

EXTENSIVE LIVESTOCK AND CROP PRODUCTION AS A CONSERVATION VALUE OF HNV FARMS IN THE BUFFER ZONE OF THE BIESZCZADY NATIONAL PARK

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Abstract

The aim of the research was to assess some aspects of agriculture that may positively or negatively shape the conservation values of the Bieszczady National Park buffer zone. The survey-based research regarding the state of agriculture and rural areas, including farm production type, was carried out in 2022–2023. The article presents the problem of the impact of national park proximity on the possibility of conducting agricultural activities by the high nature value (HNV) farms, including the maintenance or reduction of livestock production. The results show that share of permanent grasslands used only in order to obtain EU land subsidies was practically the same as those used extensively. The highest share of farms existing only formally was in the municipality of Komańcza (70%), while declining farms varied from 5 to 80% among individual municipalities. This may pose a threat to nature because the abandoned farmland was overgrown with various species of shrubs and trees. The estimated share of cattle farms was the highest for the municipalities of Czarna (70%) and Komańcza (30%), and the lowest for Lutowska (5%). Moreover, in the case of sheep breeding, the highest share of farms was recorded for the Lutowska and Komańcza municipalities. However, if the ruminant population remains at a similar level in the future, it will be difficult to implement protective functions, resulting in further degradation of unused grass communities.

Keywords: protected areas, high nature value (HNV) farms, agriculture as a conservation value, problem of deanimalisation, Subcarpathian Voivodeship

Introduction

Individual farms are influenced by a wide range of factors present in their environment, determining the availability of resources and development opportunities (Klepacki, 1998). Agricultural production in high nature value areas is an economic activity that clearly identifies close links with broadly understood environment. This means that in individual categories of conservation areas, there are allowed specific types of plant and animal production. Differences result from the legal regime assigned to a given area. In institutional terms the most important form of nature conservation is national park, with numerous, obligatory restrictions. They refer to reducing agricultural activities and building up a buffer zone, which is the area that directly borders every national park in order to strengthen its protective functions. As provided in the Nature Conservation Act from 2004, the buffer zone performs protective functions against external threats, and often has the character of landscape park. The legal basis for establishing

each landscape park is a resolution of the regional assembly of a given voivodeship (Journal of Laws of 2020, item 55). In such areas, the legislator has left some economic use of agricultural and forest land, however with certain restrictions regarding both livestock and crop production (Klepacki, 2004). They refer inter alia to pouring slurry and the litter-free farming. It is also prohibited to keep the open ditches and sewage tanks (Gruszecki, 2021).

In the case of the Bieszczady National Park (BPN), two landscape parks serve as its buffer zone: Ciśniańsko-Wetliński (C-WPK) and Doliny Sanu (PKDS). Both were established in 1992, and jointly with the BPN they form the nucleus of large cross-border protected area network – the East Carpathians Biosphere Reserve. Next to the Tatra Mountains and the Karkonosze Mountains, this biosphere reserve is one of the three earliest established cross-border areas of this type in Poland (Breymer, 2005). Moreover, this terrain overlaps the Bieszczady Natura 2000 site (PLC 180001), including a Special Protection Area (SPA) and Special Areas of Conservation (SACs). They host 27 natural and seminatural habitats listed in the 92/43/EEC Directive, which is a second updated list of sites of Community importance for the Alpine biogeographical region (Journal of Laws of UE from 13 February 2009). The park's flora stands out for its high numbers of vascular plant species (over 1100), among which 7 are recognized as Eastern Carpathian endemics.

