High Nature Value Farming in Europe

35 European countries – experiences and perspectives

Rainer Oppermann, Guy Beaufoy, Gwyn Jones (Eds.)
High Nature Value Farming in Europe

Edited by Rainer Oppermann, Guy Beaufoy and Gwyn Jones
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España
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Resumen

Los Sistemas Agrarios de Alto Valor Natural (SAVN) son intrínsecamente valiosos para la biodiversidad. Dichos sistemas se basan en pastos y prados seminaturales además de cultivos leñosos y herbáceos con bajo nivel de insumos. Suelen retener una alta variedad de elementos estructurales, conformando valiosos paisajes culturales. Los SAVN existen en todos los países Europeos, con importantes diferencias en cuanto a tipos y extensión. Aparte de constituir la base de la biodiversidad de los agro-ecosistemas europeos, los SAVN aportan valiosos servicios ecosistémicos, siendo el soporte de economías sostenibles y del rico tejido social de muchas zonas rurales. El significativo valor medioambiental, sociocultural y territorial de los SAVN es cada vez más reconocido, aunque es necesario mejorar su conocimiento entre la ciudadanía y los que diseñan las políticas públicas.

Este capítulo sobre España forma parte de un libro que presenta una visión de los SAVN en 35 países Europeos, describiendo sus principales características y presentando casos de sistemas, explotaciones, agricultores y ganaderos. Además, se abordan reflexiones sobre cuestiones de agronomía, conservación de la naturaleza, economía y política. España es un país de máxima importancia a nivel europeo por la extensión y diversidad de sus SAVN. Como en otros países, la ganadería extensiva tiene un papel predominante en los SAVN españoles, dada la gran extensión que ocupan los pastos seminaturales. También destacan el papel todavía clave del pastor y los movimientos estacionales del ganado. La ganadería extensiva mantiene numerosos hábitats de importancia europea y ofrece servicios imprescindibles como la prevención de incendios en las zonas rurales más marginales.

España también destaca en Europa por sus extensas superficies de cultivos herbáceos de alto valor natural, caracterizados por un bajo uso de insumos, los mosaicos con barbechos, pastos y cultivos leñosos (según las zonas), y una valiosa red ecológica de linderos, riberas y bosquetes seminaturales. Estos sistemas son únicos en Europa por su extensión y riqueza en comunidades de aves pseudoesteparias. El olivar y otros cultivos leñosos (almendro, higuera, castaño, etc.) siguen cultivándose de forma poco intensiva en muchas zonas sobre todo de montaña, permitiendo una alta diversidad de flora, invertebrados y aves.

Los SAVN españoles viven un continuado declive debido a procesos de intensificación en las zonas más productivas y de abandono en los suelos pobres y los lugares más remotos. Las políticas rurales de los últimos años han hecho poco para frenar dicho declive, a pesar de los amplios fondos que llegan de la UE. Las medidas agroambientales para el mantenimiento de los SAVN se han desarrollado muy lentamente en España y la cobertura territorial de su aplicación es limitada en comparación con muchos países europeos. Los fondos se han orientado preferentemente a las repoblaciones forestales en suelos marginales, con la consecuente retirada de la actividad humana.

Sin embargo, aún no es tarde para poner en marcha una estrategia de mantenimiento y mejora de los SAVN, y ya se están dando los primeros pasos con iniciativas para identificar y caracterizar los usos de alto valor natural a nivel nacional y regional.
Spain
GUY BEAUFOY, RAFAEL CABALLERO, JUAN J. OÑATE

<table>
<thead>
<tr>
<th>Land Area</th>
<th>505,365 km²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>48.4 million</td>
</tr>
<tr>
<td>Pop. Density</td>
<td>91.4 inhabitants/km²</td>
</tr>
<tr>
<td>Land Use</td>
<td></td>
</tr>
<tr>
<td>47.4% agricultural area</td>
<td></td>
</tr>
<tr>
<td>36.1% forest and scrub</td>
<td></td>
</tr>
<tr>
<td>10.3% incidental poor grazing and unproductive land</td>
<td></td>
</tr>
<tr>
<td>6% other</td>
<td></td>
</tr>
</tbody>
</table>

**Characterisation of agricultural sector:**
- Utilised Agricultural Area (UAA) 24 million ha
- Arable crops and fallows 52%
- Permanent grassland and pasture 28%
- Permanent crops 20%
- Common lands 7.5 million ha

Source: Anuario de Estadística 2009, MARM

With thanks to the LACOPE Project and the Sociedad Española para el Estudio de los Pastos (SEEP) for the use of published material.

Spain is the second largest country in the EU, occupying about 84% of the Iberian peninsula plus the Balearic and Canary Islands. Climatic conditions range from the oceanic north to the semi-arid south-east, and the sub-tropical Canary Islands, although most of the country is dominated by a Mediterranean climate with strong continental influences in the interior. There are four biogeographic regions: Alpine, Atlantic, Mediterranean and Macaronesian. The country is very mountainous, with the highest average elevation in the EU.

**Farming and rural landuse in Spain**

Spain's Utilised Agricultural Area (UAA) covers about half of the national land area according to agricultural statistics (MARM, 2009). Arable land makes up approximately half of the UAA (12.5 million ha). A significant characteristic is that 30% of the arable area is recorded as fallow or out of use. This reflects the vast areas of low-yielding arable farmland, where fallowing is a physical necessity.

