



# LIFE20 NAT/NL/001107 LIFE Bear-Smart Corridors

*Threat assessment and recommendations Italy*

*A3 - Assessment and identification of specific factors affecting bear conservation in the Italian project areas*

**Report on management and conservation status of the Marsican brown bear and damage and potential threats prevention and management, in the municipality of Pettorano sul Gizio - Monte Genzana Alto Gizio Nature Reserve –**



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Author: Antonio Di Croce, RNRMGAG Director



[life-bearsmartcorridors.com](http://life-bearsmartcorridors.com)

[@lifebearsmartcorridors](https://www.facebook.com/lifebearsmartcorridors)

[info@life-bearsmartcorridors.com](mailto:info@life-bearsmartcorridors.com)





## SUMMARY

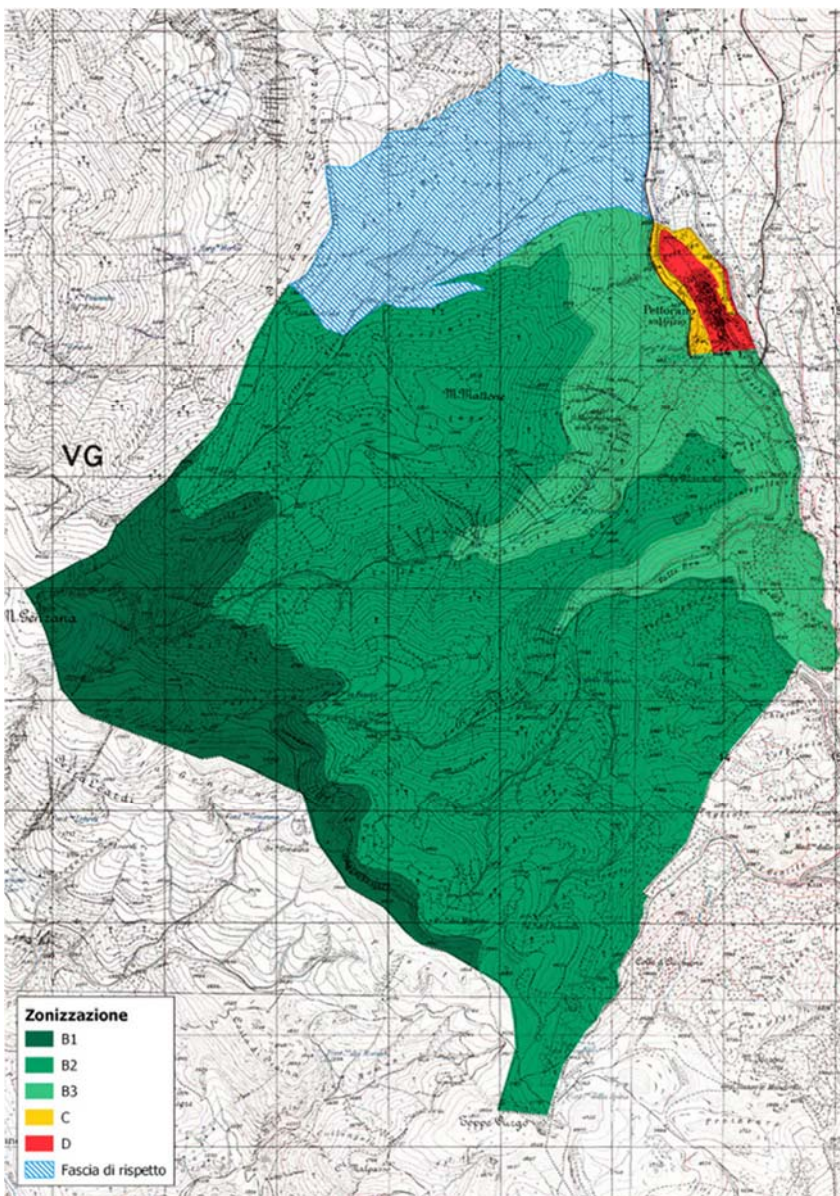
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## 1 INTRODUCTION:

The territory of the Regional Nature Reserve Monte Genzana Alto Gizio (RNRMGAG), in the Municipality of Pettorano sul Gizio (Fig. 1), is recognized and classified as Layer 4 in the Abruzzo and Molise Marsican Brown Bear Monitoring Network (RMAM), i.e., "Areas of established and recurrent presence over time of at least two individuals." Since the beginning of the Project, during 2021 and 2022, the data collected have again reaffirmed the importance of this crucial portion of territory for the conservation and expansion of the Marsican Brown Bear population, which has been consolidating over the last decade.



**Fig. 1 – Nature Reserve map and zoning**

Zone B1 targeted conservation

Zone B2 with controlled conservation

Zone B3 with conditional conservation

Zone C conditionally transformed

Zone D urban area





## The Marsican brown bear in the Monte Genzana Alto Gizio Regional Nature Reserve

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The Marsican brown bear is the symbol of the Nature Reserve. The knowledge of the species has increased over the years and the scientific research and monitoring, initiated over time, have allowed us to have a current detailed knowledge of the individuals present in the pettoranese territory, both in a stable and transient manner and also to initiate consequent and coherent conservation and management actions useful for a correct coexistence between the species and the local populations.

In the period prior to the establishment of the Nature Reserve, the official reports of known Marsican brown bears amounted to 17: three on Mount Genzana, four attributable to the "Valle Marzolina," one in the "Lago" locality (individual dead in a well), two in the "Vallone di Santa Margherita," two in the "Le Tagliole" locality, two dead along the Sulmona-Carpinone railway line and three in the countryside downstream from the town of Pettorano sul Gizio. To these reports, which were verified as part of the work of Boscagli et. al. in 1995, many others were added over time, which, since they were then never verified, were not included in the list but certainly confirm the vocation of the area and the high environmental suitability for the species of the protected area.

## 2 MONITORING AND RESEARCH ACTIVITIES

Since 2002, the year in which the first dissertation dealing with the fauna of the Nature Reserve was conducted, wildlife monitoring has been carried out with a certain systematic and standardization within the Reserve, and the detection of signs of presence has been constant over time.

Since 2012, working closely with other protected areas and in particular with adjacent national parks, the Reserve has initiated systematic monitoring of the species, especially as part of the activities of the RMAM - Abruzzo and Molise Marsican Brown Bear Monitoring Network, which has led Reserve staff to collect a considerably increasing number of bear reports over the past 10 years.







## 2.1 STUDY AREA

The area straddling the Abruzzo, Lazio and Molise National Park and the Maiella National Park includes within it in its entirety the Monte Genzana Alto Gizio Regional Nature Reserve and to a large extent the "Monte Genzana" ZSC (IT 7110100).

The IVB sub-area (Fig. 2) under the competence of the Reserve, as identified in the document "Marsican brown bear monitoring network in Abruzzo, Lazio and Molise: network establishment and operational document" (AA.VV., 2017), extends over the municipalities of Pettorano sul Gizio, Introdacqua and partially over those of Sulmona and Rocca Pia for a total of about 140 km<sup>2</sup>, divided into two types of layers:

- Layer 2 (Areas of ascertained but discontinuous presence) with an area of 69.8 km<sup>2</sup> for which survey actions are planned following reports, routine monitoring activities to search for direct and indirect signs of presence through camera-trapping and opportunistic routes.
- Layer 4 (Areas of established and recurrent presence over time of at least two individuals) with an area of 71.1 km<sup>2</sup>, for which it is planned to field an appropriate sampling scheme suitable for knowledge, recurrence over time of different individuals (genotypes) and verification of family units. The planned actions are the verification of reports, camera-trapping, construction of genetic traps and targeted observations for the identification of family units.

