LIFE20 NAT/NL/001107
LIFE Bear-Smart Corridors

Comparison of the A3 results in Italy and Greece and common evaluation for the assessment and identification of specific factors affecting bear conservation in the Italian and Greek project areas

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Author: Jan-Niklas Trei, GIS-Analyst RA

Data and comments provided by all involved beneficiaries and their respective A3 reports

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1. SUMMARY

In the frame of action A3 of the LIFE Bear Smart Corridors project, threats to the conservation of Marsican bears were identified and addressed under the scope of actions C1 to C6 and C8. The Italian area of the project covers the protected areas of the following beneficiaries: PNGSL, PRSV, PNALM, RNRMGAG, and the dispersal corridors mainly managed by SLO and RA. While the Greek project areas are encompassing the municipalities of Trikala-Meteora, managed by the beneficiaries CALLISTO and KENAKAP and the municipality of Amyntaio, with the direct involvement of the municipality itself, ARCTUROS and the University of Thessaly (UTH). Over 185 threats and 73 conflicts have been identified and will be targeted by the concrete conservation actions of LBSC. Most of the identified threats have the potential to eventually be removed or secured through the project. This summary provides an overview regarding the results of Action A3 for all involved project beneficiaries and draws comparisons between the Greek and Italian project areas. Exact beneficiary specific results can be found in the individual reports. The main issues encountered were due to the vast size of the project areas and limited staff numbers and bureaucratic hurdles. Additionally, surveying efforts need to be constantly maintained and standardised to guarantee the accurate detection of threats and their management and ensure the best possible development of the local bear populations.

2. INTRODUCTION

This report has the aim to compare the results of the A3 Assessment of threats for the conservation of the bear in the entirety of the Italian and Greek project areas, as well as to draw a common conclusion and management implications for the project.

The report is produced based on the individual A3 reports of the project beneficiaries. The report deals with the threats and conflicts that were detected as hazards to the conservation of the Brown Bear (*Ursus arctos marsicanus* – Italy; *Ursus arctos arctos* – Greece), as well as to identify areas in which conflicts could potentially occur. Hereby the focus also lies on identifying the threats that could potentially limit the movement of bears, through the designated bear dispersal corridors which connect the protected areas (Italy) and crucial bear habitats (Greece) and adjacent planned and active Bear-Smart communities. The results of this action are essential for guiding the conservation interventions of the LBSC project ('C' actions).

For the actions C1, C5, C6, C8, the goal was to identify human-bear conflicts in communities where these have already occurred or could potentially occur in the future. For C2, locations of water wells

that pose the risk of drowning to bears and other animals were identified. Action C3 aims at identifying unused fruit orchards and naturally occurring fruit, so that they can be maintained as food sources, away from densely populated areas. For Action C4, the aim is to assess livestock farms, apiaries and unprotected fruit orchards and vegetable gardens in the project areas, to determine whether damage preventive devices need to be installed to avoid potential or already occurring damages caused by bears. Lastly, for Action C5, locations for bear proof bins were determined.

To achieve these goals, assigned staff members of the beneficiaries, as well as volunteers carried out field surveys and routine monitoring throughout the project areas and relied on previously collected data from other projects. The activities were carried out partly during the proposal writing period (e.g. mapping of known, dangerous water wells that need to be closed), and since the official start of the project in October 2021 and throughout the year 2022. The methods that were used are summed up and compared between Italy and Greece in chapter.

All collected data is or will continuously be added to the geospatial database on ArcGIS Online that was specifically created for Action A3.

3. PROJECT AREA

All LBSC project areas are considered for this report. In Italy, it includes the National Parks of Gran Sasso e Monti della Laga (PNGSL) and Abruzzo, Lazio and Molise (PNALM), the Sirente-Velino Regional Park (PRSV), the Regional Nature Reserve of Monte Genzana Alto Gizio (PSG) and the Italian bear dispersal corridors (SLO and RA) as well as the Bear Smart Communities that are managed by Italian beneficiaries. All the Italian areas are located in the Central Apennines, located ca. 100km east of Rome (Figure 1). The Greek areas comprise the municipalities of Amyntaio, managed by the beneficiaries Amyntaio, Arcturos and the University of Thessaly (UTH), and Trikala-Meteora, managed by Callisto and Kenakap. Both the Italian and the Greek areas include dispersal corridors for the bears, in Italy the four designated dispersal corridors have a combined size of ca. 1,100 km^2 while the Greek corridors cover ca. 650 km^2.

