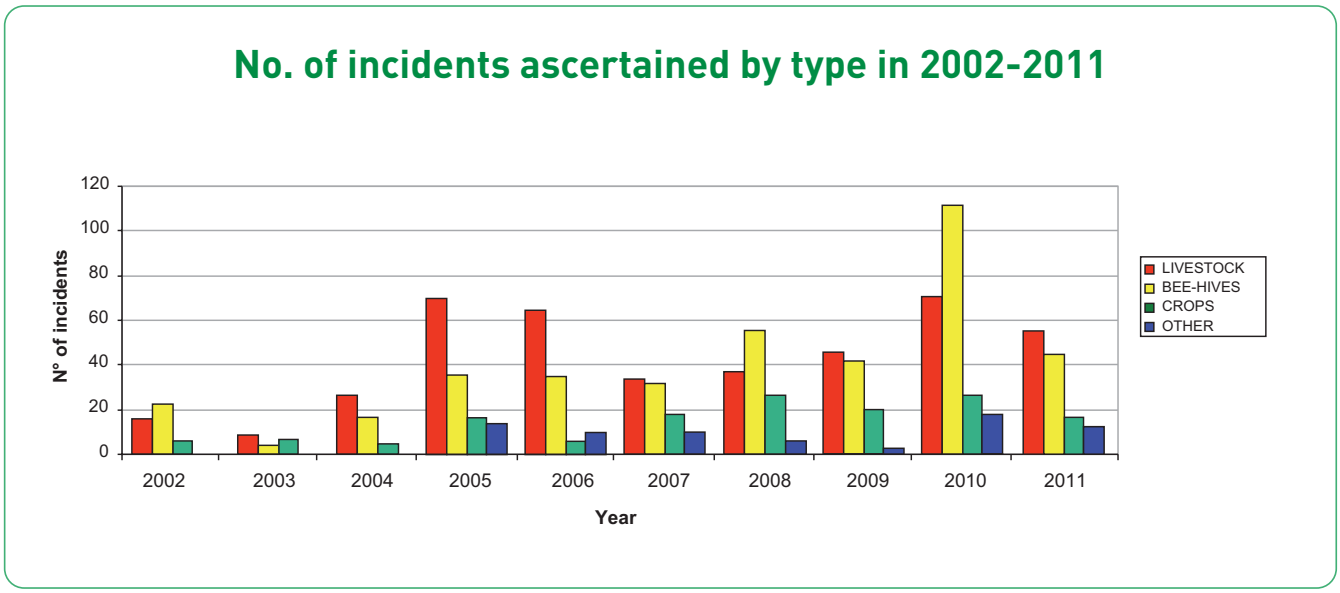
Graph 16



Graph 17

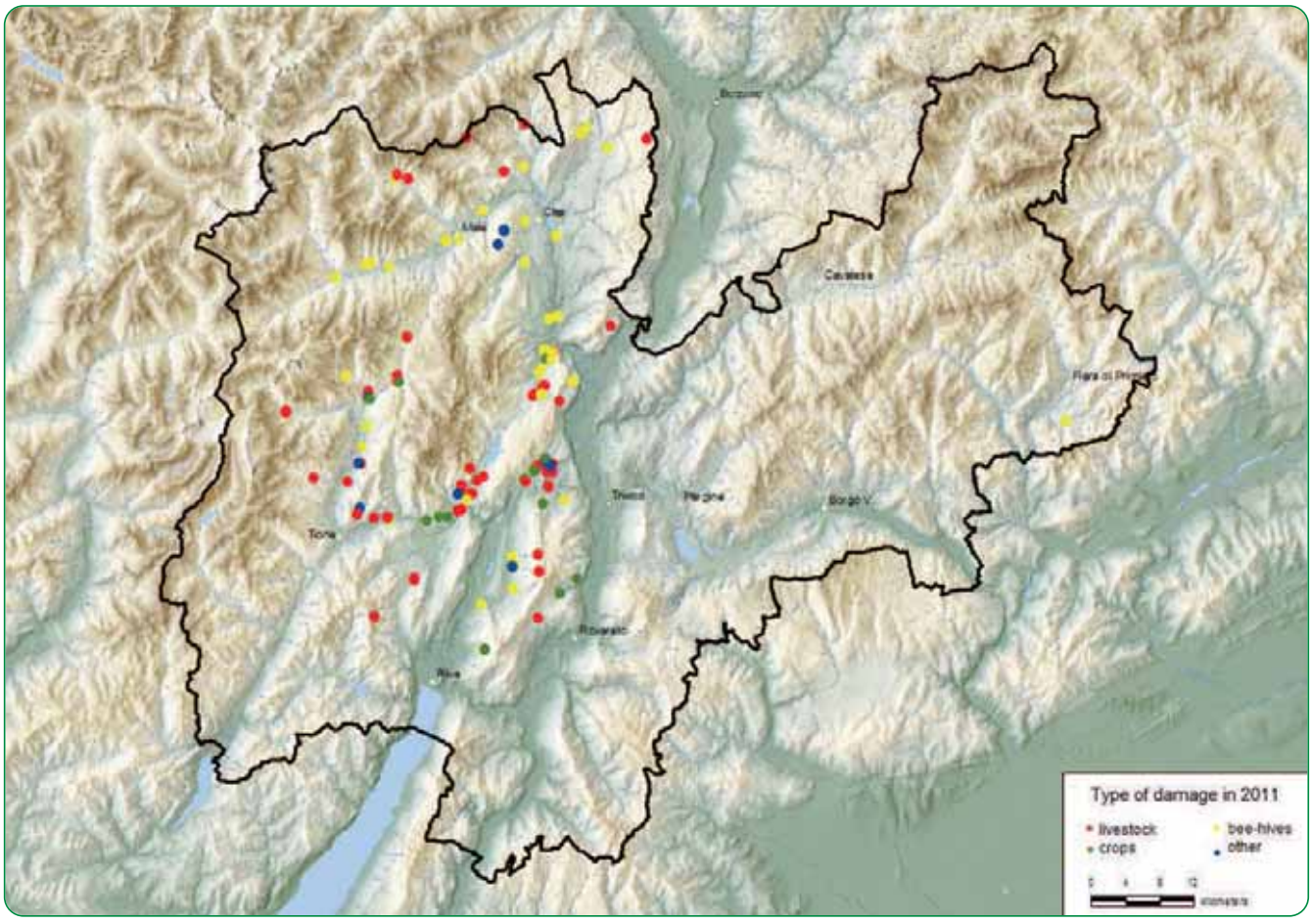


Graph 18



The geographical distribution of the damage recorded can be seen in Figure 8.

Figure 8
Geographical distribution of damage caused by bears recorded in 2011



Prevention of damage by bears

Following internal reorganisation of the Forestry and Wildlife Department, since 2011 the **District Forestry Offices** manage the distribution of prevention works in the form of gratuitous loans, while the Wildlife Office deals with applications for the funding of prevention works.

Overall, the new system has made it possible to improve the service and in particular to improve contact between users and the staff responsible for the distribution of materials. Indeed in many cases it is forestry service staff who suggest that applicants request prevention works or that they ask for consultancy or an inspection before deciding whether to present an application.

A preliminary inspection also makes it possible to suggest the type of protection most suitable for the user's needs, to recommend specific measures making it possible to improve the efficacy of works and to raise awareness of the various problems linked to the care and maintenance of the works among users. Close contact with users also makes it possible to assess the validity of the materials supplied over time and evaluate whether they respond to the operational needs of users. Last but not least, knowledge of the site of prevention works by forestry staff in the area allows **more effective control** of their use.

During the year, a total of **123 applications** were presented for prevention works protecting assets from damage by brown bears. Through the system of **gratuitous loans, 112 prevention works** were distributed (Forestry District of Malé: 28, Tione: 28, Trento: 17, Cles: 39), 75 of which designed to protect beehives and 37 livestock.

A further **11 prevention works** to protect horses and cattle were **funded** by the Wildlife Office, covering 60% of costs admissible for funding; 3 of these applications were subsequently withdrawn by users while 2 are currently being processed.

The **overall expenditure** borne by the

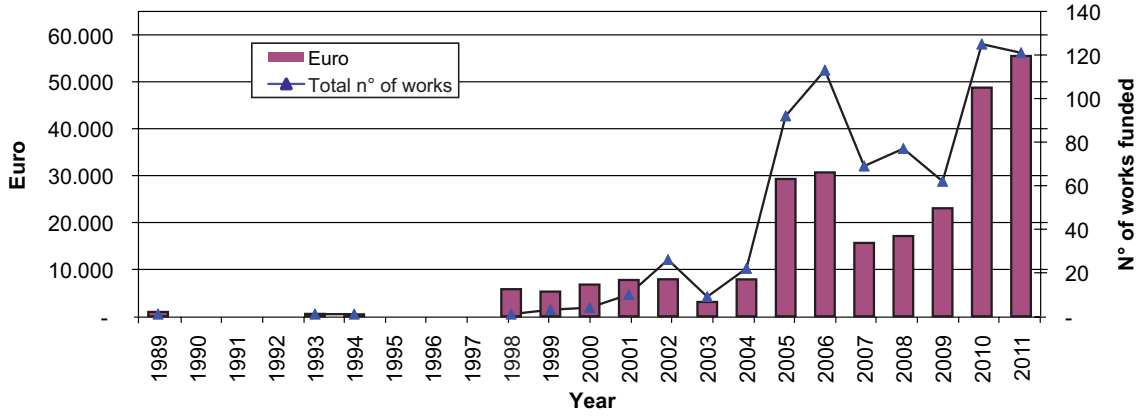
Photo 7 - Prevention work: an electric fence

Department, covered mainly thanks to funds from the **" Life Arctos" project** - Photo 8 (see update in chapter regarding national and international links), amounted to **55,545.00 euro**.

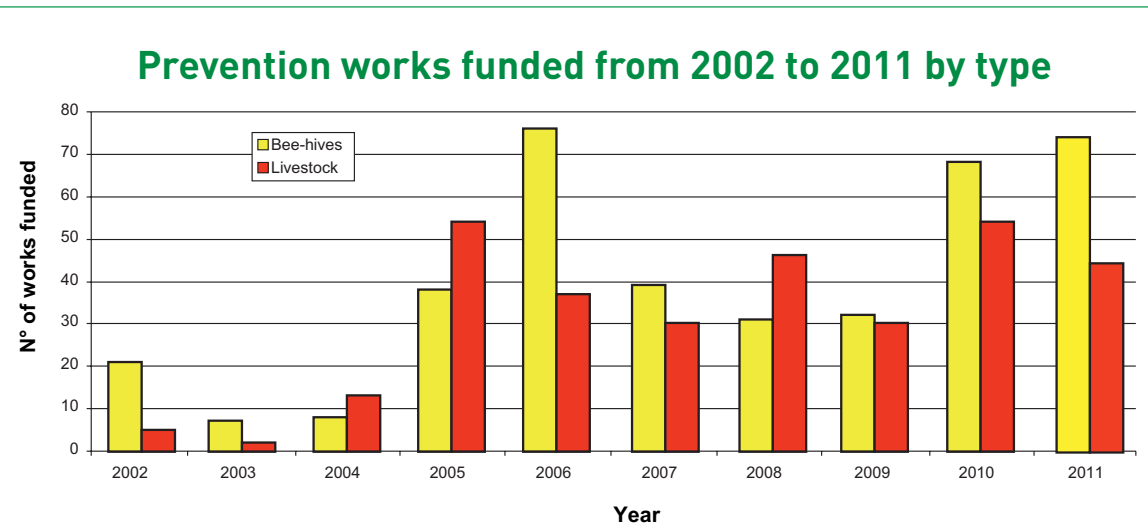
Below it is possible to see the trend in the distribution of prevention works over a number of years (Graph 19) and the different types of works in the period 2002-2011 (Graph 20), with reference to livestock and beekeeping.