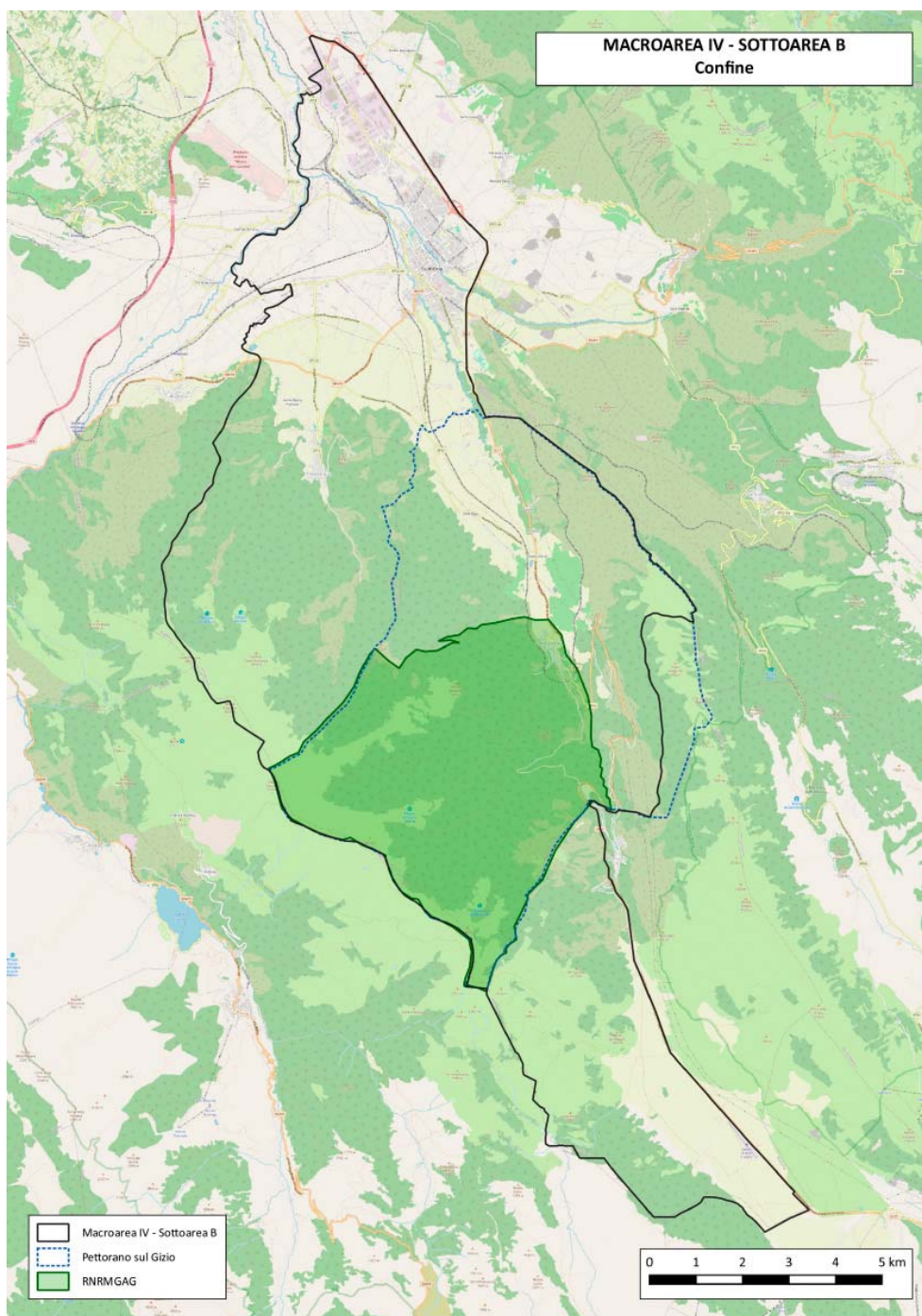
The sub-area of accountance is the only one in Abruzzo to have within it Layer 4, i.e., comparable to PNALM and ZPE in terms of the population density of the species and the consequent simultaneous presence of several different individuals at a given time, in a given territory.





Comune di  
Pettorano sul Gizio  
Provincia dell'Aquila

Riserva Naturale Regionale  
Monte Genzana Alto Gizio



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Figure 2 - Reserve area of accountance: Macroarea IVB



[life-bearsmartcorridors.com](http://life-bearsmartcorridors.com)

[@lifebearsmartcorridors](https://www.instagram.com/lifebearsmartcorridors)

[info@life-bearsmartcorridors.com](mailto:info@life-bearsmartcorridors.com)





## 2.2 METHODS AND MATERIALS

MONITORING and RESEARCH activities on the Marsican brown bear involve annual planning of the activities to be carried out in the different sampling strata, carried out on the basis of the considerations reported in the document "Marsican Brown Bear Monitoring Network in Abruzzo, Lazio and Molise: establishment of the network and operational document" (AA.VVV, 2017), and involves the implementation of the following actions:

- Installation, monitoring and maintenance of camera-traps;
- Collection of direct and indirect data and signs of presence; verification of reports;
- Inspections following reports;
- Construction, replenishment and control of genetic fur traps;
- Research and control Scratch Trees - Rub Trees;
- Compilation of forms, database and drafting final report activities of the Marsican Brown Bear Monitoring Network in Abruzzo and Molise.

As regarding the methods used, the indications provided in the "FIELD PROTOCOL AND CARTOGRAPHY FOR THE DEVELOPMENT OF ACTIVITIES IN THE FRAMEWORK OF THE MONITORING NETWORK OF THE MARSICAN BRUNO BEAR IN ABRUZZO AND MOLISE" (AA.VV. 2017) are strictly followed:

### **SURVEYS AS A RESULT OF CASE REPORTS**

The activities put in place as a result of reports are carried out opportunistically by third parties and consist of verifying the reliability of the various reports received, through:

- hair samples taken from trees, barbed wire, and fences at small backyard animal farms;
- sightings made directly by RNRMGAG personnel or by third parties who provided irrefutable video and photographic evidence;
- damage at small backyard animal farms where other definite signs of presence attributable to the species were found;
- footprints or tracks in snow or mud;
- droppings;
- third-party sightings without photographic or video evidence, but deemed reliable because signs of presence attributable to the species were found during the subsequent survey;
- signs of feeding such as damage at small backyard animal farms and destroyed ant hills.





## ROUTINE MONITORING

The activities take place, as per Protocol, from late spring to fall and involve walking transects in search of indirect signs of presence (footprints, droppings, food remains, etc.);

## SYSTEMATIC MONITORING

Systematic monitoring activities are carried out throughout the calendar year, adopting a standardized sampling grid, mediated by the following means:

- Non-invasive genetic monitoring activities - genetic traps for collecting hair samples;
- photo-trapping activities, for direct detection of presence;
- active search for Rub Trees, traveling along trails and cart tracks where numerous signs of Marsican brown bear presence have been detected in previous years, for the collection of hair samples;

## 2.3 RESULTS

### Record-breaking years for bears in the Monte Genzana Alto Gizio Regional Nature Reserve

Thanks to the intensive monitoring activities that the Reserve Staff has been carrying out for a number of years, based on scientific evidence since 2011 it has been possible to establish the minimum number of Bears present in the territory of the Municipality of Pettorano sul Gizio (PSG) and in the Reserve (RNRMGAG). Specifically, over the past four years, in 2019, 2020, 2021, and 2022, it has been possible to census a certain minimum number of 12, 7, 10, 7 respectively (the latter, as a minimum number, to be supplemented with the results of genetic analysis for 2022 that have yet to be returned by the analytical laboratories) individuals of Marsican Brown Bear, which have permanently frequented the territory (Fig. 3 and 4).

This is also what appears from the Annual Reports of the activities within the Abruzzo and Molise Marsican Brown Bear Monitoring Network - RMAM; the Reserve became part of the Monitoring Network in 2017, taking charge of a portion of territory much larger than its own borders, a strip of land crucial for the conservation and expansion of the species, located between the Abruzzo, Lazio and Molise National Park and the Maiella National Park.

Through the use of different techniques governed by the appropriate Protocol (AA.VV. 2017) developed by the RMAM (photo-trapping, monitoring of "scratching posts - Rub Tree" and implementation of "fur traps") it was possible to get a fairly clear and comprehensive picture, based on scientific evidence, of the frequentation of the species in the territories of the Reserve and the Municipality of Pettorano, and it has







been possible to identify the many different bears frequenting the territory of the protected area in recent years. All the timely data, related to systematic monitoring, are summarized in the dedicated section of the annual "Bear Report," published by the Abruzzo, Lazio and Molise National Park (Fig. 5).

