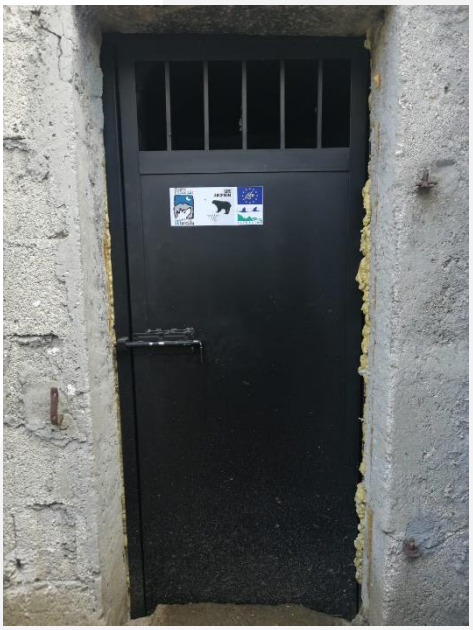
LIFE ARCPROM

LIFE18 NAT/GR/000768

Improving human-bear coexistence in 4 National Parks of South Europe

Action C7- Activity report for 2021 including list and maps of sites where e-fences, bear-proof henhouses & iron doors and bear-proof refuse containers were installed



23/12/2021

Authors

Athanasios Korakis[1], Giovanna Di Domenico[2], Antonio Antonnucci[2]

[1] Northern Pindos National Park
[2] Maiella National Park

Suggested citation

Korakis A., Di Domenico G., Antonoucci A. 2021. Activity Report 2021 Action C7 LIFE NAT/GR/768 ARCPROM. Management Agency of Northern Pindos National Park/ Maiella National Park, 2021.

TABLE OF CONTENTS

SUMMARY

The goal of Action C7 is to minimize the human-bear conflict by preventing access to anthropogenic food sources, especially near the villages. Preventing bears from accessing anthropogenic sources has a positive effect in the short term, preventing the arising of negative attitudes toward bears on the part of citizens, but also in the long term, avoiding the arising of the habituation phenomenon.
In Greece, the main objective of the Action is to prevent access to garbage, a problem widespread throughout the bear range whose solution depends heavily on the waste management system and people's behavior. Although there are several designs of bear-proof bins available, they are often not easily accessible to people so that the staff of the Northern Pindos National Park decided to start the design of a new model of bear-proof container. The project, drawn up using state funds, was contracted in summer 2020 and on 6 August 2021 the prototype was put to test in the village of Dikorfo in the municipality of Zagori. At the same time, targeted communication activities were carried out explaining the problem and how to use the anti-bear container. The results obtained so far show that the container installed is effective in preventing access to bears, is easy to use by people of all ages and is also accepted by the company that manages waste collection. Although the container is not a solution applicable in the whole study area, for example due to the specific requirements necessary for its installation, it can be installed in the most critical points inviting people to use these containers for- attractive to bears- waste disposal, rather than unprotected ones.
In Italy, in the Maiella National Park, the main objective of the Action is to prevent access to chicken coop. These latter, in fact, are an easy-to-access and very remunerative trophic resources for bears which, therefore, frequents the vllages to feed on them. The problem of feeding on barnyard animals has been present in the MNP since 2014 and, to address the problem in a systematic and functional way, in 2019 MNP staff carried out a census of chicken coops, also noting their vulnerability to bears. Based on the census data, the behavior of the bear that feeds on barnyard animals (F1.99) and the damages to chicken coops recorded in 2020, a list of chicken coops to be protected with the highest priority was drawn up in spring 2021. Out of 42 chicken coops inspected, 26 had already been protected in past years while 16 were still vulnerable to the bear. Through the distribution of 15 iron protections (doors and window protections) and 6 electrified fences, 13 out of 16 chicken coops were made inaccessible to bears, while the remaining 3 were identified as potential beneficiaries of the patented bear-proof chicken coop. In 2022, the patented bear-proof chicken coops will be purchased and distributed, the chicken coops to be protected with medium and low priority will be identified and, finally, the bear-proofing activity will be continued.

ΠΕΡΙΛΗΨΗ

Ο στόχος της Δράσης C7 είναι να ελαχιστοποιήσει τη σύγκρουση ανθρώπου και αρκούδας αποτρέποντας την πρόσβαση σε ανθρωπογενείς τροφικές πηγές, ειδικά κοντά στα χωριά. Η αποτροπή της πρόσβασης των αρκούδων σε ανθρωπογενείς πηγές έχει θετική επίδραση βραχυπρόθεσμα, μειώνοντας την εμφάνιση αρνητικών στάσεων προς τις αρκούδες από την πλευρά των πολιτών, αλλά και μακροπρόθεσμα, αποφεύγοντας την εμφάνιση του φαινομένου της εξοικείωσης.

Στην Ελλάδα, ο κύριος στόχος της Δράσης είναι να αποτραπεί η πρόσβαση στα σκουπίδια, ένα πρόβλημα που είναι διαδεδομένο σε όλο το εύρος εξάπλωσης των αρκούδων, του οποίου η λύση, εξαρτάται σε μεγάλο βαθμό από το σύστημα διαχείρισης απορριμμάτων και τη συμπεριφορά των ανθρώπων. Παρόλο που υπάρχουν διαθέσιμα πολλά σχέδια για κάδους προστασίας από τις αρκούδες, συχνά δεν είναι εύκολοι στην χρήση από τον κόσμο και για το λόγο αυτό, το προσωπικό του Εθνικού Πάρκου Βόρειας Πίνδου αποφάσισε να σχεδιάσει ένα νέο μοντέλου καλύμματος κάδου, ανθεκτικό στις αρκούδες.

Το έργο, που πραγματοποιήθηκε τελικά με άλλους πόρους, συμβασιοποιήθηκε το καλοκαίρι του 2020 και στις 6 Αυγούστου 2021 το πρωτότυπο τοποθετήθηκε για δοκιμή στο χωριό Δίκορφο του Δ. Ζαγορίου. Παράλληλα, πραγματοποιήθηκαν στοχευμένες επικοινωνιακές δρασεις εξηγώντας το πρόβλημα και τον τρόπο χρήσης του καλύμματος. Τα μέχρι στιγμής αποτελέσματα δείχνουν ότι το κάλυμμα είναι αποτελεσματικό στην αποτροπή της πρόσβασης σε αρκούδες, είναι εύκολο στη χρήση από άτομα όλων των ηλικιών και είναι επίσης αποδεκτό από την εταιρεία που διαχειρίζεται τη συλλογή απορριμμάτων. Παρόλο που το κάλυμμα δεν είναι μια λύση που μπορεί να εφαρμοστεί σε ολόκληρη την περιοχή μελέτης, για παράδειγμα λόγω των ειδικών απαιτήσεων που απαιτούνται για την εγκατάστασή του, μπορεί να εγκατασταθεί στα πιο κρίσιμα σημεία προτρέποντας τους ανθρώπους να χρησιμοποιήσουν αυτούς τους κάδους με τα καλύμματα για την απόρριψη απορριμμάτων ελκυστικών προς το την αρκούδα.