All this makes an excellent area for conducting research on the optimal model of sustainable agriculture in the Carpathian conditions (Michalik, 1994). As nature undergoes constant and multidirectional changes, in this mountain area, with former more intensive agricultural production, in the last few decades plant cover has been transformed by the spontaneous succession and regeneration processes. This is magnified by the fact that landscape is densely wooded, but also consists of species-rich secondary mountain grasslands with great natural value (Krenová and Kindlmann, 2015). Therefore, it seems interesting to determine what factors of agriculture may enhance the conservation value in such a specific region. The main features of such farms should be low-intensity agriculture, and therefore practices of extensive grazing and traditional mowing, beneficial for biodiversity, as well as low external inputs of synthetic fertilizers, pesticides and herbicides (Brunbjerg et al., 2016). In fact, the favourable conditions for both animal and plant production in conservation areas may be provided by high nature value (HNV) farmlands. They are referred to as biodiverse farms, due to the presence of various habitats and species, thus at the same time they are systems subjected to conservation measures in Europe (O'Rourke et al., 2016). The concept of HNV farmlands originates from the 1990s when they were defined by the European Environment Agency and the United Nations Environment Programme as: “those areas in Europe where agriculture is a dominant land use, and where it supports, or is associated with either a high species and habitat diversity or the presence of species of European conservation concern” (Toth et al., 2020). They are typical for small-scale farms. However, despite being less transformed by the human impact, HNV farms are still subjected to some loss of biodiversity and ecosystem services due to a frequent abandonment of traditional farming activities (Queiroz et al., 2014). The aim of the study was estimating some aspects of agriculture that may positively or negatively shape the conservation values of the Bieszczady National Park buffer zone.

Material and methods

The buffer zone of the Bieszczady National Park (BNP) is physiographically part of the Carpathians and Subcarpathian province. Administratively it covers an area of 3 counties and 6 municipalities (Table 1). Ciśniańsko-Wetliński Landscape Park with the total area of 51.461 ha, is located within the subregion of Bieszczady Zachodnie, and overlaps the following municipalities: Baligród, Cisna, Komańcza and Solina. The latter, which is Dolina Sanu

Landscape Park, is smaller (27.728 ha), and located slightly further east, with area overlapping the territory of Lutowiska, Czarna and Solina municipalities.

Table 1. Selected characteristics of the Bieszczady National Park buffer zone

Landscape park	Area (ha)	Administrative division			Physiographic division		
		County	Municipality	Number of villages	Province	Macroregion	Subregion
Dolina Sanu L.P.	27 728	bieszczadzki	Lutowiska	20	Karpaty and Podkarpacie	Beskidy Lesiste	Bieszczady
			Czarna	7			
Ciśniańsko-Wetliński L.P.	51 461	leski	Solina	6			
			Baligród	6			
			Cisna	16			
		sanocki	Komańcza	3			Bieszczady Zachodnie

Source: own study, based on Kondracki (2009).

In the Bieszczady Mountains one can experience climate characterized by prolonged continental winters, with strong and usually dry winds, and warm summers. Annual precipitation ranges from 800 mm in the lower elevations to 1,250 mm in the highest altitudes (Kondracki, 2009). All those characteristics shape the agricultural suitability of these areas. The largest number of settlements in the buffer zone of national park were in Lutowiska, which is also one of the largest municipalities in Poland, at the other extreme there is Komańcza municipality, with only 3 villages.

The research was based on expert surveys regarding the state of agriculture and rural areas, including management methods within the buffer zone of the Bieszczady National Park (BNP). The factual database was obtained through field research carried out in 2022–2023 in individual rural municipalities. Expert assessments were made among employees of the agricultural advisory service and the Chamber of Agriculture, thus people associated with the countryside, agriculture and its institutional environment. There has been presented the problem of impact of the BNP proximity on possibilities of conducting agricultural activities by the HNV farms, including the preservation or reduction of animal production. In each rural municipality located in the buffer zone there were conducted 5 surveys. All respondents were owners of farms with average area of 5–40 ha, in which they declared animal and plant production. They were practicing farmers, knowing the realities of economic and natural specificity of a given area.

