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Challenges of pastoralism and rangelands in Europe

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Abstract

High Human Development achievements across Europe explain the situation of pastoralism in the region. While its economic importance has dwindled over the last century in terms of livelihood provision, pastoralism is nonetheless key for supporting rural population - especially in the areas of lower agricultural potential - and for delivering ecosystem services in vast areas. The mainstreaming of scientific research means that pastoralism is increasingly recognized as a sustainable livelihood by the European general public. In spite of this better press, the advanced average age of European pastoralists and the increased gender imbalances pose great sustainability risks in the short- to medium-term. Some pastoralism-shaped ecosystems such as the Southern Finland pastures have already collapsed. Negative climate change narratives around pastoralism are triggering climate action plans that threaten extensive, highly biodiverse pastoralism landscapes in various countries, such as the British highlands. The process of agricultural intensification and rural abandonment in Europe poses other threats, such as poor service delivery and increasing human-wildlife conflicts, notably with disease-carrying forest species such as the wild boar or some predators that are experiencing a comeback.

For pastoralism to survive in Europe, the holistic role of pastoralism in ecosystem conservation as a whole should be recognized. This includes changes in the Common Agricultural Policy, especially at the national level of implementation (also eco-schemes, rural development interventions), to incorporate payments for ecosystem services that eliminate the competitive disadvantage with more intensive production systems. Encouraging urban, young people to become pastoralists, as well as promoting preventive measures for human-wildlife-conflict, rather than compensatory ones, are also urgent and necessary steps.

Knowledge gaps still persist that hinder effective policy and advocacy action. Better understanding will come from effective collection of national and continental statistics related specifically to rangelands and pastoralists; improved integration of traditional ecological knowledge into policy and land management at a continental scale; and building on the history of how pastoralism has shaped and maintained European natural landscapes. Landscapes in Europe are not as dominated by forests as the general public and most of academia usually believe.

Historical introduction

The European history is greatly influenced by pastoralism. It started in the southern Balkans in the late seventh millennium BC (Ethier *et al.* 2017) and extending northwards and westwards from there, reaching the Atlantic coast of the Iberian Peninsula less than thousand years later (Tejedor-Rodríguez *et al.* 2021). Much the cultural diversity in the continent is related to pastoralists, beginning with the origin of the dominant Indo-European languages in the Central Asian yamnaya nomadic culture (Olalde *et al.* 2018, 2019). European biodiversity and seminatural landscapes are maintained largely by the herbivory of domestic livestock, which inherits its functionality from now extinct megafauna (Vera 2000).

The last century, however, has witnessed great changes in European rural areas that have affected both the landscape and its inhabitants, coupled with the strong economic development of European countries. Regarding landscapes, the areas with highest agricultural potential have seen a rash urbanization and an intensification of the agricultural production, creating industrialized livestock production systems with high grain inputs and weak links to the land. Meanwhile, many lands of marginal agricultural production that are naturally used by pastoralists have been depopulated or even completely abandoned, leaving space for tree plantations, secondary forests, scrubland (Stoate *et al.* 2009), or wildfires (Damianidis *et al.* 2020). Such abandoned landscapes have allowed for the increase in numbers of wildlife such as wild boars (Frei *et al.* 2020, Valente *et al.* 2020) or wolves (Chapron *et al.* 2014), which are welcomed with joy by overwhelmingly urban, land-sparing and animal-welfare oriented (Manfredo *et al.* 2020). Women and youth have massively left rural societies, challenging their social sustainability in the long term due to lack of generational replacement (Manzano *et al.* 2021). In addition, climate change narratives have put pastoralism in the spotlight, being

accused of large-scale Greenhouse Gas Emissions both through methane emission by enteric fermentation (Manzano & White 2019) and of soil carbon release through the transformation of forests into pastureland (Hayek *et al.* 2021). As a result, the predominant vision on European pastoralism during the 20th century was of a back-laid, inefficient, primitive livelihood that should be abandoned.