Στην Ιταλία, στο Εθνικό Πάρκο Maiella, ο κύριος στόχος της Δράσης είναι να αποτραπεί η πρόσβαση στα κοτέτσια. Αυτά, είναι στην πραγματικότητα, ένας εύκολος στην πρόσβαση και πολύ ανταποδοτικός τροφικός πόρος για τις αρκούδες που, ως εκ τούτου, συχνάζουν στα χωριά για να τρέφονται από τις κότες. Το πρόβλημα της χρήσης των ανωτέρω ως τροφική πηγή υπάρχει στο Εθνικό Πάρκο Maiella από το 2014 και για να αντιμετωπιστεί το πρόβλημα με συστηματικό και λειτουργικό τρόπο, το 2019 το προσωπικό του πραγματοποίησε απογραφή κοτέτσιων, σημειώνοντας επίσης την ευπάθειά τους στις αρκούδες.

Με βάση τα δεδομένα καταγραφής, τη συμπεριφορά της αρκούδας που τρέφεται με αυτά τα ζώα (F1.99) και τις ζημιές σε κοτέτσια που καταγράφηκαν το 2020, την άνοιξη του 2021 καταρτίστηκε κατάλογος με την υψηλότερη προτεραιότητα προστασίας. Από τα 42 που επιθεωρήθηκαν, τα 26 είχαν ήδη προστατευθεί τα προηγούμενα χρόνια, ενώ τα 16 εξακολουθούσαν να είναι ευάλωτα στην αρκούδα.

Μέσω της διανομής 15 σιδερένιων προστατευτικών (θυρών και παραθύρων) και 6 ηλ. περιφράξεων, 13 από τα 16 κοτέτσια έγιναν απρόσιτα για τις αρκούδες, ενώ τα υπόλοιπα 3 αναγνωρίστηκαν ως πιθανοί δικαιούχοι του κατοχυρωμένου με δίπλωμα ευρεσιτεχνίας κοτετσιού. Το 2022, θα αγοραστούν και θα διανεμηθούν τα κοτέτσια, θα εντοπιστούν τα κοτέτσια που θα προστατευτούν με μέτρια και χαμηλή προτεραιότητα και, τέλος, θα συνεχιστεί η δραστηριότητα προστασίας των αρκούδων.

RIASSUNTO

L'obiettivo dell'Azione C7 è quello di minimizzare il conflitto uomo-orso impedendo l'accesso a risorse trofiche di origine antropica soprattutto nei pressi dei paesi. Impedendo l'accesso alle risorse trofiche ha un effetto positivo a breve termine, impedendo l'insorgenza di atteggiamenti negativi da parte dei cittadini, ma anche a lungo termine evitando l'insorgenza del fenomeno dell'abituazione.

In Grecia l'obiettivo principale dell'Azione è quello di impedire l'accesso ai rifiuti, un problema diffuso in tutto l'areale dell'orso la cui soluzione dipende fortemente dal sistema di gestione dei rifiuti e dai comportamenti delle persone. Sebbene siano disponibili diversi progetti di cassonetti anti-orso, spesso non sono facilmente fruibili dalle persone e, pertanto, il personale del Parco Nazionale del Nord Pindo ha deciso di avviare la progettazione di un nuovo modello di contenitore anti-orso. Il progetto, redatto utilizzando fondi statali, è stato appaltato nell'estate 2020 e il 6 agosto il prototipo è stato testato nel villaggio di Dikorfo nel comune di Zagori. Contestualmente, è stata effettuata attività mirata di comunicazione spiegando il problema e le modalità di utilizzo del contenitore anti-orso. I risultati ottenuti sinora mostrano che il contenitore installato è efficace nell'impedire l'accesso agli orsi, è facile da utilizzare da persone di tutte le età ed è accettato anche dalla società che gestisce la raccolta dei rifiuti. Sebbene il contenitore non sia una soluzione applicabile in tutta l'area di studio, ad esempio a causa dei requisiti specifici necessari per la sua installazione, potrà essere installato nei punti più critici invitando le persone a servirsi di questi contenitori per lo smaltimento dei rifiuti piuttosto che dei contenitori non protetti.

In Italia, nel Parco Nazionale della Maiella, l'obiettivo principale dell'Azione è quello di impedire l'accesso ai ricoveri degli animali da cortile. Questi ultimi, infatti, sono una risorsa trofica di facile accesso e molto remunerativa per l'orso che, dunque, frequenta i paesi per potersene nutrire. Il problema dell'alimentazione su animali da cortile è presente nel PNM dal 2014 e, per affrontare il problema in modo sistematico e funzionale, nel 2019 il personale del PNM ha svolto un censimento dei pollai annotando anche la loro vulnerabilità all'orso. Sulla base dei dati del censimento, del comportamento dell'orsa che si nutre di animali da cortile (F1.99) e dei danni a pollai registrati nel 2020, nella primavera 2021 è stata redatta una lista dei pollai da proteggere con priorità massima. Su 42 pollai ispezionati, 26 erano già stati protetti negli anni passati mentre 16 sono risultati ancora vulnerabili all'orso. Attraverso la distribuzione di 15 protezioni in ferro (porte e protezioni per finestre) e 6 recinzioni elettrificate 13 pollai su 16 sono stati resi inaccessibili all'orso mentre i restanti 3 sono stati individuato come potenziali beneficiari dei pollai a prova di orso. Nel 2022 i pollai a prova di orso saranno acquistati e distribuiti così come si procederà all'individuazione dei pollai da proteggere con priorità media e bassa per poi proseguire l'attività di messa in sicurezza.

INTRODUCTION

The action's main target is to minimize the human bear conflict in and around human settlements, as well as barnyards by preventing bears from approaching inappropriate human food sources (e.g. agricultural production, garbage, barnyard animals etc.). This way, the animals are also being prevented from becoming habituated "problem bears" or even provide this kind of training to their offspring, producing new generations of habituated animals. Furthermore, the damages or even the fact that bears are moving near or in to the human settlements can lead to anger and fear from humans, with the known devastating effects on bear populations.
In the Maiella National Park Action C7 is specifically aimed at reducing human-bear conflicts caused by the availability of barnyard animals and the consequent presence of bears feeding on these resources located very close or even inside villages. In the frame of Action C7, to reduce barnyard animals' availability 3 bear-proofing means must be distributed in MNP: iron doors, e-fences, bear-proof chicken coops. In this document are thus reported detailed information about where means have been distributed in 2021 as well as the rationale behind the distribution activity.

