

Livestock Herding in Polish Mountainous National Parks as An Element of Sustainable Regional Development

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Abstract

The study was conducted in 2021, and involved surveys regarding cultural grazing in Poland's mountainous national parks. Cultural grazing is a pasturage of sheep, and cattle in conservation areas, as national parks, with numerous restrictions. In Poland, raising small flocks of sheep for production purposes is considered as an activity of low profitability. However, particularly in the south of the country, pastoralism is seen as an ethnographically attractive, as it is deeply rooted in the traditions of the mountainous regions. This indicates that herding was essential culture-building factor for many centuries. Grazing sheep, and commercializing sheep products may therefore, serve as an excellent way to promote the region in a sustainable way. Sheep herding and grazing on mountain pastures is permanently integrated into the landscape of the Polish mountains, and is an integral part of highland folklore. Promotion of extensive, and cultural grazing is of particular importance in national parks, where grazing helps to slow down ecological succession processes. Moderate intensity grazing by domestic livestock is a potentially beneficial conservation management tool even in protected areas.

Keywords: Cultural Grazing, Conservation Areas, Pastoral Landscape, Polish Mountains

Introduction

A region is an area with a certain degree of self-sufficiency, and distinguishable by its geography, economy, history, climate, culture, environment, and space. It can be either very small or a huge. As the concept of sustainable development emerged, the idea of sustainable regional development followed, as a traditional part of the regional policies of large countries. In practical terms, it aims to reach a balance in the development of different regions of a country, while making the best possible use of the country's space and natural resources. Sustainable spatial development is addressed in the European Spatial Development Perspective (ESDP). The main goals include economic and social cohesion, with the conservation and management of natural resources, and cultural heritage. It seems therefore that it is crucial to preserve the unique features of particular regions (Swiader 2015).

Keeping small scale livestock is an important husbandry in mountain areas, and nowadays it is subsidized by the European Union through the Common Agricultural Policy (CAP). The crisis of Polish sheep-breeding, and the decline of the sheep population in the last two decades of 20th. century, was a threat to the existence of some valuable indigenous breeds of

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ruminants. Many of such old breeds have disappeared forever, and others connected with certain regions of the country were in danger, due to their lack of profitability (Kawecka and Krupinski 2014). The breed most strongly associated with the Carpathians is *Polish Mountain Sheep*. From its population there has been extracted the coloured variety of the *Podhale Zackel*, that now is recognized as separate breed. Sheep herding, and grazing on mountain pastures is permanently integrated into the landscape of the Polish mountains, and is an integral part of highland folklore. An unbreakable link of mountain people and animals, sealed by traditions passed down from generation to generation, it has survived many adversities with which Polish sheep-breeding has struggled for years. The culmination of such efforts are colorful celebrations of pastoralism, which are held in the Western Carpathians yearly (Molik et al. 2017).

The concept of national parks is to protect significant natural and cultural features, by acknowledging that their outstanding landscapes reflect the common heritage of all people (Kharel 1997). It has been well documented that while grazing has a detrimental effect on communities with little history of grazing, some level of that activity is necessary to maintain communities with a long history of grazing (Naveh and Whittaker 1980; Andren et al. 1997). Maintaining grazing in conservation areas in fact helps to recognize the significance of the ecological connections between habitat, wildlife, livestock, and humans (Mehra and Mathur 2001). It is a common understanding that ‘moderate intensity grazing’ by domestic livestock is a potentially beneficial conservation management tool, even in protected areas (Freschi et al. 2015). According to the new conservation paradigm, the objective is to diversify, reintroduce or restore certain natural and anthropological disturbances (Mori 2011; Middleton 2013). Experience shows that long-term effective conservation management benefits from collaboration with local communities, thus some indicators are needed that both parties understand, and accept as a positive, beneficial outcome of co-management (Molnár et al. 2016; Biro et al. 2020). Extensive land-use types play a key role in preserving natural values in habitats developed, and maintained by long-term extensive land management. Nature conservation therefore encourages, and supports such systems. The mutual dependence of extensive land-use, and nature conservation has become explicitly apparent in Europe in the past several decades. However, nowadays extensive land-use, including herding and mowing has vanished or is dramatically diminishing in a large portion of Europe (Plieninger et al. 2006). It is a result of decline in herd, which has been visible in some parts East-Central Europe in the last 40 years (Fischer et al. 2012; Molnar et al. 2016). The aim of the study was to indicate various aspects of herding, and cultural grazing in Polish mountainous national parks, that may be one of the elements of sustainable development for that regions.