Results

Rural municipalities forming the buffer zone of the Bieszczady National Park, are distinctive not only because of their unique wildlife and habitats, but in terms of demographic and agricultural production as well. The analysed area covers a total of 1,676.7 km², with Lutowiska being the largest municipality, with 475 km². The total population is 19.2 thousand people, and the average population density for all municipalities is 7.8 people per km². These numbers confirm that the settlement network in this region is extremely sparse for the Polish conditions. The lowest population can be found in Lutowiska and Cisna municipalities, with 4 and 6 people per 1 km² on average, respectively (Table 2). Due to the peripheral location, and the small number of non-agricultural economic ventures, there is also observed relatively high unemployment rate, which according to the Statistics Poland (2020) was 13.1% in Solina and 14.1% in Cisna. Forests definitely dominate this entire area, with the afforestation index up to

88.3% in Cisna and 81.9% in Lutowiska. In other municipalities, the values of this indicator range from 56.7% for the Solina municipality to 71.2% for the Komańcza municipality.

Valorisation of the agricultural production space (APS) shows natural environmental conditions in given municipalities. With the best soils having received 100 points (complex 1), soils of the study area have got only 31 to 44 points, which according to classification of Witek (1981) locate them in classes V and IVb (complexes 11–9). Ipso facto, the soil-agricultural complexes are characterized by poor grasslands. That is why permanent grasslands distinctly dominate in land use, with the share in agricultural land ranging from 83.6% in the Komańcza to over 90% in other municipalities. Agricultural land in all the municipalities covers approximately 16% of the total area on average, however in Cisna municipality these values were only 2.5%. According to Statistics Poland (2020), the cattle population, which was related to the area of permanent grasslands (PG), amounted to only 9.3 livestock density per 100 ha in Lutowiska, to a maximum of 31.3 in Czarna municipality.

Table 2. Selected characteristics of municipalities in analysed area

Municipality	Lutowiska	Czarna	Solina	Baligród	Cisna	Komańcza
General information about the municipality						
Area (km ²)	475	184.6	184.2	158.1	286.9	387.9
Total population	2 060	2 389	5 327	3 161	1 740	4 541
Average population density (km ²)	4	13	29	20	6	12
Share of the unemployed (%)	10.5	9	13.1	10.6	14.1	6.9
Afforestation (%)	81.9	63.9	56.7	69.5	88.3	71.2
Agricultural production space (APS)						
Overall indicator of APS	41.0	49.1	55.9	54.7	45.8	49.9
Including:						
Agricultural quality and suitability of soil	31.7	38.5	44.2	42.6	36.2	38.2
Agroclimate	3.8	5.0	5.8	6.2	4.2	6.2
Relief	0.6	0.8	1.1	1.1	0.6	0.7
Water conditions	4.9	4.8	4.8	4.8	4.8	4.8
Share of the agricultural land and livestock						
Area of agricultural land (AL) (ha)	2 847	3 409	2 549	3 570	719	7 364
Share of agricultural land (%)	10.4	18.4	13.8	22.6	2.5	19.0
Permanent grasslands (PG) in AL (%)	94.3	98.3	91.2	95.4	96.2	83.6
Cattle in total	250	1 048	290	423	*	952
Dairy cows	162	668	217	242	*	622
Cattle in 100 ha AL	8.8	30.7	11.3	11.8	*	12.9
Cattle in 100 ha PG	9.3	31.3	12.5	12.4	*	15.5

Source: own study (2022–2023), based on: Witek (1981), Statystyczne Vademecum Samorządowca (2019), and Statistics Poland (2020).

*No statistical data available for the number of sheep and horses, and regarding Cisna for the number of cattle.

The villages of the studied area differed in terms of agricultural land management, despite all being located in the proximity of national park. The lowest average farm areas (in ha) were indicated in Baligród and Cisna (Table 3). Share of permanent grasslands used only in order to obtain some EU subsidies was practically the same, as those used extensively. The highest share of formally existing farms that in fact have abandoned agricultural production was in Komańcza (70%), and the share of declining farms varied from 5 to 80% among the studied municipalities. The structure and character of abandoned land was indicated mostly as bushy. Only for Lutowiska was it maintained in good agricultural condition. Abandoning of agricultural land use was pointed out as slight in Lutowiska, Czarna and Baligród, but also as frequent for Solina, Cisna and Komańcza municipalities. Moreover, the most often indicated consequence for nature of the BPN buffer zone resulting from land abandonment was the increased risk of fire, due to overgrowing by bushes, but also destruction of crops by wild animals.