The extent of permanent crops is very large compared with most European countries, making up 4.72 million ha, or 20% of the UAA. The main permanent crops in order of significance are olives, fruit and nut trees, and vines.

Irrigated crops make up just over 20% of total area of arable land and permanent crops, but economically this irrigated area is very significant. In the case of crops subsidised historically by the CAP, such as olives and cereals, irrigated land receives far higher direct payments than non-irrigated, at the time of writing. The over-exploitation of water resources for irrigation is a major concern in several river basins.

Pastures and meadows cover 6.75 million ha, or 28% of the Spanish UAA,
according to the 2009 agricultural statistics (MARM, 2009), although the farm census (INE, 2009) from the same year gives a figure of 8.38 million ha. Both figures exclude vast areas of rough grazing land classified as forest. This exclusion is a significant problem with the agricultural statistics, which is also reflected in the EU-level data.

The forest statistics tell a different story. Out of a total forest area of 25.98 million ha, approximately half (12.08 m ha) consists of shrub and grassland pastures with no tree cover. Large areas with tree cover are also used primarily for grazing. Livestock grazing is a major use of forest land in Spain, as it was historically in much of Europe. The national forest strategy has more pages devoted to pastures than to timber production (MIVAM, 1999). According to this document, the total extent of permanent pasture may be approaching 20 million ha, which is 3 times the amount indicated by agricultural statistics. The majority is semi-natural vegetation.
Low-intensity arable, Madrid. Mr Juan de Mesa is a 34-year old farmer in Cobeña, a small village 30km north of Madrid. He inherited the dryland arable farm from his father, along with his pride in farming and natural curiosity and respect towards the great bustards (Otis tarda) inhabiting his fields. He owns 100 ha and rents another 200 ha, with an average field size of 2 ha. He considers himself lucky, as the farm’s size, together with quality-egg production, makes it economically viable.

Juan has participated in an agri-environment scheme, although the payments hardly compensate for the loss of income from a compulsory 1-hectare set-aside. He is careful when harvesting to avoid the nests of great bustards and other ground-nesting birds, leaving an un-harvested patch of one metre around the nests. He also leaves a 0.5-metre un-ploughed edge around his fields and avoids spraying these strips. This is beneficial for beetles, butterflies and other insects, and for rabbits.

Dehesa system, Extremadura. Mr Joaquín Rengifo is the owner of Dehesa del Guijo de los Frailes, a 3200ha farm of well-wooded dehesa in Malpartida de Plasencia, Cáceres. The farm produces Avileña Negra cattle, Iberian pigs and cork. Part of the farm (600 ha) is within the boundary of the Monfragüe National Park and Natura 2000 site with its emblematic bird species such as imperial eagle, black vulture and black stork. The farm also has dense populations of red deer, maintained in a difficult balance with the domestic livestock. The sale of the cork harvest every 10 years is crucial to the economic balance of the farm.

Mountain livestock system, Asturias. The Natural Park of Redes in Asturias is dominated by mountain grasslands, Atlantic forests of beech and oak and meadows and pastures in the valley bottoms. The mix of habitats is intimately linked to the traditional livestock farming on the area, based on the threatened Casina or Asturiana mountain breed of cattle. Farming occupies 50% of the population and represents 41% of economic activity in the three municipalities in the Park, which have an average population density below 8 inhabitants per km². There are 60 full-time livestock farmers and 130 part time.

Mr Arcadio Posada is the son and grandson of farmers in the village of La Infiesta. He keeps 40 cows of the Casina breed combining his farming with building work. His cattle spend the summer months on common grazing land (alpine pastures) following a brief period of spring grazing in the valley. He receives an agri-environment incentive to keep his stock on the mountain pastures from 1st June to 30th September. While the cattle are on the common grazings, Arcadio cuts hay and silage for winter fodder. The cattle come down from the mountain at the time of the autumn fairs, when the calves are sold at around 100kg for about €4/kg. The cows are housed in winter.

Traditional olive orchards, Extremadura. Ángel and Santiago farm tiny olive orchards handed down through the family in the valley of Río Esperabán in the remote uplands of Las Hurdes. The orchards are on narrow terraces, built by them decades ago, and have been farmed traditionally for the production of table olives. The fruit is harvested by family labour. In the few pieces of flat land, vegetable gardens irrigated by traditional channels from the river intermingle with the olives. This is a semi-subsistence polyculture system fed by a labyrinth of water channels and sustained by kilometres of monumental hand-built terraces. The creators of this landscape have handed down a heritage that is being lost due to limited economic competitiveness, lack of interest from young people and the difficulty of mechanising the production system.
Overall, Spanish rural landuse is characterised by extremes — large areas of land are under very low-intensity land uses that provide varied ecosystem services (especially biodiversity, landscape, and fire prevention); while many other areas are under extremely intensive agriculture, often using irrigation, and with varying degrees of negative impact on water, soils and ecosystems. These contrasting situations sometimes exist side by side within one municipality.

The pattern of farming structures is also one of extremes. The average holding size in terms of UAA is 24.6 ha, but this figure hides the existence of a large number of very small farms, and a small number of extremely large farms. Approximately half of all holdings are less than 5 ha in size, but these make up only 5.5% of farmland. Only 5.3% of holdings are over 100 ha, yet these account for 55.6% of the total farmland area. (INE, 2009).

