

RESEARCH ON THE PRACTICE OF RURAL TOURISM SPECIALIZED IN SPORT AND IMAGE HUNTING IN CERGĂU AREA, ROMANIA

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Abstract

The research realised in this paper was based on ecologic principles such as: stimulating forestry and hunting funds to participate in the rural tourism market, protecting game species through improving life conditions, strict control of the number of pests and combating illegal hunting (poaching); encouraging biodiversity conservation through sustainable nature-based tourism. The paper argues the necessity of conforming hunting tourism to modern tendencies which involve responsible travelling to natural areas. The study of the reliability of the main game species, quantitative and, qualitative value indicators, as well as the optimal number of animals, the influence of the anthropic factors reflected in how to manage the hunting fund, the theoretical calculation of harvesting quotas and the comparison of the real and optimal ones, the combating of game pests are all elements that we consider to be extremely important in solving the proposed objectives, in order to create the best premises and conditions for rural tourism practices specializing in image hunting.

Key words: rural tourism, hunting fund, game species, image hunting.

INTRODUCTION

According to the World Tourism Organisation estimates, the demand for ecotourism is constantly rising all over the world. Conceptually, ecotourism is tied to the conservation of nature (Björk, 2000) and promoting cultural and traditional values.

Authentic experiences, virgin natural environment, biodiversity and local culture will be more important for potential tourists than the variety of entertainment and shopping opportunities (Galluzzo, 2017; Sáez-Martínez et al., 2016).

Worldwide, the innocuous style of travel has gained more and more followers. There are tourism agencies specializing in green tourism that involve protecting the natural environment, using natural resources (alternative energy hotels, solar panels etc.) as well as tourist circuits that avoids the strong impact on traditional human communities specific to an area (González-Moreno et al., 2016; Pamuković et al., 2016).

Rural tourism as a techno-economic activity must become part of ecotourism (Călina, 2017; Ciolac et al., 2017, Drăgoi et al., 2017).

It encompasses all touristic activities that unfold in the rural area, and at its core is the strong relationship between the natural and the anthropic environment (Iancu et al., 2017; Iorio and Corsale, 2010).

Hunting represents one the most important factor that determined the appearance of rural tourism. In the eleventh and the twelfth centuries the British aristocracy trips to countryside for hunting was one the first forms of the rural tourism activities. Still sport hunting remains as one the activities of rural tourism (Sharpley and Sharpley, 1997).

Nowadays, photography represents the primary motivation to travel for the large majority tourists. In Africa, photographic tourism generates a larger income than trophy hunting, and where large numbers of tourists visit, employment opportunities for local people rise (Lindsey et al., 2007), for example the Tanzanian National Parks generates 11 million USD annually from photographic tourism just from the Serengeti and Ngorongoro Conservation Area, while the Tanzanian Wildlife Division earns only USD 10.5 million per year from trophy hunting (Thirgood et al., 2006).

MATERIALS AND METHODS

The aim of this article is to develop a sustainable relationship between available resources on the hunting fund and tourism activities.

The No. 30 Cergău hunting fund from Alba County provides the nucleus of knowledge for the area and our research. The fund is located in the Transylvanian Depression, the Târnavelor Plateau, between the Târnavă Mare River and Secaş River, the Blaj territorial area and the Lunga, Cergău and Cenade communes. From the point of view of the forest administration, it belongs to the Silvicultural District of Sebeş, Alba Silvicultural Directorate, with a total of 8700 ha and its neighbours - Association for Sport Hunting and Fishing (ASHF) Valea Lungă, ASHF Cindrelul, Forest District Mediaş, County Association for Sport Hunting and Fishing Alba. Access ways are: DN Blaj - Copşa Mică, 39 Km, DJ Valea Lungă - Cenade, 8 Km, DJ Blaj - Roşia de Secaş, 21 Km, a total 68 km.

We insisted on the analysis of the game raising indicators, that can quantify the practicing of rural tourism specialized in image hunting such as:

- the minimum food requirement for the main game species;
- optimally number of specimens (E_o) was done using the following formula:

$$E_o = \frac{D \times S}{1000}$$

S = the area of the living environment of the species concerned;

D = optimal density / 1000 ha according to the category of creditworthiness.

