

BREEDING SOLUTIONS: PARTICIPATORY MEETINGS WITH LIVESTOCK BREEDERS IN IBERIA CONCERNING COEXISTENCE WITH WOLVES

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1. Introduction

For some decades now, the sociological aspects of conflicts involving wildlife conservation have been rendered clear: in the days of the Anthropocene, Man may well be the single most important determinant in many species' habitats. Thus, human dimensions represent a main concern in wildlife management, above all when a species' growing presence in a given area in some way is perceived as hindering economic and social activities, namely in the case of large carnivores in Europe.

The wolf (*Canis lupus*) has been expanding its range in many parts of Europe, returning to regions where it had been absent for decades (Chapron et al., 2014). Such is the case south of the Douro river in the Iberian Peninsula, namely in the provinces of Castilla y León Community, in Spain, and in Portugal, in the region along the border (MAPAMA, 2014; Álvares et al., 2015). In 2002-2003, when the last Portuguese survey was done, wolf presence was considered prob-

able in the area, although with no packs established, being the region with the lowest number of reported damages to livestock within Portugal's wolf range (Pimenta et al., 2005) (Fig. 1). Ten years later, the number and range of damages had increased. Since 2012, the Institute for Nature Conservation and Forestry (ICNF), responsible for wolf management and for assessing and compensating damages to livestock, recorded an average of 90 wolf attacks per year, affecting an average of 243 domestic animals. Attacks also began to occur in three other municipalities (Pinto de Andrade et al., 2015).

Soon the expectable breeders' complaints, about wolf depredation, soon attracted the attention of regional media outlets, followed suit by TV newscasts and national newspapers that struck a chord in other regions of Portugal where wolves were also making a slow but steady comeback. These news pieces often included bogus elements regarding the number of wolves present in a given area, false claims that they had been artificially reintroduced, and inaccurate



The transition to extensive cattle and sheep production, while wolves were less present in the region, with no adequate protection measures, resulted in higher damages to livestock after wolf densities increased, especially since wild prey remained scarce, in the border region, south of the Douro river, in Portugal. Photos: Sílvia Ribeiro, Joaquim Pedro Ferreira.

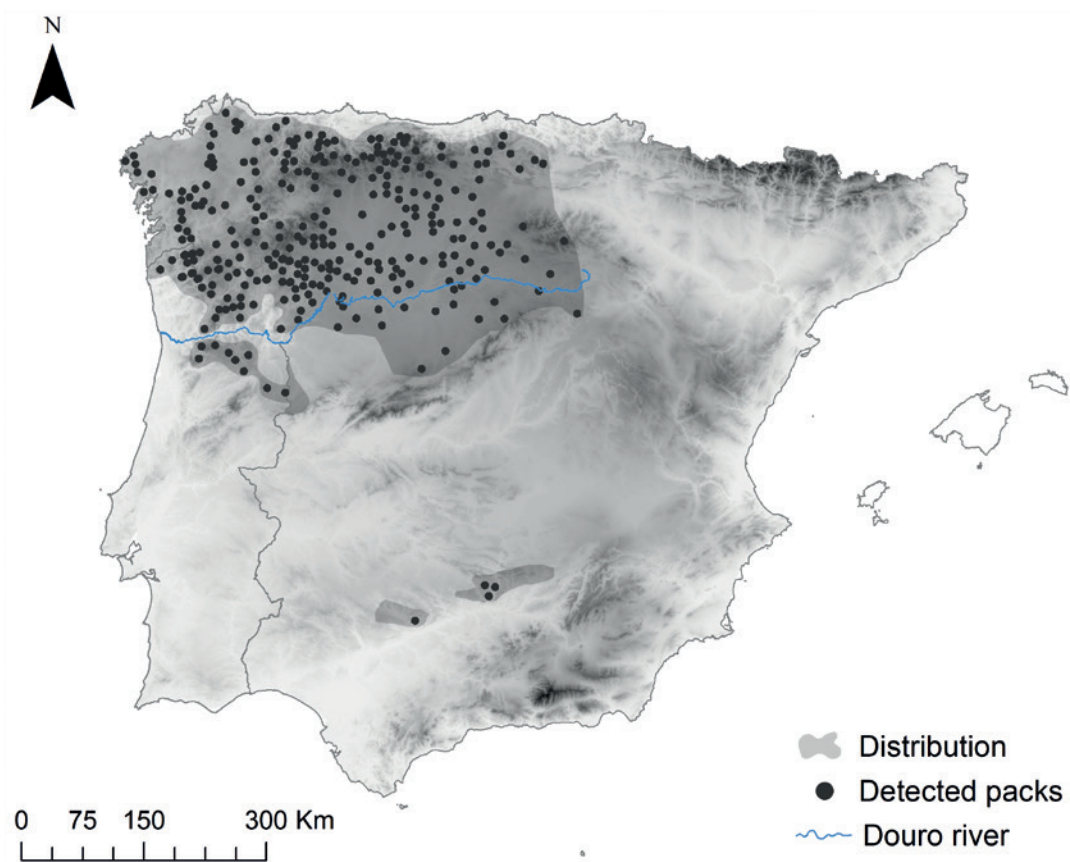


Fig. 1. Wolf range and distribution of packs in Portugal, according to the last national wolf survey of 2002/2003, and in Spain, according to regional surveys developed between 1999 and 2003. The Douro river is a barrier for the wolf in Portugal and defines the protection status of the species in Spain. Adapted from: Álvares et al., 2005.