Photo 8 - Battery for electric fence funded by the "Life Arctos" project

Graph 19



Graph 20

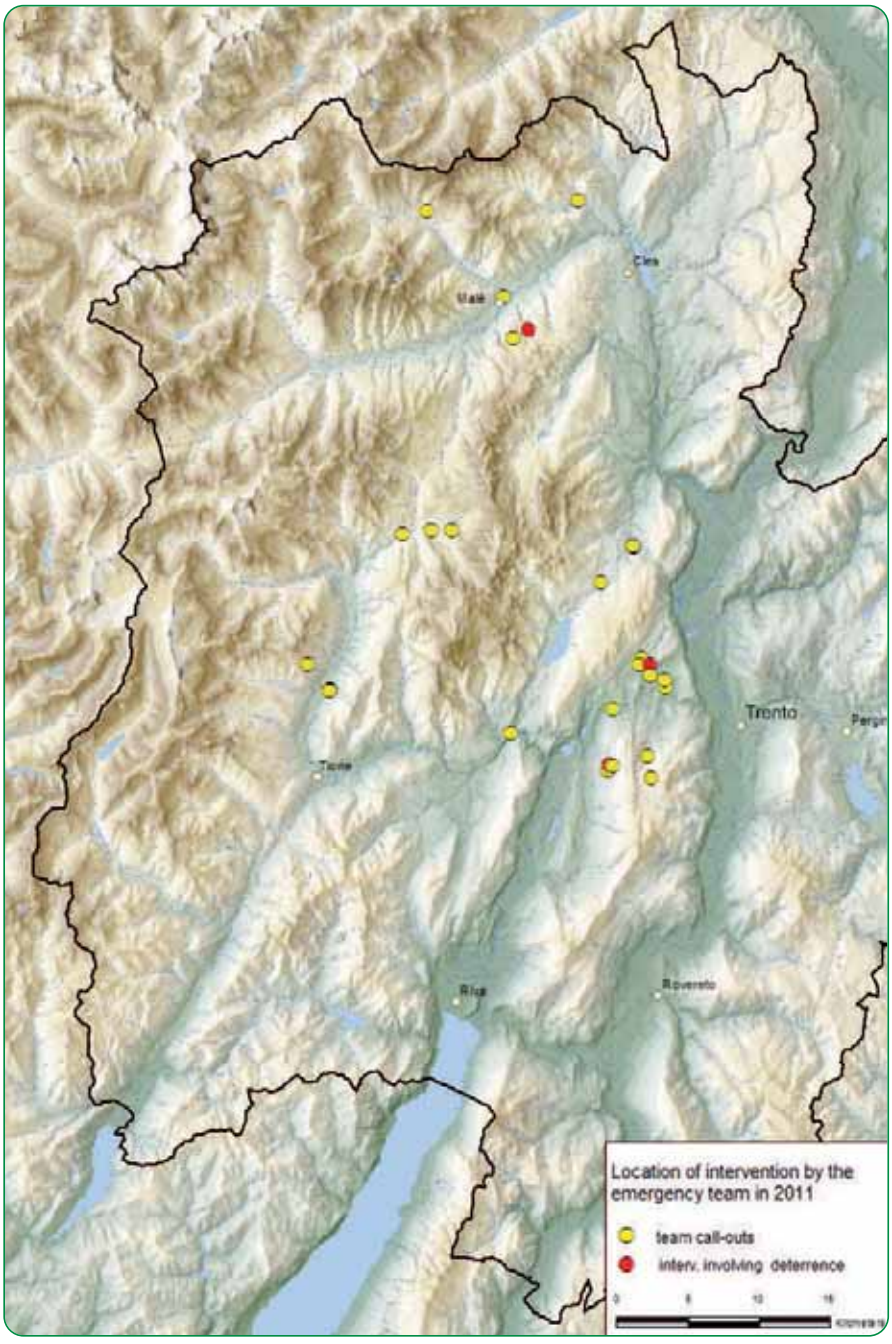


Meetings with farmers and businesses

In 2011 the contact already started up for some time with the business categories and farmers most affected by the presence of bears and other large carnivores was promoted on a stable basis. In particular, a **Round Table** was started up with representatives of breeders, farmers and bee-keepers, with meetings held around every six months (the two meetings in 2011 were held on **15 February** and **18 November**).

The provincial administration underlined on the one hand its desire to constantly inform and update businesses and farmers about the system for compensation and prevention of damage currently adopted and to evaluate the experience of previous years, and on the other to listen to the needs and proposals of those involved and to gather any possible comments and suggestions that may emerge during consultation.

Figure 9
Location of prevention works in 2011



Support for animal husbandry

The constant presence of the shepherd and the adoption of more appropriate systems for preventing damage, in addition to fair compensation, are fundamental in guaranteeing coexistence between large carnivores and livestock reared in the mountains. Bearing this in mind, one of the objectives of the provincial administration is to encourage shepherds to stay at high altitude with their flocks, also by providing temporary shelters, and to encourage shepherds to adopt prevention works. These objectives are also pursued through the activities carried out by the **livestock liaison officers**, which take the form of support and consultancy, mainly during the period of alpine pasture.

The main objective of the livestock liaison officer is thus to establish collaborative relations with shepherds and to provide training and information.

The organisation of the

department currently provides for subdivision of the provincial territory within which brown bears are present in a stable manner into **6 homogeneous areas**, with one person taking responsibility for each area. In **2011** a total of **18 flocks** with almost **11,000 sheep** and **300 goats** overall were assisted, while a further three shepherds (2,000 sheep and 40 goats in total), refused any assistance or prevention works as they have not yet experienced any damage.

In 2011 the shepherds involved were supplied with a total of **58 fences (lended)** and **18 fence electrifiers** of adequate power (2.6 joules) with rechargeable batteries fuelled by solar panels (Photo 9).

Furthermore **three shelters** (accommodation units) were transported to the mountains to allow shepherds to remain close to their flocks during the night. In areas not reachable by other means, the material necessary for mountain pasture activities, the prevention works and the accommodation units were transported to the mountains by the helicopter unit of the Fire and Civil Defence Service.

On at least **19** occasions the livestock liaison officers carried out **visits** to support and control mountain pasture activities.

In **2011** there were **only 6 incidents involving damage** by brown bears to the **18 flocks** mentioned. Overall, the deaths of 23 sheep (just **0.2% of the livestock protected**) can be attributed to brown bears, 18 of the sheep being killed in just two attacks on the same flock.

In this context, it is worth mentioning the excellent results obtained by the livestock liaison officers in the southern Brenta area, where three large flocks grazed at mountain pasture in the summer (more than 3,300 animals overall) along with a small permanent flock (around 30 animals). Despite the presence of a stable number of brown bears, only two sheep were lost and one donkey injured in 2011, (data in line with the figures for 2010, see relevant Bear Report on page 32).

It should also be underlined that in 2011 the Forestry and Wildlife Department completed work to renovate **Malga Valandro** (Photo 10), with the scope of allowing shepherds to stay at high altitude and providing a base for the monitoring and study of the bear

While aware that in 2011 the widespread availability of natural foodstuffs probably led to a reduction in the number of attempts to prey on livestock, it is likely that the systematic adoption of prevention works (electric fences) and the constant consultancy and support provided to shepherds by the livestock liaison officers contributed towards reducing attacks by bears.

Photo 9 - Transport of electric fencing to location at high altitude

In general terms, one significant problem which has arisen in the last few years is related to the fact that owners of flocks have hired shepherds from Eastern Europe, with whom communication is sometimes difficult. Then there are problems linked to specific sit-

uations, when the farmer does not wish to accept the adoption of prevention measures and management systems compatible with the presence of large carnivores. Such problems have not been resolved, nor is it likely that they can be resolved, at least in the near future.

Photo 10 - Malga Valandro (P. Zanghellini, APT Forestry and Wildlife Dept. Archives)

With the assistance of a student writing a thesis, **sample monitoring** of the effectiveness and maintenance of the **prevention works** distributed was carried out. The preliminary results show that the works are often not managed properly by users, prejudicing the effectiveness of the measures.

Ultimately it is believed that the support of experts such as the livestock liaison officers is indispensible for guaranteeing the coexistence of livestock in the mountains with brown bears.

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 enclosure B (species of community interest, whose conservation requires the designation of special areas of conservation) and D (species of community 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 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), regional and provincial regulations.

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, in accordance with D.P.R. 357/97 and subsequent amendments, issued the Autonomous Province of Trento with authorisation to act as provided for in the specific " 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 Corps (PFC), 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 2011 it was made up of 8 coordinators, who have the support of an emergency team made up of two people, also on call in turn within a group of specially chosen and trained staff made up of 14 members. When necessary the team is joined by veterinary staff from the provincial health services (given special training since 2008).

Activities of the emergency team

In 2011 the activities of the emergency team took place from 1 March to 27 November.

During this period the coordinators received **382 calls**, of which 299 during the day, 55 at night and 28 at unspecified times. In addition to these, there were an unspecified number of calls passed on and received in order to organise inspections to ascertain damage, coordinate the emergency team, inform the Department in more critical cases or simply to inform or reassure users.

The calls came from forestry service staff (175), private citizens (142), forest wardens (18), the Fire Service (10), the Carabinieri (4) or other parties (33).

The calls reported cases of possible damage (161), the sighting of bears or the finding of signs of their presence (126), presumed problematical situations (47) or were made for other reasons (48).

In most cases (136) no inspections were necessary, while intervention was requested by forestry service staff responsible for ascertaining damage (in 135 cases), by staff at forestry stations responsible for the area (70) or the staff of the emergency team (30).

