

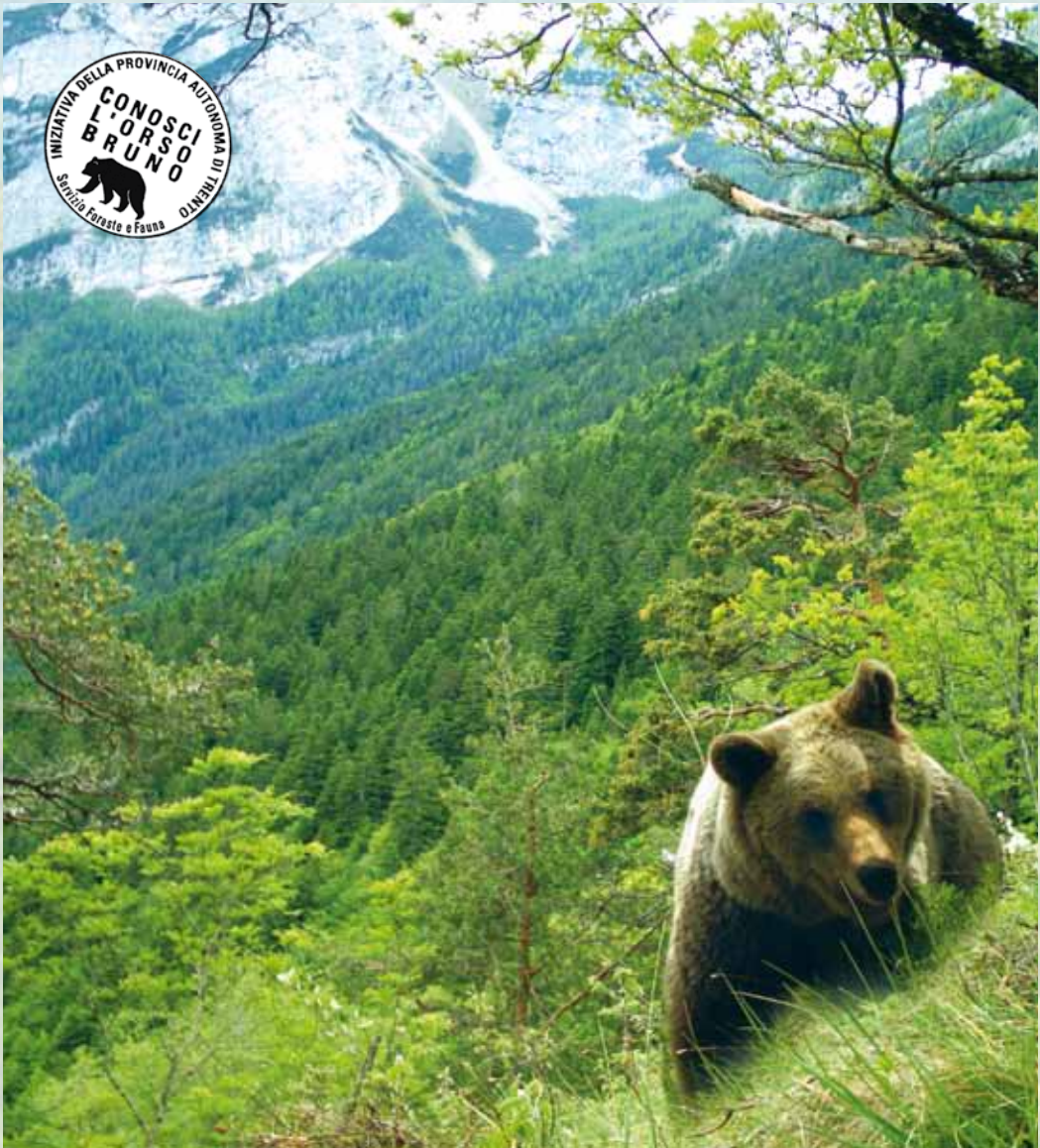


PROVINCIA
AUTONOMA
DI TRENTO

TRENTINO

BEAR REPORT 2015

With appendices on the lynx and the wolf



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PROVINCIA AUTONOMA
DI TRENTO



SERVIZIO FORESTE E FAUNA
Settore Grandi carnivori

CERTIFICATO
UNI EN ISO 14001
OHSAS 18001



BEAR REPORT 2015



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Cover page

“Bear in the Sporeggio valley”

Photo by Matteo Zeni - APT Forestry and Wildlife Department archives (camera trap)

Back cover

“Beech trees in autumn”

Photo by Claudio Groff - APT Forestry and Wildlife Department archives

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The **conservation and management** of the bear in the province of Trento takes place in the context of the national and international regulatory framework, on the basis of the operational guidelines set out by the provincial government in resolutions no. 1428 and no. 1988 of 21 June 2002 and 9 August 2002. Specifically, six **programmes of action** have been identified (Monitoring, Damage Management, Management of Emergencies, Staff Training, Communication and National and International 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 (APT) for 40 years. Over time, traditional survey techniques in the field have been supplemented by radiotracking (a method first used in Eurasia, in the second half of the 1970s), automatic video controls by remote stations, camera traps and finally, since 2002, by **genetic monitoring**.

Genetic monitoring is based on the collection of organic samples (hairs, scats, saliva and tissues) 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 activities and at damage sites. In the last few years, genetic monitoring has represented the key technique for collecting information regarding the bear population present in the province. In 2015, this was carried out for the **fourteenth consecutive year**, coordinated by APT’s Forestry and Wildlife Department, with the collaboration of ISPRA, PNAB, MUSE, Associazione Cacciatori Trentini (ACT) and volunteers.

Specifically, during 2015 **systematic monitoring** was again carried out at **69 sites**, from 20 May to 29 July. This type of monitoring provided **246** organic samples out of a **total of 807** samples collected.

Further samples were collected outside the province, contributing towards determining the total number of bears identified belonging to this **population**; the relative data was kindly provided by the **Autonomous Province of Bolzano**, the **Veneto Region**, the **Autonomous Region of Friuli Venezia Giulia**, the **University of Udine**, **Department of Agrarian and Environmental Science**, the **Province of Brescia**, and the **Hunting and Fishing Office of the Grisons Canton (CH)**.

The **data** is collected and processed on an annual basis, with reference to the **solar year** (1/1 - 31/12), which effectively coincides with the bear’s “biological year”, making it possible to take stock of the situation just before new births and during the period of the year in which the species is least active. It is nevertheless implicit that the monitoring techniques cited do not guarantee that **all the bears present** in the area will be detected, so the data in this report must be interpreted bearing in mind this **intrinsic limitation**.

In 2015 **genetic testing** was again carried out by technical staff at the conservation genetics laboratory at **ISPRA**. The methods developed, in accordance with the provisions of the Action Plan for the Conservation of the Brown Bear in the Central Alps (PACOBACE), provide for amplification of ten different genomic regions (DNA microsatellites) and molecular sexing of all the organic samples. The high risk of error associated with analysis of samples collected using non-invasive techniques demands optimisation of laboratory procedures, designed to minimise the risk of genotyping errors. With this scope the multiple amplification approach has been adopted, involving repeating a series of tests until a genotype considered to be reliable is obtained. Reliability was established using sta-



tistical evaluation, carried out using the Reliotype programme. 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, sampling and other data coming from other activities in the field (telemetry, sightings etc.) and designed to identify samples potentially subject to error. Further tests are used for these samples in order to clarify any uncertainty.

As a result of the small size of the population and its reproductive isolation, over the years there has been a gradual reduction in the **level of heterozygosity**, which has gone from 0.776 (0.020 ES) UHe in 2003 to **0.730** (0.009 ES) UHe **in 2015**. However, the 4 per cent reduction in over ten years of reproductive isolation (four/five generations) is minimal, and the population still has a **good level of genetic variability**.

During **2015** a specific **cooperation agreement** was stipulated with the **Associazione Cacciatori Trentini** (hunters' association) in relation to monitoring of the bear and other large carnivores (but also as regards communication and staff training). The agreement effectively revitalises the role of hunters in the study and monitoring of the bear in the province of Trento, a role which has continued without interruption since the 1950s and '60s, when a number of gamekeepers made an important contribution to the monitoring of some autochthonous bears present. More recently, it should be recalled that through its staff the Associazione Cacciatori Trentini has made a constructive contribution to the monitoring of the bears released in Trentino in the context of the *Life Ursus* Project.

In 2015 two new monitoring initiatives were started up, based on the use of camera traps and remote observation, illustrated in Boxes 1 and 2.



BOX 1 - Systematic monitoring of mammals using camera traps

*This box presents the results of monitoring of wild fauna through the **systematic use of camera traps** in summer 2015, intended to be the first year of a long-term monitoring programme. The project is part of the agreement between APT and MUSE for the monitoring of large carnivores, in collaboration with the PNAB. This new monitoring protocol, which has never been applied within Italy in terms of the quantity of data collected and the systematic approach adopted, follows on from the positive experience gained from the use of camera traps to study the use of rub trees by bears carried out in 2011, 2012 and 2013, but with the more general scope of monitoring the whole community of medium-large mammals over time. The study is based on a protocol for monitoring terrestrial vertebrates developed by a global network (the Tropical Ecology Assessment and Monitoring Network). The scope of*

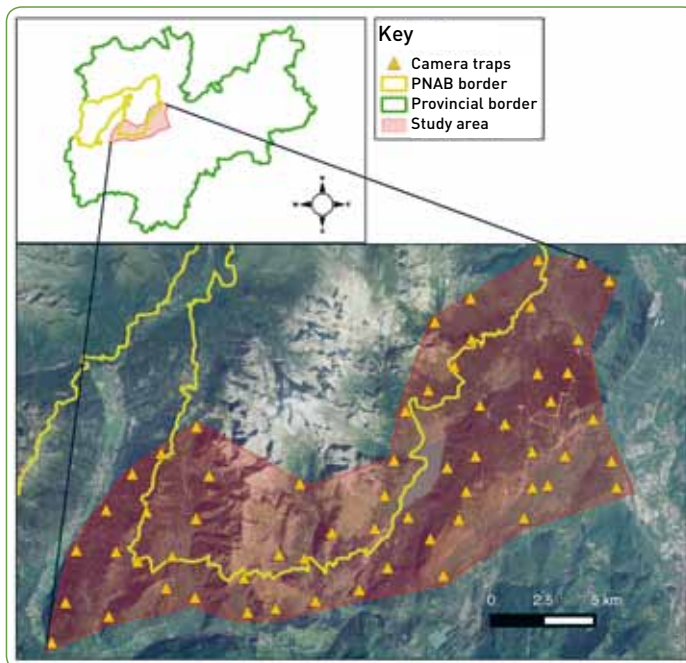


sampling is to obtain quantitative data on the presence-absence of the species, in order to apply effective statistical analysis to determine the pattern of distribution and the abundance of medium-large mammals present in the study area. Thanks to this standardised approach it is then possible to arrive at indices of local biodiversity, such as the WPI (Wild-life Picture Index), which summarises the state of a mammal community in terms of the wealth and abundance of species; over time this index provides information about temporal changes in the mammals present in an area.

