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TRENTINO

LARGE CARNIVORES REPORT 2024

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AUTONOMOUS PROVINCE OF TRENTO
WILDLIFE DEPARTMENT
Large Carnivores Division
FORESTRY DEPARTMENT

LARGE CARNIVORES REPORT 2024

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Photo: Wolves photographed in the Lagorai
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Back cover
Brenta mountains, Campa subrange – C. Groff, APT Wildlife Department archives

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Our special thanks go to Giulia Bombieri from MUSE and Enrico Ferraro from ACT for their important support in collecting and managing the data relating to monitoring.

1. MONITORING

1.1 The Brown Bear

Monitoring of the brown bear has been carried out continuously by the Autonomous Province of Trento (APT) since **the 1970s**. Over time, traditional survey techniques in the field (Photo 1) have been supplemented by **radiotelemetry** (a method first used in Eurasia in 1976), automatic video checks by remote stations, **camera traps** (Photo 2) and lastly, since 2002, by **genetic monitoring**.

Photo 1 - Brown bear photographed from a considerable distance in the Brenta Dolomites (F. Romito - APT Wildlife Department archives)

Since the 1970s a group of volunteers has remained continuously active (now entitled "**Volunteer group for the monitoring of large carnivores**" coordinated by MUSE and the Large Carnivores Division of APT's Wildlife Department – see Box 3). Established to support the monitoring of the then relict population of **bears native to the Alps**, it gradually developed following the progressive appearance of other large carnivores in the provincial territory, represented, in chronological order, by the **lynx** (since the 1980s), the **wolf** (since 2010) and the **golden jackal** (since 2012).
The **data** collected are processed on an annual basis, with reference to the calendar year (1/1 - 31/12), which effectively coincides with the "biological year" of the bear.

Genetic monitoring

Genetic monitoring is based on the collection of organic samples (hairs, excrement, urine, 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 **opportunistic** monitoring, based on the collection of organic samples found in the area during routine activities, when ascertaining damage and by checking rub trees.

Photo 2 - Adult male bear photographed by a camera trap at Bleggio in spring 2024 (M. Vettorazzi - APT Wildlife Department archives)

In **2024, genetic monitoring of bears was limited mainly to organic samples considered particularly important** (e.g. relating to female bears with cubs born during the year, problem bears, animals found dead and in general incidents involving damage). Indeed, since 2020 **intensive genetic monitoring**, designed to determine the main **demographic parameters** of the **population**, has been carried out in **alternate years**. This decision was made on the basis of the need, to **optimise the work** and costs involved in this activity in the medium-long-term while however maintaining a **good level of monitoring**.

In **2024 genetic testing of bear samples** was carried out for the 23rd consecutive year, coordinated by **APT's Wildlife Department**, with the cooperation of FEM, ISPRA, PNAB, MUSE, ACT and volunteers.
In 2024 **genetic testing** was again conducted by the Conservation Genetics Research Unit at the **Fondazione Edmund Mach** in San Michele all'Adige (Trento), coordinated by **ISPRA's** laboratories, for samples from the Province of Trento, as well as the Autonomous Province of Bolzano, the Veneto, Lombardia, Friuli Venezia Giulia and Piemonte regions.

Box n. 1 - Monitoring of the genetic variability of the bear population; update until 2023

By the Conservation Genetics Research Unit at the Fondazione Edmund Mach

Indices of genetic variability for the bear population represent one of the parameters that are constantly monitored; these were recently updated by the laboratories of FEM up to 2023.
To estimate the data, the population was subdivided by years, taking into consideration all the individuals present in the year of reference. As compared to the most recent data available (updated to 2019) the main indices of genetic variability **remained stable**, slowing down the trend previously observed in the period going from 2002 (termination of the release of the founders) up to 2019:

Expected heterozygosity:
H e (2019) = 0.645
H e (2023) = 0.646

Allelic richness:
Ar (2019) = 3.8
Ar (2023) = 3.8

Lastly, a further increase in the **inbreeding coefficient** (namely consanguinity) was noted. While remaining at **levels that are not worrying to date**, this continues the trend observed in the previous analysis.

Inbreeding:
F is (2019) = -0.0789
F is (2023) = -0.0490

Definitions

- **"Cubs"**: bears aged between 0 and 1;
- **"Young bears"**: males up to the age of 4 and females up to the age of 3;
- **"Adults"**: males aged 4 and over, and females aged 3 and over, considered to be sexually mature and capable of breeding;
- **"Detected bears"**: bears whose presence has been ascertained during the year, either genetically or on the basis of unequivocal information (associated with radiotelemetry for example) and repeated observations;
- **"Roaming"**: movement outside western Trentino, by bears born in this area, without them reaching the territory habitually frequented by bears belonging to the Dinaric-Balkan population;
- **"Emigration"**: abandonment of the population present in the province by bears reaching the territory habitually frequented by bears belonging to the Dinaric-Balkan population;
- **"Return"**: return to western Trentino, by roaming or emigrating bears;
- **"Immigration"**: arrival of bears from the Dinaric-Balkan bear population in the territory used by bears in western Trentino in a stable manner.

Results

Processing of the **data** collected in **2024** has provided the information given below.

Demographics: births

In **2024** it was estimated there were at least **12 new litters** (Photo 3), with a total of **26 cubs**. This estimate was made based on **direct observation** of females with cubs recorded during the year, camera trap videos and images, and to a lesser extent on **genetic data**. One of the litters was undoubtedly lost during the mating season: the litter belonging to F2, observed and photographed by a camera trap alone (in one case, at the beginning of June, together with an adult male and another female bear), and no longer accompanied by the 3 cubs with which she had been observed during the spring. In addition, the bodies of a female and her cub killed by a male were also found.

Photo 3 - Female bear and cub of the year filmed by a camera trap in the Brenta Dolomites on 2 October 2024 (M. Zeni – APT Wildlife Department archives)

Demographics: deaths

In 2024, **the deaths of 9 bears** were recorded (3 of which **cubs** of the year).
The relative data for bears found dead is given below, supported by the results of veterinary autopsies by the Istituto Zooprofilattico Sperimentale delle Venezie, when available at the time this report was drawn up.

- **24 January 2024** near **Stenico,** skeleton of an **unidentified bear** for which it was not possible to establish the cause of death; the poor condition of the genetic material did not make it possible to identify the animal;
- **6 february 2024** in **lower Val di Sole, M90,** a young male **killed** in application of a Decree of the President of the Province designed to safeguard public security;
- **15 May 2024** in the woods near **Garniga Terme, F90, a female cub born during the year,** albino, which probably died of starvation;
- **20 July 2024** in the woods near **Covelo (Vallelaghi), F12** (Photo 4), an **adult female** and her **cub of the year, killed by a male bear**;
- **30 July 2024** in the woods above **Arco, KJ1,** an adult female **killed** in application of a Decree of the President of the Province designed to safeguard public security;
- **30 July 2024** between **Andalo and Molveno, M113, a male cub of the year,** who died after being **hit by a car**;

- **30 September 2024** near **Cis, M44** (Photo 5), an **adult male** found dead, due to **unknown causes**;
- **1 December 2024** in the Municipality of **Sporminore, M91,** a young male **killed** in application of a Decree of the President of the Province designed to safeguard public security.

Photo 4 and 5 - Respectively, the remains of F12, an adult female, and M44, an adult male (APT Wildlife Department Archives)

Population estimate

Monitoring in **2024**, carried out in the context of the framework providing for intensive genetic monitoring in alternate years, as explained on page 5, **was not carried out for the purpose of obtaining a new a population estimate**.
Therefore, the last estimate available dates back to the end of **2023: 98 animals** (with a confidence interval of **86-120) excluding cubs of the year** (see the 2023 Report, pages 8-11).
Intensive genetic monitoring, with a new population estimate, will be carried out again in **2025**.

Distribution

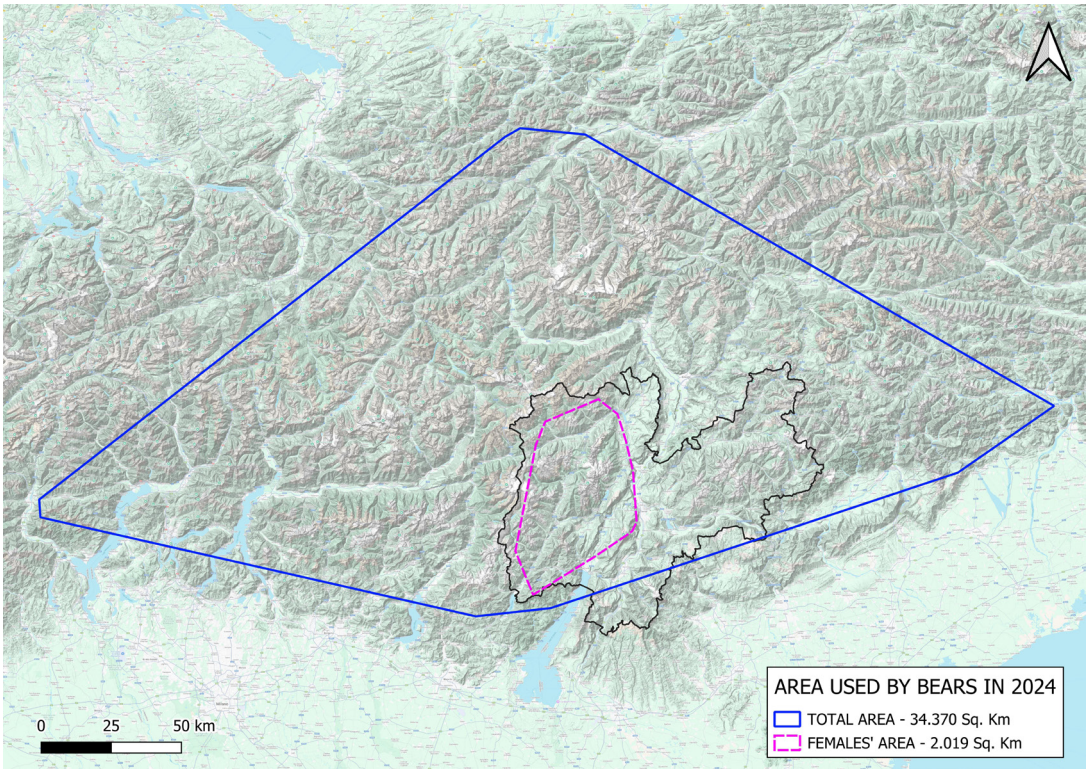
Considering also the longest journeys made by **young males** (Photo 6), in 2024 the bear population in the central Alps was distributed over **a theoretical area of 34,370 km²** (blue polygon in Figure 1).
The data were kindly provided by the **Autonomous Province of Bolzano, Brescia Provincial Police Force, the Carabinieri Division at "Val Grande" National Park, Verbano Cusio Ossola Provincial Police Force, the Department of Agriculture, Food, Environmental and Animal Science at the University of Udine**, the **Swiss Confederation** (KORA & LBC - Laboratoire de Biologie de la Conservation, Lausanne) and **Land Tirol - Austria** (Amt der Tiroler Landesregierung).

Photo 6 - Young brown bear photographed by a camera trap in the Radurschl valley, Pfunds (Tyrol, Austria) on 29 September 2024 (M. Fritz)

The area occupied by the females in 2024 (Photo 7) is instead shown by the pink polygon in Figure 1 (**2,019 km²**); this should be considered **approximate** for 2024, as it has been determined **without the information coming from intensive genetic monitoring**. It should be recalled that for several years (at least up to 2023) the **female distribution area** has been slowly, but constantly **increasing**.

Photo 7 - Female brown bear without cubs, very fat and ready for hibernation, photographed by a camera trap in the Brenta Dolomites on 15 October 2024 (M. Zeni - APT Wildlife Department Archives)

Figure 1



Use of the space by radio-collared bears

In 2024, **five bears** were monitored for part of the year using **satellite telemetry (M90, M91, F7, F89 and KJ1)**. Their home ranges, calculated using the minimum convex polygon (MCP) method), are shown in Figure 2.

Roaming

In the **2005-2024** period it was possible to document **roaming** (see definition on page 7) involving **64 bears** (all males) (Figure 3). **22** of these (**35%**) **died** or **disappeared, 26** (**40%**) **returned**, and **16** (**25%**) are **still roaming. No roaming by females** born in Trentino has been documented to date.

Figure 2

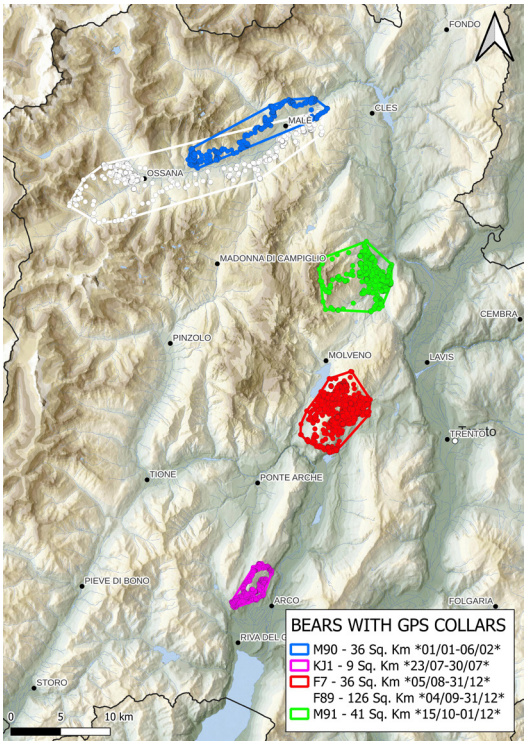
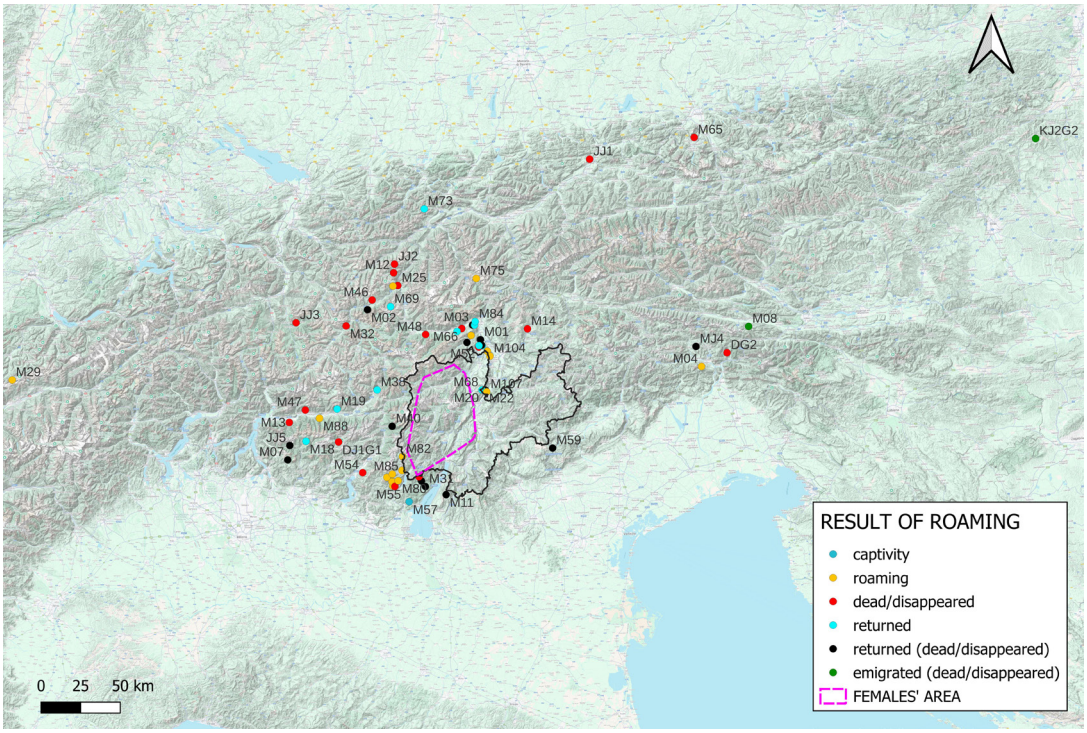


Figure 3 - Map of roaming updated to 2024



Box 2 - Systematic monitoring of large mammals with camera traps – update in the tenth year of sampling

By Marco Salvatori[12], Giulia Bombieri[1], Paolo Pedrini[1] and Francesco Rovero[2]
([1]MUSE – [2]University of Florence)

Since 2015, the MUSE has systematically studied the wild mammal community using camera traps, in cooperation with the University of Florence, APT's Wildlife Department and the Adamello Brenta Nature Park, with the support of the Forestry Department. The camera traps are positioned at 60 sites that have not changed over the years, situated in a 220 km2 area in the southern part of the Brenta mountains and on the neighbouring Paganella-Gazza massif, operating for 35 days between June and August each year. The project's goals include determining spatial and temporal changes to the community of medium and large mammals, understanding how they react to the extensive and widespread presence of humans in natural habitats and the protected area, and understanding trends in the use of the area by these species over the course of the years. The data regarding bears show a fall in the number of events involving passage by animals after the increase recorded particularly in 2020 and 2021, as well as in the number of sites frequented, going from 37 sites recorded in 2023 (the maximum recorded during the course of the project) to 31 sites frequented in 2024 (Figure 1, left-hand panel). As regards wolves, there was instead a further increase both in the number of sites (21) and passage by wolves compared to the previous year (Figure 1, central panel). The map of passage sites confirms the presence of at least two packs. One of these packs mainly gravitates around the Paganella-Gazza massif, with a maximum number of 4 adults recorded.

The second known case of breeding was also confirmed for this pack, recording a suckling female at three at least of the sites monitored between Paganella and Gazza at the end of June 2024. A second and clearly distinct nucleus was based around the Manez and Algone valleys, and the couple, also recorded in 2023, was again filmed by camera traps this year.
Furthermore, in 2024 the presence of the golden jackal on the foothills of Monte Ranzo on the Gazza massif was again confirmed, as previously recorded in the area since 2022 (Figure 1, right-hand panel).

