

Embodied Perceptions, Everydayness and Simultaneity in Climate Governance by Spanish Women Pastoralists

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Abstract

According to recent projections, Spanish traditional pastoralism and extensive livestock management are highly threatened by climate change. Multiple stressors, such as depopulation and land abandonment, agricultural policy changes, and cultural changes, may combine with climate change to drive such systems towards an irreversible crisis. Although pastoral and extensive livestock management practices are widely recognized as powerful adaptive systems to a variable climate, studies on gendered social perceptions of climate hazards and responses to climate change in pastoralism are almost absent in the literature. Moreover, very few empirical studies on natural resources management look at intersecting power relations in the face of climate change.

In this chapter, we apply three key concepts from the feminist literature in climate change—embodiment, everyday life, and simultaneity/intersectionality—to study how Spanish women engaged in extensive livestock production perceive and feel climate change; how their subjective, diverse, lived, and sometimes contradictory experiences are linked to adaptation and mitigation responses to climate change and in general to systemic changes; and how intersecting axes of power, from the individual to the institutional, shape climate change governance. We adopted a situated ethnography approach, collecting life histories of shepherdesses and women livestock operators and discussing key issues emerging from the histories with the interviewed women during collective workshops.

We observed that women pastoralists clearly express their understanding and experience of climate hazards through their bodies, their time, and their emotions. They also express their differential agency in adapting to and mitigating climate hazards in a variety of ways in their daily life and the responses move between conserving traditions and innovating. Although more empirical investigations on intersectionality are needed, we draw attention on the simultaneity of causes of marginality and power inequities among individuals and groups, which depend on their social locations, and the assumptions that privilege certain experiences and knowledges over others. It opens a window of opportunity for collaboration among women pastoralists and with researchers to transform social relations and build more inclusive solutions to climate hazards.

Introduction

Climate Change, Livestock Management and Gender

The relationship between climate change and livestock farming is twofold (Rojas-Downing et al., 2017). On the one hand, according to the Intergovernmental Panel on Climate Change (IPCC), livestock, particularly industrialized and intensive production systems, are deepening climate change by fostering land use change and deforestation, and by emitting 14.5% of greenhouse gasses (IPCC, 2019). On the other hand, climate change negatively affects extensive livestock farming and pastoralism by reducing primary productivity (i.e., forage resources), decreasing water availability, increasing the frequency of extreme weather events (particularly in arid and semi-arid regions), and spreading disease, among other factors (e.g., Muchuru & Nhamo, 2017; Rubio & Roig, 2017). In this paper we use both the terms “pastoralism” and “extensive livestock production” to refer to the livestock management systems where animals meet most of their nutritional needs by grazing natural pastures and permanent grasslands or silvopastoral systems out-door, usually in small or medium scale family-run enterprises¹. Nomadic or transhumant pastoralism (i.e., long- and short-term mobility of herds) is also adopted by some farmers and communities to respond to the uncertainty, scarcity, or variability of access to resources (fresh forage and water) during certain seasons.

¹ Anne Horsin, Claire Lebras, Jean-Pierre Theau. 2019. Extensive livestock production : Definition. Dictionnaire d'Agroecologie, <https://dicoagroecologie.fr/en/encyclopedia/extensive-livestock-production/>

The projections of climate change in Spain suggest that Mediterranean ecosystems are close to a tipping point, requiring urgent responses (Guiot & Cramer, 2016). Increasing temperatures, decreasing precipitation, and increasing extreme events (e.g., heat waves, prolonged drought, changes in seasonality and rising wildfire risks, among others) are expected to lead to progressive aridification of certain areas and a “Mediterraneanization” of others, directly affecting the distribution of plant species, health of animals, and local livelihoods. Spanish extensive livestock management and pastoralism, which include a wide range of landscapes from the threatened *dehesas* (anthropogenic oak savannahs), to agroforestry systems and mountain grasslands, cover more land area and encompass more diverse management systems than any others in Europe (Herrera, 2020). According to the Spanish National Climate Change Adaptation Plan (Rubio & Roig, 2017), traditional extensive livestock management practices are powerful adaptive responses to a variable climate and may help conserve ecosystems in the face of new climate change hazards. Additionally, the fifth IPCC report demonstrates the potential for carbon storage in pasturelands (IPCC, 2015). However, Spain’s traditional pastoralism is also threatened by climate change, and multiple environmental hazards and concomitant drivers amplify the risk of an irreversible crisis. Indeed, to understand the complex effects of climate change in the Spanish context, they must be considered in relation to other multiple stressors including depopulation and land abandonment, land use change, and agricultural policy and cultural changes (Camarero & Sampedro, 2019).

Although gender dimensions of climate change in pastoralist systems have recently received increasing attention, such studies have mainly focused on the Global South (e.g., Aregu et al., 2016; Balehey et al., 2018; Omolo, 2010; Venkatasubramanian & Ramnarain, 2018). Studies of the global North remain scarce (e.g., Buchanan et al., 2016; Reed et al., 2014; Wilmer & Fernández-Giménez, 2016a; Wilmer & Fernández-Giménez, 2016b) or absent, as in the case of Spanish extensive livestock systems. Given the potentially critical role that women play in the future of Spain’s extensive livestock management systems, our research aims to address this gap through a case study of women pastoralists’ experiences of and responses to climate change in Spain.

Feminist Scholarship and Climate Change

In this chapter we draw on three main bodies of feminist literature applied to climate change studies: embodied scholarship, the analysis of “everyday” experiences and resistance (following the concept introduced by Smith in 1987), and the concept of interlocking systems of oppression (i.e., simultaneity or intersectionality) as recently applied by critical feminist political ecologists.

