



LIFE ARCPROM



LIFE18 NAT/GR/000768

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

Action C7- Activity report for 2024 including list and maps of sites where e-fences, bear-proof henhouses & iron doors and bearproof refuse containers were installed



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Table of contents

SUMMARY	4
ΠΕΡΙΛΗΨΗ	5
RIASSUNTO	6
BEAR PROOF GARBAGE BIN COVERS IN NATIONAL PARKS	8
GREECE	8
<i>Installation of bear proof garbage bin covers in Northern Pindos National Park</i>	9
<i>Installation of bear proof garbage bin covers in Prespa National Park</i>	16
<i>Installation of bear proof garbage bin covers in Rodopi Mountain Range NP</i>	20
OTHER BEAR-PROOFING MEANS IN NATIONAL PARKS	22
ELECTRIC FENCES	22
GREECE	23
<i>Installation of electric fences in Prespes National Park</i>	23
<i>Installation of electric fences in Rodopi Mountain-range National Park</i>	25
ITALY.....	27
<i>Installation of electric fences in the Maiella National Park</i>	27

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 behaviour. 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 signing of the contract for PINDNP's metallic covers for the refuse containers (funded by OPTIESD) was signed on 25-08-2020 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 Bear proof containers. The results obtained showed that the container installed is effective in preventing access to bears, are easy to use by people of all ages and is also accepted by the company that manages waste collection.

On account of the container not being a solution applicable in the whole study area, due mainly to the specific requirements necessary for its installation, and after the effective use of the original cover, six (6) more metal shells, besides the prototype, financed by the OPTIESD 2014-2020 were installed in critical locations inviting people to use the containers inside these covers for «attractive to bears- waste disposal», rather than the unprotected ones. In 2022, the six bin covers were placed in different villages of Zagori Province at the North Pindos National Park where cases of frequent bear sightings were observed and using the information produced by Actions A1, A2 & C5.

On 20 July 2023, another contract for the procurement of fourteen (14) similar cover bins with few adjustments, financed by the LIFE ARCPROM project, was signed with a time framework of seven months for the implementation of it and the installation of ten (10), fully functional, covers in the Prespes National Park in April 2024 and four (4) in the North Pindos National Park.

The villages that were installed in PINDNP are Laista, Frangades, Flabourari and Vovoussa all within the Municipality of Zagori.

In PRESPNP the metal waste bin shells were installed in April 2024 in the areas of Pervali, Seltsa, Lefkona, Platy, Psarades, Krina, Pyli and Vrondero.

Besides the metal shells for the garbage bins, another effective measure that was chosen to be implemented in PRESPNP was the supply and distribution of electric fences to prevent bear damages. The electric fence is an effective measure to intercept bear induced damages in livestock, bees, crops and orchards. They can even be used in situations where food resources or garbage must not be easily accessible. Their effectiveness is strongly correlated to an, according to certain specifications, installation and experience has shown that is one of the most reliable and strong effective concrete measures.

The specifications for avoiding bear damage are the use of metal stakes 5 meters apart from each other, 4 rows of metal wire with a diameter of 2.5 mm for permanent protection and a durable 9-metal wired cord in a fence more versatile and easier to carry and handle for beekeepers, a high – voltage capacity central unit and a good earthing. The individual parts of the fence have been chosen in such a way as to give the producer self-reliance and to be able to use them effectively even in "hard" isolated environments (high altitudes, away from roads, electricity, etc). All other spare parts are chosen in order to ease the user in the installation and maintenance.

In PRESPNP, twenty-one (21) electric fences were purchased for distribution to local livestock farmers, beekeepers, and cultivators to prevent bear-related damages. The equipment was delivered to the

Management Unit (MU) of PRESPNP in April 2024 after three procurement processes, two of which were declared unsuccessful.

In the following period, the finalization of the administrative procedure for their allocation by NECCA administration was pending. This process was completed with decision No. 20413/23-07-2024, as amended and currently in force under decision No. 7617/10-03-2025.

The MU published the announcement for the distribution of the electric fences on August 8, 2024. In PRESPNP, 11 electric fences were allocated to bean cultivators (the administrative procedure is completed, but the distribution and installation are still pending, scheduled to take place in April 2025 after the completion of agricultural work and field sowing). Meanwhile, 10 electric fences will remain at the MU, with 9 designated for emergency situations and 1 for demonstration purposes (Action C5).

ΠΕΡΙΛΗΨΗ

Ο στόχος της Δράσης C7 είναι να ελαχιστοποιήσει τη σύγκρουση ανθρώπου-αρκούδας αποτρέποντας την πρόσβαση σε ανθρωπογενείς πηγές τροφής, ειδικά κοντά σε χωριά. Η αποτροπή της πρόσβασης των αρκούδων σε ανθρωπογενείς πηγές έχει θετική επίδραση βραχυπρόθεσμα, καθώς αποτρέπει την ανάπτυξη αρνητικών στάσεων των πολιτών απέναντι στις αρκούδες, αλλά και μακροπρόθεσμα, αποφεύγοντας το φαινόμενο του εθισμού.

Στην Ελλάδα, ο κύριος στόχος της Δράσης είναι η αποτροπή της πρόσβασης στα απορρίμματα, ένα διαδεδομένο πρόβλημα σε όλη την περιοχή εξάπλωσης της αρκούδας, του οποίου η λύση εξαρτάται σε μεγάλο βαθμό από το σύστημα διαχείρισης αποβλήτων και τη συμπεριφορά των ανθρώπων. Παρόλο που υπάρχουν διάφορα σχέδια κάδων ανθεκτικών στις αρκούδες, συχνά δεν είναι εύκολα προσβάσιμα στους ανθρώπους, γι' αυτό το προσωπικό του Εθνικού Πάρκου Βόρειας Πίνδου (ΕΠΒΠ) αποφάσισε να σχεδιάσει ένα νέο μοντέλο κάδου ανθεκτικού στις αρκούδες.

Η σύμβαση για την προμήθεια μεταλλικών καλυμμάτων κάδων απορριμμάτων του ΕΠΒΠ (χρηματοδοτούμενη από το ΕΠ ΤΑΑ) υπογράφηκε στις 25-08-2020 και στις 6 Αυγούστου 2021 το πρωτότυπο τέθηκε σε δοκιμή στο χωριό Δίκορφο του Δήμου Ζαγορίου. Παράλληλα, πραγματοποιήθηκαν στοχευμένες δράσεις ενημέρωσης που εξηγούσαν το πρόβλημα και τον τρόπο χρήσης των μη-ανοιγόμενων από αρκούδα κατασκευές κάδων. Τα αποτελέσματα έδειξαν ότι ο εγκατεστημένος κάδος είναι αποτελεσματικός στην αποτροπή πρόσβασης των αρκούδων, είναι εύκολος στη χρήση για ανθρώπους όλων των ηλικιών και είναι αποδεκτός από την εταιρεία που διαχειρίζεται τη συλλογή απορριμμάτων.

Λόγω του ότι το συγκεκριμένο κάλυμμα δεν αποτελεί λύση εφαρμόσιμη σε όλη την περιοχή μελέτης, κυρίως λόγω των ειδικών απαιτήσεων εγκατάστασής του, και μετά τη δοκιμή του αρχικού καλύμματος, προγραμματίστηκε η εγκατάσταση έξι (6) επιπλέον μεταλλικών καλυμμάτων, πέραν του πρωτοτύπου, χρηματοδοτούμενα από το ΕΠ ΤΑΑ 2014-2020, σε κρίσιμες τοποθεσίες, ενθαρρύνοντας τους πολίτες να χρησιμοποιούν τους προστατευμένους κάδους για τη διάθεση απορριμμάτων που προσελκύουν τις αρκούδες, αντί για τους μη προστατευμένους. Το 2022, τα έξι καλύμματα τοποθετήθηκαν σε διάφορα χωριά του Ζαγορίου, στο Εθνικό Πάρκο Βόρειας Πίνδου, σε περιοχές με συχνές εμφανίσεις αρκούδων, χρησιμοποιώντας πληροφορίες από τις Δράσεις A1, A2 & C5.

Στις 20 Ιουλίου 2023, υπογράφηκε νέα σύμβαση για την προμήθεια δεκατεσσάρων (14) παρόμοιων καλυμμάτων κάδων, με μερικές τροποποιήσεις, χρηματοδοτούμενη από το έργο LIFE ARCPROM, με χρονικό ορίζοντα επτά μηνών για την υλοποίησή τους. Δέκα (10) πλήρως λειτουργικά καλύμματα θα εγκατασταθούν στο Εθνικό Πάρκο Πρεσπών (ΕΠαΠ) τον Απρίλιο του 2024 και τέσσερα (4) στο Εθνικό Πάρκο Βόρειας Πίνδου.