The lack of shepherds, guard dogs or anti-predator fences makes livestock very vulnerable to wolf attacks in Castilla y León. Photo: Carolina Cortijo.

information about wolf behaviour (e.g. the notion that wolves have “fun” while killing is ubiquitous). Choreographed by some breeders and amplified by the media, the outcry made itself heard at local and national offices of power, with most mayors and parish leaders supporting the protests whole-heartedly. In November 2014, many herders and breeders congregated at the town council of Almeida, the municipality registering the highest number of damages, to voice their complaints. Adding insult to injury, the prevalent opinion about compensation payments offered by the state, complying with the Wolf Protection Law of 1988, was that they were chronically tardy and fell short of fair values, following an approval process not clear enough to those who bore the losses. This was clearly a recipe for the rapid growth of conflict between livestock owners on one side and the wolf and conservation-centred entities on the other.

Although the average human population density in the area is much lower than the national average (see Study Areas), its communities are tight-knit and economically depressed, thus detrimental impacts on livestock holdings tend to have a significant social echo. For instance, in 2016, an ex-post survey on the knowledge level and attitudes towards wolf presence found that 79% of livestock owners in the region knew someone who had suffered damages to their cattle by wolves (Espírito-Santo, 2017).



Wolf culled by the Spanish authorities of the Junta de Castilla y León. Photo: Junta de Castilla y León.

A similar situation had been evolving in Spain in recent decades, since the wolf started to slowly regain its former range south of the Douro river, with the inevitable increase of social conflict due to a surge in attacks, mainly on extensive-grazing cattle. An increase in wolf poaching duly followed, with farmers demanding lethal control of the species by the authorities, despite its strictly protected status south of the Douro (EC Habitat Directive).

1.1. Involving the breeders

Livestock breeders constitute, naturally, a group of the utmost interest for wolf conservation efforts. Not only are they in the “front line” of a growing conflict between human activities and increasing wolf presence, but also mitigation efforts such as the implementation of livestock guarding dogs (LGDs)

and permanent fences rely on their acceptance and commitment.

An opinion survey undertaken in 2013 in Portugal, in the areas near the Spanish border in the districts of Guarda and Castelo Branco, showed that, on average, livestock breeders concur that wolves should exist and do not support the hunting of wolves (Espírito-Santo, 2013). However, there was little homogeneity within this group: many respondents had polarized, either strongly agreeing or strongly disagreeing with the existence of wolves. On the other hand, a 2016 survey (Espírito-Santo, 2017) found that the general public still held the exaggerated view that wolves cause an inordinate amount of damage to livestock, bringing to light a strongly emotional factor: even if wolf-caused livestock losses are in fact low when compared to other causes of livestock mortality, they are nonetheless consistently perceived as being of paramount importance (Boitani, 2000). The 2016 survey showed that livestock breeders kept their views relatively unchanged, remaining “the only interest group with scores always on the negative side”, although not extreme (Espírito-Santo, 2017).

There seems to be a consensus that higher degrees of public involvement are propitious to successful human-wildlife conflicts’ management, even if achieving this may prove difficult (Treves et al., 2009). Early engagement with stakeholders is more likely to lead to high-quality and durable decisions (Reed, 2008). Deliberative, participatory processes may assume multiple guises, from individual interviews to popular assemblies and committees, but they are all designed to allow some degree of direct participation and empowerment, also in domains that concern environmental decision-making, as well as to facilitate deeper discussions and understanding of the values and attitudes at work in each situation, as noted by Bloomfield et al. (1998). According to O’Riordan et al. (1999), the devices of democratic participation also aim to contribute to foster a “creative sense of citizenship in participants”, even if this requires an educated citizenry, able to endure the “arduous processes of co-governing for a better society and environment”. However, these results are highly dependent on the very nature of the process that can bring them about, as Reed (2008) points out. This same author sums up the most relevant promises and known pitfalls of stakeholder participation, such as “consultation fatigue”, which strikes participants in too many ineffectual participatory processes that gain them meagre rewards. Pertinent to the present discussion, another risk is the emergence or strengthening of a dysfunctional consensus, when group discussion

only adds robustness to unfair privileges and minority disenfranchisement.

The plethora of approaches to participation makes it difficult to summarize all methods and strategies in an abbreviated taxonomy. Treves et al. (2009) enumerated no less than 13 different genres of interventions and several dozen subtypes, all aimed at the mitigation of human-wildlife conflicts. Tippet et al. (2007), based on the objectives previously laid out for participation, listed methods that tend to: inform; conceive engagement processes; consult; inform about ongoing implementation of plans; or monitor the participatory practice itself.

1.2. The LIFE MEDWOLF Project

The LIFE MEDWOLF Project (LIFE11 NAT/IT/069), implemented since September 2012 along the border with Spain, in the centre of Portugal, south of the Douro river, foresaw from the start a participatory level of engagement with local stakeholders to reach its goal: to decrease the conflict between wolf presence and human activities in rural areas where the cultural tradition of coexistence with predators was lost. To this end, workshops and public debates were implemented in an effort intended to bring about several benefits: to appease the more irate stakeholders by lending ears and attention to their opinions and grievances; to increase knowledge of their state of mind, attitudes and planned behaviours; and to involve stakeholders in the search for and adoption of remedies to attenuate conflict.

Within the MEDWOLF Project, several steps were taken and different models implemented. Firstly, in October 2014, a workshop was organized in Castelo Branco, bringing together 20 representatives of ten entities, namely local and national livestock breeder associations, as well as wolf researchers and managers from Portugal and Spain. The aim was to inform local stakeholders about the Project and the actions proposed to mitigate conflicts, as well as to survey their main concerns about the wolf presence.

In the same spirit, two meetings were held in November 2014 in two villages in the Almeida municipality, involving a total of 130 participants from 25 parishes and 3 municipalities (Almeida, Pinhel and Guarda).