Developments in the last decades

The last decades have seen a change of paradigm in Europe. Pastoralism values are associated with land-sharing conservation (Fischer *et al.* 2014) and its loss is linked with the disappearance of species that depend on sunny, open habitats, with increased number of wildfires in Mediterranean Europe, and with rural cultural loss mediated by depopulation. Former alliances are thus weakening, including the agricultural unions that host both industrial and pastoralist livestock keepers, or environmentalist organizations that host both animal rights activists and ‘land-sparing’ conservation advocates, and conservationists leaning partially or totally towards a ‘land-sharing’ approach. New alliances are being forged among former foes: pastoralist livestock keepers and conservationists with an ecosystem perspective. An increased interest in high-quality foods that express local cultural specificities has also facilitated positive policies (Charbonnier 2012). All these factors have improved the economic status of pastoralist livestock production systems in the continent. Such changing perceptions and alliances have highlighted the value of pastoralism for much of the wider public as a way of ‘retro-innovation’ to tackle some of humanity’s greatest challenges. Some initiatives include the establishment of herding schools to encourage young urban population to adopt pastoralist livelihoods as a life choice. Despite the improvement in the environmental and economic aspects, the question arises on whether the social erosion that European pastoralism has been subjected has been too severe, and whether positive tendencies are arriving too late. In e.g., Southern Finland, seminatural grasslands are the only ecosystem in the country classified as ‘critically endangered’ by IUCN’s Red List of Ecosystems (Kontula & Raunio 2018).

Future undertakings

Priority actions

In light of the current situation, **pastoralist advocates require a series of priority actions** to raise awareness to policy makers. **First**, current understanding of the fundamental ecosystem process supported by pastoralism, justifies a public investment into the maintenance of its roles, through payment of ecosystem services. Services from mobile pastoralism include the maintenance of: complex open landscapes, with a mixture of trees, shrubs and pasture (Perea *et al.* 2016); the maintenance of wild pollinators, whose crisis threatens European commercial crop agriculture (Hevia *et al.* 2016); the maintenance of seed dispersal and pollination that avoid plant inbreeding in a dangerous climate change context (García-Fernández *et al.* 2019); or the recruitment of trees in parkland landscapes (Carmona *et al.* 2013). **Second**, is the promotion of urban youth into pastoralism practice. Improved access to education in Europe has increased the array of professions available to young people and facilitated mobility across professions – e.g., the child of a bank worker is unlikely to work in a bank and is likely to choose a different professional specialization. However, European agrarian policies so far are focused on keeping recruiting new professional pastoralists exclusively from established pastoralist families. This ignores the generalized opportunities to opt out of pastoralism brought by widespread education in Europe. But this also ignores the opportunity for urban youth who wish to work close to nature while living under adequate live conditions. Such an understanding and change in policies will contribute to the generational sustainability of pastoralism. This requires adequate capacity building through pastoralist field schools, and also an adequate rural entrepreneurship environment with through a fair access to Common Agricultural Policy (CAP) rights, conditions that are currently insufficiently met for newcomers. **Third**, is the growing number of wildlife causing Human-Wildlife Conflict (HWC). Wild boars or wolves are a great source of unfairness. Advocacy for the preservation of such species is overwhelmingly urban, but their presence and, especially, induced costs, is imposed to rural inhabitants, often in areas with marginal agricultural productivity. Policies are urgently required to minimize HWC by systematically implementing effective preventive measures – valuing traditional systems, and not just providing compensatory payment. This reduces the often-ignored emotional burden of HWC to these rural populations both in terms of losing beloved domestic animals that their livelihood depends on, and of having the burden of proving HWC’s damages.