NEW GARBAGE BIN COVER IN NORTHERN PINDOS NATIONAL PARK

The problem with garbage bins "attacked" by bears is global. Many countries that host bear populations, have taken legislative measures that people have to get garbage bins that cannot be opened by bears, others have the obligation in bear areas to put out the garbage at a specific day and time, just before the collection services arrive, etc. This is not the case for Greece and especially in Northern Pindos National Park with around 80 settlements scattered in 2.000 km^2 of wilderness and with high fluctuation on population, depending on the season (e.g. 10 people during winter and 300 during summer, excluding tourists and traditional festivals), refuse collection system is a complicated issue. There are many cases that bears search for food in the garbage bins (Figure 1). In general, the conflict that arises regarding the bear and garbage, is a problem closely connected with the whole waste management system in Greece and in particular the waste management in rural areas. There is little or none recycling, no separation at source whatsoever and the collection service is limited to one time per week or even more. This, coupled with the people's perception to throw their garbage "outside their house" makes the problem more difficult to resolve.

Figure 1-Garbage bins opened by a bear in N. Pindos National Park

There have been many tries to provide solutions to this problem. From really simple to more advanced (Figure 2).

Figure 2-Different types of antibear garbage bins or covers produced under LIFE programs (LIFE09 NAT/GR/000333, LIFE15 NAT/GR/001108, LIFE13 NAT/SI/000550 the latter is used only for biodegradable waste)

Although, the attempts were decent, they posed some functional problems mainly related to the humans/users. The fact using the bins needs some effort to be put by the users (opening the cover using levers), seems to deter them from using them and instead they use the standard bins or even leave the garbage outside the bins.

This is the reason that the PINDNP staff decided to design a new more user-friendly cover. Before the announcement of the evaluation results for the Concept Notes for LIFE Nature & Biodiversity project applications, the "Operational Program for Infrastructure, Environment & Sustainable Development" issued a call for applications concerning Management Agencies of Protected Areas for funding and implementation of nature conservation actions. The Northern Pindos National Park, submitted an application including conservation actions that were also included in the project proposal of LIFE ARCPROM (LIFE18 NAT/GR/000768). One of those was Action C7. The actions were also granted for funding and the Operational Program was chosen since it has 100% funding. The LIFE funds from these actions will be distributed accordingly to other actions and beneficiaries.

The signing of the contract for the metallic covers for the refuse containers (funded by the Operational Program for Environment and Infrastructures) was signed on 25-08-2020. The period of the Covid lockdown was used for the design. The designs are provided in the ANNEX I.

After the first designs were finalized, the prototype cover was created. The frame and body were prepared (Figure 3)

Figure 3-Different stages on the garbage bin cover prototype development

After the development and testing of the prototype in the contractor's premises, which included also the testing of different types of amortiseurs needed to successfully open and close the lid in a controlled manner, the prototype was ready to put to test within the area of the National Park. Since it was summer, there was much activity with people coming to the villages, garbage volumes have increased and bear activity was also high.

After communication with Municipality of Zagori, the prototype was installed on 6th of August in the village Dikorfo (Figure 4). It was used to cover a refuse container, that a few days ago, a local resident took a picture of a bear that was trying to open it (Figure 5) In this village many cases with bear conflicts are reported throughout the years.

Figure 4-The area that the prototype cover was put.

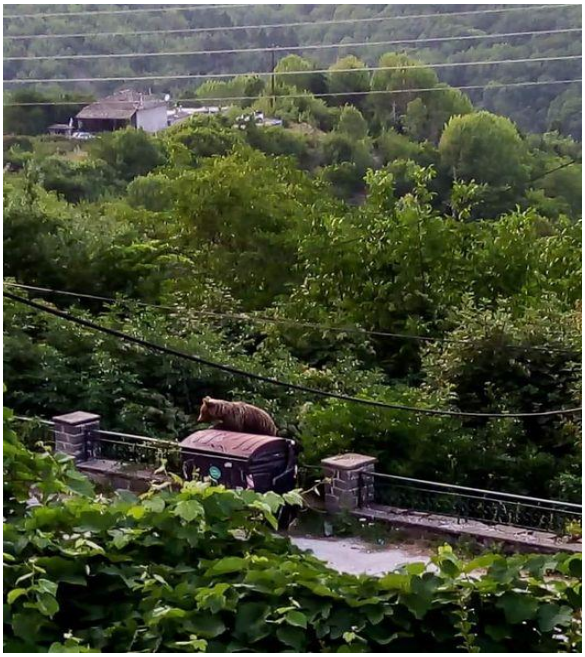


Figure 5-A bear trying to open the garbage bin in broad daylight (sign of habituation)

The day that the cover was installed (Figures 6,7), Mr Korakis from PINDNP also communicated the project to the locals directly by explaining the use and the importance of this task and indirectly by distributing a written explanation material provided in ANNEX II.

Figure 6-The cover with the garbage bin inside.

Figure 7-The prototype ready to be used.

Up to now, while the bear has visited the village and opened the other unprotected garbage bins many times, the cover was not breached. In addition, the user-friendly design has made people of all ages use it and when we visit the village for inspections, they are very satisfied with its use. Also, the garbage collection service is OK with using it. The next steps of the testing, involve the winter time with below zero conditions and how the shock absorbers that are built within, will make it through, although care was taken to select the "pricey" ones with CE specifications. Hopefully the cover will prove as reliable as it is user friendly.

All that said, the limitations must be also mentioned. For starters, it is not applicable to use the covers to all garbage bins, in the whole protected area, since it will be too costly and will also affect the waste collection services, due to the added time (approx. one minute) needed to open and close the cover. The idea is to put one or two covers in the hot spots and ask people (the most difficult part of the project) to throw in those bins the food leftovers and other materials that may attract the bear. Moreover, the cover has to be installed in a hard and flat surface. In the case of the prototype, the installation was made on the asphalt road. If there is no hard base a new one must be made, using cement.

INSTALLATION OF BEAR-PROOFING MEANS IN THE MAIELLA NATIONAL PARK

Background

Barnyard animals availability is one of the major issues affecting human-bear coexistence in the Maiella National Park. The problem is present in MNP since 2014 and is present as well in other portions of the Apennine brown bear range since more than 20 years. Barnyard animals are easy-to-access highly remunerative (from an energetic point of view) food sources so that it's not surprising at all that bears may choose to feed on them. The fact that this food resource is widespread near to villages as well as inside villages in small land plots or private gardens, determines the conflict arising as it implies bears frequenting human settlements/private houses. Since 2014 the Maiella National Park is carrying on the distribution of means to make chicken coops inaccessible to bears and, namely, two means have been used so far: electric fences and iron doors/grids. The distribution of such means followed two strategies: preventive protection of vulnerable chicken coops and protection of chicken coops after being damaged. The first strategy, obviously preferable to the second one, was hard to implement due to the fact that there are no databases available about where chicken coops are and, additionally, there is a high variation from one year to another as a result of people giving up/starting barnyard animals breeding without any written rule. Protecting such structures is challenging also due to the fact that they are not standardized. Each person has its own unique chicken coop that, in the best case, is a concrete-made structure with accessible entrances but more often is made out of materials "recycled" here and there.