Embodiment scholarship increasingly challenges the disembodied and masculinist science behind climate change discourse and policymaking at broad scales and illuminates the implications of climate change in local places. Feminist political ecology (FPE) literature points out that little research addresses the socio-political dimensions of climate change (MacGregor, 2010), such as how perceptions, impacts, and responses differ among subjects. FPE further highlights how climate change biophysical studies often marginalize the voices of the most vulnerable people (e.g., Indigenous people, women) (Buechler & Hanson, 2015). Additionally, FPE scholars argue that contemporary Western societies often view “climate change” as an abstract phenomenon, despite framing it in language of urgency and emergency. The global scale of climate change contributes to this abstraction, but so does the prevalence of scientific and technical discourse and a knowledge system, based on data and biophysical information on climate change, that downplay more experiential, embodied, and

non-scientific forms of perceiving and feeling it. Post-humanist and new-materialist scholars investigate trans-corporeal climate change that places the problem, and thereby its solutions, within and on our bodies: “Rain might extend into our arthritic joints, sun might literally color our skin, and the chill of the wind might echo through the hidden hallways of our eardrums” (Neimanis & Walker, 2014, p. 560). Following these authors, we consider climate change as an embodied “subject” that interacts with our bodies and emotions. Specifically, we apply the concept of “weathering”; that is, “a particular way of understanding how bodies, places and the weather are all inter-implicated in our climate-changing world” (Neimanis & Hamilton, 2018, p. 80).

A second body of literature also informs our study. Following the concept of “everyday life and relations” (Smith, 1987), we employ a feminist lens to explore climate governance, i.e., the range of strategies, actions, and measures of adaptation to and mitigation of climate change. This literature emphasizes the importance of more closely considering women’s standpoints and their everyday spaces, and their practices and relations around climate change that produce and regulate subjects and subjectivities, affecting people’s daily lives. Examples of this literature are the work of Bee (2013, 2014) and Bee et al. (2015), who illustrate how climate change becomes something not only visceral, material, and embodied, as we mentioned above, but also part of everyday lives. Examining women’s everyday spaces and mundane experiences is a way to understand how gendered power relations shape women’s ways of mitigating and adapting (or not) to climate change and related hazards.

We thus adopt a situated ethnography, which includes semi-structured life history interviews, participant observation, and workshops, and a review of social media messages to capture both 1) how shepherdesses and women livestock operators physically and emotionally feel climate change; and 2) how women pastoralists in their daily lives respond and adapt to climate and environmental change. This qualitative research facilitates collecting situated knowledge and stories from voices of subjects who are not usually heard in first person—i.e., shepherdesses and women livestock operators—as an alternative to the “official” voices—i.e., scientists and men pastoralists. These women make a different sense of the world, as sources of knowledge for understanding and responding to changes in rural societies. Nevertheless, we do not view women as unitary subjects. As suggested by Neimanis and Hamilton (2018), the phenomenon of weathering is situated and not all bodies react similarly. Experiences of climate change are embedded in social and political contexts. Thus, weathering is a concept based on the politics of differences and intersectionality.

A third body of literature from new FPE and intersectionality informs our study. With specific reference to the Global North, an emerging academic literature examines how gender, race, class, education and place, among other categories of social difference, make for differential perceptions, experiences and responses of rural people to climate change and environmental disasters more generally (e.g., drought, flooding, fire) (e.g., Alston, 2006; Buechler & Hanson, 2015; David & Enarson, 2012; Fletcher, 2018; García Gonzalez, 2019; Rodó-de-Zarate & Baylina, 2016; Walker et al., 2021; Whyte, 2014). Developed through the work of Black feminists, such as the Combahee River Collective and Crenshaw (1991), the concept of intersectionality has been described as the overlapping and interactive ways that gender and race can oppress (or empower) specific individuals or groups (Crenshaw, 1991). The concept calls for “simultaneity” or “interlocking” conjunctures of common histories and oppressions and disjunctures that produce differentiation between subjects, knowledges, experiences (Johnson, 2017).

Aware of the different use of intersectionality and/or simultaneity from its origins and applications in Black feminism, we follow new FPE scholars in using these concepts to analyze the intertwined categories of social difference that influence women's abilities to use gendered environmental knowledge and gain political voice and decision-making power at various levels of social organization (Elmhirst, 2011; Nightingale, 2011). In this way we also contribute to empirical research on intersectionality and/or simultaneity in climate change studies in the global North (Ravera et al., 2016; Reed et al., 2014). In the Spanish context, and specifically studying pastoralist systems, Fernández-Giménez et al. (2021) recognize that women pastoralists express common histories of oppression, but also represent a diversity of experiences, motivations, challenges and learning processes that vary greatly based on a woman's age, origins, education, social class, pathways into livestock husbandry, locality, and role in the family and livestock enterprise.

Additionally, the analysis of intertwined oppressions is concerned not only with the local, but with the structures of power that permeate all social relations from the individual to the global (Winker & Degele, 2011). Different policies that address climate change and other multiple stressors with impacts on environmental hazards have both negative and positive effects on different groups. Studying normative assumptions beyond institutional arrangements and policies can help us to understand intersections of power. It is, thus, pertinent in our work to ask how structural forms of inequity are reproduced, reinforced, or challenged by socio-cultural norms, ideologies, and dominant discourses that determine which social locations possess the knowledge and value (or not) in shaping environmental, and, specifically climate, governance (Kaijser & Kronsell, 2014).

In this chapter, we apply these three key concepts from the literature—embodiment, everyday life, and simultaneity/intersectionality—to study how Spanish women engaged in extensive livestock production perceive and feel climate change; how their subjective, diverse, lived and sometimes contradictory experiences are linked to adaptation and mitigation responses to climate change and in general to systemic changes; and how intersecting axes of power, from the individual to the institutional, shape climate change governance.

Moreover, by engaging participants in making meaning of their experiences and their feelings in the face of climate change, we sought to destabilize knowledge hierarchies among researchers and social actors. We adopted an ethnographic approach, collecting life histories of shepherdesses and women livestock operators and organizing discussions with pastoralist women via participatory workshops. As feminist researchers, our situated ethnography emphasizes transparency and reflexivity regarding our own positionalities and seeks to foster collaborative and reciprocal relationships between researchers and research participants (Baylina Ferré, 2004; England, 1994).