Originally intended solely for livestock breeders, these meetings were hijacked by the agendas of some local actors and turned into rowdy ceremonies of polarization and mob-like attitudes. The most vocal and angry participants dominated the debate, launch-

ing tirades against wolf conservation, the compensation scheme and the (imaginary) “reintroduction” of wolves. The less angry attendees cried out for the imprisonment of all wolves in enclosures, while the really irate ones demanded that they be shot without a second thought.

Clearly this “open” model for participatory meetings risked working against the Project’s objectives, spreading polarization and silencing moderate voices. Another strategy was needed; one presenting committed stakeholders with an opportunity to collaborate in the search for practical, feasible solutions to the problems they face regarding coexistence with the wolf. A final model was implemented, intended to diagnose poorly understood problems and searching for tentative solutions, all from the stakeholders’ point of view. The majority of invited participants were livestock breeders.

1.3. The Living with Wolves’ Project

Coincidentally, a similar meeting had taken place a month before, in Valladolid, on the other side of the border, organized by the Spanish NGO Ecologistas en Acción. Its stated objectives were to allow farmers to learn about other management experiences, share concerns and exchange opinions; to search for consensus on a series of measures that may facilitate coexistence between wolf and livestock; and to enhance the visibility of livestock farmers who are favourable to coexistence with Iberian wolves. This meeting was the kick-off for a more ambitious project, entitled “Vivir con Lobos” (Living with Wolves), that encompassed further meetings and actions. The most relevant issues identified therein were later subject to an online survey¹ amongst livestock breeders, edited in subsequent meetings, with the goal of creating a consensus document identifying key actions towards coexistence between extensive livestock breeding and wolves, eventually producing a document with formal claims to the different levels of Spanish authorities. This overall process involved over 50 breeders and also resulted in the production of a video documentary and a leaflet focusing

on coexistence between extensive cattle breeding and wolves².

Here, we present the main results of both meetings and provide a brief comparative analysis of their conclusions, in order to achieve a clearer idea of the key issues that affect livestock breeders across the border, with the intention to devise and reinforce common strategies to better mitigate conflicts and help manage this expanding transnational wolf population.

2. Study areas

The LIFE MEDWOLF intervention area covers 5,026 km² in seven different municipalities of Central Portugal along the border with Spain: Figueira de Castelo Rodrigo, Pinhel, Almeida, Guarda, Sabugal, Penamacor and Idanha-a-Nova (Fig. 2). The average human population density is 18 inhabitants/km²,

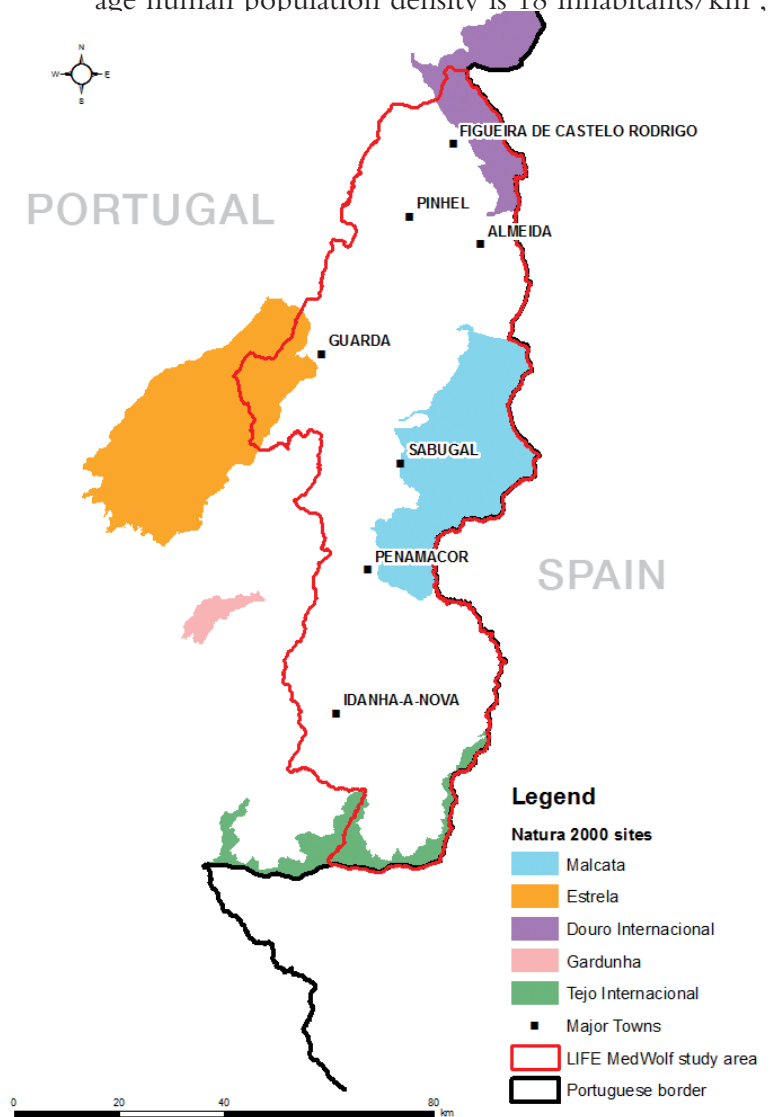


Fig. 2. LIFE MEDWOLF Project intervention area, with location of municipalities, Natural Parks and Natura 2000 areas.

