

COMPARATIVE ANALYSIS OF HUNTING IN THE CZECH REPUBLIC AND UKRAINE

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ABSTRACT

The results of a comparative analysis of hunting management in Ukraine and the Czech Republic are presented. Innovative methods of hunting management: the newest in the European hunting practice are shown. The success of Czech hunters shows that despite significant social and economic changes in the country, thanks to the observance of traditions, timely improvement of the regulatory framework, training of specialists, care for hunters and the hunting fund it is possible to ensure a significant increase in the number and production of the main types of hunting animals. Comparing the indicators of the level of hunting management with those of the Czech Republic, we can only state that Ukraine has great potential for managing hunting resources. In order for high levels of hunting management to become a reality, it is necessary to develop a national concept of its organization and development, which is based on effective economic, environmental and social instruments, taking into account national management traditions; to work in this direction purposefully and persistently for decades. The work is based on legal acts, state statistical reporting data and literary sources in Ukraine and the Czech Republic.

Keywords: ecology of animal populations, hunting economy, environmental monitoring

INTRODUCTION

Hunting is an ancient and prestigious occupation of the population of the Carpathian Euroregion, especially Ukraine and the Czech Republic. Modern hunting is an ecological activity in the field of management of wildlife populations and their environment aimed at meeting the needs of hunters, support and development of hunting traditions and customs as part of the national cultural heritage. The most significant phenomenon of Ukrainian hunting is the attempt to reform it and significantly increase the number of hunting animals, and the Czech - the implementation of tasks related to the inclusion of hunting in the national list of intangible cultural heritage and keeping the hunting fauna at the optimal level.

Both in Ukraine (74.9%) and in the Czech Republic (57.4%) field hunting lands predominate, the share of forest lands in the Czech Republic - 36.9%, and in Ukraine only - 20.5%. However, the area of forests in Ukraine (10.4 million hectares) is 4 times larger than in the Czech Republic (2.6 million hectares), although the forest cover of the Czech Republic (33.4%) is 2 times larger than in Ukraine (15.9%). In both countries, state forests predominate: in Ukraine they are 73% (13% - communal, 0.2% - private), and in the Czech Republic 63.3% are state, 22.6% private, the rest are communal and others. The Czech Republic's forest species composition is dominated by spruce (*Picea abies*) - 55%, and in Ukraine - 33% pine (*Pinus silvestris*) and oak (*Quercus robur*) - 24%. The majority of forests in the Czech Republic (76.9%) are operational, the rest are for special purposes (19.9%) and protective (3.2%), while in Ukraine only about 50% of forests are considered operational. Protected areas in Ukraine (4,300,000 ha) are 3.6 times larger than in the Czech Republic (1,200,000 ha), but in terms of wildlife conservation in Ukraine (6.6%) is significantly inferior to the Czech Republic (14%) [1], [2], [3]. Users of hunting grounds in the Czech Republic (5,800) are 5.5 times more than in Ukraine (1050). The agreement on the use of hunting grounds in the Czech Republic is concluded for 10 years, and in Ukraine for the period from 15 to 49 years. The use of hunting grounds in the Czech Republic is paid, and in Ukraine is actually free. The majority of Czech users - 86.4% rent the land, the rest, 13.6% - are owners. The average area of one private hunting farm is 1,248.9 ha, while that of public (state and public) is 1,358.4 ha. Only 784 (52.0%) of 1,507 landowners are hunters themselves, the rest are renters. The total number of leased lands is 5800,000. A total of 4983 (86.4%) hunting farms in the Czech Republic operate on a hectare (85.5%). The minimum area of hunting grounds provided for use in the Czech Republic (500 ha) is 6 times less than in Ukraine (3000 ha), and the actual average area of hunting farms is 1173.2 ha, which is 30 times less than in Ukraine [4], [5].

In the Czech Republic, a small percentage of hunting grounds are enclosures - 0.7% and pheasanaries - 1.4%. Forest areas dominate in enclosures - 79.6%, while independent pheasanaria and pheasanarias are part of hunting grounds, while field areas are 59.2% and 67.5% respectively. The share of forest land in pheasanaria is 30.2% and 26.5%, respectively. Between 201 enclosure farms, 88.1% are private and the rest are public. According to the law, the minimum area of the enclosure in the Czech Republic is 50 ha, while the actual average area of a private enclosure is 260.5 ha and that of a public enclosure is 100.1 ha. There are 33 independent pheasant farms, of which 260 are part of the hunting farm, of which 21 and 25 are private. The average area of private pheasant farms is 765.8 ha and 493.0 ha respectively, while public farms are 532.4 ha and 259.8 ha [5].