To try to face the problem in a better, systematic way in 2019 MNP developed a specific chicken coop census in the villages where the problem had already occurred (Ateleta, Cansano, Campo di Giove, Palena, Rocca Pia) also collecting data on chicken coops structure and vulnerability to bears. Basing on the behavior of the bear feeding on barnyard animals (the problematic female F1.99), on data collected with the census and on data referring to chicken coops damages in 2020, in spring 2021 we drafted the list of chicken coops for which the bear-proofing need was "imminent" meaning that they had already been damaged in 2020 and still vulnerable to bears. To draft such a list we first individuated all the chicken coops damaged in Palena and Ateleta, the two villages currently interested by the phenomenon (Figure 8), and then we implemented specific field surveys (21st June Palena; 16th July Ateleta) to verify which protection mean was actually needed/the most suitable for each chicken coop.

Additionally, e-fences have also been distributed when necessary to chicken coops damaged in 2021 and to any possible person who asked for it in Palena or Ateleta.

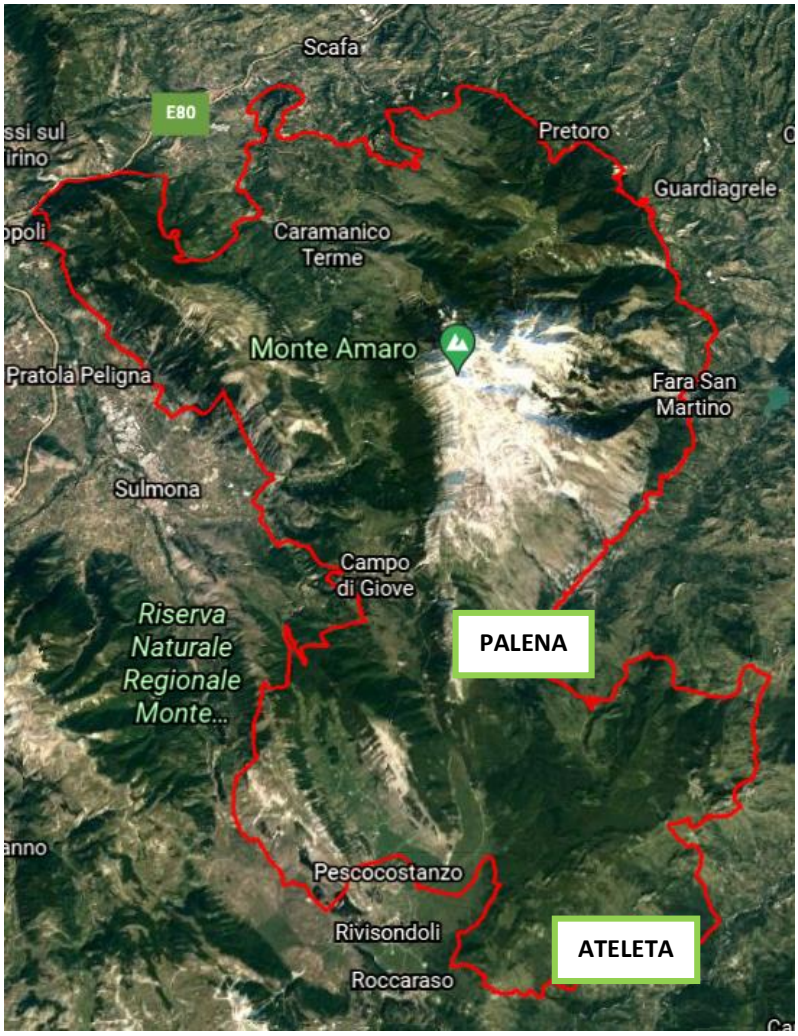


Figure 8. Position of the Palena and Ateleta villages in reference to the MNP border (red line).

List and maps of chicken coops protected in 2021

Basing on the analysis of the damages happened in 2020, 42 chicken coops needed to be inspected to verify if they needed to be bear-proofed. Surveys interested 26 chicken coops in Ateleta and 16 chicken coops in Palena (Table 1 and Table 2).

Table 1. Chicken coops damaged in Ateleta in 2020 and surveyed in 2021 to assess intervention needed to bear-proof them.

** Already bear-proof in 2020 but damaged because of owners' neglect.*

N	Coord X	Coord Y	Situation detected during the survey	Action implemented
1	431673	431673	Activity ceased	-
2	431480	463465	Impossible to protect	In list for bear-proof chicken coop distribution
3	430937	4633770	Protected in 2020 with MNP e-fence	-
4	430619	4633674	Protected in 2020 by the owner	-
5	431375	4633893	Protected in 2020 with MNP iron door	-

N	Coord X	Coord Y	Situation detected during the survey	Action implemented
6	433541	4634151	Activity ceased	-
7	433244	4634203	Protected in 2019 with MNP iron door*	-
8	433053	4634231	Activity ceased	-
9	433142	4635550	Protected in 2020 with MNP iron door	-
10	431498	4633807	Bear-proof*	-
11	432767	4635666	Protected in 2020 with MNP iron doors	-
12	432690	4635615	Protected in 2020 with MNP e-fences	-
13	432600	4635630	Vulnerable	Protected with 1 iron door
14	432550	4635652	Protected in 2020 with 2 MNP iron doors	-
15	431012	4633540	Vulnerable	Protected with 2 iron doors and 1 small iron cover for the chicken-exit hole
16	431440	4633780	Bear-proofed by the owner	-
17	430577	4633755	Vulnerable	Protected with 1 iron door, 1 iron window cover and 1 e-fence.
18	430575	4633777	Partially bear-proofed by the owner but still vulnerable	Protected with a window grid
19	430550	4633888	Vulnerable	Protected with 2 iron doors
20	430634	4633511	Protected in 2020 with MNP iron door	-
21	430668	4633496	Vulnerable	Protected with 2 iron doors
22	433245	4634025	Vulnerable	Protected with 1 iron door and 1 window grid
23	433731	4633950	Activity ceased	-
24	433709	4634047	Impossible to protect	In list for bear-proof chicken coop distribution
25	433793	4635047	Protected in 2020 with 1 iron door	-
26	433606	4633835	Vulnerable	Protected with 2 iron doors

Table 2. Chicken coops damaged in Palena in 2020 and surveyed in 2021 to assess intervention needed to bear-proof them.

** Already bear-proof in 2020 but damaged because of owners' neglect.*

N	Coord X	Coord Y	Situation detected during the survey	Action implemented
1	427667	4647053	Bear-proof*	-
2	428271	4647558	Bear-proof*	-
3	429450	4648447	Protected in 2019 with 1 iron door but additional measures needed (see the text for details)	Protected with 1 e-fence
4	429731	4648713	Activity ceased	-
5	429818	4648722	Protected in 2020 with 1 e-fence	-
6	430039	4648879	Protected in 2020 with 1 e-fence	-
7	429045	4648242	Vulnerable	Protected with 1 e-fence
8	430151	4648621	Activity ceased	-
9	427301	4646773	Activity ceased	-
10	428166	4648652	Bear-proofed by the owner	-
11	429198	4648470	Vulnerable	Protected with 1 e-fence

N	Coord X	Coord Y	Situation detected during the survey	Action implemented
12	429044	4648320	Bear-proofed by the owner	-
13	428275	4647778	Vulnerable	Protected with 1 e-fence
14	428968	4648080	Impossible to protect	In list for bear-proof chicken coop distribution
15	427977	4648979	Vulnerable	Protected with 1 e-fence
16	428333	4648434	Bear-proof*	-

Out of 42 chicken coops damaged in 2020, 16 needed to be bear-proofed. A total of 21 protection means (11 iron doors, 6 e-fences and 4 iron window protections) have thus been distributed in 2021 making possible the bear-proofing of 39 chicken coops out of 42 classified as "in imminent need of protection". Specifically, all the iron doors and iron window protections have been distributed in Ateleta, 1 e-fence has been distributed in Ateleta and 5 e-fences in Palena (Figure 9 and Figure 10).