Through the radio telemetry technique, it was also possible to follow some individuals captured and equipped with radio-collars (including the famous bear "Peppina"), which has been regularly frequenting the territories of the Reserve and Majella National Park for years and whose wintering for several years in our territory could be ascertained.

In addition, from the genetic analyses carried out by ISPRA (Superior Institute For Environmental Research And Protection) laboratories, some individuals surveyed over the past few years were found to be absolutely new to the entire Marsican brown bear population, as they were previously unknown.

### 2.3.1 RESULTS - ANNUALITY 2021:

The activities carried out as a result of case reports received, took place from the second half of February until late December.

A total of 66 case reports were received, of which 56 (or 85%) were carried out directly by RNRMGAG staff. In 86% of the cases (n=57), inspections were carried out and the actions stipulated in the RMAM Protocol were fielded. All reports received were positive, and after the expected reliability checks, n.57 were assigned a reliability 1 (86%), while n.8 were assigned reliability 2 (12%) (Fig. 5).

Reports classified as having final reliability 1 (n=57) included.:

- hair samples taken from trees, trail marker poles, snow-roll marks, and barbed wire;
- direct sightings made by RNRMGAG personnel or third parties who have provided irrefutable video and photographic evidence;
- footprints or tracks on snow or mud.

Reports rated with final reliability 2 (n=8) included:

- destroyed droppings and ant hills.

All reports received were found to be true.

Systematic type monitoring, as stipulated in the RMAM Field Protocol, has been carried out continuously for the entire calendar year. The signs of presence detected exceed 300, 95% of which were detected directly by





Nature Reserve Staff, to which must be added the radiotelemetric GPS radiocollar locations of female F.99 (*Peppina*).

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With the exception of January, signs of presence were detected continuously with a peak between May and July (60% of the total), and through targeted observation and camera-trapping sessions, the association and interaction of several individuals could also be verified, during the mating season.

No family units were observed, but the certain frequentation of 3 female individuals of breeding age should be highlighted.

Camera-trapping is once again confirmed as the most valid technique for monitoring such an elusive species, registering 188 occurrences/bear, accounting for 60 percent of the total signs of presence detected.

The search for Rub Trees, which began in 2019, continued in 2021, leading to the identification of 19 new trees for an overall total therefore of 74 for the Municipal territory of Pettorano sul Gizio and 91 for the entire macroarea (Fig. 5).

The search for hair samples, which took place both systematically through genetic traps and opportunistically (fruit trees, barbed wire, Rub Trees, etc.) resulted in the collection of 100 samples, all of which were sent to ISPRA laboratories for the planned genetic analysis. The results returned the presence data of the following individuals: M.120 (n=32), F.129 (n=2), F.143 (n=1), M.150 (n=7), M.152 (n=1), M.171 (n=17), F.177 (n=1), M.197 (n=2), ORSO (n=6), MIXED (n=8) and Doubtful/Do confirm (n=3) with an overall yield of 79% (Fig. 5).

Thanks to the combination of the different monitoring techniques used, it was possible to establish in 10 the minimum number of Bears that frequented the territory of the Municipality of Pettorano sul Gizio in 2021 and the macroarea IVB (Fig. 5).

## 2.3.2 RESULTS – ANNUALITY 2022:

Activities fielded as a result of the reports received were carried out throughout the calendar year.

A total of n.77 case reports were received, of which n.68 (or 88%) were carried out directly by RNRMGAG staff. In 96% of the cases (n=75), inspections were carried out and the actions stipulated in the RMAM Protocol were fielded. All the reports received were positive, and after the expected reliability checks, n.46 were assigned reliability 1 (60%), while n.29 were assigned reliability 2 (38%) (Fig. 5).

The Case Reports classified with final reliability 1 (n=46) concerned the following:

- hair samples taken from fruit trees, Rub Trees, barbed wire, and trail sign posts;





- a direct sighting made by third parties who provided irrefutable video evidence;
- footprints on mud..

The Case Reports classified with final reliability 2 (n=29) included:

- destroyed droppings and ant hills.

All reports received were found to be true.

Systematic monitoring as stipulated in the RMAM Protocol was carried out throughout the calendar year.

Regarding non-invasive genetic monitoring, No. 3 genetic traps were activated in 3 of the 4 cells provided, leaving them active with an average of 147 days.

Two of the four traps remained active from late spring until autumn, while the third, was activated in early October until the end of the year, in order to sample FWC with the two pups in tow. All traps were successful, allowing the collection of No. 19 genetic samples, only in two it was possible to install a camera-trapp, filming the attendance of several individuals.

The camera-trapping activity was carried out throughout the calendar year.

A total of n.31 camera-traps were used placed, in places of passage or where signs of Marsican brown bear presence had been detected in previous years, with a maximum of 364 nights/ft, a minimum of 16 nights/ft and an average of 219 nights/ft (Fig. 5).

A total of 278 events/bear were recorded in 30 different camera-traps with a yield of 97% and an average of 9 events/bear per camera-trap.

Also during the course of 2022, the active search for Rub Trees continued, traveling along trails and cart tracks where numerous signs of presence were detected in previous years: a total of n.17 new Rub Trees were detected, which added to the n.81 detected since 2019, bringing the total to n.98 (Fig. 5, 6 and 6b).

The activities involved in systematic monitoring, fur trapping and camera-trapping, resulted in the detection of No. 297 signs of presence (Fig. 5).

Frequotation for the year 2022 was almost constant by several individuals of Marsican brown bear, excluding GPS radio-collar data from F.129 (Barbara), a total of n.450 signs of presence were detected (Fig. 5).

The signs of presence, as provided in the document "Marsican Brown Bear Monitoring Network in Abruzzo, Lazio and Molise: establishment of the network and operational document" (AA.VV. 2017), are classified according to a final reliability that was found to be: 1 for n.391 (87%), 2 for n.56 (12%), and 3 for n.3 (1%); it





is worth noting that more than half of the total n.278 equal to (62%) were found to be video/photo from camera-trap (Fig. 5).

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In total, n.109 hair samples were collected, all of which were sent to ISPRA for the planned genetic analysis. They were collected through various sampling methods and were distributed as follows: opportunistic (n=18), systematic (n=19), scratching post (n=71) and damage at apiary (n=1).

The continuation of the search, initiated in 2019 of Rub Trees, resulted in 2022 in a total of No. 109 total, identified and classified, for the area of responsibility. From them, No. 71 genetic samples were taken, accounting for 65 percent of the total, thus proving to be a key resource for the genetic identification of individuals (Fig. 5, 6 and 6b).

In total, the minimum number of Marsican brown bear individuals detected through systematic monitoring for 2022 is being determined, pending the results of genetic sampling (Fig. 5).

