

Project

Safe grazing: from field experience to Common Agricultural Policy

Photo: Tomaž Berce

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Managing coexistence with large carnivores in Slovenia

Slovenians are proud of the high level of nature conservation in their country, including three species of large carnivores: the brown bear (*Ursus arctos*), wolf (*Canis lupus*) and Eurasian lynx (*Lynx lynx*). Despite the remarkable amount of forest cover, which at 58% ranks it as the third most forested Member State of the EU (Fig. 1), protected areas of habitat¹ are not sufficiently large for wide-ranging species such as large carnivores to avoid all contact with people, so interactions with them are inevitable. The interplay between the natural environment and the cultural landscape makes it imperative for humans to coexist with carnivores [1,2].

The populations of wolves and bears in Slovenia are expanding from the Dinaric Mountains into the Alps, leading to conflicts with human activities (Figs. 2 and 3). In recent years, both species, but especially wolves, have been reappearing in areas where they have not been continuously present for several decades [3,4]. This phenomenon has sparked growing concern and raised questions

among local communities about the potential danger and risks these predators may pose to human safety and, in particular, among farmers concerned about their livestock, as the existing range of damage prevention measures and the way they are implemented are not always suitable for more demanding Alpine grazing areas (Fig. 4) [5,6].

Several institutions are actively working to improve coexistence with large carnivores in Slovenia. The Slovenia Forest Service is primarily involved in preventing damage caused by large carnivores, coordinating monitoring and preparing the expert basis for management. The University of Ljubljana carries out research and participates in monitoring and education. The Ministry of Natural Resources and Spatial Planning pays compensation for damage caused by large carnivores and co-finances protective equipment. The Ministry of Agriculture, Forestry and Food also provides support to farmers, mainly through the measures of the strategic plan of the Common Agricultural Policy. Protection measures are also promoted by the Chamber of Agriculture and Forestry of Slovenia through their local agricultural advisors.

¹ <https://natura2000.gov.si/en/>



Fig. 1. The Dinaric region of Slovenia (Photo: Tomaž Berce).

Slovenia-wide project

Within the LIFE Safe Grazing (Varna paša) project, which launched in 2024, a diverse consortium of Slovenian partners from the forestry, agriculture and academic sectors will take a systematic approach to developing new solutions for conflict mitigation.

The project addresses three main threats to existing coexistence with carnivores:

- Lack of coordination by key responsible public institutions, inconsistent approaches and insufficient field-based advice to farmers hinders conflict mitigation in agricultural areas.
- Inadequate, unharmonised and financially deficient agricultural and environmental conflict prevention measures at national and regional levels.
- Highly polarised positions among key stakeholders and a lack of content on human–carnivore conflicts in formal and informal education hinders long-term coexistence.

The main focus of project activities will therefore be on reducing the damages caused by large carnivores on livestock and other property. The aim is to refine, adapt and introduce feasible damage prevention measures, to scale up their application through active stakeholder participation and to develop cost-effective and efficient measures to be included in the new Common Agricultural Policy (CAP) after 2027.

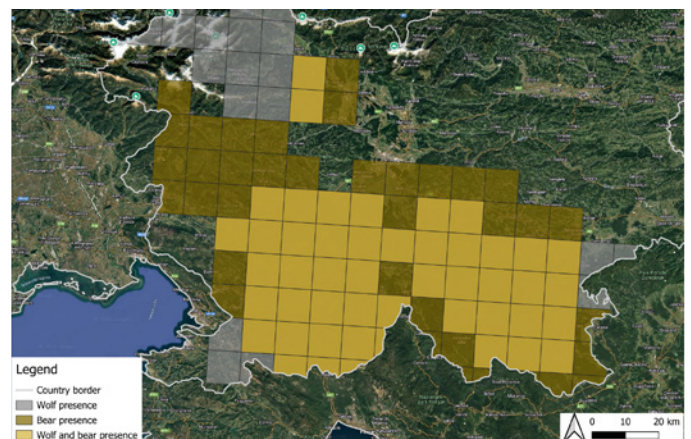


Fig. 2. Wolf and bear presence in Slovenia (Author: Aleksander Trajbaric).



Fig. 3. The Alpine region of Slovenia (Photo: Tomaž Berce).



Fig. 4. Alpine pasture in Slovenia (Photo: Tomaž Berce).