Table 3. Selected characteristics of agriculture resulting from the proximity of national park

Municipality	I	II	III	IV	V	VI
Specification						
Average area of an individual farm (ha)	15	15	7	5	5	30
Share of abandoned arable land (%)	5	15	5	2	5	40
Share of abandoned PG (%)	10	15	10	10	15	40
Share of PG used to obtain subsidies (%)	60	80	80	75	85	80
Share of farms with fallows in parts of AL (%)	2	5	20	0	15	10
Share of PG used extensively (%)	60	80	80	75	85	80
Share of formally existing farms (%)	20	5	5	0	10	70
Share of declining farms (%)	30	5	80	50	80	40
Type of AL abandonment						
Incidental	.	.	.	.	.	.
Slight	+	+	.	+	.	.
Frequent	.	.	+	.	+	+
The structure and character of the abandoned land						
Bushy	.	+	+	+	+	+
Afforested	.	.	+	+	+	.
Maintained in good agricultural condition	+	.	.	.	.	.
Consequences of land abandonment for nature of the BPN buffer zone						
Increased risk of fire	+	+	+	+	.	+
Increase in weed infestation of neighboring fields	.	.	+	+	.	+
Destruction of crops by wild animals	+	+	+	.	+	+
Threat to farm animals	+	.	.	.	+	+
Changes in the cultural landscape	.	+	.	.	.	+

Source: own study (2022-2023).

Explanations for the table: **I** – Lutowska, **II** – Czarna, **III** – Solina, **IV** – Baligród, **V** – Cisna, **VI** – Komańcza.

Cattle and sheep were kept in all analysed municipalities. The estimated share of farms breeding cattle, mainly Simmental, was the highest for the municipalities of Czarna (70%) and Komańcza (30%), and the lowest for the municipality of Lutowska (5%). Moreover, in the case of sheep breeding, the highest share of farms was recorded for the Lutowska and Komańcza municipalities. The sheep which have been kept the most often were the Polish Mountain Sheep, Podhale Zackel and Blackheaded. Pigs were kept only in the Cisna municipality, where they have been bred in 5% of all agricultural entities. In total, the largest number of farms keeping more than 30 ruminants were sheep farms located in Czarna and Solina municipalities. According to the respondents, in the buffer zone of the Bieszczady National Park there were 3 farms keeping more than 30 goats, one each in the Lutowska, Solina and Komańcza municipalities. Larger farms with dairy cows were found in the municipalities of Czarna, Baligród and Komańcza. Bigger herds of beef cattle were also kept in the same municipalities. The most favourable trends for cattle breeding were in Czarna, where they showed an upward trend. On the other hand, at the opposite end of the spectrum were municipalities Baligród and Cisna, where these values take on the characteristics of a sharp reduction. Similarly, the greatest decrease in the number of sheep was noted for Solina, Baligród and Cisna, while the stagnant trend was observed in Czarna municipality (Table 4).

Table 4. Trends in livestock farming

Municipality	I	II	III	IV	V	VI
Specification						
The share of farms with livestock (%)						
Cattle	5	70	10	10	25	30
Sheep	25	5	5	2	2	10
Pigs	0	0	0	0	5	0
Number of farms breeding > 30 ruminants						
Dairy cows	0	2	0	2	0	3
Beef cattle	0	2	0	1	0	2
Sheep	4	5	5	1	1	1
Goats	1	0	1	0	0	1
Trends in cattle farming						
Upward trend	.	+	.	.	.	.