Large areas of marginal lands in the interior have extremely low population density, for example less than 5 inhabitants per km² in the uplands of Cuenca (Castilla-La Mancha) or Albarracín (Aragón). Small villages in such areas may have only one or two active farmers and practically no other economic activity. Total abandonment of such areas is a very real threat, and a major challenge for the management of large Natura 2000 sites and their farmland habitats. Minimum estimates consider that at least 42% of the Natura area in Spain is under agricultural use (Oñate, 2007).

HNV farmland and farming

Cut with the main river valleys and coastal areas, intensive farming is restricted by high altitude, poor soils, and extreme climatic conditions, so that much of Spanish farmland is under relatively low-
intensity use, and harbours significant nature value compared with European farmland generally.

HNV farming systems can be divided very broadly between those found in mountains and those characteristic of plains and rolling hills. HNV systems in the mountains are predominantly livestock farming, and in some regions permanent crops, such as olives. Vast areas of the plains are under a varying mix of low-intensity livestock and arable farming, a considerable part of which can be considered HNV. The main systems are summarised below.

Mountain livestock systems

Low-intensity livestock systems occupy very large areas of land in the many mountain ranges (see figure 14 and table?). The farming systems are diverse and include suckler cattle, sheep (meat and dairy), goats (meat and dairy) and in some localities horses (meat, recreation). Dairy cattle were widespread in the past, especially in the northern mountain ranges, but with a few exceptions have become concentrated in coastal areas and valleys under intensified systems.

A common characteristic is the use of vast areas of semi-natural land for grazing and browsing. Practically all land used as pasture in mountain areas can be considered HNV farmland, even though current management may not always be optimum for nature conservation (over-grazing and under-grazing do occur). A large proportion of this pasture is common land, much of which is unfenced, making some use of herders necessary, especially for sheep and goats. Cattle may be left unattended for periods.

Fig. 4: Livestock handling facilities on common pastures in Navarra – an important public investment in HNV farming.

Fig. 5: Traditional cutting of bracken maintains pastures in a mosaic of successional stages, Navarra.

Fig. 6: Mosaic landscape of vines, almonds, pastures and semi-natural shrub habitats, Navarra.
Hay meadows traditionally were widespread, particularly on the north side of the Cantabrian mountains and wetter parts of the Pyrenees and Central mountains. In the main valleys, these have undergone a process of intensification (fertilisation, reseeding) or substitution by arable crops, leading to very extensive losses of this type of HNV farmland since the 1980s. At higher altitudes, meadows have tended to revert to grazing use only, or have been abandoned. The transformation from mown to grazed-only grasslands leads to encroachment by bracken, and the deterioration of an important cultural heritage in the form of stone walls and stone and wooden buildings for animal shelter and hay storage (Corbera, 2010).

The loss of traditional hay meadows has been relentless over the past 20 years (Farino, 2005; Fillat et al., 2008). However, considerable areas still exist. In the Basque Country alone, some 50,000 ha of hay meadows are mapped on the Habitats Directive inventory, although only 3% of the inventoried area is included in designated Natura 2000 sites. Butterfly monitoring in the Parque Natural de Aiguamolls de l’Empordà (Catalunya) found that of all habitat types, the traditional hay meadows were of exceptional value for the abundance of butterflies, and the variety and rarity of the species present (Stefanescu et al., 2005).

Long-distance transhumance between plains and mountains was a major feature of livestock farming in Spain until the recent past. Some 125,000 km of drovers’ roads are still in existence and protected by law, forming valuable ecological corridors and recreational routes.

Fig. 7: Upland hay meadow on the verge of abandonment, Central mountains.

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Fig. 8–10: Hay meadows are especially valuable habitats for butterflies such as the Natura species dusky large blue (*Phengaris nausithous*), here on wet hay meadow in Picos de Europa, and mountain alcon blue (*Phengaris alcon rebeli*), here on dry limestone meadows in Catalunya.
Although much reduced from historic levels, long-distance transhumance is still practised by some farmers, often by lorry. More local livestock movements on foot between lowlands and neighbouring uplands and mountains (*trasterminancia*) is still common in many areas and is essential to the continued maintenance of high mountain pastures, and of the network of drovers’ roads. It is estimated that around 100,000 head of livestock still undertake seasonal movements on foot every year (J. Garzón, pers. com.).

Mountain livestock systems are responsible for maintaining a large number of habitat types of European importance (Natura habitats). Particularly widespread are European dry heaths (4030), Alpine and Boreal heaths (4060) and Semi-natural dry grasslands and scrubland facies on calcareous substrates (6210). Other quite widely distributed types are Siliceous Pyrenean *Festuca eska* grasslands (6140), Oro-Iberian *Festuca indigesta* grasslands (6160), Alpine and subalpine calcareous grasslands (6170), Lowland hay meadows (6510), Mountain hay meadows (6520), *Molinia* meadows (6410) and Mediterranean tall humid grasslands (6420).

Particularly in southern mountains, widespread pastoral habitats are Endemic oro-Mediterranean heaths with gorse (habitat 4090) and Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea* (priority habitat 6220).