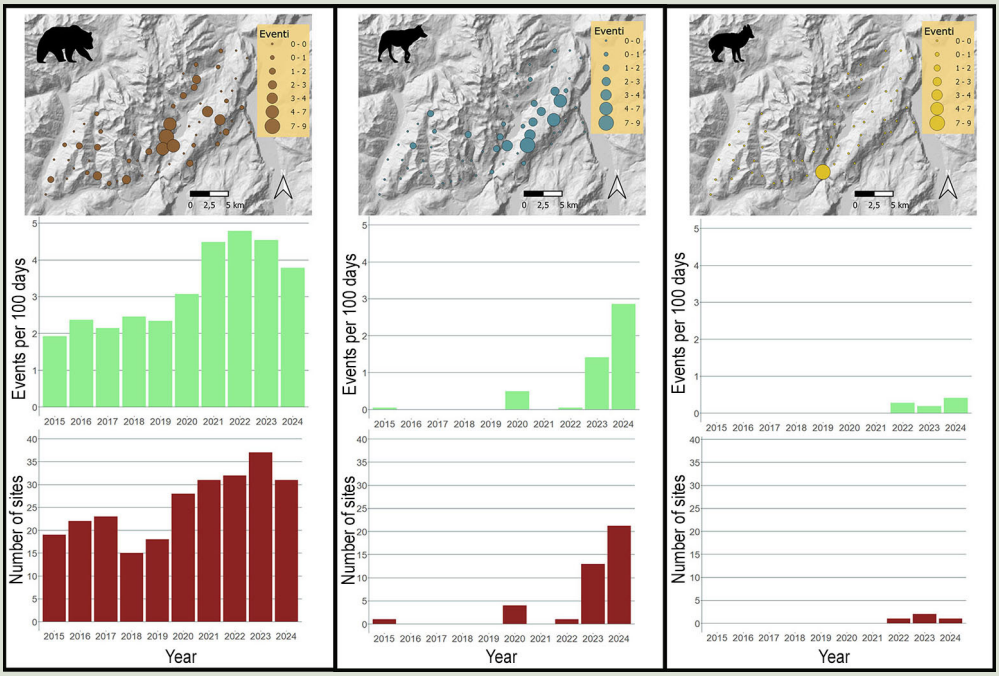


Figure 1 - The three panels above show the maps of events involving the passage of bears (left-hand panel), wolves (central panel) and jackal (right-hand panel) in the study area in western Trentino in relation to the 2024 summer sampling programme. The green bar chart shows the number of events (in this case normalised for every 100 days of sampling) recorded for each species in each year of the project, begun in 2015. Likewise, the red bar chart shows the number of sites where each species was recorded in the same period.

Passage by humans through the study area in western Trentino was distinctly lower during the 2024 sampling period, compared to the increasing trend observed between 2020 and 2023, with levels similar to those recorded in 2019 (Figure 2).

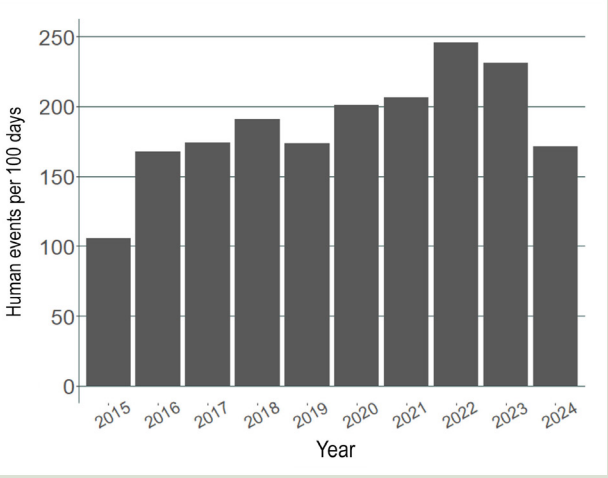


Figure 2 - Bar chart showing the number of events (normalised for every 100 days of sampling) recorded for human beings, excluding vehicles, for each year of the project, begun in 2015.

Furthermore, in autumn 2024, for the fifth consecutive year, sampling of the mammal community was also carried out in eastern Trentino, in cooperation with the Paneveggio Pale di S. Martino Nature Park and using the same method applied in western Trentino. The data regarding the wolf in this area (Figure 3) show the use of 27 sites, an increase compared to previous years, along with an increase in the number of events, which was higher than those recorded in 2023. During sampling in 2024 the presence of a wolf with radio collar was again recorded in the pack orbiting around the Val Canali area. This individual was captured and fitted with a radio collar outside the province of Trento, in the territory of the Parco Nazionale Dolomiti Bellunesi, as part of a research project headed by the University of Sassari, demonstrating the extensive mobility of this species. The data collected suggest the presence of at least three different nuclei, confirming data from previous years: one couple in the Paneveggio-Val Venegia area, a pack in the area between Vanoi and San Martino di Castrozza, with a maximum number of 12 animals (5 adults and 7 cubs) recorded by the museum's camera traps, and a third pack gravitating only partly around provincial territory, particularly in the Val Canali area, to which the individual with the radio collar belongs.

To conclude, we thank the personnel from the Conservation Biology Department at MUSE, in particular Valeria Vitangeli, Pietro Luciani, Emma Centomo and Luca Roner, the staff of Adamello-Brenta Nature Park, especially Michele Zeni, the staff of Vezzano Forestry Station, especially Yuri Valler, and the staff of Paneveggio Pale di San Martino Nature Park, particularly Piergiovanni Partel and Enrico Dorigatti.

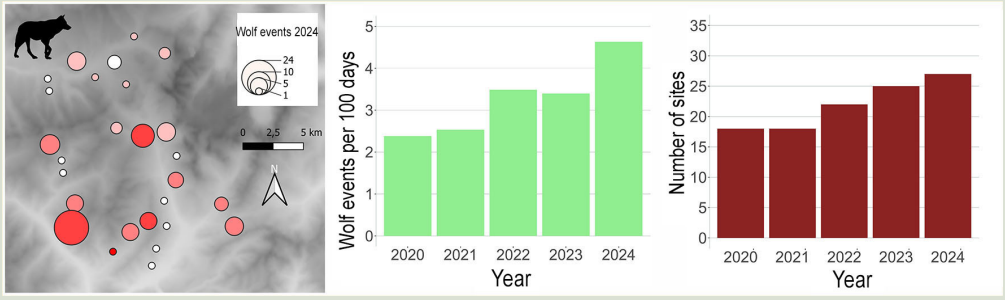


Figure 3 - Map of recorded levels and bar charts of the number of events (normalised for every 100 days of sampling, in green, on the left) and the number of sites used (in red, on right) relating to wolves in the study area in eastern Trentino from 2020 to 2024. The size of the circles on the map is proportional to the number of events, while the colour is proportional to the number of wolves recorded for each event.

1.2 The Wolf

Monitoring of the wolf **began** with the **natural return of the first animals** recorded in the province in **2010**, although the remains of a dead wolf were previously found in 2008 (see the 2009 Report, pages 57-60). The species had **disappeared** from Trentino around the **middle of the 19th century**.
From the beginning, **genetic monitoring**, traditional **surveys in the field** (Photos 8 and 9), **transects** and **camera traps** were also used for the wolf.
As is known, the **return of wolves to Trentino is part of a phenomenon on a much larger scale** than the provincial territory. For at least four decades the wolf has been **expanding throughout Europe**. All the wolf populations present in continental **Europe are effectively linked, making up a single European metapopulation of around 23,000 animals**, without considering Russia and Belarus (Source: L.C.I.E., Large Carnivore Initiative for Europe 2024 - "Large carnivore distribution maps and population updates 2017 – 2022/23").

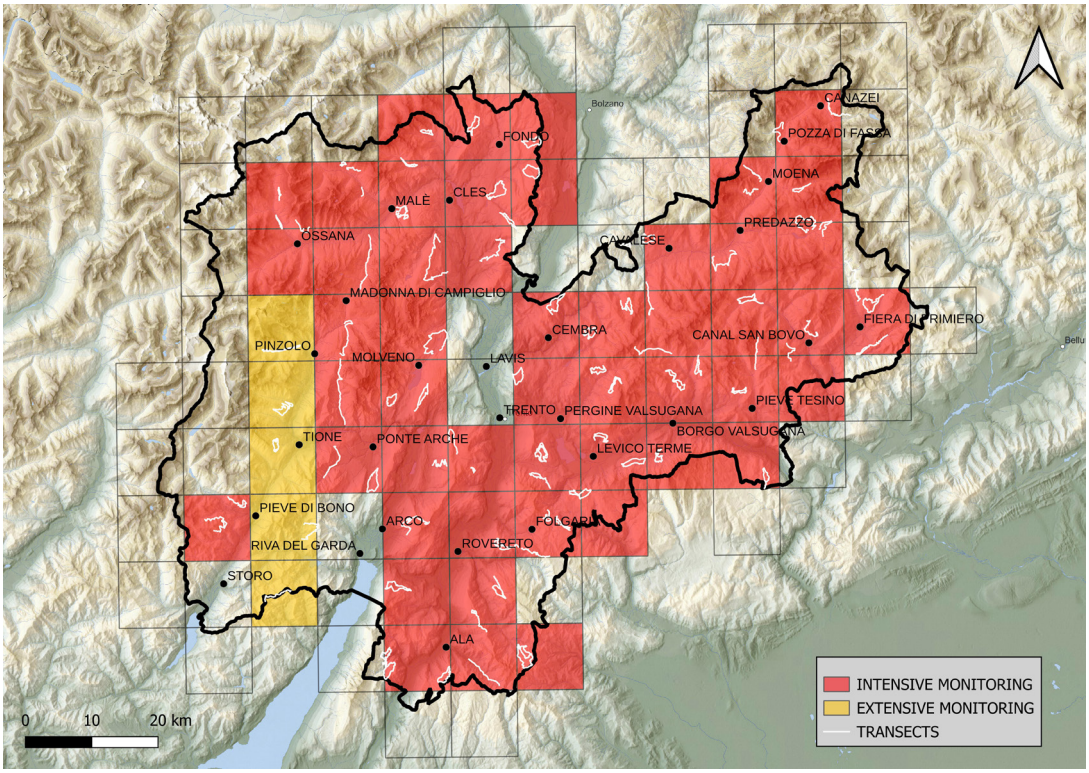
Photo 8 - Two wolf pups surprised on a trail in western Trentino in 2024 (A. Saddi – APT Wildlife Department Archives)

Photo 9 - Trail of eight wolves on the move, interrupted by moments of play, found in the early morning in the Paganella ski resort (M. Zeni – APT Wildlife Department Archives)

Genetic and camera trap monitoring

Intensive genetic monitoring activities at periodic intervals (every 4 years) is also provided for in relation to the wolf. This helps to follow the evolution of the population living in the province in the **medium-long term** and **in association with other alpine areas**.
During the **winter of 2023-2024** activities for the collection of data in the context of **systematic monitoring of the wolf** were carried out, coordinated by the **LIFE Wolf Alps EU project**, with the goal of updating the population estimate and the minimum area occupied by the species in the Alps. The **Autonomous Province of Trento** also participated in the initiative, involving **around 90 staff** from several of its departments and local bodies concerned by the presence of the species, together with volunteers trained and associated with them: MUSE, FEM, Associazione Cacciatori Trentini, Stelvio National Park, Paneveggio Pale di San Martino Nature Park and the Adamello Brenta Nature Park. Activities for the collection of data in the field took place in **pre-established transects** (Figure 4) **between November and April** (see the 2023 report for further details of the sampling pattern) and led to the collection of **465 signs of presence** for the species, including excrement, tracks in the snow and carcasses of animals preyed on. Of these, **69** made it possible to collect **genetic samples**. In addition to this data there were over **1300 observations including camera traps and direct sightings.**
In 2024 the range of information made available by the **Large Carnivores Monitoring Volunteer Group** was again particularly important: as regards this see the box below.

Figure 4 - Map of transects covered in the period May 2023 - April 2024 with systematic sampling



Box 3 - Support for the monitoring of large carnivores by volunteers in 2024

By the MUSE-APT Large Carnivores Monitoring Volunteer Group

The Large Carnivores Monitoring Volunteer Group, currently working with MUSE in Trento and APT's Wildlife Department, has been operational since the 1970s and still continues its activities today (for further background see the 2022 Large Carnivores Report, pages 16 & 17).

In 2024, the volunteers again dedicated many hours to working in the field, with commitment and enthusiasm. The group made a significant contribution to systematic monitoring of wolves in the Alps between the end of 2023 and the beginning of 2024, covering no less than 15 of the 82 sampling transepts present in the province and collecting data from camera traps and the genetic samples necessary to update the estimate of the wolf population in the Alps. The data collected by the group on breeding by

bears and wolves were also particularly important.
As far as bears are concerned, there were 36 outings from the beginning of April to mid-July 2024, dedicated to direct observation from a substantial distance: on 10 of these occasions, adult and young bears, and families with cubs of the year were observed. The group's observations also made it possible to recognise some individual animals thanks to the presence of ear tags or other identifying marks. The first sighting of the female bear F2 together with three cubs of the year was of particular interest, followed by verification that, later in the season, the cubs had been lost. This was probably the result of conflict with a male bear, highlighting the complex social and territorial dynamics characterising the species.
As regards wolves, there were 15 reports of new litters, along with some particularly significant observations. The birth of 10 wolf cubs by the breeding female in the Paganella-Gazza pack stands out in particular. The size of this litter, probably attributable to a single female, is of great scientific interest in the context of the Alps.
The monitoring activities also made it possible to document the formation of new packs in areas where they had disappeared in recent years. One emblematic example is the Carega area, where following the disappearance of the pack in 2022, presumably as the result of a sarcoptic mange epidemic, in 2023 a new couple was already observed, probably the same that then bred in 2024, making up a new nucleus in the area. These data highlight the great resilience of the species and the importance of constant monitoring to understand the evolution of packs.
As regards the golden jackal, thanks also to the contribution of some of the group's members, in 2024 it was possible to confirm the presence of the species in the areas already known.
These facts and other information acquired thanks to the participation of volunteers make a fundamental contribution towards increasing knowledge of large carnivores within the provincial territory.

Population, breeding, mortality rates, distribution and trends

In 2024, **1,749 data reports** referring to the **wolf**, belonging to categories **C1 and C2** (data defined respectively as "irrefutable" and "confirmed by experts", on the basis of Kora-CH criteria), such as sightings, photographs (Photo 10), prey, tracks, hairs, excrement, urine and damage were recorded in the province. Of these, **403** referred to organic samples, **329** of which were analysed by the Conservation Genetics Research Unit of **FEM**.
In **2024**, the overall data gathered led to **estimation** of a **minimum number of 27 packs** (or family groups) whose home range included the province of Trento, at least in part.

Photo 10 - Wolf photographed in Lessinia (E. Ferraro – APT Wildlife Department Archives

The **known packs** are listed in **Table 1**, with the **name** of the area identifying them, **the year the pack was first recorded, breeding** in 2024, if ascertained (23 cases this year) and the **maximum number of animals ascertained from the summer onwards**, when available. For the third year running **the wolf population thus remained essentially stable** in the province.

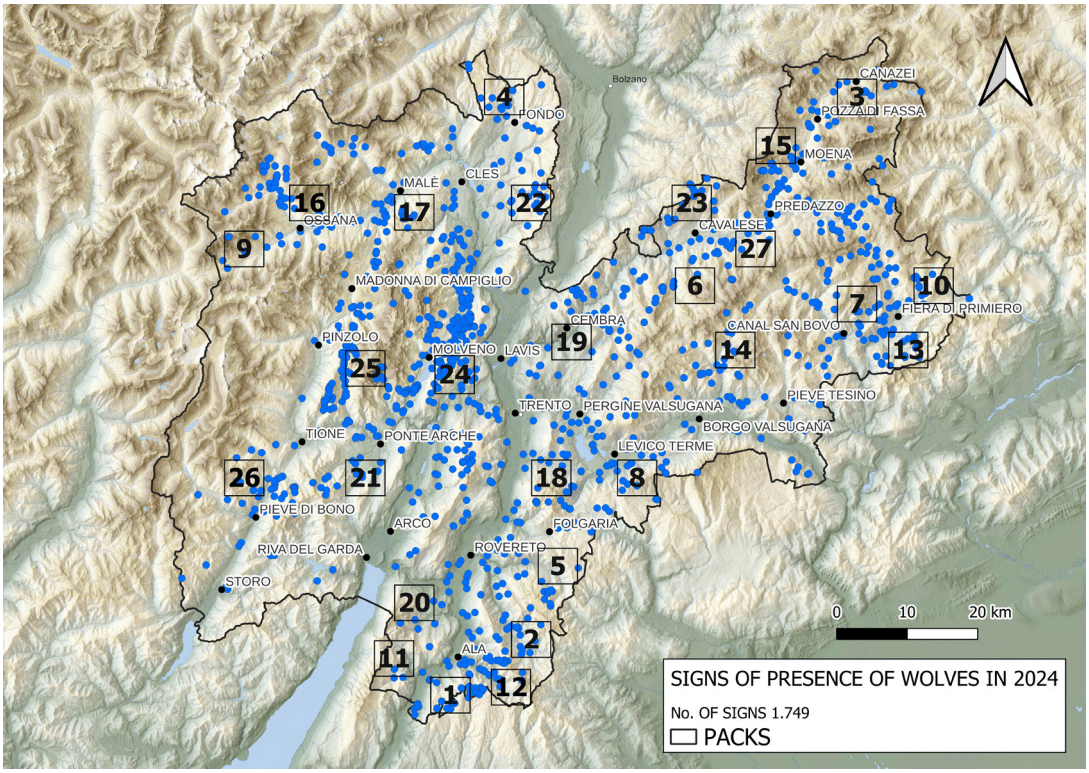
Table 1 - Packs recorded in the Province of Trento in 2024

No.	NAME	YEAR FIRST RECORDED	BREEDING IN 2024	MAX. NO. OF ANIMALS 2024
1	LESSINIA	2013	YES	7
2	CAREGA	2016	YES	7
3	ALTA VAL DI FASSA	2017	NA*	6
4	ALTA VAL DI NON	2017	YES	3
5	PASUBIO-FOLGARIA	2017	YES	7
6	VAL CADINO-VAL FLORIANA	2019	YES	9
7	VANOI	2019	YES	12
8	VEZZENE	2019	YES	9
9	TONALE	2019	YES	10
10	AGORDINO-CEREDA	2019	YES	9
11	BALDO-NOVEZZA	2020	YES	8
12	LESSINIA ORIENTALE	2020	YES	8
13	VETTE FELTRINE	2020	YES	7
14	CAMPELLE-CALAMENTO	2021	YES	8
15	LATEMAR	2021	YES	8
16	PEIO-OSSANA	2021	YES	8
17	PELLER-TOVEL-FOLGARIDA	2021	YES	5
18	VIGOLANA-MARZOLA	2021	YES	11
19	ARGENTARIO-CEMBRA	2022	YES	8
20	BALDO NORD	2022	YES	7
21	BLEGGIO-LOMASO	2022	YES	7
22	ROEN	2022	NA*	4
23	NOVA PONENTE-DESTRA FIEMME	2023	YES	8
24	PAGANELLA-MOLVENO	2023	YES	14
25	VAL ALGONE-VAL MANEZ	2023	YES	11
26	VAL BREGUZZO-VALDAONE	2023	YES	7
27	SINISTRA FIEMME-LAGORAI	2023	YES	6

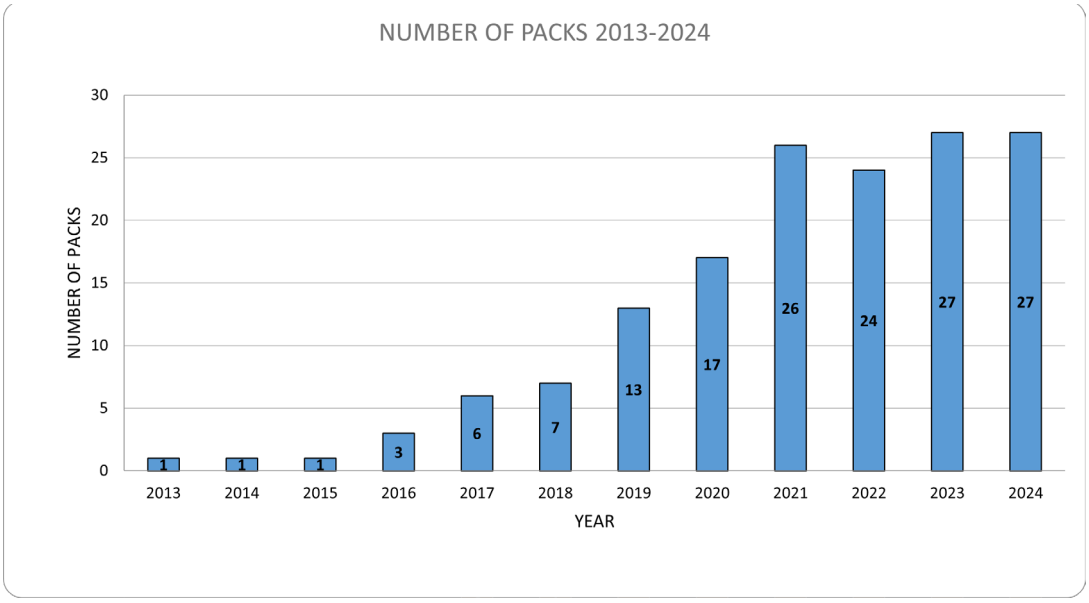
*NA = Data not available

The data given above **do not** take into consideration **wolves that do not belong to packs**, namely **solitary animals**, usually dispersing in search of new territories and partners. The **geographical location of the packs**, generally to be considered **approximate**, is shown in Figure 6, together with the location of individual reports.