¹ docs.google.com/forms/d/1kVt6b8q7ORyJ85hfCu-nNDhe3A2jj78dfjhPxMCZuHY/viewform?edit_requested=true

² www.ecologistasenaccion.org/article33288.html

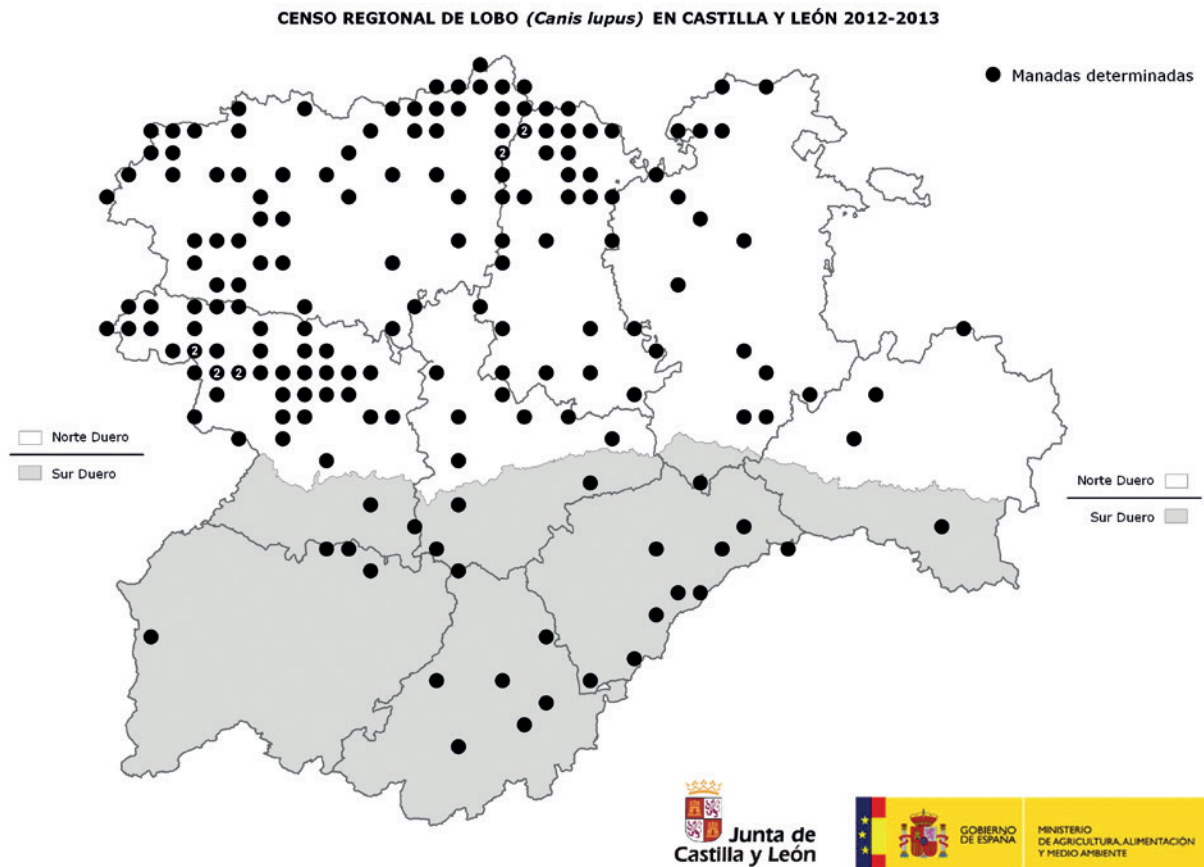


Fig. 3. Distribution of wolf packs in Castilla y León, North and south of the Douro river, according to the last regional census, in 2012–2013. Map from: Sáenz de Buruaga et al., 2015.

much lower than the national average of 115 inhabitants/km² (INE, 2012). Agriculture and livestock production are the basis of the local economy and the land is mainly divided into small properties.

From the last national survey in 2002–2003 to 2016, the wolf range increased by a factor of 5.5, mainly in the northern part of the area, where one pack's territory extends into Spain (Palacios et al., 2017). In Portugal, wolves are currently limited to less than 20% of their former distribution area, that once included the entire country (Petrucci-Fonseca, 1990; Pimenta et al., 2005). Now, as wolves are highly dependent on livestock since wild prey is generally scarce (Álvares et al., 2015), potential for conflict is high.

MEDWOLF's study area and the autonomous community of Castilla y León (where the Spanish meeting was held) are quite different in size (the latter is larger than the whole of Portugal), although there is not much difference in human population densities. Castilla y León has around 60% of packs confirmed in Spain during both national wolf surveys, in 1987–1988 and 2012–2014 (Blanco et al., 1990; MAPAMA, 2016). According to the most recent survey, the Spanish wolf population has remained more or less stable in number of breeding packs (297 vs. 294 in the previous survey),

but caution should be applied when comparing data, since there was a difference in methods that may have overestimated the number of packs in the earlier study. In several areas of Southern Spain, wolves had been extirpated (e.g. Sierra de San Pedro, Extremadura) or they are on the verge of eradication, as in Sierra Morena (MAPAMA, 2016). In the Castilla y León region, where three official surveys have been carried out during the last 26 years (Blanco et al., 1990; Llaneza and Blanco, 2005; Sáenz de Buruaga et al., 2015), there is a positive evolution of the number of packs but with no overall clear trend in wolf range and number of packs, except in the areas south of the Douro River, where wolves have been trying to establish in the last decades and the number of packs has been increasing, with 27 packs identified in the last survey (Sáenz de Buruaga et al., 2015) (Fig. 3). Where wild prey is abundant, wolf diet is less dependent on livestock, but husbandry systems less adapted to the presence of the wolf may result in more attacks on livestock, especially in areas recently recolonized by wolves, south of the Douro, and where conflicts with livestock breeders may threaten wolf recovery (Llaneza et al., 1996; Barja, 2009; Salvatori and Linnell, 2005).