Women in Extensive Livestock Management in Spain: A Situated Ethnography

The Spanish Context

Extensive livestock production in Spain is an ancient and still-relevant practice that shapes rural landscapes and provides multiple ecosystem services and cultural benefits (e.g., Azcarate et al., 2013; Montserrat Recoder, 2009; Oteros-Rozas et al., 2014). In 2015, livestock farming in Spain emitted 86.4 million tons of CO² equivalent, more than half of which is attributable to the agricultural production of animal feed and is therefore associated primarily with industrial animal production systems (Herrera, 2020). However, recent research highlights the caveats of the accounting methodologies used by the IPCC, which do

not include a baseline scenario with wild herbivores also emitting greenhouse gasses (Manzano & White, 2019), nor the carbon sink that grasslands and other natural pastures contribute (Freibauer et al., 2004). The impacts of climate change on Spanish grasslands have been extensively reported and include the loss of plant diversity, reduced soil moisture availability (the “Mediterraneanization” of the northern Iberian Peninsula and the aridification of the Southern area), rapid changes in species distribution that are driving extinctions and a resulting biotic homogenization, edaphic changes, changing wildfire regimes, increased frequency and impacts of extreme weather events like drought, or changes in seasonality that affect plant phenology and pollination, among others (Rubio & Roig, 2017). These ecological changes are already having positive and negative effects on extensive livestock management in Spain, with negative effects including reduction of animal production, new and increased diseases, reduced animal wellbeing, the loss of livestock breeds, and reduction in the neonatal mortality of lambs, goats, and calves (Medina, 2016; Rubio & Roig, 2017).

In Spain, women have long been part of livestock management systems, although their roles and visibility varied regionally (García-Ramón, 1989). Since the mid-20th century, livestock production systems in Spain largely shifted away from traditional extensive management and towards intensive industrial livestock farming (Guzman et al., 2018), leading to rural depopulation, masculinization, and land abandonment across large areas (Camarero & Sampedro, 2008, 2019; González Díaz et al., 2019). Today, however, Spanish women appear to be increasing their role in the livestock sector as both salaried and non-salaried family labor, nearly reaching parity with the number of men in the sector (FADEMUR, 2011).

Methods

Fieldwork and co-interpretation of findings for this study took place from June 2018 to August 2020. During this time, the three co-authors collected life-histories of a diverse range of women directly and indirectly involved in extensive livestock management, including women who own or co-own operations or who work with livestock as family members or employees of an operation owned by someone else. We focused the interviews in four geographic areas: Andalucía (southern Spain), the Northwest (Zamora, León, Asturias and Cantabria), the central Pyrenees and lowlands of Aragón, and Catalunya. We identified interviewees (n=31) through existing research and personal contacts, a country-wide network of Spanish women pastoralists, Ganaderas en Red (GeR), and a regional network, Ramaderes de Catalunya (Ramaderes.cat). Interviewees ranged from 22 to 96 years old. Following a situated ethnographic method, we visited most participants’ operations or accompanied participants during their daily work. Several interviews involved extended participant observation or repeated interactions. Participants shared about their origins and families; how they entered the livestock sector; the nature of their farm, livestock, and land management; their motivations and goals; and the difficulties and barriers they faced. They also reflected on past and future changes in the sector and the environment, the main drivers and challenges they perceive, and on present and future responses. To enrich our material and capture collective discourse, we also analyzed the Twitter accounts of the two associations we worked with: @ganaderasenred and @ramaderescat. We reviewed the last two years (2019 and 2020) of tweets, searching for references to key words such as climate emergency, climate change, fires, drought, mitigation, adaptation, disaster, Gloria (i.e., Hurricane Gloria), etc.

We coded the interviews and Twitter posts looking for references to drivers of changes and challenges, and to adaptation, mitigation, and transformation at different scales. We also

coded feelings and emotions we found in the interviews related to drivers and impacts of changes. Finally, we coded references to social categories and power dynamics.

We convened in-person workshops with interview participants and other women pastoralists in Andalucía (n=11 participants), Northwest Spain (n= 11), the Pyrenees (n=3), and Catalunya (n=5) to discuss preliminary research findings with an expanded group of participants, collect additional data on women's experiences and perspectives, and engage participants in data interpretation. We organized an additional virtual meeting with participants in August 2020 to share and further discuss our evolving analysis. Workshop participants discussed how to use the findings to advance their goals, such as increasing empowerment and visibility of pastoralist women in their families, communities, and the sector, improving rural services, and educating society about extensive livestock production. This research was conducted with the free, prior, and informed consent of the participants under Colorado State University's Institutional Research Ethics Board [350-18H]. Names of interview and workshop participants are pseudonyms. We did not anonymize Twitter posts as they are already publicly accessible.

Findings and Discussion

Embodied Perceptions of Climate Change and Environmental Hazards

When “wildfires of sixth generation” arose in the Iberian Peninsula in 2019 and 2020, “the body of firemen fought against them as well as the bodies of shepherds and shepherdesses felt them” (GeR, 2020a).

There is the fire. Come quickly—your animals are burning. If there is a taboo in the rural, it's the fire. Nobody names it. Since we arrived with our project of the Las Cumbres [farm operation] five years ago, we have thought to establish somewhere a protocol, but we didn't do it, to not invoke the devil. In July the 31st of 2020 the devil appeared. [...] and the fear, lot of fear. [and then] The smell. The silence. To walk the land, your land, when it burned, it's unforgettable. Where have the birds gone? This year arrived to remember us we are so fragile” (Lucía, Huelva)

Shocking experiences like Lucía's (which are recalled by herself in Chapter 10 of the present volume) are recounted repeatedly by women in social media and our conversations. An older women pastoralist in a video recorded in July 2020 also told about her feelings of fear, sadness, and helplessness facing fires—a natural phenomenon of Mediterranean ecosystems, which has intensified in Spain in the last decades. Such intensification (i.e., fires are less frequent but much more devastating, unpredictable, and larger) is explained by the interaction of aggravating causes, including climate change and resulting water stressed forests, the expansion of unmanaged forests related to rural depopulation, and resulting abandonment of traditional farming activities like grazing and controlled burns that limit shrub expansion. Similar to those two stories, during one of the workshops with shepherdesses in Catalonia, women expressed their worries of being the most vulnerable to wildfires and their fear due to lack of knowledge and tools to face them.