Stagnant trend	+	·	·	·	·	·
Decreasing tendency	+	·	·	+	+	+
Rapid reduction	·	·	+	+	+	·
Trends in sheep farming						
Upward trend	·	·	·	·	·	·
Stagnant trend	·	+	·	·	·	·
Decreasing tendency	+	·	+	+	+	+
Rapid reduction	·	·	+	+	+	·
Livestock breeds						
Cattle						
Simmental	+	+	+	+	+	+
Highland cattle	+	·	·	·	·	·
Sheep						
Polish Mountain Sheep	+	·	·	·	·	·
Podhale Zackel	·	·	·	·	+	·
Blackheaded	+	+	+			+

Source: own study (2022–2023).

Explanations for the table: **I** – Lutowska, **II** – Czarna, **III** – Solina, **IV** – Baligród, **V** – Cisna, **VI** – Komańcza.

Discussion

Already in the 1990s, researchers emphasized that protected areas should not be treated as rural areas of particular difficulties for agriculture, but more as regions of opportunities for harmonious functioning on different levels (Chmielewski and Harabin, 1993). Also in that period of time it has been recognized that particular styles of farming were not only less damaging to the environment, but in fact positively linked to the biodiversity. Some might even be essential for maintaining the current nature conservation value (Bignal and McCracken, 1996). High nature value (HNV) farmlands are extensively managed farms, which are located in areas of significant biodiversity. The idea of such farming ties the preservation of the biodiversity in the countryside to the need to continue farming and maintenance of specific farming systems associated with the long-term management. Therefore HNV farms link the presence of natural values directly to the farmland (Andersen et al., 2004). In case of Bieszczady, farms from this region fit into the definition formulated by Toth et al. (2020), as they are marginal agricultural lands that intersect with protected areas on different levels, including economic, social, and environmental.

The main purpose of identifying HNV areas is protecting them against the intensification of agricultural production, but at the same time protection against abandonment of agricultural activity and setting aside a significant acreage of agricultural land (Zieliński and Jadczyzyn, 2022). Therefore, an unfavourable phenomenon in this respect seems to be the partial elimination of agriculture in a given protected area. Over time, this may even result in a decline in its natural and landscape values. In the analysed area, such a problem may be especially distinct for farms existing only formally, which means that they have already abandoned agricultural practices. This was particularly visible in the Komańcza municipality, and applies to semi-natural communities, where apparent was the problem of recessive processes such as deagrarianisation and deanimalisation (Musiał and Musiał, 2019; Musiał, 2022). This may pose a threat to nature because the abandoned farmland was overgrown with various species of shrubs and trees. Abandoning the use of meadows and pastures may also result in the disadvantageous outcome of an increased fire risk, which was visible for declining farms.

Farmlands in this area had for their own use the larger acreage of land compared to the average for the whole Subcarpathian Voivodeship (Klepacki, 2004). However, in the first decade of the 21st century, farm owners operating within the boundaries of landscape parks were rather not interested in increasing the scale of production. Quite the opposite, they tended to leave their agricultural land as fallows in greater percentages than in the neighbouring areas.

This was also confirmed by similar research of Ślusarz (2005), who claims that in the Lutowiska municipality, natural conditions reduce the possibility of freely choosing the directions of agricultural production. Such limiting factors are harsh natural conditions, and therefore municipalities like Lutowiska, Cisna and Komańcza are the least favourable areas in this regard in the entire region. The structure of agricultural land (AL) is dominated by permanent grasslands (PG), whose total share in Czarna municipality is 98.3%, and in Cisna 96.2%. This high share of PG in agricultural land of this area results from specific topography, and low quality of soils (Klepacki, 2004).