Research gaps

Pastoralism advocacy in Europe also suffers from knowledge gaps that hinder it reaching its full potential. These include: (i) **Knowing the number of European pastoralists**. No national statistical services collect separate data on livestock keepers according to their degree of extensification. Criteria are not clear on how to define the variable “extensification”, even if the CAP does include specific payments to reward it. Ignoring the number of pastoralists poses challenges in terms of the services they need or in knowing their economic,

social, and ecological significance. A clear, continental-wide definition of pastoralism needs also to be agreed among scholars working on pastoralism in Europe. (ii) **An inventory of the ecosystem services provided by pastoralists.** The extent of ecosystem services from pastoralism (Manzano-Baena & Salguero-Herrera 2018) is impossible to estimate with accurate statistics on their numbers and the land they use. In addition, the information of the services themselves is partial, concentrated in the areas that have been surveyed by pioneering scientific teams. Maps are missing on the distribution of ecosystem services, and where knowledge gaps should be covered. (iii) **Outcomes of forestation policies.** The widespread perception of forests as the climax vegetation in Europe has promoted forestation in the continent for multiple purposes (restoration of biodiversity, carbon fixation). But the outcomes have not been evaluated and are challenged by vegetation ecologists (Pausas & Bond 2019). Such policies have targeted grazing ecosystems that are also in danger in other parts of the planet (Bond 2016). By grasping such losses and its outcomes, including not only biodiversity loss (Kontula & Raunio 2018) but also negative climatic effects in terms of a lower albedo (Bonfils *et al.* 2012, de Wit *et al.* 2014), a better understanding of forestations done at the detriment of pastoralist areas will help advocating for more reasonable land use policies. (iv) **Systematization of Traditional Knowledge.** The huge heritage of pastoralist traditional knowledge has been partially lost through rural emigration, is poorly documented and is also difficult to add into databases, as much of it is only available in local languages. It is often poorly understood, and adaptive changes in the knowledge of newer generations are easily mistaken by cultural erosion. Traditional knowledge needs to be better understood and systematized (Sharifian *et al.* 2021).

Knowledge gaps among the general public

Some knowledge gaps affect the general public in spite of having scientific evidence. These include: (i) **The acceptance of the value of pastoralist products.** Pastoralist products have a higher cost of production and are therefore less competitive than other livestock products issued from industrial production. Their distinct advantages need to be valued e.g., better nutritional profiles, higher animal welfare, ecosystem services associated to their production, or territorial/cultural values associated with their character of local products (Manzano-Baena & Salguero-Herrera 2018). The existing market for these products could be greatly enlarged if such distinct advantages were much better known among the general public, who often knows none, or only one of many. (ii) **Potential extent of wooded pastures and parklands in Europe.** European environmental education and culture is still tightly bound with trees and closed forest (Vera 2000), ignoring the open character of European landscapes which have existed since the end of the Miocene 12 million years ago (Bond 2019). Valuable pastures are still forested among ‘ecological restoration activities’, and even large-scale forestation projects such as the UK Climate Strategy target biodiverse pastures. A better dissemination of state-of-the-art knowledge on vegetation science is urgently needed to better inform the general public on these issues.

Conclusions and implications

The progress of bridging research gaps has occurred to some extent. One example is the rescue of wooded pastures, which are very significant in many European pastoralist systems (Plieninger *et al.* 2015) and a fundamental part of the 3-layered natural landscape structure. A continental-wide call for a CAP reform considers wooded pastures in a fair way (EFNCP 2016). Secondly, a greener and socially fairer CAP is called for by academia (Navarro & López-Bao 2018, Pe’er *et al.* 2020), and echoed by a wide array of European civil society organizations. While the results of the current CAP attempt are limited or deceptive (EEB 2020), elements of reform or of other parts of the EU Green Architecture that include environmental (Röder & Matthews 2021) or social (Matthews 2021) aspects show that joint lobbying is worth the effort. The proposed International Year of Rangelands and Pastoralists in 2026, fuelled by the participation of some European pastoralist organizations and many Europe-based pastoralism experts, should also add momentum for a favourable reform of pastoralism-related policies in the continent.

In summary, pastoralism has a lot of challenges in Europe that require a lot of effort to be worked out. Still, the developed nature of European economies and the recognition that pastoralism has achieved in the continent in comparison with other areas invite to optimism. Pastoralism advocacy is well placed to build on top of past efforts and make Europe a model for fitting pastoralism in modern societies worldwide.

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