- number of individuals of species harmful to game to be removed annually.

Our research was extensive and comprised general elements of the geographic setting (geology, weather conditions, hydrographic elements); flora conditions (forest fauna, meadows, food crops, sources of pollution etc.); cultural-historical heritage resources from the Târnavelor Plateau.

Finally, we evaluated the influence of anthropogenic factors reflected in how the hunting fund is managed, the economic efficiency and formed a strategy for the

sustainable use of existing resources. The data come from our previous research, as well as the Association for Sport Hunting and Fishing "Deerling from the hill" and the National Institute of Statistics online resource.

RESULTS AND DISCUSSIONS

The Târnavele area is picturesque, with *unique attractions*. Being preferred and sought by numerous domestic and foreign tourists, it is dotted with countless monuments of religious, historical, cultural and architectural interest, thus forming a centre for numerous studies with historical and cultural concerns.

The *relief, climate, flora and fauna* of the area are important reasons for initiating and developing a hunting activity based on sport and images hunting, with wildlife in their natural habitat. The traditional architecture of the area, the sights alongside the picturesque locations are an attraction for visitors and for those who transit the area, while being a dynamic factor for the development of rural tourism, generating income and jobs for the local community.

The *variety of forestry and agricultural species* ensures the sufficiency and diversity of species, and it is necessary to feed the game only in the winter months, when the thickness of the snow layer is high and especially in the years without fructification for the main forest species.

The existence of brush and shrubs favoured by game (black shrub, shallow willow, ash, lime, etc.) and flora that provide feeding also during winter (blackberry, raspberry, topinambur, hawthorn, nettle) enable Hunting Fund No. 30 Cergău to provide the trophic offer necessary for the development of hunting species.

Forest species that harvest in middle and upper age classes such as hornbeam, beech, apple, cherry, pear-tree provide much of the feed in the autumn, and leftovers from agricultural crops provide food during winter. In conclusion, the forest vegetation and agricultural crops ensure good conditions for food and shelter for hunted species. Through these conditions, the hunting fund is host to species such as: Wild boar (Figure 1), Deer (Figure 2), Roebuck, Rabbit, Pheasant, Partridge, Bear etc.



Figure 1. Wild boars
Source: Personal archive



Figure 2. Deer
Source: Personal archive

Calculation of complementary feed needs

Through the variety of stationary conditions and the attentive care of the personnel working for No. 30 Cergău hunting fund, it hosts and enjoys a large variety of hunting species. Calculating the complementary need for game and its staggering by year was realised according to the provisions of the contract of putting into use and the dynamics of the main game species (Table 1, Table 2).

Table 1. The complementary food needs

No.	Species	Concentrate feed	Green grass hay	Succulents Roots
		(kg/year/specimen)		
1	Deer	25	75	25
2	Roebuck	8	25	8
3	Wild boar	60	0	60
4	Rabbit	0	1.5	0
5	Pheasant	6	0	0
6	Partridge	6	0	0
7	Bear	60	0	60

Source: ASHF "Deerling from the hill",

Expenditure for works (ploughing, harvesting, spraying, mechanization, transport) will be calculated by the hired personnel, assisted by

hunter members during working days. It is estimated that a harvest of 5.0-7.0 t/ha will be obtained and the amount of 4935.125 lei will be required for the establishment of the 3.25 ha surface, cultivated with cereals (corn).

Table 2. The minimum food requirement for the main game species and the yearly staggering

Year/ Species	2014			
	No.	Concentrate feed	Green grass hay	Succulents/ Roots
Deer	25	625	1875	625
Roebuck	127	1016	3175	1016
Wild boar	28	1680	0	1680
Rabbit	2	120	0	120
Pheasant	201	0	301.5	0
Partridge	422	2532	0	0
Bear	299	1794	0	0
TOTAL		7767	5351.5	3441
Year/ Species	2015			
	No.	Concentrate feed	Green grass hay	Succulents/ Roots
Deer	25	625	1875	625
Roebuck	127	1016	3175	1016
Wild boar	29	1680	0	1680
Rabbit	2	120	0	120
Pheasant	201	0	301.5	0
Partridge	430	2496	0	0
Bear	253	1518	0	0
TOTAL	-	7455	5351.5	3441
Year/ Species	2016			
	No.	Concentrate feed	Green grass hay	Succulents/ Roots
Deer	25	625	1875	625
Roebuck	127	1016	3175	1016
Wild boar	28	1680	0	1680
Rabbit	2	120	0	120
Pheasant	201	0	301.5	0
Partridge	412	2472	0	0
Bear	381	2286	0	0
TOTAL		8199	5351.5	3441