Figure 6



Graph 1



Graph 1 shows the **trend** for the number of **packs** recorded in the province of Trento, from 2013, the year the first pack was formed in the province, until 2023. The data regarding 2024 essentially confirm the **stability of the population** since 2021, after a rapid increase beginning in 2016.
In 2024, the **deaths of 13 wolves** were recorded (7 males, 5 females and 1 of undetermined sex – see Table 2). In 8 cases the deaths were the result of **road kills** (Photo 11), in one case **euthanasia** (a female wolf with paralysed hindquarters, probably due to a road accident), in 3 cases due to natural causes and in one case due to **unknown causes**.

Photo 11 - Young male wolf hit and killed by a car on 31 January 2024 at Vallelaghi (Y. Valler – APT Wildlife Department Archives

Table 2 -

No.	DATE	LOCATION	CAUSE OF DEATH	GENETIC IDENTIFICATION
1	12 January 2024	A22, km 119 dir. Nord, Mezzocorona	Road kill	WTN-M115
2	31 gennaio 2024	S.S. 45 bis, loc. Vecchio Mulino, Vallelaghi	Road kill	WTN-M119
3	2 February 2024	S.S. 48, loc. Ponte dei Castellani, Predazzo	Road kill	WTN-F88
4	12 February 2024	S.S. 47, km 98.2, Borgo Valsugana	Road kill	Still unknown
5	20 February 2024	Loc. Rio Val Coalba, Castel Ivano	Euthanasia (backbone fracture)	WTN-F81
6	12 March 2024	Loc. Baesa, San Lorenzo Dorsino	Natural causes (aggression by conspecifics)	Still unknown
7	20 March 2024	Loc. Paludei Catalani, Altopiano della Vigolana	Natural causes (probably aggression by conspecifics)	WTN-F12
8	8 April 2024	Loc. Naranch, Mori	Natural causes (fractures and bruising probably caused by fall from cliff)	Unidentified
9	24 May 2024	S.S. 47, km 106.3, Borgo Valsugana	Road kill	WTN-F65
10	15 September 2024	Loc. Villa Agnedo, Castel Ivano	Unknown (carcass in advanced state of decomposition)	Unidentified
11	27 November 2024	S.S. 48, loc. Fol, Predazzo	Road kill	Still unknown
12	2 December 2024	S.P. 237, km 80,0, loc. Polina, Sella Giudicarie	Road kill	Still unknown
13	7 dicembre 2024	S.P. 90, loc. Campagnola, Avio	Road kill	Still unknown

The deaths recorded (Graph 2) represent only a part of the real number. In the context of what is by now a relatively large population, **death from natural** causes is in its turn relatively significant, but for evident reasons is **more difficult to detect**.

Graph 2 shows the trend for wolves found dead since the reappearance of the species in Trentino.

Graph 2

Preying on wild animals

423 cases of **preying/consumption of wild animals** (Photo 12) were found and recorded in 2024. The data is given in Figure 7, which shows the **distribution and the species preyed on/consumed**.

Figure 8 instead shows the total number of cases of **preying/consumption of wild animals** found and recorded in the last four years (**1800 data records** between 2021 and 2024); the map shows effectively that preying by wolves is essentially linked to the different availability of prey species, with a preference for **red deer** where there is a greater density of these (north-western and north-eastern Trentino), **chamois** in the foothills of the Alps in the south-east of the province, **mouflon** in Val di Fassa and **roe deer** found in abundance throughout the province.

It should be recalled that the carcasses found represent **only a part of the real number** of animals preyed on, most of which remain undetected. Even the **different proportions of the various species recorded** do not necessarily reflect the real situation, given that the finding of prey by man can be influenced by different factors (for example the vicinity of the carcass to footpaths, roads or inhabited areas, altitude, level of anthropic development, size of the prey etc.), invalidating the real representativity of the data.

Photo 12 - Nocturnal preying on red deer in the lower Valsugana, not far from an isolated inhabited building. In the winter months, wild ungulates habitually frequent agricultural areas on the valley floor to feed; wolves act accordingly (G. Zampiero - Associazione Cacciatori Trentini)

Figure 7

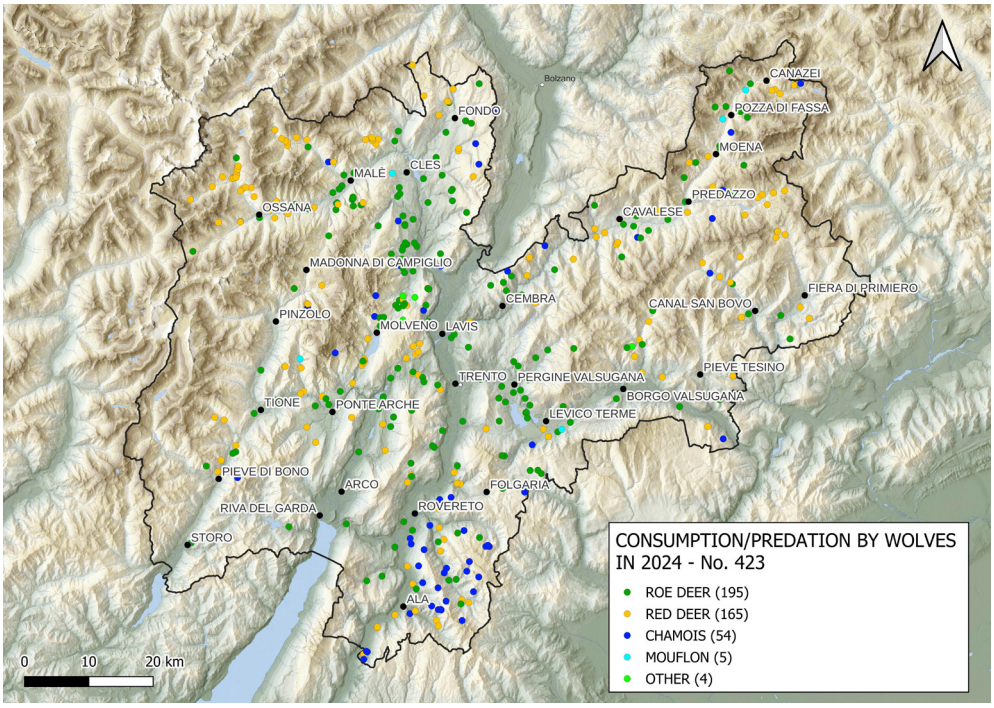
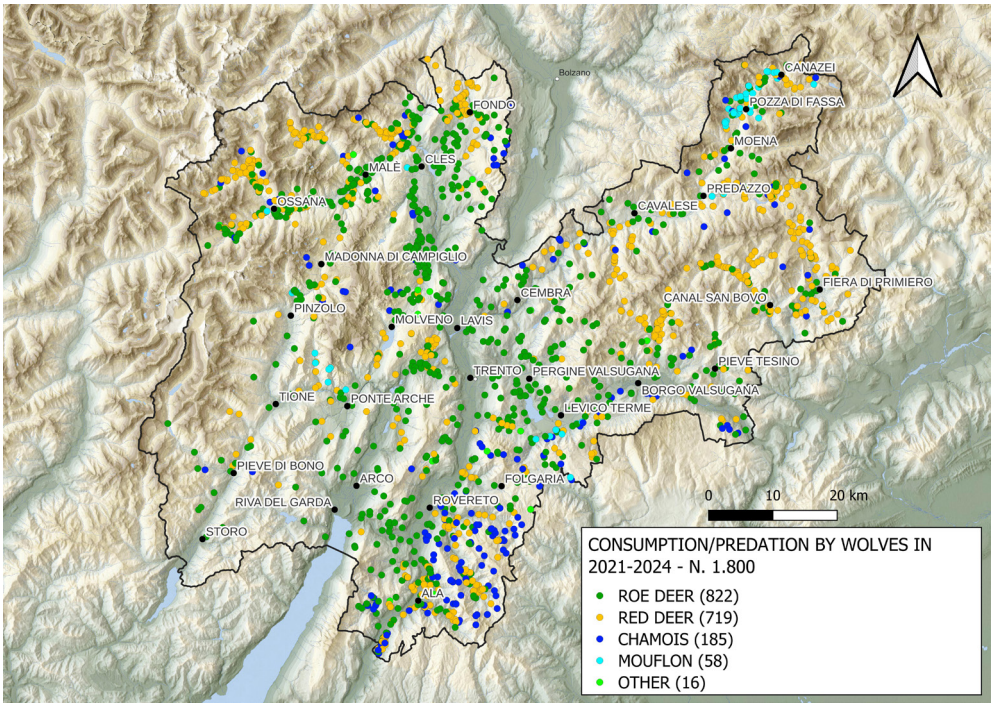


Figure 8



Box 4 - Study of predator-prey dynamics at artificial ungulate foraging sites in Val di Fassa

Giulia Bombieri[1], Marco Salvatori[12], Claudia Pellegrini [1], Enrico Ferraro[3], Luca Roner[1], Alessandro Brugnol[4], Federico Ossi[5], Francesca Cagnacci[5]
([1]MUSE; [2]University of Florence; [3]ACT; [4]APT Wildlife Department; [5] FEM)

Following a succession of predatory events at a number of feeding troughs in Val di Fassa in winter 2020/2021, which was particularly cold and snowy, MUSE and ACT devised and carried out a study on the dynamics regulating the presence of ungulates and wolves in this area, characterised by a high density of artificial foraging sites. The project took place in 2022 and 2023, with the cooperation of the Wildlife and Forestry Departments and the municipalities concerned, agreeing the experimental design with FEM. Specifically, the project took place in the context of the cooperation between MUSE and ACT established during the Stewardship Programme of the EU LIFE WolfAlps project, which together with stakeholders works towards the joint planning and creation of concrete actions to improve coexistence between human activities and wolves.

The study took place during the winters of 2021/22 and 2022/23, with the general scope of evaluating whether these sites may appeal to wolves, given their increasing presence in the area. In view of the complexity of the subject and the lack of previous knowledge regarding the dynamics of wolf packs present in the zone and their use of the local area, in 2022 a pilot study was carried out designed to test the efficacy of the experimental design and the method of data collection. This was then put into effect in a more widespread and extensive manner in 2023, making it possible to respond effectively to the questions raised.

Specifically, the study made it possible to: 1) identify species that visit the artificial feeding sites and quantify the intensity of use in terms of both time and space; 2) analyse interspecific dynamics between ungulates at the sites, in particular measuring potential temporal avoidance between roe and red deer making use of the same sites; 3) assessing the influence of artificial foraging sites on the use of space by ungulates and wolves on a wider spatial level, namely in terms of the whole study area. It was surmised that the feeding troughs, although provided with hay and hence food specifically designed for herbivores, would also be used by a large number of other species and would therefore trigger dynamics linked to competition between ungulates, in particular between roe and red deer. Furthermore, it was surmised that the sites would attract ungulates, influencing their use of space and creating a chain effect that would also attract wolves due to the high concentration of prey.

The study showed that in Val di Fassa foraging sites attract non-target species, both wild and domestic (Figure 1). The intensity of use of the feeding troughs varied considerably in terms of both time and space. The red deer was the species making most intensive use of the feeding sites (49% of all recorded sequences), followed by roe deer (27%), mouflon (15%) and other recorded species (Figure 1). Foxes visited the largest number of sites (100%), followed by roe deer (79%), mouflon (64%) and red deer (57%). Use of the feeding troughs by mouflon was on average clearly diurnal, with a peak of activity around mid-morning and a rapid decline after mid-

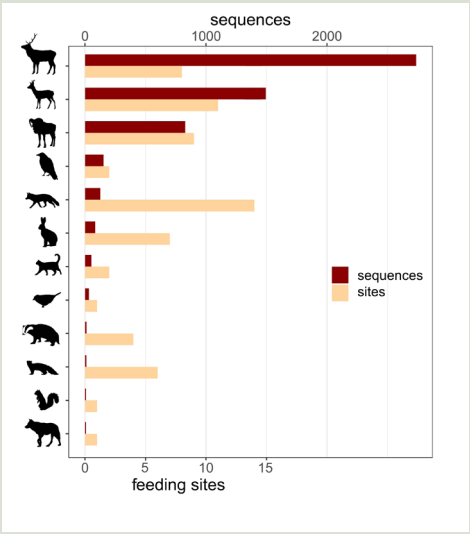


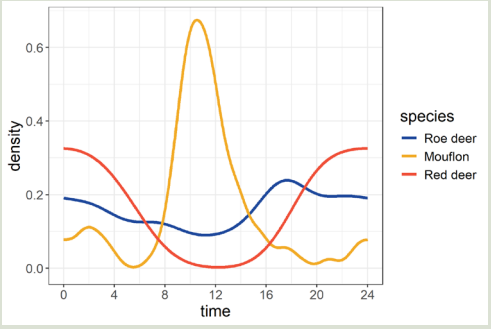
Figure 1 - Bar chart of the number of photographic sequences (upper red bars, y axis) and the number of feeding sites visited (lower orange bars, y axis) for each species recorded during 2022, shown by their profile. The species are listed from the most to the least frequently recorded in the following order: Cervus elaphus, Capreolus capreolus, Ovis musimon, Corvus corone, Vulpes vulpes, Lepus spp., Felis catus, Fringilla coelebs, Meles meles, Martes foina, Sciurus vulgaris, Canis lupus.

day, whereas red deer favoured nocturnal activity, with a peak around midnight and lowest levels around midday.

The roe deer curve falls between the other two species, with a peak in activity after midnight and less frequent but constant activities during the daytime (Figure 2, on the left). On comparing the use of food troughs by roe deer with the different intensity of use by red deer, a pattern of temporal segregation between roe and red deer emerges, with use of the foraging sites by roe deer shifting to the daytime in the case of a more extensive presence of red deer in the area (Figure 2, on the right).

Furthermore, the likelihood of use of the sites by ungulates was shown to be negatively correlated with the distance from the nearest foraging site. This means that ungulates were more likely to be present at sites near food troughs. The potential appeal of foraging sites for ungulates would in its turn appear to influence wolves. The intensity of use of the sites by wolves was indeed greater close to foraging sites, indicating the potential appeal of a predictable presence of ungulates around these sites.

We thank all the personnel involved in the collection of data in the field: MUSE and forestry service staff, forest wardens and gamekeepers in the Val di Fassa area.



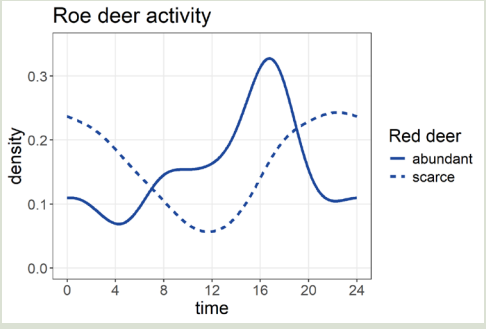


Figure 2 - – On the left: curve showing the temporal activities of the three species of ungulates recorded. On the right: curve showing the temporal activities of roe deer with greater (continuous line) and lesser (dotted line) intensity of use of the sites by red deer.

Box 5 - The Adamello Brenta Nature Park and large carnivores – activities in 2024

From the very first phase of the project to reintroduce the brown bear to its territory, the park has carried out numerous communication activities, constantly seeking to achieve the scope of the most balanced coexistence possible. In an attempt to sum up almost thirty years of commitment by the park, activities linked to communication (and environmental education) are summarised below, divided into "current" initiatives (being put into effect in 2024) and "routine" initiatives (namely carried out with constancy over the years, including 2024).

CURRENT ACTIVITIES

- Zoological-anthropological-sociological study in cooperation with the University of Sassari (Prof. Andrea Vargiu – Department of Sociology) and Cà Foscari University in Venice (Prof. Roberta Raffaetà – Department of Philosophy and the Cultural Heritage), which intends to investigate the approach of individuals and interest groups to large carnivores, translating the results into concrete communication initiatives. In the context of the project, officially started up in 2023, anthropological investigations based on participant observation, focus groups and surveys conducted with the wider public were carried out;
- Prevention-management project: a document describing the behaviour to adopt to prevent and manage encounters with bears has been drawn up. Careful analysis of many situations has been carried out, with the various activities possible in the countryside and the types of possible encounters with bears, describing in detail the best behaviour to adopt to reduce the likelihood of physical contact and suggesting actions and behaviour useful for reducing risks. The project has led to the drawing up of the text "Coexistence with bears" made available to the wider public as a digital publication and sent to the stakeholders most involved;
- Production of 3 issues of the newsletter "I nuovi fogli dell'orso". The newsletter deals with issues regarding scientific research and the human dimension linked to the presence of large carnivores, targeted at raising awareness to encourage coexistence between men and bears. A further 5 issues are planned for 2025. The document is currently sent to around 2,000 e-mail addresses, and can also be consulted at the park's website (www.pnab.it);
- "Un passo alla volta" (one step at a time) large carnivore video tutorial project: 10 video tutorials were produced and published on social media regarding the best behaviour to adopt to ensure coexistence with large carnivores and minimise the likelihood of problematic encounters, in the context of the different outdoor activities possible in the countryside.

ROUTINE ACTIVITIES

- Training courses for seasonal staff at the park acting as cultural workers in the valleys and visitors centres in the park;
- Training courses for organised groups (university master's degree courses, teachers, CAI, schools etc.);
- Educational initiatives in schools at all levels, with particular attention for primary schools. Adult education courses.
- Books and leaflets dedicated to bears and large carnivores, distributed in the valleys and at visitors centres (biology, ecology, hi-

story and behaviour to adopt;
- Meetings with mayors and administrators in the area of the park to discuss the subject of bears and possible approaches;
- Organisation and/or participation at evenings, public meetings and debates dedicated to bears and (in the last few years) to wolves;
- Participation in television broadcasts and documentary films dedicated to the presence of bears;
- Publication of numerous interviews dedicated to bears and large carnivores;
- Participation at conferences and workshops;
- Presence on web channels and social media, website (www.pnab.it) with dedicated section; social media editorial calendar with planned posts of an informative and educational nature; YouTube videos on the specific subject of bears; podcasts;
- Paper-based material, six-monthly magazine "Adamello Brenta Parco", issued by the park and distributed to all resident families; press releases, press conferences and other activities directed at the media; leaflet "Getting to know the brown bear" entirely dedicated to the bear and "Wildlife in summer" giving instructions on conduct to adopt in the event of encounters or sightings; "Coexistence between men and bear" document; FAQ, the most important questions linked to the coexistence with these species; series of educational publications "Noi Parco: la fauna";
- palaOrso, a large inflatable multimedia igloo travelling around towns, public parks and fairs dedicated entirely to the history and biology of the brown bear;
- superpark, trips in the local area and thematic film festival also dedicated to the subject of coexistence between humans and large carnivores.