Τα χωριά όπου εγκαταστάθηκαν στο ΕΠΒΠ είναι η Λάιστα, οι Φραγκάδες, το Φλαμπουράρι και η Βωβούσα, όλα εντός του Δήμου Ζαγορίου.

Στο Εθνικό Πάρκο Πρεσπών, τα μεταλλικά καλύμματα των κάδων απορριμμάτων εγκαταστάθηκαν τον Απρίλιο του 2024 στις περιοχές Περβάλι, Σέλτσα, Λεύκωνας, Πλατύ, Ψαράδες, Κρίνα, Πύλη και Βροντερό.

Εκτός από τα μεταλλικά καλύμματα των κάδων απορριμμάτων, ένα ακόμα αποτελεσματικό μέτρο που επιλέχθηκε για εφαρμογή στο ΕΠΑΠ είναι η προμήθεια και διανομή ηλεκτρικών φρακτών για την αποτροπή ζημιών από αρκούδες. Οι ηλεκτρικοί φράκτες αποτελούν ένα αποτελεσματικό μέτρο για την αποτροπή ζημιών που προκαλούνται από αρκούδες σε ζώα, μελίτσια, καλλιέργειες και οπωρώνες. Μπορούν επίσης να χρησιμοποιηθούν σε περιπτώσεις όπου οι πηγές τροφής ή τα απορρίμματα δεν πρέπει να είναι εύκολα προσβάσιμα. Η αποτελεσματικότητά τους συνδέεται στενά με την ορθή εγκατάσταση, σύμφωνα με συγκεκριμένες προδιαγραφές, και η εμπειρία έχει δείξει ότι αποτελεί ένα από τα πιο αξιόπιστα και αποτελεσματικά μέτρα προστασίας.

Οι προδιαγραφές για την αποτροπή ζημιών από αρκούδες περιλαμβάνουν τη χρήση μεταλλικών πασσάλων σε απόσταση 5 μέτρων μεταξύ τους, 4 σειρές μεταλλικού σύρματος διαμέτρου 2,5 mm για μόνιμη προστασία και ένα ανθεκτικό καλώδιο 9-μεταλλικών συρμάτων σε έναν φράχτη πιο ευέλικτο και εύκολο στη μεταφορά για τους μελισσοκόμους. Επιπλέον, απαιτείται κεντρική μονάδα υψηλής τάσης και καλή γείωση. Τα επιμέρους μέρη του φράχτη έχουν επιλεγεί ώστε να παρέχουν στον παραγωγό αυτονομία και να μπορούν να χρησιμοποιηθούν αποτελεσματικά ακόμα και σε απομονωμένες περιοχές (μεγάλο υψόμετρο, μακριά από δρόμους, χωρίς παροχή ρεύματος κ.λπ.). Όλα τα ανταλλακτικά έχουν επιλεγεί ώστε να διευκολύνουν τον χρήστη στην εγκατάσταση και συντήρηση.

Στο Εθνικό Πάρκο Πρεσπών, αγοράστηκαν είκοσι μία (21) ηλεκτρικοί φράκτες για διανομή σε τοπικούς κτηνοτρόφους, μελισσοκόμους και καλλιεργητές, με σκοπό την αποτροπή ζημιών από αρκούδες. Ο εξοπλισμός παραδόθηκε στη Μονάδα Διαχείρισης (ΜΔ) του ΕΠ Πρεσπών τον Απρίλιο του 2024, μετά από τρεις διαγωνιστικές διαδικασίες, εκ των οποίων οι δύο κηρύχθηκαν άγονες.

Στη συνέχεια, εκκρεμούσε η οριστικοποίηση της διοικητικής διαδικασίας για την παραχώρησή τους από τη διοίκηση του ΟΦΥΠΕΚΑ. Η διαδικασία αυτή ολοκληρώθηκε με την απόφαση υπ' αριθ. 20413/23-07-2024, όπως τροποποιήθηκε και ισχύει με την υπ' αριθ. 7617/10-03-2025.

Η ΜΔ δημοσίευσε την ανακοίνωση για τη διανομή των ηλεκτρικών φρακτών στις 8 Αυγούστου 2024. Στο ΕΠ Πρεσπών, 11 ηλεκτρικές περιφράξεις παραχωρήθηκαν σε καλλιεργητές φασολιών (η διοικητική διαδικασία έχει ολοκληρωθεί, αλλά η διανομή και εγκατάστασή τους εκκρεμεί και έχει προγραμματιστεί για τον Απρίλιο του 2025, μετά την ολοκλήρωση των καλλιεργητικών εργασιών και της σποράς των χωραφιών). Παράλληλα, 10 ηλεκτρικοί φράκτες θα παραμείνουν στη ΜΔ, εκ των οποίων 9 προορίζονται για καταστάσεις έκτακτης ανάγκης και 1 για σκοπούς επίδειξης (Δράση C5).

RIASSUNTO

L'obiettivo dell'Azione C7 è minimizzare il conflitto tra esseri umani e orsi impedendo l'accesso alle fonti di cibo di origine antropica, specialmente nelle vicinanze dei villaggi. Prevenire l'accesso degli orsi a queste fonti ha un effetto positivo a breve termine, evitando l'insorgere di atteggiamenti negativi nei confronti degli orsi da parte dei cittadini, ma anche a lungo termine, prevenendo il fenomeno dell'abituazione.

In Grecia, l'obiettivo principale dell'Azione è 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 dal comportamento delle persone. Sebbene esistano diversi modelli di bidoni anti-orso, spesso non sono facilmente accessibili alle persone, motivo per cui lo staff del Parco Nazionale del Pindo Settentrionale ha deciso di progettare un nuovo modello di contenitore anti-orso.

Il contratto per le coperture metalliche dei contenitori per rifiuti del PINDNP (finanziato da OPTIESD) è stato firmato il 25/08/2020 e il 6 agosto 2021 il prototipo è stato testato nel villaggio di Dikorfo, nel comune di Zagori. Contemporaneamente, sono state svolte attività di comunicazione mirate per spiegare il problema e il corretto utilizzo dei contenitori anti-orso. I risultati ottenuti hanno dimostrato che il contenitore installato è efficace nel prevenire l'accesso agli orsi, è di facile utilizzo per persone di tutte le età ed è stato anche accettato dall'azienda che gestisce la raccolta dei rifiuti.

Poiché il contenitore non rappresenta una soluzione applicabile all'intera area di studio, principalmente a causa dei requisiti specifici necessari per la sua installazione, e dopo l'uso efficace della copertura originale, è stata pianificata l'installazione di sei (6) ulteriori coperture metalliche, oltre al prototipo, finanziate dal programma OPTIESD 2014-2020. Queste coperture sono state posizionate in luoghi critici per invitare le persone a utilizzare i contenitori protetti per lo smaltimento dei rifiuti attrattivi per gli orsi, piuttosto che quelli non protetti. Nel 2022, le sei coperture per bidoni sono state installate in diversi villaggi della provincia di Zagori, all'interno del Parco Nazionale del Pindo Settentrionale, in aree dove erano stati osservati frequenti avvistamenti di orsi, utilizzando i dati raccolti dalle Azioni A1, A2 e C5.

Il 20 luglio 2023 è stato firmato un altro contratto per l'acquisto di quattordici (14) coperture simili, con alcune modifiche, finanziate dal progetto LIFE ARCPROM. Il termine per l'implementazione del contratto è di sette mesi, con l'installazione di dieci (10) coperture completamente funzionali nel Parco Nazionale di Prespa ad aprile 2024 e quattro (4) nel Parco Nazionale del Pindo Settentrionale.

I villaggi in cui le coperture sono state installate nel PINDNP sono Laista, Frangades, Flavourari e Vovousa, tutti all'interno del Comune di Zagori.

Nel PRESPNP, le coperture metalliche per i bidoni dei rifiuti sono state installate ad aprile 2024 nelle aree di Pervali, Seltsa, Lefkona, Platy, Psarades, Krina, Pyli e Vrondero.

Oltre alle coperture metalliche per i bidoni della spazzatura, un'altra misura efficace implementata nel PRESPNP è stata la fornitura e distribuzione di recinti elettrici per prevenire danni causati dagli orsi. Il recinto elettrico è un sistema efficace per limitare i danni provocati dagli orsi al bestiame, agli alveari, alle coltivazioni e ai frutteti. Può essere utilizzato anche in situazioni in cui le risorse alimentari o i rifiuti non devono essere facilmente accessibili. La sua efficacia dipende fortemente dall'installazione conforme a specifiche tecniche, e l'esperienza ha dimostrato che si tratta di una delle misure più affidabili e concrete.