In the Czech Republic, about 400 farms are actively engaged in farm breeding of reindeer-like animals on which there are more than 10.7 thousand animals, including fallow deer - 61.3%, deer - 29.3%, mouflon - 7.6% and wild boar - 1.8%. In Ukraine, 220 nurseries and farms for artificial breeding of hunting animals contain almost four times less animals (2.7 thousand): wild boar - 44.0%, fallow deer - 17.1%, forest deer - 16.9%, mouflon - 11.1%, spotted deer - 8.9%, the rest - European roe deer, as well as 20.3 thousand birds including - pheasant - 4.9 thousand, and mallard - 15.4 thousand.

The total number of hunters in Ukraine is 750,000, i.e. 8.3 times, while the number of active hunters is 254,000, it is 2.8 times higher than in the Czech Republic (90,400). In the first case, one hunter accounts for 56 and active for 166 citizens, while one hunter

accounts for 51 and active for 151 he of hunting grounds. In the Czech Republic, one hunter accounts for 117 people, while one hunter accounts for 75.9 he of hunting grounds.

Both in Ukraine (181 thousand) and in the Czech Republic (60 thousand) the majority of hunters are members of public organizations - "Ukrainian Hunters and Fishermen Society" and "Czech-Moravian Hunters and Fishermen Society". However, in Ukraine, unlike in the Czech Republic, the UHFA primary teams (clubs) are not legal entities. The main source of funds in the society is the sale of shooting cards and hunters' membership fees, which, depending on the administrative area in Ukraine, range from 1000 to 3000 UAH per year, favourable ones are 50% less. Approximately 90% of the total contributions remain to the primary staff (club), the rest to regional (6%) and Ukrainian institutes (4%) of society. In the Czech Republic, membership fees amount to CZK 1000-1700 per year. A significant part (42%) of the total membership fee remains with the primary staff (club), 41.4% with insurance, the rest is paid to the regional authorities (15.9%) and the country (0.4%). Slightly less (by 20-40%) preferential membership fees are provided for retired hunters, students, disabled people and full-time employees in the hunting and forestry sector [6], [7], [8].

In the Czech Republic, unlike in Ukraine, each hunter is required to insure his or her health for at least 20 million CZK and material assets (weapons, etc.) for at least 500,000 CZK. A hunter may be deprived of a hunting ticket for 2 years for violation of the current requirements or hunting rules, or fined from 10 to 30 thousand CZK [9], [10].

METHODS AND OBJECTS OF THE RESEARCH

Aim of the research

Analysis of various forms and methods of conservation, reproduction and use of game resources in Czech Republic and Ukraine to understand the level of hunting organization for reproduction and enrichment of biological diversity.

Output data for analysis of game and wildlife management in Czech Republic and Ukraine are open access information.

Initial conditions

Ukraine is 7.7 times larger than the Czech Republic, which is famous for its hunting traditions and tourism, as well as the export of live animals, meat of the wild animals and hunting dogs. The area of hunting lands provided for use in Ukraine (38.3 million hectares) is 5.6 times larger than in the Czech Republic (6.8 million hectares), and their share is 63.5% and 86.1% of the country's area in accordance. In Ukraine, on most of the land (61.6%) the farm is run by the primary teams of the public organization of the Ukrainian Society of Hunters and Fishermen (UHFA). The enterprises of the State Agency of Forest Resources were provided with 10.4% of hunting lands, the rest - 28.0%, other users (individuals and legal entities, clubs). In the Czech Republic, 75.1% of hunting grounds are in public (state, communal, church, collective, clubs), the rest (24.9%) are privately owned.

RESULTS

The Ukrainian hunting industry employs 6,260 people, of whom 4,831 are regular gamekeepers and 485 are hunting experts, while in the Czech Republic there are 3.2 times more employees and 2.8 times more gamekeepers. The number of hunters per employee in the Czech hunting farm is 4-5, while in Ukraine there are 40-120 hunters, i.e. 10-24 times more. The average area of hunting grounds served by one ranger in Ukraine is 8,000 ha, while in the Czech Republic it is 16 times less - 500 ha.