Examples of HNV livestock systems are shown in Map 1, courtesy of the LACOPE project (Caballero et al., 2009) and described in Table 1 according to the main mountain ranges, drawing mainly on LACOPE, plus other studies.

Plains – livestock and arable systems

The plains and rolling hills of the Spanish interior include two main farming systems of high nature value: the dehesas and the pseudo-steppes (see figure 22, (Map 2).
Tab. 1: Main extensive livestock systems in mountain areas

<table>
<thead>
<tr>
<th>Region</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Galician mountains</strong></td>
<td>Extensive upland grazing with suckler cattle and horses (in decline). Large areas of mountain pastures previously under traditional dairy systems have reverted to heath, bracken or woodland, or been reforested with eucalyptus and pines. As a result, wild fires have become a major environmental problem in this region. Dairy production has been progressively concentrated in intensive or semi-intensive dairy cattle systems with very limited use of pastures.</td>
</tr>
<tr>
<td><strong>Western Cantabrian mountains</strong></td>
<td>In Asturias and northern León there are mainly suckler cattle systems (Casina breed), and free-ranging horses (Asturcones). There is also a mixed cattle-sheep system, sometimes including goats, for the production of local cheeses (Cabrales, Gamoneu de Puerto).</td>
</tr>
<tr>
<td><strong>Eastern Cantabrian mountains</strong></td>
<td>Indigenous cattle (Tudanca) are still maintained in specific mountain valleys (Cabuérniga) with lowland grazing in spring and autumn under shared management of private land (derrotas). Traditionally there was the Pasiego system, where animals and herders moved progressively up and down the mountain from hut to hut. Nowadays the system is mainly mountain grazing, orientated to selling first calving American Holstein heifers to more intensive dairy herds near the coast. Indigenous dairy sheep (Lacha breed) and goats are also present in the eastern Cantabrian mountains for the production of cheeses such as Picón.</td>
</tr>
<tr>
<td><strong>Western Pyrenees</strong></td>
<td>In Navarra, dairy sheep systems (Lacha breed) are found in the wetter west and meat systems in the drier east, where some shepherds still move stock to the mountain pastures in summer from local upland valleys, as well as from the Ebro valley (ragui Yoldi et al. 2010).</td>
</tr>
<tr>
<td><strong>Central Pyrenees</strong></td>
<td>Communal sheep grazing systems persist, with trastermince to winter lowland pastures, although this is in retreat due to agricultural intensification and consequent loss of pastures in the Ebro valley. Large parts of the higher slopes, that were fields and pastures in the past, are covered by shrubs and mixed or coniferous forests. There is a trend for cattle grazing to increase and sheep grazing to decline.</td>
</tr>
<tr>
<td><strong>Eastern Pyrenees</strong></td>
<td>Meat cattle are dominant forage crops in the Mediterranean lowlands and trastermince to upland pastures. The indigenous Bruna cattle breed produces much-appreciated meat controlled by a regulatory council. There is also a strong tradition of artisan cheese-making (cow and goats’ milk).</td>
</tr>
<tr>
<td><strong>Iberian mountains</strong></td>
<td>Traditionally an important area for sheep systems, producing large transhumant flocks that spent the winter in Andalucía and southern Castilla-La Mancha. These movements have largely disappeared.</td>
</tr>
<tr>
<td><strong>Central mountains</strong></td>
<td>Characterised mainly by suckler cattle systems (Avileña negra breed) and goats for mixed dairy and meat production (Verata breed). Hay meadows are found in wetter parts of the Central mountain system (Guadarrama, Gredos), but many have been abandoned in recent years. A declining number of Avileña negra cattle still walk the approximately 50km to winter pastures in the nearby dehesas.</td>
</tr>
<tr>
<td><strong>Betic mountains</strong></td>
<td>Extensive livestock systems mainly involve sheep (meat) and goats. Native breeds include Segureña sheep and Serrana, Murciano-Granadina and Malagüeña goats, and some Pajuna suckler cattle. Sheep and goat flocks are run on communal pastures and rented land. Trastermince is common from lowland valleys (spring and autumn) to upland pastures (1,500-2,000 m) in summer. Some flocks migrate to nearby Sierra Morena during winter. The dehesa wood pastures also extend into Sierra Morena, especially in the west of Andalucía.</td>
</tr>
<tr>
<td><strong>Balearic and Canary Islands</strong></td>
<td>Extensive goat systems in Canary Islands (Majorera, Palmera or Tinerfeña breeds), and traditional cattle systems (including dairy) in the Balearics (Mallorquina and Menorquina breeds).</td>
</tr>
</tbody>
</table>

**Dehesas** cover approximately 4 million ha in the west and south-west. This low-intensity pastoral system consists of semi-natural pasture with an open tree canopy, usually of evergreen oaks, ranging from thinly scattered trees up to about 60 trees per ha. There is some arable cultivation on better soils, usually for the production of animal fodder. A proportion of the pasture is typically cultivated every 10-15 years to prevent gradual deterioration through scrub invasion. Traditional farms have a mix of livestock, including sheep and goats, suckler
Fig. 13: Apollo (Parnassius apollo) typical of semi-natural dry grasslands on limestone.

Fig. 14: Mountain livestock systems in mainland Spain.