Le specifiche per prevenire i danni causati dagli orsi includono l'uso di pali metallici distanziati di 5 metri l'uno dall'altro, 4 file di filo metallico con diametro di 2,5 mm per una protezione permanente e un cavo resistente a 9 fili metallici per una recinzione più versatile, facile da trasportare e maneggiare per gli apicoltori. Inoltre, è prevista l'installazione di un'unità centrale ad alta tensione e un buon sistema di messa a terra. Le singole parti del recinto sono state selezionate per garantire l'autosufficienza del produttore e il loro utilizzo anche in ambienti difficili e isolati (altitudini elevate, lontano da strade e rete elettrica, ecc.). Tutti gli altri pezzi di ricambio sono stati scelti per facilitare l'installazione e la manutenzione.

Nel PRESPNP, sono state acquistate ventuno (21) recinzioni elettrificate per la distribuzione agli allevatori, apicoltori e coltivatori locali, al fine di prevenire danni causati dagli orsi. L'attrezzatura è stata consegnata all'Unità di Gestione (MU) del PRESPNP nell'aprile 2024, dopo tre procedure di gara, due delle quali dichiarate deserte.

Nel periodo successivo, era in sospeso la finalizzazione della procedura amministrativa per la loro assegnazione da parte dell'amministrazione di NECCA. Questo processo è stato completato con la decisione n. 20413/23-07-2024, come modificata e attualmente in vigore con la decisione n. 7617/10-03-2025.

L'8 agosto 2024, la MU ha pubblicato l'annuncio per la distribuzione delle recinzioni elettrificate. Nel PRESPNP, 11 recinzioni elettrificate sono state assegnate ai coltivatori di fagioli (la procedura amministrativa è completata, ma la distribuzione e l'installazione sono ancora in sospeso e sono previste per aprile 2025, dopo il completamento delle operazioni agricole e della semina dei campi).

Nel frattempo, 10 recinzioni elettrificate rimarranno presso la MU, di cui 9 destinate a situazioni di emergenza e 1 a scopo dimostrativo (Azione C5).

BEAR PROOF GARBAGE BIN COVERS IN NATIONAL PARKS

Greece

Background

Research and field observations indicate that bear-proof garbage bins can significantly reduce human–bear conflicts. These containers are designed with secure locking mechanisms and durable construction, making it difficult for bears to access food waste. When properly deployed and maintained, they help prevent bears from becoming habituated to human food sources, thereby decreasing the frequency of bear-related incidents and property damage. Their overall effectiveness, however, depends on proper placement, regular upkeep, and community compliance with waste management practices. In many areas, the adoption of bear-resistant waste containers has been an important element of integrated wildlife management strategies, enhancing both public safety and the natural behavior of bears. To solve the problem of garbage bins “attacked” by bears and hence arise the possibility of conflicts in two National Parks in Greece, Northern Pindos and Prespa NP, a new user-friendly metal bear proof shell in order to protect conventional garbage bins was used (Fig 1-4).



Figures 1-4. Photos of the construction process of the meta shell garbage bins

The size of one metal shell is sufficient to fit a 1100 lt waste bin. The construction allows the user to access the bin (whose cap has been removed while fitted inside the shell) through an expert mechanism with foot pressure which opens the specially designed hatch. This mechanism is covered and positioned in such a way as to prevent accidental activation by a bear. After the foot press of the mechanism the hatch returns to its original position slowly to avoid injury to the user. There is also a handle-rail on the front (perpendicular to the ground) for the user to use if desired. The opening of the shell in order to retrieve the bin that is inside is placed the side of the shell that makes it easier for the waste collector to withdraw the bin without hindering its rolling on wheels. The door opens using a special system (electric panel type lock with a common key for all corresponding structures) to exclude accidental opening by bears or people. The construction is electro-welded for more strength and endurance and has two removable hoops for easy transport.

On 20 July 2023 another contract for the procurement of fourteen (14) similar cover bins was signed, with a time framework of seven months for the implementation of it and the installation of ten (10), fully functional, covers in the Prespes National Park and four (4) in the North Pindos National Park. The Action was finalised in 2024. The contract was prolonged until 20 April 2024 due to harsh weather conditions in Prespa NP area. The low temperatures didn't allow the installation of the concrete bases that were necessary for stabilizing the cover bins.

Installation of bear proof garbage bin covers in Northern Pindos National Park

In Northern Pindos NP, 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 Units 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. In 2021, the prototype was put to test in the village of Dikorfo (Fig. 5-6). Up to now, while the problematic bear has visited the village and opened the other unprotected garbage bins many times, the cover was not breached, making its application successful. It is so successful that the inhabitants of the village wanted more to be installed.



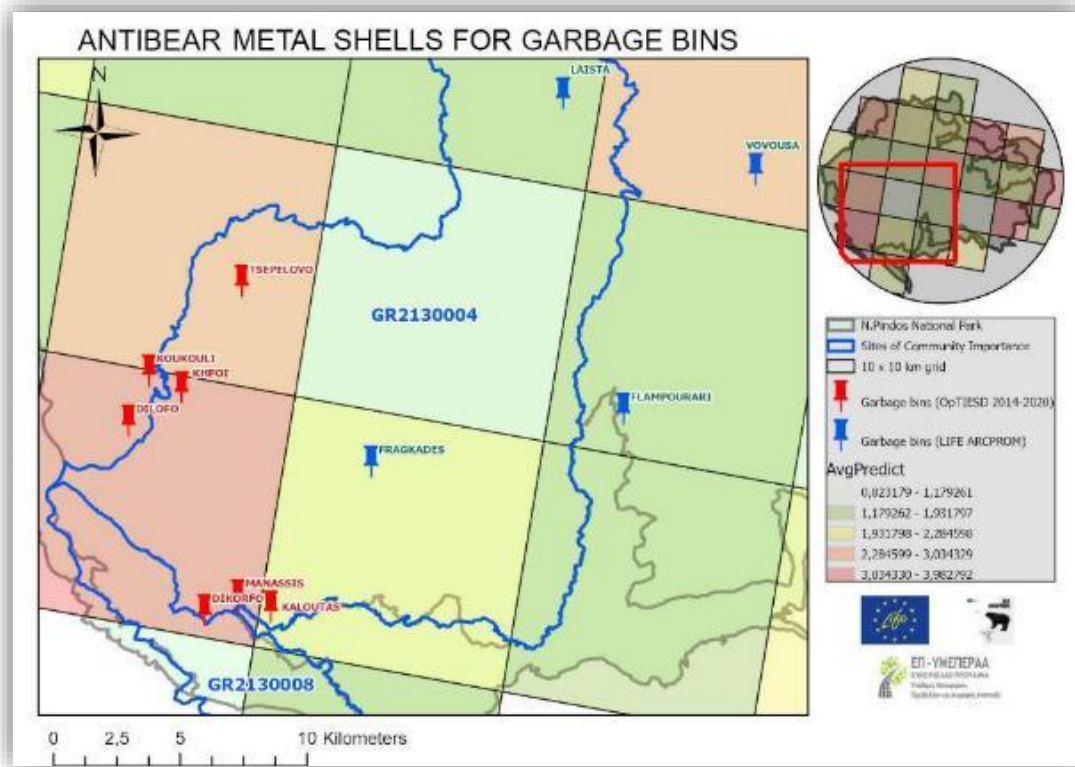
Figures 5-6. Bear proof metal shell protecting a garbage bin installed at Dikorfo village

After waiting to see how some parts of the construction will withstand the harsh winter conditions, another six covers were installed in May 2022 (Fig. 3-8). Using the new data acquired from Action A1, A2 & C5 and the map of Relative abundance that was produced, six other hot spots were determined and in 2022 the



Figures 7-8. Left: A bear visiting the conventional garbage bin in Dikorfo, the trigger to take action on using the bear proofing metal shell. Right: the installation of the bear proof metal shell for the garbage bin as a solution

remaining 6 covers financed by OPTIEST were installed in the villages of Kipoi, Koukouli, Tsepelovo, Manassis, Kaloutas and Dilofo (Fig. 7-14). It was not possible to use the covers to protect the garbage bins in the whole protected area of N. Pindos, since it is too costly and also affects the time needed by the waste collection services. On 2020 the price of one metal shell costed 1.120€/cover and on 2023, 2.194€/cover. The rise of the cost is mainly due to rise in metal prices something that can be attributed to several interrelated factors (covid-19, supply chain disruption or/and rising energy costs).



Map 1. Map showing the installation locations of the bear proof metal shells for garbage bins purchased through installed in N.Pindos National Park. The map also displays a hotspot evaluation of areas with garbage feeding issues, with red areas indicating higher levels of concern.