Approaching different levels of education

Recognising that lasting change begins with the younger generation, the project also targets formal education. The aim is to develop skills for collaborative dialogue between involved institutions and different stakeholders, while increasing knowledge on large carnivores, focusing on effective conflict prevention practices and bringing together the views of key stakeholders on the basis of concrete field activities. Integrating relevant topics into mainstream formal education programmes in agriculture, forestry and nature conservation will fill a gap in systemic education, ultimately contributing to the long-term sustainable coexistence of large carnivores and humans.

Special attention will be paid to filling the gap in systemic education on coexistence and conflict prevention. Many forest and outdoor educators lack a holistic understanding of large carnivore issues. To address this gap, the programme takes a broader, interdisciplinary approach by embedding conflict mitigation into pro-environmental education. This helps broaden perspectives and equip educators with the tools to engage more meaningfully with topics of human–wildlife coexistence. Educational activities on farms aim to promote practice-based learning focused on livestock protection at both local and regional levels. These hands-on experiences not only enhance practical knowledge but also foster a deeper understanding of coexistence with large carnivores. To ensure the long-term sustainability of these efforts, the programme will be integrated into the new CAP framework.

Through collaboration with best practice farms, vocational schools and universities, we will be able to ensure the transfer of conflict mitigation and livestock protection knowledge beyond the end of the project in 2029. Through best practices and a thoroughly developed holistic approach to damage prevention, the project aims to set an example for other countries to follow and thus contribute to wolf and bear conservation in the EU. Together, these complementary actions—on farms, informal education and within academic institutions—form a comprehensive educational strategy aimed at cultivating informed, proactive and cooperative communities prepared to live alongside large carnivores.

“Help a farmer” programme

Due to limited time and labour resources, many livestock breeders face considerable challenges during the grazing season. To help address this, we are launching the “Help a farmer” programme during the 2025 grazing season. The initiative is designed to ease the burden on breeders by offering practical and technical support through dedicated volunteers. It specifically supports farmers who have chosen to use recommended protective methods, such as high electric netting, to safeguard their herds from large carnivores. Participation is based on farmers’ requests for assistance, ensuring that support is targeted, practical and aligned with real needs. Small teams of volunteers, led by a technically skilled team leader, will assist farmers in setting up effective livestock protection measures. Their primary task will be to install electric fencing systems, including preparing the perimeter, positioning netting and ensuring the pen is fully functional before animals are brought in.

Beyond providing hands-on assistance, the programme also aims to foster dialogue and build bridges between diverse stakeholders—particularly those with little or no experience in farming. Volunteers, nature enthusiasts and animal rights advocates will work side by side with farmers, united by a shared goal: ensuring a safe grazing environment for livestock while supporting coexistence with large carnivores in the region. By encouraging direct engagement and shared experiences in the field, the programme seeks to build mutual understanding, trust and respect. Ultimately, this initiative aims to lay the groundwork for long-term collaboration between livestock breeders and conservation NGOs.



Fig. 5. Goats protected with high electric netting (Photo: Tomaž Berce).

Collaboration with stakeholders brings results in the field

The current project builds on previous efforts, field-proven practices and farmers' knowledge and experience, to further improve the effectiveness and practicality of damage prevention measures. In general, two main practices have been implemented in Slovenia throughout project work to date. First, protection with electricity, specifically with high electric netting (Fig. 5), and secondly livestock guarding dogs (Figs. 6 and 7), which represent a reliable partner in protecting herds against predator attacks [7].

Close collaboration with farmers is key to success, which is why the Slovenia Forest Service is regularly present in the field through its damage officials and project staff. Engagement on damage prevention in Slovenia has been evolving since 2010, when collaboration first began with farmers who were facing the most damage cases caused by wolves and bears. Prior to that, wolf- and bear-related damages were increasing (Fig. 8), despite early pilot efforts by the state, such as the distribution of low (110-cm) electric fencing. However, a significant proportion of predator attacks—by both wolves and bears—continued to occur where these lower fences were used. The lack of improvement highlighted the urgent need for more effective solutions.



Fig. 6. Karst shepherd dog (Photo: Anita Tomšič).



Fig. 7. Tornjak livestock guarding dog (Photo: Mirjam Kržič).