1. Atlantic mountains
   1a. Galician minifundia. Milk and meat cattle
   1b. Cantabrian mountains. Meat cattle
   1c. Trasencarnal Pasiego systems

2. Pyrenees mountains
   2a. West. Milk sheep and meat cattle
   2b. Central. Meat sheep and cattle
   2c. East. Meat cattle

3. Iberian mountains
   3a. Cameros. Meat cattle
   3b. Teruel-Albarracín-Serranía de Cuenca. Meat cattle and sheep

4. Central mountains
   4a. Guadarrama. Meat cattle
   4b. Gredos. Meat cattle
   4c. Montes de Toledo. Red deer systems

5. Sierra Morena dehesa systems
   5a. Sierra de Andújar-Sierra Madrona. Red deer systems
   5b. Los Pedroches-Hornachuelos-Sierra Norte de Sevilla-Sierras de Huelva. Meat sheep and Iberian pig

6. Betic mountains
   6a. Segureña system. Sierra de Cazorla y del Segura. Meat sheep and goats
   6b. Sierras Penibéticas. Meat sheep and goats
cattle and pigs, usually of native breeds. However, the tendency is towards specialisation on one or two livestock types. In recent decades, a considerable increase in livestock densities has led to a general lack of tree regeneration (Díaz et al., 1997).

Silviculture is an integral part of traditional dehesa management, providing an essential part of the seasonal forage (acorns, foliage), firewood and charcoal. The pastures and acorns are especially valuable for foraging Iberian pigs and the production of quality hams, an important economic sector linked with the dehesa.

Where intact, the system maintains a diverse mosaic of habitats, including species-rich dry grassland, open woodland, scrub and low-intensity cropping. Typical Natura pastoral habitats associated with these systems are dehesas of evergreen Quercus spp. (6310), cork-oaks Q. suber (9330) and oak forests of Q. iberica subsp. ballota (9340).

Pseudo-steppe occupy vast landscapes with almost treeless scant vegetation and flat or gently undulating topography, characteristics that resemble the true steppes of Russia and Asia. Semi-natural pastures, shrub vegetation and extensive cereal crops are the main habitat components of these systems, occurring in varying proportions and with varying degrees of farming intensity. Although there are considerable crossovers between them in terms of landuse and farming systems, three broad types of pseudo-steppe can be described, based on the dominant land cover: extensive grasslands, cereal pseudo-steppes and shrub pseudo-steppes.

In some areas the landscape is predominantly extensive permanent grassland, with arable cropping a minor element.

Fig. 15: Goat raising on woody pastures is a labour-intensive farming system.

Fig. 16: Goats of the Verata breed.

Fig. 17: Goat grazing in oak woodland maintains a highly diverse and accessible landscape. Central mountains.
Fig. 18: Dehesa wooded pastures cover over 4 million hectares and are one of the most internationally famous types of HNV farming in Spain.

Fig. 19: Pigs and cork are two valuable products of the dehesa. Extremadura.
limited by physical conditions. These areas, which include also pockets of shrub vegetation, are grazed by flocks of sheep and to a lesser extent goats. Suckler cattle are common in some areas.

This landscape is widespread in the west (Extremadura, parts of Castilla y León and Andalucía), where the grazing resource is mainly private, fenced grassland, although with some cereal stubbles and fallows. Sheep numbers have increased steadily over recent decades, and farming systems have become more intensive. This system merges with dehesas (see above). Shepherded flocks exist, but these are mostly marginal producers using scattered grazing resources (e.g. village commons).

Typical Natura 2000 pastoral habitats associated with these systems are Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (6210) and Pseudo-steppe with grasses and annuals of the Thero-Brachypodiea (priority habitat 6220). Occasional localised arable cropping adds habitat diversity to the pastoral landscape.

Cereal pseudo-steppes are found in areas with more productive potential, where extensive arable cropping is the dominant landuse. In fact arable land with high nature values generally consists of a mosaic of dryland cereal crops, fallow land, legume crops and dry grasslands. Mosaics vary in character, for example, small-scale arable mosaics are typical in parts of northern Spain (Galicia, parts of Asturias, north of Léon), while larger-scale mosaics are characteristic of the central and southern plains, often including olives and vines amongst the mix of arable land and pastures, all of which may be grazed or browsed by livestock at certain times of the year.

These cereal pseudo-steppes cover at least 7 million ha (Oñate, 2003) and fallowing is still commonly used to enable cropping under limiting climatic and edaphic conditions. Arable fallows covered more than 3 million ha in 2009. The fallow proportion typically constitutes a third of the arable area, rising to as much as 80% on the most marginal soils. The traditional 3 year rotation is cereals
(wheat, barley and oat) - fallow - legumes (vetch). Variations include a longer fallow period (up to 7 years) on less fertile soils, and a shorter cycle of alternating cereal-fallow-cereal in intensified systems. In all cases, the presence of cereal stubble during summer and autumn is typical. Agricultural productivity is low, with average cereal production of 2.5 t/ha, compared to 6.0 t/ha EU average.

Extensive livestock has important functions in this agro-ecosystem. During the fallow period, the soil is improved by incorporated stubbles along with livestock dung from grazing sheep flocks. Grazing livestock also prevent succession to scrub on areas of semi-natural vegetation, thus maintaining habitat suitable for steppeland birds, and disperse weed species that are consumed by birds.