Location	Cover bins Quantity	Coordinates N (WGS84)	Coordinates E (WGS84)
Vovousa	1	39.930345°	21.049597°
Frangades	1	39.820194°	20.883646°
Laista	1	39.965513°	20.954135°
Flavourari	1	39.847388°	20.990953°
Total	4		

The bin covers and their exact location are shown in Map 1. Photos of the installation are given below:



Figure 9. Another installed bear proof metal shell cover in Dilofo village



Figure 10. Installation of a bear proof metal shell at Kaloutas village



Figure 11. Installation of a bear proof metal shell at Kipi village



Figure 12. Installation of a bear proof metal shell at Koukouli village



Figure 13. Installation of a bear proof metal shell at Manassis village



Figure 14. Installation of a bear proof metal shell at Tsepelovo village

Immediately after the installation of the covers, the residents of the settlements were fully informed about their role and function. In addition to this initial approach, the National Park rangers, during their frequent patrols in the area, constantly tried to encourage residents and visitors to throw their waste in the specific bins, reducing, as possible, bear visits in the areas. On the covers, a sign was put that explained the operation and the need of such kind of structure, in Greek and in English.

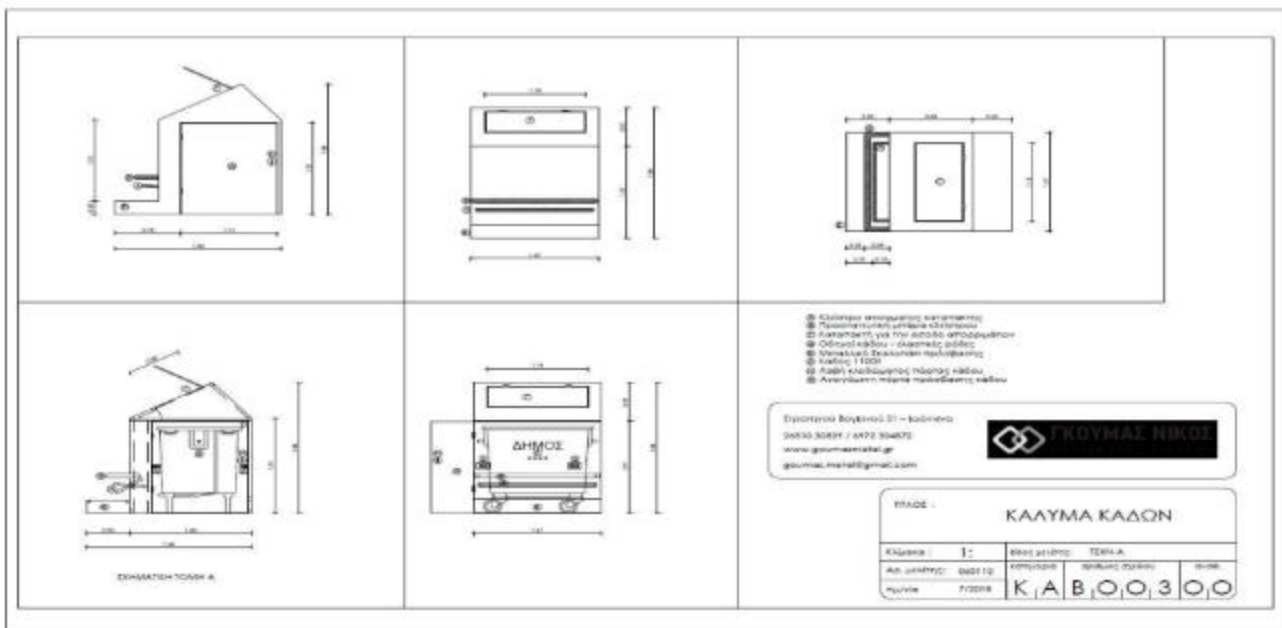
“The present structure was designed and installed by the Northern Pindos National Park Management Unit as a part of a pilot program to create a structure that will cover the existing waste bins, creating an obstacle to the bear's access to the bin and its contents. The aim is to gradually change the behavior of bears, who, if they do not have easy access in left overs, are expected to look elsewhere for food and move away from settlements. Please try to throw in this bin:

- Organic waste (food leftovers), especially during periods when there are many people in the settlement.
- Do not leave trash bags out of the bin.

Step on the pedal and the hatch will open to dump the trash, step away and the hatch will slowly close BY ITSELF for safety.”

Despite constant pressure on the residents for the exclusive use of the specific waste bins, this unfortunately did not happen in some cases. Despite the resident’s initial positive response, other conventional uncovered bins were also used. This may be due to the fact of convenience (closer to their houses) or the lack of bear visits in the area during 2022, since it was a year of full growth and the food was abundant all over the place. It is evident, that except the “bear factor”, the “human factor” also needs a lot of training. The final overall results obtained showed that the covers installed are effective in preventing access to bears, are easy to use by people of all ages and are also accepted by the company that manages the waste collection.

Since there was an amount of 10.000 € remaining in Pindos NP’s budget, it was decided to purchase four (4) more covers in the framework of the implementation of LIFE ARCPROM. The installation of the new cover bins decided to be in different areas in order to avoid any kind of double funding but still in “hot-spot” areas according to the results of A1 action. The number of the cover bins that were purchased had been minimized to four (4) because, as said before, of the rise of the iron prices since the first tender, due to the Covid situation and the war in Ukraine. There had been also some small modifications in the original prototype, in order not to change the outcome, but to make the whole construction a bit cheaper.



Scheme 1. Initial blueprints of the bin cover

The adjustments had to do mainly with the iron prices that almost doubled during the COVID Pandemic, as well with some additions like a handle and an extra bolt to secure the side doors so they will become more user friendly to the garbage collection personnel in order not to leave them unlocked. The price for 1 metal

shell was estimated to 2.194,8€/bin. Finally, two (2) reflective strips have been added and were used for identification at night on the outer corners.



Figure 15. Modifications in the original scheme. Left above: the extra handle for better grip. Left bottom: the mechanism for the foot handle. Right the reflective strips and the lock

The villages that were installed in PINDNP are Laista, Frangades, Flabourari and Vovousa all within the Municipality of Zagori. All the places of the metal shells in PINDNP are given in the map below.



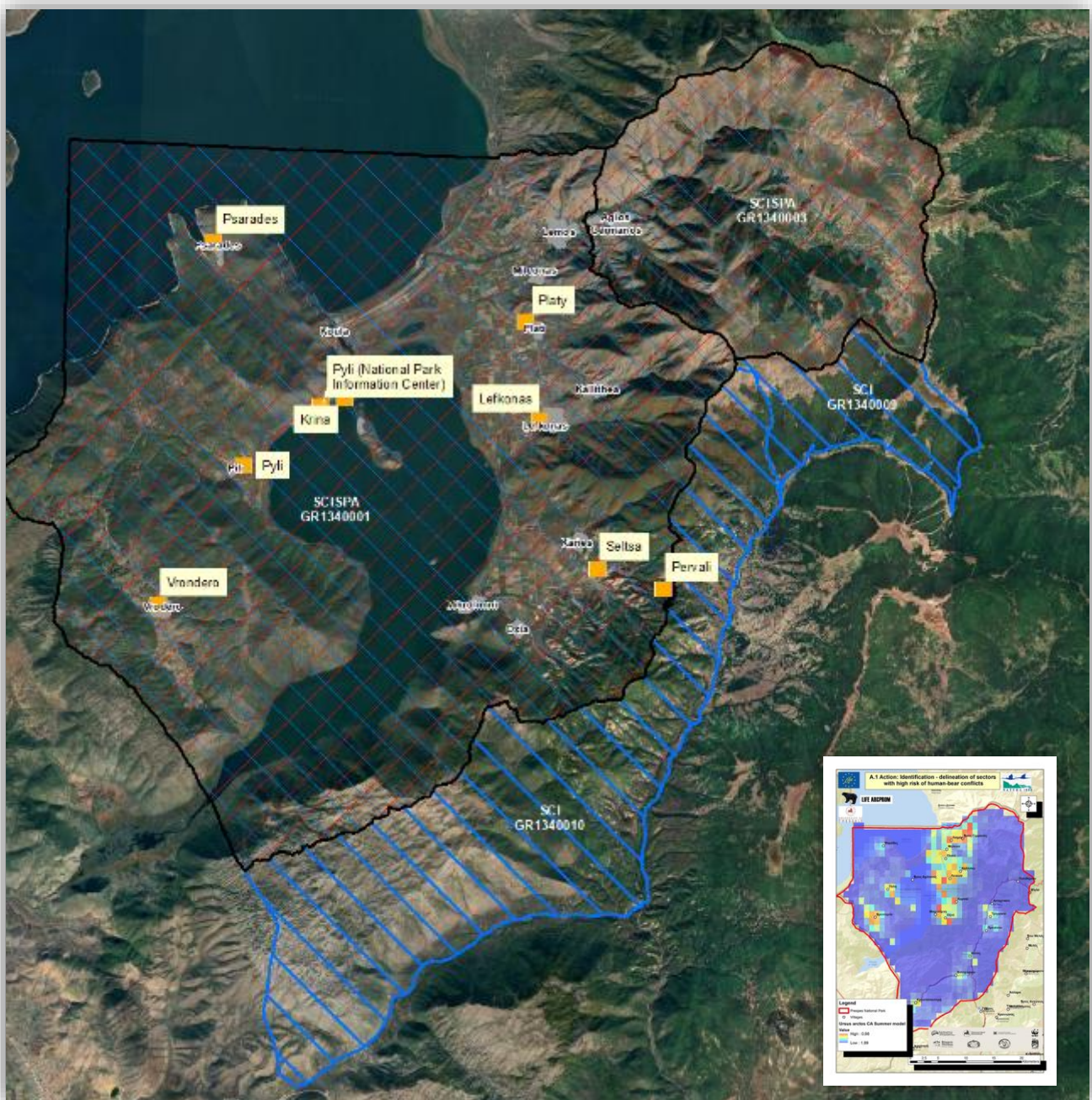
Figure 16. The cover in Frangades village in North Pindos NP ©PINDNP/NECCA