The **study area (220 km²)** was selected in such a way as to represent the elevational gradient and the forest habitat, and falls partly within the Parco Naturale Adamello-Brenta (PNAB) and the core area of the **brown bear** population, the target species of greatest interest in the study. Reconyx HC500" and "IR plus UV572" camera traps were used, distributed over **60 points** (Figure A) and **active for at least 30 consecutive days** each. For the sake of simplicity, the cameras were initially used at 30 sites for a month and then subsequently transferred to the remaining 30 sites for a further month. The sampling stations were situated around 1.5-2.5 km from one another, on footpaths or forest roads, in such a way as to be representative of all the altitudinal bands between 500 m and 1900 m. The cameras were attached to trees opposite the footpath/road, at a distance of 3-6 metres, depending on the model. They were set to photo mode (3 consecutive shots per passage), with continuous operation and the date and time of the shot impressed on the image, and equipped with a memory card of at least 4 GB.

Sampling took place **from 10 June to 31 August 2015**, with a total of 1978 camera days (average of 34.1). Of the 60 cameras, only 2 operated in a defective manner. They recorded **49,595 images**, of which **9,903** were images of wild animals (**mammals and birds**). The presence of domestic species and of man (on foot and in vehicles) was recorded and quantified.

Figure A - Map of the 60 camera trap sites in the study area in western Trentino. The yellow line shows the border of the Parco Naturale Adamello-Brenta.



The number of "independent events" for each species was calculated, eliminating sequential images from the calculation because they referred to a single event, considering a standard time interval established as 15 minutes.

The presence of the **brown bear** was recorded at **20** out of the 60 total sites (Figure B), with 39 independent events and a maximum of 6 at a single site.

Analysis of the **pattern of daily activity** showed a tendency for the species to be most active in the period before dawn (3:00-4:00 GMT) and towards sunset/dusk (18:00-21:00 GMT), with secondary peaks of activity during the night.



Figura B - Map of camera trap sites and events involving brown bears in the study area.



Foto A - Deer photographed by a Reconyx HC500 - MUSE archives

Analysis of the **likelihood of the species being present** at the sampling sites made it possible to calculate an average value of 0.52 (± 0.15), which was relatively constant at the sites (0.48-0.55) and little influenced by the environmental variables and disturbances considered. The results of **detectability analysis** (a parameter indicating the ease with which animals are recorded, and which can vary for behavioural reasons) instead showed the positive effect of distance from inhabited areas and the negative effect of tourist-pedestrian traffic.

In addition to the bear, other species were also recorded, including the **wolf**, photographed by a camera trap on a single occasion in the Val Algone. The other **mammals** "captured" on film (12 species in total) were, in descending order in terms of the decreasing number of events: the fox, roe deer, red deer (Photo A), chamois, hare, badger, stone marten (*Martes spp.*), squirrel, marmot and weasel. Analysis of probable presence was carried out for species with an adequate number of events (>20), which included ungulates, the fox, badger, marten and hare, in addition to the bear.

Francesco Rovero, Valentina Oberosler - Museo delle Scienze

BOX 2 - The bear watching

Observing bears in the wild in the Alps is usually extremely difficult, given that there is a small population of animals living in a wooded environment, and above all because there are no special conditions facilitating the observation of an elusive, solitary and mainly crepuscular/nocturnal animal. Elsewhere, in Slovenia, Scandinavia and the Balkans for example, the concentration of bears frequenting certain areas for trophic reasons means that it is possible to observe them with a certain ease at feeding sites created by man, whereas in other places, such as Abruzzo and Alaska, bears can be observed when they visit specific sites providing natural sources of concentrated and seasonal food (respectively buckthorn fruit and salmon).

In the last two-three seasons a number of enthusiastic volunteers have also begun to understand the potential for observing bears in Trentino, through remote sighting using appropriate optical equipment, identifying suitable areas and periods for this activity.

Specifically, it has been possible to ascertain that in **spring** certain bears are also inclined to be **active** during the **day** and in **open environments**, often steep and at high altitude, rather than at night and in the woods, as usually takes place.

This seems to be particularly true for **females accompanied by cubs** born during the year, hence a few months old (3-6) (Photo A).



Foto A - Female bear with two cubs in the southern Brenta mountains (M. Vettorazzi - APT Forestry and Wildlife Department archives)

This behaviour is probably linked to the need to **reduce the likelihood of meeting males** during the mating season, trying to move around and feed at times and in environments that are not ideal, but where conspecific encounters are less likely. It is indeed well-known that males can attack and kill cubs, or at least drive them away, so that the females initiate oestrus and are thus available for mating.

Hence staying outside the forest, above the tree line, would appear to give female bears the chance to reduce the likelihood of unpleasant encounters and to become aware of approaching danger more easily. Furthermore, alpine grasslands are an environment providing **fresh grass** in this season, a food which is greatly appreciated by bears, who feed on it intensively.

The marked philopatry of the females also means that in these areas it is relatively common to observe female bears accompanied by cubs born the previous year, or these cubs themselves, in the first phases of independence. Finally, the relative concentration of female bears probably also leads to a certain amount of passage by males, who are however less



frequently seen, especially adults.

It should be recalled that the demographic conditions necessary for these dynamics to occur (several females with cubs and a certain number of adult males interested in reproducing) have only existed in Trentino in the last few years, for the first time after a lengthy gap, following the recent increase in the numbers of males and females of reproductive age.

Certain slopes in the **eastern and southern Brenta mountains**, steep, with an extensive elevation gain and furrowed by avalanche gullies, have shown to be particularly popular with bears in the spring. However, other orographically similar areas of the Brenta mountains (starting from those in the north) and in the Paganella-Gazza chain are probably also frequented with a certain regularity.

During **spring 2015**, for the first time **data** regarding monitoring processes and sighting carried out in an opportunistic manner by volunteers was collected systematically. This is summarised briefly below. It is significant to note the fundamental contribution made by this data in terms of assessing a relatively important demographic parameter, namely the number of females accompanied by cubs born during the year. Last spring it was indeed possible to estimate the presence of 7-8 females with cubs born during the year relatively accurately (then confirmed by genetic testing during the year), by directly observing most of them and cross-checking the data with other reports coming from the field in the meantime.

Furthermore, it is undoubtedly fascinating and of great **naturalistic/scientific interest** to be able to observe the bear moving freely in its natural environment, unconditioned by man and behaving completely naturally, often over a lengthy period. In this context, it is also worth recalling the **potential** that this activity could have in terms of **ecotourism**.

The monitoring took place in **April, May and June** 2015, from panoramic vantage points in **6 different areas**, 2 of which monitored with a certain constancy.



Foto B - Remote observation point (C. Groff - APT Forestry and Wildlife Department archives)

A total of **63 sighting outings** were carried out, with more than **170 hours of observation** using appropriate equipment (binoculars and telescopes), by 1-7 watchers per site (Photo B) (up to three sites at the same time).

In most cases the observations took place from the valley floor, or from one slope to another, at distances of between 1,000 and 2,000 metres.

39 outings out of 63 (62%) were **positive**, namely led to the sighting of one or more bears, with an **average observation time** of around **2h 20'**.

There were a total of **41 sightings**, understood as individual events in which single bears or independent family units were seen, and these involved:

- on 27 occasions, females with cubs born during the year (at least 4 different females with a total of 8 cubs);
- on 8 occasions, a female with a young bear born the previous year;
- on 3 occasions, sighting of at least one adult bear;
- on 3 occasions, sighting of at least one young bear.

Hence at least **16** different bears were observed over the course of the spring.

Status of the population in 2015

Definitions

- **“Cubs”**: bears aged between 0 and 1.
- **“Young bears”**: males between the ages of 1 and 4 and females between the ages of 1 and 3.
- **“Adults”**: males over the age of 4 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 and repeated observations.
- **“Undetected bears”**: bears 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 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 of bears from the Dinaric-Balkan bear population in the province.

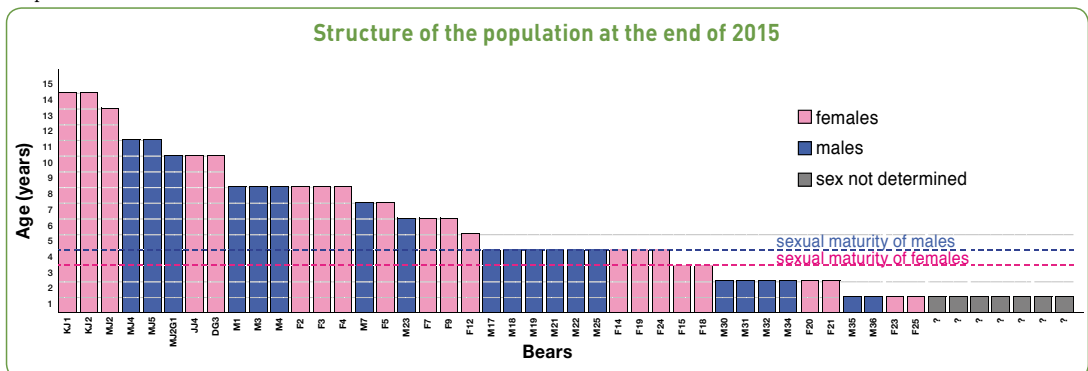
Processing of the data collected has provided the information given subsequently regarding the **identification of the bears sampled**, **estimation of the minimum population**, the number of **litters** during 2015, the **survival rate**, the **trends** in terms of population development and the **use of the area** by the animals.

It should be noted that the **graphs regarding demographic aspects** have been **updated** not only in relation to the last year, but also by amending the data for **previous years** that monitoring in 2015 has made it possible to recover. This explains the differences which can sometimes be found in relation to graphs in previous reports. **Updating of the data available** and the relative graphs is therefore **“ongoing”** and the current graphs must thus be considered to substitute previous ones, bearing in mind the greater reliability of the background information and hence the related analysis.