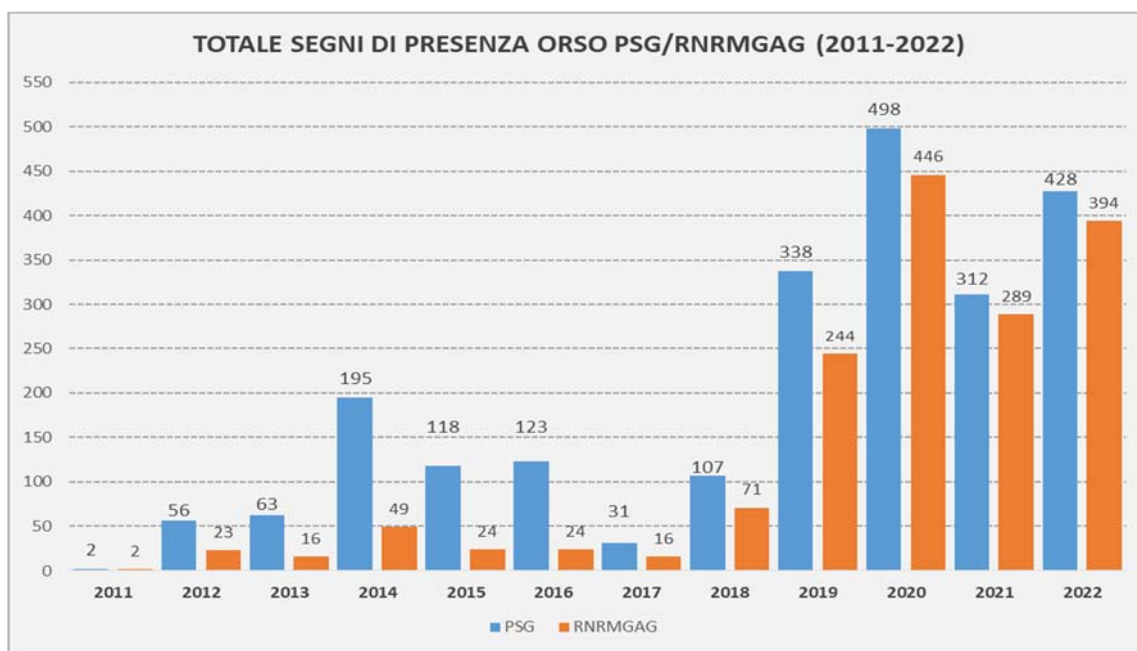


Figure 3 – Bear presence signs in the area of competence, PSG/RNRMGAG





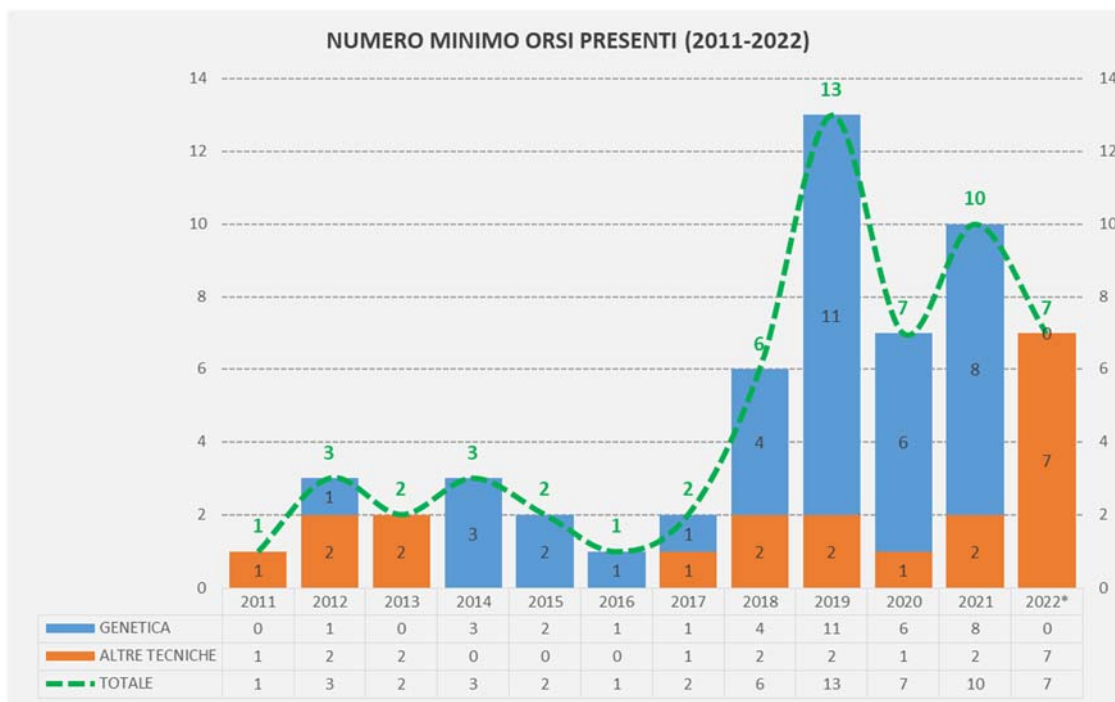


Figura 4 – Minimum number of Bears present in the area of responsibility, PSG/RNRMGAG

\* for what concerns 2022, the data still need to be supplemented with the results of genetic analysis