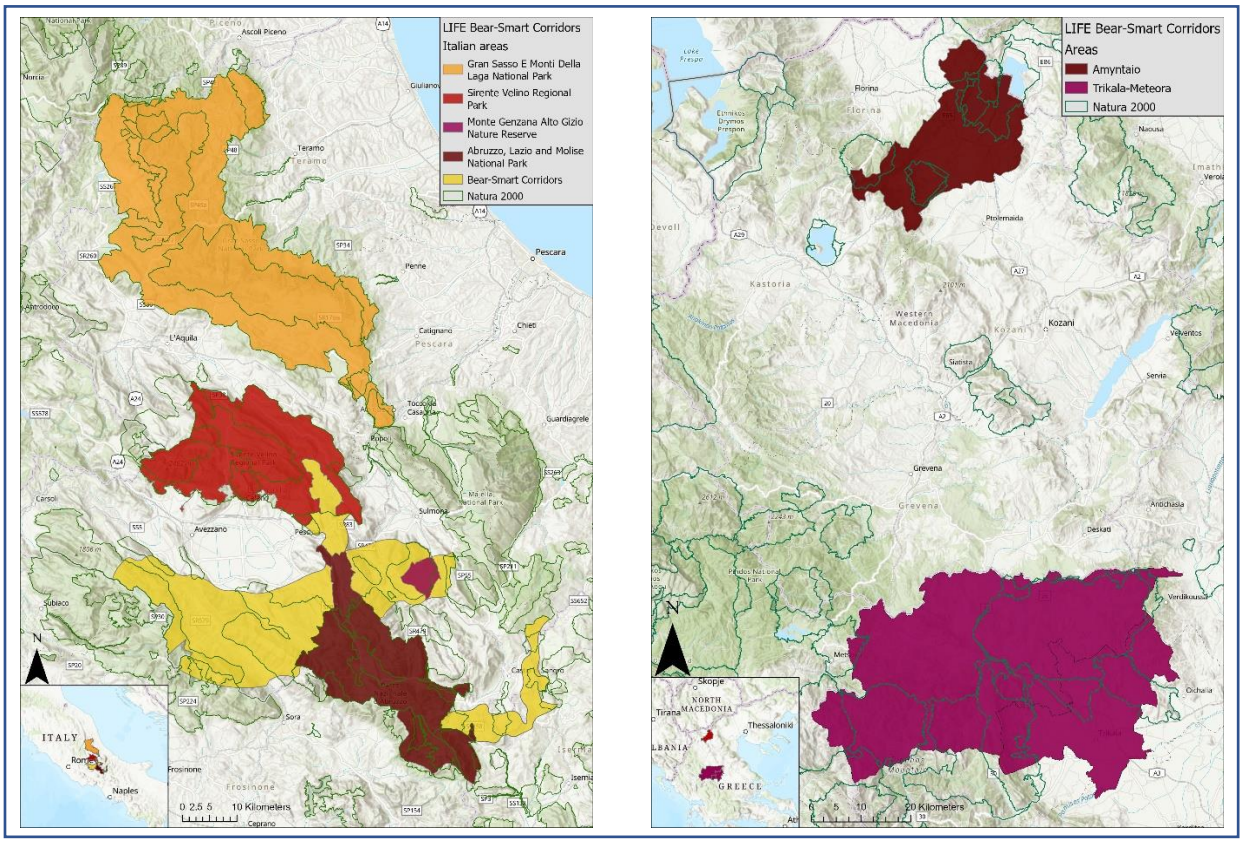

Figure 1. Map of LBSC project areas (Italian areas left, Greek areas right)

Both the Italian and the Greek areas represent key habitats for the brown bear in the respective countries (*Ursus arctos marsicanus* – Italy; *Ursus arctos arctos* – Greece). The Italian core area is the PNALM, whereas the Greek core area is represented by Amyntaio. In both countries, the establishment and/or maintenance of the dispersal corridors is crucial to maintain a stable population, enhance gene flow and allow the expansion of the species, while reducing the occurrence of conflicts and threats, for local people and the bear.

4. MATERIAL AND METHODS – Comparison Italy and Greece

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

Italy

General bear monitoring in the Italian corridors is mostly carried out through the Abruzzo and Molise Bear Monitoring Network (RMAM), following strict guidelines. Most of the Italian beneficiaries are officially integrated in the network, apart from SLO and RA who collaborates by reporting their monitoring results to the network.