Results

The **minimum number** of animals considered to be present at the end of 2015 was **48**, of which **20 males**, **21 females** and **7 cubs** of **undetermined sex** (see Graph 1) (M-F sex ratio 1:1.05 - $N^{\circ}=41$).

Graph 1



Once again this year it is likely that the genetic monitoring carried out in the province did not detect all the bears making up the population. Considering the presence of individuals not detected in the last year alone (6) as possible/probable, the **estimated population in 2015** goes from **48 to 54 bears**.

It should be underlined that the minimum figure is certain, whereas the extra bears considered to be possibly present are based exclusively on an evaluation of probability, according to specific criteria shown to be essentially valid to date, but which have intrinsic limitations. The 48 bears therefore represent the “**minimum certain population**”, which is different from a genuine “**population estimate**”, requiring the use of demographic models involving capture (genetic), marking and recapture (CMR), on the basis of which an estimate was produced for the first time in Trentino during 2014, thanks to the scientific support of the Museo delle Scienze in Trento (see Box 1 in the 2014 Bear Report).

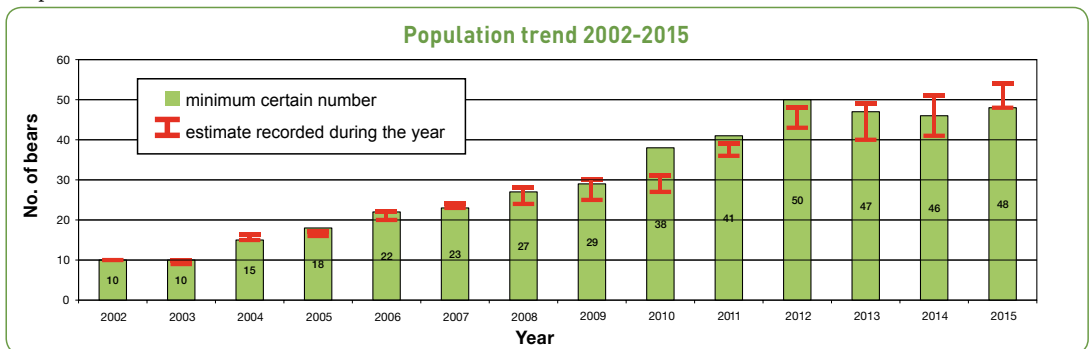
The estimated population in 2015 is thus shown to have been **essentially stable** in the last four years, with around fifty bears, in contrast with almost constant growth from 2002 to 2012 (average growth rate of 17.3% in the minimum certain population in that period).

At the end of 2015 the **structure** of the ascertained population was as follows: **23 adults** (8 males and 15 females), **14 young bears** (10 males, 4 females) and **11 cubs** (2 males, 2 females and 7 of undetermined sex).

The population **trend** is shown in Graph 2. The columns show the “**minimum certain numbers**”, which have been updated and supplemented using data acquired in subsequent years (for example, on the basis of genetic ‘recapture’ this year, we now know that the minimum certain number of bears present in 2014 was 46, and no longer 41 as indicated in last report).

The graph also shows **past data for estimates recorded year by year**, represented by the gap shown in **red** (minimum certain number and estimated number, also considering bears absent for only one year); the respective figures effectively provide a “snapshot” of each season, unchanged by the adjustments made possible later due to subsequent monitoring.

Graph 2



New litters

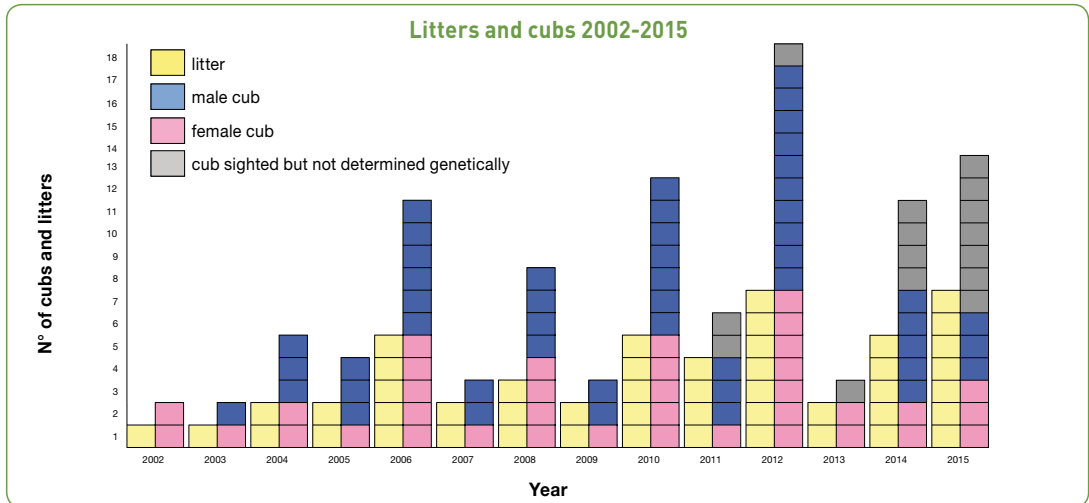
In **2015** the presence of **7 new litters** during the year was ascertained, with a total of **13 cubs** (3 cubs for KJ2, 2 for F4, KJ1, F3 and BJ1 and 1 for F12 and MJ2). However, BJ1 was found dead with her two cubs, following an attack by a male bear.

It is believed to be possible/likely that there was at least one further litter, but it was not possible to obtain objective and certain evidence of the fact. Consequently, as is the practice, this litter was not included in this report but will be taken into consideration in subsequent years should genetic evidence confirm its presence. **Genetic testing** made it possible to identify 6 of the 13 cubs (3 females and 3 males).



48 litters have therefore been ascertained to date in Trentino in the last **fourteen years**, and at least **101 cubs** have been born (49 males, 37 females and 15 of unknown gender) - (see Graph 3), **M-F sex ratio 1:0.76** (2002-2015, n°=86).

Graph 3



The **average number of cubs per litter is 2,1**. It should be specified that this figure is probably slightly underestimated, given that some cubs die before monitoring can identify them.

Reproducing bears

To date **19 females** have undoubtedly reproduced, together with **10 males**. There were **8 sexually mature males** present in 2015, while there were **15 sexually mature females** (again without considering the bears dying during the course of the year).

“Rediscovered” bears

During 2015 **one bear** (an adult female) was “rediscovered” genetically (see definitions on page 11).

Bears undetected in 2015 alone

Six bears present in 2014 were **undetected for the first year** in 2015.

Missing bears

6 new bears must be considered **missing** as they have not been genetically recorded in the last two years.

2015 also saw the **death of five bears**.

- **M6**, an **8-year-old male**, found dead as a result of poisoning on 28 March 2015 in the woods of Campodenno/Lover, in the Val di Non (photo 1).
- **BJ1**, a **10-year-old female**, together with the cubs **F22** and **M33**, killed and partially eaten by a male bear in the Val di Tovel (at Costa Lugiangia), on 10 May 2015 (photos 2 and 3).
- **M26**, a **3-year-old male** whose remains were found on the right-hand side of the Val di Sole, in the municipality of Caldes on 22 August 2015 (photo 4).



Photo 1 - The male bear M6, who died from poisoning in the Val di Non (M. Baggia - APT Forestry and Wildlife Department archives)



Photo 2 - The female BJ1, killed by a male bear in the Val di Tovel (M. Baggia and R. Calvetti - APT Forestry and Wildlife Department archives)



Photo 3 - Remains of BJ1's cubs (M. Baggia and R. Calvetti - APT Forestry and Wildlife Department archives)



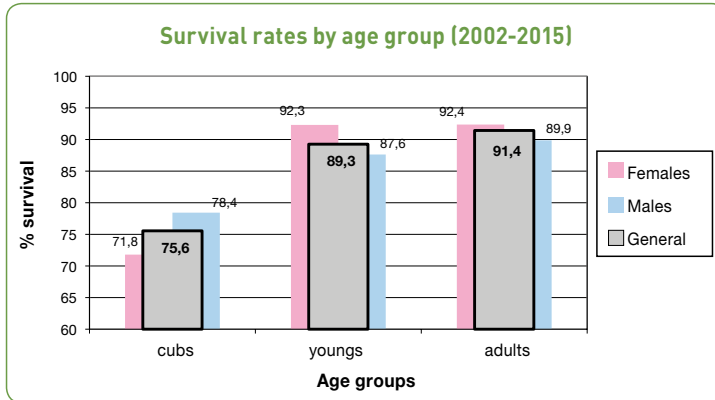
Photo 4 - Remains of the male M26, found dead in the Val di Sole (M. Taddei and T. Ruatti - APT Forestry and Wildlife Department archives)

Thus by the end of 2015 at least **28** bears are known to have **died**. In 8 cases the deaths were due to natural causes, in 9 cases the cause is unknown, while in 11 cases the deaths were linked to man. It should be underlined that these figures probably do not reflect either the total number of dead bears, nor the real proportions in terms of the cause of death, given the different likelihood of noting them (for example it is much easier to find bears hit by vehicles along roads than those dying from natural causes).

Survival rates

The new data available make it possible to update the survival rates for the three different age groups, differentiated for the two sexes (Graph 4). The data refers to a period of **14 years** (2002-2015), during which it was possible to record the survival or death of **99** different bears, with

Graph 4



449 passages from one year to another (**449 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. The data regarding any emigrating bears is instead only considered up to the time that they leave their original population.

As regards **survival rates**, it is worth recalling that both **Daniza’s cubs**, born in 2014,

successfully survived the winter of 2014-2015, hibernating in the usual way and being detected genetically the following spring. This confirms the good possibilities of survival forecast by the experts.