Characteristics of the studied area

The total mountain area in Poland is 878.4 thousand ha, of which the 77.2% is Carpathians, and 18.8% Sudetes. The Carpathians are among the largest, and the most important European mountains. Area of the Polish Carpathians is ca. 19.5 thousand km², i.e. 76.8% of the mountain area, and ca. 6.3% of the area of the whole country. Polish Western Carpathians are located in the southern part of the country, and spread over three voivodships: Lesser Poland, Silesia and small part of Subcarpathia. They are mostly mid- and low mountains (Pieniny, Beskids), with widespread foothills, except for the relatively small area of the high-mountain range of Tatras (Kondracki 2009). The Polish part of the Sudetes, which are lower than the Carpathians, including the foothills, occupies ca. 9.3 thousand km², within the Lower Silesia voivodship. Since the mountain areas in Poland are situated in the moderate climate zone, and mostly on moderate altitudes, they are a good place to produce biomass for animal forage. That comes in a variety of natural, and seminatural grasslands. In the foothills there are traditionally agricultural zone, with a low proportion of woodlands. For such lower altitudes the most important is production of usable legume species, cereal, fruit, and vegetables grown with the help of extensive technologies (Musial et al. 2015). In higher altitudes above the sea level the dominant forms include steep slopes with a greater share of woodlands (Starkel et al. 2007).

Materials and Methods

Cultural grazing is a pasturage of sheep and cattle in conservation areas, as national parks, with numerous restrictions (Molik et al. 2017). Although its range is fairly low, it is significant for a specific region or even a micro-region, because it helps to keep the area unique, when compared to the surroundings. This is a product of various aspects of herding, both environment-related, and cultural. The research was conducted in 2021, and involved surveys regarding cultural grazing in Poland's mountainous national parks. A total of seven such areas were covered by the study, including five in the Western Carpathians and two in the Sudetes. The surveys collected information about the general principles of cultural grazing in each area, the organisational, environmental and nature-related aspects of that activity, as well as its cultural dimensions.

National parks are the main institutional form of nature conservation in Poland. In order to be classified as a national park, specific area must meet strict requirements, as special natural, social, cultural and educational values. They are organized as state budgetary entities, with organisational structures established by the minister for the environment, while the Polish State Treasury is the legal person for such entities. The legal basis for establishing, changing the borders of and liquidating national parks is always a regulation of the Polish Council of Ministers, which document also defines the area, borders, and buffer zone of each national park (Nature Conservation Act of 16 April 2004, sections 8 and 9). The buffer zone is an area of land that borders the park and is required for each national park. It protects against external hazards caused by human

activities and serves as a protection zone for the game. Restrictions concern virtually any business activities, e.g. manufacturing, trading and farming. There are five national parks in the Western Carpathians. Three among them: Tatra N.P. (area of 211.64 km²), Pieniny N.P. (23.46 km²), and Babia Gora N.P. (33.92 km²), are the oldest conservation areas of this type, all established in 1954 (Denisiuk 1995). Two other are Gorce N.P. (70.30 km²), established in 1981, and the youngest - Magura N.P. (1995), with the area of 194,39 km². The Sudetes are separate mountain range, with two national parks. Karkonosze N.P. with the current area of 55.76 km² was established in 1959, and a little larger area of Stolowe Mountain - 63.39 km² (1993).

Results

Cultural grazing in the Tatra National Park has been practiced since 1981, and is continuous. Cattle and sheep graze on a total area of 141 ha, which includes 30 enclaves. The sheep breeds are: *Podhale Zackel* and *Polish Mountain Sheep*, and accompanies them one native cow breed - *Polish Red*. The park does not own any livestock, but animals come from the surrounding areas. It is all-seasonal grazing, which starts in early May and ends in early October each year. In this biggest among all of the Western Carpathian parks, the maximum number of grazing animals is 1100-1200 (7 herds). They are kept on a pasture, in a loose pen. Cultural grazing in the national park entails the need to mow the meadows once a year, but undesirable plant species are not removed mechanically. In the forests adjacent to the pastures it is forbidden to graze animals. Social and cultural aspects of grazing: chief shepherd (*baca*) must observe the traditional shepherd rites, such as using the local dialect, on special occasions wearing the regional outfit, celebrating the trailing of the sheep, traditional equipment in the hut, and offering information on cultural grazing. On the pastures, *baca* processes milk and makes regional products - traditional cheese products, *oscypek* and *bundz*. The shepherd's hut is located along the *Oscypek Route*, so one may buy such products directly on the pasture. The park is responsible for the selected shepherd's huts.