In the vast inland plains of Castilla and Aragón, livestock producers generally own little or no land and rely on the shepherded grazing of flocks on land rented annually, usually a combination of arable stubbles/fallow on the better land and rough grazing on the poorest land and hills. The latter is often owned by local authorities. The administration of grazing rights on cereal stubbles is based on old laws and depends on Local Grazing Commissions (Juntas de Pastos) involving cereal farmers (landowners) and graziers (largely landless). Sheep for milk make more use of arable land, whereas meat sheep depend more on rough grazing. Milk sheep spend more time indoors than meat sheep, but shepherding is still practised for a large part of the year. In both milk and meat systems, the stocking densities are extremely low (0.15-0.3 LU/ha).

Depending on fallow duration, the density and composition of vegetation col-
onising fallow parcels varies considerably (assuming succession is not prevented by tillage). The variability in the length of fallows creates spatial and temporal habitat heterogeneity, which is positively linked to diversity and abundance of steppeland birds. The fallow land itself is particularly selected during the breeding season, and also benefits wider biodiversity (flora, invertebrates, and reptiles). The presence of landscape features such as field boundaries of spontaneous vegetation and seasonal streams and ponds (e.g. priority habitat 3170) further increases the nature value of such farmland.

Shrub pseudo-steppes are found on high altitude plains of the north and southeast. They share harsh climatic conditions and edaphic limitations, and a distinctive vegetation of coarse grasses and shrubs. The páramos in the Iberian highlands are characterised by scattered Juniperus woods (priority habitat 9560). These areas were traditionally used as summer grazing, but have suffered severe rural exodus and the traditional grazing system has declined sharply, with a move to semi-indoor systems. Many juniper wood pastures are in a state of abandonment with rampant scrub invasion (Blanco et al., 1997). Dupont’s lark (Chersophilus duponti), the most threatened passerine bird in Europe, is an emblematic species of such areas. This bird’s habitat depends on continued grazing for its existence, and abandonment of this activity is among the main threats to the species (Suárez, 2010).

In the southern shrub pseudo-steppes, pockets of arable crops are located in valley bottoms and better soils, but the landscape is dominated by coarse grasses and shrub in a highly diverse mosaic. Important priority habitats include Mediterranean saline steppes (1510) and gypsum vegetation (1520). Meat sheep and goat rearing is nowadays the dominant use, the harvesting of esparto grass (Stipa tenacissima) and aromatic plants being almost abandoned.
Fig. 24: A typical bird species of shrub pseudosteppes is the Dupont’s lark (Chersophilus duponti) while little owls (Athene noctua) prefer olive groves.

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics and farming uses</th>
<th>Typical bird species</th>
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<tr>
<td>Shrub steppe</td>
<td>Predominantly semi-natural shrub pastures. Pockets of arable crops in valley bottoms and better soils. Highly diverse mosaic. Sheep and goat rearing. Harvest of esparto (Stipa tenacissima) and aromatic plants.</td>
<td>Dupont’s lark (Chersophilus duponti), lesser short-toed lark (Calandrella rufescens), black wheatear, (Oenanthe leucura), spectacled warbler (Sylvia conspicillata), trumpeter finch (Bucanetes githagineus)</td>
</tr>
<tr>
<td>Extensive grasslands</td>
<td>Predominantly semi-natural grassland pastures. Cereal crops in valley bottoms and better soils. Diverse mosaic. Rearing of sheep and goat and, very locally, cattle.</td>
<td>Stone curlew (Burhinus oedicnemus), collared pratincole (Glareola pratincola), black-bellied sandgrouse (Pterocles orientalis), pin-tailed sandgrouse (Pterocles alchata), european roller, (Coracias garrulus), tawny pipit (Anthus campestris)</td>
</tr>
<tr>
<td>Cereal pseudosteppe</td>
<td>Predominantly cereal crops in rotation with other arable crops (e.g. sunflower, legumes) and fallows. Dynamic mosaic in time. Occasional presence of permanent crops (e.g. olives, vines). Seasonal rearing of sheep and goats.</td>
<td>hen harrier (Circus cyaneus), montagu’s harrier (Circus pygargus), lesser kestrel (Falco naumannii), great bustard (Otis tarda), little bustard (Tetrax tetrax)</td>
</tr>
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Source: Own elaboration based on Yanes & Delgado, 2006

The main natural values of this agro-ecosystem are the populations of many birds species that are in decline (or not present) throughout Europe (Suárez et al., 1997). Bird communities vary according to the relative proportions of arable crops and semi-natural vegetation, as shown in Table 2.
Permanent crops

Olives cover over two million hectares and dominate the landscape in parts of the centre and especially the south of the country. The national statistics do not reveal what proportion of this area is under low-intensity management, although they indicate that about 453,000 ha are irrigated (INE, 2009) and therefore under more intensive forms of cultivation that are not conducive to high nature value.

Nevertheless, there are many remaining areas with plantations under more traditional, low-intensity management, especially uplands such as in Sierra Morena north of Cordoba, Sierra de Segura in Jaén, the north of Extremadura, the interior of Valencia or parts of Navarra. A key factor for nature values is the management of the understorey. If spontaneous vegetation is allowed to develop into the spring, olive groves can support a high diversity of flora and of invertebrates, include typical grassland butterflies such as small copper (Lycaena phlaeas), meadow brown (Maniola jurtina) and the declining common blue (Polyommatus icarus), as well as specialist species such as marsh fritillary (Euphydryas...
Fig. 26: Traditional orchards in upland areas, such as these chestnuts in Extremadura, act as fire-breaks in the event of forest fires.