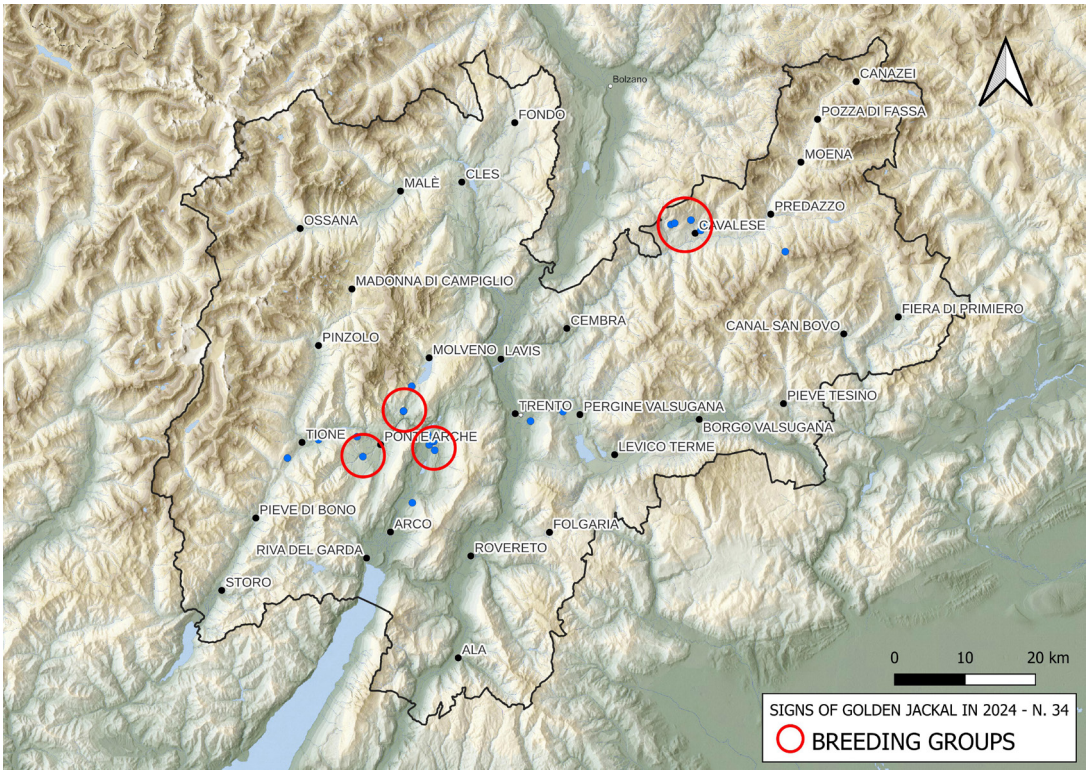
1.3 The Lynx

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 in the Lagorai mountains** (present for around 15 years, until the early 2000s).
Traditional survey methods in the field, **camera traps**, **radio-tracking** and **genetic monitoring** were also used for this species from the beginning.
The only lynx certainly present in the province of Trento (from 2008 to 2022) was the **male** known as **B132**, who came from the small Swiss population reintroduced in the St Gallen Canton (see **page 45 and subsequent pages of the 2008 report**, along with appendices and sections relating to the lynx in all subsequent reports).
During **2024**, for the second year running, **it was not possible to document any signs of the presence** for the species.

1.4 The Golden Jackal

The golden jackal (Photo 13), a wild canid smaller than the wolf but larger than the fox, has been colonising continental Europe for some decades (for further information see the relevant box in the 2020 Large Carnivores Report, pages 29-30). Since 2012 the province of Trento has also been concerned by this phenomenon. Starting from the first ascertained breeding (2020), the positive trend continued in subsequent years. In 2024 the presence of **four breeding groups** was ascertained: in the **Bleggio/Lomaso** area, between **Cavalese** and **Tesero** and in the municipalities of **Dro** and **San Lorenzo Dorsino**.
Figure 9 shows the **territorial distribution** of data in 2024 (33 reports).

Figure 9



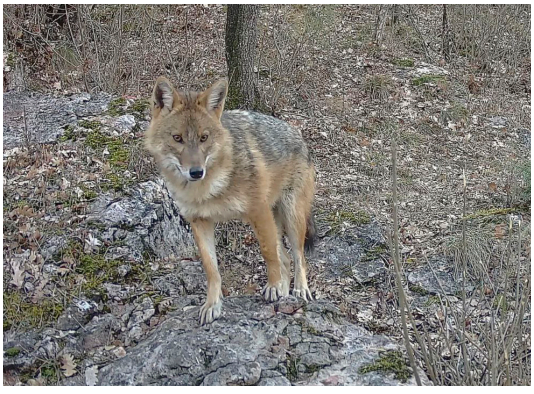


Photo 13 - Golden jackal filmed by a camera trap in Valle dei Laghi in 2024 (F. Bergamaschi – APT Forestry Department Archives)

Box 6 - Activities of the Associazione Cacciatori Trentini to monitor large carnivores in 2024

By Enrico Ferraro

From the beginning of the LIFE Ursus project (1997-2004) the Associazione Cacciatori Trentini (ACT) has actively contributed to monitoring the bears released, using its own staff for radiotracking activities. Over time, this has been followed by various forms of cooperation, culminating with a specific cooperation agreement with the former Forests and Wildlife Department stipulated in February 2015, dealing with matters related to systematic and opportunistic monitoring of large carnivores and the crucial issue of communication. Over the course of the last few years, coinciding with the return of the wolf to increasingly large areas of the province, the association's activities have increased, above all to obtain an up-to-date picture of the distribution of the species in the area.

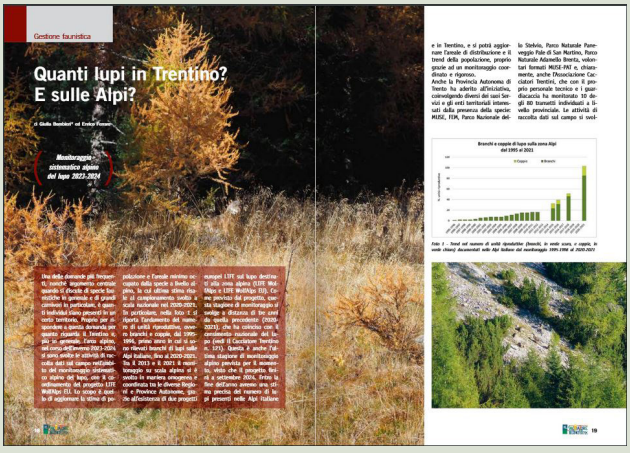
During 2024, activities related to monitoring and reporting of direct sightings and indirect signs of presence for the three large carnivores most widely present (the brown bear, wolf and golden jackal) have continued, both through the association's employees and more generally its members.

Specifically, during the year a number of wolf packs were reported, various bear litters were ascertained and a third breeding group of golden jackals was reported in the province of Trento.

The informative evenings begun in 2021 and directed at hunters continued, with a special course in 2024 directed at the expert hunters' group in Rendena and a refresher course on the situation in Trentino for ACT staff, as well as a further ten meetings during the year, when ACT staff were invited as speakers at evenings and conferences on the wolf.

As regards systematic monitoring of the wolf, after its participation in the first National Monitoring Programme in winter 2020-21, the association was again involved in monitoring of the Alps in 2023-24, with surveys taking place throughout the Alps, both in Italy and abroad (France, Switzerland, Austria and Slovenia). Specifically, using its own staff, ACT was involved in surveying ten transects distributed uniformly over the area, checked monthly, between January and April.

Lastly, ACT continued to cooperate within the context of the Stewardship initiative, along with MUSE and the LifeWolfalps.Eu project, participating in a working group dedicated to the final event, held in Trento as part of the final conference (19 May 2024), and publishing three articles in issues of the Cacciatore Trentino magazine.



2. DAMAGE COMPENSATION AND PREVENTION

By now APT has gained fifty years' experience as regards compensation and the prevention of damage. Indeed, **since 1976** 100% of the material value of assets damaged by bears has been **reimbursed** and it is possible to acquire damage **prevention** works (mostly consisting of electric fences or guard dogs). The relative regulations, covered by 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 Resolution no. 1988 of 9 August 2002. With Resolution no. 697 of **8 April 2011**, the provincial government further revised the regulations for damage compensation, also providing for compensation of ancillary expenses and extending 100% compensation to damage caused by the **lynx and wolf**. Preventive activities continue to take place following two main lines of action: **funding** covering up to 90% of the cost of damage prevention works, or **gratuitous loans** of such works.
There are also a series of **further activities** directed at more **general prevention of conflict**.

Damage compensation

In 2024, **456 cases of damage by large carnivores** were recorded: **297 by bears and 159 by wolves**.
341 applications for compensation were presented (234 by businesses (69%) and **107 by private individuals** (31%), **305** of which were **accepted** (damage confirmed, Photo 14), and **36 denied**. The number of applications for compensation was lower than the cases of recorded damage, as in some situations compensation is not requested (usually for damage of limited financial value), while in others applications may concern multiple cases of damage.
A total of **237,950.73€ of compensation** was **paid** for the **305 cases of damage** stated above, of which 145,027.53€ for **damage by bears** (**187**) and **92,923.20€** for **damage by wolves** (118).
There was no damage linked to the **lynx** or **golden jackal**.
The data regarding damage compensated in 2024, distinguished by predator and type of damage, are shown in detail in **Table 3**.

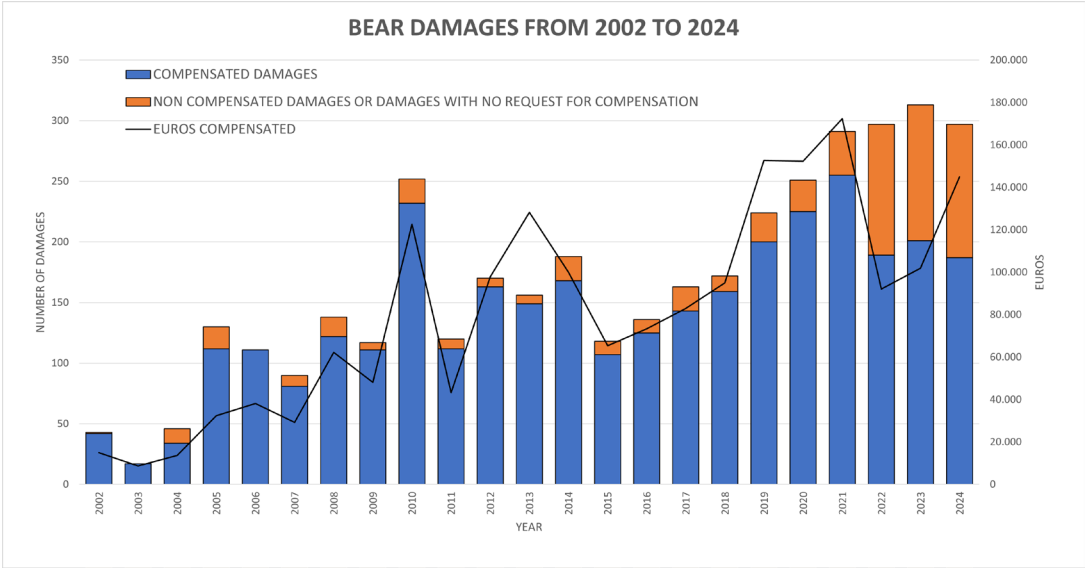
With reference to **damage to livestock by bears**, in 2024 there was a **specific and financially significant case of damage to a trout farm**, which was compensated with an amount of **31,500.00 €** (the bear dived into a tank containing over 200,000 fry, which were mostly thrown out of the tank and died or ended up in the stream below and were impossible to recover).
As regards **organic waste bins and domestic composters, 23** and **14 cases of damage** respectively were recorded, with a significant fall in "damage" to waste bins compared to 2023 (when there were **77** cases). This was partly as a result of the **removal of bears** who serially sought out, and used these sources of food (for example M90), and partly due to continuing im-

Table 3 - Damage by large carnivores compensated - 2024

ASSETS	BEARS		WOLVES		TOTAL	
	No. CASES	AMOUNTS	No. CASES	AMOUNTS	No. CASES	AMOUNTS
BEEKEEPING	46	37.440,41 €	0	0	46	37.440,41 €
AGRICULTURE	65	41.647,48 €	0	0	65	41.647,48 €
OTHER	27	6.727,9 €	0	0	27	6.727,9 €
LIVESTOCK	49	59.211,74 €	118	92.923,20 €	167	151.261,36 €
TOTAL	**187**	**145.027,53 €**	**118**	**92.923,20 €**	**305**	**237.950,73 €**

plementation of the provincial plan to secure urban waste collection systems from raids by large carnivores (further information on pages 43-46). Graph 3 shows the **trend** for **damage by bears** and the amount of compensation paid over the years. Graph 4 shows the **trend** for **damage by wolves**.

Graph 3



Graph 4

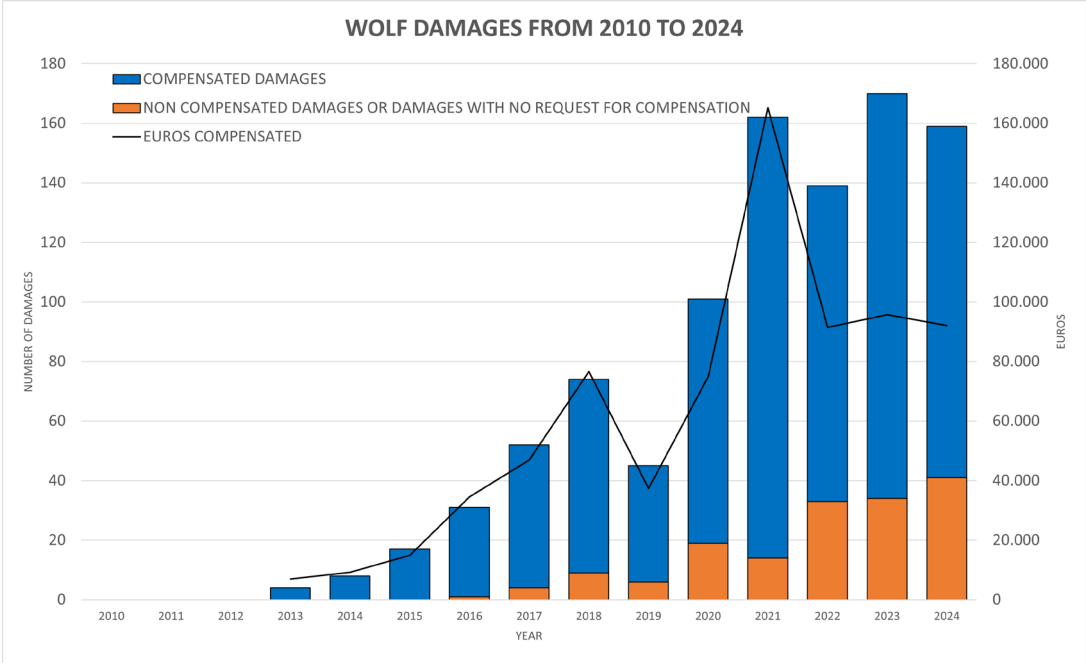


Table 4 - Damage to livestock - 2024

TYPE	BEARS			WOLVES			TOTAL
	DEAD	INJURED	MISSING	DEAD	INJURED	MISSING	
SHEEP/GOATS	17	1	4	287	40	75	424
EQUINES	8	0	0	16	12	5	41
CATTLE	10	1	0	19	6	0	36
DOGS	0	0	0	1	5	1	7
TOTAL	**35**	**2**	**4**	**323**	**63**	**81**	**508**

A total of 508 domestic livestock (sheep and goats, equines, cattle and dogs) were preyed on (either killed, injured or lost), of which 41 by bears and 467 by wolves. Table 4 shows these animals, distinguished by category and the outcome of the predation.
A further 231 small farmyard animals (chickens, rabbits, geese, ducks and quails) were preyed on, almost exclusively by bears (229, compared to 2 by wolves). In total, in 2024 739 livestock were damaged (killed, lost or injured), 31% of which were small farmyard animals.

Photo 14 - Holstein cow preyed on by wolves in Lessinia, a tableland repeatedly affected by serial predation involving wolves during the summer grazing (T. Borghetti – APT Wildlife Department archives).

As regards the **geographical distribution of damage**, 82% of cases involving **wolves** took place in the **eastern** part of the province and 18% in the western part. 96% of damage involving **bears** was instead recorded in western Trentino and only 4% in the eastern part. The latter was caused by a young roaming bear (M75).
Figures 10 and 11 show the distribution of damage caused in the area by bears and wolves, distinguished on the basis of the main categories.