In Pieniny N.P., which on the other hand is the smallest of all mountain national parks, sheep grazing was supported from its inception. That was in order to keep using grasslands, the same way as before it had gained the conservation status (Kawecka et al. 2017). Grazing is continuous and has been practiced annually since 1993. Cattle and sheep graze on a total area of 52 ha, and the pasture area has remained the same since the beginning of cultural grazing here. All the animals graze on a single pasture. The sheep breeds are: *Podhale Zackel* and *Polish Mountain Sheep*, and a cow breed is *Polish Red*. There are 2 herds: 460 sheep, and 10 cows. As the park does not have its own livestock, animals come from the surrounding areas. Livestock graze on the leased pasture. The choice of the lessee is made following a tender. The chief shepherd must be authorised to produce certified *oscypek cheese* and must have held the authorisation for at least 3 years prior to the tender. It is all-seasonal grazing, which annually starts in early May, and ends on 15th October. Maximum number of grazing animals is 500. The animals are kept on a pasture, in a loose pen. The distance between the loose pen and water is ca. 50 m. In this area any changes in the water regime, mineral fertilization, and plant protection products are prohibited. The number of animals is estimated as sufficient to maintain biodiversity. The meadows where no grazing is practiced are mowed, and undesirable plant species are removed mechanically. Social and cultural aspects of grazing: *baca* must observe traditional shepherd rites, such as using the local dialect, wearing the regional outfit on special occasions, traditional equipment in the hut, and offering information on cultural grazing - as regards the tradition, rites and production of goods. On the pastures, the chief shepherd processes milk and makes regional cheese products: *oscypek*, *bundz*, *redykolka*, and a beverage known as *zentyca*. The shepherd's hut is located along the *Oscypek Route*, so it is possible to buy such products on the pasture. As regards the provision of information on cultural grazing, there is an information board on the pasture. The *baca* is responsible for selected shepherd's huts.

In the third national park in the Western Carathians, which is the Babia Gora N.P., grazing is continuous and has been practiced annually since 2016. The total pasture area is 8 ha, divided into 3 separate pastures. Over the past decade the pasture area has been reduced by 1 ha, due to the protection of water ecosystems. Ca. 300 individuals of sheep and cattle graze there, but the names of individual breeds have not been provided. The park does not own any livestock, which is brought here from the municipalities located in the buffer zone. Grazing is based on a lease agreement, concluded for 4 years. The lessee is selected following a tender. It is all-seasonal grazing, which lasts up to 7 days a month, from May to October. The maximum number of animals allowed to be grazed there is 300. They are not kept in the pasture in a pen. It has not been specified the minimum distance to water springs or streams. Once a year the meadows are mowed and in the adjacent forests there is a ban on grazing animals. The chief shepherd is not obliged to observe traditional shepherd rituals. *Baca* processes milk on the pastures, and makes traditional *oscypek cheese*, but the shepherd's hut is not located along the *Oscypek Route*. A shepherd is responsible for the shepherd's hut.

In the Gorce N.P. cultural grazing has been practiced annually since 2003. The total area of meadows where animals are grazed is ca. 52 ha. The area is divided into 4 separate enclaves within the perimeter of the national park. Over the past decade, the pasture area has increased by ca. 16 ha, after the park purchased private land plots and included new enclaves in the cultural grazing scheme. There is 1 herd, 250 animals - *Polish Mountain Sheep*. Each year the number of sheep slightly fluctuates, but overall it remains the same. The park does not have its own livestock, and animals come from its buffer zone. The grazing is based on a lease agreement, which is concluded for 5 years, following a tender. Since the pastures are situated ca. 1200 metres above sea level, in early spring and autumn the herd grazes at the foot of the Gorce Mountains, that is a part of Beskid Mountains. Maximum number of animals is up to 400. Once a year the meadows are

mowed. Just like in other national parks, also in this one there is a ban on grazing animals in the adjacent forests. On the pasture there is a hut with electricity, running water and sewage system. Under the lease agreement, the chief shepherd is obliged to observe traditional shepherd rites, such as using the regional dialect, wearing the regional outfit, and having shepherd dogs. Moreover, *baca* uses traditional equipment to prepare *oscypek* cheese on the pasture and provides information on cultural grazing. The shepherd's hut is located along the *Oscypek Route*.