In the Czech Republic, the user of hunting grounds proposes a gamekeeper for every 500 ha of land, and the state body in charge of hunting management approves the gamekeeper for a ten-year period. A physically healthy citizen of at least 21 years of age, who has no criminal record but has a hunting ticket, a hunting gun permit and compulsory insurance may apply for a gamekeeper's service. Upon taking up this position, the applicant takes a special oath and an examination on the knowledge of regulations on hunting, wildlife protection and the environment. A person hired by a gambler will receive a service mark with a coat of arms and a certificate with a specified period of validity, areas of competence and land boundaries. In the Czech Republic, among other things, a ranger's duties include fighting stray dogs and cats, as well as regulating the number of raccoons, raccoon dogs, American minks, zentry and other undesirable wild animals. A ranger may be fined from CZK 10,000 to CZK 30,000 for non-fulfilment or malpractice of his duties [11].

In addition to rangers, every user of hunting grounds is obliged to hire a hunting expert (hunting manager) whose identity is also approved by the federal executive body in the field of hunting economy. A Czech citizen of at least 21 years of age who has no criminal record, a good reputation, a higher vocational education (as an exception, a college), a valid hunting ticket, a permit for a weapon of the relevant category (C) and an appropriate insurance policy may apply for the position of a hunting expert.

In the Czech Republic, the user of the grounds is obliged to maintain and use hunting dogs with proper documentation. In total, hunters in this country use 30.6 thousand hunting dogs, which is 8.1 thousand more than the legal norm. There are 1 dog for 3 hunters in Czech Republic and for 12-16 hunters in Ukraine. The Czech Republic is dominated by pointing dogs - 10,500, the second place is occupied by hounds and trail dogs hunting reindeer (7,300), and the third place is occupied by burrowing (6,500) hunting dogs. Hunting birds of prey in the Czech Republic can only be retained and used with the permission of the relevant state authority. The owner of a bird of prey must be a member of the Falcon Society and have an examination certificate [12].

In contrast to Ukraine in the Czech Republic, a user of hunting grounds may be fined from CZK 10,000 to CZK 200,000 for violating current regulations.

Both in Ukraine and the Czech Republic the area of hunting grounds is divided into categories of quality for the main types of hunting animals with an indication of their standard and minimum number. In the Czech Republic, this is done using the so-called expected productivity coefficient, which expresses the average value of litter per half-mature female, which is 0.7-0.8 for forest deer, spotted deer and mouflon - 0.8-0.9 for wild boar - 3.2-4.5, and for European chamois - 0.8-1.2 in forest lands and 0.5-1.0 in field lands. The value of this factor can be reduced if there is a high level of disturbance (tourism, heavy traffic on a dense road network, high recreational loads, etc.) [13].

Unlike in Ukraine, in the Czech Republic the hunting grounds are divided into regions where the main hunting facilities are identified. Thus, the total area of lands where the main object of management is forest deer is only 13.0% of the total area of the country's lands. The third (65.8%) and second (18.3%) classes of forest management prevail, while the rest are of the fourth (10.8%) and first (2.2%) classes of forest management. The standard number of forest deer for the whole area of the land is set at 16.7 thousand individuals, while the minimum number is 10.3 thousand individuals, including for cage farms (28.8 thousand ha) - 5.2 and 2.0 thousand individuals, respectively. During the survey period, the maximum spring population of forest deer was 31.8 thousand individuals, while the minimum was 26.6 thousand in 2013, which is 1.9 and 1.6 times higher than the normative (optimal and minimum) numbers respectively. According to Czech environmentalists, in some regions of the country, the natural density is 6-10, the normative density is 11-26, and according to hunting statistics it is 35-45, and in fact - 70-80 deer per 1,000 ha of forest land. In Ukraine, the maximum number of forest deer is 20.2 thousand individuals registered in 2009, and the minimum is 11.9 thousand individuals, in 2015, which is 1.6 and 2.2 times less than in the Czech Republic. During the survey period, the average number of forest deer in the Czech Republic is twice as high as in Ukraine. Reindeer production in the Czech Republic increased from 21.0 thousand in 2011 to 28.3 thousand in 2018 and over the last 50 years. - 4.5 times (in 1968, 6.3 thousand individuals were mined). In Ukraine, for the period under study the production of deer varies within the range of 255-490 individuals, and in 2018 the production of only 361 deer, it is 78 times less than in the Czech Republic [14], [15].