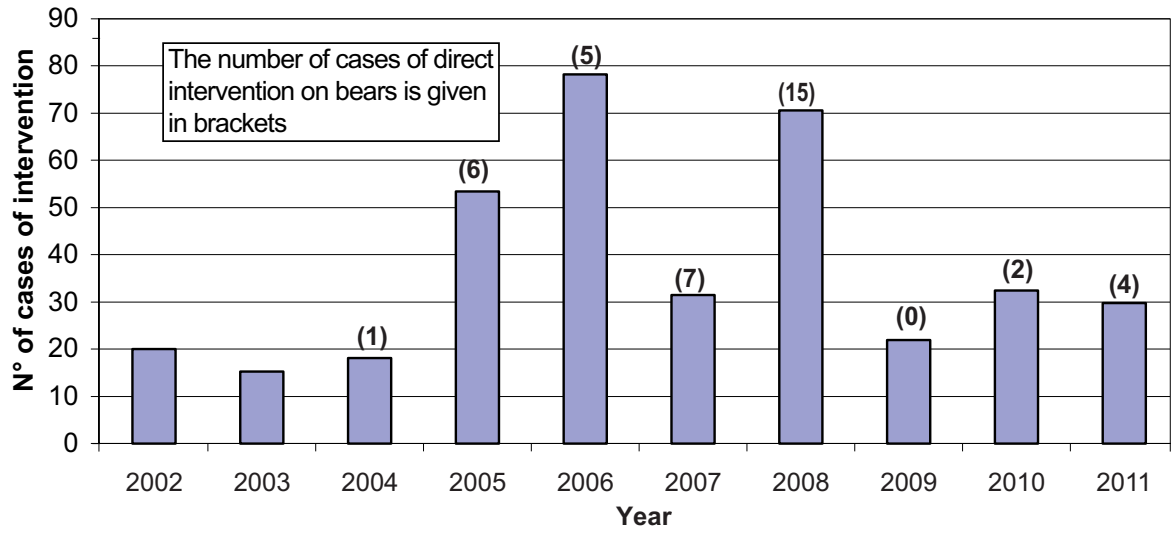
In 2011 the **emergency team** was thus set in action **30 times** (Graph 21), in most cases following reports of damage or the sighting of bears close to facilities frequented by man or inhabited areas. Their action was mostly limited to protecting and informing the population, while only 7 cases involved visual contact with the bear, **four** of which required **direct intervention to deter the animal**.

In particular, we can note the intervention taking place twice at Monte Terlago (Municipality of Terlago), Lagolo (Municipalities of Calavino and Lasino) and at the Mezòl refuge (Municipality of Malé).

In the first case, after lying in wait repeatedly, the emergency team twice carried out action to deter bears using a smooth bore

Graph 21

Emergency team call-outs in the period 2002-2011



rifle with rubber bullets on a male bear (M6) which frequented the village at night, preying mostly on poultry.

In the second case the emergency team intervened following repeated reports of a young bear which was wandering around close to houses, again at night, in order to feed on rubbish contained in organic waste or compost bins. In this case deterrence was again carried out using rubber bullets while the bear was rummaging in an organic waste bin. The result of the deterrence was verified immediately, also with the use of a bear dog, which followed its tracks, confirming that the animal had moved away from the village.

In the third case the team intervened following reports of a young bear feeding on waste close to a mountain refuge and which did not flee despite the presence of numerous people a short distance away. When the team

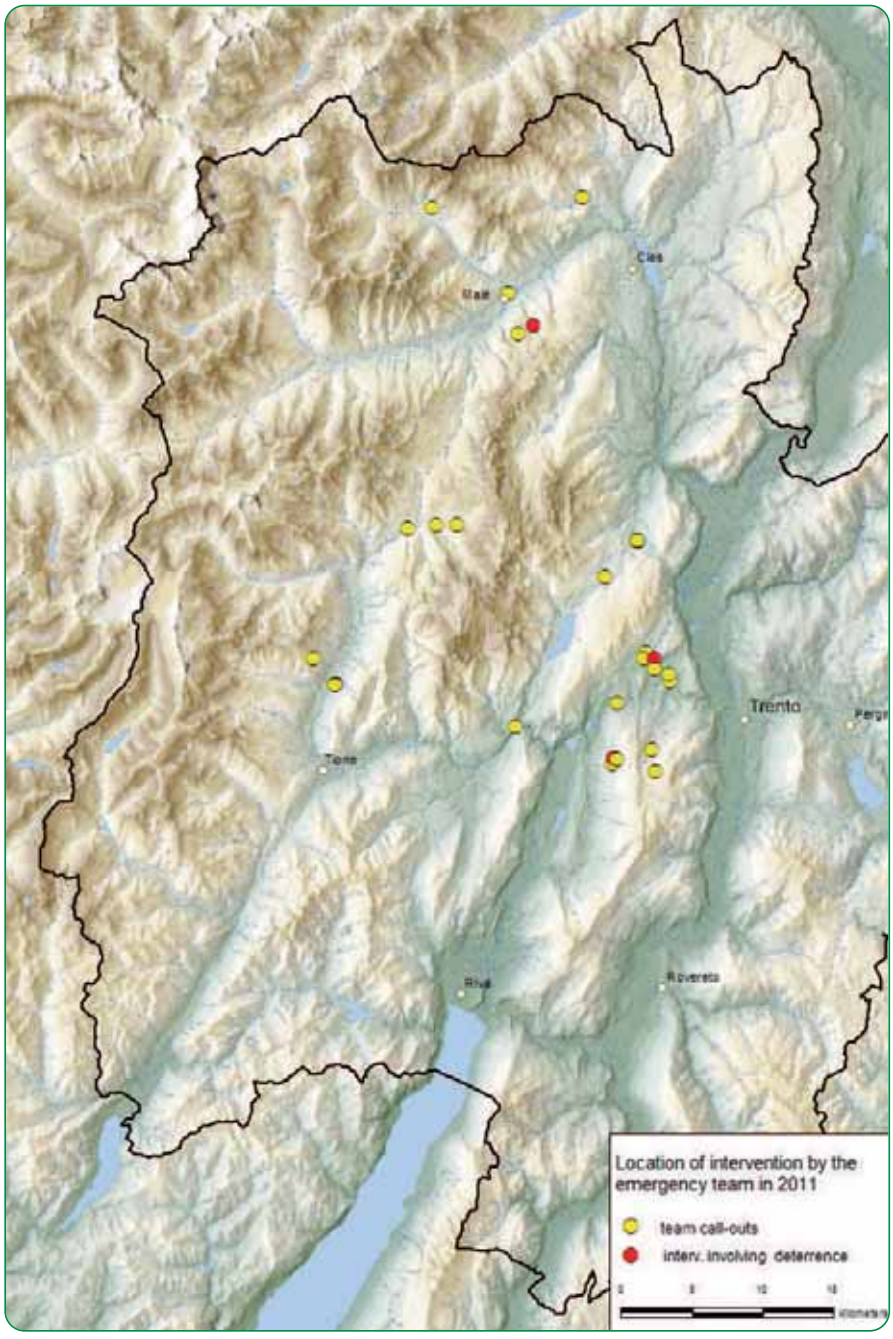
arrived, the bear was still present on site and was put to flight using rubber bullets and a bear dog. Following action by the dog, it was possible to intervene twice using rubber bullets.

In the last two cases described the deterrence would appear to have been particularly effective as no further reports of the aforementioned problem behaviour were received. However, in the first case, M6 continued to prey on poultry, as demonstrated genetically by the organic samples collected at the site of the damage.

The fact that the intervention carried out at Lagolo and at the Mezòl refuge undoubtedly involved very young bears (1½ years old), whereas M6 was almost five years old, certainly reinforces the theory that deterrence gives better results if carried out on young bears.

The location of intervention by the emergency bear team in 2011 is shown in Figure 10.

Figure 10
Location of intervention by the emergency team in 2011



On 11 April 2011 there was a **close encounter** in the woods of Monte Bondone (more specifically in the woods close to **Malga Mezavia**) between a **female bear** accompanied by three cubs born that year and a **jogger**. The man came across the three cubs at a distance of around 30 metres at a bend in the forest road along which he was running, while listening to music on headphones. Probably intrigued by his presence, the cubs began to approach him. The mother bear, coming up shortly behind them, twice moved towards the man, bounding forward in front of the cubs and placing herself between them and the jogger. After a moment of indecision, he ran off, while the female bear recovered her three cubs and took them into the woods. Frightened and in a state of shock, the man went to the first aid station and then advised the Carabinieri. The forestry staff of the emergency team and the Wildlife Office subsequently visited the spot and reconstructed what had happened

in detail, with the assistance of the person concerned. The bear's behaviour was undoubtedly intended to protect the litter, which the bear believed was menaced by the presence of the man, unintentionally close, and concluded with the departure of the man.

Waste management

As regards the prevention of critical situations, it should be recalled that in 2011 there was further **distribution of around ten 120 litre bear-proof waste bins** in **Lagolo** (Municipality of Calavino and Lasino), following repeated reports of a young bear at the organic waste collection points for the village in spring.

A sligh **modification** was also made **to the bins already positioned in the area** in order to increase the efficacy of the bins' automatic closing system. This intervention was once again funded by the European project "Life Arctos" .

Captures

In the context of emergency management, there is a " capture team" made up of staff specially trained for such activities. They are supported by two vets from the provincial health services, as regards health aspects.

In 2011, due to the problematic behaviour of the female bear called **DJ3**, it was considered necessary to capture her (Photo 11). The bear was then taken to the special enclosure at the Casteller centre **(on 17 May)**. The animal had previously been fitted with radio-collar and it was thus possible to identify the area most frequented by the bear, where a " tube trap" was positioned. In addition to DJ3, the area was also frequented by a male (MJ5) and a female (Daniza), whose presence was revealed through the use of photo traps. The tube trap was immediately and assiduously used by the two females, whereas the male was more wary, although he did enter the trap.

During attempts to carry out the capture, on

Photo 11 - The capture of DJ3. The bear outside the trap is the male MJ5 (V. Calvetti with photo trap, APT Forestry and Wildlife Dept. Archives)

the first evening it was possible to capture the bear called **Daniza** (Photo 12). After having been drugged, she was fitted with GPS radio-collar and immediately freed at the same site.

Photo 12 - The capture of the female bear Daniza (C. Groff, APT Forestry and Wildlife Dept. Archives)

The first female captured (Daniza) displayed relatively aggressive behaviour inside the trap, whereas the second, (DJ3) remained very calm. Also for this reason it was decided not to drug her during the transfer from the place of capture to the enclosure at Casteller.

At the time of capture both females weighed around 80 kg, were not accompanied by cubs and may well have been on heat. Indeed the management of the two bears closed in the tube trap was made more complicated by the presence of a male bear outside (Photo 11). Given that it was the mating season, he insisted on staying close to the trap containing the females. Given the potentially dangerous situation, the two bear dog handlers were also involved in the capture operation in order to guarantee the safety of the staff involved in manipulating the two bears, in addition to the security staff normally present for captures.

In any case the tube trap provided excellent results, significantly reducing staff involvement and increasing safety standards for both staff and the animals.

The following table summarises captures taking place in the period 2006-2011.

Road accidents

During 2011 no **road accidents** have been recorded (table 3).

