

STUDY AREA: SIERRA DE GREDOS (ÁVILA)

1. OVERVIEW

- **Municipalities:** Hoyos del Espino, Navarredonda de Gredos, and San Martín del Pimpollar are small highland villages located on the northern slope of the Sierra de Gredos mountain range in the province of Ávila, within the autonomous community of Castilla y León (Diputación Provincial de Ávila, 2023a, 2023b, 2023c).
- **Geographical size:** Combined area of approximately 175 km²: Hoyos del Espino (~52 km²), Navarredonda de Gredos (~78 km²), and San Martín del Pimpollar (~45 km²) (Diputación Provincial de Ávila, 2023a, 2023b, 2023c).
- **Human population:** The three villages host a total of roughly 1,007 permanent residents: Hoyos del Espino (345), Navarredonda de Gredos (442), and San Martín del Pimpollar (220) (INE, 2023). These municipalities are characterized by low population density (≤ 7 inhab./km²), rural isolation, and an ageing demographic structure (INE, 2023). During the summer peak season, the population increases significantly due to the influx of tourists and temporary residents, coinciding with the period of highest wolf depredation incidents. The registered tourist accommodation capacity alone accounts for more than 600 additional places.
- **Number of livestock farmers (approx.):** Approximately 100 livestock farms operate extensive beef cattle farms (Blanco et al., 2021). For example: Navarredonda (~45 farms, with 2,250 head of cattle in 2021), San Martín del Pimpollar (~56 farms, with 2,747 head of cattle in 2021).
- **Livestock farming systems:** The region practices extensive, low-input beef cattle farming based on natural resources. Most of the farmers run family operations. Cattle graze natural and semi-natural vegetation with minimal confinement, often using communal pastures and traditional transhumance cycles. The predominant breed is the native breed Avileña-Negra Ibérica, valued for its hardiness and adaptability to altitude, harsh weather and seasonal forage availability (Blanco et al., 2021).
- **Wild large carnivores species:** The Iberian wolf (*Canis lupus signatus*) is the only large carnivore with an established presence in the area.
- **Wolf/ population:** Ávila province hosts 6–10 stable wolf packs. In 2024, a wolf breeding pack was confirmed for the first time in decades in the southern reaches of the Sierra de Gredos (MITECO, 2025; Blanco et al., 2021).



Extensive grazing of Avileña-Negra Ibérica cattle in the high-mountain pasturelands of the Sierra de Gredos (Ávila, Spain), exemplifying traditional low-intensity livestock systems in the region (May 2025; Photo: Daniel Martín Collado)



Extensive cattle grazing in the high-mountain pasturelands of the Sierra de Gredos (Ávila, Spain), including Charolais and Avileña-Negra Ibérica breeds, representative of traditional low-intensity livestock systems in the area (May 2025; Photo: Daniel Martín Collado)

2. SOCIOECONOMIC CONTEXT

- **Environment:** The area is part of the Gredos Regional Park and belongs to Natura 2000 network (ZEC and ZEPA). The landscape includes forests of Scots pine (*Pinus sylvestris*) and Pyrenean oak (*Quercus pyrenaica*) and extensive shrublands of *Cytisus oromediterraneus*. There are glacial cirques and alpine meadows above 1,800 m. Winters are long and snowy, while summers are brief and dry. These factors determine seasonal grazing to adjust animal requirements to vegetation availability (Ayuntamiento de Hoyos del Espino,).
- **Local economy:** The local economy is structured around extensive cattle farming and nature-based tourism. Tourism has grown steadily due to the area's scenic beauty and outdoor recreational offerings (hiking, birdwatching), but livestock production remains vital to the rural economy, cultural identity, and landscape conservation. Despite difficult local economic conditions, many households continue livestock activity, alongside pensions of some family members and seasonal employment in tourism and other services (Blanco et al., 2021).
- **Social description:** These rural mountain communities face severe demographic challenges: population decline, ageing, limited job market, and outmigration of the younger generation. However, traditions like summer cattle drives through the Puerto del Pico and festivities tied to pastoralism still persist and foster a strong sense of belonging and cultural heritage among local residents (Blanco et al., 2021).



Shepherd on horseback guiding Avileña-Negra Ibérica cattle during transhumance through the Puerto del Pico mountain pass (Ávila, Spain), exemplifying traditional pastoralism in highland environments (Photo: D. Martín Collado).