In many parts of Europe socio-economic changes have led to the cessation of traditional grazing practices (Loos et al., 2015). The interruption of extensive livestock grazing or mowing brings about secondary succession processes, tending towards the climax vegetation, which for the area of Poland is forest. Taking into account the need for sustainable development in the buffer zone of the Bieszczady National Park, extensive animal production should predominate. The most desirable in such area should be traditionally understood sheep production based on natural feed resources from grasslands (Czudec and Ślusarz, 1998). Also, the very high afforestation rate, exceeding 88% in Cisna, illustrates the importance of maintaining some production space in the BNP buffer zone, in order to preserve a certain share of meadow and pasture communities in a total plant cover. According to data from the Statistics Poland (2020), for Lutowiska there are approximately 10.8 ha of PG per one livestock unit of cattle. This means that for 1 ha there are approximately only about 0.1 physical head of cattle, which indicates a far-reaching deanimalisation of this area. Such number is very low, and definitely insufficient, even taking into account the extensive use of meadows and pastures. What is more, if the population of ruminants remains that low in the future, it will be difficult to implement the protective functions, which poses a threat of further degradation of unused grasslands (Ślusarz, 2005). That is why it is so important to stop the decline in cattle population and then try to rebuild it. This task is not made easier by the respondents' negative perception of the proximity of the BNP to their own farms and agriculture in this area in general. Factors that significantly contribute to this phenomenon include the presence of wolves and wild boars, which make management in all municipalities even more difficult. According to Ślusarz (2005), in this region the level of agricultural development and its economic effects do not provide grounds for further development. Similar conclusions arise from this study, and the main role of both animal and plant production is to produce food for own needs of individual farms.

In Europe the HNV areas very often overlap with Natura 2000 sites. The good example of that may be the situation in the Republic of Ireland, where 50% of HNV is Natura 2000, and they maintain the local biodiversity. More examples from the European Union countries also show that sustainable development of valuable natural areas is possible, taking into account agricultural and non-agricultural activities. What is more, they can provide local communities, including farmers, with tangible benefits, also material ones. It is therefore necessary to use these experiences for Polish conditions. When creating a new strategy for the functioning of such areas, firstly there should be determined some actual reasons of conflicts between the interests of nature conservation, and the needs of the communities inhabiting these areas (Voegel, 2000; Moran et al., 2021). However, in realities of our part of Europe such type of farms are most often privately owned permanent grasslands. According to Valko et al. (2016), as they have been incorporated into conservation schemes, the labour-intensive practices become less and less viable, which is mainly due to the low profitability, alternative employment and changes in lifestyle. But we should remember that extensively grazed or mowed grasslands are characterized by species-rich plant communities, and provide multiple ecosystem services, or even, as was noted by Gigante et al. (2024), "nature's contributions to people".

Conclusions

The condition for effective implementation of the conservation function of agriculture in particular areas is to achieve optimal convergence of interests with the goals of nature protection, indicated by relevant institutions, with the interests of local communities. This in particular applies to residents who engage in agricultural production in such areas. Hence, it can be argued that the existence of landscape parks, in terms of maintaining the characteristics of the cultural landscape, will only be possible if people living there will have the opportunity to conduct various forms of economic activity, including agricultural production. The barriers encountered by farmers in the study area indicate that it is necessary to create a system that would allow farm owners to function without damaging natural environment. The link between HNV farming, biodiversity and traditional landscapes is very strong, as many of the habitats of biodiversity significance in Europe were created by the centuries-old, input-low, and small-scale cropping practices, with extensive grazing of ruminant animals. Replaced by expanding intensive agriculture in large parts of the territory, nowadays HNV farms operate in the most marginal agricultural land, such as mountainous regions, difficult for agricultural practices. At the same time, in such lands agriculture may have an essential role in enhancing the nature conservation.