Both countries also differ regarding wolf manage-

ment: in Portugal the species is listed as endangered, being fully protected under the aegis of national and international laws; whereas in Spain the wolf is a game species north of the Douro river (except in Galicia, where it is partially protected), with hunting quotas established yearly, and fully protected south of the river, under the Habitats Directive (but permits for controlling “problem” animals that prey on livestock are issued annually).

Poaching may have slowed the wolf’s southward expansion in some Spanish provinces, delaying reconnection of the isolated nucleus in Portugal south of the Douro river (a barrier to wolf in the Portuguese territory), with the rest of the Iberian population. In fact, some wolves that seemed to issue from a trans-border pack (Palacios et al., 2017) have been culled in recent years, close to the international border, bringing to light the lack of a concerted strategy between Portugal and Spain regarding the management of the common Iberian wolf population. Moreover, in Portugal a system for compensating wolf damage has been set up, while this is only true in some regions of Spain, while in others, insurances have been implemented.

3. Methods

3.1. The Portuguese meeting

An international meeting was organized in the scope of the MEDWOLF Project and was held on 26th November 2016 at the Agrarian School of Castelo Branco. It involved 38 participants, mostly men 30–60 years old, from Portugal (16), Italy (13), Spain (3), Switzerland (4), France (1) and Canada (1). Livestock breeders formed a majority (20, of which 19 men), but damage prevention specialists and agricultural and livestock production technicians were also present, mainly as observers but also providing technical expertise when required. The participant breeders, originating from wolf areas and representing different regions and husbandry systems (from shepherded flocks to extensively grazed herds), were invited on the basis of their willingness to search for solutions concerning management decisions to reduce wolf impact on livestock in the context of wolf protection, although not all shared a high degree of goodwill towards this predator. Every Portuguese farmer came from the north or centre of the country, four from the MEDWOLF area. Outlooks on their profession ranged from the modern/open to innovation to more traditional/prudent stances.

Each livestock breeder made a brief presentation

describing his/her holding, livestock husbandry, main predation issues and difficulties faced, and the measures implemented to deal with them. Talks were grouped according to the type of livestock bred and the production systems employed. Translations were made by the facilitator and the organizers. Farmers of the same nationality were placed together to minimize the need for translations.

After each set of presentations, participants were asked to identify the main difficulties and issues associated with each husbandry system and livestock production in each region. These were written on a board and grouped by topic with the help of the facilitator. Afterwards, a mediated workshop was set up, in a manner akin to Open Space Technology (openspaceworld.org), where groups discussed the difficulties in a debate session meant to find solutions which were then presented to the other groups and listed in a chart, and consensually grouped into topics (Fig. 4).

Due to the lengthy debates that ensued, only top-



Fig. 4. Talks, working groups and results of the discussion during the Portuguese meeting.

ics considered most important by participants were discussed during the meeting, while solutions to the less relevant ones were provided later by eight of the participants.

This “marketplace of ideas”, as O’Connor and Cooper (2005) put it, was then captured in a proceedings document, to be delivered afterwards to all participants.

3.2. The Spanish meeting

The meeting, held on 31st October 2016 in Valladolid, northwest central Spain, involved only livestock breeders (20, of which 18 men), from holdings producing sheep, goats and cattle. All came from wolf areas in the autonomous regions of Extremadura, Madrid and Castilla y León, and were between 35 and 60 years old. The goal was to replace discussions between them and conservationists with a process that relied solely on their inputs and analysis to identify the main problems faced by their activity and propose workable solutions. The participants came from different contexts, whether pertaining to the wolf’s legal status, habitat characteristics, predominant grazing systems or types of livestock.

The proceedings started with the participants presenting themselves, their holdings and their struggle to coexist with the wolf. Then, a preordained list of themes to discuss was introduced, based on previous meetings with farmers. This comprised: a) measures to be taken by the state (processing of compensation claims, improving valuation of damage, management of feral dogs); b) preventive measures that can be adopted by breeders with state support (non-collec-

tion of carrion, selection of breeds, LGDs, donkeys, etc.); c) socio-economic valorisation of products associated with extensive grazing in areas with wolves (fair prices, special branding, cultural interest, ecotourism); d) improvement of communication and spreading of information and research in this area between the media, social organizations, ecologists, livestock associations, researchers, administrations, etc. Each of these subjects was discussed in a dedicated group with its own table using the World Cafe method (www.the-worldcafe.com): a system that subdivides participants into groups that discuss a specific theme in 20-minute sessions. Subsequently, groups share their insights with the whole assembly.

One participant at each table was fixed and the rest rotated every 10 minutes, until they had all been through all the tables. The ideas discussed were written on paper tablecloths, in a continuous fashion. When this stage ended, a spokesperson for each table shared with everyone the recommended measures. These were expressed in the most consensual way possible, written on post-it notes and placed on the wall (Fig. 5). The next step, assigning a priority degree to each proposal, revealed itself to be rather complex, since all of them were deemed important, and thus this was not factored in at this stage. The conclusions formed, later on, the basis for a subsequent survey – intended to rank the proposals by their order of relevance.

4. Results

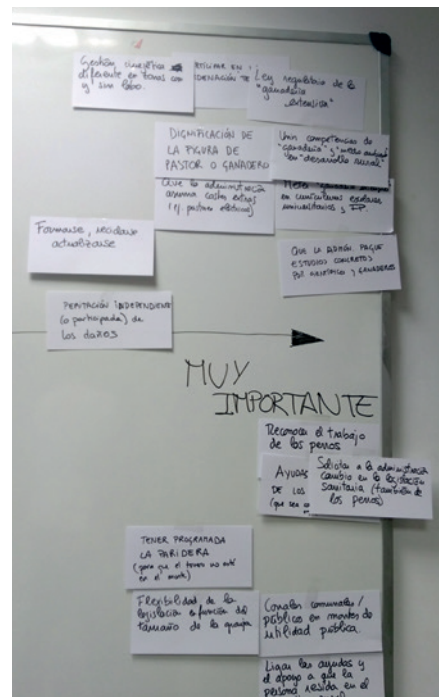


Fig. 5. Discussion, working groups and results of the Spanish meeting³.