Wildfires are just one of the environmental hazards linked to climate change that women pastoralists portray through their everyday feelings. In January 2020, the Ramaderes de Catalunya Twitter feed shared images of snow, ice, and water disasters provoked by Hurricane Gloria, which interfered with the daily life of women and animals—another

example of women's lived experiences with multiple and uncertain climate change effects. Our interviews also include many references to prolonged droughts, floods, landslides, and other intense climate-related events. The following Twitter post epitomizes the theme of embodiment—of experiencing, feeling, and knowing change through emotion (“our heart”) and bodies (“our skin”).

The dehydration of soils is chronic. The springs, the mountain and the planet know, our skin and our heart, of men and women farmers who live and work in the rural, know. Who produces food see and feel what means the lack of water. It's impossible for shepherdesses to not see our mountains and pastures losing springs at an irrevocable speed” (GeR, 2020b).

These stories remind us of feminist scholars' argument for the importance of “pluralistic politics of knowledge for effective climate governance” (Bee, 2015, p. 9). Women farmers express different ways of knowing climate hazards. Far from suffering a “hyper-hypo-affective disorder” (Colebrook, 2011, p. 45), like much of Western society, they feel their own bodies engaged in the rhythm of everyday life with a weather-world in flux, experiencing emotions in the face of wildfires, droughts, extreme weather events, and natural disasters. As Neimanis and Walker (2014, p. 573) suggest: “These records, memories, and intensities are indications of “insurgent vulnerabilities: we are responsive to the weather, as it is to us”. Women express, then, their ethos of responsiveness to such urgency, because they are “weathering” their bodies and time.

In one example of this ethos of responsiveness, “Ganaderas en Red” in September 2019, joined the climate strike, because, in their own words: “We are part of the planet, who is our ally and we are aware of the havoc of climate change in pastures and springs” (GeR, 2019a). A few months later at the COP25, where they participated in a round table on extensive livestock management and pastoralism, they also communicated their concerns about the effects of climate change on ecosystems and biodiversity and, ultimately, on their animals, their livelihoods and physical and mental health (GeR, 2019b).

Despite their consciousness and concerns about climate change, other emotions are also expressed by women pastoralists, like rage to have to combat the image—promoted by international reports on climate change (e.g., IPCC, 2019) and social media—that livestock production as a major polluter and contributor to greenhouse gasses, without distinguishing between intensive industrial livestock production and small-scale place-based extensive livestock management, and to showcase the environmental and health benefits of the latter. In December 2018, a long post on @ramaderescat manifested their disapproval of an article titled “If you want to save the planet, don't eat meat” (ARA, 2018). In response, they wrote:

Our ovaries are swollen and we have decided to react.... It's not that we don't agree with the fact that we should eat less meat ... but can we put a little emphasis on what meat and vegetables we need to eat if we want to “fight climate change”? (Thus, we say) if you want to save the planet, choose the right system that produces the food you eat. (Ramaderes de Catalunya, 2018).

This tweet, with a passionate reaction to the newspaper article, also highlights how the climate emergency is intertwined with a particular agri-food model grounded in a set of agrarian, land use, and urbanization policies that further drive both intensification and rural depopulation and land abandonment, ultimately harming ecosystems and biodiversity. As

suggested by several scholars that focus on the politics of climate change, it is difficult to determine which local impacts are, and which are not, directly attributable to climate change rather than to indirect drivers of climate change and underlying stressors that contribute to rural vulnerability (Räsänen et al., 2016). Several women during the interviews highlighted their consciousness of how rural depopulation and the abandonment of livestock farming, especially sheep and goat herds, contribute to shrub encroachment and increase fire risk and biodiversity loss. Some of them are also critical about how policies oriented to tourism overlook rural population and extensive livestock management's needs, and therefore are inadequate to prevent rural abandonment and pasture loss. They expressed their sadness, worries and fears on the future of villages without people and pastoralism: "I would not like for the world to see the house closed, the village empty. That is something I cannot bear. That is something that gives me a lot of pain... and my tears fell" (Rosa, North of Spain)

Moreover, some women are claiming the new EU Common Agricultural Policy (CAP) should consider who is working the land and mitigating climate change by fixing CO₂, maintaining the diversity of habitats, fertilizing soils, and renewing nutrient cycles. "The peasantry, we are among the main landscape managers. What resources will be devoted to the advice and support to adapt the agroecosystems to climate change? We want a landscape capable of guaranteeing Food Sovereignty, now and in 10 years" (Ramaderes de Catalunya, 2019).

However, some of them also express anger about how the EU CAP is not currently oriented to pastoralism's conservation and promotion:

We have everything certified organic, which requires even more pastures, not for them to produce and survive, mind you! We want access to the help of the CAP, the damn CAP, [but it's] the poisoned candy... we need even more pastures than animals need to survive. And we don't have any economic and social recognition. We are adding value for settlement of the people, for the generational change, for the self-esteem, for the environment ... all these (services) should be economically taken into account in the new CAP (Sandra, Andalusia)

Exploring Everyday Spaces and Lived Experiences of Adaptation to and Mitigation of Climate Change

Following the Smith's concept of "everyday" (1987), the life histories of women tell us about the mundane, ordinary activities and practices in homes, neighborhoods, and communities through which women respond to climate change and other concomitant drivers and stressors. Our findings show that women pastoralists' routines, experiences, knowledge, and spaces are never unimportant, because they shed light on how women express their perceptions and capacity to respond to climate change, and how they resist, conserving their landscapes and ways of life while they also transform the system.