The share of land in which European chamois is managed is 90.2% of the total area of hunting grounds in the Czech Republic. The third (58.6%) and second (21.8%) classes dominate, while the rest are in the fourth (10.8%) and first (8.6%) classes. The optimum number of chamois has been set at 284,500 and the minimum number at 98,000, including 658 and 306 for cage farms (16,500 ha), respectively. During the period under study, the average number of chamois in the Czech Republic was 299,500, the maximum was 318,300 and the minimum was 288,700. In Ukraine, these figures are half as low. During the survey period, the Czech Republic on average annually mines (108,700 PE) 16.6 times more chamois than in Ukraine (6,500 PE).

Historical sources show that in 1786, Emperor Joseph II banned the breeding of wild boars in free nature, and they considered them harmful animals. The Czech Republic now has 862,800 hectares of wild boar (12.5% of the total land area). The majority of this area is occupied by lands of the third (60.8%), fourth (18.5%) and second (14.6%) classes of boar. The middle class of the wild boar is 3.3. The optimal number of boars is 11.3 and the minimum number of boars is 5.4 thousand, including 3.0 and 0.8 thousand for cage farms (23.7 thousand ha). Boars were accounted for most of all - 64.8 thousand in 2012, and the least of all - 54.5 thousand, in 2018. In the Czech Republic, the actual number of boars is 6-12 times higher than the standard number of boars, respectively. Ukraine in terms of average number of wild boars during the survey period (54.3 thousand) is second only to the Czech Republic (59.7 thousand) by 9.9%, but in 2018 this figure reached 80%. During 2009-2018, the average annual production of wild boar in the Czech Republic was 25, and in some years it was 50 times higher than in Ukraine (6.4 thousand). In 2017, the Czech Republic shot 5 times as many boars as 46.3 thousand planned for withdrawal. Record levels of wild boar production in recent seasons have been accompanied by agricultural losses of CZK 4-5 billion. However,

another 40-50 CZK has been lost. Back in the Czech Republic, wild boars were mined 15-20 times less than they are now [9], [10], [13], [14].

Hare remains a popular hunting ground for fur-bearing animals, but its numbers have decreased by a factor of 1.3 both in Ukraine and the Czech Republic over the period under study. In the Czech Republic, the actual number of grey hares is half as low as the optimal number - 470,600, but 1.2 times as low - 192,100. Gray hare production during 2009-2018 decreased in Ukraine by 1.4 times and in the Czech Republic by 3.1 times. The Czech Republic counts and produces 5 times less hares per year than in Ukraine. Hunting grounds are suitable for farming hares in the Czech Republic, which occupy almost 4 million ha, but they are characterized by insufficient forage and protective properties, and the majority of them are class III (53.9%) and IV (27.4%). However, in the same sites in recent 1976, the population density of the hare exceeded 47 people, and now it is only 5.8 people per 100 ha. During the 2017/2018 season, Czech hunters also hunted 205 wild rabbits with a population of 2,400, while in Ukraine the population of this species varies between 100-200 people.

DISCUSSION

In Ukraine, the 2017/2018 season, there were 107.7 thousand muskrats, 64.8 thousand squirrels, 49.0 thousand marmots, 48.6 thousand beavers, 17.2 thousand black ferrets, 13.8 thousand otters, 13.0 thousand minks, 10.4 thousand raccoon dogs, 5.3 thousand ermines, 2.2 thousand wolves, 1.3 thousand forest cats, 0.3 thousand bears and about 0.2 thousand jackals. Permitted for the 2018/2019 season: 544 beavers, 296 marmots, 262 muskrats.