³ Some of the images are from the documentary produced by Ecologistas en Acción, focusing on coexistence between extensive cattle breeding and wolves: www.ecologistasenaccion.org/articulo33288.html.

4.1. The Portuguese meeting

The initial discussion that arose during the workshop identified 35 different difficulties that were divided into five broad categories: economical, management/grazing systems, product value, societal and environmental. Thirty-four solutions were proposed regarding the difficulties included in the first two of these categories and 77 pertaining to the last three categories. A consensual list of proposals was produced and is summarized in Table 1.

The proposed solutions to deal with the economic difficulties revolved mainly around the need to have

feasibility studies and technical support to holdings in terms of predation risk and use of prevention measures that should also be subsidized; on the need to improve damage assessment processes and compensate indirect costs of predation, even if this entails creating special subsidies for holdings in the wolf range, whilst all subsidies' granted should be better controlled and linked to the use of prevention measures and take in consideration the predation losses. The subsidy procedures should avoid detrimental consequences to farmers. In terms of the concrete difficulties of livestock management, confinement can be eased by adjusting the

Table 1. Summary of solutions proposed by Portuguese livestock breeders for each of the difficulties identified, grouped into five broad categories.

Issues identified	Proposed solutions
Economics	
Actual costs caused by wolf attacks and insufficient compensations.	Include reproductive stress in damage costs, as well as the genetic value of livestock and the hours spent looking for runaway animals. Grant special subsidies to all the holdings located in wolf territory. Closer inspections of state support to livestock production. Take into account wolf attacks, regarding those support schemes. Make them partially dependant on the implementation of protective methods.
Costs brought by changes to cattle management systems.	More support from breeders' associations in the elaboration of feasibility studies. The state should give technical support to holdings.
Tardiness and difficulties of the compensation process.	Require more professional and sensitive attitudes from technicians evaluating damage. Improve their capabilities, e.g. through the use of DNA analysis.
High costs of LGD maintenance, penning and fences.	Implement support measures that are adequate to the holding's realities. Demand subsidies for protection methods such as LGDs, shepherding and fencing.
Management/grazing	
Confinement: during winter, animals stay confined between 4pm and 8am, a long period without feeding. Problems with humidity when confining calving cows in fences. Difficulties when confining animals: some are frightened and do not want to get inside. Animal welfare at risk with confining procedures. Hoof problems during confinement. Increasing sanitary risk with confinement in smaller pastures/fences.	Distribute food to all animals evenly during confinement inside fences, to make the entry of all animals easier, avoiding dominant animals preventing others from entering. Increase the size of the fences: they should be adjusted to the size of the flock/herd. Train livestock to stay inside fences. Use temporary fences, e.g. electric fences, which are easy to move.
Management: heterogeneity among holdings precludes any one-size-fits-all solution; specific management measures and support systems are needed. The magnitude of all previous problems increases in large holdings (> 1,000 sheep), where more LGDs and fences are needed. Entities on the ground do not work together.	Transition to smaller herds/flocks. Each holding should have its own management plan. More pilot actions should be developed. Provide training/ information to livestock breeders and shepherds about production, nutrition and health/welfare of livestock
Imminent loss of autochthonous breeds, replaced by other breeds less adapted to the region. Changing management may entail a loss in quality and value of local products.	Raise awareness about the advantages/disadvantages of producing specific breeds of livestock in a given husbandry system. Financial support to autochthonous breeds.

Issues identified	Proposed solutions
Birth detection and breeding synchronization are complex tasks.	Provide training to shepherds.
It is hard to change livestock breeders' mentalities, making them accept LGDs and, with night penning, getting to know the habitat and the surroundings.	New technologies (e.g. GPS collars) should be implemented. Promote studies to evaluate damage prevention measures and deepen understanding of predator behaviour. Provide more information to livestock breeders and shepherds.
Insufficient rapport with society and the government.	Increase society's respect for the work done by livestock breeders and promote the self-reliance of younger breeders. A group of mediators that support livestock breeders and report to the government should be created. Livestock breeders should always be consulted when solutions to their problems are being sought.
Product value	
Environmental services of production are not considered in the payment of wolf damage compensation.	Include environmental services of production in the financial compensation for wolf damage.
Uncontrolled selling chain and low selling prices. Even though they have premium quality, meat and milk are increasingly hard to sell.	A shorter selling chain from producers to consumers and local restaurants and fairs, maybe even with the help of mobile abattoirs. Certified brands, products, perhaps linked to a Producers' Association that gives added value to products from wolf territories. Synchronize births to maximize them in the best-selling months (e.g. August).
Society	
How to alert society to the problems faced by livestock breeders?	Awareness campaigns by agricultural associations to show the origin of our daily food.
Local communities sometimes find it difficult to accept the presence of LGDs.	Local networking to improve acceptance of farmers and dogs and their impact on the landscape and ecological aspects. Teach neighbours to get to know them. Distribute leaflets and information panels near zones where LGDs are active.
Lack of awareness of the shepherd profession.	Upgrade the social status of shepherds through specialized schools, uniforms and proper wages.
Poor knowledge of rural areas and of the specificities of each region.	Fight the tendency for depopulation of rural areas, nurturing the passion for nature and adding value to associated experiences.
Uncontrolled and intensive tourism in natural areas.	Monitor tourist presence, inform them about recommended paths and proper behaviour when facing LGDs. Promote small and sustainable ecotourism projects. State tourism offices should treat livestock holdings as partners, making sure that they get their fair share of tourism revenues – after all, they are responsible for much of the beautiful landscape.
Environment	
Lack of wild prey, inadequate hunting management.	Protect and improve the status of ungulate populations, starting with more studies. Better control of hunting activities and zero tolerance of poaching. Liaison between hunters' associations and livestock breeders. Start cereal plantations that may help feed ungulates.
Poisoning when wolves appear: poison linked to wolf expansion, kills the predator community.	Provide alternatives to poison, even if this entails the culling of wolves by local authorities. Spread information on the damage and danger posed by poison. Stricter enforcement of the law.
Removal of carrion should be avoided, since it represents a food source for other species.	Hardly compatible with tourism or water-sensitive areas, but it could be standard practice away from populated zones.