Our interviews revealed a variety of everyday and mundane practices women undertake that sustain rural communities and cultural landscapes, from one woman's dedication to restoring and maintaining the physical infrastructure of her village, to many participants' commitment to keeping locally adapted rare and heritage livestock breeds (Fernández-Giménez et al., 2021). Though knowledge and adoption of practices for conservation of landscapes and biodiversity are not exclusive to women, many interviewees defended the use of small, controlled burns and grazing in mountains to reduce shrub encroachment and wildfire risk, and to manage horizontal and vertical connectivity. In Spain, the warming and drying climate

combines with land use change, especially abandonment of formerly grazed or cultivated lands, to increase wildfire risk. The progressive abandonment of traditional agricultural and livestock management activities of the Spanish rural territories since the 1970s has resulted in increased forest and shrub cover—e.g., around 690,000 hectares from 1994 to 2006 according to Benayas et al. (2007), and therefore increased wildfire hazards.

Traditionally, shepherds in some regions used small controlled (or “artisanal”) burns to keep pastures cleared of shrubs and accessible for grazing (Fernández-Giménez & Fillat Estaque, 2012). Flocks of goats and sheep that browse on new growth of woody plants also helped manage the highly flammable shrubs and understory vegetation and reduced risk of large intense fires. Several participants, like Carla and Juana below, referenced the role that their livestock play in maintaining the landscape and reducing the wildfire risk.

Here it's a strange balance, because the climate is so changeable. There are drought years when you don't have grass, or tiny amounts of grass, but there are years when you have a lot of grass and you need to have sheep to eat it because if you don't there is a huge fire risk. You must have sheep. (Carla, Andalucía)

The sheep do it, but the goats much more. Do you know what a goat can clear? It's outrageous. If you go there to a field, the goat is always on the hillside, eating the trees, the shrubs... It helps the mountains a lot. (Juana, Pyrenees)

Today, in many locations, the government prohibits controlled burns, and livestock numbers (especially sheep and goats that favor woody species) are insufficient to keep shrubs at bay. Since the economic crisis of the late 2000s, there has been a decline in public investment in expensive mechanized forest thinning and management. Our participants frequently commented on the important roles of livestock and controlled burning in mitigating shrub encroachment and wildfires. Some, like Marina in the following excerpt, express frustration at an administration that promotes a distorted image of pastoralists and their role in wildfire management:

We burn because it is a management tool that we have used all our lives, and the people from the cities when they see the fire say “delinquents, the stockmen are burning again,” and no, we are cleaning the mountains so the houses don't burn, because they are going to burn any day because of the government's disastrous management. (Marina, Northwest)

Nine of the interviewees use the traditional practice of transhumance, i.e., repeated seasonal movements between distinct seasonal pasture areas in different geographical and ecological zones. As such, they help to maintain a practice that provides multiple environmental benefits (Oteros-Rozas et al., 2014), and uses mobility to adapt to variable environmental conditions over space and time (Oteros-Rozas et al., 2013). Victoria, a transhumant from northwestern Spain discusses the value of the practice for having open spaces and controlling fires as well as for seed dispersal, as expressed below. Although she does not link seed dispersal to climate change adaptation, the role of sheep in transporting propagules could serve as an inadvertent form of “assisted migration,” a strategy to conserve biodiversity in a changing climate (Manzano & Malo, 2006).

So there are plants that would be lost if the livestock didn't carry them, plants that are going to disappear. ... There are millions of seeds they say the animals expel along

the [transhumant] route, as they graze from one side to another. In the village where we go in the spring one woman said that new plants are arriving that they have never seen before.” (Victoria, Northwest)

Although women have long supported transhumance as members of transhumant families, until recently, it was relatively rare for women to take a visible and active role in the everyday activities of animal husbandry during the transhumance trips. One of our eldest participants described how she was rebuked by other local women when, in the 1970s, she first dressed in farmers’ work clothes and went out to help her husband with the traditionally “men’s work” with the sheep. Her lifelong persistence in flouting some conventional gender roles while conforming to others exemplifies acts of embodied everyday resistance to dominant gendered relations of power in transhumant operations. Younger transhumant women like Juana also reported similar experiences: “The first year I went up with transhumance, the whole trip [...], I was 13 years old, I remember that everyone was telling me: ‘where are you going, you disgrace, you will not arrive, where are you going, where are you going, no way you can arrive...’ [laugh] And I arrived, perfectly.” Juana is currently one of the youngest transhumant women in Spain.

Several women also mentioned specific practices related to soil management that aimed to increase carbon capture or reduce greenhouse gas emissions. For example, Sandra from Andalucía discussed the importance of good grazing management to limit erosion and maintain critical soil functions like infiltration in the context of climate change. This excerpt also highlights the detailed ecological knowledge that women expressed in discussing their daily management activities:

Every time now with climate change, it rains more rarely but torrentially. If you have the soil, if you have it not bare but protected, it will act like a sponge and prevent the loss of the fertile topsoil, and furthermore, on top of that it soaks [the rain] up, holds it and filters it. (Sandra, Andalucía)

Most of the previous examples highlight women’s roles in maintaining or advocating for traditional practices that also function as responses to climate change. Such examples also reveal women pastoralists’ nuanced ecological knowledge. As such, women’s everyday activities and knowledge are often naturalized and under-recognized, while affording them daily and direct experiences with resource scarcity, natural disasters, and environmental changes. We shift focus towards women’s roles as innovators and pro-active agents of change, linking their actions to a climate change consciousness. In our study, a number of women implement novel approaches to climate change adaptation and mitigation, as well as actions to transform extensive livestock production more broadly towards greater social and environmental sustainability. Many (but not all) of these women are young and/or newcomers to the livestock sector. Those who are most politically engaged with the food sovereignty movement propose a new agro-social paradigm shift, that is, a shift to a new food system strongly connected to the environmental and climate change movements. These findings align with previous studies on newcomers in the European Union (Monllor i Rico & Fuller, 2016; Pinto-Correia et al., 2015).

Marina from the Northwest exemplifies an innovative approach to climate change mitigation. Marina won an international prize for women entrepreneurs for a project that aimed to reduce methane emissions from cattle waste, while limiting nitrate pollution of soils and aquifers, increasing soil fertility, and improving livelihoods. In the interview, she first described the

challenges of manure management and her concern about releasing contaminants into the aquifer.