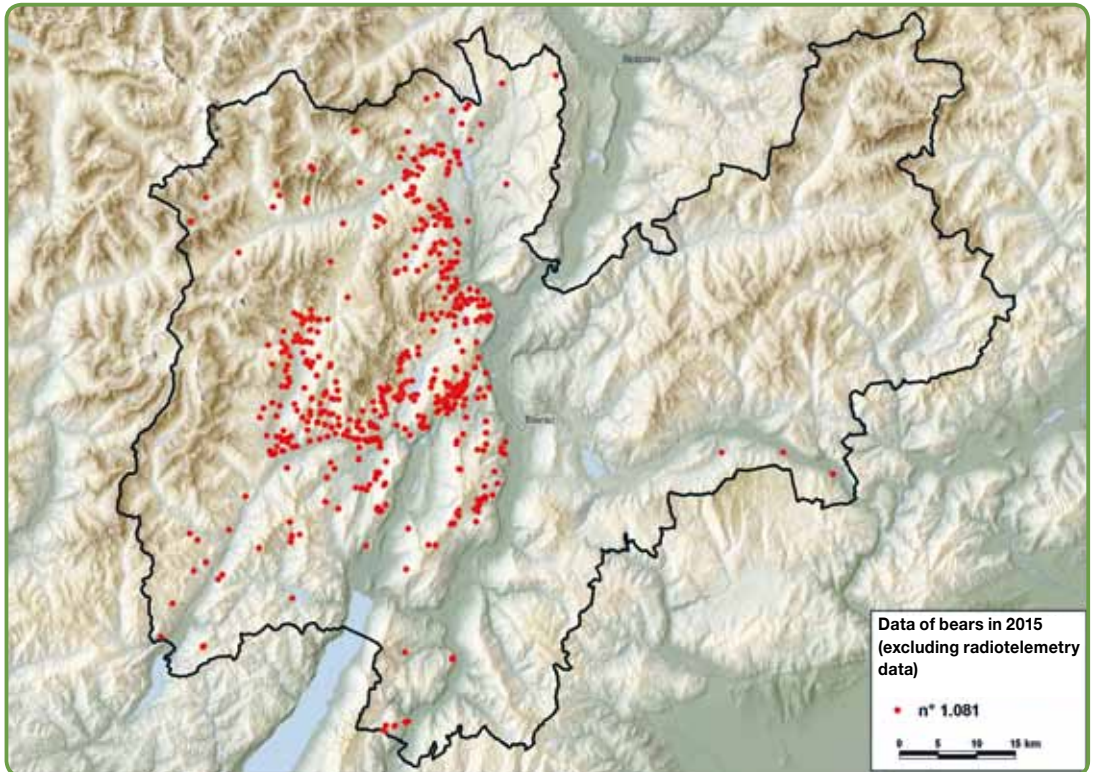
Use of the territory

47 of the **48** bears recorded in 2015 were detected in the territory of **Trentino** (**40** in Trentino alone, **7** also in neighbouring provinces/regions). **1** bear lived entirely outside the province: **M25**, recorded in the province of Sondrio, his fate being unknown since the sudden disappearance of the radio and GPS signal transmitted by his collar. All the **8** bears detected also or exclusively outside the province in 2015 were males: **7** adults and **1** young bear.

4 bears also frequented the province of **Bolzano** (MJ5, M7, M22 and M32), all on slopes going from the upper Val Venosta to the Val d'Ultimo, and the right-hand side of the Adige up to the border with Trento; 1 was also present in **Veneto** (M19), 1 in **Friuli V.G.** (M4) and 2 in **Lombardy** (M18 and M25).

The **1,081 data** of bears collected within the **province of Trento** during 2015 (all data, with the exception of those from satellite monitoring of three bears) are shown in Figure 1.

Figure 1 - Reports of bears in the province of Trento in 2015



The only three certain data regarding **eastern Trentino** in 2015 concern the male bear M4, present in the lower Valsugana at the beginning of spring, before he headed towards Friuli V. G. **None** of the other **reports and rumours** following one another during the summer led to **any objective confirmation**.

Area occupied by the population

Considering also the longest journeys made by young males, the **population** of brown bears present in the central Alps, which is mainly centred around western Trentino, **was distributed over a theoretical area stretching out over 20,794 km² in 2015** (Figure 3). The **area occupied by the females in a stable manner** is smaller (1,303 km²), although a **little larger** than in previous years; this is still entirely situated within the province. The areas occupied were estimated using the minimum convex polygon method, applied to 100% of the validated indicators of presence. 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.

Figure 2 - Area occupied by bears in the central Alps in 2015 (in blue), highlighting the area within this occupied by the females (in pink).



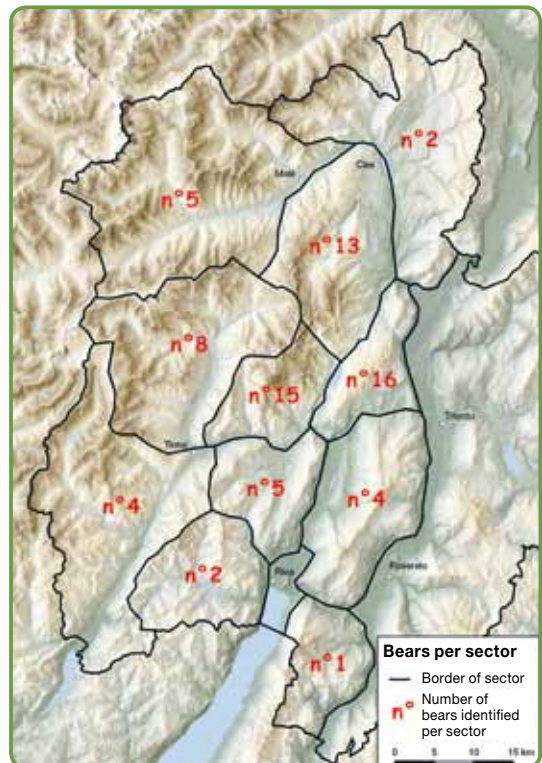
Population density

The population **density** in the area **occupied by the females** (1,303 km²) is **3.4 bears/100 km²** (44 bears, including cubs born during the year). This data should be considered bearing in mind the following:

- the density refers to a dataset collected over an extensive period of time (a solar year) and therefore the number of bears present in the area at a certain moment, which would represent a figure closer to the real average density, is likely to be lower;
- some bears also frequented areas outside the area occupied by females in the period of time considered.

This density may be different locally, as is partly evident in Figure 3, which shows the **number of bears** identified with certainty (genetic tests, radiotelemetry, photos) in each **sector** of western Trentino. It goes without saying that many animals were present in more than one sector and may therefore have been identified in several of them. It follows that the total minimum number ascertained in the province and in neighbouring areas in 2015 remains 48 bears and thus there is no sense in summing data from the individual sectors.

Figure 3 - Number of bears identified in each sector of western Trentino

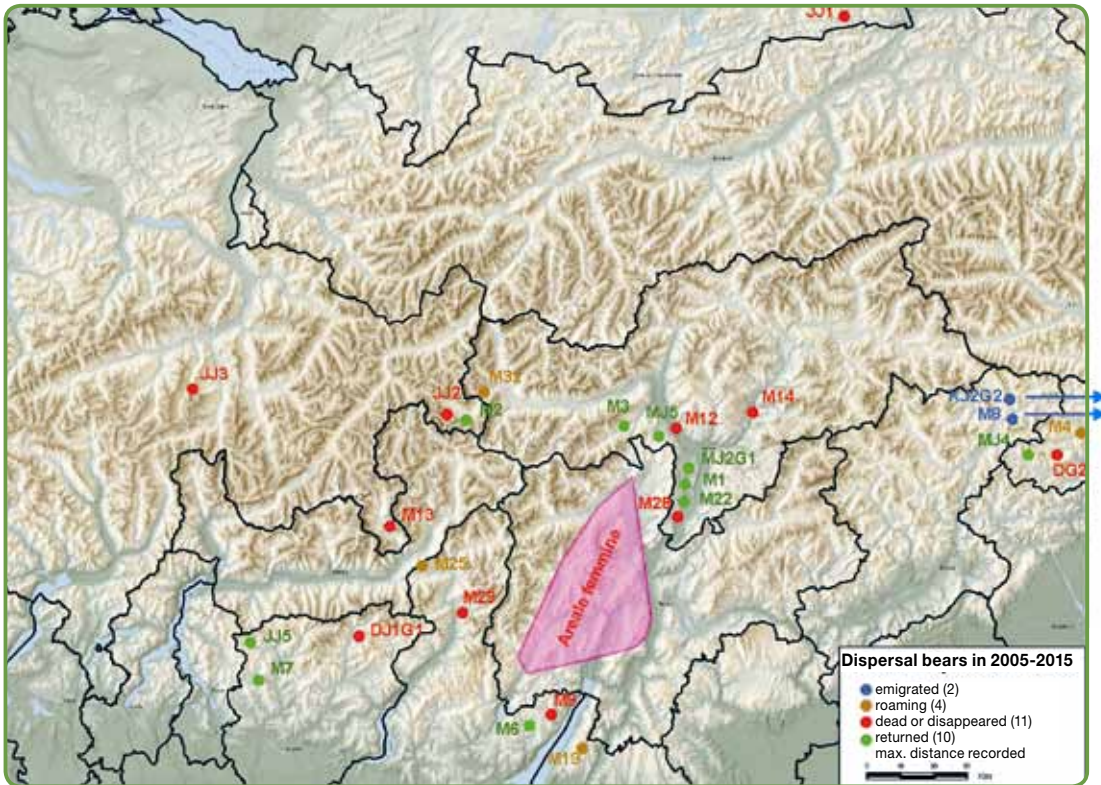


Dispersion

In the period 2005-2015 it was possible to document **dispersion** (understood as movement outside western Trentino, see the definition on page 11) involving **27 bears** (all males). **11 of these (41%) died or disappeared**, a further **10 (37%) returned**, **2 (7%) emigrated** and **4 (15%) are still roaming**. **No dispersion by females** born in Trentino has yet been documented.

Figure 4 shows the locations of animals involved in dispersion that it has been possible to identify with genetic monitoring, highlighting specifically the points where they died, their last location before their disappearance or their maximum distance from the area occupied by the females. The arrows extending beyond the map instead refer to the two emigrating bears.

Figure 4 - Location of the furthest point from the area occupied by the females reached by bears involved in dispersion



2. Damage compensation and prevention

By now APT has gained forty 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 **compensated** and it is possible to acquire **prevention works** (mostly consisting of electric fences or guard dogs). The relative regulations, dealt with in article 33 of provincial law no.24/91, have been revised and updated several times over the years, also on the basis of directives imposed by the provincial government with the aforementioned resolution no. 1988 of 9 August 2002. With resolution no. 697 of 8 April **2011** the provincial government further reviewed the regulations for damage compensation, also providing for compensation of ancillary expenses and extending 100% compensation to damage caused by **lynx** and **wolves**.

Prevention activities take place following two main lines of action: **funding** covering up to 90% of the cost of works and/or **gratuitous loans** of prevention works, and support/consultancy for farmers through the activities of **livestock liaison officers**, who provide assistance and consultancy services to shepherds, mainly during the period of alpine grazing.