size and type of fences and livestock behaviour, by reducing the number of head and selecting adequate breeds (higher support to local breeds should be considered). Demonstration actions and research about predation and prevention measures should be promoted, as well as extra training for farmers, including the use of new technologies (e.g. GPS collars). Each holding should count on a suitable management plan and the help of mediators, connected to authorities. Boosting farmers' confidence and societal recognition of their important role must further their involvement in decision-making.

Increased product value, certification processes and shorter market chains should be implemented, as well as the adaption of production to seasonal demand, while environmental services provided by farmers should also be compensated. Regarding the relation of farmers with society, a better understanding of the important work they do (e.g. production of quality food, biodiversity and landscape conservation) could be achieved through awareness-raising campaigns and by networking within the community. This can also be attained through specialized training of farmers aimed at upgrading their social status, promoting farming and nature conservation as a means to fight depopulation of rural areas, as well as ecotourism with farmer involvement. It was deemed necessary to explain to passers-by and neighbours how to behave in the presence of LGDs in order to increase their acceptance, possibly by posting informative signs.

Concerning environmentally-related issues, the promotion of wild prey (e.g. feeding crops, poaching control) was seen as important and should benefit from a closer collaboration between farmers and hunters. Measures to prevent use of poison should also be considered, given the huge impact this practice has on the faunal community. Not removing livestock carcasses, that can be an important source of carrion for predators and may reduce the need to attack livestock, can also be a partial remedy for the scarcity of wild prey, considering the dependence of wolves on livestock.

It should be noted that removing carcasses may not be beneficial in this case, as opposed to regions where wild prey is abundant and carcass removal may avoid attracting wolves to farms and increasing the probability of them preying on livestock (Morehouse and Boyce, 2011).

4.2. The Spanish meeting

A total of 66 actions and solutions were identified by the discussion groups within the four topics proposed at the onset of the meeting, with some transversal to all topics (Table 2). Regarding the first topic, supporting measures by the state authorities, proposals focused mainly on improving the existing conditions for livestock breeding, including the legal framework (e.g. grazing limitations); providing subsidies and infrastructures to enable farmers to develop their activity (namely smaller holdings); adapting, in advance, to the presence of predators, even by promoting shepherding; stopping wolf control from becoming a profitable activity; focusing on problem wolves; adapting game management to wolf presence; demanding timely and fair compensation (including profit losses), linked to the use of prevention measures and based on independent assessment; clearing vegetation around pastures to reduce refuges for predators; creating sites for carcass disposal (so they can be fully consumed by necrophagous birds, such as vultures); collaborating with authorities in management issues; and training and promoting training in schools and universities.

Regarding livestock management and damage prevention measures, proposals focused on the improvement of herd management (e.g. clearing vegetation, protecting young animals); resorting to the institution of communal flocks and shepherding; increasing knowledge about wolves and the territory; improving training (e.g. shepherd schools), namely on the use of damage prevention measures, that should be in place in advance of wolf expansion; adapting a proactive stance; disposing of carcasses for necrophagous animals (as mentioned before); sharing success stories but also looking into mistakes made.

Vis-à-vis product valorisation, proposals were to differentiate and add value to those products resulting from coexistence efforts; to promote networking among farmers; to support working collaboration with environmentalists; to dignify and value the profession and increase its visibility and proximity with the public.

The “communication and research” proposals included better communication from breeders and with environmentalists; a more efficient imparting of information about the wolf in rural areas; and conveying correct data without concealing the facts.

Table 2. Measures proposed by Spanish livestock breeders to deal with four main topics: supporting measures, management and prevention measures, valorisation of products, communication and research.

Supporting measures by the authorities
Help to maintain LGDs.
CAP payment in cash.
Recognize the work of LGDs, also regarding the general population.
Adapt legislation for all uses of the forest.
Wolf hunting must not be turned into a business, either for hunters or the state.
Fair and timely compensation, but only for those with preventive measures in place.
Pay profit losses, not only south of the Duero river.
Wolf population control, not necessarily by culling, removal of problem individuals.
Clear bushes to remove refuges for predators.
Shepherds paid to tend livestock in rotating schedules.
Extra costs, such as fencing, should be paid by the state.
Preventive measures to be taken before the wolf reaches an area, not only after attacks.
Adequate sites to dispose of carcasses for necrophagous animals should be instigated and maintained.
State biologists should train holding personnel.
The shepherd profession should be dignified.
Laws for extensive grazing, etc.
Plan in conjunction with the administration.
Have the extensive grazing system taught at high school, universities and vocational training.
Independent damage assessment is indispensable.
Corrals on public or communal hills.
Different game management systems in wolf and non-wolf areas, to protect wildlife.
Adapt legislation to small farms.
Create conditions, through subsidies, for people to live in the countryside.
Build or rehabilitate infrastructures to keep sheep in high mountains, so they do not have to return to barns at night.
Livestock management and protection.
Livestock management and damage prevention measures
Unification of herds during summer.
Differentiate the breeder from the profiteer.
Disposal of carcasses in appropriate sites for necrophagous animals.
Learning the management of LGDs.
Electric fences.
Pen cattle at night and at noon.
Capitalism is to blame for profit losses.
We need to return to shepherding.
Get to know your territory.