In Italy, human-bear conflicts and threats were registered in all project areas throughout regular field activities and opportunistic surveys. A considerable number of conflicts is directly reported by residents to the Italian beneficiaries, especially concerning inflicted damages to livestock or property. The livestock damage database of the PNALM and registered conflicts by RA and SLO helped to provide precise information on human-bear conflicts since 2013.

Greece

In the Greek project area Trikala-Meteora, relevant livestock and property damages (conflicts) were exported from a governmental database (National Farmers Insurance organization) and used to summarise and visualise yearly statistics using QGIS and R Software, dating back until 2013.

Furthermore, construction projects for wind farms and hydroelectric dams were identified as potential threats for sensitive mountain areas. Consequently, data for regarding these projects was exported from the National Authority of Energy (RAE).

Bear mortality due to illegal poison baits was tracked through a collaboration between the Hellenic Ornithological Society and CALLISTO. The results were again plotted for the Trikala-Meteora project area for the period 2017-2020, highlighting detected poisoning for each community in the area.

In the project area of Amyntaio, the focus for conflict identification was on large agricultural fields, leading to the detection of a high number of fruit orchards that pose the risk for negative interactions and conflicts with the bear.

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

In both Greece and Italy, water wells that pose a potential threat of drowning for bears were set out through field surveys, during regular activities or were localised through information provided by local people and authorities. Locations and measurements were recorded in geospatial databases.

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 in Italy.

The surveying was done either opportunistically in areas known for high apple tree/fruit tree occurrence and through randomly generated transects for a master thesis carried out by a RA intern in the dispersal corridors 1 and 2. Additionally, known foraging areas for bears with high fruit abundance were located (PRSV) and previously recorded locations of wild/abandoned fruit trees and orchards were utilised (PSG/SLO/RA/PNALM).

In Greece, even though fruit orchards were recorded in the area of Amyntaio, this action is not carried out within the frame of the LBSC project.

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*

In Italy opportunistic surveys were carried out to assess livestock farms, apiaries and fruit orchards close to or inside of human settlements in the project areas, assessing their level of protection and registering unprotected or insufficiently protected potential and actual food sources for the bear (PSG/SLO/RA). Additionally, local farmers are regularly contacting Italian beneficiaries to request support for protecting their possessions and corresponding conflict information is collected.

In Greece, the action is only carried out in Trikala-Meteora through KENAKAP, while UTH and Callisto are providing support for the monitoring and implementation of the measures. Similar actions have already been carried out in Amyntaio through LIFE AmyBear (LIFE15 NAT/GR/001108).

4.5 *For Action C5: Analysis of the effective location of bear-proof garbage cans and other food attractors (fruittrees, pet food, random garbage dumps etc.) inside or around human settlements, to prevent foodconditioning of bears.*

In Italy, the locations for the placement of bear proof garbage cans are determined following reports of local people concerning bears plundering waste bins in their communities. Additionally, locations that are prone to bears (e.g. in areas where recent bear sightings or signs were reported) or where improperly protected garbage bins were found and reported during opportunistic ground surveys.

In Greece, this action is already carried out through LIFE AmyBear (LIFE15 NAT/GR/001108) in Amyntaio, the already installed waste bins are continuously monitored. The focus is on Trikala-Meteora, where attractive hot spots with accessible and attractive garbage bins were identified to be replaced by bear-proof garbage cans.

5 RESULTS Comparison

A synthesis of the identified threats per area since the beginning of the Life BSC can be found in Table 1. The assigned categories follow the LBSC data management plan, category titles were slightly adapted for data consolidation purposes in the shared geospatial database. It is important to note that due to a disparity in staff members, data collection methods and threat focus, main threats and conflicts can not be statistically compared between areas and only provide an insight of the human-bear situations in the area. Relevant information was provided by all beneficiaries according to their responsibilities and main observations are drawn in this chapter.

Table 1. Conflicts and threats since October 2021 reported by the beneficiaries of the LBSC project. [1] Already built structures still maintained to this day – structures built since the start of the project – structures planned. [2] Not Concerned – Beneficiaries are not required to participate in this action. [3] Not Quantified – Data was collected but quantified differently (e.g. since prior to the start of the LBSC) refer to individual report for further information.