Source: ASHF "Deerling from the hill"

Also, the lucerne costs for field works (ploughing, seeding, sowing, harvesting, transporting) will be calculated by the same personnel and it is estimated that a harvest of 15,000-40,000 kg of green mass and 5,500-7,000 kg of hay will be obtained, with expenses of 921 lei. For succulents, a harvest of 25 t/ha is estimated, and the amount of 1303.5 lei is required for setting up the 1 ha surface (ploughing, disking, sowing, herbicides, hoeing, transporting).

Credit worthiness study for the main game species.

The analysis of the abiotic, biotic and anthropogenic factors influencing the existence of game species has led to the development of

"ecological diagnosis keys", whereby the hunting fund can be assessed for each individual species of game, which results in the optimal flock that can live within the hunting fund, under optimum conditions (Micu, 2005; Duda, 1998).

The creditworthiness study for the main game species was done in accordance with the provisions of the Ministry of Agriculture and Rural Development and the Institute for Forest Research and Development. The optimal number (Table 3) determined through the *study* are comparable to the real ones (Table 4). A *credit worthiness* committee decides on the harvest, eliminating the wounded, sick badly adapted or aged individuals.

The analysis of the data revealed that the essential conditions necessary for hunting (shelter, quietness, food) are generally fulfilled, but it is still necessary to prevent the evolution of negative influence from anthropogenic factors on hunting in the future. The calculation of complementary feed needs for game and its staggering by year was made according to the provisions of the supply contract and the dynamics of the main species. Intensive grazing and the significant presence of pests require special measures to combat, which will lead to the achievement of optimum hunting numbers.

Various works will be undertaken in the Cergău Hunting Fund to ensure the minimum necessary hunting constructions and the minimum quantities of complementary food from the provisions of the contract of putting into use.

Table 3. The optimal number of animals

Species	Scores	Category of creditworthiness	Density/1000ha	Optimal number
Deer	500	III	10	4
Roebuck	505	II	51	87
Bear**	365	III	7	0
Wild boar	525	II	11	11
Rabbit	500	III	140	200
Pheasant	750	II	200	100

**Density/10000 ha

Source: ASHF "Deerling from the hill"

The results, measures and recommendations will ensure optimum number of specimens and a healthy gender balance, valuable trophies in trophy-carrying species, healthy and vigorous

hunting populations, while also preserving biodiversity, maintaining the current ecosystem and even improving it.

Table 4. Theoretical calculation of harvesting quotas and comparison of herds, real ones with optimal ones

Species	Years	Real no.	Optimal no.	Natural growth	Harvest
Deer	2014-2015	3	4	1	0
	2015-2016	3	4	3	0
	2016-2017	6	4	3	0
Roebuck	2014-2015	105	87	15	3
	2015-2016	120	87	19	4
	2016-2017	139	87	20	8
Wild boar	2014-2015	14	11	6	3
	2015-2016	20	11	10	4
	2016-2017	32	1	10	7
Rabbit	2014-2015	140	200	20	0
	2015-2016	160	200	60	0
	2016-2017	220	200	40	0
Pheasant	2014-2015	90	100	22	0
	2015-2016	120	100	28	0
	2016-2017	130	100	36	0

Source: ASHF "Deerling from the hill"

The influence of anthropogenic factors reflected in the way the hunting fund is managed.

1. Existing hunting, construction and installations

Within the hunting fund no. 30 Cergău, there are currently 18 deer feeders, 10 boar feeding points, 8 game observatories, 20 cervid salting and 5 boar salting. There are also one deer baths, 3 wild boar baths, naturally built with small arrangements. Natural troughs are in the number of 6 for boar and deer.