Installation of bear proof garbage bin covers in Prespa National Park

In PRESPNP the metal waste bin shells were installed in April 2024 in the areas of Pervali, Seltsa, Lefkona, Platy, Psarades, Krina, Pyli and Vrondero

Besides the metal shells for the garbage bins, another effective measure that was chosen to be implemented in PRESPNP is the supply and distribution of electric fences to prevent bear damages. The electric fence is an effective measure to intercept bear induced damages in livestock, bees, crops and orchards. They can even be used in situations where food resources or garbage must not be easily accessible. Their effectiveness is strongly correlated to an, according to certain specifications, installation and experience has shown that is one of the most reliable and strong effective concrete measures.

All the places of the metal shells in PRESPNP are depicted in the map below.



Map 2. Map showing the installation locations of the bear-proof metal shells for garbage bins, purchased and installed in Prespa National Park. In the lower right corner, the map displays the hot-spot areas where bear-related conflicts have been reported.

All the locations of the metal shells in PRESPNP are presented in the table below.

Location	Cover bins Quantity	Coordinates (WGS84) N	Coordinates (WGS84) E
Pyli (National Park Information Center)	2	40.79229°	21.06639°
Seltsa	1	40.75504°	21.15629°
Lefkonas	1	40.79049°	21.13643°
Platy	1	40.81437°	21.13102°
Krina	1	40.79425°	21.07407°
Pyli	1	40.77739°	21.04243°
Psarades	1	40.83123°	21.03053°
Pervali	1	40.750626°	21.177401°
Vrondero	1	40.742907°	21.01676°
Total	10		

Photographs of bear proof garbage bin metallic shells installation sites (orange squares in Map 2) in Prespa NP



Figure 17. Installation of two bear proof metal shells at Pyli (National Park's Information Center)



Figure 18. Installation of a bear proof metal shell at Seltsa village



Figure 19. Installation of a bear proof metal shell at Lefkonas village



Figure 20. Installation of a bear proof metal shell at Platy village



Figure 21. Installation of a bear proof metal shell at Krina village



Figure 22. Installation of a bear proof metal shell at Pyli village



Figure 23. Installation of a bear proof metal shell at Psarades village



Figure 24. Installation of a bear proof metal shell at Pervali village

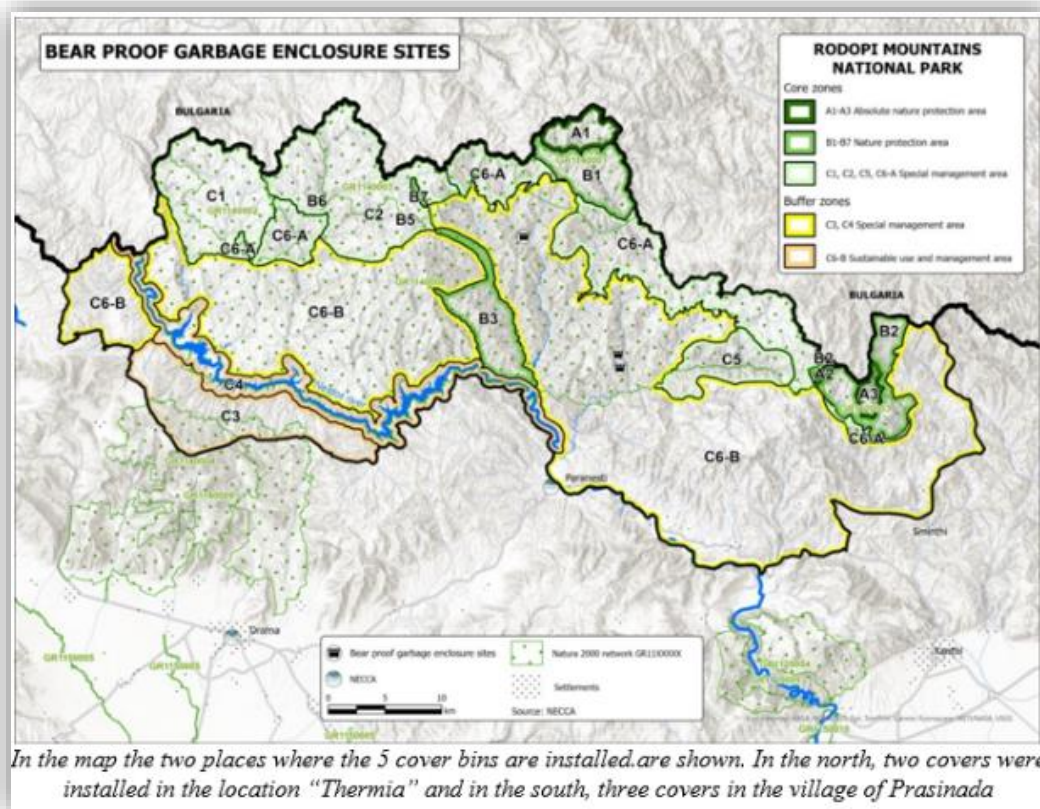


Figure 25. Installation of a bear proof metal shell at Vronero village

Installation of bear proof garbage bin covers in Rodopi Mountain Range NP

In RMNP, although no such procurement was planned for metal waste bin shells, the Management Unit replicated the use of the measure and purchased and installed five (5) bear proof metallic covers funded by the program OpTIESD 2014-2020. The specifications of the covers were according to the ones installed in PINDNP including the new adjustments (the new handle and the extra bolt to secure the side doors).

The covers were installed in two different places inside the Rodopi Mountain Range National Park. Two (2) of them were installed in the location "Thermia" where incidents with bears foraging from garbage were recorded the previous years and three (3) of them installed inside the village "Prasinada", where in 2023 a bear was recorded causing trouble inside the village. RMNP's cover's installation is seen in the map below.





Two of the bins are installed in the location "Thermia" that incidents with bears foraging from garbage were recorded the previous years