Table 2 - Captures taking place in the period 2006-2011

No.	Date of capture	Location	Bear	Method of capture	Scope of intervention	Period of radio monitoring	Method of release	Sex	Age	Weight	Notes
1	23/08/2006	Malga Grum (Terzolas)	Jurka (1st)	Free ranging	Fitting of GPS radio-collar	23/8/06 28/6/07	On site without deterrence	F	9	140	Female with 3 cubs
2	28/06/2007	Rifugio Genzianella (Terres)	Jurka (2nd)	Free ranging	Taken into captivity	–	–	F	10	130	No cubs
3	02/07/2007	Maso Dos (Pinzolo)	Daniza	Free ranging	Fitting of GPS radio-collar	2/7/07 5/5/08	On site without deterrence	F	12	106	No cubs
4	13/06/2008	Molveno (Molveno)	KJ2G1	Free ranging	Fitting of GPS radio-collar	–	–	F	3	95	Died by drowning in Lake Molveno
5	13/07/2008	Loc. Mangio (Castel Condino)	DJ3	Free ranging	Fitting of GPS radio-collar	13/7/08 23/6/10	On site with deterrence *(dogs + rubber bullets)*	F	5	95	No cubs
6	27/09/2008	Loc. Pineta (Molveno)	KJ1G1	Aldrich snare	Fitting of GPS radio-collar	27/9/08 5/4/09	On site with deterrence *(dogs + rubber bullets)*	F	3	130	No cubs
7	15/10/2009	Val Canali (Tonadico)	M5	Aldrich snare	Fitting of GPS radio-collar	15/10/09 13/5/10	On site with deterrence *(dogs + rubber bullets)*	M	3-5	175	Specimen immigrated from dinaric population
8	22/10/2010	Malga Pozze (Praso)	DJ3	Aldrich snare	Fitting of GPS radio-collar	22/10/10	On site without deterrence	F	7	130	No cubs
9	16/05/2011	Rodugol (Stenico)	Daniza	Tube trap	Fitting of GPS radio-collar	16/05/2011 -	On site without deterrence	F	15	80*	Accompanied by male
10	17/05/2011	Rodugol (Stenico)	DJ3	Tube trap	Taken into captivity	–	–	F	7	75*	Accompanied by male

Table 3 - Road accidents reported in the period 2002-2011

No.	Date	Location	Bear/s involved *	Sex and age	Fate of the bear
1	30 August 2001 at 00.50	Laives(BZ) (A22 motorway	Vida	Female	Injured quite seriously but survived
2	4 November 2005 at 6.45	Preare (prov. road n° 34)	DJ3	Female	Survived and reproduced
3	28 June 2006 at 00.30	Fai (prov. road n° 64)	MJ2	Female	Survived and reproduced
4	28 Octber 2006 at 3.00	Caldes (main road n° 42)	Unknown	Unknown	Unknown **
5	29 October 2007 at 23.25	Ciago (prov. road n° 18)	Unknown	Unknown	Unknown **
6	18 July 2008 at 4.00	Villa Rendena (prov. road n° 34)	Daniza + 3 cubs born that year	Female aged 13 with 3 cubs born that year	1 female cub died
7	22 July 2008 at 22.30	Nembia (prov. road n° 421)	KJ1G1	Female aged 2.5	Survived with no consequences
8	16 August 2008 at 23.45	Strembo (prov. road n°236)	Daniza + 2 cubs	Female aged 13 with 2 cubs born that year	1 cub injured, probably survived
9	15 October 2008 at 00.30	Bus de Vela (main road n° 45 bis)	Unknown	Unknown	Unknown **
10	9 April 2009 at 23.00	Passo Palade (BZ) (main road n° 238)	Unknown	Unknown	Unknown **
11	9 December 2009 at 19.30	Tione (prov. road n° 37)	Unknown	Unknown	Unknown **
12	25 May 2010at 22.30	Strada del Faè (prov. road n° 43)	Unknown	Unknown	Unknown **
13	22 October 2010 at 6.30	Vigolo Baselga (prov. road n° 84)	Unknown	Unknown	Unknown **

* the identity of the bear was ascertained through genetic testing
** an immediate inspection took place with dogs, suggesting that the animal hit moved off autonomously

Bear dogs

During 2011 the **training of the two young Russo-European Laika bear dogs** purchased in Germany in 2010 (Cora and Ceck) and their handlers continued.

Furthermore, additional **satellite collars**, were purchased in order to make them available for all four dogs, improving management of the dogs during operations both for deterrence and when searching for signs of presence or checking damage.

In 2011 the dogs wer **put into action** on a total of **26 occasions**, 15 of which linked to checks on reported damage, 5 during operations to deter bears, in 2 cases to guarantee the security of staff during capture procedures, in 3 cases to look for signs of the presence of bears and in 1 case for the capture of the bear cub M11 (see box 3).

In addition to the activities described above, which are specifically linked to the management of brown bears, it is worth recalling the fundamental contribution made by the female dog Lapua, in at least two **anti-poaching** operations.

Four years after beginning this experience it is possible to express the first considerations regarding the use of the dogs in activities to manage brown bears.

While on the one hand use of the dogs for deterrence has proved more complicated than expected, at least when not linked to capture procedures, the dogs have shown themselves to be fundamental when looking for injured bears following road accidents. They have also made an important contribution to checking damage reports, particularly those involving livestock, and when looking for signs of presence in specific situations.

The fundamental importance of continuing training is confirmed, both for handlers, in relation to technical aspects linked to the management of the dogs during operations, and for emergency team coordinators, in order to correctly evaluate cases in which the dogs can be used effectively.

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 programmes of action 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 has involved numerous initiatives in the past and is still currently active. 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 these communication activities, the Forestry and Wildlife Department has always been supported by Adamello Brenta Nature Park, which has been active in this field for many years in its own area, and by Trento Science Museum, formerly Trento Natural Science Museum, which has offered educational activities related to bears for schools from the very beginning.

The main activities undertaken during 2011 are summarised below.

Evening sessions and meetings

Table 4 lists the **12 meetings/evenings e** organised within the context of the information campaign " Getting to know the brown bear" (with **around 600 participants** overall). Some of these meetings were specifically organised in response to local situations and requests for information, also in relation to situations arising when certain bears caused special concern due to the number of incidents involving damage.

Five further evenings were held within the context of the Adamello Brenta Nature Park 2011 summer programme. A detailed list is given in Table 5.

Table 4 - Public meetings held within the context of the "Getting to know the brown bear" campaign

Place	Date	In collaboration with	No. of participants
Trento Science Museum (with distribution of the 2010 Bear Report)	02/03/2011	Trento Science Museum	120
Bresimo	10/05/2011	Municipality of Bresimo	70
Trento	19/05/2011	Società degli Alpinisti Tridentini	50
Rifugio Nino Pernici	24/05/2011	Società degli Alpinisti Tridentini	50
Villa Lagarina	31/05/2011	Municipality of Villa Lagarina	25
Terlago	06/07/2011	Municipality of Terlago	60
Lagolo	15/07/2011	Municipalities of Lasino and Calavino	70
Monte Bondone	28/07/2011	Pro Loco City of Trento	40
Pellizzano	02/08/2011	Municipality of Pellizzano	35
Monte Bondone	04/08/2011	Pro Loco City of Trento	40
Azienda Agricola De Bellat CastelnuovoValsugana	02/10/2011	Associazione Allevatori Ovicaprini Trentini	20
Lake Cei	27/10/2011	Municipality of Villa Lagarina	35

Table 5 - Public evenings on the bear held by ABNP

Place	Date	Title	No. of participants
Andalo - Conference Hall	13 June	The park animals: the great return	70
Carisolo - Casa Rosa	24 June	The park animals: the great return	44
Tione - Piazza C. Battisti	6 July	The park animals: the great return	35
Folgarida - Conference Centre	14 July	The park animals: the great return	111
Pinzolo - Piazza Carera	12 August	The park animals: the great return	250

In addition to these, the park also held a meeting during the " Melissa: honey fair" event on 23-24 July in Croviana and offered

the initiatives listed in Table 6, again within the context of the Adamello Brenta Nature Park 2011 summer programme.

Table 6 - Summary of additional activities offered by ABNP

Initiative	Total participants
"A stroll with the bear... and honey"	466
Tovel bear routes	155
Guided tour of Spormaggiore Wildlife Centre - bear house*	72
Invitation to Spormaggiore	242

*in collaboration with Spormaggiore Wildlife Centre

Informative material produced and distributed

The fourth " Bear Report" **(2010 Bear Report)** was issued, representing both a valid means of communicating and raising public awareness and a useful working tool for the department.

In 2011 5,000 copies of the **brochure " In the land of the bear"** were printed (around half were distributed).

During 2011 Adamello Brenta Nature Park continued to issue the bulletin/newsletter **" I Fogli dell'Orso"** (which can be requested free of charge at the address **orso@pnab.it**), with three issues coming out during the year (in February, July and November). Having now reached its 28th edition, " I Fogli dell'Orso" has published a total of 294 articles over a period of nine years, involving no less than 135 authors, including Park staff, external experts and enthusiasts. The newsletter is currently sent to more than 1,100 e-mail addresses.

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

For the eighth consecutive year TSM 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 also guarantees consultancy on the content. The 2010-2011 edition of the guide to the educational activities of the museum also contained all the educational initiatives realised in collaboration with the Forestry and Wildlife Department, as has taken place since the 2003-2004 edition.

Once again in 2011 five types of activity were offered:

- " **Hands-on museum**" , a 90' guided visit to the mammals room, with particular emphasis on the bear and other large alpine carnivores, with the opportunity to see and touch particular types of materials (skulls, casts of footprints, hairs etc.);
- " **Laboratory**" , 2½ hours of interactive activities, partly providing information on the bear and other large carnivores (using powerpoint and various materials) and partly practical (simulation of radio-tracking, creation of plaster casts of footprints, recognition of different mammal hairs through the use of educational worksheets);
- " **Travelling Museum**" , an activity divided into three sessions, two in the classroom and one (the middle session) involving a trip to an area frequented by bears to look for any signs of their presence;
- " **From the Museum to the Wild**" , 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 2½ hour session reserved for secondary school pupils.

In the context of the existing agreement between the Forestry and Wildlife Department and Trento Science Museum, the museum organised the following educational activities in the period 1 January 2011 - 31 December 2011:

- interactive laboratories on the subject " The bear and other large carnivores in the Alps, with 30 pupils participating;
- " The museum goes to the classroom" , with workshops in schools, involving 86 pupils;
- " On the tracks of the brown bear" - excursions for 42 pupils.

In the context of educational activities for

Table 7 - Educational initiatives on the bear carried out by ABNP for schools

Title	Number of schools	Number of classes	Number of pupils
Bear Project, the return of the bear to the Alps and peaceful coexistence with man (2 classroom sessions and 1 trip to Spormaggiore)	12	19	287
A day with the bears (1 session: Bear House at Spormaggiore)	17	35	692
The animals of the Park	2	5	110
Large carnivores project (2 classroom sessions and 1 trip)	2	2	19

schools, the Park promoted its usual activities relating to the brown bear through the Communication Department. The statistics for the 2010/2011 school year are given in Table 7.

Web sites

The site **www.orso.provincia.tn.it**, also available in English, was further updated and all sections completed. Furthermore all the sections available to the public were simplified, in accordance with the instructions of the administrative simplification department, and monthly updating was also guaranteed. It is currently organised into 250 pages and received **30,732 visits** by **17,848 visitors in 2011. The site also contains this report and the documents mentioned it.**

2011 saw continuing implementation and updating of content in the section of the Adamello Brenta Nature Park web site (www.pnab.it) dedicated to the bear (20 pages overall).