Beneficiary	C1 Human-bear conflicts	C1 General threats	C2 Water wells	C3 Fruit trees/orchards	C4 Damage preventive devices[1]	C5 Potential bear proof bins
SLO/RA	36	163	15	804	293-47-20	14
RNRMGAG	1	22	NC[2]	1073	106-0-NA	
PRSV	9 (NC)	-	3	92 (only orchards)	NA-7-NA	
PNALM	27 +	NQ[3]	NC[2]	NQ[3]	114-20-NA	
PNGSL	NA	200 +	4	NA	NA	20
Italy total	**73 +**	**385 +**	**22**	**1969**	**513-74-20+**	**34**
CALLISTO/KENAKAP	NQ[3]	NQ[3]	37 (11 dangerous)	NC[2]	NA-NA-10	31
Arcturos/Amyntaio	NQ[3]	NQ[3]	2	NC[2]	NC[2] (LIFE AmyBear)	20 (LIFE AmyBear)
Greece total	**NQ[3]**	**NQ[3]**	**39**	**NC[2]**	**NA-NA-10**	**51**

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

In Italy, numerous identified threats and conflicts have been reported. The most frequent conflicts being livestock killings and property damage, reported mostly in the dispersal corridors as well as within the PNALM and PRSV. Livestock killings of cattle/horse, sheep and goat as well as raids of chicken coops, apiaries and fruit orchards/vegetable gardens are predominant (see A3 reports SLO/RA, PNALM and PSG). Other threats are unsecured (organic) waste dumping sites, abandoned barbed wire fragments that pose a threat to bear and wildlife dispersal and other human disturbances

such as hunting or recreational activities. Trash dumping sites that attract bears close to villages and along roads were found throughout the project area, endangering them through drawing them close to human infrastructure, increasing road-kill and conflict risk. Roadkill risk is partially addressed by the PNALM through involvement in LIFE SAFE CROSSING. Lower numbers of human disturbance through recreational activities (e.g. Moto crossing in protected areas) were reported.

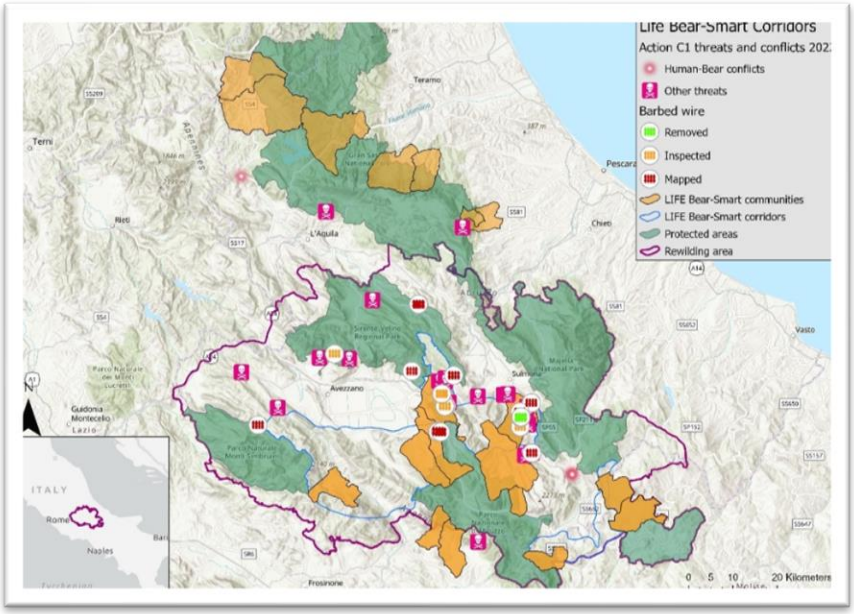

Figure 2. Mapped threats and conflicts for action C1 (SLO/RA)

In Greece, livestock damages and unsecured domestic food sources for bears are also among the most reported threats. Additionally, the use of poison baits is reported to be much higher than in Italy, and noticeably high in areas with a high cumulative number of livestock depredation of wolves and bears. Whereas livestock depredation of only bears seems be a less significant predictor for the use of poisoned baits. However, in comparison to Italy, newly planned wind parks and hydroelectric dams in crucial bear habitats are a major threat.