Figures 26-27. Metal shell garbage bins installed in RMNP

OTHER BEAR-PROOFING MEANS IN NATIONAL PARKS

ELECTRIC FENCES

Background

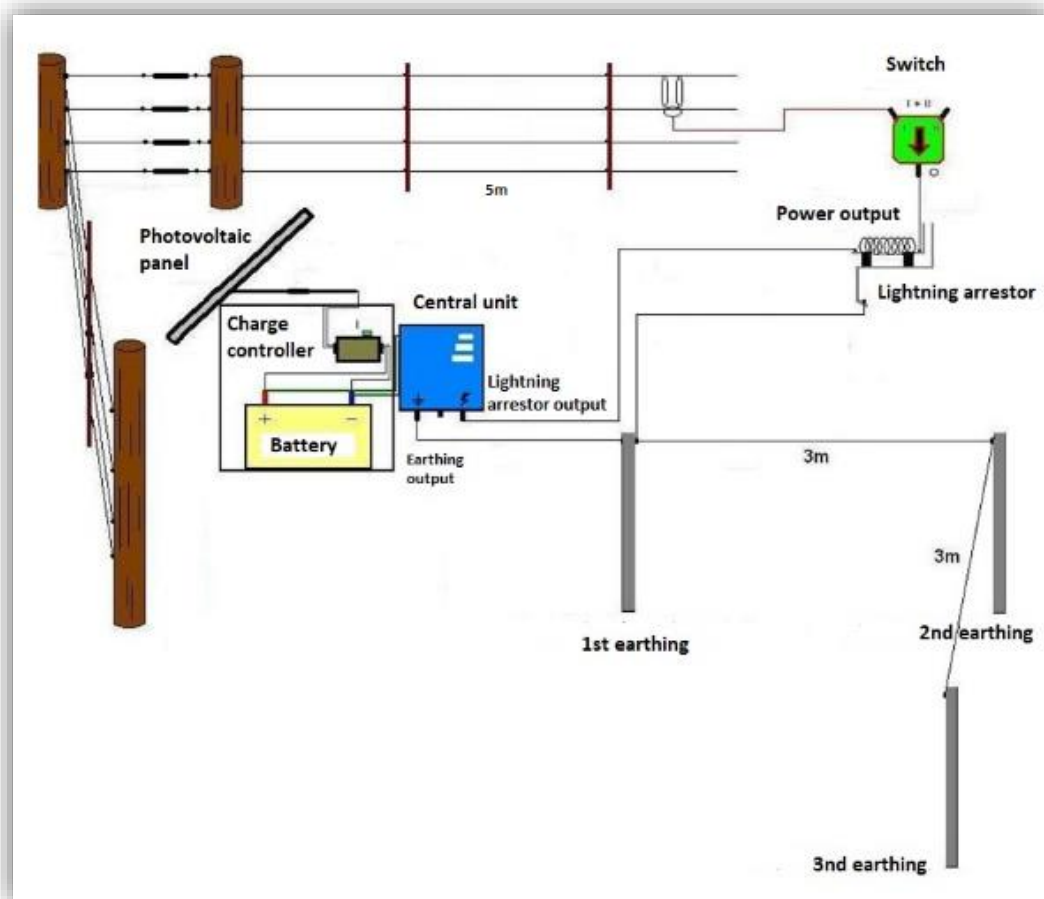
Electric fences have proven to be an effective tool for protecting producers from bear attacks across agriculture, livestock, and apiaries. When properly installed and maintained, these systems act as a reliable deterrent by delivering a harmless but noticeable shock that discourages bears from approaching. In agricultural settings, electric fences help safeguard crops from bear foraging, thereby minimizing yield losses. For livestock producers, the fences protect animals by establishing a clear boundary that prevents bears from entering enclosures, reducing stress and the risk of injury to both animals and humans. Similarly, in apiaries, electric fences contribute to maintaining a safe environment for beehives, deterring bears from interfering with pollination and honey production. Overall, the strategic use of electric fences not only mitigates the risk of direct damage but also promotes a coexistence model that benefits both wildlife conservation and the livelihoods of rural communities.

Through the implementation of actions A1, A2, C5, and C9 of the LIFE ARCPROM project, conflict “hot-spot” areas were identified across all National Parks. In multiple instances of bear attacks, the Bear Emergency Team (BET) from the National Parks, in collaboration with Callisto, assessed the situation and recommended the use of electric fences. In some cases, e-fences were also provided directly to producers as a preventive measure to mitigate further conflicts.



Figure 28-29. Bear damage in an apiary in RMNP

The specifications for avoiding bear damage are the use of metal stakes 5 meters apart from each other, 4 rows of metal wire with a diameter of 2.5 mm for permanent protection and a durable 9-metal wired cord in a fence more versatile and easier to carry and handle for beekeepers, a high – voltage capacity central unit and a good earthing. The individual parts of the fence have been chosen in such a way as to give the producer self-reliance and to be able to use them effectively even in "hard" isolated environments (high altitudes, away from roads, electricity, etc). All other spare parts are chosen in order to ease the user in the installation and maintenance.

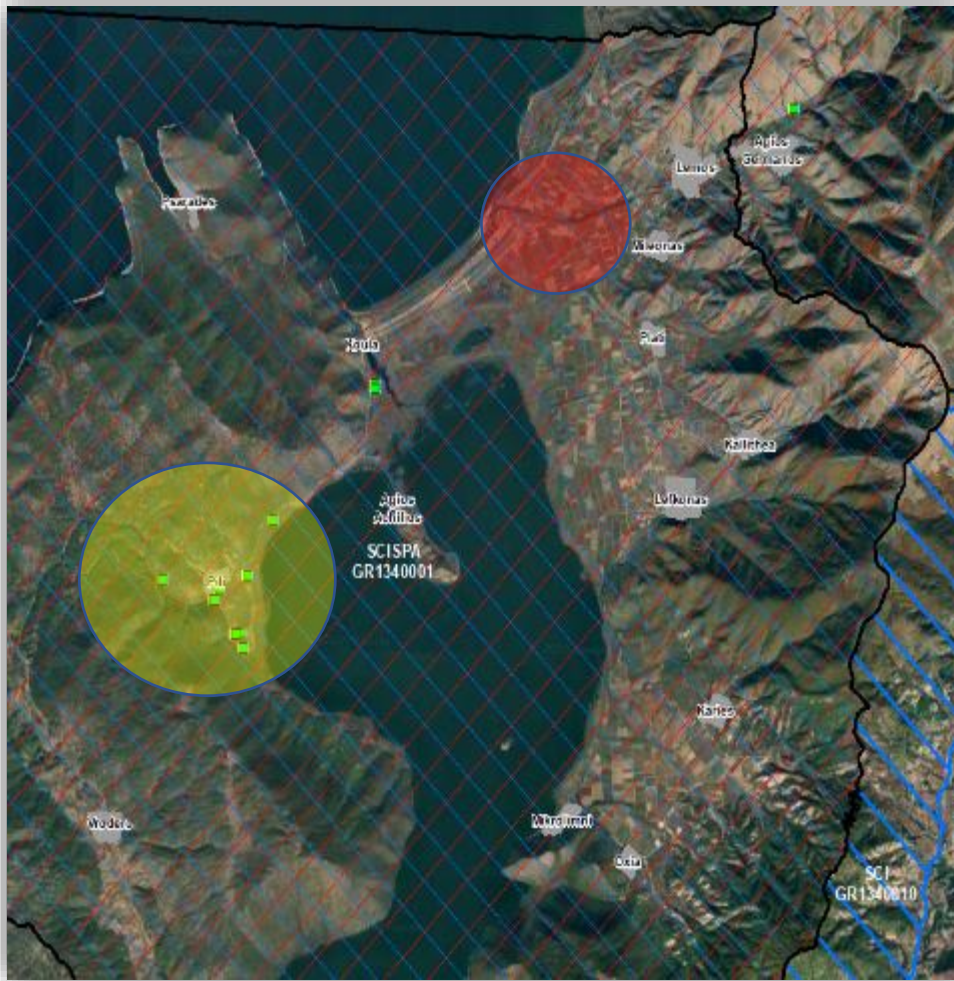


Scheme 2. Diagram of an e-fence installation taken from the technical user manual © E. Grigoriadou

Greece

Installation of electric fences in Prespes National Park

In PRESNP, twenty-one (21) electric fences were purchased for their distribution in producers with bear related damages (livestock, apiarys, crops) as a protection measure. The MU published the announcement for the distribution of the electric fences on the 8th of August. In PRESNP, 11 electric fences were allocated to bean crop cultivators as is they have the major conflict with the bear. Tthe administrative procedure for giving the e-fences is completed, but the distribution and installation is going to take place in April 2025 after the completion of agricultural work and field sowing. The crop owners have already stated the locations where the e/fences are going to be installed (see Map 3). This is one of the two main hot-spot areas according to the results of A1 action. Meanwhile, 10 electric fences will remain at the MU, with 9 designated for emergency situations and 1 for demonstration purposes (Action C5).