Other interviewees reported working on projects at the enterprise, regional, or sectoral levels that directly or indirectly mitigate climate change through technology adoption or institutional innovations, often while also working towards a transformation of agri-food systems and the livestock economy. For example, at the enterprise level, several women installed solar panels on their farms. In interviews, they linked this choice to their growing awareness of the interconnections between their lived experiences of climate change and the greenhouse gas emissions of their agricultural activities.

Several interviewees also reported innovations in value-added local branding and marketing of their animal products (e.g., locally produced lamb, charcuterie, and cheese) and linked them to climate change mitigation. Erika, a young shepherdess of Catalunya, connected these efforts to the need for a “zero kilometer” agri-food system that directly decreases greenhouses emissions. In sparsely populated rural Spain, livestock slaughtering and packing facilities are often located far from the small villages where herders live. Erika is working for more local food systems, collaborating with others to advocate for the introduction of mobile slaughterhouses that better fit both farmers’ and consumers’ needs and concerns regarding animal wellbeing and the reduction of transportation emissions.

Several women also recounted innovative examples of public-private collaborations in Catalunya where livestock are used to decrease wildfire risk. For example, in the project Ramats de Foc, shepherds access land and graze the forests, providing mutual benefits for young pastoralists, who often face difficulties in securing access to grazing lands, and the local government administration, for whom cost-effective fire risk reduction is a priority. The Artisan Butchers Guild of Girona and participating restaurants add value to the products of participating pastoralists, through a specific label: “Turning our forests into silvopastoral systems. Not only does this remove fuel from the forest floor and turn it into tasteful and nutritious meat” (Ramats de Foc, 2020).

Finally, the increasing participation of women in sectoral organizations and the rise in women pastoralists’ networks, facilitated by social media and digital communication, indicate women’s growing roles in transforming the extensive livestock sector. To our knowledge, the first such virtual network was Ganaderas en Red (GeR), founded in 2016 by a group of women pastoralists and women advocates for pastoralism, who were tired of attending meetings about the extensive livestock sector where women’s perspectives and voices were ignored or not represented. Several other groups have spun off from the initial network, including one specific to Catalonia (Ramaderas.cat).

In addition to increasing women’s visibility and including their voices at the sector level, GeR has served as a mutual support and knowledge exchange network for women pastoralists across Spain. A clear example of this are the initiatives set in place during the COVID-19 pandemic, in which the network fostered internal consumption within the network and helped advertise direct sales. All the GeR participants interviewed mentioned how these virtual and in-person spaces support women in processing knowledge and information, including on environmental change, within their households and communities, and in sharing it beyond their localities. Our findings thus align with others from feminist sociology and geography that suggest that women in rural contexts specifically pursue women’s cooperation and

networks as new strategies to respond to the masculinization of rural settings and knowledge systems (e.g., Ní Fhlatharta & Farrell, 2017; Porto Castro et al., 2015; Sachs et al., 2016).

Simultaneity in Spanish Pastoralism in the Face of Urgent Responses to Climate Hazards and other Multiple Stressors

As Kaijser and Kronsell (2014) remark, differentiated situated knowledge and understanding related to climate hazards and responses is derived from women's position in society, their background, and the place in which they live. An intersectional approach seeks to avoid oversimplifying women's experiences by attributing their knowledge and experiences to a universal aspect of being female. Previous studies (Fernández-Giménez et al., 2019) show how Spanish women pastoralists still experience barriers to accessing resources. In this work, we recognize simultaneous and interacting social positions related to women's different origins, education, and pathways into livestock management that influence differential knowledges, attitudes, and discourses around natural resources management and drivers of change.

Women interviewed in this study differ in age, family status, and origin (rural vs. urban), which affects their access to land and knowledge of livestock management. Although each woman's life history is unique, we identified three main pathways through which women enter the livestock sector (Fernández-Giménez et al., 2021). Some women inherited the profession from their families, others married into the business, and some were newcomers who reported starting "from zero". Three of them are hired shepherdesses who work for other livestock operators. Nearly two thirds of the interviewees were married or partnered in heterosexual relationships, while one third were unmarried, widowed, or divorced. Two-thirds were mothers, including three with young children.

In our study, intersectionality emerges from 1) issues of stereotyping and discrimination of those who did not come from pastoralist background, especially young women; (2) tensions between shepherdesses versus urban environmental and animalist activists.

The Intersection of Origin, Age, and Gender

A general discourse recognizes as pivotal the repopulation of rural spaces and revitalization of the extensive livestock sector in the face of climate hazards. Newcomers have capabilities related to their often-urban origins and education—most of them come from agrarian and forestry schools and academic training—but they lack access to material resources, especially land and animals, and to inherited knowledge and lived experience with animal husbandry. Newcomers often come to the countryside seeking a more tranquil and grounded quality of life and/or a context for child-rearing compared to their urban origins. They also more frequently articulate specific ideological motivations related to the agroecology, food sovereignty, and ecofeminism in their discourses and practices of environmental governance. Paradoxically, in their own words, they are advantaged by not carrying with them a long history of difficulties in the rural villages and the livestock sector.

In contrast, despite their inherited access to land and animals (in many cases), and their rich traditional knowledge related to livestock management, women from rural agricultural family backgrounds more frequently express a negative discourse on how to deal with the multiple stressors of livestock sector. Several expressed fatigue from defending the rural world, and specifically a traditional extensive livestock sector "on its way to extinction" (Fernández-Giménez et al., under review).

In some cases, our interviewees are pioneering solutions to overcome such unequal distribution of resources, as in the case of Cloe, who encountered barriers to entering the livestock sector as an immigrant and newcomer starting from zero after arriving from Latin America. Her project represents a novel arrangement involving access to land within a protected area to graze forested areas for fire control. The project was sponsored by a land bank that supports young people returning to rural communities and farming livelihoods. She also created a mobile farm and cheese factory, which she calls a “circus farm,” that moves according to availability of grazing land.