Compensation for damage caused by bears



Photo 5 - Checking of damage to beehives (G. Vettori - APT Forestry and Wildlife Department archives)

In 2015, **163 reports of damage caused by bears** were forwarded to the Forestry and Wildlife Department; of these **128 cases** effectively referred to damage caused by **bears**, whereas **35 were not attributable to bears**. **112 claims for compensation** were received by the department, of which **104 were accepted** and **8 rejected**. There were fewer claims for compensation than there were reports of damage, both because some were cumulative claims for several cases of damage suffered by a

single user, and because in some cases of limited financial significance the damaged party did not follow up the report. In 88% of cases the report of damage was followed by an inspection by forestry staff, who drew up a report.

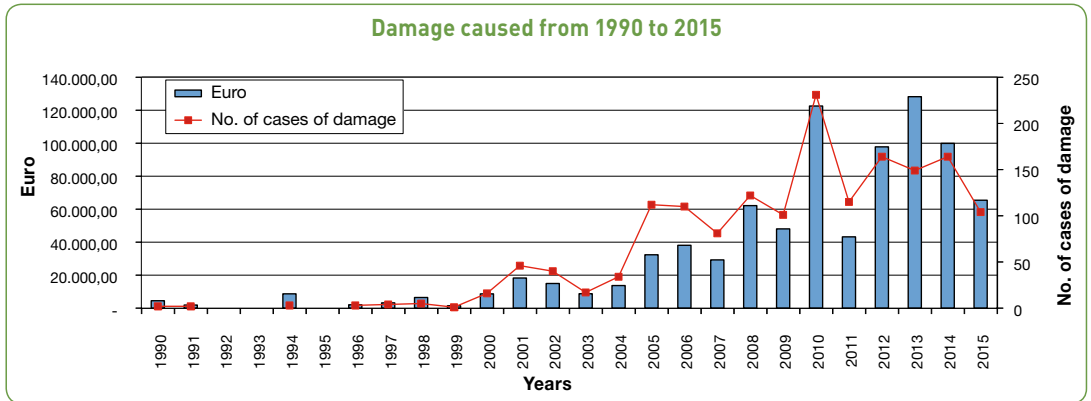
Overall, **65,595.00 €** compensation for damage caused by brown bears was paid out, of which **23,065.00 €** for **damages related to bee-keeping** (photo 5), **27,405.00 €** for crops (photo 6), **14,008.00 €** for livestock, and **1,117.00 €** for **other damages**.



Photo 6 - Damage to corn crops (V. Calvetti - APT Forestry and Wildlife Department archives)

Graph 5 shows the long-term trend for damage caused by bears.

Graph 5



In 40 cases (31% of the overall damage ascertained to have been caused by bears), it was possible to determine the identity of the bear involved with certainty, thanks to genetic testing of organic samples (hairs or scats) collected at the site of the damage. Overall **16 different genotypes** were identified (9 males and 7 females), representing 39% of the population detected genetically in 2015. Of these, 7 (3 females and 4 males) were detected at only one damage site, 4 (2 females and 2 males) at two damage sites, 2 (males) at three damage sites, 1 (female) at five damage sites and 2 (1 female and 1 male) at seven damage sites.

In 2015 there were no particularly problematical situations linked to damage, also because the bears causing a particularly large amount of damage in 2014 (M25 - M4 - M6) were not present in the province in 2015, for various reasons.

Prevention of damage by bears

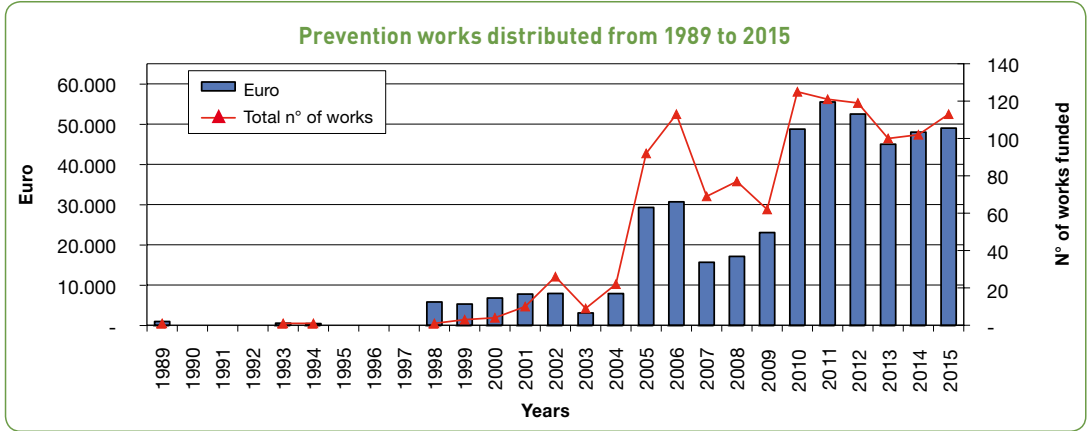


Photo 7 - Prevention works protecting a flock (C. Gröff - APT Forestry and Wildlife Department archives)

During the year, a total of **120 applications** for prevention works to protect properties from damage by brown bears were presented. Of these **102** were dealt with by the District Forestry Offices by providing **gratuitous loans: 63** were designed to protect beehives and **39** livestock. The remaining **18 applications** concerned livestock (mainly cattle and equines) were dealt with by the Large Carnivores Section of the Forestry and Wildlife Department (11 accepted and 7 rejected or cancelled). The **overall expenditure** amounted to **49,000.00 €**.

The following graph shows the long-term trend for the number of prevention works distributed and the relative cost (Graph 6).

Graph 6



Guarding dogs

Guarding dogs are used to protect animals at pasture from attacks by wolves and bears; the first two dogs were handed over to a farmer in Trentino in 2014 (see the 2014 Report, pages 43-44). In 2015 a further **5 guard dogs** (3 females and 2 males belonging to the Abruzzo-Maremma sheepdog race) were provided to 4 different farmers with animals at pasture in the Brenta and Lessinia mountains. The animals provided, aged between 2 and 5 months, were purchased from specialist/certified breeders belonging to ENCI (Ente Nazionale Cinofilia Italiana), guaranteeing health standards and genetic lines with an aptitude for work (Photo 8).



Photo 8 - Guarding dog for the protection of livestock (D. Asson - APT Forestry and Wildlife Department archives)

Meetings with stakeholders

In 2015 the relations already started up for some time with the stakeholders most affected by the presence of bears and other large carnivores continued.

The **Round table with representatives of farmers, breeders and bee-keepers** met twice, on 27 April and 10 November.

Intervention to support animal husbandry

One of the objectives of the provincial administration is to encourage shepherds to stay at high altitude, close to their flocks/herds. The presence of the shepherd and the adoption of more appropriate systems for preventing damage, along with fair compensation, are fundamental in



Photo 9 - Transport of an accommodation unit to the mountains (D. Asson - APT Forestry and Wildlife Department archives)

guaranteeing coexistence between large carnivores and livestock reared in the mountains. These objectives are also pursued through the activities carried out by the **livestock liaison officers**; the area within which brown bears are present in a stable manner has therefore been divided into **6 homogeneous areas**, with a contact person being identified for each area. In **2015** support for shepherds continued and was consolidated, above all in the areas with the largest numbers of bears. Overall, a total of **50 flocks** with around **18,550 sheep and goats, 135 equines and 1,112 cattle** were supervised and assisted, mostly to protect them against bears and to a lesser extent against wolves.

The shepherds were supplied with fences and **fence electrifiers** of adequate **power (2.6**

joules), with rechargeable batteries fuelled by solar panels.

Furthermore **eight prefabs/box** (accommodation units, photo 9) were **transported to the mountains** to allow shepherds to remain close to their flocks at night.

The **results** were **excellent**: a total of only **6 attacks** (3 by bears and 3 by wolves) on the **protected flocks** were recorded over the whole year and in all the alpine pastures supervised, leading to the death of **35 animals** (32 sheep, 2 goats and 1 donkey), namely **0.18%** of the livestock protected. This level of damage was decidedly contained, despite the fact that this area has the highest density of bears.

As in previous years, it was thus confirmed that the correct use of prevention works (electric fences), the presence and expertise of shepherds and the constant consultancy and support provided by the livestock liaison officers make it possible to **minimise damages**.



3. Management of emergencies

In the province of Trento the management of emergencies represents a field of action in which it has been necessary to operate for some time, given the success of the reintroduction project and more specifically as a result of the presence of individual animals considered to be “problematic”.

Action may be taken **to control problem bears** or bears in critical situations, in accordance with the provisions of European norms (Directive 92/43/EEC - Habitat Directive) and national regulations (D.P.R. 357/97, article 11, paragraph 1; L. 157/92, article 19, paragraph 2; L. 394/91, article 11, paragraph 4 and article 22, paragraph 6).

Indeed, in order to avoid conflict with human activities and for reasons of public safety or for other compelling reasons of significant 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 Sea (MATTM), having consulted ISPRA, on condition that there are no other practicable solutions and that the exception does not prejudice the satisfactory conservation status of populations of the protected species, (D.P.R. 357/97, article 11.1).

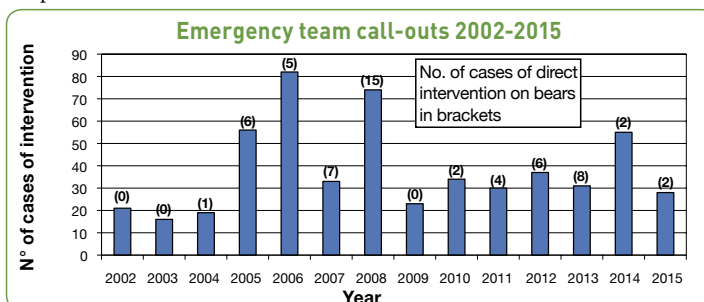
In the event that public safety is at risk, the capture or killing of an animal can also be ordered by the President of the Province, with an extraordinary emergency order, according to articles no. 52.2 of the DPR of 31/8/1972, no. 670 and no. 18.2 of the L.R. of 4/1/1993 no. 1, as specifically also provided for by the PACOBACE.

With the resolution of **7 September 2015** the provincial government set up a **Technical Committee** including representatives of MATTM, ISPRA and APT and a **Technical Operations Group** (with APT, MUSE and PNAB) to manage the bear and other large carnivores present within the province (hence in relation to all fields of action, not just for the management of emergencies).