Fig. 27: Olive groves are still grazed with sheep in some areas, such as here in Córdoba.
aurinia). The abundant invertebrates and the olive fruit, which is of a very high energy value, provide a rich supply of food for birds and mammals. The trunks of older trees develop hollows which are used by birds such as little owl (Athene noctua) and reptiles, as well as by other fauna, such as the genet (Genetta genetta). Traditional groves are an important wintering habitat for thrushes, warblers and finches, and breeding grounds for the rufous bush robin (Cercotrichas galactotes) one of three passerines classed as at risk of extinction in Spain. Features such as dry-stone walls and patches of semi-natural vegetation on and between parcels provide important habitats and "ecological infrastructure". Other types of fruit and nut orchards that occur more locally but in several different parts of the country in low-intensity systems include almonds, chestnuts, figs and carobs.

In some uplands areas such as Alpujarras (Granada) in the Southern mountains or Gata and Hurdes (Cáceres) in the Central mountains, mixed orchards are found in a micro-mosaic with small-scale cropping and vegetables. These semi-subsistence systems usually depend on traditional networks of irrigation channels that are themselves of considerable cultural and natural value. See farm example from Las Hurdes, below.

Apple orchards are typical of the northern Atlantic regions, particularly Asturias and Cantabria and to a lesser extent Galicia and Cataluña. Traditional orchards, combining trees with semi-natural pasture, cover a small area. In Asturias such orchards can be found in a mosaic landscape of meadows, rough grazing, vegetable plots and various types of fruit tree.
Tendencies and Developments

Land use in Spain in recent decades has been unstable. Change is often rapid, dramatic and on a large scale. The most widespread changes have involved intensification and restructuring of the farming and forest landscape as a result of policy incentives, especially new irrigation and farmland afforestation. There has been an accompanying steady decline and abandonment of traditional land uses, especially in more marginal areas. These changes have environmental impacts, including the loss of biodiversity and landscape values, and increased fire risk.

Farm structures are evolving rapidly. Between 1990 and 2003, the total number of holdings fell by 28%, and holdings of under 5 ha fell by 35% in number. The number of larger holdings increased in the same period. There is a general shift away from family farms towards farms run by businesses and co-operatives.

All of the extensive livestock systems have undergone considerable change in recent decades. The almost complete disappearance of transhumant sheep has reduced the grazing pressure in many seasonal mountain pastures, leading to gradual scrub invasion and increased fire risk. In some regions, suckler cattle that are housed in the valley bottoms in winter have tended to replace transhumant sheep on the summer pastures, thus keeping these pastures open.

Shepherded systems in plains and mountains face severe challenges under current socio-economic and policy conditions. Although they can produce a net income with CAP direct payments, the labour demands on farmers are excessive, because they cannot afford to employ a shepherd. In response to this, there has been a marked increase

Fig. 30: Electric fencing helps to reduce the farmer’s work load on common grazings in these mountain passes of Asturias.
in sheep flock sizes in some regions, with more than 1,000 head in a flock being now quite common. There are estimated to be some 90,000 active shepherds at present (J Garzón, pers com).

The tendency in all systems is to concentrate livestock on the better pastures, and provide supplementary feeding rather than exploiting remote and seasonal pastures, particularly in dairy sheep and goat systems but to some extent also in sheep meat and cattle systems. Semi-intensive systems are becoming widespread, with housing for at least part of the year. This change reduces work loads and risks to stock, but inevitably leads to reduced grazing pressure and consequent scrub invasion, especially on remote pastures. A relatively new phenomenon is the development of highly intensive indoor dairy sheep systems, relying entirely on purchased feeds and normally using imported breeds (e.g. from Israel) of high productivity.

The main drivers of abandonment and intensification of traditional extensive livestock systems are lack of economic viability (especially of herded systems); very limited support from the CAP, rural development and other policies; lack of skilled shepherds; harsh living conditions; long working hours and no holidays; unwillingness of sons and daughters to take over this type of farming from their parents; inadequate infrastructure for livestock (handling facilities, fencing, water) both on the farm and on common land.

Rules and regulations are important factors that contribute to livestock farmers giving up their already difficult activity. These include rules on livestock tagging, veterinary inspections, restrictions on livestock movements, and requirements to dispose of carcasses rather than leaving them in open country where they are quickly disposed of by vultures and other wild animals. Restrictions imposed by environmental authorities, especially in protected areas, can also be a factor. For example, prohibitions on eliminating trees and shrubs, which shepherds traditionally did by hand or with controlled fire, to prevent encroachment and loss of pastures.

In certain areas of northern Spain, the recovery of wolf populations in areas where the species had been eliminated is a factor that drives farmers to withdraw livestock from more remote pastures. The problem is not necessarily the loss of stock, which is compensated, but the cost and time needed to prevent the loss of stock, or claim compensation.