Figure 10

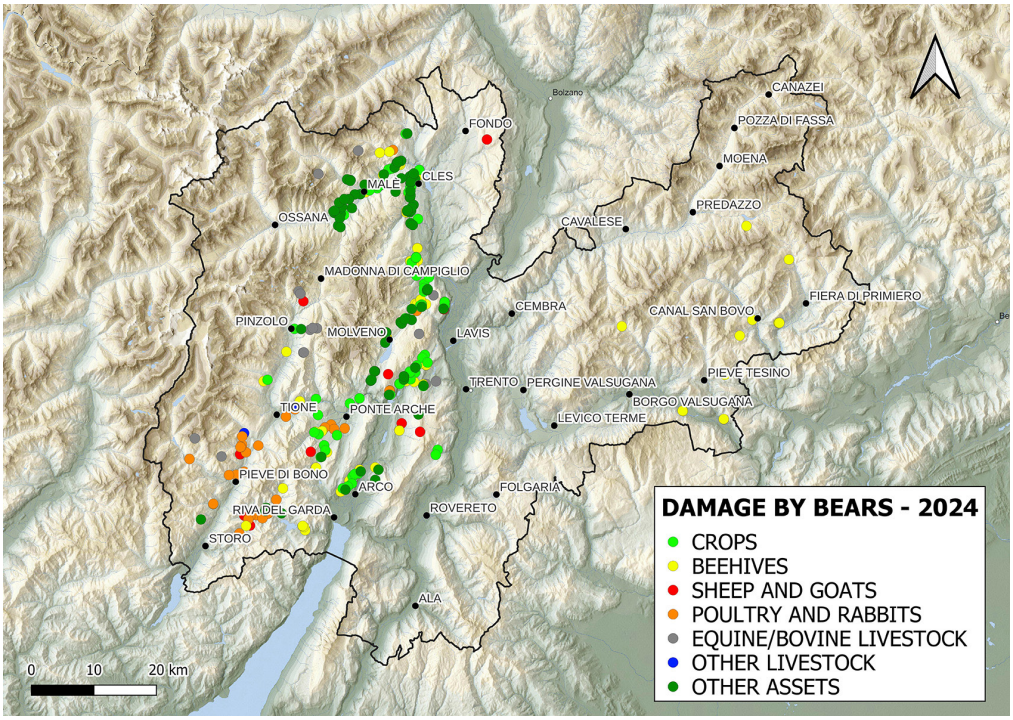
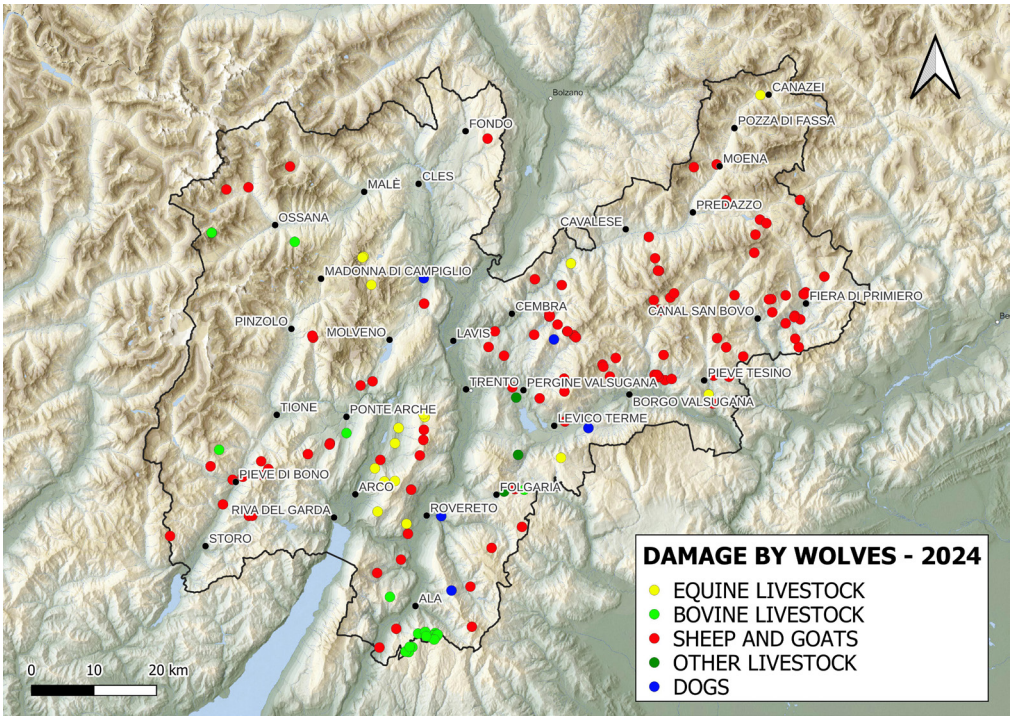
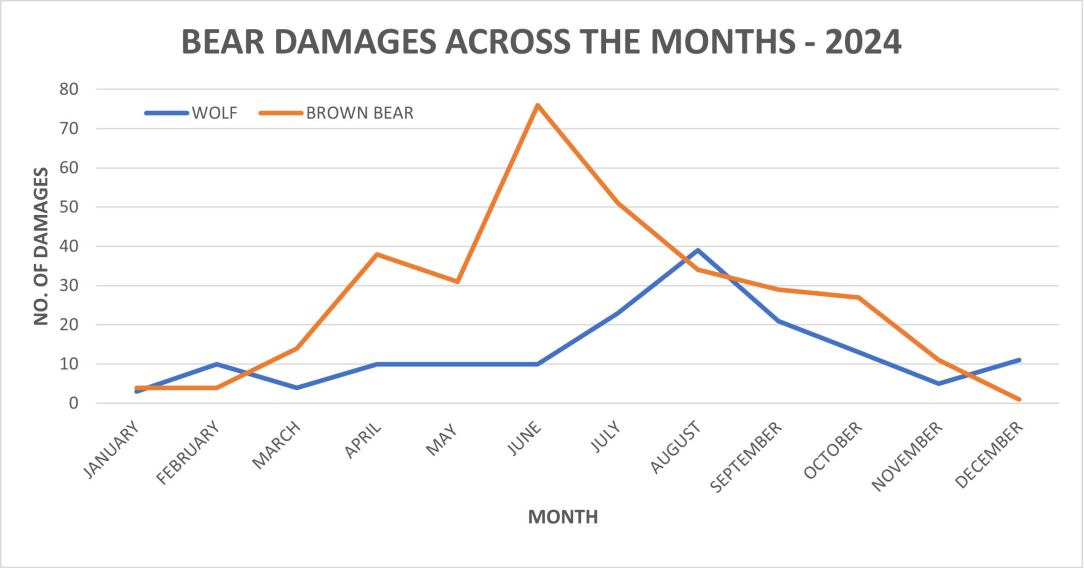


Figure 11



Graph 5 below instead shows the distribution of damage by bears and wolves during 2024, with peaks in spring and summer for the former and in late summer for the latter.

Graph 5



Box 7 - Focus on damage to agriculture in the period 2002-2024

INTRODUCTION

The damage to cultivated crops caused by brown bears (Figure 1) can be attributed to three main categories:

- products removed or made unusable (Figure 2);
- damage to plants (Figure 3);
- damage to materials and infrastructures (Figure 4).

COMPENSATION CRITERIA

To compensate for products removed or made unusable by bears, reference is made to the prices shown in the annual tables of CODIPRA (Consorzio Difesa Produttori Agricoli), the average prices of the Chamber of Commerce, Industry, Trade and Agriculture or to those available at APT's Agriculture Department. Compensation for damage to fruit trees takes into account the species, age and productivity of the plants.

As regards materials and structure, reference is made to the average market value, increased by 30% to make up for the labour costs necessary to restore the damaged structures and/or the transport of materials. Indirect damage resulting from possible insect infestation (e.g. *Drosophila suzukii*) facilitated by damage to anti-insect nets is not eligible for compensation.

ASCERTAINING DAMAGE

The inspector contacts the damaged party and agrees on inspections to be carried out to verify the extent and if relevant the evolution of the damage, to then quantify it cumulatively and report it at the time the product is finally harvested. The inspector also assesses any damage to materials and infrastructures.

Figure 1 - Bear feeding on grapes (M.Zeni - APT Wildlife Department archives)

Figure 2 - Damage to a vineyard by bears (APT Wildlife Department archives)

Figure 3 - Damage to a cherry tree by bears (APT Wildlife Department archives)

Figure 4 - Damage to a perimeter fence by bears (APT Wildlife Department archives)

EXPERIMENTAL SURVEY OF DAMAGE TO WAXY CORN USING DRONES

In 2024, the forestry staff at Ponte Arche forestry station experimented with the use of drones (DJI Phantom 3 and DJI Matrice) to rapidly, efficiently and safely map the areas crossed by a bear in corn fields (Figure 5). It was ascertained that the surface areas concerned by the bear's consumption were more numerous than could be appreciated visually from the ground. Photographic surveys were then carried out in the areas damaged, at different altitudes, to gather the information necessary for subsequent georeferencing and processing of the data gathered with QGIS.

Having thus obtained rasters with which to identify the damaged areas, polygons of the surface areas damaged by the bear and the relative surface areas were established (see Figure 6).

To verify that the areas had been correctly identified, staff then returned to the field to carry out spot checks confirming that bears were responsible for the damage surveyed.

DAMAGE SURVEYED

Graph 1 shows events involving damage to agricultural assets in the period 2002 -2024.

Overall, 839 events involving damage were recorded, regarding mainly grapes, apples, cherries, maize (waxy or grain), plums, hay silage, and to a lesser extent, apricots, peaches, chest-

Figure 5 - Large-scale photo taken with DJI Matrice drone at Clena (photo by Nicola Panelatti - APT Wildlife Department archives)

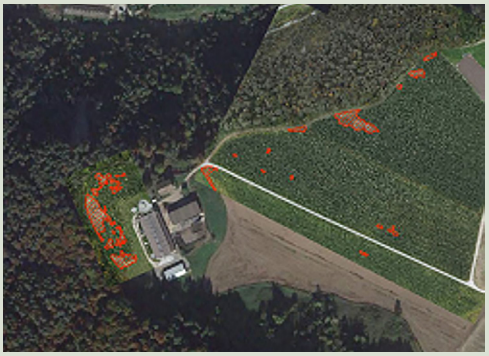


Figure 6 - Georeferencing of the Clena area (photo by Nicola Panelatti APT Wildlife Department archives)

nuts, olives, pears, loquats, walnuts, lettuce, radicchio, kiwis, figs, persimmons, cabbage and carrots (Graph 2).

Use of agricultural products by bears is undoubtedly higher than reported, but in many cases, above all for non-intensive consumption of apples and grapes, it is not perceived or reported by farmers.

Alongside damage to agricultural products, there is also damage to materials, such as fencing around orchards/vineyards (designed mainly to keep out wild ungulates), which does not represent a deterrent for bears, who climb under or over them with ease. Occasionally, mostly out of curiosity or playfulness, bears can also cause damage to infrastructures, such as irrigation systems, or plastic structures for the storage of liquids.

COMPENSATION OF DAMAGE

Damage to agricultural assets represents on average 20-25% of the overall damage by bears compensated. Much of the damage, over 70%, relating to orchards, in particular cherry orchards, concerns plants, rather than consumption/damage to products.

In the case of vineyards on the other hand, it is direct consumption of the product that is most significant, with over 90%.

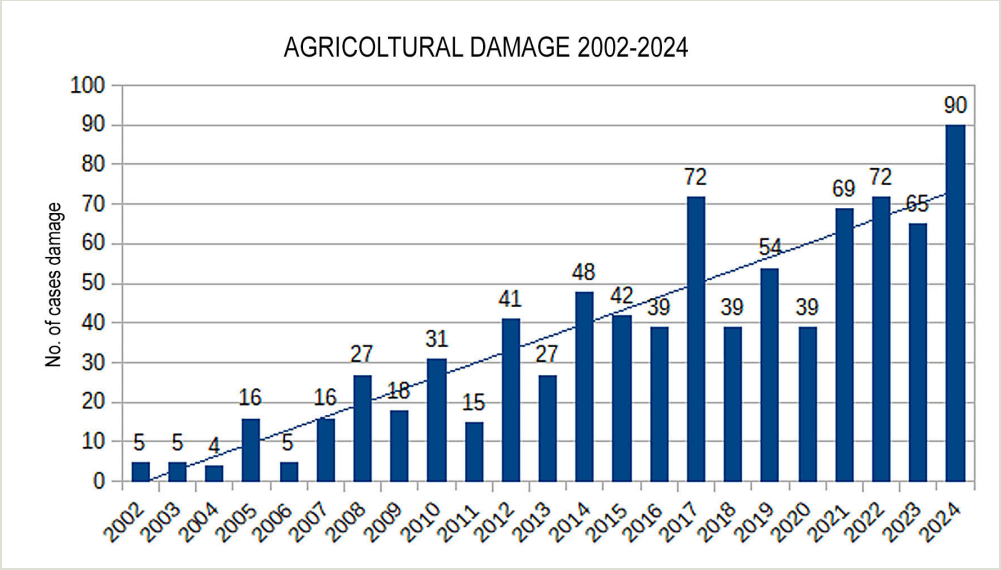
SPATIAL DISTRIBUTION OF DAMAGE

Farms situated in marginal areas, fragmented or bordering on or close to woods are most exposed to damage. In some cases, hot spots are created in these areas, with damage that is frequently repeated both during the same season and over the years. These situations can lead to powerful and understandable discontent among farmers, also bearing in mind the difficulty of adopting prevention measures (the perimeters are often very extensive and prevention works may hamper farming activities; for this reason, they are not supported by APT, although users are at liberty to install them).

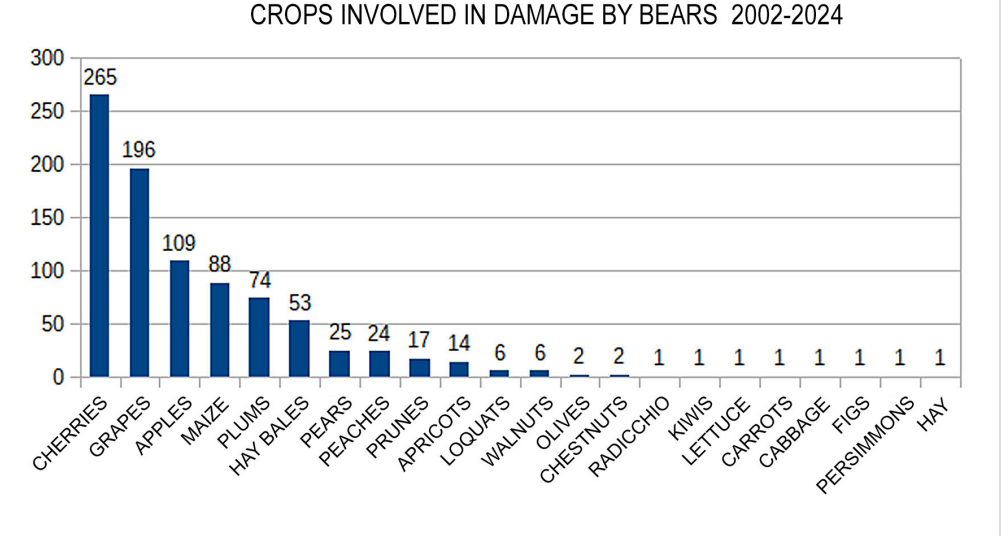
In the period considered (2002-2024), damage by bears to agricultural assets concerned 54 municipalities. Those most affected were Vallelaghi, with 261 cases of damage (on average 11.34 a year), with peaks in 2017 (29 cases) and 2019 (21 cases). The assets damaged in this area were mostly vineyards (146 cases), cherry orchards (46 cases), plums (26 cases) and waxy maize (24 cases). Over 40 cases of damage were recorded in the municipalities of Cles (49), Cimone (45) and Stenico (42).

As shown in the map below (Map 1), agricultural damage mostly concerns valley floor environments intensively cultivated and used by man, which due to the nature of the landscape in the valleys of Trentino, are closely linked to

Graph 1



Graph 2



wooded areas on the slopes of valleys.
Bears can thus find areas of shelter and very desirable sources of food in these environments, especially in the period of hyperphagia, from August onwards.

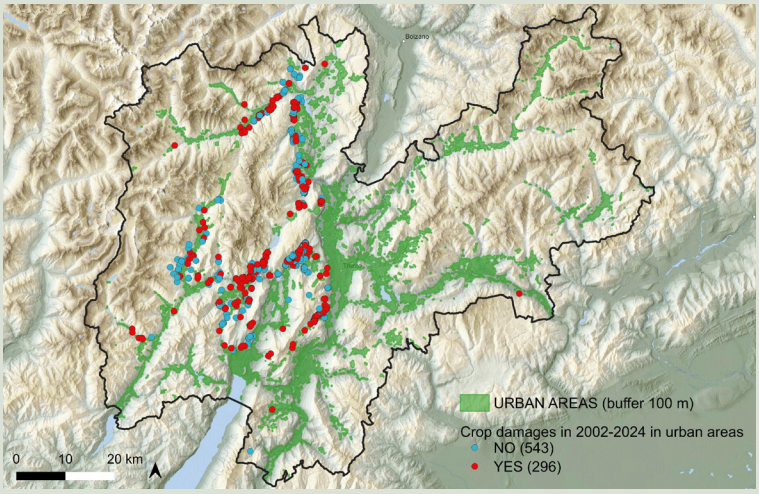
Agricultural areas often neighbour on urban areas, which as shown on the map, are visited by bears in the immediate vicinity: 35% of damage is located at less than 100m from inhabited areas (Map 1). Extending the buffer area to

200 m, the percentage of damage rises to 56%, to arrive at 72% with a buffer area of 300 m. Map 1 shows the position of damage sites and highlights damage falling within a buffer zone of 100 metres from inhabited areas.

TIMING

Agricultural areas are mostly visited by bears at night (87% of damage), or more rarely at dawn or sunset (13%). Monitoring of agricultural environments with camera traps has made it possible to show that a specific area may be visited by different bears, sometimes also simultaneously, and these may also stay in the field/orchard for several hours during the night. Females were recorded more frequently than males.

Map 1



INTERACTION WITH MAN

Visiting cultivated areas leads bears to approach the valley floor, and hence inhabited areas, with a certain regularity, usually during the night. Inevitably, in these settings there are close encounters with people (farmers and others). These situations can create alarm and lead to a sense of insecurity among people, who are not accustomed to sharing space with bears. It is important to know that in certain periods even the most elusive bears can visit agricultural environments with regularity and consequently encounters are more likely to happen. In this context, the importance of adopting suitable conduct is highlighted, to reduce risks to a minimum.

CONCLUSIONI

More than any other data, agricultural damage demonstrates the omnivorous and adaptable nature of brown bears as able users of the resources made available by human activities. The widespread diffusion of agricultural cultivation, territorial fragmentation, the alternation of cultivated areas and woods, and the difficulty of adopting prevention measures facilitate the use of these resources by bears, in some cases making coexistence with farmers extremely difficult. Damage to agriculture does not usually have the same emotional impact as damage to livestock or beekeeping, but it nevertheless represents a serious challenge, given the difficulty of adopting effective and economically sustainable prevention systems. Fair and full compensation must therefore be the main way of mitigating conflict for this type of damage, more than any other.

Prevention of damage and conflict

The management of **damage prevention measures** at provincial level is coordinated by the staff of the Wildlife Department, in association with the local **prevention coordinators**. The latter figure has the role of guaranteeing **technical support** for the prevention of damage by large carnivores and managing activities relating to the **supply of prevention measures** in the form of gratuitous loans (or short-term loans for emergencies). This takes place through dialogue, support and continuous liaison with users - managers of farms and mountain dairies, shepherds, beekeepers and hobbyists etc. - who manage assets in the area susceptible to damage by large carnivores. In order to respond promptly and effectively to these needs, the province has been subdivided into **10 zones**, generally corresponding to the Forest District Offices (FDOs), each of which is managed by a **contact figure** and their **assistant/stand-in**.

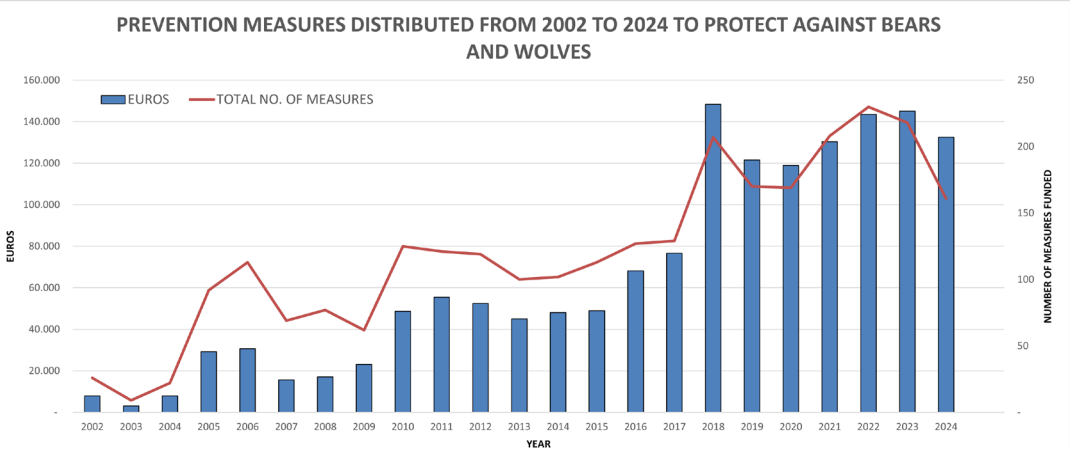
There are also more general activities for the **prevention of conflict, for example in the case of bears approaching areas where people live**, taking shape above all with the progressive adaptation of systems for the storing and collection of **organic waste**, which **began in Trentino** in **2009** and has never ceased (see pages 40 and 41 of the 2009 report and subsequent reports). This activity, updated to 2024 and shown hereafter, is very **complex** due to the extensive and varied **geographical context**, with **different storage and collection systems** and **different bodies** involved; time is therefore required to be put it progressively into effect.