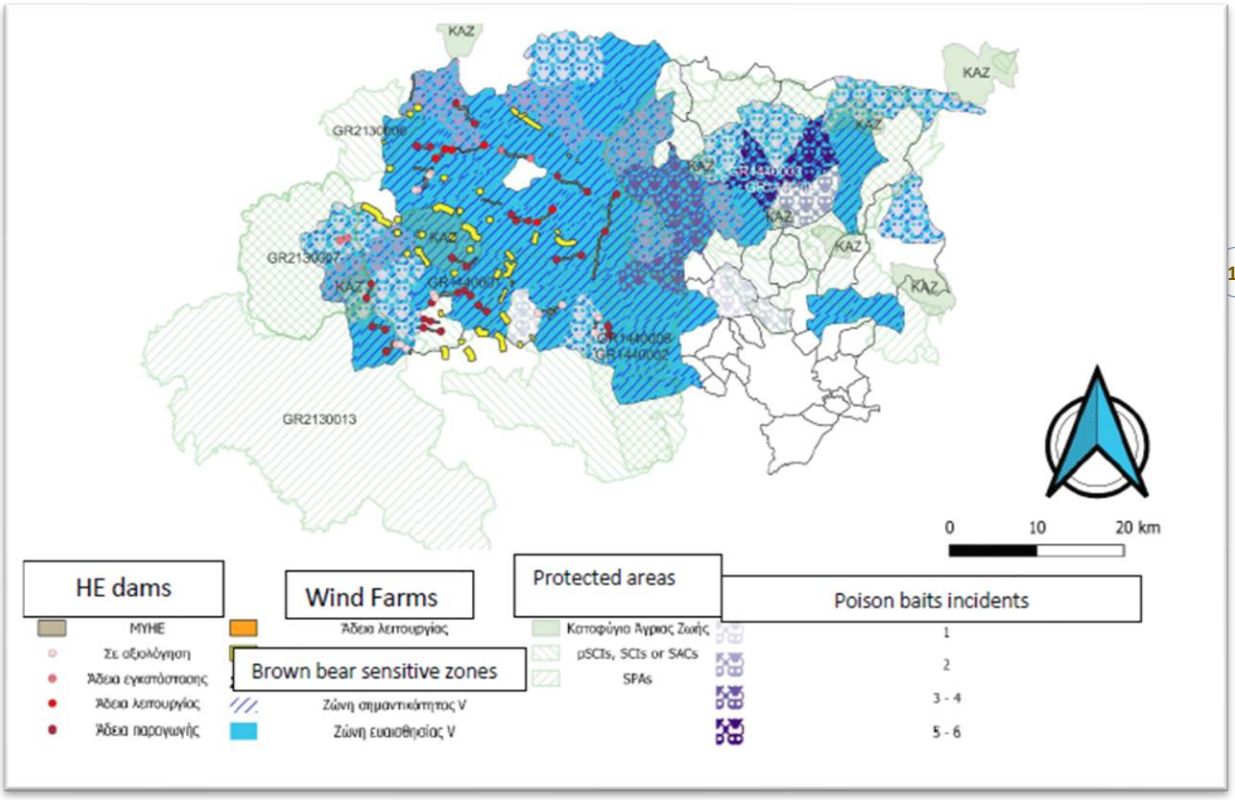

Figure 3. Major threats to brown bear in Meteora-Trikala sub project area (CALLISTO/KENAKAP)

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

Since the project start, 15 wells and other unsafe water sources were identified in Italy and 13 potentially dangerous ones recorded in the Greek project areas. The structures were evaluated and potential drowning risk for bears and other wildlife species assessed. Pictures 1 and 2 show a well that was made safe in June 2022 on the territory of the PNALM, to enable bears and other animals to safely get in and out.

Picture 1 and 2. Water well made safe for bears and wildlife

5.3 *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.*

With the help of benificiary staff and interns/volunteers, numerous individual fruit trees and fruit tree orchards were identified throughout the Italian area, indicating target areas for action C3. Pruning and restoration activities already started (example in pictures 3 and 4).

Pictures 3 and 4. Pruned fruit trees, March 2022

5.4 *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*

In both Italy and Greece extensive efforts have been undertaken by several beneficiaries to assess the local status of livestock and crop farms regarding their needs of protection and to identify where protective devices have to be installed through action C4. Some of the Italian partners such as PNALM, PSG, SLO and RA have long lasting electric fencing campaigns in their respective areas with hundreds of fences and other protective devices installed prior to LBSC and numerous fences installed since the start of LBSC. The fences and protective devices are mostly protecting livestock, apiaries and fruit and

vegetable gardens. In Greece this action is only carried out by KENAKAP, with support from UTH and CALLISTO in Trikala-Meteora, while this action is handled through LIFE AmyBear in Amyntaio.

Pictures 5. Electric fence installed in November 2022

5.5 *For Action C5: Analysis of the effective location of bear-proof garbage cans and other food attractors (fruit trees, pet food, random garbage dumps etc.) inside or around human settlements, to prevent food conditioning of bears.*

The process of setting out the effective locations of bear-proof garbage cans and other fruit attractors was very similar within Greek (Trikala-Meteora) and Italian project areas. Overall, the identified easily accessible domestic food sources are often associated with human settlements, restaurants and bakeries in the project areas.