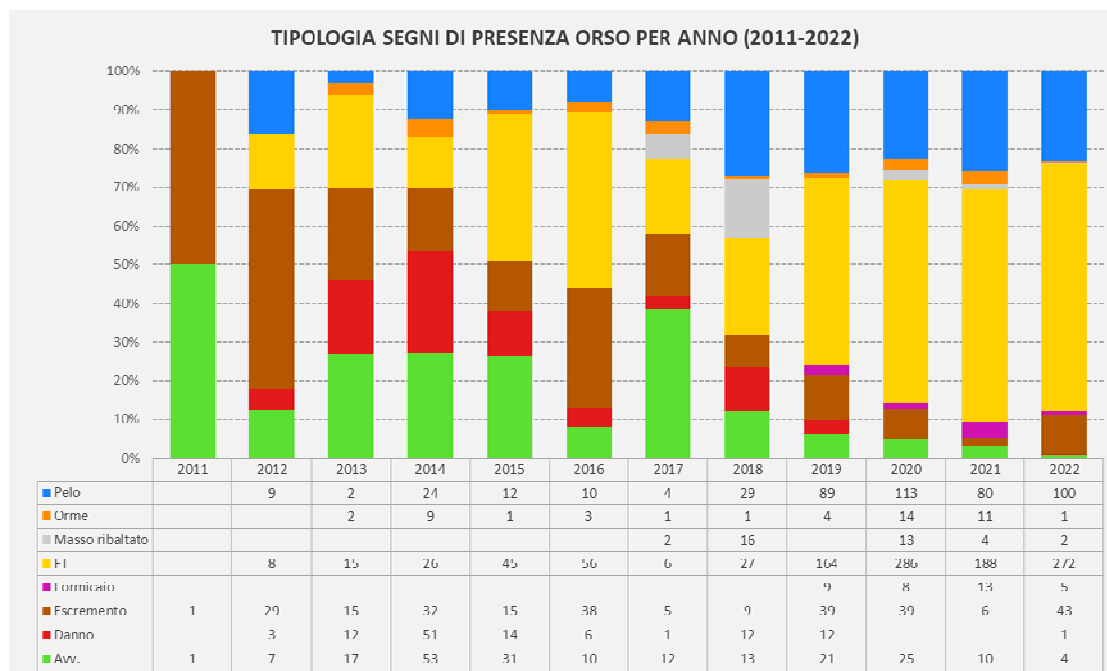


Figure 5 – Bear presence signs in the area of competence, PSG/RNRMGAG



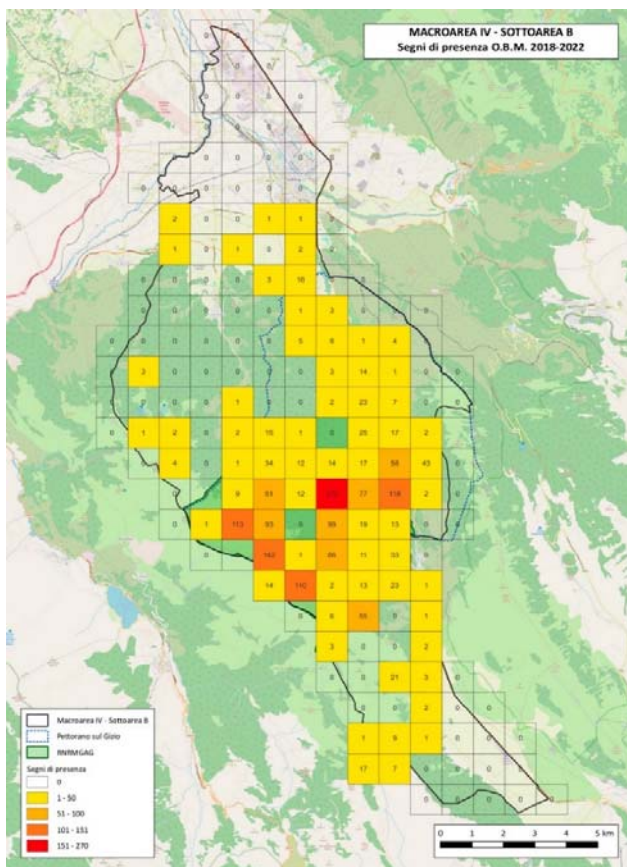


### 2.3.3 FINDINGS

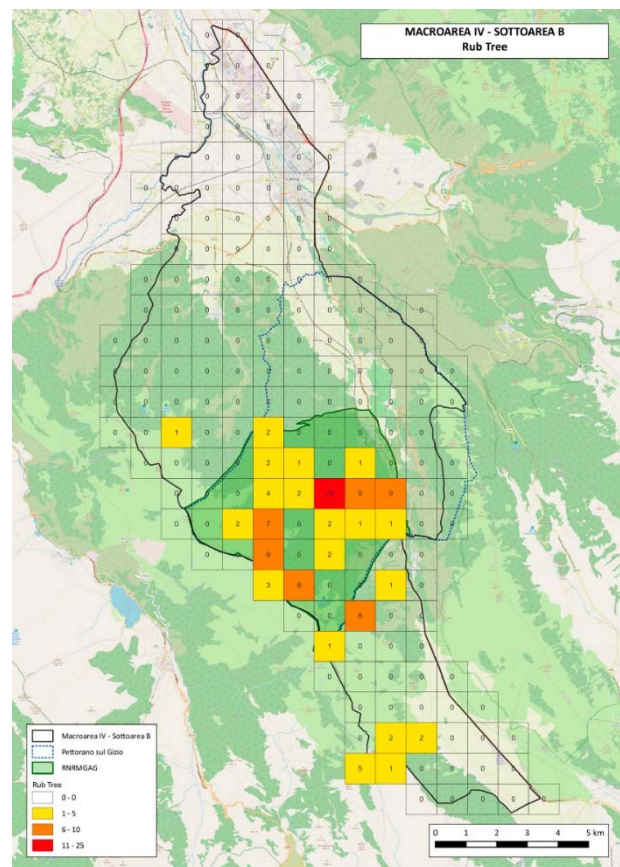
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As of 2011 and up to 2022, the data collected in Macroarea IV subarea B, are to be considered consistent and encouraging for the desired and expected demographic and territorial expansion of the Marsican Brown Bear population, given the number of signs of presence, the number of different individuals, the reconfirmation and detection of new genotypes, and the presence of wintering sites. All this, confirming the primary role of the sub-area in question in terms of protection and demographic and territorial expansion of the species. The activities within the RMAM turn out to be a valuable tool to have up-to-date data with a clear and comprehensive picture regarding the actual presence and expansion of the species, and in the last 4 years, in particular, they have made it possible to systematically collect standardized data that return a picture of the situation that confirms the importance of this crucial portion of the territory for the conservation and expansion of the Marsican brown bear population (Fig. 6 and 6b).

**Figure 6 – SIGN OF PRESENCE MAP in the area of responsibility, PSG/RNRMGAG (2018-2022)**



**Figura 6b –RUB TREES MAP identified in the area of responsibility, PSG/RNRMGAG**





The sampling effort put in place in recent years and the implementation of such a capillary and intensive monitoring requires a considerable employment of qualified personnel, means and equipment, which is not negligible for the Monte Genzana Alto Gizio Regional Nature Reserve. This is even more evident, especially if one considers the meagreness of the Staff employed and the available annual financial resources, made available by the Abruzzo Region, to be considered already insufficient for the survival of the Authority itself, thus seriously jeopardizing the regular performance of activities for the coming years.

However, starting in 2021, the resources (economic, personnel, means) made available by the Life BSC Project, allow a further qualitative leap in the activities to be carried out and an integration in the quantity of actions to be put in place, useful for the conservation of the species, the minimization of conflicts with humans, real and potential and the maximization of the potential for demographic and territorial expansion of this species, especially in the areas of "ecological corridor".

### 3 MANAGEMENT ACTIVITIES - PREVENTION AND MANAGEMENT OF DAMAGE AND POTENTIAL THREATS

The Nature Reserve over the years has initiated numerous management actions such as, for example, the installation of more than 300 wildlife reflectors, 3 information panels on the risk of crossing along State Road 17 and 6 others on provincial roads, the census of all poultry houses, the installation of 106 electrified fences, the delivery of chickens and hens preyed by bears, and the closure of some valleys to vehicular traffic during the winter period.

Numerous information and dissemination actions were also initiated, along with environmental education projects carried out in schools, more than 20 training courses dedicated to wildlife, and 3 conferences of national interest.

#### 3.1 DAMAGE PREVENTION AND MANAGEMENT ACTIVITIES

Over the years and until 2022, the year in which the activities under the Life BSC Project will begin, the Monte Genzana Alto Gizio Regional Nature Reserve, in addition to continuing the work, begun in 2014, on securing the animal trophic sources present in the Municipality of Pettorano sul Gizio, in order to prevent damage potentially caused by the Marsican Brown Bear, has further intensified the monitoring of trophic sources





potentially at risk, putting in place actions aimed at minimizing the risk of damage by the species, with the aim of thus minimizing potential conflicts with the presence of humans and their activities (Fig. 7 e 8).

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#### SUPPORTING THE LOCAL COMMUNITY: checking and setting up damage prevention facilities:

RNRMGAG Staff have provided technical support in the distribution, maintenance and control of the electrified fences given on loan for free use, regularly carrying out the prevention activities screwed since 2014, including through communication, awareness and dissemination initiatives. Overall, a total of 106 small farms currently appear to have been secured, and for the second year in a row, no damage has been recorded (Figs. 7 and 8).

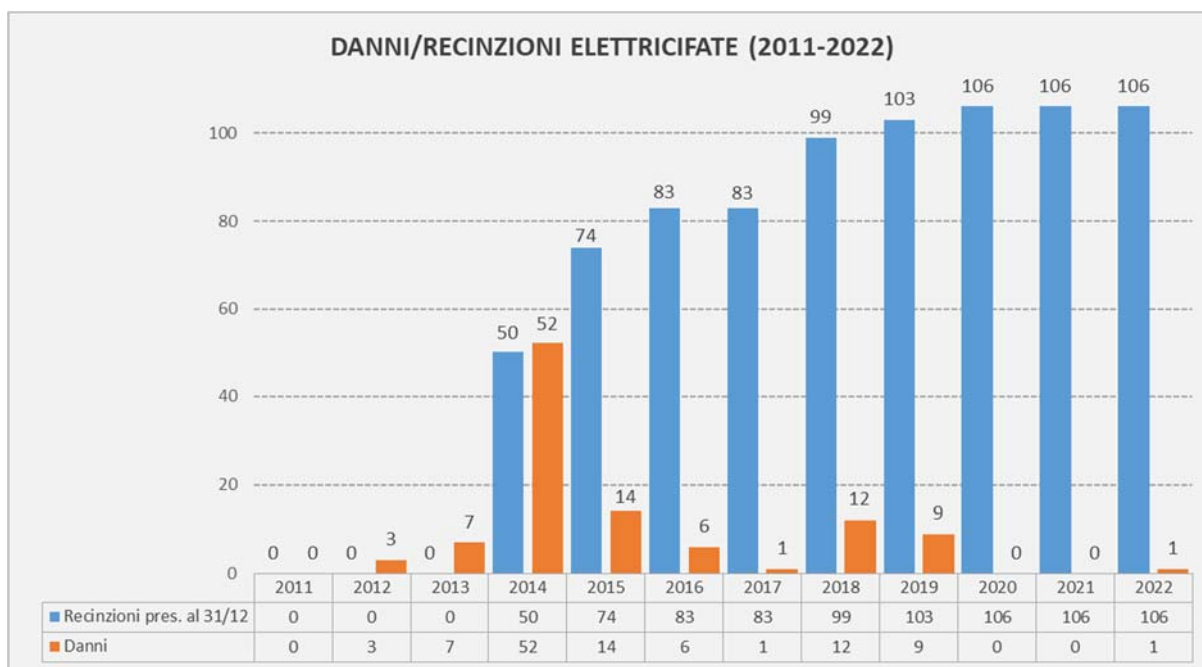


Figure 7 – Damage prevention in the area of competence, PSG/RNRMGAG

From the month of May until the end of September, about 20 working days are used to monitor the efficiency of prevention structures as well as the effectiveness of results.