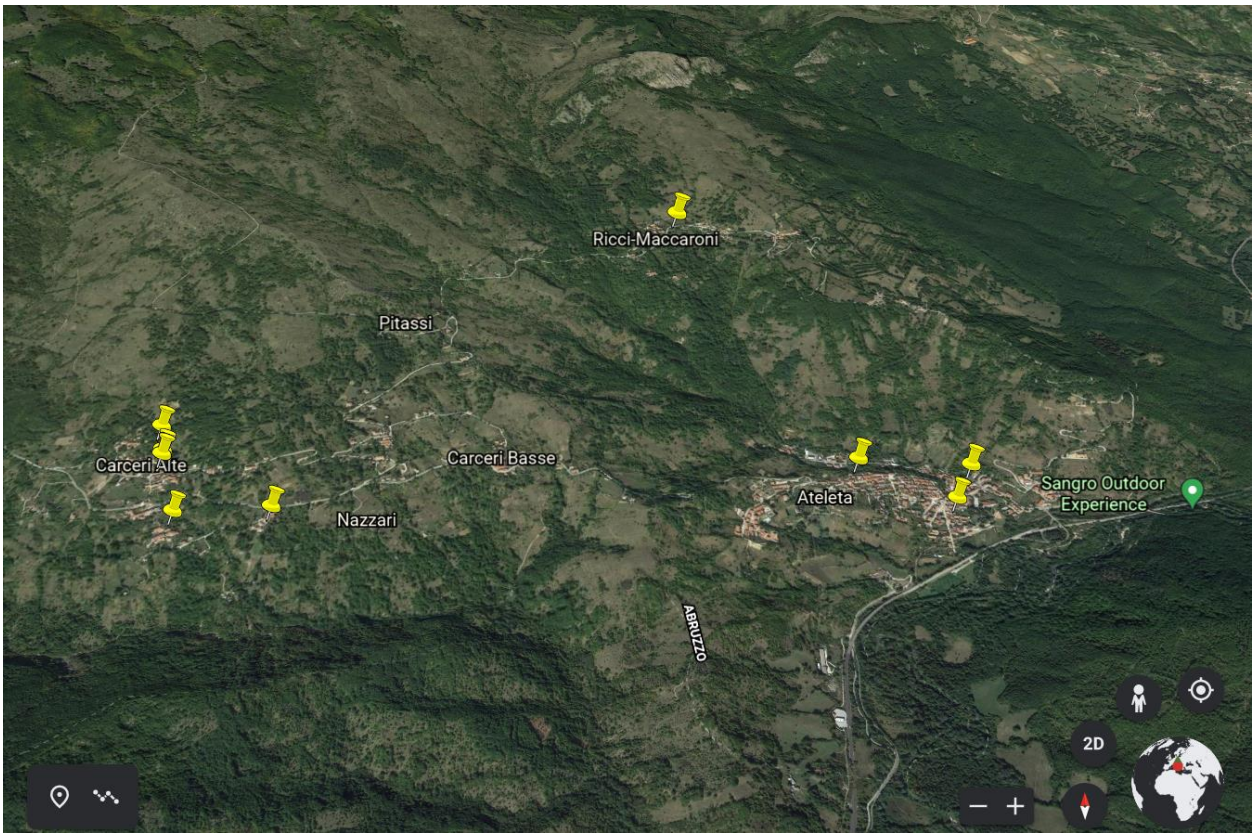


Figure 9. Location of the 16 protection means distributed in the Ateleta municipality in 2021 (11 iron doors, 4 iron window protections and 1 e-fence) to bear-proof chicken coops damaged in 2020. Not all the pins are visible as some protection means refer to the same location, see the table for details).

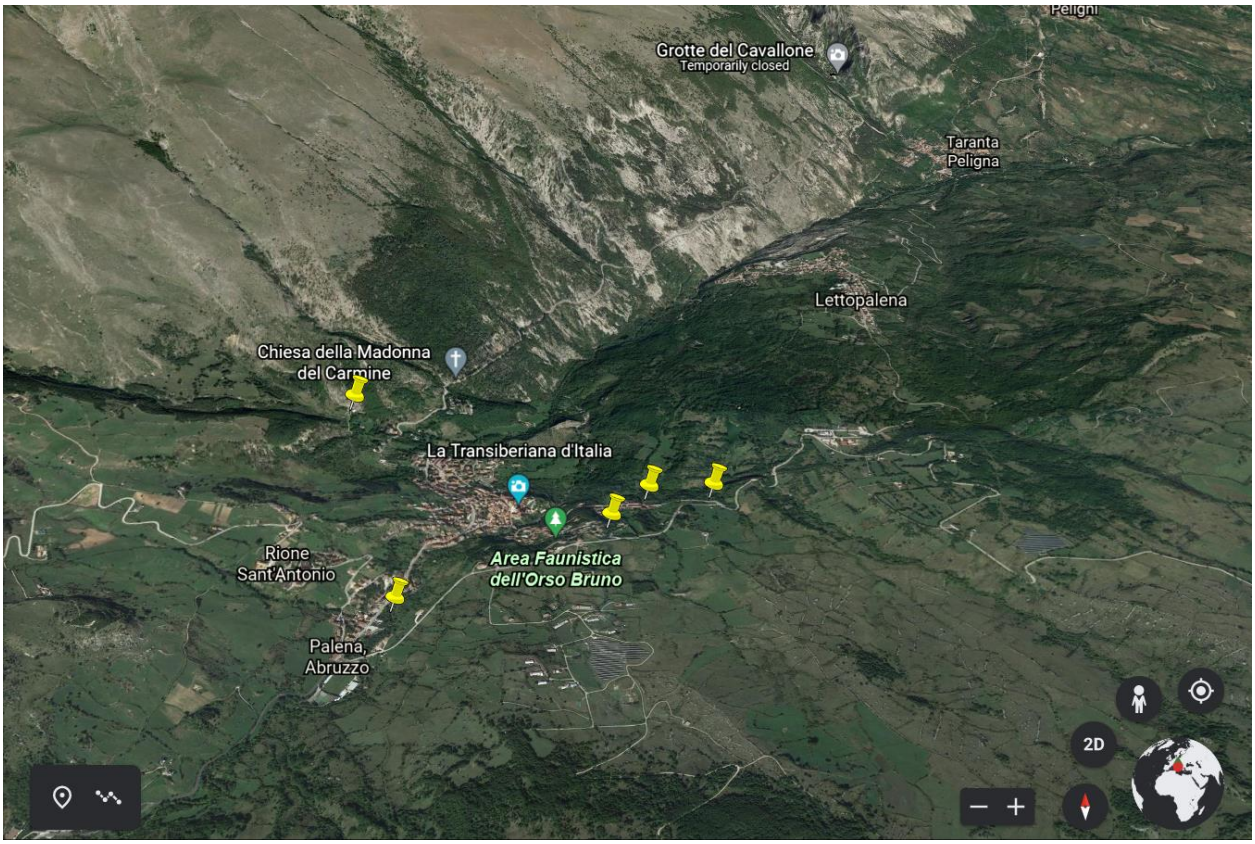


Figure 10. Location of the 5 e-fences distributed in the Palena municipality in 2021 to bear-proof chicken coops damaged in 2020.