In 2024, **161 applications** were processed in relation to **prevention measures to protect against damage** by large carnivores (electric fences and guard dogs), designed to protect livestock (Photos 15 and 16) or beehives.
Of these, **152** were dealt with by Forestry District Offices (FDOs) through **gratuitous loans** of works (mobile electrified nettings and multi-wire electrified enclosures), at a total cost of around **€91,000**, and **9** by the Large Carnivores Division through **capital funding** (mobile electrified nettings, multiwire electrified enclosures and guard dogs), at a cost of around **€41.600**. In **2024**, a **total of €132.600** was thus invested in prevention.
The following graph shows the long-term **trend** for the number of **prevention measures** distributed and the relative costs (Graph 6). It is pointed out that until 2012 the provision of preventive measures concerned only bears, whereas since 2013 there has also been a progressive increase in preventive measures requested and distributed to protect against wolves.

Photo 15 - Traditional wooden fence with 7 wire electrification in zinc-aluminium on the external side, funded in 2024 to protect sheep and goats at alpine pasture at night (M. Zeni – APT Forestry Department archives)

Photo 16 - Electric fence protecting young bovines (M. Zeni - APT Forestry Department archives)

Graph 6



Livestock guarding dogs

Livestock guarding dogs (**LGD**, photo 17) have been used effectively for thousands of years to **protect livestock** from attacks by large carnivores. Due to the scarcity or disappearance of the latter, in the Alps the custom of using this form of assistance to prevent damage had been lost. With the progressive return of brown bears and wolves to Trentino, and starting from the first APT funding for the purchase of LGD puppies (see page 43 of the 2014 Report), access to this type of public support and the use of LGD in general has gradually increased.

In **2024, 4 further dogs** were funded, at a cost of around **€3,080**.

By the end of 2024, a total of **99 dogs had been funded** in the province of Trento (**up to 90% of cost**). The dogs purchased with financial support from APT have been supplemented by direct purchases, dogs from farmers' home litters or exchanges between farmers.

These additional ways of acquiring dogs are a sign that the practise of **using LGD is by now well-established**, as the provincial administration expected and hoped.

With the widespread use of these dogs, over time there has also been a predictable and inevitable increase in **conflict with other users of the mountains** (day-hikers, people doing sports, walkers accompanied by dogs etc.), usually relating to episodes when LGD have defended the animals entrusted to them particularly strenuously. Given this issue, as requested by the provincial administration, since **May 2023** access to financial aid for the purchase of these dogs is subject to attending a **basic training course on the education and management of LGD**, in order to provide future users of these dogs with better knowledge of the behavioural characteristics of guard dogs.

Interested parties can organise this course independently, by contacting behavioural vets

Photo 17 - Maremmano Abruzzese sheepdogs (M. Zeni - APT Wildlife Department archives)

with proven experience, or they can make use of courses organised by public bodies and associations.
In this context, in 2024 the Wildlife Department again organised a **free course** (Photo 18) lasting one day (**7 November 2024**), once again hosted by the **Federazione Provinciale Allevatori di Trento**.
In 2024, the Forestry Department and Wildlife Department continued to distribute information panels to those using LGD funded by the Province, with the scope of making users of the mountains and pastures aware of the presence of **dogs protecting flocks**, and of advising them how to behave to avoid conflict with such dogs.

Photo 18 - Course on the correct education and management of LGD, organised by the Wildlife Dept. on 7 November 2024 (M. Zeni – APT Wildlife Department archives)

Box 8 - Checks on the functioning of damage prevention works

As took place in 2014 (see 2014 Bear Report, pages 42-43) and 2020 (see 2020 Large Carnivores Report, pages 36-37), in 2024 **targeted spot checks** were again carried out on some of the works designed to prevent damage by large carnivores, namely mobile electric nettings and multi wire electrified enclosures, assigned with gratuitous loans between 2016 and 2023. The inspections concerned **258 damage prevention works**. Coordination and subsequent processing of the data was carried out by the Large Carnivores Division of the Wildlife Department, whereas activities in the field were carried out by the forestry service prevention coordinators, with the support of other staff from the forestry stations.
A form was completed for each of the works and photographic documentation was acquired when considered appropriate. The inspection in the field was targeted at establishing the situation at the time of the check and specifically at assessing strong and weak points in terms of both the installation and maintenance of the fences, in relation to preventing damage by large carnivores. In the event of works installed inadequately or found to be poorly maintained, the staff of Trentino Forestry Service reported the problem to the assigned user, while at the same time providing information and consultancy on improvements to be made.
Analysis of the data gathered made it possible to establish that:

- 60% of the works were installed at the time of the check. The uninstalled works (40%) were partly not operational for justifiable reasons (e.g. temporary use, for example in the case of electric fences not adopted in meadows on the valley floor when the livestock was at alpine pasture; or used elsewhere, for example due to seasonal transfer of beehives to flowering zones), and partly without appropriate justification (e.g. failure to use the work, or termination of activities without communication and return of the work);
- the battery, essential for fuelling the electrifier at sites without electricity, was present in 88% of cases; when present it was adequately charged in 89% of cases. The charged

batteries were connected to the electrifier in 97% of cases;
- as regards structural components, the set up was adequate in 79% of cases. The main structural problems reported concerned incorrect positioning of the grounding rods and conductor supports (posts). The positioning of the work was appropriate in 79% of cases. In 19% of cases the positioning was instead incorrect, usually due to siting on terrain that was too steep, or at the base of walls, making it easier for predators to jump inside the fence. In the case of beehives, the positioning error may also regard the asset itself, e.g. when the hives are placed too close to the multi-wire enclosures;
- as regards maintenance, the electrified fences were correctly maintained in 65% of cases, whereas in 32% of checks maintenance was instead inadequate. In three out of four cases the problem concerned grass, which was too high and in contact with the electrified fence; in fewer cases it was shrub vegetation that was touching the fence;
- bearing in mind all the factors described above, the **overall state** of the works installed was **adequate**, both in terms of installation and maintenance, in **67% of cases** (22% excellent, 33% good, 12% sufficient).

The analysed data shows that over the last decade, the level of suitability in terms of the installation and maintenance of prevention works assigned with gratuitous loans has remained essentially unchanged. While it is true that the percentage of electrified fences considered to be suitable is higher, it is equally true that in 2024, a still significant percentage (33%) of the works installed was judged to be unsuitable for preventing damage by large carnivores (Figure 1). Furthermore, it was shown that an increasing percentage of works was not present at the site inspected, for reasons that were partly justified, but partly unjustified. In the context of unjustified reasons, it can be noted that some users, infringing the conditions of the contract signed at the time, have not informed the authorities they have closed down, consequently not enabling forestry staff to promptly assess the degree of wear of the materials and hence their possible useful and opportune reuse.

It is important to recall that electrified enclosures/fences represent above all a psychological barrier for predators: efficacy against predatory activity is based not so much on their straightforward presence or absence, so much as on the average level of efficacy of electrified fences present in a certain area. If a brown bear or wolf has had a traumatising experience on first contact with electric fences and multi-wire enclosures due to particularly painful electrocution, they will tend to avoid interacting with prevention works in the future.

The absence of initial traumatic stimuli due to the presence of fences that are not working or working poorly, will instead tend to make predators less concerned about all the electrified fences that they encounter subsequently; as a result, they will also be more tolerant of electrocution, unless it is particularly effective. It is therefore the duty of everyone (both businesses and hobbyists) to strive not to nullify the work of those who keep their electrified fences and enclosures fully efficient.

In contrast with some users, during the 2024 checks it again emerged that some prevention works have not only been set up and maintained correctly, but often reinforced by the addition of improvements by particularly conscientious individuals, with work designed to increase the robustness, power, durability and/or deterrent impact (Figure 2). One can list, for example:
- the addition of a photovoltaic panel to the electrifier system with battery;
- protection of the electrifier and battery from the elements;
- the addition of one or two wires (in the case of multi-wire enclosures) compared to the requirements;
- the addition of tie-rods/pickets (in the case of electric fences) to keep them erect and tense;
- the addition of mulching at the base of the

Figure 1 - Unsuitable electric fence: even with adequate electrification, the leaning post and conductors irrevocably compromise its efficacy

Figure 2 - Effective electric fence, to which the user has, on his own initiative, added a photovoltaic panel and a further external electrified wire to discourage digging

lowest wire to limit grass regrowth;
- the addition of an "anti-digging wire" outside the electric fence, to discourage attempts at digging under the main fence;
- dampening of the terrain around the grounding rod, particularly during dry periods.

It should be highlighted that the presence of these particularly effective works in the area not only represents a stimulus for effective prevention that is an advantage for everyone, but also a source of satisfaction for those setting them up and maintaining them.

This is an excellent example and a source of inspiration for young people and enthusiasts who are starting up in the field of beekeeping and animal husbandry, whether at professional or amateur level.

In the light of the results emerging from the checks carried out and described above, the administration is evaluating **initiatives targeted at improving the technical skill of users** as regards electrified enclosures. These are particularly important prevention works whose widespread diffusion in the province has over the years contributed to mitigating the conflict between humans and large carnivores and to preventing much damage and predation on beekeeping and livestock.

Support for animal husbandry

One of the provincial administration's objectives is to encourage herders and their flocks/herds to stay at alpine pastures. The presence of the shepherd and adoption of the most appropriate systems for preventing damage, along with fair compensation and constant liaison with local forestry service staff, are the strategic factors in **mitigating the impact of large carnivores** on **animal husbandry in the mountains**.

In 2024, the **prevention coordinators** followed in particular the progress of a 38 alpine pastures, which were provided with damage prevention works in the form of **loans** for the summer grazing period alone (usually from June to September). When possible, this temporary and/or emergency measure was replaced with the **assignment of gratuitous long-term loans** (with the works being lent to the user for a duration of 8 years) or by **funding** to acquire such works.

Photo 19 - Shelter for shepherds set up by the Forestry Service at Prà del Vescovo, Val d'Ambiez, Municipality of San Lorenzo Dorsino (APT Wildlife Department archives)

Support for summer grazing activities involved the **supplying and helicopter transport of 14 accommodation modules** to encourage the constant presence and supervision of livestock by herders where there are no alternative shelters. The construction of **permanent wooden shelters** (Photos 19 and 20) also continued, to replace the prefabricated accommodation units, which are considered to be emergency and temporary measures. In **2024**, forestry service

Photo 20 - Photos of the exterior and interior of the shelter for shepherds built by the Forestry Service at Busa dell'Orso, in the Lagorai mountains, Municipality of Roncegno (APT Wildlife Department archives)

personnel **finished the construction of three new wooden shelters**, respectively at Prà del Vescovo in Val d'Ambiez (San Lorenzo Dorsino), Fornasa (Fornace) and Busa dell'Orso (Roncegno), **bringing the total number of shelters built to 9**.

In 2025, a further two wooden shelters for shepherds will be constructed, again by **APT's Forestry Department**, at Laghi della Bella Venezia (Bieno, with renovation of an existing structure) and Malga Tenera (Tenno). A similar initiative has already been planned for 2026 at Malga Zanchetta (Canal San Bovo, with recovery of an existing structure). Lastly, the **Comunità della Valsugana e Tesino**, has taken on board the construction of **two further shelters in 2025 and 2026**, respectively at Pian dei Cavai (Telve di Sopra) and Viosa Alta (Castello Tesino).

Box 9 - The Pasturs Project

By Mauro Belardi - Cooperativa Sociale Eliante Onlus

For the third consecutive year, activities were carried out according to the Pasturs model during the 2024 summer grazing season in the province of Trento. In the context of the Lifestock Protect European project (www.lifestockprotect.info), a number of young volunteers from all over Italy assisted farmers in Trentino with measures to prevent damage by large carnivores: maintenance, assembly and dismantling of mobile fences, accompanying animals to pasture, supervision and management of guard dogs. The volunteers spent variable periods of time (minimum one week) at mountain pastures, as guests of the farmers, also offering their services to help with day-to-day activities. In 2024, three farms were involved: Malga Tuena in Val di Tovel; Malga Agnelezza, in Val di Fiemme and Malga Alta Fazzon in Val di Sole.

These represent very different situations both in terms of geographical area and recent history regarding the presence of bears and wolves. Malga Tuena relies above all on an established group of guard dogs for protection. Malga Agnelezza instead focuses on active supervision of animals at pastures and a large electrified enclosure for goats. Malga Alta Fazzon has mainly cattle and is situated in a context sensitive above all to the presence of bears. In 2024, Malga Tuena was affected by predation on some donkeys by wolves: the supervision and volunteers were focused on protecting the goats, and unfortunately the wolves took advantage of a donkey enclosure that was less than ideal. The farmer has promptly addressed the problem for the future.

In addition to practical support, the declared scope of the project is also to bring together people from different cultural backgrounds – farmers who deal with the reality of life in the mountains and young people, mostly from urban environments – with the conviction the everyone has something to learn from each other, and that dialogue between worlds that do not usually mix can be one of main keys to coexistence.

In 2024, 26 volunteers were involved, trained and supported. The project will continue in 2025.

Prevention and waste management

Organic waste can be very appealing to brown bears. Due to the presence of remains of appetising and easily accessible food, bears may be encouraged **to approach inhabited areas**. Habituation to this trophic resource can lead to **food conditioning** that over time makes bears more **confident in relation to man**, resulting in higher risks for the bears involved and potentially also for humans. This phenomenon can and must be limited as much as possible through **suitable prevention measures** (Photo 21).

In 2024, implementation of the provincial waste management plan continued, in relation to provisions regarding the presence of large carnivores and other wildlife (see page 58 of the 2023 report). The box below summarises the activities carried out.

Photo 21 - Montes, Municipality of Malé: one of the 88 new bear-proof structures protecting organic waste bins installed in Val di Sole between the end of 2023 and 2024 by the local Comunità di Valle, with the participation of the municipalities concerned (M. Zeni – APT Forestry Department archives)

Box 10 - Provincial plan to protect urban waste collection systems from raids by large carnivores

By architect Rosa Staiano – APT Agenzia per la Depurazione

Responding to a specific request for action from the Civil Defence, Forests and Wildlife Department, ADEP (Agenzia per la depurazione) carried out a survey of urban waste collection systems in western Trentino in order to draw up a proposal for further adaptation, designed to improve the level of protection against raids by large carnivores. This upgrade began, it should be recalled, in 2009 (2009 Bear Report, pages 40 & 41) and has never ceased. The survey was carried out with the cooperation of the Comunità di Valle, municipalities, waste collection bodies and APT's Wildlife Department.
The preliminary knowledge-gathering phase assessed experiences already put into effect with pilot projects, identifying two methods of protection against raids by large carnivores as the most effective, among those tried out to date:

- bear-proof structures covering 240 l organic waste bins, made of weathering steel;
- underground/semi-underground waste disposal centres for communities with bell-shaped containers above ground and equipment for their management.

Bear-proof structures. In December 2022 an agreement was signed between the Comunità della Valle di Sole and APT's Wildlife Department for the production of protective shells for organic waste bins in return for funding of 200,000.00 euro. In 2023, the Comunità della Val di Sole perfected and patented the experimental bear-proof structures devised by APT's Forestry Department and Wildlife Department and in 2024 completed the installation of 88 structures (the photo shows those situated at Bolentina, Malé).

This work led to the drawing up of a provincial plan to secure urban waste collection systems from raids by large carnivores, approved with Provincial Council Resolution no. 694 of 17 May 2024, implementing the addendum to the 5th update of the Provincial Waste Management Plan. The plan was

Semi-underground waste disposal centres. In 2023, ASIA - Azienda speciale per l'igiene ambientale, proposed the construction of partly underground waste disposal centres preventing access to animals as a solution to the problem of raids by large carnivores. These consist of containers in which waste is deposited at a depth of 1.5 metres below ground, also reducing odour emissions (the photo shows a waste disposal centre constructed at Mezzolombardo).

divided into three stages, classified as priority A, B and C:

- Priority A: urgent work in areas exposed to the greatest risk of raids by large carnivores and mostly regarding domestic users;
- Priority B: for areas exposed to the risk of raids by large carnivores and for non-domestic users;
- Priority C: for areas exposed to a medium risk of raids by large carnivores.

During 2024, ADEP granted funding to carry out the work provided for by the plan in relation to priority A to public bodies in western Trentino presenting an application accompanied by technical and financial documentation.

The beneficiaries were identified on the basis of expertise in relation to "services for the collection and disposal of urban waste and/or similar" in the 5 Comunità di valle and 8 municipalities, with a total of 13 bodies:

New semi-underground waste disposal centre at loc. Santel, Fai della Paganella. Work was carried out as priority A, in December 2024 by ASIA - Azienda Speciale per l'igiene ambientale. Waste disposal centre made up of 5 containers (organic, paper, packaging, glass and non-recyclable), of which three with a capacity of 5m³ (non-recyclable, paper and packaging) and two 3 m³ (organic and glass). The waste disposal centre shown is one of the 10 already built on the Paganella tableland. In spring 2025 they will be clad with natural stone.

- Comunità di valle: Val di Non, Val di Sole, Alto Garda and Ledro, Vallagarina, Giudicarie;
- Municipalities: Madruzzo, Vallelaghi, Andalo, Molveno, Cavedago, Spormaggiore, Fai della Paganella, Trento.