Press releases

9 press releases regarding the bear were issued by the Forestry and Wildlife Department with the support of the Press Office of APT:

- N. 366 of 18 February 2011
  In the last few days provincial technical experts have met farmers and bee-keepers in Trento BEAR MANAGEMENT: SEARCHING FOR THE BEST FORMS OF COEXISTENCE
- No. 457 of 2 March 2011
  Presentation of the 2010 Report at 20.45 BEARS, AN UPDATE THIS EVENING AT THE NATURAL SCIENCE MUSEUM
- No. 584 of 19 March 2011
  President Dellai has signed the order: the bear's behaviour " has exceeded the limits"
  THE BEAR DJ3 WILL BE TRANSFERRED TO THE CASTELLER WILDLIFE CENTRE
- No. 718 of 1 April 2011
  THE BEAR M5: A NOTE FROM THE FORESTRY AND WILDLIFE DEPARTMENT
- No. 1206 of 18 May 2011
  The operation was carried out- yesterday evening by the staff of the Trentino Forestry Service
  THE BEAR DJ3 WAS CAPTURED AND TRANSPORTED TO THE CASTELLER WILDLIFE AREA
  Implementing the order of the President of the Province
- No. 1314 of 26 May 2011
  BEAR: A NOTE FROM PRESIDENT DELLAI
- No. 1557 of 9 June 2011
  The monitoring of rub trees provides new and interesting images of bears
  " WHITE" BEAR FILMED BY PHOTO TRAP
- No. 2952 of 26 October 2011
  Appointment at 20.15 at the Prà dell'Albi Biotope Visitors Centre
  MEETING IN CEI ON THURSDAY EVENING TO TALK ABOUT THE BEAR
- No. 2993 of 28 October 2011
  Discovering the secrets of bats and large mammals in Trento
  " M'AMMALIA. MAMMAL WEEK" AT THE SCIENCE MUSEUM

The Adamello Brenta Nature Park coordinated the issuing of the following press releases:

- 25 March 2011
  NEW UPDATES AND FURTHER INFORMATION ON BEARS
- 6 April 2011
  VISIT OF THE INTERNATIONAL WWF TO THE WILDLIFE AREA AND PARK CENTRE IN SPORMAGGIORE

- 14 October 2011
  COORDINATION MEETING OF THE LIFE+ ARCTOS PROJECT
- 23 November 2011
  I FOGLI DELL'ORSO

Questions

The necessary information was provided in order to respond to the following **13 questions**, raised regarding bears, of the provincial Council:

- Question for immediate reply no. 2563 of 15 February 2011, asked by Councillor Casna;
- Question for immediate reply no. 2579 of 16 February 2011, asked by Councillor Dominici;
- Question no. 2599 of 18 February 2011, asked by Councillor Morandini;
- Question no. 2620 of 28 February 2011, asked by Councillor Giovanazzi;
- Question no. 2835 of 18 April 2011 " Are bears a threat to citizens?" , asked by Councillor Morandini;
- Question for immediate reply no. 2988 of 18 May 2011, asked by Councillor Civettini;
- Question for written reply no. 3004 of 23 May 2011, asked by Councillor Bombarda;
- Question no. 3165 of 7 July 2011, asked by Councillor Giovanazzi;
- Motion no. 358 of 25 July 2011, presented by Councillor Dominici;
- Question no. 3357 of 25 August 2011, asked by Councillors Penasa, Savoi, Casna, Filippin, Paternoster and Civettini;
- Question no. 3370 of 26 August 2011, asked by Councillors Penasa, Savoi, Casna, Filippin, Paternoster and Civettini;
- Question no. 3403 of 5 September 2011, asked by Councillors Borga, Viola, Delladio, Morandini and Leonardi;
- Question for immediate reply no. 3495 of 21 September 2011, asked by Councillor Paternoster.

Other communication initiatives

Radio-TV broadcasts

Under the supervision of APT's Forestry and Wildlife Department and ABNP, the following radio and television interviews were granted (Table 8):

Table 8 - List of broadcasts on the bear with the participation of APT or ABNP during 2011

Radio/TV station –programme	Subject	Date	Type of broadcastber
RAI Radio TRE - Radio 3 SCIENCE ** (http://www.radio3.rai.it/dl/radio3/programmi/puntata/ContentItem-e624b2af-214c-4321-b362-194b1cb51114.html)	Men and bears	7 January 2011	Interview
Geo&Geo ** (http://www.geo.rai.it/dl/portali/site/articolo/ContentItem-4b0b9b77-320e-4b4a-a69a-8da9527f68d6.html?homepage) CA - "Prevention and health" feature	Bears	24 January 2011	Interview
Radio RAI 1*	The Brown Bear	19 April 2011	Interview
"Chi cerca innovavia Biglieri 2G - Radio RAI 3*	Bear dens	19 April 2011	Interview
Ecoradio **	Wildlife and naturalistic aspects in the park, bears	25 May 2011	Interview
Inter Channel **	Bears and the Park	12 July 2011	Interview
The Alps from above – documentary co-produced by RAI, ARTE, VIDICOM **	Bears	18 August 2011 and 8 September 2011	Interview and filming from a helicopter near a bear's den RAI 3 – Geo&Geo **
The Brown Bear	24 November 2011	Interview and video contributions	Radio RAI 1*
The Brown Bear	10 December 2011	Interview	

* with the participation of APT; ** with the participation of ABNP

BOX 5 - The bear " business"

In the context of the much debated question of the presence of bears in our province, there has not yet been assessment (in terms of providing a specific financial estimate) of the ***economic advantages*** *resulting from the association of bears with the Trentino environment in the national and international media (newspapers and magazines but above all TV). The first data emerged during 2011 in relation to some* ***coverage on national TV****. On the one hand this would seem to confirm the on-screen charisma of the bear, and on the other the considerable economic value of media coverage, which represents a genuine form of* ***" commercial"*** *, inseparably linking the image of the bear with the landscape of Trentino. This is presented as being of exceptionally high quality, to the extent that it plays host to an animal as exciting as the bear.*

A preliminary study carried out by Trentino Marketing has indeed highlighted that in the period 23 May 2011 - 16 June 2011 alone, brown bears in Trentino were dealt with on national TV at least 11 times (six on Italia1, three on Rai2 and two on Rai1 - Figure A), both in the afternoon and the evening, with an ***overall duration of 12' 42"*** *(average duration 1' 10"). The reports covered the filming carried out by APT's Forestry and Wildlife Department with photo traps at rub trees (the "white" female bear with her 3 cubs), the*

Figure A
Some of the national TV coverage in Spring 2011

recovery of the young debilitated bear cub (M11) and the capture of the problem bear DJ3.

The value of the eleven commercials in terms of ***AVE (advertising value equivalent)****, namely the advertising value of the commercials broadcast on those networks and in those time bands and within those specific news programmes, was estimated to be* ***361,449.47*** *euro (on average 32,859 for each 1' 10" "spot").*

The coverage undoubtedly showed situations in which the image of the bear was presented in a positive way and illustrated control of the bear population (the case of the removal of DJ3). What is more the information reached a national public which tends to appreciate the species. There is a continuing awareness of the different attitude (and concerns) present particularly at local level in certain categories more exposed to the damage caused by bears (beekeepers, farmers). However, in the same way as has taken place in Abruzzo, France and Spain for example, the fact remains that the positive aspects are certainly worth exploring, offer excellent potential and are given widespread coverage by the media.

The data highlighted by Trentino Marketing shows that coverage has a certain and significant value, considering also the period (spring, when people usually decide where to spend the forthcoming summer holidays) and the importance for a tourist sector focusing on the environmental quality offered by Trentino.

Newspaper and magazine articles

APT's Forestry and Wildlife Department and ABNP supervised the production of articles (scientific or informative articles) and granted interviews (supplying content and iconographic material) in the following publications (see Table 9):

Table 9 - List of articles published in 2011

Title/subject	Newspaper/magazine	Data/edition
The brown bear population in Trentino, (Italian Alps): still increasing *	IBA Newsletter	May 2011
Orso 2010 *	C.A.I. magazine	May-June 2011
Trentino, l'orsa della Discordia *	L'Espresso	15 July 2011
Men and Bears: Up and Close **	International Bear News	February 2011 Vol. 20, no. 1
Un nuovo progetto LIFE sull'orso **	Adamello Brenta	February 2011, 15/1
Grandi carnivori e aree protette: il gruppo di lavoro di ALPARC **	Adamello Brenta	February 2011, 15/1
L'impegno del Parco per l'orso Il Progetto *Life Ursus* **	Bulletin of the Alpine Network of Protected Areas	23 March 2011
Preventing the disappearance of brown bear populations	LIFE Focus/LIFE preventing species extinction - Safeguarding endangered flora and fauna through ex-situ conservation, DG ENV 2011 - 60 pp.	July 2011
Il lungo sonno dell'orso Bruno **	Ambiente Trentino (online)	September 2011
Managing biodiversity: a park for the bear **	Protected Areas in-Sight - The journal of Europarc Federation	September 2011
Verità e bugie sull'orso **	Focus Wild	January 2012 no. 6
I quaderni di Mario Tisi: cronache della Guardia dell'Ors tra il 1950 e il 1960**	Adamello Brenta	15/3 – December 2011

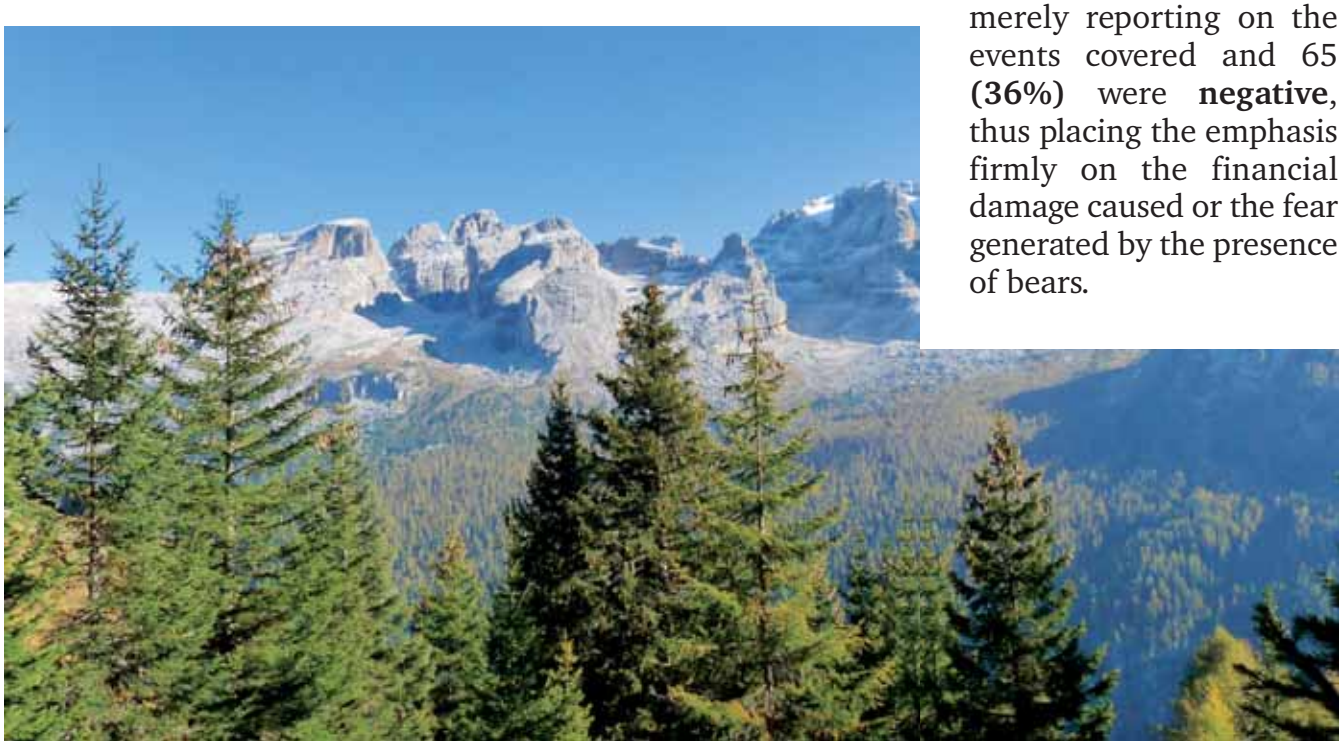
* produced by APT; ** produced by ABNP

Park Bear Centre - Spormaggiore

In 2011, the Park Bear Centre in Spormaggiore, a museum entirely dedicated to the history and biology of the bear, was visited (excluding initiatives with schools and summer programmes) by **11,500 people** (7,649 visits via the Spormaggiore Wildlife Park and 3,872 direct visits).

