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Ecological, legal and economic aspects of evaluating the damages caused by wild animals

Ekologiczne, prawne i ekonomiczne aspekty oceny szkód wyrządzanych przez dzikie zwierzęta

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Abstract

This paper presents the ecological grounds of interaction between animals and their living habitats, which in economic terms is referred to as damages. In addition, an analysis of the legal and economic aspects of the liability for damages caused by wild animals in different types of natural habitats was carried out. Liability for damages is a special law in relation to the general principles of civil law in this area. At the same time, it is also limited, both objectively and subjectively. The increase in the interaction of animals with environments, which results directly in the size of compensation amounts paid, is closely associated with the dynamics in the number of damaging species, whereas the specificity of the damage results from the behavior of perpetrator animals. Multi-directional preventive measures using different methods generally produce short-term effects and their use is not always economically justified.

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Streszczenie

W artykule przedstawiono ekologiczne uwarunkowania interakcji zwierząt i środowisk ich bytowania, co w ujęciu ekonomicznym określane jest mianem szkód. Dodatkowo dokonano analizy prawno-ekonomicznych aspektów odpowiedzialności za szkody wyrządzone przez dzikie zwierzęta w zróżnicowanych rodzajach środowisk przyrodniczych. Odpowiedzialność za szkody jest prawem szczególnym w stosunku do ogólnych zasad cywilistyki w tym zakresie. Jednocześnie jest ona również ograniczona zarówno przedmiotowo jak i podmiotowo. Wzrost interakcji zwierząt i środowisk, przekładający się w sposób bezpośredni na wielkość kwot wypłacanych odszkodowań ściśle powiązany jest z dynamiką liczebności gatunków wyrządzających szkody, zaś specyfika szkód wynika z behawioru zwierząt je wyrządzających. Różnokierunkowe działania profilaktyczne z zastosowaniem zróżnicowanych metod z reguły przynoszą krótkotrwałe efekty i nie zawsze ich stosowanie znajduje ekonomiczne uzasadnienie.

1. INTRODUCTION

Functioning of many wild animal species in different ecosystem structures contributes to the complex interactions between animals and their environment. The environment has multiple, yet continuous influence on the processes within individual species population resulting in a population dynamics of the species, their individual quality, as well as spatial distribution and evolution of the population structure. At the same time, most of the biological analyses concern the negative impact of animals on the environment, which in economic terms is referred to as damages. Adverse effects of animals on the environment takes a fairly significant variation and depends largely not only on the specific feed, social behavior but also on the number of animals and the local indicators of densities [Bobek et al. 1984; Budny et al. 2010; Flis 2009a, 2011b; Kościelniak-Marszał 2009; Węgorek 2011].

Wild animals cause damages to agriculture, forestry, and fishing, and also sometimes to the devices of technical infrastructure. Damages to farms are associated with adverse effects of wild ungulates, especially wild boars, as well as the predators and beavers. Ungulates from deer family along with beavers are the primary perpetrators in the forest holdings, while mainly beavers and predators, especially otters and minks in fish farms. In addition, quite considerable damages are caused by black cormorants and gray herons [Czech 2003; Flis 2010; Flis 2012; Klosowski 2011]. It is worth emphasizing that quite significant damages are caused especially among wild as well as domestic animals, by feral and

released cats and dogs [Flis 2013]. The problem of environmental damages refers not only to our country but also to many other European countries [Bleier et al. 2012; Czech, Lisle 2003; Geisser, Reyer 2004; Herrero et al. 2006; Mertens, Promberger 2001; Schley et al. 2008; Sidorovich et al. 2003].

The aim of this study was to analyze and evaluate the legal aspects of liability for damages caused by wild animals and potential possibilities for compensation for such damages, including elements of measures to prevent any damage.