One of the e-fences distributed in Palena (N.3 Table 2) has been installed in a chicken coop already bear-proofed in 2019 with an iron door distributed by MNP. However, the distribution of the e-fence in 2021 was necessary as the problematic female F1.99 during fall 2020 managed to avoid the bear-proofing and killed the chickens: the nights between 25-26 September 2020 and 15-16 November 2020, bear-killed chickens were found outside the intact structure in the small garden where chickens used to go by themselves at sunrise using a small hole to exit from the coop (see Annex III). These episodes made us hypothesize that F1.99 decided to wait for the chickens to go out from the bear-proof structure early in the morning to kill them easily outside. This hypothesis was confirmed once the bear was equipped with a GPS radiocollar: between 22nd and 23rd November 2020 F1.99 spent the night in an oak wood close to the chicken coop eating on acorn and resting but in the morning, between 6 and 7 a.m., the localization acquired by the radiocollar was in the chicken coop and chicken were found dead that very morning. This episode, beyond making the bear-proofing activity way more challenging, is also relevant from the ethological point of view revealing the high problem solving skills possessed by bears.

In addition to the means distributed to bear-proof chicken coops damaged in 2020, 5 more electric fences have been distributed in Palena and Ateleta (Table 3 and Figure 11) to chicken coops damaged in 2021 (n.1) and to people who made an official request (n. 5).

Table 3. Additional e-fences distributed to chicken coops damaged in 2021 and to people who made an official request in Ateleta and Palena.

N	Village	Coord X	Coord Y	Protection	Reason
1	Palena	428816	4648480	E-fence	Requested
2	Palena	428763	4648413	E-fence	Requested
3	Ateleta	431366	4633827	E-fence	Requested
4	Palena	428256	4648350	E-fence	Requested
5	Palena	428066	4648775	E-fence	Damaged in 2021

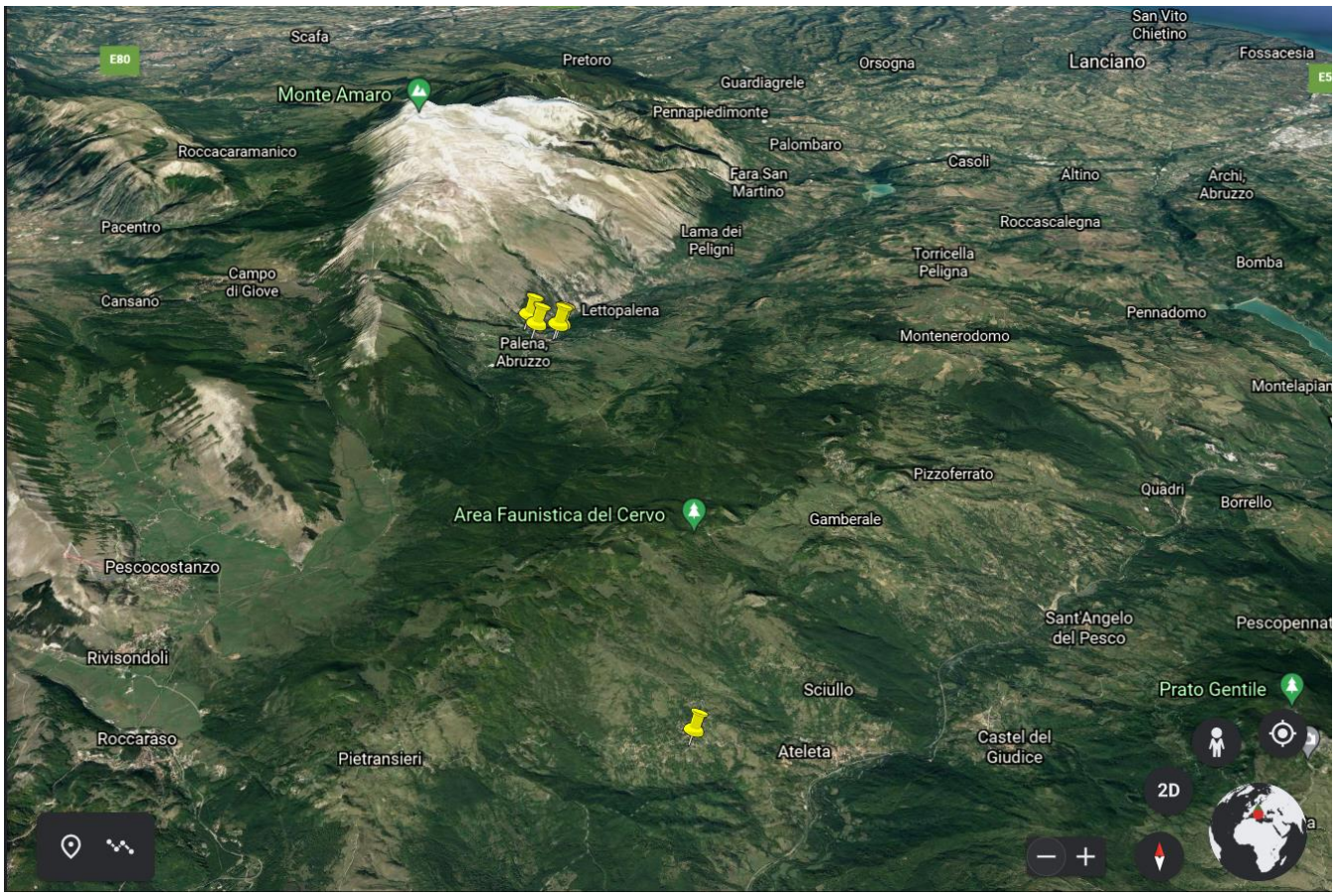


Figure 11. Location of the 5 additional e-fences distributed to chicken coops damaged in 2021 and to people who made an official request in Ateleta (n.1) and Palena (n.4).