The **PACOBACE** represents the document of reference for this programme of action in the province of Trento and in the rest of the Italian alpine region. On the basis of this, the Forestry and Wildlife Department has identified, trained and equipped the staff responsible for intervening in situations of emergency (emergency staff). Operational management is based on the use of staff from the **Provincial Forestry Service (PFS)**, to which the Forestry and Wildlife Department makes recourse, through the setting up of a special unit which is on call. The system of on-call availability in the wildlife sector is based on weekly shifts involving a coordinator, nine forestry staff (one from each forestry district, on call from 6 p.m. to 8 a.m.), and from 1 March to 30 November two emergency staff (on call 24 h/day), along with veterinary staff from the Azienda Provinciale per i Servizi Sanitari (APSS) - the provincial health services - whenever necessary.

During 2015 the coordinators received **674 calls** regarding situations involving large carnivores; only a small number of these were emergencies (28 cases, as will be seen in the subsequent section). The calls concerned the reporting of possible **damage by bears or wolves**, direct sighting or the finding of possible **signs of presence**, wild **prey of wolves**, potentially **problematical situations** or **other matters**.

Graph 7



Activities of the emergency team

The activities of the emergency team took place from 3 March to 30 November 2015, with a total of **28 call-outs** (Graph 7). Only in two cases did the team members carry out aversive conditioning to deter the animal.

Close encounters between men and bears

In addition to the case of the man attacked by the female bear **KJ2**, which will be dealt with subsequently, there were two cases of **false attacks** (charging without any physical contact between man and bear), on the following occasions:

- On **14 June** in woods not far from **lake Terlago** - bear accompanied by three cubs;
- On **24 July** in the area of **Monte Amolo (Montagne municipality)** - bear accompanied by two cubs.

A further episode took place on **30 May** in the Val Manara (above **Zambana**) when a jogger met a bear and suffered an injury to his arm, without it being possible to ascertain with certainty, despite immediate and repeated on-site checks, whether this was caused by direct physical contact with the bear or by the precipitous flight of the man concerned.

On **10 June** a man was jogging in the woods, accompanied by his dog, around 4 km away from **Cadine**, a village near Trento, when he encountered a female bear at close quarters. The bear then attacked him and the man suffered repeated assaults, from which he tried to defend himself actively, but was clawed and bitten, receiving serious injuries to the head, abdomen and upper limbs. Treatment of these injuries required hospital treatment, followed by lengthy hospitalisation and convalescence. On the following day the President of the Autonomous Province of Trento issued an urgent order for reasons of public safety, in accordance with the provisions of the PACOBACE, providing for: intensive monitoring of the area, genetic identification of the bear responsible for the attack, recognition of the bear and subsequent removal of the animal, using the measures provided for by the PACOBACE, namely capture for the purposes of taking into permanent captivity or killing of the bear.

Collection of organic samples at the site of the attack made it possible to attribute the aggression with certainty to the bear called **KJ2**, a 12-year-old female. Only subsequently was data acquired proving the existence of three cubs.

The activities involved in capturing the bear were lengthy and demanding, because she was not marked and therefore not recognisable, but finally met with success on 15 October 2015, allowing a radio collar to be fitted to a bear compatible with the known characteristics (mainly the fact that she was accompanied by three cubs), within the home range of KJ2. Subsequent genetic tests confirmed that the bear fitted with the radio collar was effectively KJ2.

The bear then went into hibernation at the end of last autumn, in an remote area in the monte Bondone range.

Captures

In the context of emergency management, a significant role is played by the “capture team” made up of forestry staff specially trained for such activities, supported by vets from the APSS to deal with health aspects.

In **2015** action was taken to capture and fit three bears with radio collars:

- a **young female (F15)**, captured on 21 August 2015 using a tube



Photo 10 - Phases in the capture of F15 (D. Asson - APT Forestry and Wildlife Department archives)

trap on the slopes of the Paganella above Ter-lago (photo 10);

- an **adult female (KJ2)**, captured on 15 October 2015 while free-ranging in the woods above Cimone;
- an **adult male**, whose identity was not known when this Report was in the process of being printed, captured on 28 October 2015 using a tube trap, in the Sporeggio valley (photo 11). Shortly after waking, the bear managed to free itself of the collar.

Road accidents

During 2015 there were **two cases of road accidents** involving bears, bringing the total number of such accidents reported since 2002 to 27 (of which 2 in the province of Bolzano).

The first took place on **19 September** near **Cavedago**, involving a 6-year-old female bear (F5), whose fate is unknown, although she was observed moving away from the scene. The second happened on **19 October** just south of **Vigolo Baselga**; in this case one of KJ2's **cubs** was involved, but cannot have suffered serious damage, as it was recorded by camera traps and sighted several times subsequently.



Photo 11 - Adult male captured in the Sporeggio valley (F. Angeli - APT Forestry and Wildlife Department archives)

Bear dogs

In 2015 the dogs were put into action on **27 occasions**, 3 of which related to operations to **deter bears**, 2 to **look for bears** hit in **road accidents**, 1 to **look for a wolf** hit by a vehicle (not yet confirmed by genetic testing), 9 to follow up **close encounters between bears and men**, 3 for anti-poaching operations (searching for poisoned bait), 2 for activities linked to **capture** and 1 to **recover a dead bear**, while the remaining 6 cases were linked to **checks on damage**, **searches for traces of presence** or to **check dens**.

The handlers and the four Laika dogs also participated at **2015 Expo Riva Caccia Pesca Ambiente fair**, in the working dogs section.

Overall, in 6 years of effective operations for two of the dogs and 4 for the other two, there have been **138 operations** involving the dogs and their respective handlers. 34 of these regarded attempts to deter bears (including the release of problematical bears following capture), 12 were for inspections following close encounters between bears and men, 24 to carry out damage checks, 16 to check on investment made, 4 to assist with capture, 2 to look for dead bears, 5 for anti-poaching operations and 41 for other activities (looking for signs of presence, participation at events, checking of dens etc.).

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 provincial government resolution 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 different initiatives in the past and is still underway. 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 the **Parco Naturale Adamello Brenta**, which has been active in this field for many years in its own area, the **Museo delle Scienze in Trento (MUSE)** in Trento, which has offered educational activities on bears to schools from the very beginning, and the **Società degli Alpinisti Tridentini (SAT)**.

Furthermore, since **2015** communication activities regarding bears and other large carnivores have been able to count on a new tool, namely the **Communications Task Force**, coordinated by APT’s Press Office, which includes representatives of the **Forestry and Wildlife Dept., Trentino Marketing, PNAB, MUSE and SAT**.

The main activities undertaken during 2015 are summarised below.

Evening sessions and meetings

Table 1 lists the **meetings/evenings** organised by the Forestry and Wildlife Department within the context of the information campaign “Getting to know the brown bear” (**more than 1,400 participants** overall). Most of these meetings were organised in response to requests for information and the exchanging of ideas

Table 1 - Public meetings held within the context of the “Getting to know the brown bear” campaign

Type	Date	Place	In collaboration with	no. of participants
Meeting with IASMA students	12/02/2015	Istituto Agrario S. Michele all’Adige	Istituto Agrario S. Michele all’Adige	700
Public meeting	06/03/2015	Cavareno	Municipal admin.	130
Presentation of the 2014 bear report	11/03/2015	Museo delle Scienze di Trento - MUSE	Museo delle Scienze di Trento - MUSE	100
Public meeting	23/04/2015	Margone (Vezzano)	Pro Loco in Margone	60
Public meeting	12/05/2015	Borgo Valsugana	Municipal administration	60
Public meeting	29/05/2015	Rovereto	Museo Civico in Rovereto	40
Public meeting	06/07/2015	Cadine	Cadine district	200
Public meeting	15/07/2015	Tenno	Municipal administration	80
Public meeting	07/08/2015	Rumo	Municipal administration	200
Public meeting	01/09/2015	Garniga Terme	Municipal administration	70
Public meeting	03/09/2015	Cavedine	Municipal administration	80
Public meeting	26/09/2015	Marco di Rovereto	Associaz. Psicologi dell’Emergenza	20
Public meeting	09/10/2015	Romagnano (TN)	Romagnano district	30



25 press releases regarding the bear were issued directly or with the support of the Press Office and a press conference was held by the provincial government (on 5 June). Furthermore, the necessary information was provided in order to respond to **31 questions raised at the Provincial Council**.

Communication project for schools on “Alpine biodiversity”, in collaboration with the Museo delle Scienze in Trento

In the context of the cultural and educational activities promoted by the museum during 2015, MUSE dedicated particular attention to educational initiatives directed at different target groups in schools in relation to large carnivores in Trentino, particularly the **brown bear**, also collaborating with the Forestry and Wildlife Department in the organisation of workshops and trips to the area.

Communication project for schools entitled “Sometimes they return...”, in collaboration with the Museo Civico in Rovereto

85 pupils attended the **workshops on large carnivores** during the 2014-2015 school year. This participation was furthered by the collaboration between the MCR Foundation and the Monte Baldo local nature park, providing for the involvement of five municipalities and local schools, which participated with their classes. They were offered a series of activities, including a programme on mammals, with a trip to the Monte Baldo park, also to raise the awareness of pupils as regards the presence of bears.

Informative material produced and distributed

- Brochure: “How should you behave in areas where bears are present?” issued by the partners in the LIFE DINALP BEAR project in January 2015 in three languages (5,000 copies in Italian) (Figure 6)
- Bulletin of the LIFE DINALP BEAR project: “Living with bears” issued by the project partners in November 2015 in three languages (800 copies in Italian) (Figure 7)
- Informative **sign** for internal environments:

Figure 6 - Brochure: “How should you behave in areas where bears are present?”