6. Common evaluation and implications

Action A3 was successfully carried out in both the Greek and Italian areas, respective to the obligations that were defined in the project description. Some aspects of A3 were not relevant in Greece (preparation of C3) or only carried out in Trikala-Meteora (C4, C5) since they are handled through other on-going projects in Amyntaio (LIFE AmyBear LIFE15 NAT/GR/001108).

Both in the Italian and Greek project areas, livestock damages, unsafe wells, easily accessible food and waste dumping sites are commonly reported threats that have to be addressed through the C actions of the project.

Particular to Greece, planned construction projects for wind parks and hydroelectric dams are reported as a major threat and disturbance for critical bear habitat. Additionally, the use of poison baits as a response to livestock depredation is a major threat, not only to bears but also to Livestock Guarding Dogs (LGDs), wolves and other wildlife. This problem will be specifically addressed in Greece through the action C7 (Dissemination of anti-poisoning first aid kits).

In Italy, the risk of poaching remains but the use of poison against bears is a less significant problem in comparison to Greece. Road mortality is still a serious threat, the conflict is partially addressed through LIFE SAFE CROSSING (CALLISTO, PNALM) and other campaigns by some of the beneficiaries. Particular to Italy is also the presence of abandoned barbed wire, potentially hindering the dispersal of the species and posing a risk for injuries. Removing barbed wire will be addressed under the scope of action C3.

Both in Greece and Italy, garbage dumps and easily accessible organic waste along roads and close to settlements can lead to bears getting used to human presence, increase human-bear conflicts and increase road-kill risk, highlighted also by the recent death of the confident male bear 'Juan Carrito' in the Italian project area in January 2023. Critical locations for setting out bear-proof waste bins were identified in the project areas and the dissemination of the bins will be addressed in action C5. The problem concerning the availability of anthropogenic food sources has been pointed out by multiple beneficiaries to pose the risk of conditioning bears to get dangerously close to settlements and in direct contact with humans. Community involvement, information campaigns and the provision of alternative food sources outside of settlements will be tools of this project to counteract these problems (C1, C3, C6, C8).

In terms of danger, unsecured water wells in both countries are a direct threat to bears and other animals, several bears have been recorded to have drowned in both countries. In Greece the last drowning of a bear was recorded in 2022. To avoid this risk and prevent drowning, wells that were evaluated as dangerous through A3 will be secured in the scope of action C2.

Direct human-bear conflicts concerning livestock depredation have been reported in both countries, affected are large animals (cattle/horses) but also a considerable proportion of small livestock (goats/sheep), chicken, beehives, and fruit and/or vegetable gardens. The tool to mitigate this problem will be the provision, construction and maintenance of electric fencing and other protective

structures in both countries. Reported difficulties are mostly concerning the maintenance of provided structures by the recipients, therefore the correct usage of the structures needs to be regularly monitored and efforts are undertaken to make maintenance as simple as possible. Additionally, constant monitoring of insufficiently protected or completely unprotected food sources needs to be undertaken to stay on top of the situation and foster a positive perception of the bear in the project areas.

Problems encountered during A3 were quite similar in Greece and Italy in terms of bureaucratic hurdles that slowed down the process of data collection for A3 (e.g., slow response times of competent authorities in Trikala-Meteora; authorisations for closing wells in the Italian corridors). Additionally, standardisation of data collection procedures should be focused for LBSC to improve data flow and data collection speed and integration in the projects geospatial database. This process will be continuously optimised, and improvements discussed in monitoring related meetings of the project beneficiaries. The results of A3 will also aid the effectiveness of registering conflicts that are supposed to be addressed by the Bear Intervention Units (C8) in the later stage of the project. Standardising data collection procedures will also help to address the problem of the vast size of the project areas and improve the detection probability of threats to the conservation of the brown bear in both countries.

On a positive note, the results of the qualitative study of stakeholder attitudes towards bears and the (LBSC) project for action A4, carried out in PNGSL, Italian corridors, PNALM and Trikala-Meteora indicates that while bear numbers are perceived to be increasing in the surveyed areas, tolerance towards them is widespread in both countries. Nevertheless, negative attitudes towards the bear are reported to be linked to livestock damages, highlighting the importance of damage preventive structures. Trust in the effectiveness of electric fences is high among local stakeholders in Italy and well established in Greece, although stock breeders are reported to have more concerns regarding their safety.