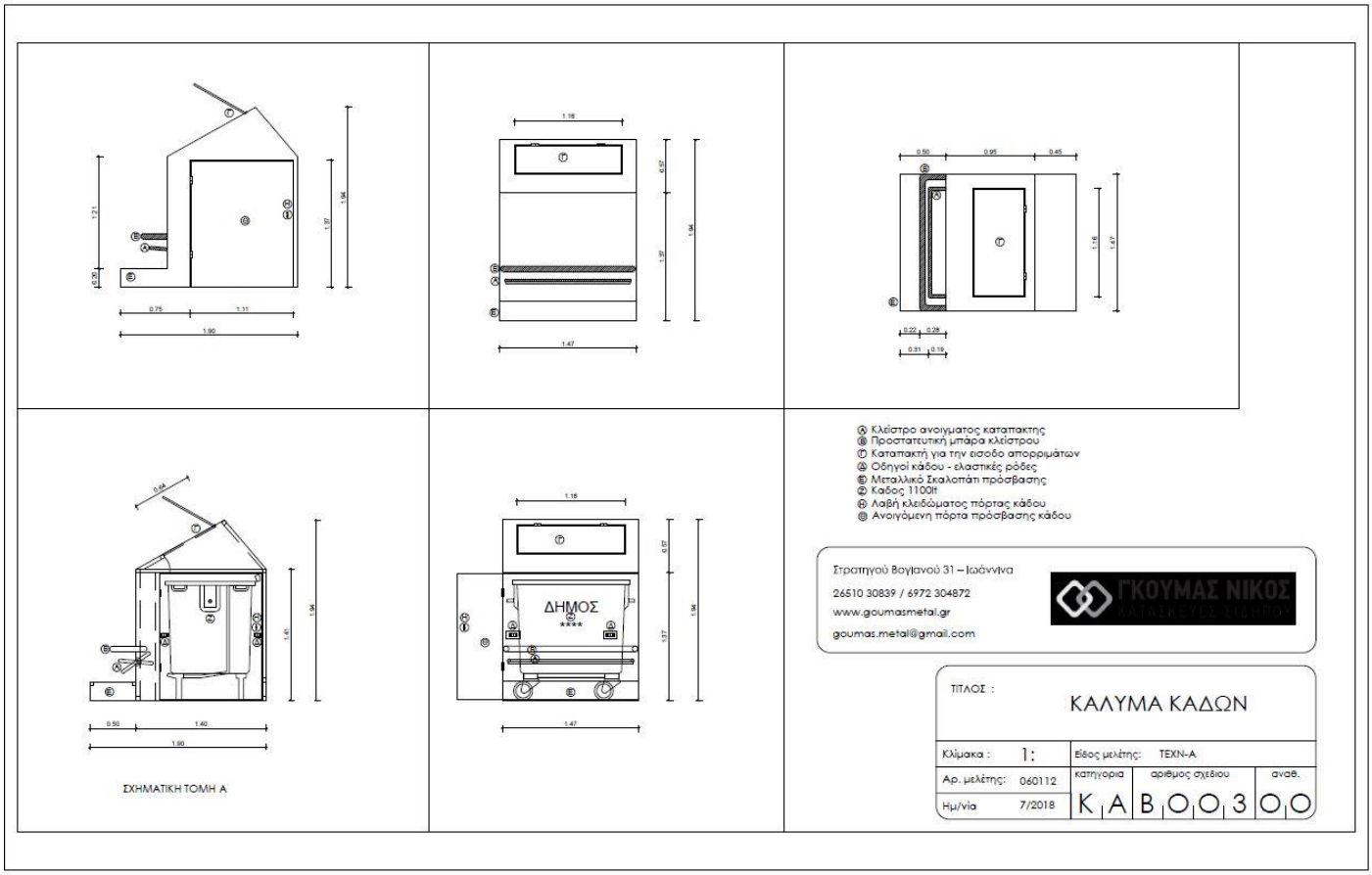
Considering all the different tasks a total of 26 protection means have been distributed to prevent bear to access chicken coops (11 iron doors, 4 iron protection for windows, 11 e-fences). Some pictures of the mean distributed are reported in ANNEX IV.

Finally, even though Action C7 doesn't specifically aims at preventing access to beehives since they usually are located outside villages and cannot be strictly classified as "human food sources", it is worth mentioning that 5 additional e-fences have been distributed to bee keepers. This last activity, necessary to prevent huge economic damages as well as to help and favour the beekeeping in MNP, is also crucial to manage human-bear conflicts and to make people have a positive perception of the bear.

Note on funds use and future implementation of Action C7 in MNP

Funds available in the ARCPROM budget for the purchase and distribution of protection measures are: 4.000 € for 10 bear-proof iron doors, 4.000 € for 5 patented bear-proof chicken coops and 6.000 € for 15 e-fences. During 2021, 4.880 € have been spent to build and install 15 iron protections rather than 10 (11 doors and 4 iron window protections) and bear-proof all the chicken coops classified as of "imminent need of protection". Patented chicken coops designed by FAZA and the Abruzzo, Lazio and Molise National Park have not been purchased because they don't really fit the needs of the owners individuated as potential beneficiaries (3 among the chicken coop of "imminent need of protection", see Tables 1 and 2). To better accomplish their need (specially to augment the 12-chickens-capacity of the FAZA structures) MNP contacted a supplier who's designing a new bear-proof chicken coop that will be purchased and distributed in 2022. E-fences distributed in 2021 have been bought with MNP own funds while LIFE ARCPROM funds have been used to buy additional e-fences in September 2021 (i.e. as soon as they became available considering the raw materials shortage due to the pandemic) that will be distributed in 2022. The distribution of e-fences and bear-proof chicken coops will be implemented after the drafting of the list of chicken coops classifiable as "in urgent need of protection" and "in need of protection". The drafting of the list will be based on data collected so far on bear damages as well as on results of Action A1.

ANNEX I - BLUEPRINTS OF THE BIN COVER



ANNEX II - DISTRIBUTED WRITTEN INFORMATION MATERIAL TO THE INHABITANTS OF DIKORFO (IN GREEK)

"Σε πολλούς οικισμούς του Εθνικού Πάρκου τα τελευταία χρόνια αναφέρονται πολλά περιστατικά επισκέψεων ατόμων αρκούδας για να βρουν τροφή από τους κάδους οικιακών απορριμμάτων. Το πρόβλημα γίνεται εντονότερο κατά την θερινή περίοδο που τα χωριά «ζωντανεύουν» με περισσότερο κόσμο και κατ' επέκταση περισσότερα σκουπίδια. Σε κάποια σημεία οι επισκέψεις επαναλαμβάνονται πλέον κάθε χρόνο, αφενός λόγω της ευκολίας προσέγγισης (δασοκάλυψη) και αφετέρου λόγω της «συνήθειας» κάποιου ατόμου του είδους ή της «εκπαίδευσης» σε αυτή την πηγή τροφής, κάποιου νεαρού ατόμου από την μητέρα του. Πολλές φορές οι αρκούδες επισκέπτονται τους κάδους ακόμα και κατά τη διάρκεια της μέρας, δημιουργώντας ακόμα εντονότερη την αίσθηση φόβου στους κατοίκους.