Our findings also illustrate how social relations are shaped by power and how the access to and control over decision-making is not only gender-differentiated, but also depends on intersecting identities (Bee et al., 2015). With some exceptions, Spanish women pastoralists still face barriers to holding leadership positions and implementing innovative practices and policies within formal livestock organizations. Such barriers are related to age, origin, and social status (like being a hired shepherdess rather than livestock owner), in addition to gender. As observed by other authors (Fernández-Giménez et al., accepted; Oteros-Rozas et al., 2017), established pastoralists sometimes ostracize, discourage, or express skepticism about newcomers, especially if they are young women. Laia’s experience is one example, where she described how initially other shepherds did not include her in decisions: “[At the beginning] for old people of this mountain, who don’t know you because you come not from here, it’s so strange a young girl from abroad who works as employee in a farm as a shepherd”. (Laia, Catalunya)

Several newcomers recounted how they fought such discrimination within livestock organizations and expressed their resistance by negotiating for the recognition of their voices. These results are similar those of Baylina Ferré et al. (2015) who studied newcomers from urban areas who re-settled in rural Galicia and Catalunya. Although some of the landless (and animal-less) young women who worked as hired shepherds described their precariousness, they also expressed their sense of freedom. Also, they are very active in advocating for improved working conditions.

Gendered Aspects of the Urban-Rural Power Divide

To address intersectionality in light of climate change, it is also important to analyze how social and political institutions may “take part in the construction and reinforcement of injustices and intersectional categorizations” Kaijser and Kronsell (2014, p. 426). In the context of Spanish pastoralism, these dynamics are most visible in the ongoing tensions between rural agrarian society and urban areas that are home to large populations and centers of power and governance.

First, conservation policies have excluded from decisions those who are suffering the main impacts of environmental hazards in the Spanish countryside, and who hold possible adaptation and mitigation responses to these hazards. Such policies are designed under certain representations of the problem of environmental change by a hegemonic national/urban center in contrast to a rural periphery. An example is found in the conflicts that have arisen in the last decades between extensive livestock management and other competing land uses, such as tourism and biodiversity conservation. Embedded, but hidden, in these conflicts is the divergence in understandings of human-nature relationships and of rural and urban values, worldviews, and power relations. Starting in the 1980s, conservation policies and strategies on protected areas and key species (re)introduction have been designed

largely from the urban centers' desktops, supported by conservation organizations with their headquarters mostly in metropolitan areas (Beltran & Vaccaro, 2014; Vaccaro & Beltran, 2009). Such policies have most negatively affected small farmers, but little has been studied about potential gender differences in attitudes towards such policies or relationships to wildlife. In Spain, women typically do not engage in legal or illegal predator control. In the northwestern workshop women verbalized emotions evoked by the conflict between livestock farming and growing wolf populations, mentioning fear, helplessness, rage, and disappointment. They committed to invite the government administration to come and experience the everyday reality of landscape and livestock management. They further committed to a social media campaign to raise awareness about the need to consider the needs and benefits of extensive livestock management, not only of wildlife. Overall, historically, local communities, and specifically women, have not been included in decision-making processes and progressively have been dispossessed of their legitimate governance over their own territories and management of local resources. Here, Marina captures the feeling of such conflict around the conservation of wild fauna by the government and environmental organizations:

[Names of two environmental organizations] have not even sat down to negotiate. Nor to talk, when we were talking about the management of wolves. And they have not sat down to dialogue. So, with those positions, not even sitting down, there is already a confrontation. I organized a meeting and more than 250 livestock farmers attended, a unique opportunity to see both parts... and those didn't even want to sit down. So those people [are] radical, but they have power and they have very powerful lobbies, and the only thing that they are doing is killing us. So, my question is: who has more rights, Wildlife or people? (Marina, Northwest)

Women interviewed, especially those from traditional rural backgrounds, described how the rural world has been neglected and undervalued by the urban culture. As the following quotes suggest, intertwined power relations related to culture and origins within the urban/rural continuum and center-periphery dynamics, normatively reproduce in public opinions the narrative that defines which experiences have value and who has the legitimate technical and scientific knowledge to take decisions. Specifically, urban-centered "environmentally and climate-friendly" movements are set in contrast to a "negative other", represented by extensive livestock managers who oppose conservation policies as they are currently designed and applied.

What I dislike the most is sometimes the incomprehension of people who don't understand that you are here because you like it. That sentence of "oh, you who have studied [at university], and you're here caring for cows.' And it's, I am taking care of cows because I want to care for cows. And the incomprehension that they don't realize that without a stockman or a farmer, they won't eat. They don't value you. I feel very empowered as a pastoralist, but when people don't see that the primary sector is fundamental and they go to you like, "you there with the cows, washing off the dung," and they diminish you. (Sara, Northwest)

The complexity rises as climate policies have direct and indirect effects on food policies and on food habits. The special report on climate change and land by the IPCC in 2019 described plant-based diets as a major opportunity for mitigating and adapting to climate change—and included a policy recommendation to reduce meat consumption. These recommendations, together with the increasingly popular climate emergency youth movement and the anti-

speciesism movement, have also permeated the feminist movement, fueling a conflict between urban, highly educated and academically supported anti-speciesism feminists and livestock farmers—specifically women pastoralists—some of whom also self-identify as feminists. In this sense, this urban/rural tension is gendered, because women shepherdesses have been treated differently in this public discourse of anti-speciesism than men.

On March 8, 2019, representatives of the urban feminist movement from Catalunya launched a manifesto in which anti-speciesism was among the values raised as central to feminism. In response, *Ramaderes de Catalunya* issued a public declaration expressing how they, as rural feminists, did not feel represented by such a manifesto, denouncing the supremacist attitude of urban feminists, explaining their ecofeminist perspective, and making visible the differences between intensive and extensive livestock production systems. This resulted in yet another newspaper article published by a number of highly educated women, from universities and anti-speciesism collectives, titled “Feminism must be anti-speciesism”. Since these exchanges, ethical and environmental arguments are being discussed in various fora, creating an extremely vivid public debate laden with emotion from both sides. Meanwhile, both the feminist and the environmental movements in Spain seem to be increasingly incorporating veganism and the critique of livestock farming among their pillars. Anti-speciesism and vegan movements accuse women pastoralists of incoherence for their enslavement and discrimination against animals and especially non-human females. To reinforce this narrative and influence public opinion, anti-speciesism movements describe livestock management as one of the main causes of climate change, without any distinction between intensive industrial and globalized management and extensive management.

