

Project

LIFE Oso Courel: Facilitating coexistence with bears in Galicia, Spain

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Brown bears in the Cantabrians

After years of conservation efforts, the brown bear (*Ursus arctos*) has been recovering in the Cantabrian Mountains of Spain (Fig. 1), but the population remains small [1]. As the number of bears increases, young males tend to disperse to areas where bears have not been seen for many years, promoting population expansion and raising complex challenges regarding coexistence of bears and human activities [2]. One such area is Serra do Courel, part of the Natura 2000 network, where bears began to reappear at the beginning of the 21st century.



Fig. 1. Brown bear in northern Spain
(Photo: Fundación Oso Pardo).

The Courel Mountains in Galicia have high quality habitat for bears (Fig. 2), with a mosaic of different landscapes of native bushes and trees, especially oak and chestnut forests, that provide refuge and abundant food, but there are also many unprotected apiaries (Fig. 3). In fact, the first signs of bears recolonising the area were beehives damaged by bears seeking honey and bee larvae. This gave rise to conflicts as local people no longer had experience or knowledge of what the presence of the species entails.



Fig. 2. High quality bear habitat in Serra do Courel, Galicia.
(Photo: Fundación Oso Pardo).



Fig. 3. Bear-damaged beehives (Photo: Fundación Oso Pardo).

Facilitating coexistence

The LIFE Oso Courel project, which ran in 2017 – 2021, aimed to enable the spread of bears to new areas southwest of their established range in the Cantabrian Mountains (Fig. 4). Actions were implemented to favour dispersing bears, support the long-term viability of the Cantabrian bear population and mitigate rising conflicts with beekeepers and other human activities in the Courel Mountains. The project was coordinated by the Brown Bear Foundation (Fundación Oso Pardo) with the collaboration of the Galicia Regional Government (Xunta de Galicia) and the Galician Association of Land Stewardship (Asociación Galega de Custodia do Territorio).

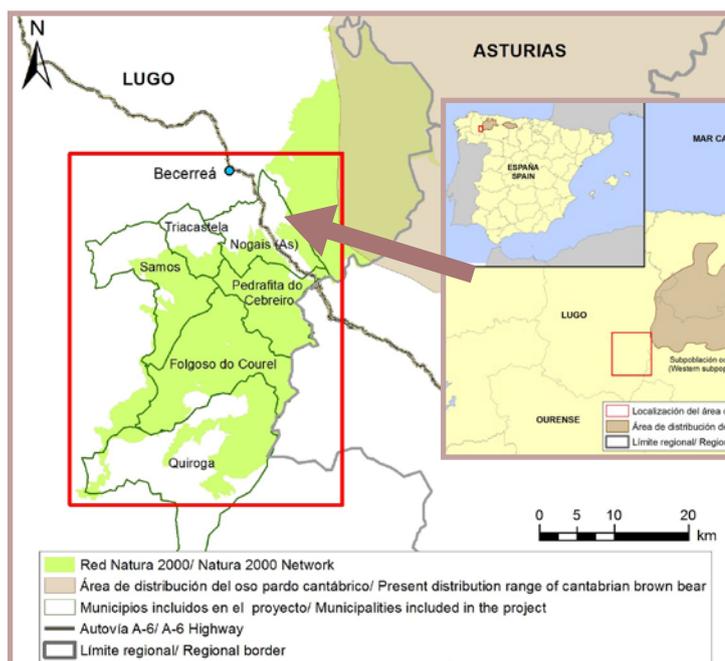


Fig. 4. Location of the project area in relation to bear distribution in the Cantabrian Mountains (Source: Fundación Oso Pardo).

Serra do Courel is a cultural landscape facing rural abandonment, depopulation and loss of traditional activities. The presence of bears in the past is evident in the many structures, currently in ruins, that were built to protect beehives from bears (Fig. 5) and which are also testimony to the economic significance that honey and wax production used to have. Beekeeping is still an important activity, with many amateur and professional beekeepers producing high quality honey. As bears began



Fig. 5. A traditional stone structure (alvares) to protect apiaries from bears (Photo: Fundación Oso Pardo).

to return to such an area, where the practice of protecting apiaries had been lost, the potential for conflict was clear.

Project actions focused on improving habitat, raising awareness and preventing conflicts were implemented in six municipalities of the province of Lugo, Galicia (Fig. 4). Specifically, the project aimed to improve trophic availability and connectivity between high quality habitats; to guarantee connectivity with the main bear reproductive nucleus in the western Cantabrian subpopulation; to prevent and resolve conflicts between bears and people; and to increase information and awareness of local stakeholders and residents.