Press review

Once again during 2011 (particularly in the period from April to December), a review of articles about bears appearing in the two local newspapers, "L'Adige" and "Il Trentino" was carried out by APT's Wildlife Office. Of the **182 articles** about bears appearing in the period in question, 56 **(31%)** showed a **positive** attitude to the presence of bears, in the sense that they portrayed sightings or other reports as lucky events to be remembered, 61 **(33%)** were **neutral**, merely reporting on the events covered and 65 **(36%)** were **negative**, thus placing the emphasis firmly on the financial damage caused or the fear generated by the presence of bears.



5. Training

Correct management of the bear population is inextricably linked to the availability of specially trained staff, 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 programmes of action 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 initiatives realised during 2011 are illustrated below.

Main training initiatives regarding bears

The following meetings were held to train staff in various roles responsible for the management of bears:

- Meeting for District Forestry Offices on works to prevent damage by bears **(Casteller, 7 February 2011)**
- Meeting to update staff of the forestry service and the Adamello Brenta Nature Park involved in the management of bears **(Casteller, 28 February 2011)**.

ABNP organised the following training courses:

- **Strembo, 6 April 2011**: one day session to update park wardens and the staff of the Park's Communication Department on wildlife activities underway and the situation of the bear
- **Strembo, 19 April 2011**: focus workshop for the Park's environmental education workers on providing information about bears in educational projects
- **S. Antonio di Mavignola, 14 May 2011**: training session for seasonal workers at the Park (working at information points and in the valleys)
- **Spormaggiore, 27 May 2011**: short course on the reintroduction of the bear to the Park for a group of students from the University of Padova, Department of Biology.

6. National and international links

Links with neighbouring regions and countries 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, which has effectively concerned neighbouring regions and countries, and 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 approved by all the partners and printed in 2010. In addition to the Autonomous Province of Trento, this also involved the Autonomous Province of Bolzano and the Lombardia, Veneto and Friuli Venezia Giulia Regions.

Activities designed to guarantee **transnational coordination** also continued, in the light of the numerous cases of young bears moving into neighbouring areas reported over the last few years.

With **Resolution no. 8 of 30 March 2011, the legislative assemblies of Bolzano, Innsbruck and Trento** invited their respective executive bodies (councils) to a: 1) present the question of management of bears to their respective governments and national parliaments, with particular reference to the greater autonomy they must be granted above all in the management of "problem bears" ; 2) also raise this question at European level; 3) pursue greater transnational cooperation; 4) express their opinion to relevant national and European bodies "in favour of rethinking the *Life Ursus* project to reintroduce bears".

ABNP continued its commitment within the context of the **Large Carnivores, Wild Ungulates and Society Platform**, set up by the **10th Convention of the Alps** in Evian in March 2009, with the objective of encouraging the search for solutions ensuring standardised management of large carnivores and wild ungulates in the alpine area.

As the lead partner in the "Large Carnivores Group" of ALPARC - Alpine Network of Protected Areas - the Park also contributed directly or indirectly to workshops organised by the Platform in 2011.

LIFE+ " ARCTOS" Project

On 31 May 2010 the European Commission approved the co-funding proposal for a new LIFE+ project on the brown bear (Figure 11).

The project, called "ARCTOS – Conservation of the Brown Bear: Coordinated Action

Figure 11
Logos of the Natura 2000 network and the LIFE Arctos project

for the Alps and Apennines" (LIFE09 NAT/IT/000160), is promoted by Abruzzo, Lazio and Molise National Park and provides for the participation of WWF Italia, the State Forestry Service, the University of Rome La Sapienza, the Abruzzo, Lazio, Lombardia regions, the Autonomous Region of Friuli Venezia Giulia, the **Autonomous Province of Trento** and **Adamello Brenta Nature Park**, all partners which have previous experience of European projects (LIFE NATURA) aimed at the conservation of the species.

The initiative developed out of the need to combat the main threats to the conservation of the brown bear in Italy, identified as the progressive loss of the natural habitat, conflict with the activities of man (particularly animal husbandry) and the lack of sufficient ecological-ethological knowledge about the species to enable adoption of the most suitable management practices.

The main objective of LIFE+ ARCTOS is to implement management procedures and protocols designed to ensure conservation of the brown bear populations present in Italy in the long term, through careful identification, sharing and preparation of experience, methods and effective tools for safeguarding the species (for further details see **www.life-arctos.it**).

The project provides for a **duration of 4 years**, starting on 1 September 2010 and ending on 31 August 2014, with **total expenditure of 3,984,820 euro**, of which **67.63% (2,694,934 euro)** funded by the **European Commission**.

APT will be involved in the implementation of action designed to prevent damage (installation of electric fences), discourage bears from approaching inhabited areas (production and distribution of bear-proof waste bins) and actions related to communication. In order to do so it has available a budget of € 172,368, with EU funding representing € 109,013 of this.

ABNP is involved in communications activities (promotion and dissemination of information on bears and project actions, through involvement of residents, administrators, schools etc), for which overall expenditure is expected to be 114,967 euro, of which around a third (€ 34,452) will be covered directly by the Park.

In the context of initiatives linked to general coordination of the project, APT and ABNP attended technical meetings organised in Rome (on 23 - 24 February 2011) and two meetings of the Alpine Coordinating Committee (Milan: 14 February and 20 September 2011) and the meeting linked to administrative aspects held in Trento on 29 July 2011.

In the same context, APT and ABNP hosted the second general coordination meeting (which was followed by the inspection of the monitoring group assigned the task by the European Commission), organised between 17 and 22 October 2011 at accommodation facilities in the protected area and at the departmental offices, attended by contacts from all the 10 bodies involved. Furthermore on 15 December a workshop on monitoring was held in Udine.

Finally, ABNP began planning and production of educational tools (informative material, games on a theme, multimedia materials) designed for school pupils in the Trentino area, tools which will be used to assist with educational activities undertaken in the next few years.

As regards actions involving APT, the provincial administration has acquired and distributed 112 prevention works in the area (as specified in the chapter relating to damage compensation and prevention), with total investment of 55,545 euro.

Furthermore, the bear-proof containers distributed in the area have been modified in order to make them more practical and it is planned to acquire and distribute further bins in the next two years.

7. Research and conferences

Research – experimentation

Acoustic deterrent devices

Given the widespread nature and the extent of cultivated areas, damage to **crops**, cannot normally be managed using electric fences. In these cases, realistic and prompt compensation for damage is the only way to reduce conflict with farmers.

In an attempt to try and diminish the impact of bears on crops, in 2011 the use of an **acoustic deterrent device** was experimented (Alarm Guard - Photo 13), as it had apparently provided good results in other contexts, at least in the short-medium term.

The opportunity to use the acoustic deterrent device was provided by one or more bears which began to frequent a vineyard in the Monte Terlago area (in the Municipality of Terlago) when the grapes started ripening, causing some damage and alarming the owner to some degree.

Photo 13 - Alarm Guard acoustic deterrent device (E. Bonapace, APT Forestry and Wildlife Dept. Archives)

It was therefore decided to place the device close to the place where the bears would be expected to pass, adding a PIR wireless sensor at a second point of probable passage.

The machine was regulated to only work at night, producing a loud shrill sound, while the passage of any animals was monitored using a photo trap.

Once the system was activated, the frequency of damage to the vineyard was greatly reduced, although it was possible to ascertain that bears still fed on the grapes on some occasions. The images obtained using the photo trap made it possible to establish that there were at least two different bears in the area.

The damage recorded at the time of grape-picking was relatively modest (less than 2 quintals of grapes) as compared to previous harvests by the same farmer.

Despite the intrinsic limitations of the restricted experience gained in the use of these systems, it seems possible to surmise that they may be useful in mitigating damage to crops in particular situations, on condition that it is possible to identify the point where the bears are likely to pass. However, the systems would not appear to be suitable for permanent prevention, as the animals would probably get used to the noise.

Alarm systems for tube traps

There was continuing development of materials linked to activities involving the capture of problem bears. In particular the tube trap was improved by equipping it with a **radio alarm system** prepared by the Province's Network and Communications Department. This could be received anywhere in the area.

Monitoring of dens

In 2011 ABNP concluded the operation to gather information on the environmental characteristics of hibernation sites for bears present in western Trentino.

In addition to description and analysis of

parameters relating to the caves identified in the area (e.g. altitude, immediate environmental surroundings, size of the den's entrance and interior, position of bedding material, external and internal profile, longitudinal and cross-section of interior), the study started up in 2008 to analyse microclimatic conditions inside dens was completed. This involved the positioning of special humidity and temperature sensors.

Thanks to collection of the last 41 sensors positioned in caves the previous summer (Photo 14), the database currently available now contains data recorded in the October - April period in **63 hibernation caves** actually used by bears and **70 caves potentially suitable** for hibernation by the species. **133 sensors** were used to acquire and correctly archive data every 4 hours throughout the day for a period of **212 days** (i.e. from the beginning of October to the end of April).

Thus over a period of 4 years – thanks to the collaboration of staff at the Park and APT and of students and volunteers – the survey covered a total of 143 caves out of the 152 known to exist (65 dens actually used by the bear plus 87 suitable caves).

In the next few months it will be possible to complete analysis of the data and see whether microclimatic parameters are decisive in determining the choice of winter shelters by the brown bear.

In addition to providing further information about the ecology and ethology of the brown bear, this will also furnish useful assistance in improving conservation strategies and in orienting management policy within the area, ensuring appropriate safeguards for the species.