Women pastoralists are defending their right to self-identify as feminists, even when, and precisely because, their livelihood system depends on animal management. The engagement of some of the women interviewed within feminist environmental and food sovereignty movements led them to expand the discussion on animal well-being and work together with environmental and academic organizations on the linkage of livestock management, climate change and, more recently, zoonotic epidemic². Around this topic, in contrast to conservation, the extensive livestock sector and part of the environmentalist movement are working as allies to publicly differentiate between production systems, supported by scientific evidence (del Prado & Manzano, 2020; Ecologistas en Acción, 2019; Herrera, 2020). Specifically, these alliances work to point out the inaccuracies of the current emissions accounting systems and to publicly defend a sustainable food system that takes care of people, animals, and the environment. Several of the interviewed women express frustration with these increasingly dominant discourses, as well as its assumptions about environmental cause-and-effect relations at the root of current social-ecological challenges.

But the problem is that look, within 20 years, what will this be? If we are going to be in the hands of the animal rights activists, the environmentalists and all these types of people. ...And the future scares me because we will fall in the hands of the children we are educating. I already told you about my son’s biology book that says “extensive livestock production pollutes.” No, no, it’s the macro-farms that pollute, and emit gas. But my sheep that go through the mountains eating and pooping, this is far from pollution. It is scientifically certain the extensive livestock production produces

² See a recent article written by @ramaderescat “In defense of the pastoralism”: <https://directa.cat/en-defensa-del-pastoreig/>

emissions, but it likely has more benefits than. Someone has to explain this. (Sara, Northwest)

A final remark in this sense is that the analysis of implicit and explicit assumptions underlying these constructions tells us how the relationships between humans and nature are lived and defined, as well as how and to whom the responsibility for environmental protection is assigned and how it is related to other axes of power, such as being women, young, newcomers but living and working in marginalized rural spaces and sectors. This message is well illustrated by Cloe, a young migrant newcomer:

... it seems foolish to me, to come here and set fire to my farm [metaphorically], while wearing Decathlon shoes made by exploited Thai girls, living in a place where you get your food from the supermarket and you don't question where it comes from or how it contributes to climate change. I sometimes feel that maybe this way of life [i.e., livestock farming] makes us less anthropocentric, that is, we are one more thing, we are equal to the sheep, to the birds, to everything. And we are one gear more. (Cloe, Catalunya)

Conclusions

In the Spanish extensive livestock sector, women assume important roles in the management of resources, animals, and territories, despite their invisibility and undervaluation. Climate change affects the ecology of natural pastures and influences the livestock sector and livelihoods of Spanish rural society. Women pastoralists express their understanding and experience of climate hazards through their bodies, spaces (physical, virtual, symbolic) and emotions.

Avoiding a simplistic focus on vulnerability, interviewed women express their differential agency in adapting to and mitigating climate hazards in a variety of ways. On one hand, their everyday actions and mundane experiences express their sense of responsibility to conserve rural landscapes and village spaces, and to continue the traditional management practices that maintain biodiversity, soil, and pasture quality, prevent wildfires and other environmental hazards, and feed society with healthy food. As observed by Dowsley (2007) in her studies on Inuit women, our interviewees perform key roles in managing traditional knowledge, discussing and processing information about environmental change within the household and the community, and sharing it through social media.

On the other hand, many of the interviewees reject stereotypical images of rural womanhood. Specifically, they challenge the predefined roles of women as “helpers” in rural families, communities, and society, and they act as change agents, advancing multiple climate change adaptation and mitigation innovations at household, community, sectoral, and societal scales. Through a bricolage of elements that they have at hand, several of them deliberately create opportunities for tangible and intangible changes to address the problem. For instance, they implement new technologies, knowledge, land and animal management practices; forge novel private-public alliances against wildfires and towards ecological objectives; strengthen women's networks for collective support and knowledge exchange to deal with environmental changes; and work to shift social paradigms and values about the rural world by promoting the role of extensive pastoralism in healthy and environmental sustainable food production.

However, the politics of difference and intersectionality influence climate governance. In Spain, multiple barriers still obstruct transformative paths of adaptation to climate change, and these barriers are linked to intersecting social positions, each subject having distinct advantages and disadvantages. Specifically, as suggested by Fernández-Giménez et al. (under review) newcomers with non-rural and non-livestock backgrounds and limited access to land and animals, young women, and single women often experience the greatest barriers to entry in the extensive livestock sector.

Finally, we argue that drawing attention to the simultaneity of causes of marginality and power inequities among individuals and groups depending on their social location, and on the assumptions that privilege certain experiences and knowledges over others, may open a window of opportunity for transforming social relations and collaborating to build more inclusive solutions to climate hazards. Our situated ethnography supported relationship-building, mutual learning and knowledge bridging between us, as researchers, and women pastoralists, shifting the focus on climate change from the biophysical to a political arena. Moreover, the research moved from the application of an analytical strategy of intersectionality towards simultaneity as critical praxis of inclusiveness that may help transformations. Additionally, the women's networks, GeR and Ramaderes de Catalunya, are examples of negotiations that facilitate relationship-building, mutual support and care, and knowledge-sharing among women of different backgrounds and political ideologies. As such they work towards resolving conflicts, making visible the junction of power dynamics and interlocking institutional oppressions in order to fight against them, increasing women pastoralists' participation and voice in decision making, and engaging with common objectives. As suggested by feminist scholars, creating alliances based on common interests and solidarity rather than on fixed identities implies a move beyond merely identifying power patterns in a certain context to looking for common ground for action and engagement (Lykke, 2010; Mohanty, 2013; Kaijser & Kronsell, 2014).

Despite this initial analysis, we recognize that intersectionality is an understudied topic in our study context, and much work remains to explore the experiences of LGBTQ individuals, migrants, and other intersecting social identities in Spanish pastoralism.

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