Legal grounds of responsibility for the damage caused by animals In the current legal context, the ownership of wild animals as individualized substantive law is assigned to the Treasury. Such a legal definition of game properties, including the fact that wild animals are an integral part of the natural environment, differs significantly from the property rights defined in terms of civil law, in which the ownership of things, i.e. material objects, is separated. In view of the fact that wild animals being living creatures that are capable of feeling pain and suffering, as well as the fact that the functioning of animal populations in natural conditions are not within the canons of independence and are not subjected to human power until they are killed, they cannot be regarded as things. Thus, the regime of liability for damages caused by this group of animals does not result from the general principles of civilistics; instead, this responsibility is a special law, the *lex specialis derogat legi generali*, and is regulated by provisions of other legal acts. It is

worth emphasizing that the legislature, when regulating the specific law referring to the responsibility for the consequences of wildlife populations, has limited the material and personal scope of responsibility for several animal species and to identify possible subjects taking the responsibility for the damage, as well as to provide procedures for the evaluation of damages and payment of compensation on this account.

Protected species vs. damage

Legal liability for damage caused by protected animal species is regulated by the Act on the Protection of Nature. The legal construction of the statutory provisions makes this responsibility to include two groups of animals. The first group includes animals that by law are under the species protection in whole or in part, whereas the second group is made up by animals that despite the fact that they

do not have the status of protected animals, exist on the statute indicated areas being under different forms of protection [Act... 2004]. In the case of protected species, the responsibility of Treasury for damage bears the characteristics of limited liability, since it effectively boils down to actual damages only, while not including the lost benefits. In addition, despite the damage is done by many protected species, the Treasury is liable only for damage caused by enumerated five species of animals, such as bison, wolf, lynx, bear, and beaver. This responsibility is diverse and depends on the specifics of the damage and refers to damages in agricultural, forest, and fish farms, and also in the case of predators making damages in livestock and apiaries (Fig. 1). The widest range of liability for damage, both in legal and economic terms, covers the liability for damages caused by beavers [Dzięciolowski 1994; Czech 2001; Goetel 2002; Act... 2004].

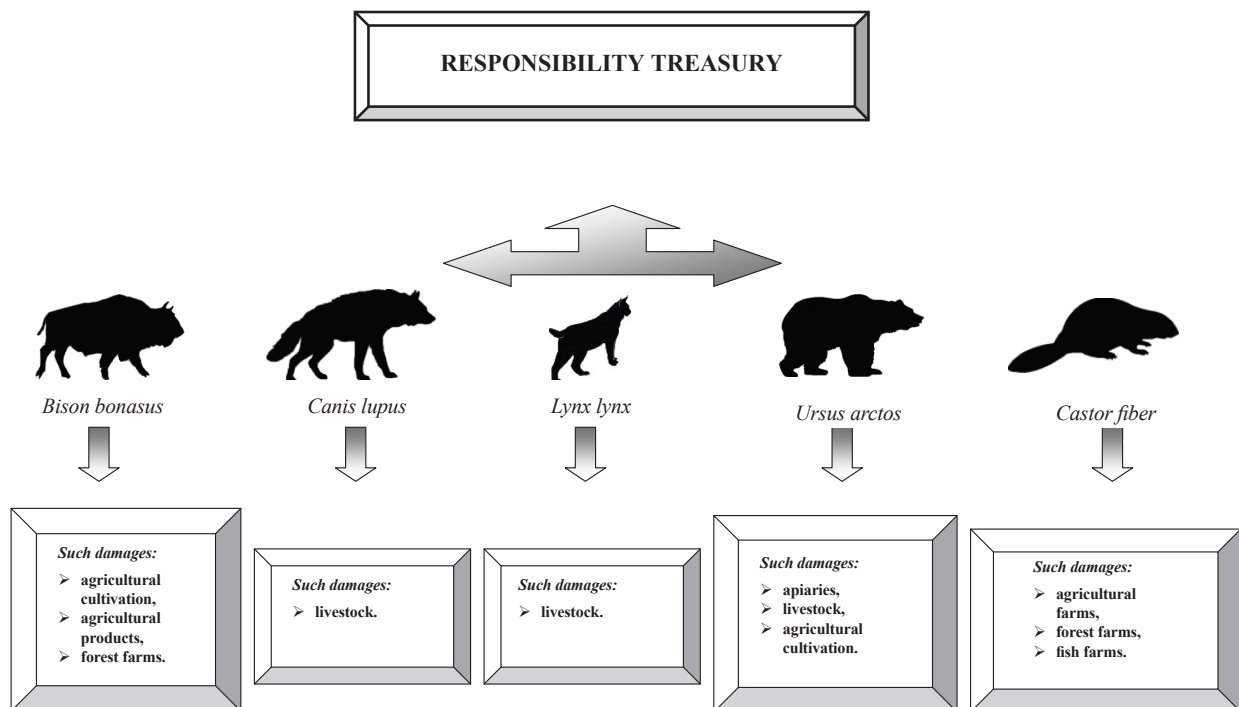


Fig.1. Characteristics of the Treasury responsibility for damages caused by animals of protected species.