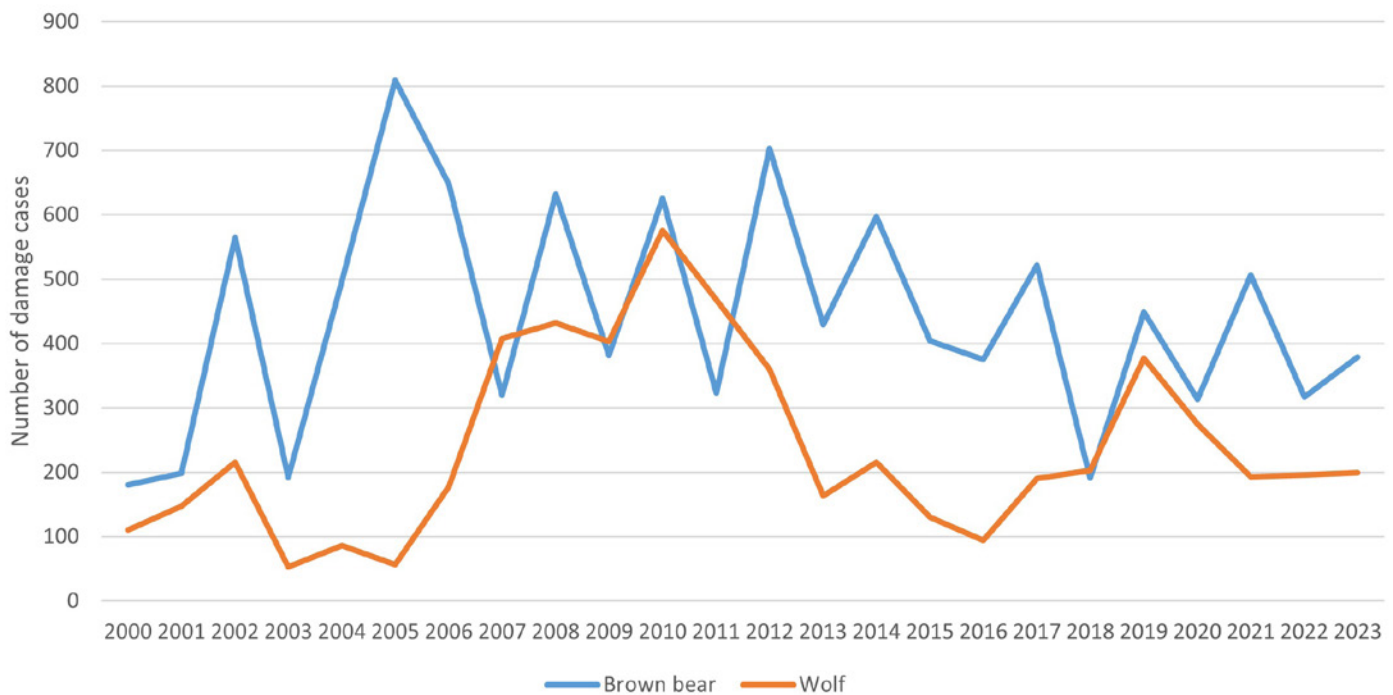


Fig. 8. Numbers of cases of reported damage by bears and wolves in Slovenia in 2000–2023 (Source: Slovenia Forest Service).

Substantial progress was made with the introduction of high (160-cm) electric netting, combined with regular, on-the-ground support and communication with farmers. This marked a turning point, showing that targeted, well-supported prevention strategies could significantly reduce recurring attacks. From these first attempts, the results quickly demonstrated that damage can be prevented with dedication from farmers who have to regularly maintain the netting and high-voltage electric system. With the improvements and knowledge gained, the Ministry responsible for nature conservation began co-financing electric fences for farmers who had already experienced attacks from large carnivores. Slovenia For-

est Service damage officials have been regularly inspecting proper use and maintenance of protective measures. These visits usually involve checks of the implemented measures but also, more importantly, discussions with farmers about their practical use. The results from the last 15 years of work are encouraging: more than 85 % of farmers have not experienced losses among animals protected by recommended prevention measures [8].

Over the past four years, we have conducted intensive testing on 145 cm high electric netting systems, with consistently good results. The findings demonstrate both the reliability and practicality of these fences. Based on our experience, 140–160 cm electric netting represents the



Fig. 9. Suckler cows protected with high electric netting (Photo: Tomaž Berce).



Fig. 10. A multi-wire electric fence protecting beehives from bears (Photo: Tomaž Berce).

most effective solution currently available for preventing attacks by predators including wolves, bears, lynx and jackals (*Canis aureus*).