In the Magura N.P. cultural grazing is continuous and has been practiced since 1997. Cattle and sheep graze on a total area of 110 ha, which includes 3 enclaves. The sheep breeds are *Podhale Zackel*, and *Polish Mountain Sheep*, the cattle breeds include *Simmental*, and *Polish White-back cow*. The park does not have its own livestock, but it comes from the buffer zone. It is all-seasonal grazing, which starts on 20th. of May, and ends on 10th. of October each year. The maximum number of animals is 400 sheep, and 100 cows. Cultural grazing in the national park entails the need to mow the meadows once a year, but undesirable plant species are not removed mechanically. In the forests adjacent to the pastures it is forbidden to graze animals. As far as cultural aspects of the grazing is concerned, *baca* is not obliged to observe traditional shepherd rites. On the pastures, the chief shepherd processes milk and makes regional products: *oscypek*, and *bundz*. The shepherd's hut is not located along the *Oscypek Route*. The national park is responsible for the maintenance of the traditional hut.

Stolowe Mountains N.P. is situated in the Sudetes Mountains. Grazing is practiced there since 2018, on the pasture area of ca. 83 ha. That includes 3 complexes of meadows and pastures. The herd consists of 200 sheep (mothers) and ca. 160 lambs. The sheep which are grazed in the area of the park, represent an indigenous breed for Poland – the *Polish Heath Sheep*. The number of animals is fairly stable. The livestock is not owned by the park. Animals are brought from the buffer zone. Cultural grazing is based on a lease agreement concluded on average for 4 years. The lessee is responsible for appointing the shepherd. The choice is made following a tender. Grazing is all-seasonal. The animals are kept in a loose pen. The shepherd is not obliged to observe traditional shepherd rituals.

The Karkonosze N.P. is the second national park in the Sudetes. Grazing has been practiced here since 2017. The pasture area is ca. 10 ha, within 4-5 delimited enclaves. The pasture area has increased by ca. 2.46 ha since the beginning of the continuous grazing scheme. It's the result of increasing the herd of sheep and extending the grazing scheme to a larger area. 1 herd of *Polish Heath Sheep* grazes in the pasture area. The herd includes 60 adult sheep and ca. 30 lambs. The animals are brought from the neighbouring municipalities. Cultural grazing is not based on a lease agreement. A direct agreement is concluded with the contractor - the subject matter is the grazing of animals on a specific area. The contractor is selected following a request for proposal. Grazing is practiced on average for 153 days in a season. The authorities of the park do not specify a limit on the number of animals that can graze. At the moment, a monitoring service is introduced to help arrive at an optimum number of sheep.