References

- Andersen E. et al. (2004). Developing a High Nature Value Farming area indicator. FINAL REPORT.
- Bigal E.M., McCracken D.I. (1996). Low-intensity farming systems in the conservation of the countryside. *J. Appl. Ecol.*, 33: 413–424.
- Breymeyer A. (2005). Rezerwaty biosfery na wschodniej granicy Unii Europejskiej. *Kosmos, Probl. Nauk Biol.*, 54 (2-3): 275–283.
- Brunbjerg A.K., Bladt J., Brink M., Fredshavn J., Mikkelsen P., Moeslund J.E. Nygaard B., Skov F., Ejrnæs R. (2016). Development and implementation of a high nature value (HNV) farming indicator for Denmark. *Ecol. Indic.*, 61: 274–281.
- Chmielewski T.J., Harabin. Z. (1993). Rolnictwo w parkach krajobrazowych i obszarach chronionego krajobrazu [W:] *Proekologiczne zorientowanie polityki rolnej w Polsce na przełomie XX i XXI wieku*, 3: 111-121. Wydawnictwo IERiGŻ, Warszawa.
- Czudec A. Ślusarz G. (1998). Rynkowe uwarunkowania rozwoju produkcji owczarskiej w terenach górskich województwa krośnieńskiego. *Zeszyty Nauk. AR w Krakowie*, 55 (1).
- Gigante D., Angelucci S., Bonini F., Caruso F., di Cecco V., Donnini D., Morbidini L., Pauselli M., Valenti B., Tassi A. (2024). Seminatural grasslands: an emblematic challenge for nature conservation in protected areas. *Land*, 13, 386.
- Gruszecki K. (2021). *Ustawa o ochronie przyrody. Komentarz. Wydanie 5.* Wydawnictwo Wolters Kluwer Polska.
- Journal of Laws of UE from 13 February 2009.
- Journal of Laws of 2020, item 55.
- Klepacki B. (1998). Czynniki warunkujące rozwój przedsiębiorstw agrobiznesu. [W:] *Ekonomika i organizacja produkcji rolniczej. Zeszyty Naukowe AR w Krakowie*, 52, 17.
- Klepacki B. (2004). Zasoby i organizacja gospodarstw rolnych na obszarach o zróżnicowanym systemie ochrony prawnej. *Acta Scientifica Academiae Ostroviensis*, 16: 28–41.
- Kondracki J. (2009). *Geografia regionalna Polski.* Wydawnictwo Naukowe PWN.
- Krenová Z., Kindlmann P. (2015). Natura 2000 – Solution for Eastern Europe or just a good start? The Šumava National Park as a test case. *Biological Conservation*, 186: 268–275.

- Loos J., Turtureanu P.D., von Wehrden H., Hanspach J., Dorresteijn I., Frink J.P., Fischer J., (2015). Plant diversity in a changing agricultural landscape mosaic in Southern Transylvania (Romania). *Agric., Ecosyst. Environ.*, 199: 350–357.
- Michalik S. (1994). Międzynarodowy Rezerwat Przyrody Karpaty Wschodnie. *Kosmos*, 43 (1): 117–128
- Moran J., Byrne D., Carlier J., Dunford B., Finn J.A., ÓUallacháin D., Sullivan C.A. (2021). Management of high nature value farmland in the Republic of Ireland: 25 years are evolving toward locally adapted results-orientated solutions and payments. *Ecol. Soc.*, 26 (1).
- Musiał K. (2022). Pola kompromisów pomiędzy interesami produkcyjnymi a ekologicznymi na przykładzie Konecko-Łopuszniańskiego Obszaru Chronionego Krajobrazu. *Rocz. Nauk. Zoot.*, 49 (1): 71–87.
- Musiał W., Musiał K. (2019). Deanimalisation processes in the Polish Carpathians – production, economic and ecological aspects. *Annals of the Polish Association of Agricultural and Agrobusiness Economists*, 21 (4): 331–340.
- O'Rourke E., Charbonneau M., Poinot Y. (2016). High nature value mountain farming systems in Europe: Case studies from the Atlantic Pyrenees, France and the Kerry Uplands, Ireland. *J. Rural Stud.*, 46: 47–59.
- Queiroz C., Beilin R., Folke C., Lindborg R. (2014). Farmland abandonment: Threat or opportunity for biodiversity conservation? A global review. *Front. Ecol. Environ.*, 12: 288-296.
- Statistics Poland. (2020). *General Agricultural Census, Environment*. Warszawa.
- Statystyczne Vademecum Samorządowca. (2019). *Portrety terytorium – woj. podkarpackie*. Statistics Poland, Warszawa.
- Ślusarz G. (2005). Studium społeczno-ekonomicznych uwarunkowań rozwoju obszarów wiejskich w świetle zagrożenia marginalizacją – na przykładzie woj. podkarpackiego. Wydawnictwo UR w Rzeszowie, seria “Monografie i Opracowania”, 1.
- Toth G., Huzui-Stoiculescu A., Toth A.I., Stoiculescu R. (2020). How do Natura 2000 areas intersect with peoples' livelihood strategies in High Nature Value farmlands in Southern Transylvania? *Land*, 9 (484).
- Valko O., Zmihorski M., Biurrun I., Loos J., Labadessa R., Venn S. (2016). Ecology and conservation of steppes and semi-natural grasslands. *Hacquetia*, 15 (2): 5–14.
- Voegel R. (2000). Nature protection areas and agriculture in Brandenburg, Germany [In:] *The relationship between nature conservation, biodiversity and organic agriculture. Proceedings of an international workshop, Vignola, Italy, IFOAM*, pp. 92–94.
- Witek T. (1981). *Waloryzacja rolniczej przestrzeni produkcyjnej Polski wg gmin*. Wydawnictwo IUNG, Puławy.
- Zawilińska B. (2011). *Obszary chronione – bariery czy stymulanty rozwoju lokalnego? Studia KPZK*.
- Zieliński M., Jadczyzyn J. (2022). Importance and challenges for agriculture from high nature value farmlands (HNVf) in Poland in the context of the provision of public goods under the European Green Deal. *Ekonomia i Środowisko*, 3 (82): 194–219.