2. Refuge area

The refuge zone is located in the northeast of the hunting fund, consisting of 120 ha. Near the refuge there is an oak and hornbeam forest, in the area called La Benzi and Mărărăzi Valley. We believe that the refuge area is ideally placed within the hunting ground.

3. The influence of the anthropic factor reflected by activities that harm the game

Regarding industrial activities, these do not take place on the hunting fund, except for small and medium-sized enterprises located in the neighbouring city. Instead, building activities (ballasts) do take place, that have an influence on a section of the hunting fund, specifically on the access to shelters and game trails.

Activities in zootechnics greatly influence the conditions of propagation and development of hunting.

The existence of 2,174.7 ha of pastureland for cattle and sheep, as well as agricultural land which is no longer cultivated, and even of cultivated land and grassland, which for a good part of the year become grazing grounds, adversely affects the conditions for the presence of game.

The prospects for the future are discouraging as there is a growing tendency for domestic animal flocks to be raised along and over much of the hunting fund. Concerning poaching, in view of the increase in unemployment, with no developmental perspectives in the area, it is estimated that it will increase, especially with rudimentary methods, such as traps and dogs.

4. The main trophies acquired

The conditions set out above and the proper management of the hunting fund ensured the development of game trophies. In the last 5 years, the following medals - trophies were obtained - roebuck: 2 bronze trophies

5. Hunting found dead and causes

No hunting and epizootic diseases have been recorded on hunting grounds over the past 10 years. Mortality has been recorded within the limits considered normal and accidental. The main causes were carnage by dogs, wandering dogs, harvesting of hay and farm crops and traffic accident injuries.

6. Combating harmful species to game

Intensive grazing and the significant presence of harmful species to game require special measures to combat.

The measures anticipated to take place in the following years aim to achieve optimum number of specimens by intensifying pest control as shown in Table 5. Through this action, the optimal number of individuals are expected to be achieved in all species, predicting a substantial increase in small game herds.

Table 5. Estimated number of individuals of species harmful to game to be removed annually

Season	Wandering dogs	Wandering cats	Crow	Magpies
2006 -2007	60	25	100	60
2007 -2008	60	25	100	60
2008 -2009	60	25	100	60
2009 -2010	70	25	120	70
2010 -2011	70	25	120	70
2011 -2012	80	25	120	80
2012 -2013	80	25	130	80
2013 -2014	90	25	130	90
2015 -2016	90	25	140	90
2016 -2017	100	25	150	100

Source: ASHF "Deerling from the hill"

Economic calculation

Capitalizing on the harvest implies obtaining a material income from the trophies, meat and furs of the game. The quantitative and qualitative indicators are decided by the committee of creditworthiness and trophies evaluated based on number of points obtained. (Table 6, Table 7).

Table 6. Quantitative indicators per species /1 000 ha hunting fund

Species	No. of individuals	No. of skins / furs	Meat harvested
Deer	0.5	0.1	58.5
Roebuck	1.3	1.3	52.5
Wild boar	0.5	0.5	77.9
Rabbit	33.8	33.8	135.0
Pheasant	41.7	-	62.5
Bear	0.1	0.1	-
Wolf	0.1	0.1	-
Fox	3.9	3.9	-
Badger	0.5	0.5	-
Polecat	0,5	0.5	-
Pine marten	0.2	0.2	-
Weasel	0.5	0.5	-
Muskrat	6.5	6.5	-

Source: ASHF "Deerling from the hill"

Table 7. Qualitative indicators per species/1000 ha hunting fund

Species	No. of trophies harvested	No. of medals trophies	No. of trophies selection
Deer	0.3	0.1	0.1
Roebuck	1.3	0.3	0.3
Wild boar	0.5	0.4	-
Bear	0.1	0.1	-
Wolf	0.1	0.1	-
Fox	3.9	2.0	-
Badger	0.5	0.3	-

Source: ASHF "Deerling from the hill"

Estimate of expenses and revenues

Following the proposals for completing and correcting the planning of the studied hunting fund, the following are necessary:

- the work for the construction of a feeding spot is achieved through the hired personnel with guard duties and management of the hunting fund - it follows that for the construction of 10 feeds, the amount needed is 3645 lei;
- investments for the construction of a lookout (Figure 3) the work is done by the hired personnel, guarding and managing the hunting fund, and the timber material for the lookout's support structure is taken from the site - for the

construction of 15 lookouts the sum of 11310 lei is necessary;

- investments for 5 km of hunting trails - requires the help of a team of 2 workers who will be paid 60 lei/day. Cutting and grubbing works will be done by power tools or chainsaw - the amount of 600 lei is necessary for the minimum necessary hunting trails within the studied hunting fund.