3. FARMING CONTEXT

- **Deeper description of the type of farming system:** Farming is primarily based on the extensive beef cattle rearing being the local breed Avileña-Negra Ibérica, the primary breed with other international beef breeds such as Limousine or Charolais and its crosses being also present. The Hispano-Breton horse breed is also common in the area, locally raised for meat production. Animals graze all year-round across a diverse mix of private holdings and communal lands. Cows give birth in the open field, and calves are raised by the mother for about 6–8 months before weaning and sale. Transhumance remains an active tradition, with herders moving cattle to high mountain pastures in summer and to warmer valleys in the area or to other warmer regions in southern Spain during winter months. Mechanisation is limited, and most farms are managed by 1 or 2 individuals (Blanco et al., 2021).
- **Approx. number of farms of each type:** Navarredonda de Gredos holds ~45 cattle farms with ~2,250 animals. San Martín del Pimpollar holds ~56 farms with ~2,747 cattle. Hoyos del Espino has a similar scale. Herd size ranges from 40 to 200 cows per farm. Most operations are family-owned, combining the commercial activity with heritage and land stewardship values (Blanco et al., 2021).
- **Main farming challenges:**
 - Ageing farmer population and low generational renewal.
 - Sanitary status and animal health regulations, particularly tuberculosis and brucellosis.
 - Predation by wolves, emotional burden on herders, and administrative delays for compensation.
 - Declining profitability and dependency on EU subsidies.
 - Scarce rural infrastructure and limited public services



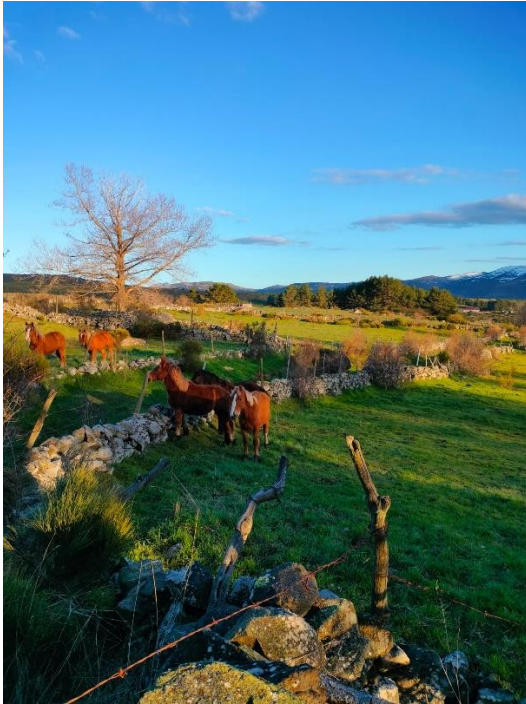
Winter feeding of Avileña-Negra Ibérica cattle in the high-mountain pastures of the Sierra de Gredos (Ávila, Spain), illustrating the adaptation of traditional extensive livestock systems to harsh climatic conditions (23 September 2006; Photo: Daniel Martín Collado).



Transhumance of Avileña-Negra Ibérica cattle through the Puerto del Pico mountain pass (Ávila, Spain), a traditional seasonal movement to high-mountain pastures that maintains cultural heritage and landscape connectivity (2011; Photo: Daniel Martín Collado).

4. LOCAL CONFLICT ASSOCIATED WITH LARGE CARNIVORES

- **Quantification of attacks and impact on farming:** Livestock predation by wolves has increased significantly in the province of Ávila. In 2023, over 1,652 animals were killed, with cattle representing approximately 85% of the losses. In the municipalities of the study area, dozens of attacks are reported annually. For example, in 2020, San Martín del Pimpollar suffered 49 wolf attacks (51 heads lost), and Navarredonda de Gredos recorded 36 attacks (36 heads lost). These incidents commonly occur during summer grazing at high altitudes, but winter attacks also occur near the villages (Blanco et al., 2021; Junta de Castilla y León, 2024).
- **Derived social conflict:** The conflict has both material and social dimensions. Farmers cite increased workload, emotional stress, and a growing sense of helplessness since lethal control was prohibited in 2021 (Blanco et al., 2021). Compensation systems are perceived as slow and insufficient, failing to cover the real economic and emotional value of lost livestock. Non-lethal preventive measures, such as the use of guard dogs and electric fencing, have shown limited effectiveness in extensive cattle systems due to the large surface areas, rugged terrain, and scattered herds (Marsden et al., 2022; Blanco et al., 2021; MITECO, 2025).