Project activities and results

Improving habitat for bears

A total of 107,805 native fruit trees and shrubs were planted in more than 140 patches (averaging around one hectare each) to improve the carrying capacity and connectivity of habitat for bears (Fig. 6). These were planted in collectively owned forests and on private lands, with 20 land stewardship agreements signed, and on 17 hectares of land acquired by the project for long-term management. These actions have had a demonstrative effect and allowed the involvement of residents and owners, especially in communally owned forests. Positive interest was generated in this model of autochthonous small forest plantations, both for their improvement of the land-



Fig. 6. Planting fruit trees in Serra do Courel to increase the carrying capacity for bears through trophic enrichment and habitat connectivity (Photos: Fundación Oso Pardo).

scape and natural value and for their potential economic interest, and above all for allowing a forest structure compatible with livestock use and favourable for the prevention and reduction of forest fires.

Preventing damage to beehives

During the project a total of 225 records of bear presence were collected, of which 104 related to attacks on apiaries. Genetic analysis identified four individual bears in the project area. Damage prevention was addressed in collaboration with the Galician Beekeeping Association and local beekeepers and based on experience gained by the Brown Bear Foundation in previous projects in nearby areas. A total of 154 electric fences were distributed for the protection of more than 150 apiaries containing a total of over 3,000 hives (Fig. 7). Additionally, 168 beekeepers were informed of what the presence of bears entails and of the best measures to protect apiaries.

Fences consisted of five parallel wires of nylon or, preferably, metal (steel or aluminium, 1.5 – 2 mm in diameter) 25 – 30 cm apart. The bottom wire was 20 cm above the ground: as low as possible without touching the ground while allowing vegetation beneath it to be cut. Wires were attached to poles of wood, steel, plastic or fibre glass, with the latter preferred due to its high resistance and insulating properties. When metal poles are used, insulators are necessary and wires have to be more than 1 cm away from the poles to avoid losing electricity. Poles were placed at intervals of 4 – 5 metres (sometimes less depending on the terrain) with their bases buried 30 – 40 cm in the ground. Fences were powered by a 12-V battery, charged by a solar panel, providing 0.5 – 2 joules.

Monitoring visits were made to 96 apiaries to assess fences, provide advice and correct any installation problems (Fig. 8). A lesson learned was that it is not enough only to provide equipment: it is also essential to provide technical advice on how to properly build and maintain fences to guarantee their effectiveness. This being so, a brochure¹ and a video tutorial² were produced describing installation procedures. Participating beekeepers' level of satisfaction with the fences was very high, with an average score of 4.4 out of 5.

¹ https://fundacionosopardo.org/wp-content/uploads/2020/05/libreto_COLMENARES_2020.pdf

² English version: <https://www.youtube.com/watch?v=-2j-Hqoi0N0&t=165s>
Spanish version: https://www.youtube.com/watch?v=SiOzGDeFE_0



Fig. 7. Electric fences distributed to beekeepers to protect apiaries from bears (Photos: Fundación Oso Pardo).



Fig. 8. A monitoring visit to provide advice and correct problems concerning the use and maintenance of electric fencing (Photo: Fundación Oso Pardo).

Working with hunters

With the collaboration of the Galician Hunting Federation, an information campaign was developed to raise awareness among hunters of the presence of bears where they carry out their activities and of the need to properly identify animals when hunting, with a focus on how to behave in the presence of a bear. Furthermore, the project established more than 30 agreements with ten hunting areas for the clearing of more than 230 hunting sites (totalling 63 hectares) to increase visibility and facilitate the identification of animals.

Establishing an intervention team

A specialist intervention team, made up of rangers from Xunta de Galicia, was set up and trained to solve possible conflict situations with bears. The team was provided with equipment and material for the capture, transport, veterinary treatment and monitoring of bears (Fig. 9). In addition, an enclosure for the treatment and care of injured or problematic bears was also built. Training staff of the Xunta de Galicia responsible for managing the species, especially nature rangers, was very important, since their work is fundamental to facilitating coexistence by dealing with any problematic situations that may arise in the future.



Fig. 9. The bear intervention team created to address potential conflict situations (Photo: Fundación Oso Pardo).

Promoting tourism

Cultural resources can help promote bear presence as an asset to tourism in the region. An inventory of traditional dry-stone structures (*alvarizas*) built to protect apiaries from bears was carried out, resulting in the identification of 267 such structures in the project area³ (Fig. 10). Six of these structures were restored for beekeeping or tourism, three through collaboration agreements with the owners and three acquired by the project.



Fig. 10. Inventorying a traditional apiary protection structure (*alvares*) for restoration and possible use in tourism (Photo: Fundación Oso Pardo).

Furthermore, three touristic *Routes of the bear and honey in Courel*⁴ were developed in collaboration with the Neighbours Association of Seceda do Courel, Folgoso do Courel Town Hall and the Montañas do Courel Geopark (Fig. 11). The development of thematic routes and promotion of the area's values have been highly appreciated, clearly showing that the arrival of a species like the bear can have positive impacts. A *Handbook of good practices*⁵ to develop sustainable ecotourism in bear country, focused on the Serra do Courel, was also produced.