Figure 7 - Bulletin: "Living with bears"



Photo 12 - Sign: "How to coexist with bears"



"How to coexist with bears" produced in 2 formats (A4 and A2) and distributed in the province (photo 12)

- Informative sign for external environments: "BEAR AREA - Rules for peaceful coexistence with bears" distributed in the province (photo 13)
- Informative brochure: "The brown bear in Trentino" (1,000 copies)
- New posters about bears (3,000 copies)

Photo 13 - Sign "BEAR AREA - Rules for peaceful coexistence with bears"

Altre iniziative di comunicazione

The Forestry and Wildlife Department supervised the production of **articles** (scientific and informative) and interviews, issuing the content directly and/or supplying information and images, on the following occasions:

- Article: “*Status of the Brown Bear Population in the Central Alps (Trentino, Italy), 2014*” in **IBA news - spring 2015** , May 2015.
- Article: “*Analysis Underway for Population Dynamics of the Brown Bear in the Italian Central Alps*” in **IBA news - fall 2015** , December 2015.
- Article: “*Resource selection and connectivity reveal conservation challenges for reintroduced brown bears in the Italian Alps*” - **Biological Conservation**, February 2015.
- Article: “*Patterns in the use of rub trees by the Eurasian Brown Bear*” - **Hystrix, the Italian Journal of mammology**”, December 2015.
- Article: “*Patterns and correlates of claims for brown bear damages on a continental scale*” - **Journal of Applied Ecology**.
- Article: “*Brown bear reintroduction in the Southern Alps: To what extent are expectations being met?*” - **Journal of Nature Conservation**.
- Article for the web site **Reporter.com** (in collaboration with Trentino Marketing).
- Interview about the bear on **RTTR** - 4 May 2015.
- Article for the magazine **Buona Idea** - May 2015.
- Interview on **Radio Bavarese** - The presence of the bear in the Alps - May 2015.
- Interview on **Radio Capital** - The management of bears in Trentino - 16 July 2015.
- Interview with the newspaper **La Stampa** - July 2015.
- Interview on **Radio NBC** - The management of bears in Trentino - 23 July 2015.
- Interview with the weekly South Tyrolean magazine “**FF**” - 19 August 2015.
- Interview with the **RAI 3** news programme - Life DINALP Bear project meeting - 22 October 2015.
- Interview with the German tourist magazine **ADAC** - 15 December 2015.
- Field trip with **journalists** at **national** level - 27 May 2015.
- Field trip with **journalists** at **local** level - 28 August 2015.

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 provincial government resolution no. 1988 of 9 August 2002.

The training initiatives carried out during 2015 are illustrated below.

- Meeting to update and **train staff** on large carnivores (Casteler, 26 February 2013).
- **SAT** course on large carnivores in the Val Ambiez - 26-27 September 2015.
- Two meetings with **Trentino Marketing staff** on 2 July (Trento) and 28 July (Andalo).
- Training for **staff** of the **Associazione Cacciatori Trentini**, 9 June 2015 at Casteler.



6. National and international links

Links with neighbouring regions and countries take on 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 Sea and the coordination of APT, the **PACOBACE** (Plan of Action for the Conservation of the Brown Bear in the Central-Eastern Alps) was approved by all the partners in 2010. In addition to the Autonomous Provinces of Trento and Bolzano, this also involved the Lombardy, Veneto and Friuli Venezia Giulia Regions.

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

Updating the PACOBACE

The process of **updating** the PACOBACE, begun in 2013, **terminated** in 2015 with the amendments to chapter 3 (*Criteria and procedures for action in relation to problem bears and action in critical situations*). The changes to the plan were therefore made effective by the **Ministry for the Environment, Land and Sea**, with the **decree** of the Director General no. 15137 of 30 July 2015.

The LIFE + “Dinalp bear” project (2014-2019)

APT is participating in the Life “*DinAlp Bear*” project (photo 14, Figure 8) within the context of the European Commission LIFE+ Natura funding programme (with funds of € 248,011 available to APT, the EU quota being € 173,608). The project, running from **1 July 2014** to **30 June 2019**, sets itself the objective of managing and conserving the brown bear population in the North Dinaric Alps and the Alps, through the involvement of partners in **Italy, Austria, Slovenia and Croatia**. Specifically, APT’s commitment within the project has taken concrete form in the sharing of monitoring data for the drawing up of the first alpine report regarding the distribution of bears and in collaboration as regards the drawing up of guidelines for action by emergency teams. As provided for by the project, the first bears have been fitted with radio collars.



Photo 14 - Project meeting (C. Groff - APT Forestry and Wildlife Department archives)

Figure 8 - Logos of the Natura 2000 network and the LIFE+ DINALP BEAR project



Alpine Convention Large Carnivores Platform (WISO)

The activities of the **Alpine Convention Large Carnivores Platform** (Figure 9), set up in 2009, continued during 2015. Two meetings also involved the staff of the provincial administration in 2015 (28-29 May in Rome, and 29-30 September in Nova Ponente (BZ)).

The most significant results obtained have been:

- the adoption of **guidelines for the management of lynx and wolves at alpine level** (in the context of the RowAlps project);
- the starting up of work also directed at the adoption of **common guidelines for the management of the brown bear**, in association with the similar activities promoted in the context of the actions of the Life DINALP BEAR project and involving the Bear Alpine Group;
- the continuation and implementation of **genetic monitoring activities at alpine level** for the three species of large carnivores;
- the reinforcements of **links** with the activities of the ECONET platform (regarding ecological networks).

Figure 9 - Logos of the Alpine Convention



APPENDIX I

The Lynx

Monitoring of the species **began** when the lynx made its return to the province, namely in the second half of the **1980s**, with the appearance of a number of animals in **eastern Trentino** (these were present for around a decade). Traditional survey methods in the field, camera traps, radio-tracking and genetic monitoring were also used for this species from the beginning.

As is known, since 2008 the only lynx still present in the province of Trento is the **male known as B132**, who comes from the small Swiss population reintroduced in the St Gallen Canton (see page 45 and the following pages of the 2008 report and the appendices on the “Lynx” in subsequent Bear Reports in order to reconstruct his history).

During **2015**, the presence of the feline was documented with certainty on at least one occasion, when it was **caught on film with a camera trap** by a hunter in the woods of Tremalzo (Val di Ledro) on **20 April 2015** (Photo 1); a week earlier, there was also a sighting in the same area. Finally, **tracks in the snow** were found by forestry staff close to Cima Avèz (again in the Tremalzo area) on **29 April**.

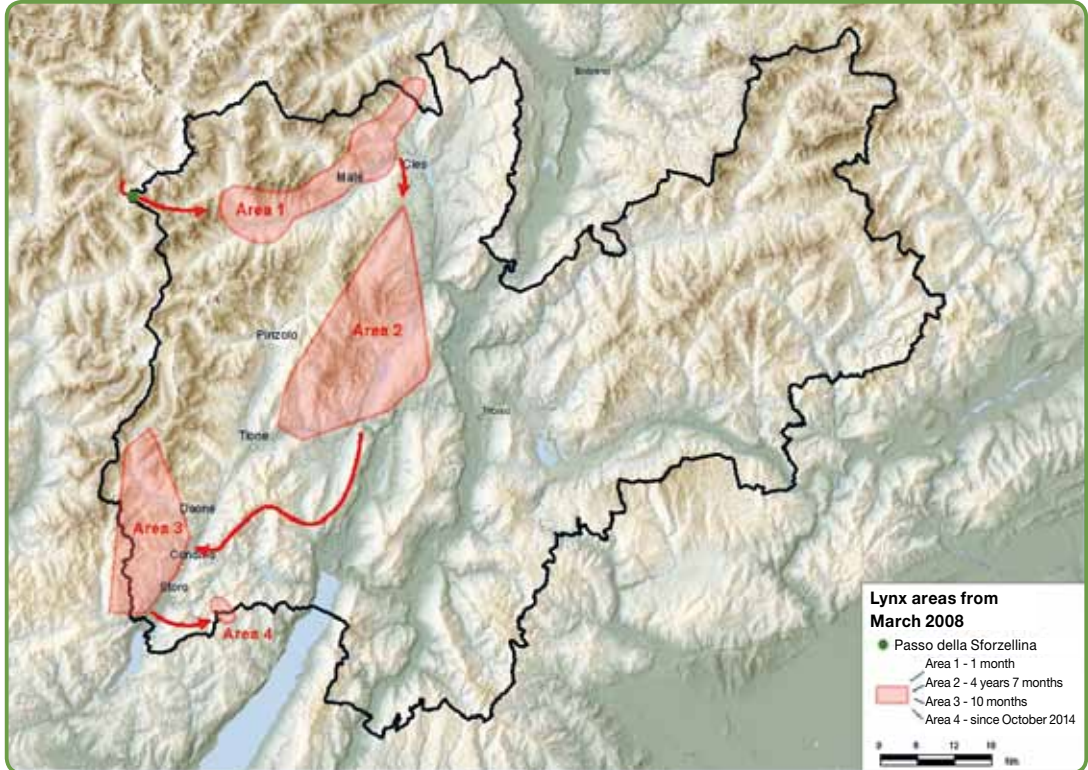


Photo 1 - The lynx photographed in the Tremalzo area (APT Forestry and Wildlife Dept. Archives)

This therefore confirms the presence of B132 in the area where he had already been filmed by hunters on 18 October 2014, on that occasion on the Brescia side of the Tremalzo mountains (see page 72 of the 2014 Bear Report).

Figure 1 shows the areas used by the animal starting from his arrival in Trentino, which took place on 23 March 2008 in the upper Val di Sole. This is therefore the eighth year that the presence of this animal, aged around ten, has been ascertained, one of the longest cases of intensive documentation of one lynx in the Alps.

Figure 1 - Area occupied by B132



Once again this year there were no cases of **damage** to livestock attributable to the **lynx** within the province.

Finally, there were **unconfirmed reports** which are only noted for the sake of completeness; only future confirmation would eventually demonstrate the presence of at least one other lynx:

- 24 April: loc. Campeï - Val Paròl (Monte Baldo) - sighting;
- 25 May: woods above S. Orsola (Valle dei Mocheni) - sighting;
- 14 September: woods of Condino - presumed preying on a wild animal;
- 8 October: Malga Riondera (Lessinia - Ala) - sighting.

As regards communication initiatives, there was an **informative evening** on the lynx held on 4 **February 2015** at the MUSE by a Swiss technical officer from KORA (update on the status of the Lynx in Switzerland and in the Alps).