Arable cultivation has become intensive on more productive soils, for example in the Ebro and Guadalquivir valleys, the plains around Valladolid and Salamanca, or the south of Navarra. Increased fertiliser applications mean that fallowing is reduced or no longer practised at all. Widespread tendencies include the decline of legumes as part of the rotation, repeated tillage of fallow land in winter and spring, preventing the spontaneous ground cover that is so beneficial for wildlife, and burning of stubbles. Field boundaries are often treated with herbicides and in some areas have been eliminated entirely. Land consolidation schemes, grubbing out of traditional vineyards and their conversion to more intensive trellis systems are threatening the most valuable arable pseudo-steppes in northern Castilla-La Mancha.

Irrigation of olive plantations and other permanent crops is expanding rapidly in some regions, and is a clear indicator of intensification. In Andalucía, the world's main olive-producing region, production from irrigated plantations has reached 30% of the total, up from 20% in 2005. Many non-irrigated olive plantations have also come under relatively intensive management since the 1970s. For example, pesticide use may be high and the land is often ploughed several times a year in order to remove competing vegetation.
Opportunities for the future

Many areas under HNV farming systems have very limited alternative activities. Abandonment is a serious threat, creating unproductive wastelands of dense scrub that are highly vulnerable to forest fires and unattractive for tourism. Current policies are not effective in halting these processes, as they fail to support the relevant farming activity. Most rural development expenditure has been absorbed by sectors such as irrigation and food processing, and by afforestation of marginal farmland, which contributes to human withdrawal.

Although Spain receives a very large EU budget for rural development, support for HNV farming has been weak and fragmented. Agri-environment measures have developed very slowly. There are some positive schemes for habitat management, but their coverage is limited compared with the scale of the challenge on the ground, and compared with many other EU countries.

However, it is not too late to halt the decline of HNV farming. Recently there are signs of hope in the emergence of new interest and initiatives. Several shepherd schools have been set up in Andalucía, Aragón, Asturias, Basque Country and Cataluña. Associations of shepherds have been established and become more active in the defence of their activities, including a National Shepherds’ Foundation, and regional groups such as Pastores por el Monte Mediterráneo and Asociación de Ganaderos Trashumantes de Asturias.

At the national policy level, the Ministry of Rural and Marine Environment has established rural development thematic working groups on HNV Farming Systems and on Extensive Livestock and Transhumance. Detailed work identifying HNV farmland and farming systems is being undertaken by the national government (Olivero et al., 2011) and by the regional government of Navarra (Iragui Yoldi et al., 2010). A new mechanism for supporting sustainable farming through territorial contracts has been established recently (Real Decreto 1336/2011), that includes the objective of “maintaining traditional farming systems of high nature value”.

Some good LEADER and LIFE projects show what can be done, for example La Serena LIFE project in Extremadura and LEADER Oriente in Asturias. Much more effort is needed from the agricultural authorities to transfer these experiences and models into RDPs, in order to achieve results on a much larger scale. There is also a tendency for young people to move into some areas of HNV farming, providing an injection of new ideas and initiatives often favouring sustainable rural development.

Many HNV farming systems are linked with labelled quality products such as PDOs (Protected Denomination of Origin), including many cheeses, Iberian ham, beef, legumes and some olive oils. However, the link is not automatic – PDO labels are primarily a geographical indication, with only limited links to the farming systems involved. Many quality products are from intensified farming systems with reduced nature values. More should be done to promote products specifically from HNV farming systems.

Conclusions

HNV farming is of enormous territorial and environmental significance in Spain. Vast areas of the country are under these farming systems, producing a range of public goods including biodiversity, attractive and accessible landscapes, fire prevention and cultural heritage. The diversity and extent of HNV farming systems is exceptional compared with most European countries.

Many of the areas under these farming systems face a challenging future. A new policy approach is needed, with programmes of support to HNV farming
that work towards the economic sustainability of these landuses, in order to maintain the farming communities and ensure the environmental services they provide.

This does not mean trying to fossilise traditional or existing systems. Some traditional practices should be maintained, but in many cases there is a need for evolution towards new management models, such as the use of electric fencing to replace some shepherding tasks, the introduction of more balanced and productive arable rotations, or the joint management of small and fragmented olive farms.

A mix of measures is needed, including far more ambitious programmes of agri-environment payments and territorial contracts for farmers and grazers, funding for local NGO projects that work with farmers to achieve socio-economic sustainability, and initiatives to improve public awareness, value-adding and marketing of products from HNV farming systems.

References


High Nature Value (HNV) farming is inherently valuable for biodiversity and forms a living cultural and natural heritage. HNV farmland comprises semi-natural pastures, meadows and orchards, as well as species-rich arable land, and often retains a wealth of landscape features. HNV farming is present in all European countries, with a diversity of types and extent. Apart from being the cornerstone of European farmland biodiversity, these types of farming provide a multitude of other services for society, including sustainable rural economies, and the rich social fabric and character of Europe’s landscapes. The environmental, socio-cultural and territorial significance of HNV farming is increasingly recognised, but greater awareness is needed amongst policy makers and the wider public.

This book presents an overview of HNV farming across 35 European countries, describing the main characteristics and presenting examples of farming systems, farms and farmers. Beside the country chapters there are thematic chapters looking at a range of issues of farming, nature, economy and policy. Thus the book gives insight to a very broad subject affecting not only farmers, conservationists and policy makers, but also all people interested in the diversity of European landscapes.