Figure 3. Building a lookout on the hunting fund
Source: Personal archive

For an average year of application, revenue and expenditure is estimated in the table below:

Table 8. Revenue and expenditure

Revenue (lei)			
Hunter contributions		25000	
Meat hunted		38700	
Hunting authorizations		17000	
Foreigner hunt		120000	
Image Hunt		10000	
Interest		900	
Total		211 600	
Expenditure (lei)			
Wages	30000	Hunting cartridge	2500
Awards	2000	Drugs	1400
Equipment	500	Repairs and hunting constructions	30000
Feed hunted	31000	Fee for hunting	10000
Guide for images	1000	Share subsidiary expenses	10000
Salt	600	Share expenditure association	5000
Total		124 000	

Source: ASHF "Deerling from the hill"

It is worth noting that the expenditure related to the repopulation was not included because it is covered by centralized funds.

$$\text{Profit} = \text{Income} - \text{Expenses} = 211600 \text{ lei} - 124000 \text{ lei} = 87600 \text{ lei}$$

Stimulating touristic activities

Tourism based on natural exploitation is associated with a longer stay period, a higher average of expenses and with a responsible behaviour towards biodiversity.

The tourism activity in the area is underdeveloped, yet it presents high, untapped potential. In 2017, in the entire area (over a radius of 30 km) there were only 5 accommodation units, all of them located in Blaj town (Table 9).

Table 9. The accommodation supply in Blaj town

Type of accommodation	Number of units	Number of beds	Category of comfort
Hotels	1	60	Two stars
Tourist Guesthouses	4	124	Two-three stars

Source: National Institute of Statistics

The reduced number of accommodation spaces and the existent tourism services of a low quality determined the necessity for realising a tourist guesthouse. The guesthouse will be created in the traditional Romanian architectural style from construction material (wood and stone) obtained from the area. The accommodation capacity of the guesthouse is 10 places and it will offer the ability to prepare and serve meals. Its furnishing and facilities will permit classifying the cabin at a maximum level and its introduction in the local and national tourism system. Realising a tourism infrastructure will establish a factor of balance and comfort for tourists and will create conditions for sustainable development of businesses on a small scale.

Strategic measures for sustainable usage of the resources of the fund

- maintaining the native, untouched ecosystem, protected from anthropic activities such as grazing (aspect also presented by Buckley and Mossaz, 2015);
- utilising some areas for conservation and tourism for photography;
- ecological education activities for tourists;
- realising a short monograph on the natural and cultural resources from the area;
- monitoring the impact of tourism activities.

CONCLUSIONS

The research was primarily aimed at the implementation of agritourism specialized in

the hunting of images that would not bring any harm to the natural environment and the local fauna in the beautiful and unique area of the Târnavelor Plateau. To achieve this, it was necessary to apply a hunting management based on scientific grounds, aiming harmonization with the general interests of the local population and the preservation of biodiversity and natural habitats of wild game.

Various works will be carried out in the No. 30 Cergău hunting fund, which will ensure the minimum necessary hunting facilities and the minimum quantities of complementary food, according to the stipulations included in the contract for putting into use. The results, measures and recommendations will ensure optimum performance and a healthy gender balance, valuable trophies in trophy-carrying species, healthy and vigorous hunting populations, while preserving biodiversity, maintaining the current ecosystem and even improving it.

Furthermore, the income achieved in an average year of application is of 211600 lei, which makes this hunting fund profitable, with a sum of 87600 lei, without taking into account the revenues that can be obtained from the accommodation and dining activities. The services offered by the hunting lodge will be realised to the required standards, with traditional cuisine and organic products, which will give it its distinctive appeal.

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