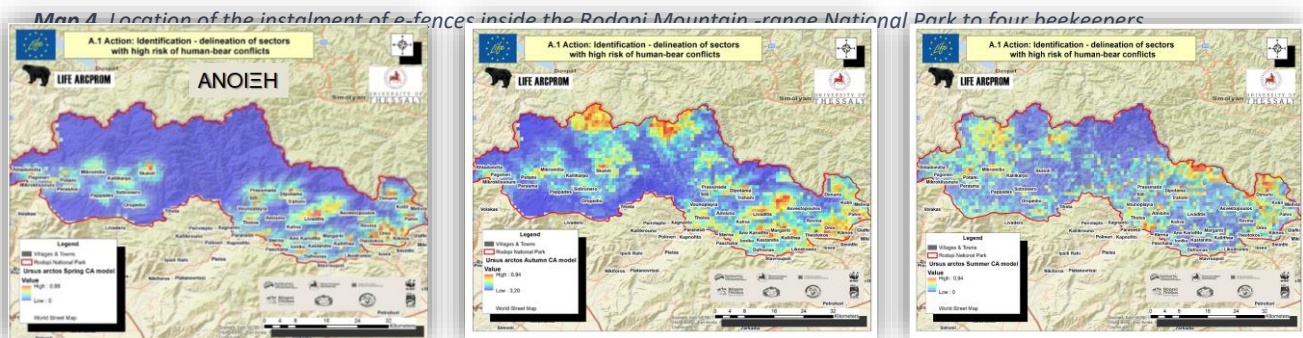
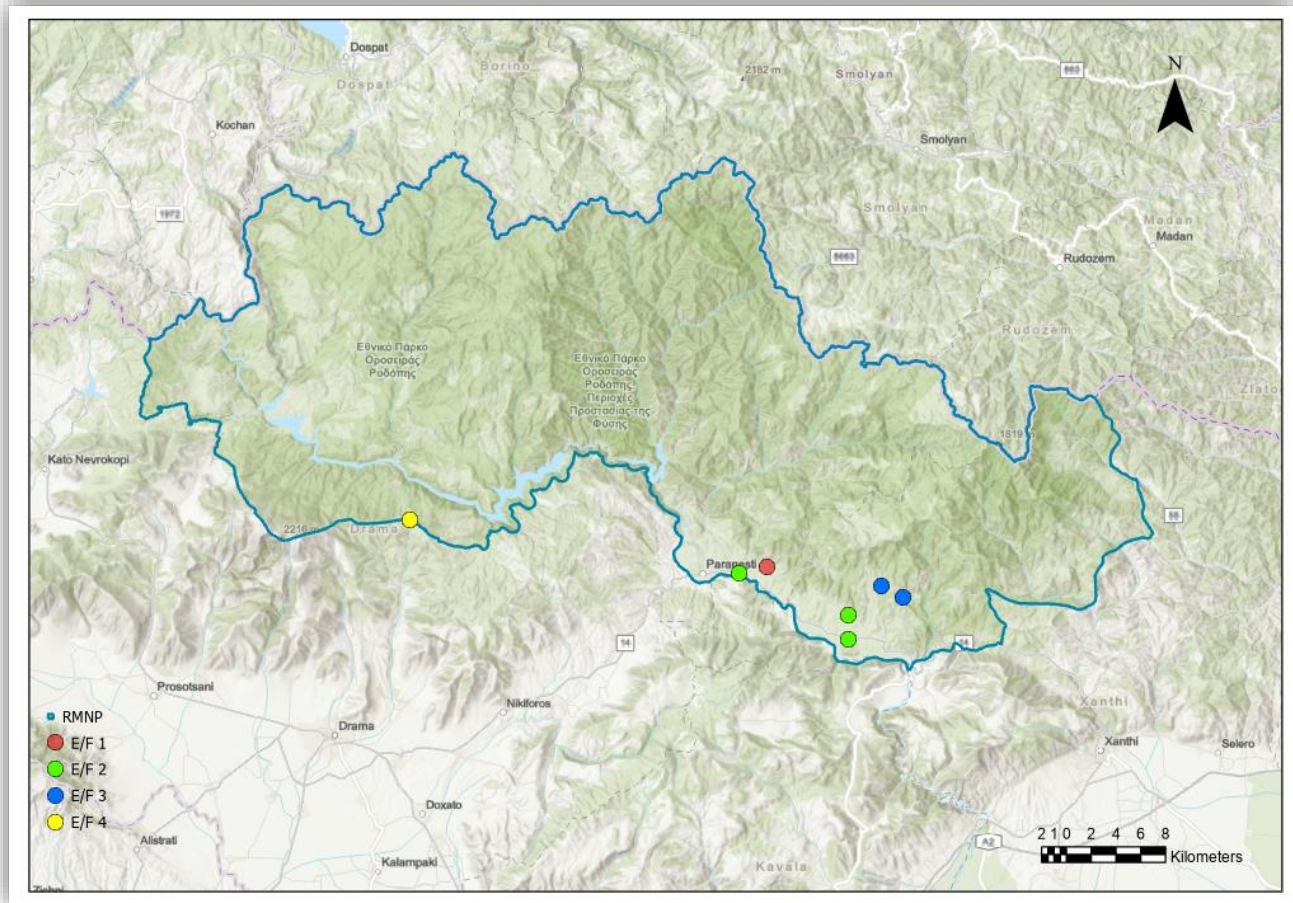
Map 3. All the locations where the electric fences are going to be installed in PRESPNP

All the locations of the 11 electric fences in PRESPNP are presented in the table below.

Location	Quantity	Coordinates (WGS84) N	Coordinates (WGS84) E
Koula	2	40.804849°	21.073012°
		40.804153°	21.073042°
Agios Germanos	1	40.775549°	21.040345°
Pyli	8	40.76758°	21.045886°
		40.7696°	21.045311°
		40.845443°	21.162609°
		40.77655°	21.027844°
		40.785423°	21.051555°
		40.777712°	21.0464°
		40.774099°	21.039155°
		40.769351°	21.044324°
Total	11		

Installation of electric fences in Rodopi Mountain-range National Park

In 2021, four (4) electric fences were purchased for Rodopi Mountain-range National Park (RMNP), primarily for demonstration purposes. However, due to high demand resulting from bear-related damages to apiaries, these fences were allocated to beekeepers operating within the National Park who had experienced losses. As a result, they were installed at seven (7) locations affected by bear activity (see Map 4). The distribution of the e-fence and their distribution according to the “hot-spot” areas of conflict within RMNP.



Map 5-7. "Hot-spot" areas of conflict within RMNP: Left - conflicts in spring, Middle - conflicts in summer, Right - conflicts in autumn.



Figures 30-31. Installation of e-fences at Rodopi Mountain Range National Park

RMNP has produced a manual on the installation of electric fences to assist beekeepers. The following diagram is included in the manual and illustrates the layout of the installation.

All the locations of the e-fence in RMNP are presented in the table below

E-fence code	No of e-fences	Coordinates (WGS84) N	Coordinates (WGS84) E
E/F 1	1	41.271447°	24.564047°
E/F 2	1	41.21809°	24.641693°
E/F 2		41.235431°	24.641927°
E/F 3	1	41.266536°	24.537119°
E/F 3		41.256722°	24.673333°
E/F 3		41.248833°	24.694028°
E/F 4	1	41.306467°	24.219683°
Total	4		

Installation of electric fences in the Maiella National Park

Background

Barnyard animals availability is one of the major issues affecting human-bear coexistence in the Maiella National Park. Given the high availability of a such easy-to-access remunerative food, some bears choose to feed on barnyard animals entering inside villages and becoming problematic bears. This problem is a stable issue for MNP since 2014 and, after a couple of years of preliminary actions to assess chicken coops availability and the problematic bears behavior, a plan was designed to bear-proof the highest number of chicken coops in the villages where the problematic bear F1.99 used to roam (see C7 report of activity 2021 for more details). During 2021, Action C7 consisted thus in the implementation of actions aimed at achieving the goals of this plan.

In 2021 the female F1.99 was filmed in July inside damaged chicken coops but this was the last verified report of her presence. In September 2021 a citizen of the Palena village reported that a bear tried to enter its chicken coop so there is a probability that she was still alive in September but the absence of damages during fall 2021 as well as the absence of any other sign of her presence, make it highly probable that F1.99 died during late summer 2021. This event did not change at first the implementation of the former plan and the “medium risk” and “low risk” chicken coops started to be checked in fall 2021 in order to implement their bear-proofing.

At the beginning of 2022, MNP staff was involved (by the Environmental Ministry) in the management of the problematic and confident 2-years old M1.176, a bear born in the Abruzzo, Lazio e Molise National Park that ended up feeding on garbage in Roccaraso, one of the 39 municipalities of MNP. After a major BET intervention consisting in a translocation and after the bear-proofing of the garbage in Roccaraso, M1.176 shifted to barnyard animals feeding and started to do it not only in Roccaraso but also in other 4 villages of the southern portion of MNP (Map 2). Out of 5 villages (Ateleta, Gamberale, Pescocostanzo, Pizzoferrato, Roccaraso), 1 (Ateleta) had a high level of chicken coops protection as it had been already interested by the presence of F1.99 while in the other 4 the bear-proofing work needed to be started from zero (i.e. not even a census of existing chicken coops was available). Considering that M1.176 was also a “new” bear for MNP, his behavior and his space use were unknown making it impossible to arrange a systematic plan to avoid damages.

The result of F1.99 disappearance and M1.176 arrival was the abandonment of the ongoing chicken coops bear-proofing plan and the need to shift to a new plan following M1.176 behavior and damages. During 2022 the delivery of electric fences thus followed the occurrence of damages while during 2023 no e-fences were delivered as M1.176 died in January 2023 and F1.143 started to damage chicken coops only at the end of the year.