Recognising the need to better protect large livestock (particularly in the early stages of life when smaller, less mobile animals are more at risk of predation), we began working closely with cattle breeders to identify practical, effective solutions tailored to their needs. Because large adult livestock require larger grazing areas per head, it became clear that temporary, adaptable protective measures were necessary, especially for protecting young animals during their most vulnerable periods. We started our first initiatives using high electric netting systems to protect suckler cows and their calves in 2021 (Fig. 9). These initial trials demonstrated that this approach is highly effective in protecting calves up to approximately three months of age, offering a reliable and feasible solution for farmers seeking to reduce predation risk during this critical early phase.

The use of electric fencing to prevent large carnivore attacks on livestock has been extended to protect other vulnerable assets with consistently positive results. High electric netting, typically 140–160 cm in height, has proven particularly effective for deterring bears from accessing beehives, orchards, crops and silage bales. Bears often damage silage bales left in fields or at the edge of forests by tearing off the plastic film and sometimes pulling out the silage, although they usually do not eat it. The reason for this behaviour is not yet fully understood. The most likely explanation is the distinctive smell of the fermented grass, or the scent of fermentation itself, which may attract bears. They might also be drawn to the plastic material of the wrapping.

For stationary beehives, we have implemented a setup using six-wire electric fencing (Fig. 10). The wires are spaced more densely near the ground—starting no more than 15 cm above the surface—to prevent bears from crawling under). Additionally, insulators are placed on the outer face of the fence posts, making it difficult to push them over. Thanks to this design and proper installation, over 98 % of beekeepers we collaborate with have reported no bear-related damage since implementing the system.

Shepherding as a possible solution

The expansion of wolves into the Alpine region of Slovenia has exposed a lack of knowledge on how to protect animals grazing in mountain pastures. During the last five years, there has been a clear need to find solutions for these new conflict hotspots. Measures included in the current CAP are not fully suitable for the specific challenges of Alpine pasture management. In the Slovenian Alps, grazing communities are still active, with herds of cattle, sheep or goats gathered from several community members. During the grazing season, these animals are often left unattended in the mountains, with occasional checks by community members.

The absence of a consistent human presence makes herds vulnerable to predator attacks. In contrast, shepherding practices used in certain regions of Italy have proven highly effective in protecting grazing animals from predators. Given its success, we plan to introduce and adapt these shepherding methods to Slovenia, thoroughly assessing all aspects of the practice. A key outcome of this initiative will be the development of a new CAP measure for shepherding, to be included in the scheme after 2027.

To ensure the success of this approach, we will collaborate with two grazing communities. Together, we will establish the necessary conditions for employing shepherds to protect herds, including the establishment of mountain shelters for shepherds, construction of night enclosures for the herd, providing tools for tracking herds and installation of predator-monitoring cameras. As part of this process, we will evaluate various factors that may influence the broader adoption of shepherding in the Alps, such as the availability of interested shepherds, living conditions and logistical challenges. This pilot activity will serve as the foundation for designing a tailored measure for integrating shepherds into Alpine herd protection efforts and may offer a viable solution for other mountain regions facing similar challenges.

Long-term project goals

Building on these foundations, we would like to develop and improve four crucial damage prevention measures. Beside the above mentioned high electric netting and protecting livestock with shepherds in the Alps, we will take further steps with our livestock guarding dog activities, trying to build a solid basis for national support. All three of these measures have already been supported through the existing CAP scheme but need to be refined and improved in order to be accepted by a larger number of farmers. The fourth measure needs to be set up from the start. It involves the protection of large stock such as cattle and horses, especially young animals. Our goal is to develop approaches that help owners protect their animals on pastures and ensure the rationality of each measure, both financially and in terms of the additional labour required to implement and maintain it.

Through cross-sectoral cooperation we would like to further improve the conflict mitigation network with the goal of preparing and incorporating cost-effective measures into the next CAP scheme. The primary objective of the LIFE Varna paša project is to improve acceptance and coexistence between humans, wolves and bears, fostering a sustainable balance that supports both long-term agricultural practices and the preservation of our natural heritage. More information can be found on the project website² or follow us on social media³.

Acknowledgments

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² <https://varna-pasa.si/>

³ <https://www.facebook.com/LIFE.Varna.pasa/>

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