In detail, the operations were organized as follows:

- Verification of electrificator operativity;
- Measurement of battery charge level;
- Measurement of pulse intensity along the conductor wire;







- Verification of proper placement of support poles around the perimeter;
- Door-to-door Marsican brown bear awareness and information campaign.

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Most of the facilities were found to be properly assembled and fully functional.

In no case did the electrifiers require repair at a service center, while in some cases the battery was found to be dead and was replaced. The rest of the inspections, in addition to the routine operations listed above, basically consisted of the proper repositioning and replacement of the support poles and conductor wire.

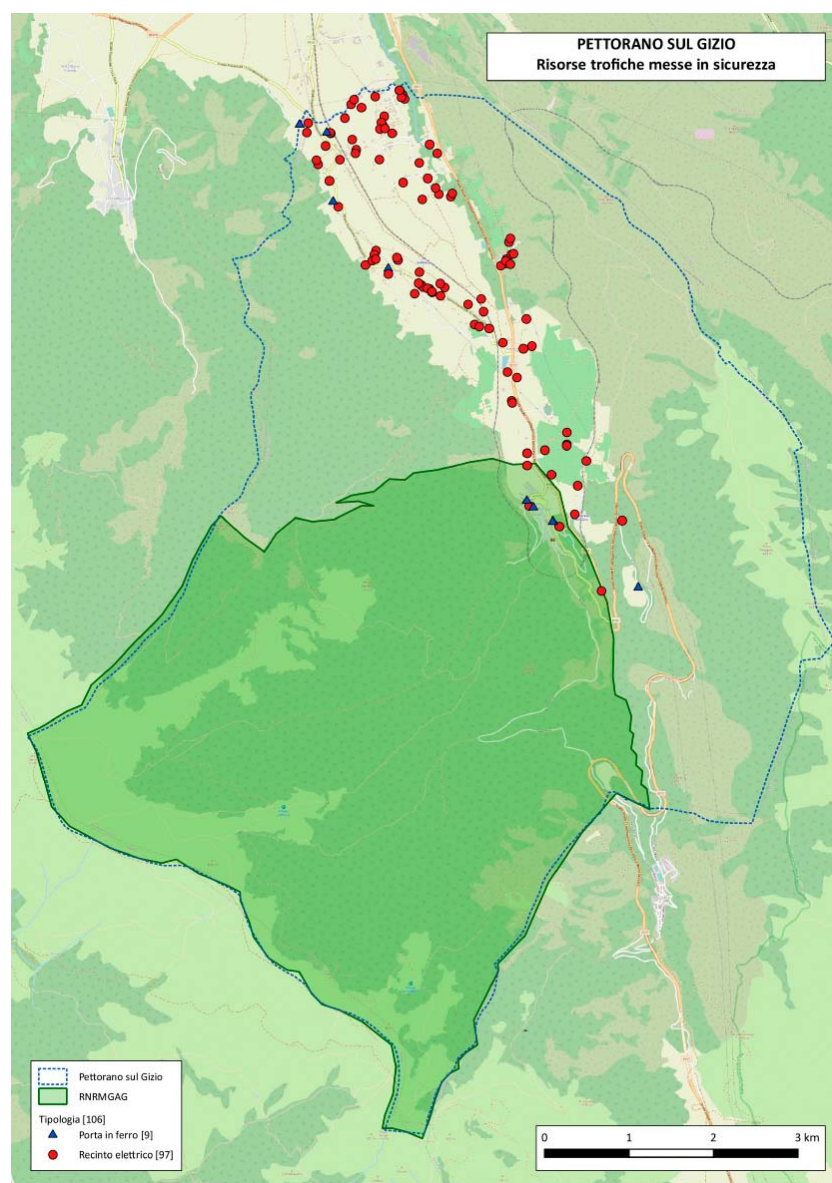


Figure 8 – Damage prevention in the area of responsibility, PSG/RNRMGAG - protected facilities map





As of today, therefore, all known human food sources of animal origin (No. 106, distributed over the territory as per the produced and attached cartography (Fig. 7 and 8) palatable to bears on the territory of the Municipality of Pettorano sul Gizio appear to be secured; specifically, No. 97 are protected by electrified fencing and No. 9 by reinforced iron gates (Fig. 7 and 8).

## 3.2 COMUNICATION ACTIVITIES

Also during 2021 and 2022, the public awareness campaign for the prevention of Bear damage was continued through the posting and dissemination of specific posters, accompanied also by the door-to-door delivery of the relevant information brochure.

Continuing throughout the summer until the end of September, all stakeholders were contacted in order to provide useful information and guidance to make preventive action more effective, including making support staff available in case of need for assistance.

## 3.3 BSC - BEAR SMART COMMUNITY GENZANA ACTIVITIES, IN COLLABORATION WITH Salviamo L'Orso and Rewilding Apennines VOLUNTEERS

The Genzana Bear Smart Community pilot project, developed in tight collaboration with the "Salviamo l'Orso onlus" Association and partly funded by the IBA - International Association for Bear Research and Management (an organization composed of the world's top bear experts), was created with the intent to encourage actions by the local community, businesses and citizens to prevent human-bear conflict by promoting some "best practices," simple but effective measures to prevent bear and bear damage. Promoting the creation of "bear-friendly communities" is in fact necessary for the establishment of a context of full awareness and tolerance, in which the presence of the species is no longer considered a problem, but a resource, as well as fundamental to foster the process of demographic and territorial expansion of the species and ensure its survival.

In addition to the Monte Genzana Alto Gizio Regional Nature Reserve and the "Salviamo l'Orso" Association, the project also involves the community of Rocca Pia, and the actions carried out also involve other associations, such as, "Rewilding Apennines," as well as local citizens and administrators, thus developing in





a vast territory, which represents a connecting ecological corridor, privileged for the movements of Marsican bears between the two large protected areas of the PNALM and PNM.

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Many are the activities and initiatives conducted within the Bear Smart Community - BSC Genzana, in collaboration with the Associations, also thanks to the many volunteers who have joined the Erasmus+ Project, hosted by the Reserve, as listed schematically, below:

- MEASURES TO SUPPORT TROPHIC PRODUCTIVITY, pruning wild fruit trees, an initiative aimed at increasing food resources for wildlife, especially for the Marsican brown bear, and the preservation of historical cultivars, allowed for the pruning and freeing from antagonistic species many wild fruit trees, especially apple and cherry trees, in an area of high naturalistic value in the territory of Pettorano sul Gizio;
- DAYS OF REMOVAL OF ABANDONED WASTE, considered a priority initiative aimed at the preservation of our natural environment and the redevelopment of areas of high naturalistic value, removing waste of various kinds and dismantling more abandoned metallic fences and barbed wire, which are an obstacle to the movement of wildlife, in addition to being dangerous waste for public safety;
- GROUND FRUIT REMOVAL DAYS, considered a useful initiative in urbanized settings, aimed at the removal of fallen fruit from ornamental and/or no longer used fruit trees found in urbanized and rural areas, to minimize the risk of attraction for the species, minimizing the risk of conflict with humans and also aimed at safeguarding public safety, as well as the species.

## 4 ACTIVITIES TO IDENTIFY AND PREVENT POTENTIAL THREATS – ACTION A3 Life Bear Smart Corridors Project

As regarding to the main critical issues identified related to the conservation of the species in the territory coinciding with Macroarea IVB, as identified in the founding document of the RMAM (AA.VV. 2017), under the competence of the Regional Nature Reserve Monte Genzana Alto Gizio and extending over the municipalities of Pettorano sul Gizio, Introdacqua and partially over those of Sulmona and Rocca Pia, it is possible to identify and categorize different types, direct and indirect, also and not only with specific reference to Action A3 of the LIFE Bear Smart Corridors project.

Within this framework, the critical issues identified are identified and categorized, such as:





- Threats to the conservation of the Marsican brown bear (Italy);
- risk of direct and indirect conflicts with humans and their activities.

With regard to the first category, the focus under Action A3 of the Life BSC is first and foremost on identifying threats that could potentially restrict bear movements through designated Bear-Smart corridors linking PNSGSL, PRSV, PNALM and RNRMGAG/PSG protected areas and adjacent planned and active Bear-Smart communities.