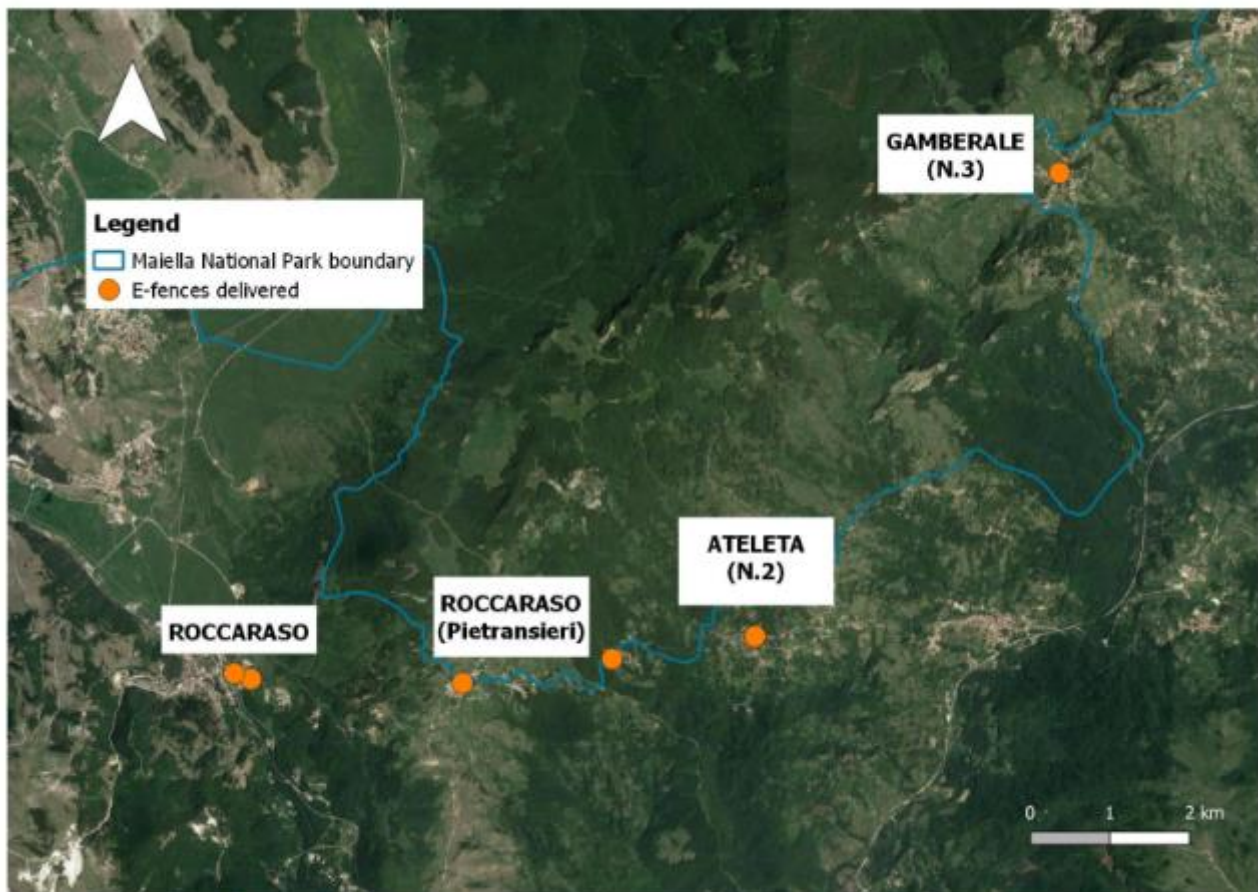


Map 2. Location of the 5 villages interested by M1.176 chicken coops damages in 2022 in reference to the MNP border.

List and maps of chicken coops protected in 2022

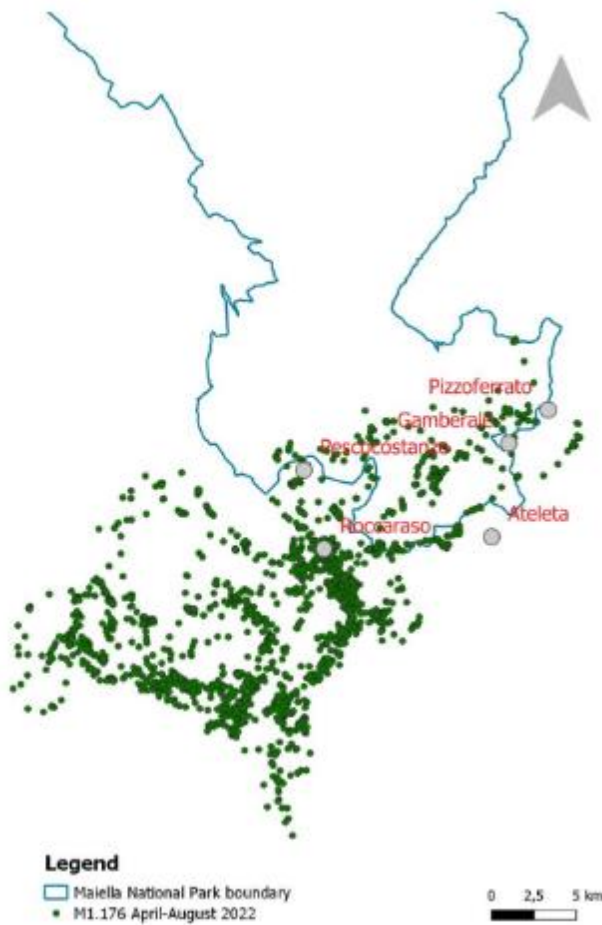
A total of 9 e-fences have been distributed in Ateleta, Gamberale and Roccaraso to protect damaged chicken coops or to prevent damages (Table 1 and Map 3)

Municipality	Coord X	Coord Y	N
Ateleta	430562	4633742	1
Ateleta	430566	4633763	1
Gamberale	434385	4639563	3
Roccaraso	428773	4633477	1
Roccaraso	424035	4633294	1
Roccaraso	424245	4633225	1
Roccaraso	426899	4633177	1
TOTAL			9



Map 3. Location of the 9 e-fences delivered in 2022 to protect chicken coops from damages caused by M1.176 in the villages interested by this problem. In Gamberale 3 e-fences have been delivered to the Mayor, see text for details.

In Pescocostanzo damaged chicken coops could be more effectively bear-proofed with iron protection so that no e-fences were distributed but MNP personnel hired a manufacturer to collect data needed to produce iron doors, windows, grates etc. In Pizzoferrato the two chicken coops damaged were not suitable for e-fence installation so that one was protected through the positioning of 2 Critter Gitter (Action C9) while one was protected by the owner with a new bearproof door. In Gamberale the situation was a little bit different: M1.176, at his very first visit to this village, entered the garage of an inhabited house to feed on a biofuel made of olive pits and used for stoves. This episode represented a huge issue to face as it was the first time that a bear entered an inhabited house in the Maiella National Park. MNP staff organized a meeting with the Mayor of Gamberale, a small village with 300 people, in order to assess what to do and how to face the situation. The decision taken was to work together to avoid food availability for M1.176 so that citizens were asked to secure any possible food in bear-proof construction and the Mayor himself took the charge to deliver e-fences to protect chicken coops. Three e-fences were thus delivered to the Mayor who distributed them among citizens. During 2022 M1.176 was monitored with a radio-collar from April to August when the collar stopped working. In autumn 2022 we thus had a better knowledge of his space use and behavior (Map 4).



Map 4. Locations achieved by the radio-collar of the 2-years-old problematic and confident bear M1.176 from April to March 2022 in reference to the MNP boundary and the villages where he damaged chicken coops.

We could understand that the MNP represented a small portion of his range that is mostly located in the area SW from Roccaraso between the MNP and the Abruzzo, Lazio and Molise National Park. This implied that his presence caused a lower pressure than the presence of F1.99, whose home range was almost entirely located inside MNP. However, M1.176 was not only problematic but also confident so that its presence inside the villages, even if relegated to brief periods, was a potential source of a high conflict with humans and required a well-designed and coordinated (with all the other bodies involved) management strategy. In Ateleta the strategy was to implement a strong communication activity in order to make people use all the protection means already delivered when F1.99 was present. In the other 4 villages (as well as in other neighbouring villages like Rivisondoli) the plan was to start from the knowledge of chicken coops number, locations and features in order to draft a plan to systematically bear-proof all the structures. MNP staff was thus planning to implement such a “census” of chicken coops during 2023 in order to plan e-fences distribution in a way similar to what has been done in 2021 (see C7 Action report 2021 for more details) rather than following the damages. However, M1.176 died on January 2023 making it necessary to re-set again the strategy for Action C7.22 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 11 additional e-fences have been distributed to bee keepers in 2022-2023. 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.