In 2008–2010, the annual average rates of compensation paid for damages caused by five protected species reached 6.2 million, of which 86.4% were average compensations for damage caused by beavers, and another 7.9% accounted for compensations for damage caused by wolves. The amount of damages in terms of the amount of claims paid was small and represented 5.7% of the total pool of paid claims [Flis 2012]. This situation is clearly conditioned by rapidly growing population of beavers [GUS 2011]. According to the inventory data, the population growth reached a value of 251% in the last decade, whereas the number of this species animals within the whole country in 2011 was estimated for 78.1 thousand individuals (Fig. 2).

Completely different liability regime occurs in the case of damage caused by the species inhabiting the areas covered by diverse forms of protection. In such cases, liability for damages is also ceded to the Treasury, but procedural provisions of the Hunt Act are applicable. Thus, this type of legal regulation is not only procedural, but perhaps above all, it is a substantive law. This makes that in such cases, the responsibility of the Treasury is limited only to the damage to crops and agricultural products, caused by five

enumerated species that have the status of game animals, i.e. wild boar, moose, red deer, fallow deer, and roe deer. In such cases, the procedure for evaluating the loss and compensation is in accordance with the provisions of hunting legislation [Act... 2004; Act... 1995; Radecki 2006, 2010].

Game species vs. damages

Under current legal circumstances, the hunting management being an element in the protection and development of natural environment is carried out on the basis of separated administrative areas called hunting circuits. These areas are leased by hunting circles joining hunters belonging to the Polish Hunting Association. Where appropriate, these areas can be managed by other institutions such as game management centers. The principle of conducting the hunting management consists in that the game is a national value. Treasury is their legal owner. Such legal definition of the game ownership, no doubt emphasizing its importance as an integral component of the natural environment, however, differs from the property rights defined in terms of the civil law. This principle makes the lessee or manager of

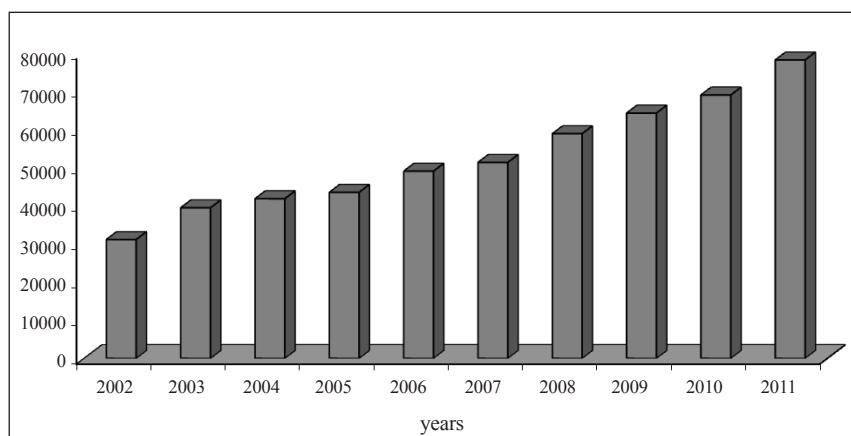


Fig. 2. The number of beaver (*Castor fiber*) in Poland in the years 2002–2011

the hunting circuits to take the management upon the Treasury property, whereas the law makes them lease the right to hunt but not the right to the land, that is usually a private property. Such a legal structure also ensures that the lessee or manager of the hunting circle has the right to dispose of the carcasses of wild animals acquired in accordance with law, due to which they gain income reserved for the current jobs and financial obligations related to the hunting management [Flis 2011d; Act... 1995; Radecki 2010].