Regarding the second category, with special reference to actions C1, C5, C6, C8, the objective is to identify human-bear conflicts in communities where they have already occurred or could potentially occur in the future. For action C2, locations of water wells that pose drowning risk to bears and other animals should be identified. Action C3 aims to identify unused orchards and naturally occurring fruits so that they can be maintained as a food source outside the villages. For Action C4, the goal is to assess unprotected livestock farms, apiaries, orchards, and vegetable gardens in the project areas to determine whether damage prevention devices need to be installed to prevent potential or existing damage caused by bears.

Given these objectives, field surveys were carried out in the area of responsibility as a sub-area of the whole project to obtain the expected results.

The area of data collection covers macro-area IVB (Figure 2), under the responsibility of the Reserve as part of the activities of the RMAM - Abruzzo and Molise Marsican Brown Bear Monitoring Network.

Activities have been carried out partly during the proposal writing period, as well as since the official start of the project in October 2021 and throughout 2022.

This report will be supplemented by the "Bear Report" produced annually, through the Abruzzo and Molise Marsican Brown Bear Monitoring Network (RMAM), and the data will be added to the database.

## 4.1 Action C1, C5, C6 and C8 – Identification of human-bear conflicts in communities where these have already occurred or could potentially occur

In detail, with regard to the identification of the main threats/critical issues related to the actions of the Life BSC Project, most of the risk situations mapped in the area of responsibility are barbed wire scattered throughout the territory (especially in the objects of past reforestation) that pose a threat to the dispersal of bears.







On the other hand, litter dumps have been found in some areas, often at the edge of roadways not far from urbanized areas and along major roads, potentially posing a risk of attracting bears in search of food remains, consequently exposing some individuals to the danger of being too close to human infrastructure and generating conflicts and also increasing the risk of road investments.

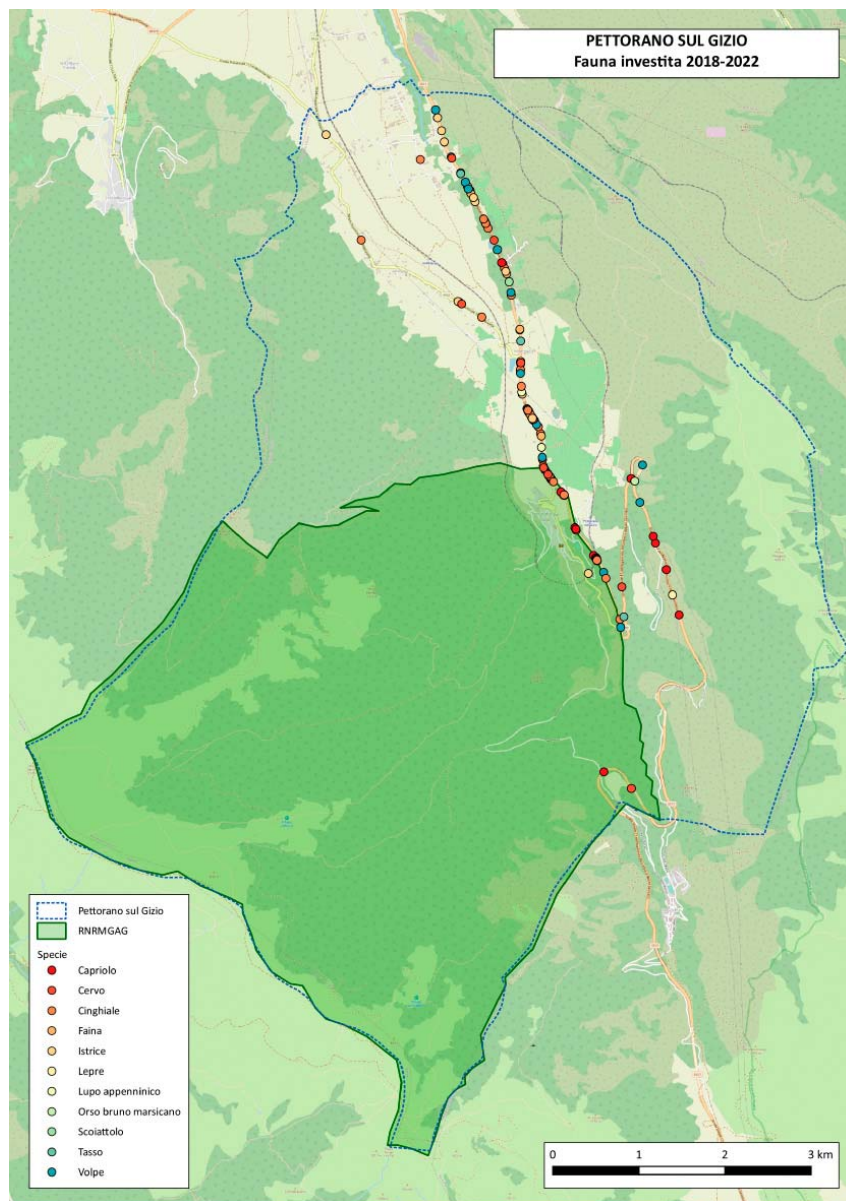
In terms of potential human-bear conflicts, possible incursions into poultry houses, apiaries and orchards/gardens excel, although in the territory of competence, within the already established BSC - Bear Smart Community Genzana, all structures potentially at risk of being considered as of attractive trophic sources have been surveyed, mapped and secured (see Par. 3 and Fig. 7 and 8).

The total number of livestock killed by bears in the area of responsibility, although not known exactly, does not appear worthy of consideration and thus does not seem to represent a potential threat that could generate conflicts.

One potential threat is the risk of road investments for many species, and therefore also for bears, especially in some critical areas that have long been identified and mapped by Reserve Staff and especially over the past 4 years (Fig. 10). This threat, on the one hand endangers the movement of individuals, and on the other is potentially a generator of conflicts with humans because of the risk of safety to motorists, as well as to bears.

Finally, also of note is the potential human disturbance due to play/recreational activities conducted even in areas of high naturalness (e.g., the use of motorcycles, despite existing restrictions).





**Figure 8 – Mapping (2018-2022) of road kills sites for various wildlife species**





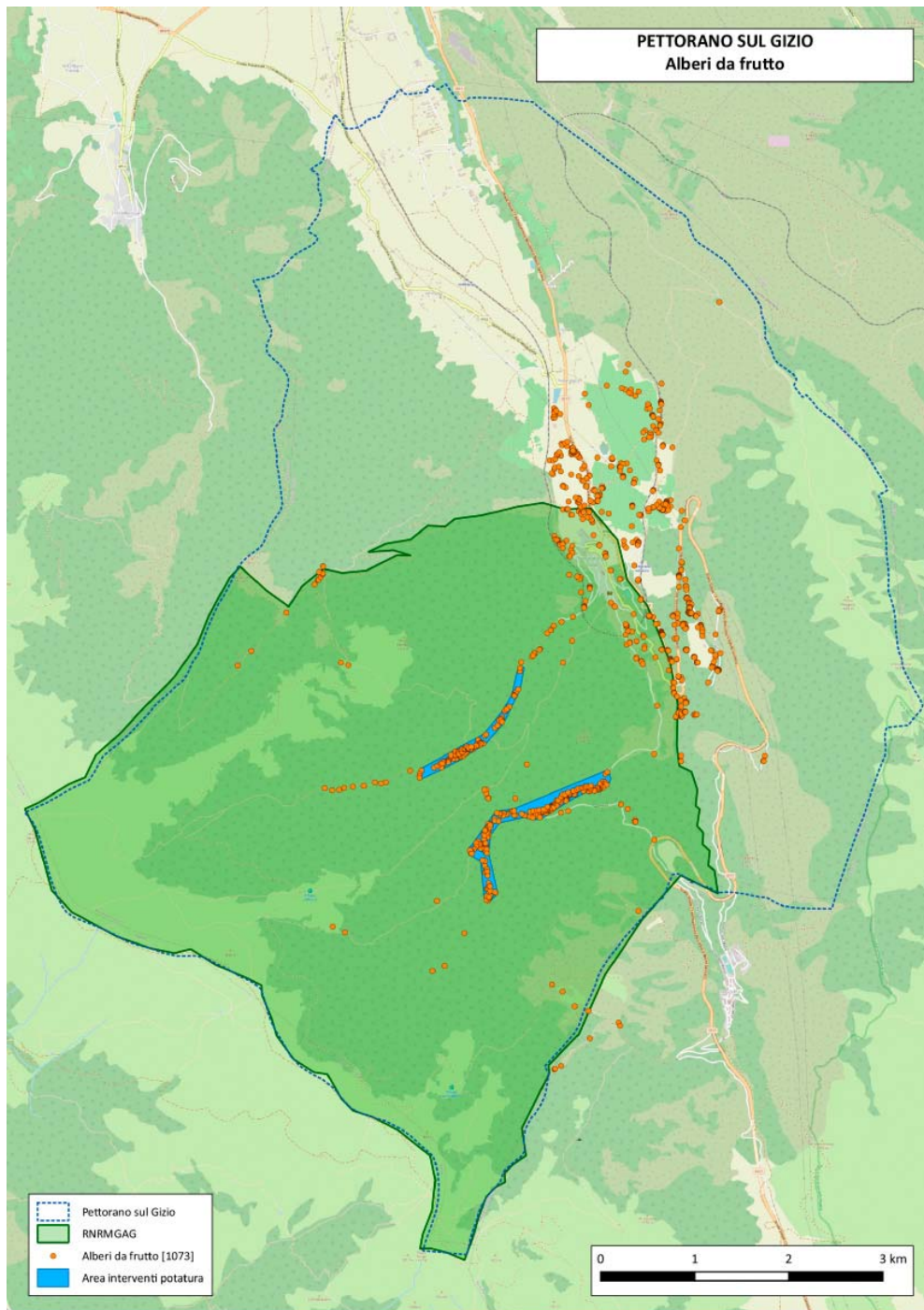
## 4.2 Action C2 - Set out locations of the water wells presenting high risk of drowning for bears and other wildlife species requiring intervention