Raising awareness

To inform the local community and gain their support, more than 30 meetings were held with over 380 participants, an exchange visit with local actors was made to Somiedo Natural Park in Asturias to share experience with people who live in bear country and several conferences and talks were held to disseminate information about bears and coexistence with human activities (Fig. 12). As mentioned above, actions also focused on livestock breeders and hunters. Work with stakeholders,

³ <https://fundacionosopardo.org/wp-content/uploads/2021/06/Alvares-seleccionados.html>

⁴ <https://fundacionosopardo.org/wp-content/uploads/2021/06/Tríptico.pdf>

⁵ <https://fundacionosopardo.org/wp-content/uploads/2019/06/Buenas-practicas-turismo-Courel.pdf>



Fig. 11. A tourist route focused on bears, habitats and cultural values established to show that bear presence can have a positive impact on the local economy (Photo: Fundación Oso Pardo).

especially hunters, made it possible to counteract misinformation that circulated in the region. The arrival of a species like the bear can generate suspicion and false narratives, so the project took an important step in this regard.

An educational campaign was developed that included two workshops for teachers, production and provision of educational material for 15 schools and the organisation of 12 classroom activities in which a total of 254 children from the project area participated. Furthermore, information panels were exhibited in various places and information brochures disseminated.

An intense media campaign was implemented that led to over 150 news items and articles as a result of collaboration with regional and local media, providing information about bear presence, project actions to prevent conflicts and raising awareness of bears and the importance



Fig. 12. An event to raise awareness and share experience of coexisting with bears (Photo: Fundación Oso Pardo).

⁶ <https://www.youtube.com/watch?v=Ur5deQrf5dU>

⁷ <https://www.youtube.com/watch?v=3t4EdzkXX8E&t=154>



and opportunities presented by the presence of this emblematic species in the region. In addition to the video tutorial on electric fences already mentioned, a short video explaining the main results of the project was also produced in Spanish⁶ and Galician⁷.

Public opinion about bears and project activities

In 2021, at the end of the project, 205 beekeepers, hunters, livestock breeders and local residents were surveyed to find out their opinions about bears and the LIFE Oso Courel project. Opinions were most positive among the tourism sector (averaging 4.4 on a 1–5 Likert scale) and lowest among hunters (2.9). Beekeepers and livestock breeders were mostly positive about bears (3.6 and 3.4, respectively), with 60% of beekeepers considering their activity to be compatible with bears and 93% being in favour of the use of damage prevention measures.

Project actions were also rated positively, particularly the environmental education activities (4.4 out of 5), delivery of electric fences and restoration of *alvarizas* (4.3), organisation of informative meetings (4.2), planting native species (4.0) and cleaning hunting sites (3.9).

Beekeeping is very important in the area and beekeepers, who do not have a negative perception of bear presence, have assumed the need to incorporate the protection of apiaries as a normal part of their activity. This is one of the most important changes generated by the proj-

ect, in an area where knowledge of prevention measures did not exist. Furthermore, positive expectations have resulted, with local entities, associations and some sectors of the community seeing bear presence as an important element of the natural value of the area and an opportunity to promote rural development.

Steps beyond the project

The LIFE Oso Courel project sought the support and collaboration of organisations and groups involved in the region in order to work together with local residents. There were still unprotected apiaries at the end of the project, as it is a dynamic sector, but the long-term task of protection goes on. To this end, collaboration agreements have been established with various entities, such as the Serra do Courel Rural Development Association, the Galician Beekeepers Association, the Uxío Novoneyra Foundation and the Courel Scientific Station of the University of Santiago de Compostela. This has enabled development of additional activities not initially planned, such as the organisation of a 3-day summer course⁸ with the University of Santiago de Compostela (Fig. 13), publication of a handbook for sustainable tourism in Serra do Courel and a conference on natural areas as drivers for rural development.

Recently, a video providing *Advice for visiting the mountains of the brown bear*⁹ was produced within the LIFE Bears with future project¹⁰, which is running from 2020 to 2025, to inform and raise awareness among stakeholders of the potential for conflicts with bears less prone to hibernate and to provide advice and guidance for the development of winter activities in bear areas. Together with information leaflets on how to behave in bear country and during encounters with bears¹¹, this should help to limit problematic bear-human interactions in a changing climate.

Acknowledgements

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 [2] Palomero G et al., eds. (2021) Osos cantábricos. Demografía, coexistencia y retos de conservación. Fundación Oso Pardo. Lynx Edicions.



Fig. 13. Summer course focused on bear ecology, conservation and coexistence organised in collaboration with the University of Santiago de Compostela (Photo: Fundación Oso Pardo).

⁸ <https://fundacionosopardo.org/proyecto-life-oso-courel-realizado-un-seminario-universitario-de-verano-sobre-el-oso-en-courel-y-la-conservacion-de-grandes-carnivoros-2>

⁹ https://fundacionosopardo.org/wp-content/uploads/2022/07/Dibujos-animados-consejos-oso_LIFE-OsosFuturo_english_br.mp4

¹⁰ <https://fundacionosopardo.org/en/life-projects/project-life-bears-with-future/>

¹¹ https://fundacionosopardo.org/wp-content/uploads/2021/08/triptico_COUREL_esp-2.pdf