Undoubtedly, one of these tasks consists in a statutory obligation to compensate damage to crops and agricultural products caused by wild boar, moose, red deer, fallow deer, and roe deer, as well as damage occurred during the hunt. This requirement only applies to damage to crops and agricultural products within the areas included within the hunting circuits. Beyond the boundaries of hunting circuits, the liability for such damage shall be borne by the legal owner of the animals, i.e. Treasury, whereas the board of region, in which the loss occurs, is the entity responsible for assessing damages and their compensation [Flis 2008].

It should be noted that the responsibility of tenants or administrators of hunting circuits is a limited liability; therefore, it is not absolute, since it is reduced to the actual size of any damage, while not including the lost profits, the victim could achieve, if no damage had occurred. This is confirmed by the exclusion of liability for damages in special cases. These exemptions having a tax character make the appearance of any situation results in a lack of ownership cession for the damage by the lessee or manager of the hunting circuit. Regulations of the hunting law regarding liability for damage caused by game animals are so specific provisions in relation to generally accepted rules of the civil law on the issues

of civil-legal responsibility for any kind of damage caused by wild game [Ignatowicz 1995; Radecki 2010].

All issues related to the assessment of damages and the size of compensation entitlement are assigned to tenants or managers of hunting circuits. All the procedures are performed by authorized representatives of these parties, performing a number of operations to determine the extent of losses and their economic value. Despite the fact that this is done on a discretionary basis, the legislature has reserved the opportunity to participate in a procedure of damage assessment by a representative of a proper Territorial Agricultural Chamber. It is worth emphasizing that entities applying for compensation for damages must meet certain requirements in order to obtain the status of victim and apply for the access to satisfaction [Flis 2008; Radecki 2010; Act... 2010].

Environmental determinants of the size of the damage to crops and agricultural products result mainly from quite dynamically developing wild boar population in our country. This directly affects quite high local rates of population densities, and thus the increase in the impact of these animals on agrocoenotic environment. Over the last decade in our country, the population of wild boars in leased hunting circuits increased more than twofold with the average hunting exploitation of population in the level of 84.3% of the spring population (Fig. 3). This type of a dynamic growth impinged on annually increasing financial liabilities for the compensation of damage to crops and agricultural products. At the beginning of the 21st century, a global volume of paid compensations for damage remained at a level of about 20 million per year (Fig. 4). Within 10 years, the size of paid claims gradually increased reaching the highest value in the season 2010/11, when the total amount of compensations reached 48.5 million PLN.

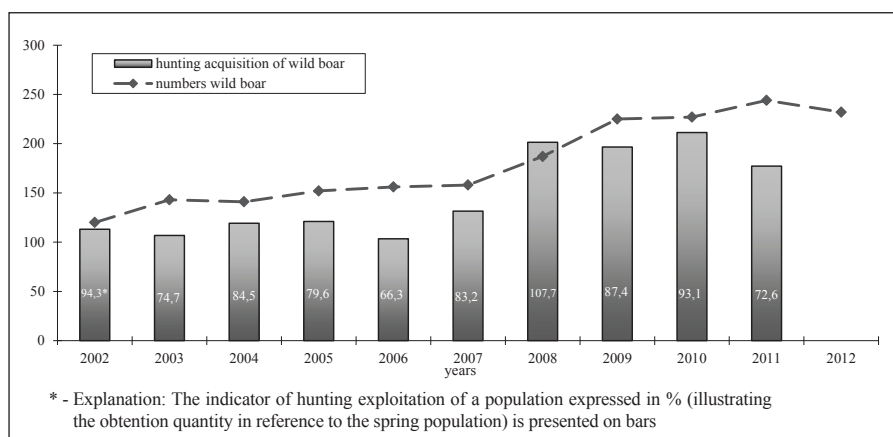


Fig. 3. Population and hunting acquisition of wild boar (in thousands of individuals) in the last decade in hunter district to lease