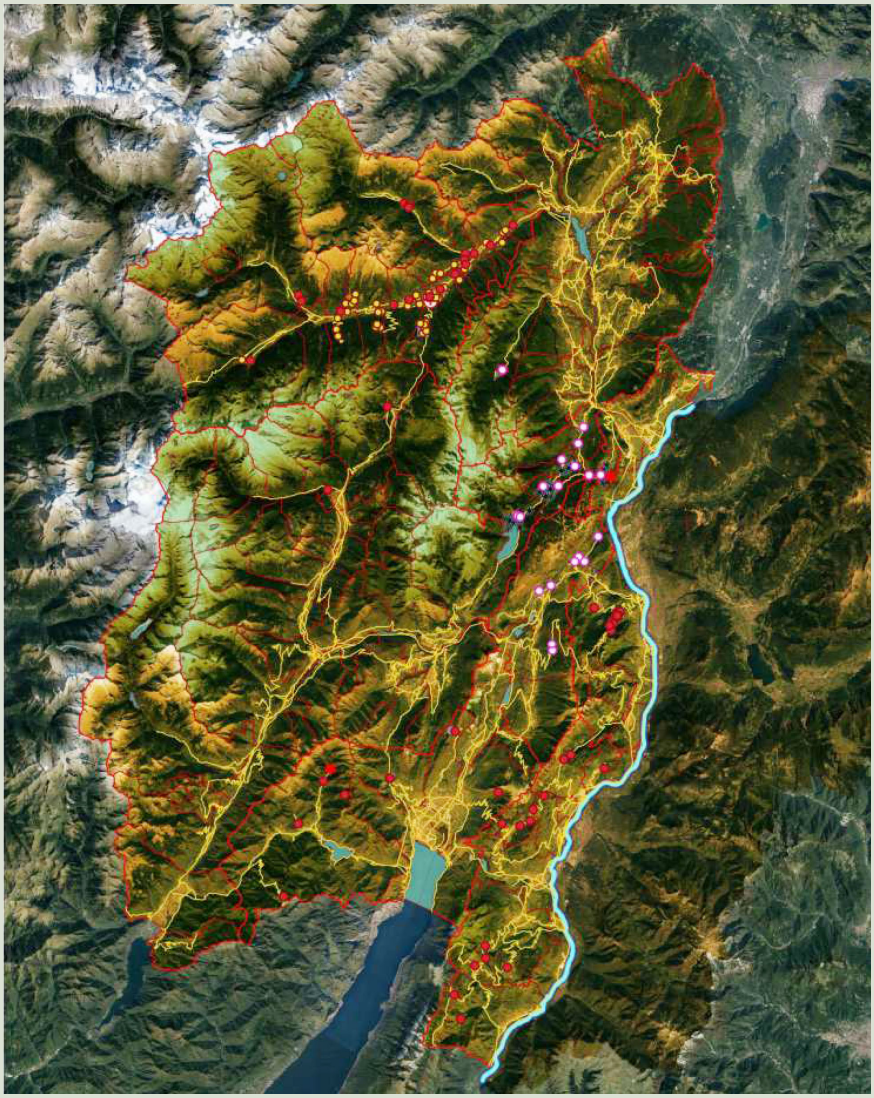
Addendum	Plan	2024	2025	2026
P1	Priority A	€ 1.516.000,00		
	Priority B		€ 2.325.500,00	€ 2.325.500,00
P2- P3	Priority C			
Trentino		western Trentino		

The works to secure waste collection systems receiving funding are represented by:

- 180 bear-proof structures for organic waste;
- 20 semi-underground waste disposal centres including containers for all categories of waste.

By 31 December 2024, priority A work had been carried out for a total amount of Euro 1,018,143.76. The remaining work in this first phase will be carried out by May 2025.

Location of work funded according to priority 1



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 presence of individual animals described as "problematic" on the basis of current legislation.
The **PACOBACE (Interregional Plan of Action for the Conservation of the Brown Bear in the Central-Eastern Alps**) represents the document of reference for the management of emergencies in the province of Trento (as in Friuli Venezia Giulia, Veneto, Lombardy, Piemonte and the Autonomous Province of Bolzano), on the basis of which the Forestry and Wildlife Department has identified, trained and equipped special staff.
Controlling action (including killing of the animal) may be taken to deal with **problem bears** or bears in critical situations, in accordance with the provisions of European regulations (Directive 92/43/EEC – Habitat Directive). On the basis of **Provincial Law No. 9/18** and subsequent amendments, the **President of the Province is responsible for authorising exceptions to the ban on controlling actions such as the removal, capture or killing of bears or wolves, according to the aforementioned European regulations**, after having consulted ISPRA. This law has been deemed valid by the Constitutional Court.
In the event that safety and **public security** is at imminent risk, the capture or killing of an animal can also be ordered **with an extraordinary emergency order of the President of the Province** or of other **authorities with jurisdiction for public safety**, according to articles no. 52.2 of the Decree of the President of the Republic of 31/8/1972, no. 670 and no. 18.2 of the Regional Law of 4/1/1993 no. 1, as specifically also provided for by the **PACOBACE**.
Operational management is based on the use of specialist staff from the **Provincial Forestry Service (PFS)** making up of a **special unit on call**. The system of on-call availability involves weekly shifts and is operational from **1 March to 30 November**.
The team is made up of a coordinator and two emergency staff (on call 24 h/day), along with **veterinary staff assigned by the Provincial Health Services (APSS)** whenever necessary.

Problematic animals

Bears

M90

M90 was a 3-year-old male who **since 2023**, had manifested problematic behaviour (repeatedly entering inhabited areas and voluntarily approaching/following people – items nos. 13 and 16 in the PACOBACE), leading the provincial administration to proceed with his **removal** to guarantee **public safety**, applying the provisions of the PACOBACE. Having **consulted ISPRA** (which agreed with the assessment of the provincial administration, classifying the bear as "**high risk**" and recommending his "**immediate removal**"), the administration proceeded with **lethal removal** of the bear on **6 February 2024** in the lower Val di Sole.
Further details can be found on page 50 of the 2023 Large Carnivores Report.

KJ1

KJ1 was a 22-year-old female who on **16 July 2024**, accompanied by three cubs born during the year, **attacked and injured a person** at Naroncolo in the municipality of **Dro** (Item 15 in Table 3.1 of the PACOBACE). This event led the provincial administration to proceed with her **removal** to guarantee **public safety**, applying the provisions of the PACOBACE. In this context it should be recalled that previously the two female bears accompanied by cubs who had attacked people and not been rapidly removed (KJ2 and JJ4) had gone on to carry out further attacks in subsequent years, causing respecti-

vely a new wounding and the death of a person. Having **consulted ISPRA** (which agreed with the assessment of the provincial administration, classifying the bear as "**extremely high risk**" and recommending her "**immediate removal**"), the administration proceeded with removal of the bear, which was **killed** on **30 July 2024** above Padaro, in the municipality of Arco.

M91

M91 was a **3-year-old male** who followed a person at length in Valle delle Seghe in the municipality of Molveno (Item 16 in Table 3.1 of the PACOBACE) on 24 April 2024, and was subsequently repeatedly reported in residential areas or in the immediate vicinity of dwellings during the summer (item 13 in Table 3.1 of the PACOBACE) on the Paganella tableland. Once again, the provincial administration applied the provisions of the PACOBACE, deciding to proceed with **removal** of the bear to guarantee **public safety**, after having received **the approval of ISPRA**. Removal took place by **killing** the bear on **1 December 2024**, in lower Val di Non in the municipality of Sporminore.

On 19 October 2024 there was also a report of **presumed physical contact between a bear and a man** in the **Bleggio** woods. However, in this case the checks and inspections carried out did not make it possible to acquire any objective evidence; there was also no result from genetic testing, due to the poor quality of the genetic material.

Wolves

As regards action to **deter wolves** showing particular habituation to man or repeatedly visiting urban areas, in 2024 reference was again made to the **protocol for action drawn up by LCIE (Large Carnivore Initiative for Europe)**, codifying undesirable behaviour, the conditions necessary to implement deterrents, methods and timing of deterrents and procedures for intervention.

In 2024 and up to February 2025, there were **19 call-outs** targeted at protecting urban areas or deterring confident wolves. In **2 cases** (on 24/01/2024 at San Giovanni di Fassa and on 02/01/2025 at Borgo D'Anaunia) it was possible to **carry out deterrent activities with rubber bullets**, entering into close contact with the animals.

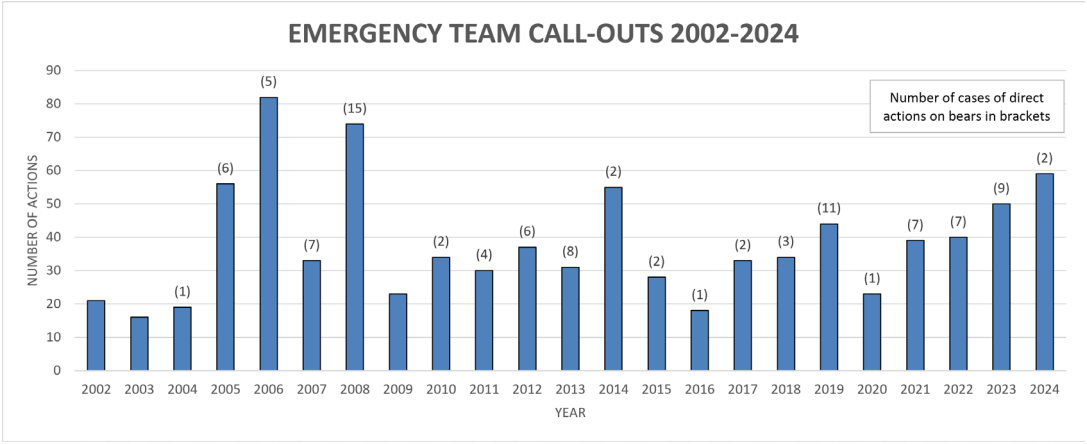
Intimidatory charges by bears

During the course of the year **3 episodes** were recorded.
Two involved the **female bear F12** accompanied by cubs, on 10 July near Lake Molveno and on 17 July in the woods of Ciago in Valle dei Laghi; on 20 July, F12 was found dead in Valle dei Laghi, killed by a male bear together with one of her cubs. The **third episode** concerned a further **female** accompanied by three cubs of the year, **not identified genetically**, which carried out a bluff charge on 30 July in Val di Bresimo.

Online maps

In 2024 the geographical position of **bears with radio collars** was again made available, through an **online map**: (https://grandicarnivori.provincia.tn.it/Comunicazione/MAPPA-ORSI-RADIOCOLLARATI), which was **regularly updated** (without being excessively precise, in order to protect the animals), for the benefit of all those visiting the mountains.
Another online map contained reports of **female bears accompanied by cubs** (https://grandicarnivori.provincia.tn.it/Orse-con-piccoli/MAPPA-SEGNALAZIONI-2024), with the scope of raising awareness and offering an additional tool for preventing potential incidents following close encounters.

Graph 7



Activities of the emergency response team

In 2024 the emergency response team was called out **59 times (53 in relation to bears and 6 for wolves** - Graph 7). **12** were given **code white** status (operations not requiring deterrents), **27 code yellow** (possible deterrents) and **13 code red** (operations providing for the possibility of directly manipulating/killing the bear).

Capture of bears

In 2024, 4 captures were carried out.

1. During the night of **22/23 July 2024**, in the municipality of **Dro**, the female bear **KJ1** was captured with a tube trap. After fitting of a **radio collar** she was released at the site, while awaiting genetic identification. This took place in the context of a procedure designed to identify, make recognisable and then remove the animal responsible for the attack on a man taking place on 16 July.
2. During the night of **4/5 August**, in the municipality of **San Lorenzo Dorsino**, the adult female **F7** was captured with a tube trap, in the context of activities designed to capture the problem bear M91. After fitting of a **radio collar** she was released at the site.
3. During the night of **3/4 September 2024**, in the municipality of **Vermiglio**, the adult female **F89** was captured with a tube trap. After fitting of a **radio collar** she was released at the site.
4. During the night of **15/16 October 2024**, in the municipality of **Cavedago**, the male bear **M91** was captured with a tube trap (photo 22). After fitting of a **radio collar** he was released at the site, while awaiting genetic identification. This took place in the context of a procedure designed to identify, make recognisable and then remove the animal.

Photo 22 - 14-15 October 2024, Cavedago: capture to fit M91 with a radio collar (V. Oberosler – APT Wildlife Department archives).

The number of **captures of bears** (involving **39 different animals**) taking place since 2006 has therefore risen to **59** (34 females, 23 males and two of undetermined sex). **41** of these 59 captures were carried out with **tube traps**, **10** on **free-ranging bears, 4** with an **Aldrich snare** and **4 manually** (for cubs born that year).

Road accidents involving bears

Road accidents involving bears represent **potential emergencies**, as injured bears remaining close to roads can be **dangerous**. For this reason, reports of accidents require immediate verification by the emergency response team and the dog unit.

In 2024, there were **15 road accidents** involving **bears** in the province of Trento (Table 6), bringing the total number of such events **recorded to date** to **74**. The motorists involved did not suffer any physical harm. One particularly interesting case concerns the adult male **M45, hit twice in 2024**, after having also been **hit twice in 2023**.

Table 5 - Road accidents involving bears in 2024

NO.	DATE	LOCATION	BRIEF DESCRIPTION OF EVENT AND RESULT OF ACCIDENT	GENETIC IDENTIFICATION OF THE BEAR INVOLVED
1	27 April 2024	S.P. 84, loc. Berlonga, Madruzzo	Slight damage to vehicle; the bear moved away and survived (sampled genetically).	M45
2	8 May 2024	S.S. 42, Ossana	Accident involving two bears and two vehicles simultaneously. Slight damage to vehicles, while bears moved away.	Not identified
3	8 May 2024	S.S. 42, Ossana	Accident involving two bears and two vehicles simultaneously. Slight damage to vehicles, while bears moved away.	M109
4	11 May 2024	Loc. Costa Rotian, Dimaro Folgarida	Slight damage to vehicle; the bear moved away.	Not identified
5	26 June 2024	S.S.421, loc. Nembia, San Lorenzo Dorsino	Medium level of damage to vehicle; the bear moved away.	M91
6	30 June 2024	S.P. 64, Fai della Paganella	Medium level of damage to vehicle; the bear moved away and survived (sampled genetically).	M52
7	30 July 2024	S.S. 421, loc. Ponte Lambin, Molveno	Medium level of damage to vehicle; the bear died (cub of the year).	M113
8	5 August 2024	S.S. 43, loc. Sant del Chiatàr, Cles	Slight damage to vehicle; the bear moved away.	F97
9	6 September 2024	S.S. 45 bis, loc. Vecchio Mulino, Vallelaghi	Medium level of damage to vehicle; the bear moved away.	M45
10	30 September 2024	S.S. 45 bis, loc. Naran, Vallelaghi	Slight damage to vehicle; the bear moved away.	Not identified
11	18 October 2024	S.S. 45 bis, loc. Gaidos, Vallelaghi	Slight damage to vehicle; the bear (cub of the year) moved away. Survived and photographed by camera traps several times with mother, F4 and two siblings.	Not identified
12	3 November 2024	S.S. 237, loc. Saone, Tione di Trento	Very slight damage to vehicle; the bear moved away.	Not identified
13	7 November 2024	S.P. 18, loc. Laste (bivio per Margone), Vallelaghi	Slight damage to vehicle; the bear (cub following its mother) moved away.	Not identified
14	8 November 2024	S.P. 64, loc. Fontana Bianca, Fai della Paganella	Slight damage to vehicle; the bear moved away.	Testing underway
15	10 November 2024	S.S. 421, loc. Pontarola, Fiavé	Slight damage to vehicle; the bear moved away.	Not identified

Activities of the Bear Dog Unit

The **Bear Dog Unit** (Nucleo Cinofilo Cani da Orso - NCOO) has by now been active for **eighteen years** and in 2024 there were **42 operations** linked to the **management of large carnivores** in the province. In 2024, **road accidents with bears** were again confirmed to be one of the most delicate problems to be managed by the dog unit. Last year there were **15 operations** to inspect and secure the sites of accidents involving vehicles and bears. Organic samples sufficient for identifying the **animals involved** were often found. In all cases (except for a cub that died) it was possible to ascertain that the injury was such that bear was able to move away autonomously from the place of impact, thus enabling the unit to state that the area posed no threat to human safety.
In 2024, the dog unit also intervened on **16 occasions** to look for organic samples and reconstruct the dynamics of **human-bear interaction** in one case related to an attack on a man. In this case, the operation was again shown to be an indispensable support for identifying the animals involved.
There were **6 hazing actions** in 2024, four of which successfully completed on the target animals.
The dog unit was also called out on **3 occasions** to support activities for the **capturing of bears** (one of which also involving hazing during the release) and **twice** to reconstruct dynamics relating to the death of **bears found dead**.
In addition to the operations above, there were a further **7 anti-poaching checks** regarding different species.

The dog unit teams participated in routine outings for the purpose of **training** (Photo 23). In particular, a training programme was put into effect for the dog **Scar**, a West Siberian Laika replacing the female Jamthund **Freja**, which died during the year following an accident while out on call. The new dog will be considered operational in 2025.

Photo 23 - Training of the Dog Unit at the APT Helicopter Unit (M. Zeni – APT Wildlife Department archives).

4. COMMUNICATION

The main **activities carried out during 2024** are summarised below.

Evening sessions and meetings

Table 6 lists the **meetings/evenings** organised by the Wildlife Department. The meetings were organised in response to local requests for information and dialogue.

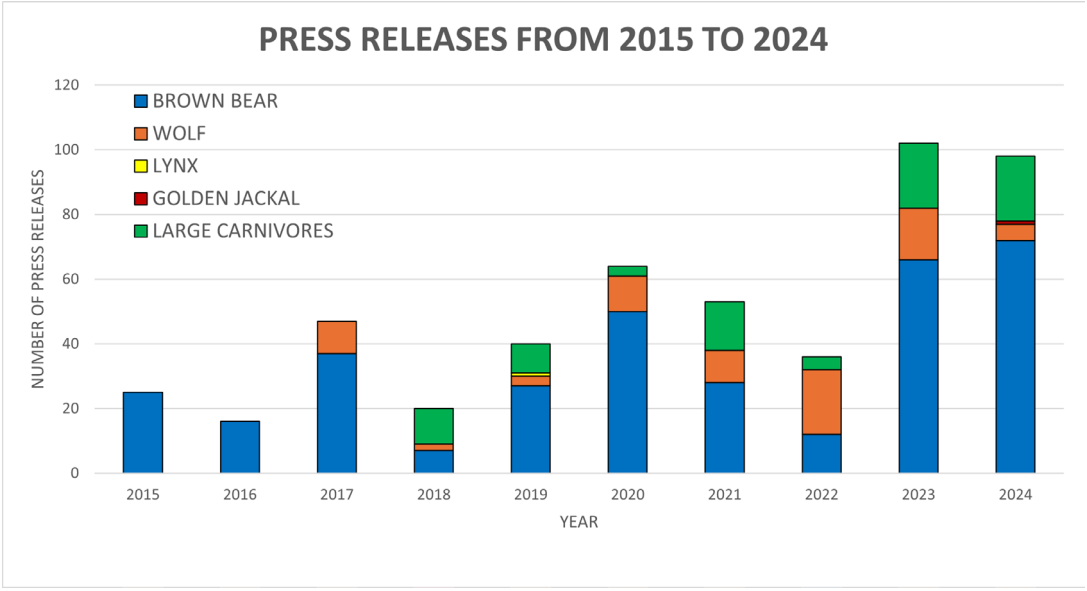
Table 6 - Communication initiatives in 2024

TYPE	DATE	PLACE	No. of PARTICIPANTS
Informative meeting on large carnivores with Mayors from the Giudicarie	17 January 2024	Tione	50
Informative meeting on large carnivores with Mayors from Val di Non, Rotaliana-Königsberg and the Paganella tableland	24 January 2024	Spormaggiore	50
Evening event for the public on wolves	31 January 2024	Meano di Trento	150
Evening event for the public on wolves	7 February 2024	Muse - Trento	100
Informative meeting on large carnivores with Mayors from Upper Lake Garda and Ledro, Valle dei Laghi, Vallagarina and the Val d'Adige area	9 February 2024	Vezzano	50
Evening event for the public on wolves	16 April 2024	Predazzo	70
Meeting on wolves with workers from Ala and Avio	21 May 2024	Ala	50
Informative meeting on large carnivores with Mayors and municipal councillors from Val di Sole	26 June 2024	Dimaro	150
Informative meeting on large carnivores with Mayors and municipal councillors from the Giudicarie	28 June 2024	Tione	60
Informative meeting on large carnivores with Mayors and municipal councillors from Val di Non, Rotaliana-Königsberg and the Paganella tableland	2 luglio 2024	Denno	90
Informative meeting on large carnivores with Mayors and municipal councillors from Upper Lake Garda and Ledro, Valle dei Laghi, Vallagarina and the Val d'Adige area	3 July 2024	Arco	100
Informative meeting on large carnivores with workers from Val di Sole	11 July 2024	-	100
Informative meeting on large carnivores with ASUC Trentino	19 July 2024	Livo	60
Evening event for the public on wolves	24 July 2024	Masi di Cavalese	100
Evening event for the public on large carnivores	12 September 2024	Sopramonte di Trento	120
Evening event for the public on bears	14 November 2024	Brescia (c/o CAI)	150