Livestock management and damage prevention measures

A school for shepherds.

Admit our mistakes.

Guarding donkeys' management is unknown.

Have a shelter with a good enclosure for calves.

More careful grazing of calves and their mothers.

Farmers should learn more about wolves.

Synchronization of births, scheduling calving cows so that they take care of calves once a year.

Learn from the elderly but also train, recycle and update.

Learn a lot about the wolf, its life cycle, etc.

Prevent rather than regret.

Close feedlots.

Create shepherds' networks.

Learn about LGDs.

Be with your cattle at all times.

Breeders should be continuously informed by authorities about wolf presence and related prevention measures.

Product valorisation

Dignify the profession.

Programmes to bring the rural world nearer to the cities.

Make the profession more well-known.

"Extensive grazing" stamp for products.

Better product flow between producer and consumer, e.g. direct sales, so that the consumer is not so taxed.

More local, mobile or ethical abattoirs, like in other countries.

Environmental groups should have sections on their websites dedicated to selling these products.

Common ways of working among farmers, creating networks of collaboration and mutual support.

Breeders should be included in local workshops and festivals.

Social networks and internet presence.

Another special brand, for breeders who protect necrophagous birds.

Communication and research

Better breeders' associations.

Facilitate the union and collaboration between breeders and ecologists, to share objectives and use a single voice when addressing the state.

Convey truthful information.

Avoid denial of attacks.

Educate people in the countryside as well as in the city.

Education in schools and universities.

Communicate the role of the wolf as a regulator of ungulates.

Bring society onside.

4.3. A brief comparison

Differences notwithstanding, some common leit-motifs are easy to find in the documents that were issued after the two meetings: a strong yearning for the dignification and public recognition of livestock breeding and shepherding; a will to differentiate their products through the creation and marketing of special brands, either showcasing autochthonous breeds or the producers' commitments regarding coexistence with predators; a marked dependence upon state-issued subsidies – to be expected from professionals that feel that their livelihood is threatened and marginalized; nearly equal complaints about compensation measures, from both sides of the border, namely deploring their scope, financial suitability and lengthy/opaque processes; insufficient experience and practical difficulties with the implementation of LGDs, e.g. regarding coexistence with tourism activities; the need for more interconnectedness between professionals; the absolute necessity of more wild prey and to adapt game management in order to improve alternative prey and diminish the number of wolf attacks on livestock.

Besides these broad, omnipresent and somewhat political concerns, other issues of a more technical nature were deemed important by Spanish and Portuguese breeders and should be looked into in detail and encourage further discussion: problems that have to do with calving, stabling, and more. Practical ideas like the synchronization of births in cows, night penning, mainly of young and more vulnerable livestock, and the possibility of legal abandonment of carcasses in the wild also seem of transnational relevance. Furthermore, the suggestion that mobile abattoirs can contribute to the creation of new and more efficient distribution channels cropped up in both meetings.

Whether because of the nature of these two meetings or through differences in data collection methods, the Portuguese side seems to have focused more on the search for solutions, with quite a few being produced in response to each stated problem. This can also be explained by the presence of participants from different regions, that brought to the proceedings greater experience with wolf presence.

Nonetheless, interesting ideas also arose from the Spanish meeting, e.g. persuading environmental organizations to reserve a section of their websites for the sale of wildlife-friendly products, the possibility of instituting communal flocks, subsidizing shepherds and setting up structures to keep sheep in high mountains, during the night in summer pastures.

One must keep in mind that participants in both

meetings were not randomly selected but were all volunteers, most of them already supporting coexistence with the wolf and open to the use of mitigation methods. Even so, the collective state of mind that emerged from these proceedings is remarkable: people of different age brackets that were committed to finding ways to share the land with predators. They were eager for information, support and a role to play in management decisions. Thus, those who fight for wolf conservation can count on an articulate and active segment of livestock breeders that do not view them as adversaries; people that strive to improve their working conditions and the way that the public sees them. Working not against nature but alongside it.

5. Looking forward

These proceedings show the trove of information and ideas that can be obtained from a participatory process and that could hardly be accessible by other means. Some of the suggestions will surely be scrutinized and evaluated by management authorities and other stakeholders.

There are also other advantages to this process. As it spreads, active engagement with stakeholders may have an important consequence, besides civic commitment, trust building, creative citizenship, enhanced Project communication and data mining. When more and more socially relevant members of the livestock breeder community are seen adhering to this ongoing process, the descriptive norms around the profession's praxis will likely undergo subtle but relevant changes: as behaviours and attitudes towards wolves become more and more tolerant or at least muted, more positive intentions will flourish in the community.

A brief analysis of the literature (e.g. Chess and Purcel, 1999) provides us with clues that may help us keep in mind a short set of rules of thumb for future efforts in this domain, e.g. "Stakeholder participation needs to be underpinned by a philosophy that emphasises empowerment, equity, trust and learning"; "Clear objectives for the participatory process need to be agreed among stakeholders at the outset"; "Methods should be selected and tailored to the decision-making context, considering the objectives, type of participants and appropriate level of engagement" (including the need to foresee the participation of illiterate citizens) and, finally, "Participation needs to be institutionalised", highlighting the fact that in the long run, success may depend on institutionally giving livestock breeders' participation a relevant role for future policy-making.



Photo: Joaquim Pedro Ferreira.

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