APPENDIX II

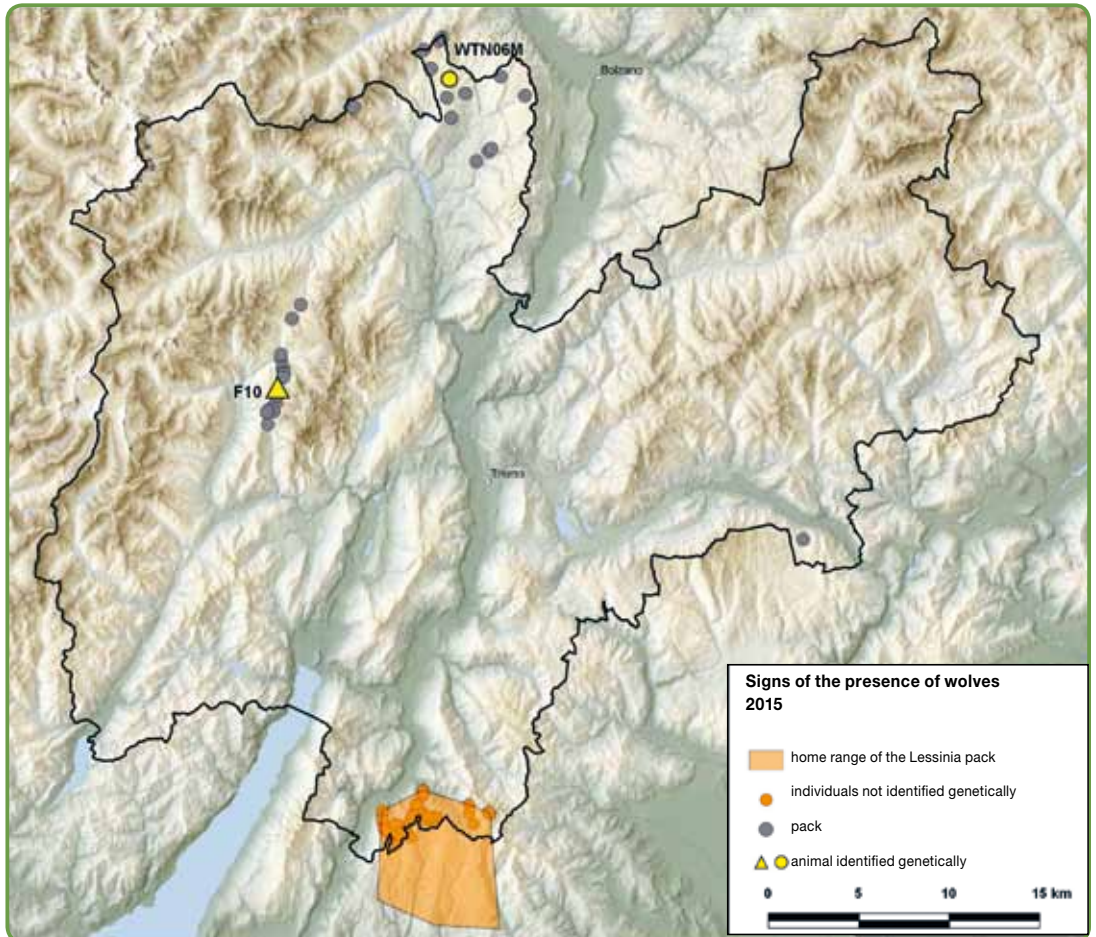
The Wolf

Monitoring

Monitoring of the species **began** with the reappearance of the wolf in the province, namely in **2010**. Genetic monitoring, traditional surveys in the field and camera traps were also used for this species from the beginning.

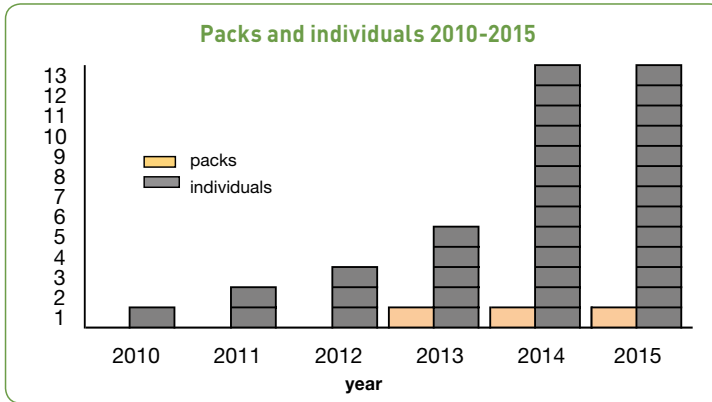
During 2015 **240 reports** relating to the presence of the **wolf** were recorded in the province; 12 came from the upper Val di Non, 19 from the Val Rendena-southern Brenta area, 208 from the

Figure 1 - Spatial distribution of signs of presence attributable to wolves in the province in 2015, distinguishing between packs and individuals, in accordance with the criteria established by the W.A.G. (*Wolf Alpine Group*).



Lessini mountains and 1 from another area (Figure 1). 53 of these were represented by evidence from camera traps, 60 by organic samples, 92 by tracks in the snow, 16 involved cases of damage to livestock and there were 19 cases of preying on wild animals.

Graph 7



Graph 7 shows the **trend** for the minimum ascertained presence of the wolf in the province and neighbouring areas from 2010 to the present day.

The situation in the **areas** of the province where the presence of the wolf was ascertained in **2015** is summarised below.

Upper Val di Non - Val di Sole

A **new wolf**, a male belonging to the Italian population and identified with the code name **WTN06M**, was detected genetically in the municipality of Fondo in December 2014 (confirmation from genetic testing arrived in 2015) and again in the Castelfondo area in July 2015. The same wolf (in all likelihood) was filmed by **camera traps** in the area on at least one occasion during the year (Photo 1); these occasions were probably linked to two cases of preying on wild animals.



Photo 1 - Wolf (probably WTN06M) in the upper Val di Non (G. Zeni - APT Forestry and Wildlife Dept. Archives)

The presence of the male wolf known as “**M24**” was instead unconfirmed. The last certain (genetic) evidence of his presence in the area dates back to 30 January 2014.

Finally, the presence of a further male of Italian origin in neighbouring areas in the province of Bolzano (identified as “**M41**” by the Swiss researchers who first identified him in their area) should be noted.

Southern and western Brenta mountains

The presence of the wolf in this area was documented again, with the species having first been detected in 2014. This was again the **female** wolf of “**italian**” origin reported the previous year, namely F10, born in spring 2013 in Switzerland, in the “**Calanda pack**” (north-western **Grisons**

canton). The images from the camera trap in the upper Val Algone (Photo 2) probably relate to the same animal. Confirmation is awaited in relation to the presence of **further wolves** in the Val d'Algone-upper Val Rendena area.



Photo 2 - Wolf caught on camera in the upper Val Algone (MUSE archives - APT Forestry and Wildlife Dept.)

Lessini mountains

As is known (see the appendices on the Wolf in previous reports), a pair of wolves has been present in the Lessini mountains since 2012, in the border area between the provinces of Trento and Verona, producing their first two cubs in spring 2013. A further 7 cubs were born in 2014. This year the staff of the CFS and the Lessinia Regional Nature Park - VR ascertained the presence of a **further litter** made up of **7 cubs** in the province of Verona, **with** both direct sighting and photographic images (Photo 3).



Photo 3 - The seven wolf cubs born in the Lessinia area in November 2015 (P. Parricelli - Parco Naturale Regionale della Lessinia archives)

On the basis of tracks in the snow, images from camera traps and sightings, at the end of 2015 the **pack** would appear to be made up of around 12 wolves.

Other areas



Photo 4 - Wolf photographed in the Parco Nazionale delle Dolomiti Bellunesi (F. Friz and E. Canal - State Forestry Service archives)

As far as eastern Trentino is concerned, in addition to the wolves still belonging to the Lessinia pack, some of whom have made their way at least up to the nearby mountains of **Carega/Piccole Dolomiti**, sightings of individual wolves have been reported both in the **Asiago plateau (VI)** area, hence to the south of the Valsugana, and in the **Parco Nazionale delle Dolomiti Bellunesi**, where a wolf was photographed with a camera trap in December around a kilometre as the crow flies from the provincial border, and specifically in the Val Noana (Primiero) (Photo 4). A further animal was also observed in Barricata di **Marcesina** - municipality of **Grigno**, on the right-hand side of the **Valsugana**, on 14 August 2015.

Damage management

In the area of the **Lessini** mountains, **14 cases of preying on livestock** (Photo 5) were recorded overall, involving cattle in 8 cases, equines on 3 occasions and ovines in 3 cases. Considering also the damage recorded on the Verona side of the Lessini mountains, the overall balance was 58 predatory attacks, leading to the loss of 68 animals. The data regarding predatory activities on the Verona side of the Lessini mountains was provided by the Parco Naturale Regionale della Lessinia (VR). In **western Trentino 3 cases of preying on animals** were recorded, at Malga Movlina in the Brenta area and Malga Pradont in the upper Val di Non (Fondo).

In all cases of reported damage, an **inspection** was carried out by forestry staff, who were responsible for drawing up the damage report. A total of **14,942.00 €** was paid out for the damage caused.

In 2015, with the scope of reducing the impact of attacks on sheep, goats and equines, an **electric fence** was funded (minimum height 140 cm, with 7-strand galvanised wire) along with a **guarding dog** belonging to the Maremmano-Abruzzese shepherd dog breed. Furthermore, a 140 cm **fence** and an **accommodation unit** were lent to Malga Posta (in the Carega mountains).



Photo 5 - Remains of a cow preyed on by the Lessinia wolf pack (T. Borghetti - APT Forestry and Wildlife Dept. Archives)

Revision of the plan for the conservation and management of the wolf in Italy

During 2015 the Ministry for the Environment, Land and Sea promoted the first **update to the Wolf Action Plan at national level**, which had been drawn up first by ISPRA in 2002, requesting the support of ISPRA, the Unione Zoologica Italiana and Regions/Provinces, and promoting the involvement of the stakeholders. It is expected that the updating process, to which the Autonomous Province of Trento has also contributed in technical terms, will conclude in 2016.

Communication

Communication initiatives involving departmental staff in 2015:

- Answers to **5 questions raised at the Council** regarding the presence of the wolf in Trentino;
- **SAT course** on the Lessini mountains on 14 February 2015 (in the context of Wolfalps Life project);
- **Evening event in Cavareno** on 6 March 2015 (130 people);
- **Evening event in Rumo** on 7 August 2015 (200 people);
- **Meeting in Turin** on 18 February 2015 (Wolfalps Life project);
- **Meeting with hunters in Ala** on 1 April 2015 (35 people, in the context of Wolfalps Life project);
- Meeting with **economic interest groups** on 14 April 2015 at MUSE in the context of Wolfalps);
- **Meeting at the Istituto Agrario S Michele all'Adige** on 16 April 2015;
- Meeting with farmers from the **Vallagarina in Ala** on 9 March 2015;
- **SAT course** on the wolf in Lessinia, on 24 June 2015.

Finally, it should be recalled that in 2013 APT joined the **LIFE Wolfalps** project as a supporter (Figure 2). Specifically, the staff of the Forestry and Wildlife Department contribute to carrying out monitoring activities and communicating the presence of the carnivore, in collaboration with the MUSE, a project partner, the Parco Naturale Adamello Brenta and the Parco Nazionale dello Stelvio.

Figure 2 - Logos of the Natura 2000 network and the LIFE Wolfalps Project











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