Το παρόν είναι μέρος ενός πιλοτικού προγράμματος εξέλιξης κατασκευής που περικλείει τους υπάρχοντες κάδους απορριμμάτων ώστε να μην επηρεαστεί ο τρόπος αποκομιδής, ενώ δημιουργεί εμπόδιο στην πρόσβαση της αρκούδας στον κάδο και κατ' επέκταση στο περιεχόμενό του. Χωρίς πρόσβαση στο εύκολο φαγητό των σκουπιδιών, αναμένεται να υπάρξει σταδιακά μια αλλαγή στην συμπεριφορά των αρκούδων και να αποθαρρυνθεί η προσέγγιση στους οικισμούς για την αναζήτηση τροφής. Σημειώνεται ωστόσο, ότι τα σκουπίδια είναι ένα τμήμα πηγής τροφής στους οικισμούς. Η ύπαρξη οπωροφόρων δέντρων των οποίων οι ώριμοι καρποί δεν συλλέγονται, είναι άλλη μια πηγή που προσελκύει την αρκούδα.

Η κατασκευή είναι εύκολο να χρησιμοποιηθεί από τον άνθρωπο. Με τη χρήση του πεντάλ, ανοίγει η καταπακτή όπου πετάγονται τα σκουπίδια και το καπάκι κλείνει αργά για λόγους ασφαλείας.

Με την συνεργασία του Δήμου Ζαγορίου αποφασίστηκε ο πρώτος κάδος να τοποθετηθεί στο Δίκορφο, έναν οικισμό που διαχρονικά αντιμετωπίζει θέμα με προσέγγιση αρκούδων, ευελπιστώντας σε καλά αποτελέσματα αλλά και στην παρακολούθηση και επίλυση τυχόν αστοχιών της κατασκευής."

ANNEX III - DIAGRAM OF THE CHICKEN COOP WHERE F1.99 MANAGED TO GO OVER PREVENTION MEAUSERES

Diagram of the bear-proof chicken coop where F1.99 waited for the chickens to exit early in the morning to kill them. At sunrise chickens went outside in the grazing area, accessible to bear, using the exit D. The bear could thus kill them easily in the non-bear-proof grazing area. To prevent future damages an e-fences was built all around the chicken coop and the grazing area.

Concrete made walls

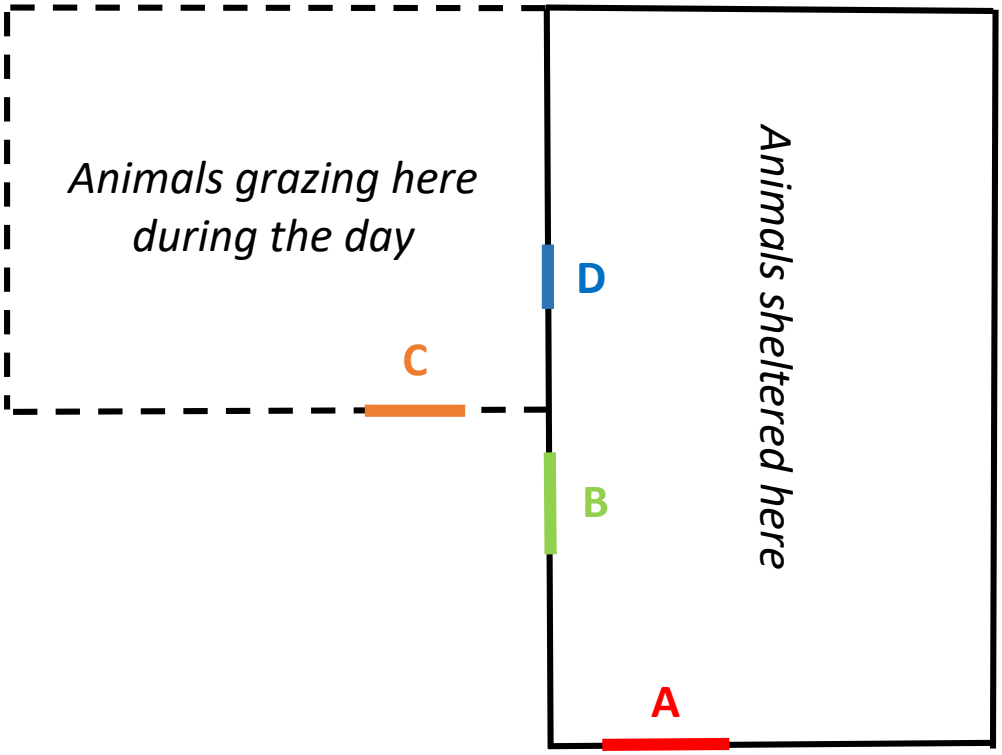
Iron door

Inaccessible window

External mesh net

External gate (not bear-proof)

Small hole for chicken exit (approx. 20x20 cm)

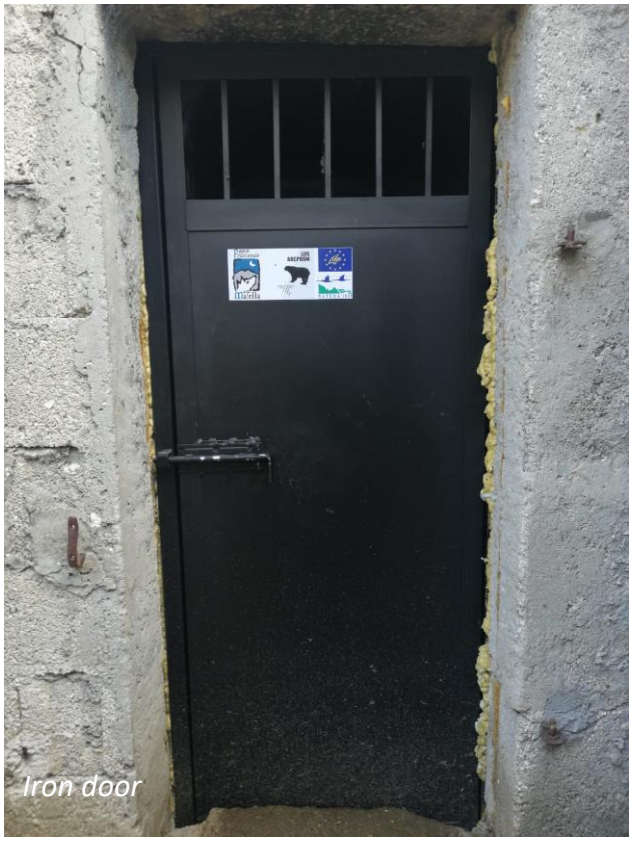


ANNEX IV - EXAMPLES OF PROTECTIONS MEANS DISTRIBUTED IN MNP IN 2021.

Iron door

Iron cover for chicken-exit hole

Iron door



Iron door

Iron window protection

Iron door

Iron door

Iron door


E-fence


E-fence


E-fence

Callisto
Wildlife and Nature Conservation Society

University of Thessaly
Founded 1984

University of Western Macedonia

WWF

Northen Pindos National Park

Prespa National Park

Management Body National Park Rodopi Mountain-Range

Parco Nazionale della Maiella