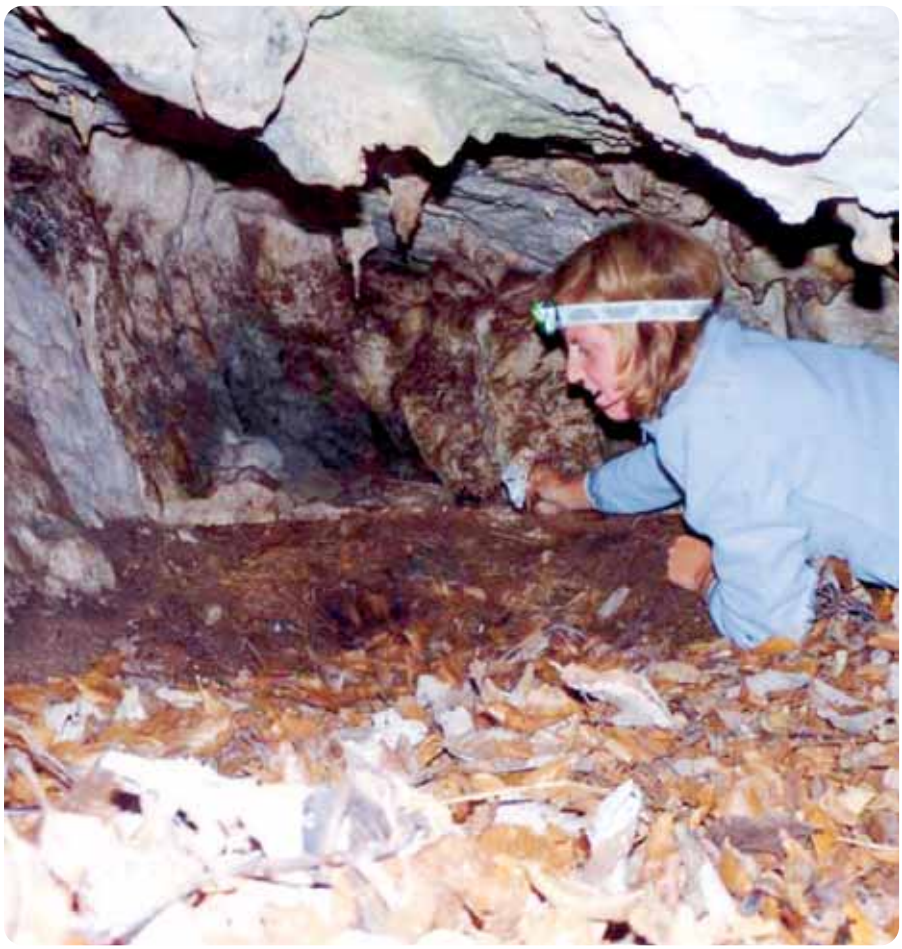


Photo 14 - Recovery of a temperature and humidity sensor from a den in the Brenta Dolomites (ABNP photographic archives)

Studies, conferences and surveys

In-depth study of the bear management
During 2011 the provincial Administration assigned professors Marco Apollonio and Guido Tosi with the task of drawing up a study entitled "Technical and scientific examination of the management and sustainability of the bear population in Trentino". The document was drawn up by the technical experts with the support of APT's Forestry and Wildlife Department and the Adamello Brenta Nature Park.

Degree theses

During 2011 APT's Wildlife Office and

ABNP also monitored the following decree theses (Table 10).

Table 10 - Degree theses on the brown bear monitored by APT and ABNP

Author	Title of thesis	Degree course/ University	Academic year	Supervisor	Assistant supervisor
Matteo Tiso	Rub trees: trials of a new method for genetic monitoring of the brown bear (Ursos Arctos L.) in Trentino	University of Padova - Facolty of Agriculture, Degree course in Forestry and Environmental Science	2010/2011	M. Ramanzin	C. Groff
Francesca Bussola	Methodological criteria for analysis of the selection of hibernation dens by brown bears (Ursos Arctos L.) in Trentino	University of Parma, Faculty of Mathematical, Phyiscal and Natural Science, Degree course in Natural Science	2010/2011	J. Tagliavini	A. Mustoni F. Zibordi

Opinion poll on the presence of the bear in the province of Trento

In the first months of 2011 the provincial Administration commissioned an opinion poll directed at residents in the province of Trento from a specialist agency. This was designed to show the level of information, appreciation and concern of residents as regards the presence of the brown bear in the area. Essentially, the information emerging from the survey showed there was a **reduction in the percentage of those in favour** of the presence of bears as compared to the figures shown in 1997 and 2003, but at the same time **appreciation** of the ways in which the Administration carries out **management** of the bear population.

Conferences

The ABNP presented a paper: "Project URSUS – Protection of the brown bear population of Brenta" (with abstract) at the conference "LIFE + in the Alps: lessons learned and opportunities" (Permanent Secretariat of the Alpine Convention and European Commission, DG ENV), held in Bolzano on 7 February 2011.

APPENDIX 1
The lynx

The male Eurasian lynx known as B132 again frequented the area in the Brenta mountains and on Monte Gazza, at least in the first months of 2011. He is known to have been present here since spring 2008.

In 2011, the animal, which belongs to a species which is, if possible, even shyer and more elusive than the brown bear, remained the only lynx whose presence was ascertained within Trentino, although there were new traces suggesting the presence of at least a second animal. In this context, the genetic evidence provided by an organic sample (faeces) collected at the entrance to the Val di Rabbi on 27 June 2011, belonging to an unidentified lynx, is particularly relevant.

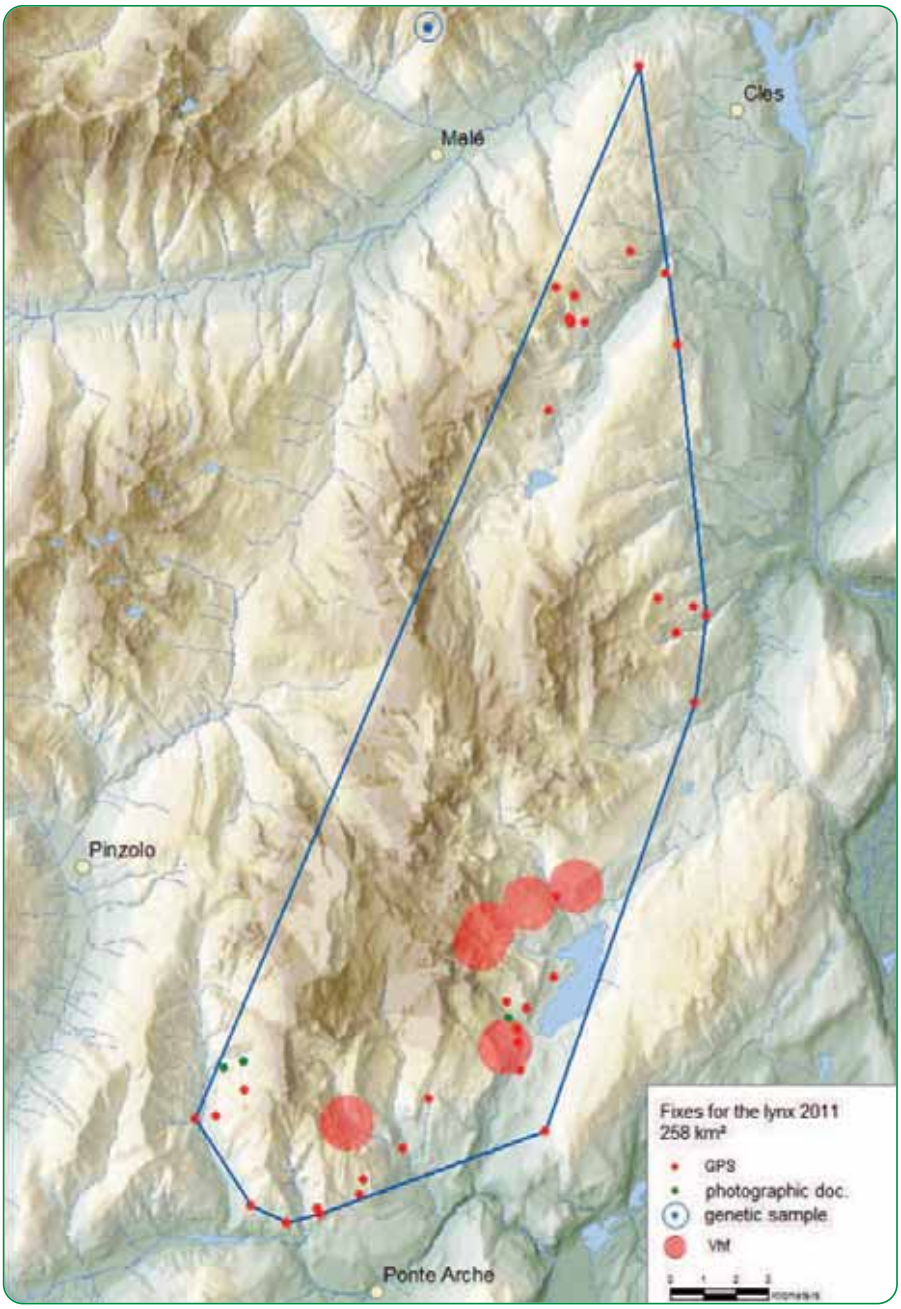
Photos 1 and 2 - The lynx B132 passing close to a bear rub tree (M. Tiso with photo trap, APT Forestry and Wildlife Dept. Archives)

Thanks to the radio collar fitted following B132's capture on 10 February 2010 (see 2010 Bear Report, pages 52-54), equipped with GPS-GSM technology and hence capable of transmitting satellite fixes at pre-established intervals through the cellular phone network, as well as functioning using the traditional VHF radio mode for searching in the field, the lynx's movements were recorded constantly also during the first few months of 2011, until the **collar's batteries were exhausted,** after **24 February 2011 (GPS-GSM)** and **27 March 2011 (VHF)**.

During 2011, there were several reports of the feline not linked to GPS/VHF monitoring, thanks to monitoring with **video-photo traps**; on no less than **26 occasions** it was possible to film the animal using this equipment in the period between **25 January and 30 May 2011** (Photos 1 and 2).

The **home-range** of the lynx from 1 January to 27 March 2011, calculated using the

Figure 1
Home-range of lynx B132 in the Brenta mountains from 1 January to 27 March 2011, calculated using the minimum convex polygon (MCP) method



minimum convex polygon (MCP) method, was **258 km²** (Figure 1).

In 2011 monitoring of the lynx's **predatory** habits also continued. The remains of three animals which can certainly be recorded as the lynx's prey were found in the period in which the GPS collar was working (January and February): a roe deer (Photo 3), a chamois and a moufflon, while a further moufflon and a roe deer which had been preyed on by a lynx were found in the autumn.

Finally, it should be recalled that in December 2011 attempts to **recapture** the lynx B132 using box traps recommenced, in order to fit the animal with a new radio collar which would allow its movements to be constantly monitored.

As regards communication activities, 2011 saw completion of the **documentary "The Lynx: the story of its return"** , produced by the Forestry and Wildlife Department with direction by Enrico Costanzo.

Photo 3 - Remains of roe deer preyed on by lynx B132 (C. Groff, APT Forestry and Wildlife Dept. Archives)

APPENDIX 2
The wolf

For the second consecutive year it was possible to document the presence of **at least one wolf** in the province of Trento.

This was the male wolf **"M24"** , recorded for the first time in Trentino on 13 April 2010 by the wardens of the Adamello Brenta Nature Park (north-eastern Brenta mountains) and subsequently identified genetically (for his history see the 2010 Bear Report, pages 56-58).

In 2011 the animal's presence was documented objectively **(genetic tests)** on two occasions in the province of Trento (Photos 1 and 2) and on a third occasion (filmed by video trap) just over the border in the territory of Bolzano (Photo 3).