Traditional stone-and-wire fencing used to deter large carnivores in the Sierra de Gredos (Ávila, Spain), with Hispano-Bretón horses grazing nearby (2025, Photo: D. Martín Collado).



Avileña-Negra Ibérica cattle grazing in traditional extensive pastures of the Sierra de Gredos (Ávila, Spain), where fencing is absent or widely spaced, reflecting long-established grazing practices (2025, Photo: D. Martín Collado).



Hispano-Bretón horses in Navarredonda de Gredos beside mixed stone-and-wire enclosures protecting livestock from wolf predation (2025, Photo: D. Martín Collado).

REFERENCES

Marsden, K., Eul, J., & Blum, P. (2022). *EU Platform on Coexistence between People and Large Carnivores: Cattle Farming and Wolves – Case Studies and Lessons Learned*. adelphi consult GmbH.

https://adelphi.de/system/files/document/231219_eu_lc_platform_livestock_protection_print_version.pdf

Ayuntamiento de Hoyos del Espino. (s.f.). *Parque Regional de la Sierra de Gredos*.

<https://ayuntamientohoyosdelespino.es/gredos/parque-regional/>

Blanco, J. C., Herraiz, P., Barroso, A., & Olmeda, C. (2021). *La ganadería extensiva de vacuno en Ávila y los daños del lobo. Buscando soluciones al conflicto*. Instituto di Ecologia Applicata (IEA).

https://www.researchgate.net/publication/366974621_EXTENSIVE_BEEF_CATTLE_GRAZING_AND_WOLF_DAMAGE_IN_AVILA_PROVINCE_SPAIN_THE_SEARCH_FOR_SOLUTIONS_EXTENSIVE_BEEF_CATTLE_GRAZING_AND_WOLF_DAMAGE_IN_AVILA_PROVINCE_SPAIN_THE_SEARCH_FOR_SOLUTIONS_Regional_P

Diario de Ávila. (2020, 23 September). *Las tres Casas del Parque suman 8.704 visitantes en 2 meses*. <https://www.diariodeavila.es>

Diputación Provincial de Ávila. (2023a). *Hoyos del Espino – Población, altitud y superficie*. <https://www.diputacionavila.es/la-provincia/nuestros-pueblos/hoyos-del-espino.html>

Diputación Provincial de Ávila. (2023b). *Navarredonda de Gredos – Población, altitud y superficie*. <https://www.diputacionavila.es/la-provincia/nuestros-pueblos/navarredonda-de-gredos.html>

Diputación Provincial de Ávila. (2023c). *San Martín del Pimpollar – Población, altitud y superficie*. <https://www.diputacionavila.es/la-provincia/nuestros-pueblos/san-martin-del-pimpollar.html>

INE. (2023). *Padrón municipal continuo*. Instituto Nacional de Estadística. <https://www.ine.es>

Junta de Castilla y León. (2024, 3 March). *Los ataques del lobo al ganado en Castilla y León alcanzan los 3.558 con el resultado de 5.566 cabezas muertas en 2023* [Press release]. <https://comunicacion.jcyl.es/web/jcyl/Comunicacion/es/Plantilla100Detalle/1284877983892/NotaPrensa/1285371550379/Comunicacion>

Junta de Castilla y León – Turismo. *Camping Navagredos (Navarredonda de Gredos)*. <https://www.turismocastillayleon.com>

Ministerio para la Transición Ecológica y el Reto Demográfico (MITECO). (2025, 27 June). *El censo nacional del lobo 2021–2024 arroja una cifra total de 333 manadas en toda España* [Press release]. <https://www.miteco.gob.es/es/prensa/ultimas-noticias/2025/junio/el-censo-nacional-del-lobo-2021-2024-arroja-una-cifra-total-de-3.html>

Zabalza, S., den Toom, M., Astrain, C. (2019). Análisis de rentabilidad de explotaciones ganaderas en coexistencia con el lobo. Gestión Ambiental de Navarra (GAN-NIK) y WWF. Informe inédito.