EKSTENSYWNA PRODUKCJA ZWIERZĘCA I ROŚLINNA JAKO WARTOŚĆ KONSERWATORSKA GOSPODARSTW OKREŚLANYCH JAKO „HNV” W OTULINIE BIESZCZADZKIEGO PARKU NARODOWEGO

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STRESZCZENIE

Celem badań była ocena tych aspektów rolnictwa, które w sposób pozytywny lub negatywny mogą kształtować wartość konserwatorską otuliny Bieszczadzkiego Parku Narodowego. Badania w terenie przeprowadzone w latach 2022–2023 oparte były o ankieto-wywiady dotyczące stanu rolnictwa i obszarów wiejskich, w tym typu prowadzonej produkcji rolnej. Przedstawiono problem wpływu bliskości parku narodowego na prowadzenie praktyk rolniczych przez gospodarstwa cechujące się wysokimi walorami przyrodniczymi (*HNVf*), odnośnie zachowania lub redukcji produkcji zwierzęcej. Wyniki wskazują, że udział trwałych użytków zielonych, które były utrzymywane jedynie po to, aby otrzymać dotacje obszarowe z UE, był praktycznie taki sam jak TUZ użytkowanych w sposób ekstensywny. Najwyższy udział gospodarstw istniejących jedynie formalnie stwierdzono w gminie Komańcza (70%), natomiast gospodarstwa schyłkowe wykazywały zróżnicowanie w poszczególnych gminach pomiędzy 5–80%. Może to generować zagrożenie dla przyrody, jako że porzucone grunty rolne cechowały się zarastaniem przez różne gatunki krzewów i drzew. Oszacowany udział gospodarstw utrzymujących bydło był najwyższy dla gmin Czarna (70%) i Komańcza (30%), a najniższy dla gminy Lutowiska (5%). Odnośnie hodowli owiec największy udział gospodarstw został zanotowany dla gmin Lutowiska i Komańcza, jednak jeśli populacja przeżuwaczy utrzyma się na podobnym poziomie w przyszłości, trudno będzie realizować funkcje ochroniarskie, co może skutkować dalszą degradacją nieużytkowanych zbiorowisk trawiastych.

Słowa kluczowe: obszary chronione, gospodarstwa o wysokich walorach przyrodniczych (*HNVf*), rolnictwo jako wartość dla ochrony przyrody, problem dezanimalizacji, województwo podkarpackie