Both in Ukraine and the Czech Republic, a significant number of hunters prefer to hunt birds. In the Czech Republic, they are mainly pheasants and ducks. However, in 2018, the number of pheasants in the Czech Republic was half as low as in Ukraine, where the number of pheasants increased 1.3 times between 2014 and 2018. In the Czech Republic the number of pheasants decreased 1.4 times in 2009-2018 and in 2018 it was half as much as in Ukraine. In absolute terms, pheasant production in the Czech Republic decreased by almost 1.2 times over the survey period, while in Ukraine it increased by 1.9 times between 2015 and 2018, but Czech hunters annually produce 9-18 times more pheasants than Ukrainian pheasants. Interestingly, up to 78 pheasants per hundred hectares of land were extracted in the Czech Republic in 1977, and now up to 17 pheasants per hundred hectares. The average pheasanarium class of land is 2.4, while in natural pheasants, the figure is close to 3.0. In the Czech Republic, the normative optimal and minimum number of pheasants in the pheasanaries is 129.1 thousand and 71.8 thousand individuals, while in natural conditions it is 354.9 thousand and 123.0 thousand individuals, respectively. Over the period 2009-2018, the number of recorded and shot ducks in Ukraine was 21 and 1.9 times higher than in the Czech Republic. During the same period, the number of recorded ducks decreased in the Czech Republic by 12% and in Ukraine by 9%, while production decreased by 17 and 12% respectively. In addition to pheasants and ducks, during the 2017/2018 season Czech hunters caught 17.3 thousand ringdoves, 3.6 thousand turtledoves, 1.5 thousand wild geese, 754 Eurasian coots, 566 diving ducks, 1135 mallards, 157 wild turkeys and 120 helmeted guineafowls. In the process of hunting, Czech hunters also shoot off other birds

undesirable in the hunting grounds, in particular a large cormorant 5,800 individuals, 278 grey herons, 12,000 forties, 2,000 ravens.

In general, in the Czech Republic there are 3-4 individuals of prey game per one hunter, which is almost 2 times more than in Ukraine.

Noteworthy is the Czech experience of annual reporting on the results of hunting, in particular, accounting for planned and actual production of the main types of hunting animals by gender and age.

The plan for the use of hunting resources in the Czech Republic for the 2018/19 season was to harvest 22,699 reindeer, including 27.7% of males, 40.6% of females and 31.7% of fawns, while the actual number of deer extracted was 24% higher than planned. There are 40.0% more fawns between the shot, which is 57.2% more than the planned number of young reindeer. The share of females is 37.6%, which is 3% more than planned, while the number of males produced is 45 persons more than planned. In total, hunters shot deers by 31.6% more than planned for the 2018/2019 season. In fact, wild boar 3.5, spotted deer twice, European fallow deer 33.6%, forest deer 24.6% and mouflon 16.0% more than planned. White-tailed deer were mined 5.7 times less than planned, as well as 30% and 20% less chamois and rupicapra respectively. In the Czech Republic, the number of deer-like in 2018 was twice as high as in Ukraine. For the 2018/2019 season in Ukraine the limit was 445 times for fallow deer, 33 times for forest deer, 12 times for chamois and 6 times less for boars than in the Czech Republic. In contrast to the Czech Republic, one of the most painful problems facing the hunting industry in Ukraine is poaching. The decline in living standards for the vast majority of the country's population has led to an increase in illegal hunting of hunting animals.

CONCLUSIONS

In general, the success of Czech hunters shows that despite significant social and economic changes in the country, thanks to the observance of traditions, timely improvement of the regulatory framework, care for hunters and the hunting fund, it is possible to ensure a significant increase in the number and production of the main types of hunting animals.

The hunting industry in Ukraine does not meet modern requirements in its current state. In terms of basic indicators, it is significantly inferior to the Czech hunting industry. The potential of hunting grounds in Ukraine is used extremely inefficiently. The populations of the main types of hunting animals are in a depressed state. The overwhelming majority of users of hunting farms are unprofitable and the scope of services provided by hunting farms is insufficient to meet the needs of hunters.

There is a need to reform hunting management on the principles of sustainable development, rational use of natural resources, improvement of hunting culture and the role of hunting in the state economy as a whole. First and foremost, it is necessary to do this: optimising the functions of state management and control over hunting economy; improving the regulatory and legal framework, bringing it in line with the criteria of European standards; creating conditions for the conservation of biological diversity, increasing the resource potential of hunting grounds, efficient use of hunting resources, self-sufficiency of hunting economy and its participation in the national economy; increasing the number of users of hunting grounds who will be interested in rational and

profitable hunting; improving the management of wild animal populations and their habitat; creating favourable conditions for the development of hunting tourism; contributing to the solution of socio-economic problems of territorial communities related to hunting management; strengthening legal protection of employees of hunting facilities.

Comparing the indicators of the level of hunting management with those of the Czech Republic, we can only state that Ukraine has great potential for managing hunting resources. For high levels of hunting management to become a reality, it is necessary to work in this direction purposefully and persistently for decades.

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