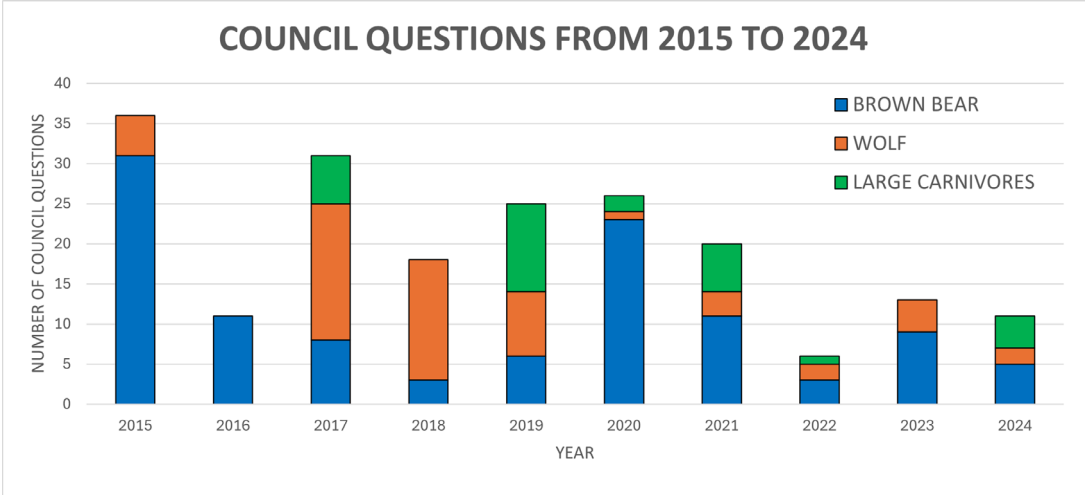
Other communication initiatives

- Interview with the **German press agency DPA** on 22 February 2024;
- Interview with the **Netherlands TV channel NOS** on 16 February 2024;
- Interview with the **British newspaper Daily Mail** on 28 August 2024;
- **Informative meeting** at the **Council of the Autonomous Province of Trento** on "The management of large carnivores in Trentino" on 27 February 2024;
- Docufilm "**Dangerously close**", by M. Pichler, with the participation of APT, summer 2024;
- Interview with the **German TV channel ZDF** on 19 July 2024;

Graph 12



Graph 13



- Interview with a journalist from the magazine **Outside (USA)** and a journalist from the Swiss TV channel RSI on 1 September 2024;
- Interview for the American magazine **Outside** on 1 October 2024;
- Interview with the **Swiss TV channel SRF** on 1 October 2024;
- Participation in discussion after screening of the docufilm "**Dangerously close**". Cinema Teatro in **Pergine Valsugana**, 520 pupils from the **Istituto M. Curie** - 12 November 2024;
- Participation in discussion after screening of the docufilm "**Dangerously close**". FEM in San Michele all'Adige, 400 pupils from the **Istituto Agrario S. Michele** - 20 December 2024;
- Article for **Focus** on bear spray, end of December 2024.

Press releases and council questions

With the support of the Press Office, **98 press releases** were issued, of which **72** concerning **bears, 5 wolves, 1** the **golden jackal** and **20 large carnivores** in general. **Graph 12** shows the **trend for the number of press releases** over the last ten years.
Furthermore, the necessary information was provided in order to reply to **11 provincial council questions** (standard or with an immediate response), **5** regarding **bears, 2** concerning **wolves** and **4 large carnivores** in general. **Graph 13** shows the **trend for the number of council questions** over the last ten years.

Large Carnivores Working Group

The **Large Carnivores Working Group** was set up by the Provincial Council with Resolution no. 794 of 31 May 2024.
It is chaired by the councillor responsible for the management of large carnivores and is made up of representatives of the Council of Local Authorities, Adamello Brenta Nature Park, environmental associations, hunting associations, economic and interest groups and the tourist sector.
For matters relating to wolves, it is supplemented by further representatives from the Council of Local Authorities and Paneveggio Pale di S. Martino Nature Park.
The working group met on **6 August 2024** and **25 November 2024**.

Round table with representatives of economic interest groups

In 2024, the dialogue already established for some time with the economic interest groups most affected by the presence of bears and other large carnivores (farmers and beekeepers) continued.
The **round table with representatives of farmers and beekeepers** met on **30 October 2024**.

Communication activities carried out by SAT (Committee for Protection of the Mountain Environment)

The informative activities carried out during 2024 focused mainly on the subject of r**esponsible use of the mountain environment**, promoted in various different ways. Events dedicated to large carnivores, requested mainly by the branches, were naturally not lacking. A summary of the initiatives organised follows:

- 25/1 – Participation in **Trentino In Diretta** programme on **RTTR** radio on the subject of bears;
- 15/2 - Evening on bears for SAT, Pieve di Bono;
- 19/5 – Participation as steward at the final meeting of the "**Life Wolfalps EU**" project;
- 30/5 - Evening on wolves at SAT, Cognola;
- 06/06 – "In the woods, in safety", evening on wolves and bears for scout leaders, in cooperation with **Agesci Trentino Alto Adige**;
- 21/06 – Event presenting the **Large Carnivores Report** in cooperation with the WWF and 'Io Non Ho Paura del Lupo' (Photo 24);
- 03/08 - Evening on wolves and bears for the **Gruppo Sportivo Escursionistico Cristo Re**, in cooperation with 'Io Non Ho Paura del Lupo':
- 17/10 - "La storia de l'Ors", online evening session on bears for CAI members, in cooperation with **CAI's Large Carnivores Group**.

5. TRAINING

Correct management of large carnivores 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, damage management and 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.
Over time, training has also been progressively extended to **personnel outside the provincial administration**.

The following **training events** were organised during **2024**:

- 11 January 2024, training for the **Capture Team**, in Trento;
- 23 January 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for forestry companies, c/o **Associazione Artigiani**, in Trento;
- 30 January 2024, training for **Coordinators and Emergency Response Teams, Trento** at Loc. Casteler;
- 10 March 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for Terna staff in Trento;
- 26 March 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for forestry workers in the Forestry Department, Trento at Loc. Casteler;
- 29 March 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for lift system staff in Mastellina (Val di Sole);
- 11 April 2024, training for the **Capture Team**, in Trento;
- 11 April 2024: training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for APSS staff, Trento, Course I;
- 22 April 2024, training on bears for university students (scientific communication master's degree course at the University of Insubria), at the MUSE;
- 7 May 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for APSS technical prevention staff;
- 9 May 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for Trento Malè railway maintenance staff;
- 10 May 2024, training of **APT forestry staff** on interaction with bears and the use of bear spray;
- 15 May 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for APSS technical prevention staff, Trento, Course II;
- 28 May 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for APSS staff, Trento, Course III;
- 5 June 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for **forestry workers in the Forestry Department**;
- 13 June 2024 training for **Carabinieri, Trento, course I**;
- 18 June 2024 training for **Carabinieri, Trento, course II**;
- 25 June 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for pasture management technicians in **APT's Agriculture Department, Trento**;
- 9 July 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for the staff of **Trentino Forestry Service**, Trento, TSM offices;
- 23 July 2024, training on **interaction betwe-**

en humans and large carnivores, with particular reference to the brown bear, for **APSS staff**, Trento, course IV;
- 25 July 2024, training for the staff of APT's **Geological Department, in Trento**;
- 20 September 2024, training for the **emergency response teams** on the use of **helicopters, in Trento**;
- From 7 to 9 October 2024, training trip to **Slovenia** for the staff of the **emergency response teams** (Photo 25);
- 12-13 October 2024, participation in Civil Defence week, with a stand providing information on the management of large carnivores, **Trento**;
- 16 October 2024, guidance in the field and training for students from the **Fondazione E. Mach - S. Michele all/Adige**;
- 5 November 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for **forestry staff in the Forestry Service**, Trento, Loc. **Casteler**;
- 6 November, training on the management of bears, at the **University of Trento, Faculty of Economics**;
- 12 November 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for **forestry staff in the Forestry Service**, Trento, Loc. **Casteler**;
- 18 November at the **Liceo Rosmini secondary school in Trento**, education on large carnivores for pupils;
- 19 November, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for **forestry staff in the Forestry Service**, Trento, Loc. **Casteler**;
- 20 November 2024, training on the **status, biology, ethology and interactions of large carnivores with humans**, with particular reference to the brown bear, directed at employers, **Trento, TSM offices**;
- 28 November 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for **forestry staff in the Forestry Service**, Trento, Loc. **Casteler**;
- 3 December 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for **forestry staff in the Forestry Service**, Trento, Loc. **Casteler**;
- 5 December 2024, training on **interaction between humans and large carnivores**, with particular reference to the brown bear, for **forestry staff in the Forestry Service**, Trento, Loc. **Casteler**;
- 10 December 2024, training of **APT forestry staff** on interaction with bears and the use of bear spray, **TSM offices, Trento**;
- 10 December 2024, training on the **status, biology, ethology and interactions of large carnivores with humans**, with particular reference to the brown bear, directed at workers, Trento, TSM offices;
- 17 December 2024, training on the **status, biology, ethology and interactions of large carnivores with humans**, with particular reference to the brown bear, directed at workers, **Cles** in cooperation with **TSM**.

Photo 24 - Slovenia: meeting between the staff of the Slovenian Forestry Service, APT's emergency response team and the NGO Blackfoot Challenge, Montana - USA. (M. Zeni, APT Wildlife Department archives)

6. NATIONAL AND INTERNATIONAL NETWORKING

Networking with neighbouring regions and countries takes on **strategic importance** in the management of highly mobile species such as the brown bear, wolf and lynx. Bearing this in mind, relationships with other countries and regions have long been established and have been strengthened and consolidated over time.

The Alpine Convention Large Carnivores Platform

2024 also saw continuation of the activities of the **Alpine Convention Large Carnivores Platform (WISO)**, set up in 2009, where the Autonomous Province of Trento is also represented within the Italian delegation. In 2024 the Platform was chaired by Slovenia and specifically by its Forestry Department. The Platform met face-to-face on **3-5 June** in Nice, **France** and **online** on **6 September 2024**.

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The Arge Alp working community

In 2024, activities to share information and management methods for large carnivores between the 10 alpine regions again continued in the context of Arge Alp. The dedicated meeting took place in the **Ticino Canton (CH) on 14 and 15 March 2024**.

ARGE ALP
Die Alpen leben
Le Alpi vivono

Activities within the Large Carnivores Initiative for Europe (LCIE), the International Bear Association (IBA), and the "Bear Specialist Group" of the International Union for the Conservation of Nature (IUCN)

In 2024, the staff of the provincial administration again participated in the activities of **LCIE** and **IUCN's Bear Specialist Group**.

It also attended the **28th Conference of the IBA (International Bear Association) held in Edmonton (Alberta-Canada) on 15-20 September 2024**, the first to be held face-to-face for six years (since Slovenia in 2018), followed by a study trip to **Yellowstone National Park** (Montana and Wyoming, USA) on **21-25 September 2024**.
During the conference a workshop was held on removal through permanent captivity/killing of wild bears of a problematic/dangerous nature (Photo 26), in which APT also participated with a presentation. This was also attended by some of the **greatest experts in the world** on the subject, who drew up a **final document** that stated, among other things *"wild bears have a strong motivation to escape from contained enclosures and ensuring their wellbeing in such structures is difficult. In some cases, their suffering in such structures is inevitable. Bearing this in mind, permanent captivity is not the ideal op-*

tion and lethal removal (shooting/euthanasia) must be considered to be preferable".

Large Carnivore Initiative for Europe
IUCN/SSC Specialist Group

Bear Specialist Group

Conclusion of the LIFE WolfAlps EU project

September 2024 saw the conclusion of the **LIFE WolfAlps EU project** on wolves, co-funded in the context of the EU LIFE Nature and Biodiversity programme. With nine lines of action, which include monitoring, prevention, combating poaching, hybridization and many activities linked to dialogue and communication, the project aimed to develop actions and good practice to **improve coexistence between wolves and humans in the Alpine area. During the five years of the project**, thanks to the coordinated efforts of an international partnership involving 20 bodies (in **Italy, France, Slovenia and Austria**), the contribution of 119 supporters and 6 co-funders and a multi-disciplinary approach, for the first time actions were developed for the whole Aline ecosystem. This work has taken place for the overall wolf population, overcoming challenges linked to administrative and cultural differences to develop long-term solutions and good practice. The main results have been gathered together in the Layman's Report, available at the project website.

From 17 to 19 May 2024, Trento hosted the **final event for the project**, offering the chance to talk about the main results achieved and future challenges linked to conservation and coexistence with wolves (Figure 1). The event was organised by **MUSE**, a project partner dealing with actions regarding communication, education and stakeholder involvement.

Other opportunities for networking beyond the province

- Meeting with **colleagues from Slovenia** (Slovenian Forestry Service and representatives of Slovenian farmers) **in Trentino from 27 to 29 August 2024** (Photo 27);
- Meeting with the **French delegation of the Ministry of the Environment** at PNAB - **Strembo, 20 June 2024**;
- Study trip for training of the **emergency response teams** in **Slovenia**, from **7 to 9 October 2024**;
- Participation as invited guests at the event marking the **20th anniversary of the project to reintroduce Asiatic Black Bears to South Korea** – Seul, 29 October - 1 November 2024.

Photo 26 - Outing in the field with a delegation of Slovenian farmers and staff of the Slovenian Forestry Service, in the context of the LIFE VARNA PAŠA project. Behind them, a shelter for shepherds constructed by workers from APT's Forestry Service can be seen (K. Bizjak Bat – APT Wildlife Department archives)

7. SUMMARY

- **Status of the bear population: 12 litters** recorded in 2024, with **26 cubs. 9 bears** died, 3 of which cubs of the year. 3 bears were killed for reasons linked to management, 3 died of natural causes, 2 due to unknown causes and 1 was hit by a car. **Population estimate in 2023** (next statistics at the beginning of 2026): **98 animals, excluding cubs of the year** (confidence interval **86-120**).
- **Distribution of bears**: individual **males** over a vast distribution area (34,370 km²) from Piemonte to Friuli Venezia Giulia and from the foothills of the Alps in Lombardia to Tyrol in the north. **Females** in an area of around 2,000 km², the latter distribution area is however approximate, given the absence of intensive genetic monitoring. In the last few years there has been a **constant, albeit slow growth** in this area.
- **Status of the wolf population: 26 packs** estimated to be present, with at least 23 breeding in 2024; **13 wolves** found **dead**, of which 8 due to road accidents, 1 case of euthanasia, 3 due to natural causes and 1 of unknown causes. The **population** has apparently been **stable** since 2021; further spatial expansion.
- **Distribution of wolves**: 16 packs in eastern Trentino and 10 in western Trentino; the area in south-west Trentino still without ascertained packs has grown smaller.
- **Predation/consumption of wild animals by wolves**: 423 prey found (195 roe deer, 165 red deer, 54 chamois, 5 mouflon, 4 others).
- **Status of the lynx population: no animals** recorded in the province in 2024; last certain animal recorded in spring 2022.
- **Status of the golden jackal population: presence increasing** and distribution over much of the province; the number of **breeding groups** ascertained has risen to **4** (in the municipality of Cavalese in Val di Fiemme, in the Fiavè/Lomaso area, in the municipality of Dro and in the municipality of S. Lorenzo Dorsino).
- **Damage by bears**: 187 cases, with around 145,000 euro compensation (25% beehives, 35% agriculture, 26% livestock, 14% other assets).
- **Damage by wolves**: 118 cases, with around 93,000 euro compensation (all for livestock).
- **Number of livestock preyed on (killed, injured or lost**): 508, of which 467 by wolves by wolves and 41 by bears. A further 231 small courtyard animals (chickens and rabbits) were preyed on by bears.
- **Trend for damage by large carnivores**: decreasing slightly compared to 2023, both for bears and wolves.
- **Prevention works**: 161 new works (electrified nettings/multiwire fences) distributed/funded, with an investment of 132,600 euro.
- **Livestock guarding dogs**: 4 new dogs funded, with around 3,000 euro invested; in total 99 have been funded to date by APT (NB in the province there are several other dogs provided by breeders). A further training course for the owners of guard dogs was organised; further information panels provided.
- **Targeted checks on the functioning of prevention works**: a sample of 258 works (electrified enclosures) checked. 67% were in adequate condition (22% excellent, 33% good, 12% sufficient), while 33% were found to be unsuitable for preventing damage.
- **Support for animal husbandry**: 38 mountain pastures followed directly by the prevention coordinators, 14 accommodation units taken to the mountains for the summer and 3 further wooden shelters built. A further 4 are planned for 2025.
- **Bear-proof waste bins**: positioning of a further 88 bear-proof structures concluded in Val di Sole. Applications gathered for new funding allocated by the Provincial Waste Management Plan. Positioning of the structures identified and funded (Val di Sole-type structures and semi-underground waste di-

sposal centres) has begun: the plan has thus entered the operational phase.

- **Problem animals**: one attack by a bear on a man (female bear KJ1). The problem bears M90, KJ1 and M91 were killed for the purposes of removal (according to the PACOBACE).
- **Activities of the emergency response team**: 59 call-outs (53 for bears and 6 for wolves).
- **Bear captures**: 4 capture operations, regarding the problem bears KJ1 and M91, subsequently removed, and the female bears F7 and F89, captured and fitted with radio collars in the context of the activities above.
- **Road/rail accidents**: 15 involving bears (the animals involved moved away, with the exception of one cub of the year, which died); 8 lethal road accidents involving wolves, no passengers were injured.
- **Bear dog unit**: 42 operations carried out, 15 of which to clear areas involved in road accidents with bears, 16 to search for biological samples at sites of human-bear interaction, 6 for deterrent activities, 3 to assist with the capture of bears, and 2 to reconstruct dynamics when bears were found dead. A further 7 operations were carried out to combat poaching of various species
- **Communication**: 7 meetings open to the public, 98 press releases (72 on bears, 5 on wolves, 1 on the golden jackal and 20 on large carnivores), replies to 11 provincial council questions (5 on bears, 2 on wolves and 5 on large carnivores); new informative material produced (various brochures and articles); SAT activities.
- **Staff training**: 37 initiatives/meetings organised.
- **National and international networking**: continuation of activities with the Alpine Convention (Large Carnivores Platform) and Arge Alp. Further activities carried out with LCIE (Large Carnivores Initiative for Europe) and IUCN's Bear Specialist Group. Attendance at the 28th Conference of IBA (International Bear Association) in Edmonton - CAN.

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