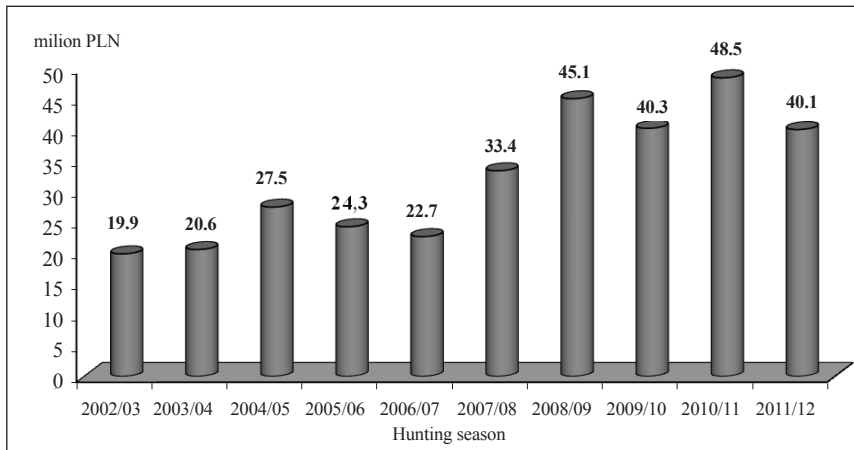


Fig. 4. Hunting indemnities paid by hunting circuit leaseholders associated in Polish Hunting Association

Every year increasing financial liabilities for the compensations should be directly linked to the dynamics of wild boar population that are the primary culprit causing damages to crops and agricultural products [Flis 2011a; Kamieniarz 2010]. The dynamic growth in the population of wild boars is conditioned particularly by intensive changes in the structures of agrocoenoses, especially in the form of increased acreage of large-scale plantations at increased proportion of high-energy crops, mainly maize [Flis 2009a]. This situation often leads to the modification of food preferences of wild boars. In the 1970s and 1980s, potatoes cultivated in fields were the main food crop for wild boars [Mackin 1970; Drozd 1988; Fruziński, Wlazełko 1991], whereas in the late 1990s and nowadays, extensive cultivation of maize became the crop most preferred by wild boars [Dubas 1996; Flis 2009b, 2010a, 2011b]. Large-scale plantations of maize providing excellent conditions for shielding, bypassing the forest as a primary habitat for wild boar recently, coupled with the availability of high-energy food,

significantly stimulate the growth of wild boar population. In turn, the availability of high-energy food determines an increase in the reproductive potential of the population. The symptoms of this consist in: an increased body weight gain and sooner reaching the sexual maturity, and thus participating in the reproduction of juveniles, often before reaching 1 year of age [Bresiński 1994; Flis 2009a; Kamieniarz 2010; Kościelniak-Marszał 2009; Kozdrowski, Dubiel 2004; Welander 2000; Węgorzek 2002].

Prophylaxis related to damages

Entities responsible for paying the compensations for the damage undertake several initiatives to prevent against the possibility of making damage. It should be emphasized that regardless of the status of perpetrator animals, the legislature ordered potential victims to cooperate to protect against damage under penalty of inability to achieve any compensation [Kościelniak-Marszał 2009; Flis 2010; Act... 1995; Act... 2004]. All preventive measures are