Discussion

Nowadays, the sheep grazing is practiced as cultural and commercial activity in the national parks of the Carpathians. This is the result of herding having been a major culture-building factor, particularly in mountainous regions, in addition to its typically economic role (Molik and Kubiak 2021). Sheep are the first farm animals to have been domesticated in Poland, and they have been playing a crucial role especially in the Carpathians. Pastoralism or pastoral farming in that part of Poland dates back to the late 14th, and early 15th centuries, and began as an activity with the arrival of the Vlachs there. They had come to the Sub-Tatra region, moving along the Carpathians, from the land of what is now the borderlands between Ukraine and Romania (Mroczkowski 2005). Over the years, pastoralism has shaped the mentality of people (Zuskinová 2018). Despite many changes over the centuries, this grazing system has remained virtually unchanged. It is the Carpathian Mountains that are linked with the various aspects of material and spiritual culture, that were created through sheep grazing. These include homestead construction, customs, folk music and folk costumes, the general culture of being, as well as products made from sheep (Knapik and Musial 2017). This indicates that in that area herding was a very important culture-building factor for many centuries. Grazing sheep and commercializing sheep products may therefore, serve as an excellent way to promote the region, which is exemplified by the holidays, fairs and festivities that are held annually. All such events are an important instrument in territorial promotion and marketing activities, including the promotion of sheep herding traditions. They also serve as an opportunity to present local handicrafts, and to sell regional and traditional products. These activities are particularly significant in the areas covered by the Tatra National Park, but also Pieniny N.P., and Babia Gora N.P. Both cultural grazing and cultural and commercial grazing, defined as a limited, collective sheep grazing activity practised in conservation areas, and a comprehensively defined pastoralism pursued in the mountains, are permitted with numerous restrictions. However, cultural grazing plays an important role in the other national parks of the Western Carpathians as well, as the Gorce N.P., and the Magura N.P. The last one lies on the border with the Eastern Carpathians, that spread further to the area of Ukraine (Mirek 2004). Despite, raising small flocks of sheep for production purposes is considered as an activity of low profitability, it is commonly believed, that it is seen as an ethnographically attractive, as it is deeply rooted in the traditions of the mountainous regions. This is because the culture of southern Poland is predominantly a mountain culture characterized by sheep raising. This also means products from sheep have come to be recognized as regional, and traditional products (Kawecka et al. 2017). For many

centuries, dairy and meat products have been produced here in the form of various traditional and local specialties, which is a result of keeping that breeds of ruminants (Molik et al. 2017).

Herding is an integral part of life of the people living in mountain areas. Raising sheep is also associated as an inherent part of the cultural landscape. This activity, which involves livestock grazing in environmentally challenging areas, helps to preserve the features of the pastoral landscape. The promotion of extensive, and cultural grazing is of particular importance in national parks, where grazing helps to slow down ecological succession processes (Musial et al. 2015). Despite biodiversity is still often not regarded as part of the natural capital of a specific country or region, concerning the economy, the recent reforms of the agricultural policy in the EU indicate that the situation may be slowly changing. Yet, general perspectives for the biodiversity conservation in mountains, through the practices of sustainable agriculture are uncertain (Perrings et al. 2006). Mountain areas in Poland are a valuable natural asset, and sustaining their economic functions is important also to maintain the proper role of natural environment. This meaning of 'functions' is a specific sort of benefit, which follows both from the natural conditions and from the intentional management of the environment, and agricultural production (Musial and Musial 2019). Since subregions of the Western Carpathians are highly populated, livestock production is significant for both the local, and regional markets (Knapik and Musial 2017). This entails farming livestock of local breeds (Kawecka and Krupinski 2014). Especially in the Carpathians, but also in the Sudetes, such native breeds of cattle and sheep are adjusted to the specific local conditions. An important aspect of pastoral management is also landscape, and biodiversity conservation. Sheep breeding and large-scale grazing using sustainable development methods allows for the effective use of fodder resources and is in line with the principles of organic farming (Paraponiak 2007). The pastoralism is of great economic and social importance for such regions (Sobala 2014). It is a form of social activation, and investing in tourism and pastoralism promotion makes the region more attractive, and creates new jobs. The use of the functioning cultural grazing as one of the bases of social development gives also hope for the emergence of thematic clusters of sustainable development or eco-development (Molik and Kubiak 2021). Moreover, according to Molnar et al. (2016), nowadays a new profession is needed - the conservation herder. That shall be an individual knowledgeable about herding and pasture management, trained in conservation, and able to design management experiments, and develop novel but tradition-based management practices.

Summary

Pastoral landscape is one of the oldest subtype of the cultural landscape, which function is breeding livestock. Its primary form is most often associated with forms of extensive grazing. The structure of traditional pastoral landscapes consists of natural elements, and an anthropogenic factor. Due to the influence of various non-natural factors, pastoral landscapes are now of relict character. In Poland, in their contemporary form, they have been replaced by pasture landscapes. Herding and cultural grazing is of a great importance in order to maintain the biodiversity, and also for the local preservation of traditions, functioning of the local economy, and improving the quality of life of local communities from different regions. Despite the fact, that nowadays in Poland the importance of sheep products (wool or leather), has been perceived as declining, consequently more appreciated is their role in non-production goals. This is to help to maintain the biodiversity of seminatural grasslands. At the same time that sustains the unique culture in these areas, that has been cultivated for several centuries.

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