Since the start of the project, no unsafe wells and other water sources have been identified in the narrow area of responsibility for potential drowning risk to bears and other wildlife species.

## 4.3 Action C3 - Set out unused fruit orchards locations or natural fruit resources currently available for bears to prevent them from encroachment following land abandonment from traditional rural activities.

For Action C3, unused/abandoned fruit trees and orchards were surveyed. Surveys were conducted in a targeted and opportunistic manner in areas known to have a high presence of apple/fruit trees. With the help of staff and volunteers, 1073 fruit trees and orchards were identified and georeferenced in some areas of the territory (Fig. 9). In many of these sites, pruning operations to minimize the risk of plant suffering due to antagonistic trees and shrubs and to maximize the fruiting potential of the fruit trees present have already been initiated some time ago, in collaboration with volunteers from the Salviamo l'Orso and Rewilding Apennines Associations, as part of the Genzana BSC activities (Fig. 9). In total, about 60 wild fruit trees, particularly apple and cherry trees, in an area of high wildlife value in the Pettorano sul Gizio area have been subjected to non-invasive re-wilding and pruning since the start of the project to maintain food availability for bears outside urbanized areas.





**Figure 9 – Mapping of wild fruit tree occurrence sites in the area of responsibility**







## 4.4 Action C4 - Assess livestock farms, apiaries and unprotected fruit orchards close to human settlements within the project areas that need to be protected from attacks of bears with the deployment of specific preventive measures

Since a long time, the Reserve has been engaged in constant monitoring, census and mapping of trophic resources for the species, with particular attention to those considered to be at potential risk of conflict with humans, and opportunistic surveys have therefore been conducted, also in relation to the specific Life action C4, to assess unprotected livestock farms, apiaries and orchards near or within man-made areas in the area of responsibility. Through these surveys, all currently known sites were identified and mapped (see Sec. 3.1, Fig. 8).

As already reported in Sec. 3.1. and Fig. 7 and 8, the Reserve has already installed, also in cooperation with the Associations, a total of 106 protected structures, in direct response to human-bear conflicts.

## 4.5 FINAL DISCUSSION/CONCLUSIONS

Under Action A3 of the Life Bear Smart Corridors project, aimed at assessing and identifying specific factors affecting bear conservation, human-bear conflicts, waterholes, trophic sources and unprotected anthropogenic food sources were identified and recorded in Actions C1 to C6 and C8.

Overall, in the territory of Macroarea IVB (Fig. 2), under the Reserve's jurisdiction, the main threat reported is the presence of abandoned barbed wire, which potentially slows the species' dispersal and, therefore, will be subsequently removed under Action C3.

In addition, garbage dumps identified near urbanized areas, and especially along roads, can create a habituation phenomenon for bears, increasing the risk of conflicts with humans and especially road investments; again, as per the project, the identified dumps will be cleaned up.

Regarding water wells, a few part of abandoned elements that may pose a direct threat to animals, including Marsican brown bears, and for which securing is planned under Action C2, no cases of possible criticality have been recorded in the area of responsibility





Other threats, include the availability of anthropogenic food sources, responsible for attracting bears to and around population centers in search of easily accessible food, making them habituated and conditioned but also increasing the risks of conflict and road kill. These include unprotected garbage bins and illegal dumpsites, which will be removed and, where possible, replaced with bear-proof bins in Action C5.

In an effort to increase the attractiveness and accessibility of wild food sources for bears, wild trophic sources and abandoned orchards have been mapped. Fruit trees outside urbanized areas are pruned and the surrounding vegetation is cleared under Action C3.

Regarding the potential conflict related to Action C4, no livestock farms, apiaries or the orchards are known to be insufficiently protected by damage prevention structures in the area of responsibility to date.

In the future, the focus should be on:

- Continue to promote the use of electric fences to prevent bear damage and bear-human conflict, which are the main cause of the negative perception of the species in the area;
- Further develop the use of bear-proof dumpsters;
- Continue constant direct and indirect monitoring of the species in order to always have up-to-date data on its presence and use of space and resources, concentrating the sampling effort in the areas most used by bears, also to direct and focus management actions and conservation efforts, in the most effective and targeted way;
- Provide knowledge for the creation of bear intervention units under Action C8 and involve local people in bear conservation.





## BIBLIOGRAPHY

- AA.VV. 2017. Rete di monitoraggio dell'orso bruno marsicano in Abruzzo e Molise: istituzione della rete e documento operativo. Redatto da R. Latini, A. Antonucci, G. Di Domenico, D. Gentile, L. Scillitani. Parco Nazionale d'Abruzzo, Lazio e Molise, Parco Nazionale della Majella. 46 pagg.
- AA.VV. 2017. PROTOCOLLO DI CAMPO E CARTOGRAFIA PER LO SVOLGIMENTO DELLE ATTIVITÀ NELL'AMBITO DELLA RETE DI MONITORAGGIO DELL'ORSO BRUNO MARSICANO IN ABRUZZO E MOLISE. Redatto da R. Latini, A. Antonucci, G. Di Domenico, D. Gentile, F. Quattrociochi. Parco Nazionale d'Abruzzo, Lazio e Molise, Parco Nazionale della Majella. 66 pagg.
- Boscagli G. et all. 1995. Distribuzione storica recente (1900-1991) dell'Orso bruno marsicano (*Ursus arctos marsicanus*) all'esterno del Parco Nazionale d'Abruzzo. Atti Soc. it. Scienze Naturali del Museo civico si Stor. Nat. Milano, 134/1996 (I): 46-84, Giugno 1995.
- Ciucci P., E. Tosoni, L. Boitani. 2009. Conta delle femmine di orso con piccoli dell'anno (FCOY): protocollo di applicazione nel Parco Nazionale d'Abruzzo Lazio e Molise. Dipartimento di Biologia e Biotecnologie Charles Darwin, Sapienza Università di Roma.
- Ciucci P., L. Maiorano, L. Chiaverini, M. Falco. 2016. Aggiornamento della cartografia di riferimento del PATOM su presenza e distribuzione potenziale dell'orso bruno marsicano nell'Appennino centrale. Azione A2: relazione tecnica finale. Ministero dell'Ambiente e della Tutela del Territorio e del Mare e Unione Zoologica Italiana, Roma. 84 pagg.