Photo 1 - Wolf tracks in Val di Bresimo - November 2011 (D. Righetti, Hunting and Fishing Office - Autonomous Province of Bolzano)

Photo 2 - Excrement of the wolf M24 near Malga Castrin - Upper Val di Non - November 2011 (C. Groff, APT Forestry and Wildlife Dept. Archives)

Photo 3 - Wolf filmed by a photo trap close to the provincial frontier - 2011 (D. Righetti, Hunting and Fishing Office - Autonomous Province of Bolzano)

On a further 18 occasions (7 in the province of Trento and 11 in the province of Bolzano) the wolf's presence was documented through **sightings, tracks** in the snow or mud and **preying** on animals. While not representing objective and certain proof such as that provided by genetic monitoring and photo traps, this nevertheless provides relatively clear evidence that a wolf was present in the area during the year (Figure 1). The territory involved covers an area of c. **150 km²**, calculated using the minimum convex polygon method, albeit with all the limitations resulting from the limited amount of data available.

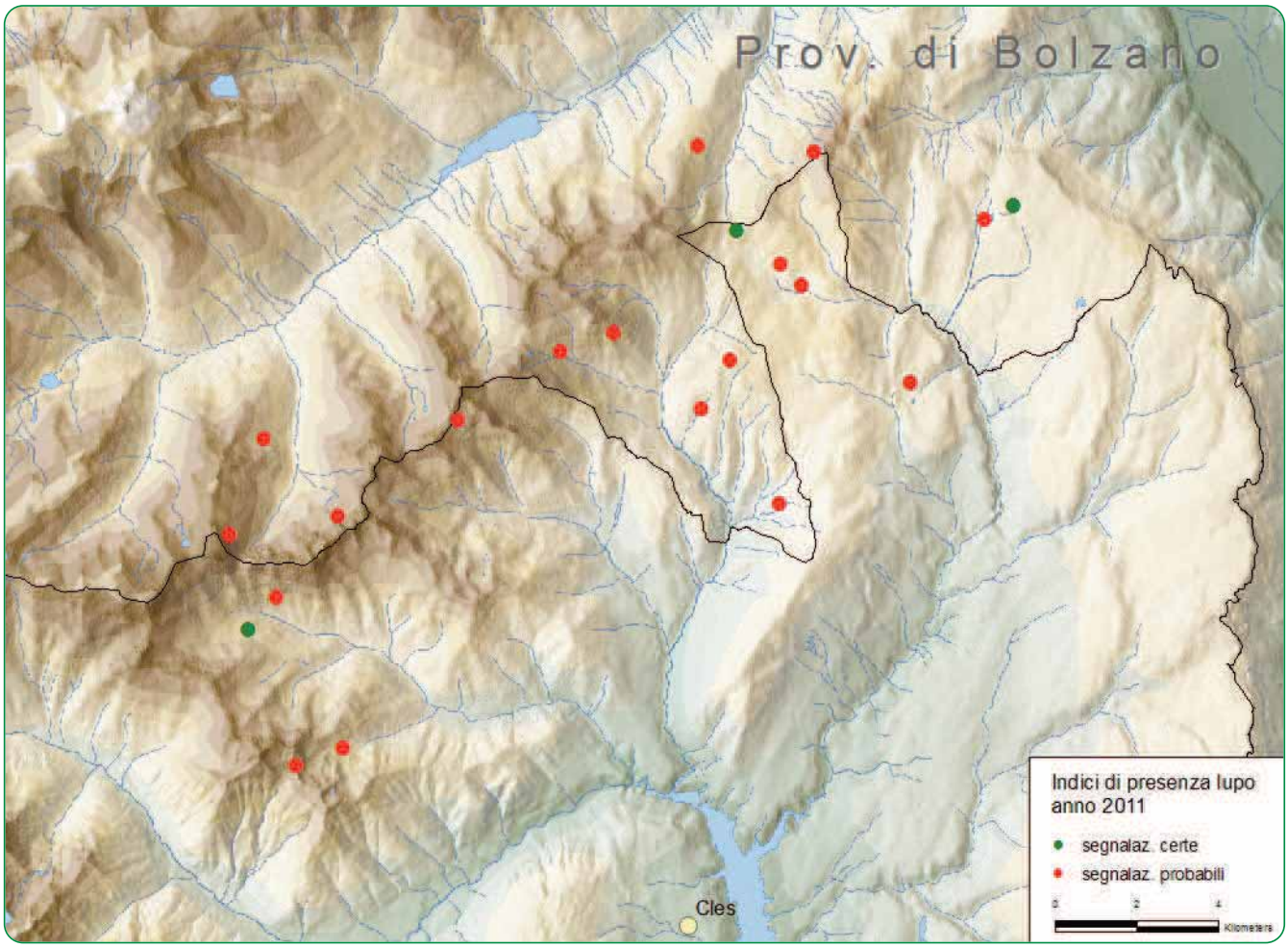
It should be recalled that in 2011 for the first time **two cases of damage** to domestic livestock taking place in the province were traced to the wolf (and therefore 100% reimbursed). The two attacks took place in the municipalities of Rumo and Bresimo (in the Upper Valle di Non) and led to the deaths of a total of four sheep and three goats, for which compensation of 1,604.17 euro was paid.

Thus 2011 saw continuation of the **natural expansion of the species in the Alps** to the province and neighbouring areas: in the last few years this has been demonstrated by documentation of individual wolves in Trentino and Alto Adige, but also in neighbouring Lombardia, Austria and Bavaria.

In **2011** it was possible to document the presence of some individual wolves in the **central eastern Alps**, with however a **fall in the number of reports** overall, and of the different areas where they come from, as compared to the previous year.

Specifically, only **1-3 wolves** were reported in **Austria**, all believed be of Italian origin (western Alps): a male in southern Austria

Figure 1
Signs of the presence of wolves in the provinces of Trento and Bolzano during 2011. Certain evidence (genetic or photo) is shown in green, probable evidence in red. Data for Alto Adige: Hunting and Fishing Office, Autonomous Province of Bolzano



(since September 2010) and a second animal probably in the same area, not genotyped up to January 2012. Finally, what was probably a third wolf was reported in south-western Carinthia. Considering the apparent loyalty of the wolf M24 to the territory of the Maddalene mountains in 2011, it is believed that this wolf is probably a different animal as compared to the Austrian wolves.

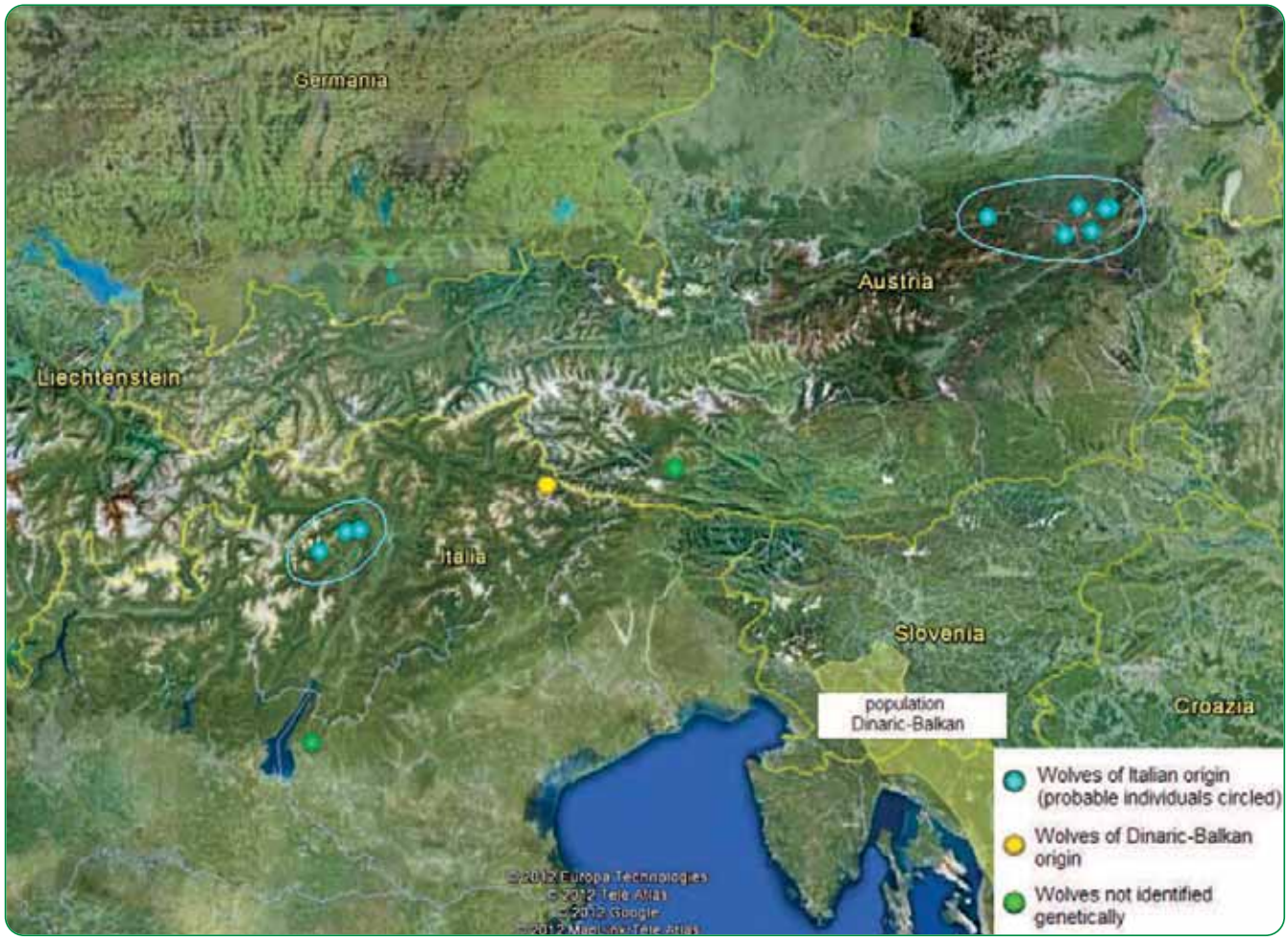
At the end of December 2011 a **wolf fitted with a radio collar** in **Slovenia** entered Austria, crossing Carinthia and heading north until it reached lower Styria, then moving south-west until it reached the Isel valley in eastern Tyrol and Alto Adige (Val Pusteria), Belluno Province and finally eatsern Trentino on 20th of February 2012 (M. Krofel, J. Rauer - pers. comm.).

Finally, at the very beginning of 2012 a probable **wolf** of unknown origin was photographed in the **Lessini mountains (VR)**, not far from the border with the province of Trento (State Forestry Service, Bosco Chiesanuova - VR).

The Forestry and Wildlife Department attended two **conferences** regarding management of the wolf, within the context of Arge Alp in **Innsbruck** (A) on 12 May and the LIFE WOLFNET project in **S. Sofia (FC)** on 22 and 23 November.

It also attended the annual meeting of W.A.G. **(Wolf Alpine Group)** which was held in **Turin** on 20 September, with representatives of regions and countries in the Alps which are involved in the management of wolves.

Figure 2
Wolves identified in the central-eastern Alps up to January 2012 (G. Rauer, modified and supplemented)



NOTES

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