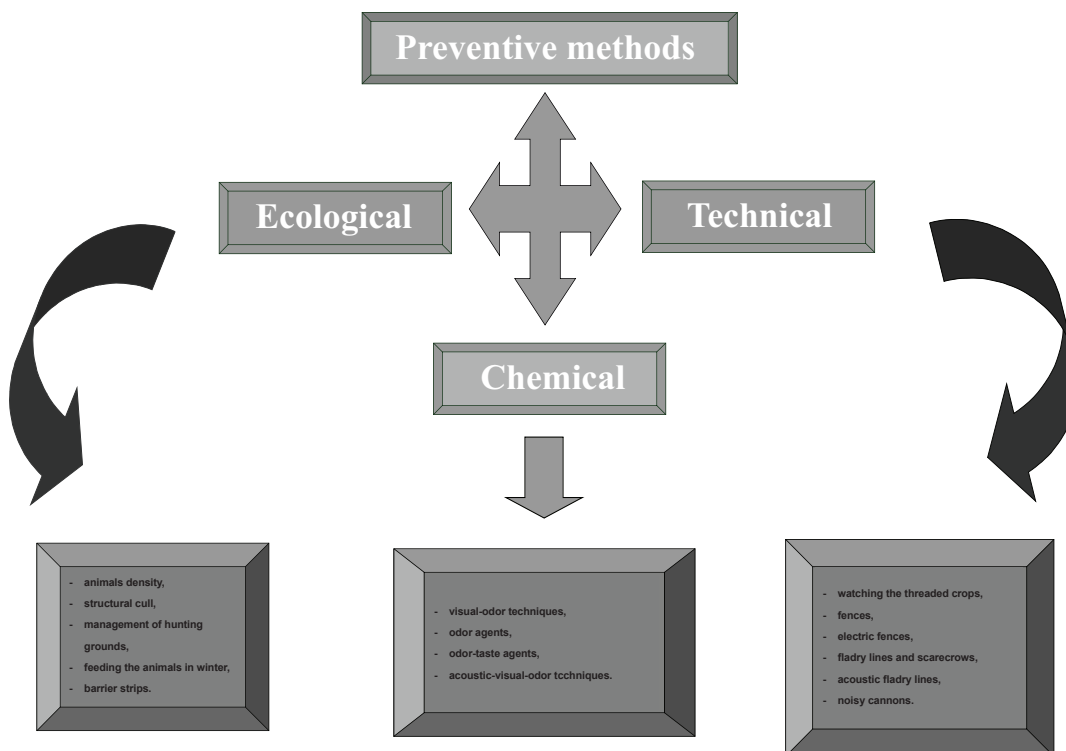


Fig. 5. Groups of prophylaxis methods in reference to reduction of damages made by wild animals in crops

based on two general rules that effectively, yet using the ecological balance, reduce the number of perpetrator animals and limit the availability of game animals to sites that are most vulnerable to damages. In general, these methods are divided into three groups:

- o biological (ecological);
- o technical (mechanical);
- o chemical (Fig. 5).

The use of particular methods of protection depends on the specifics of species making damages, and especially their behavior and food preferences. Quite often, there is a need for applying several groups of methods in combination in diverse time intervals directly related to the severity of damage [Flis 2011c]. Until recently, quite common prophylaxis methods consisted in using mechanical techniques and chemical agents, but in recent years, chemical methods are becoming less effective due to the relatively quick habituation of animals to the emitted odors that act as a repellent. Regardless of the prevention methods or their groups, it is impossible to completely eliminate the damage caused by animals [Węgorzek 1999; 2004; Borowski et al. 2005; Węgorzek, Giebel 2008].

2. CONCLUSIONS

1. The current legal conditions related to the liability for damages caused by wild animals vary and depend on the legal status of animals that are the perpetrators of the damage.
2. The Treasury being the legal owner of free wild animals is responsible only to a limited extent for the damages caused by protected species and for damages caused by game animals in areas legally not included into the hunting circuits.

3. In the case of game, tenants or managers of hunting circuits are the entities responsible for the compensation in an area, where the damage occurred. However, this liability is also limited, as it boils down exclusively to damage to crops and agricultural products made only by certain species of game animals as well as damages resulting from the hunting.
4. Regardless of the status, entities responsible for compensating damages assume the liability only for actual damages, not including lost profits that the victim could achieve, if no damage had occurred.
5. The considerable growth of damages resulting from the increased interaction of wild animals and environments of their living is dependent mainly on the increase of the perpetrator species population, and thus high rates of population densities of particular species.
6. Multidirectional prophylaxis elements to minimize the damage, although having effects on reducing their size and spatial distribution, do not completely meet their goals. Thus, considering the elements of prevention in economic terms, costs of preventive measures are not always commensurate with the potential benefits achieved due to lack of or minimizing the damage, and therefore the amount of compensation paid.
7. Under current ecological-legal circumstances, it seems to be necessary to develop legal instruments that would allow for efficient undertaking the ecological prophylactic activities related to regulation of population and structures of protected populations that make remarkable damage in different branches of economy. In the case of game animals, it is necessary to develop methods for efficient cooperation between entities involved in hunting management and potential victim farmers referring to the prophylaxis within wide large-area crops.

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