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Synanthropic predators as an environmental threat

Drapieżniki synantropijne jako zagrożenia środowiskowe

Summary. The problem of a rapid increase in the number of wandering dogs and cats observed in recent years is quite a serious threat to the functioning of many ecosystems. This probably results from increased predation, the effect of which is killing wild animals of many species, and sometimes also from pets bitten by stray dogs. This type of a continuing trend threatens the ecological balance, and in the case of game species, among which about 30 thousand of injuries by dogs are ascertained every year, remarkably affects the local abundance and density, as well as further existence of certain populations. Such a situation is extremely detrimental to the functioning of the basic species of small animals, in which a downward trend has been recorded for recent years, while these species make up the fundament of predation for stray dogs and cats. In addition, synanthropic predators destroy many bird hatchings and mammals that are non-game species, but in such cases, the range of losses is not recognized. The present results suggest a need to change the environmental policy, which has been the same for several years in our country and concerning the status of synanthropic predators, as well as legal and practical possibilities of limiting their population. In addition, it appears to be necessary to clarify the legal conditions of purchase and sale opportunities, in particular, getting rid of dogs by their owners, as well as more responsibility for kept pets.

Key words: stray dogs, unheeded dogs, stray cats, bitten animals

INTRODUCTION

The role of predation in the functioning of various ecosystems, is restricted mostly to the impact on the population dynamics of the species being the set of potential prey, and thus the spatial distribution of the population, as well as sanitary functions [Goszczyński 1995, Dzięciołowski 1996, Smith 2005]. In the case of excessive impact of predators on certain populations, it is related to as *sabotage* [Flis 2008, Flis 2012a]. Dogs and cats that were domesticated many thousands years ago and now are called *anthropogenic*

predators, are kept in almost every rural and urban household. Basic elements of their biology have changed during this time, as well as their dietary specificity has been altered in the process of co-evolution. These animals, in a significant way, became heavily relied on the supplied food, as well as on the potential opportunities for shelter and protection. At the same time, they did not completely lose their hunting instinct, which may revive in their behavior at any time. In cases of insufficient owner's care and often escaping the farms through broken fence, as well as intentional release by the owners outside the farm area, the pets quickly grow wild. Living in the wild, they relatively easily learn to hunt and reproduce at large, therefore increasing the risk for functioning and even the existence of many animal species, which are their potential prey [Krauze and Goszczyński 2008, Wierzbowska 2004, Wierzbowska *et al.* 2008].

A sharp increase in the number of wandering dogs and cats occurred in Poland after World War II. Such situation contributed to the negative impact of predation on other animal species, as well as it caused the increased epizootic and epidemiological hazard due to the rabies virus common at that post-war period. It should be noted that so-called *street rabies* dominated by the beginning of the twentieth century in our country, and wandering dogs and cats were main reservoir of the disease. Thus, the compulsory vaccination and elimination of stray dogs was introduced [Mól 2004, Flis 2009a]. By the end of the 90's, all dogs and cats remaining within hunting reviers without any care, were treated as pests and there were legal possibilities to eliminate them by culling. In subsequent years, the legislation related to the protection of animals included the records on prohibiting the elimination of synanthropic predators, while their culling was conditioned upon the occurrence of specific circumstances [Dzięciołowski *et al.* 2000, Ustawa… 1997]. This situation led to a gradual increase in the number of stray dogs and cats, and thus the increase of predation on many species of wild animals, and even on people in recent years, not only in Poland but also in other European countries.

The aim of this study was to assess the dynamics of the number of stray dogs and cats, as well as losses made by those species among game animals in terms of hunting reviers leased by the Polish Hunting Association.

MATERIAL AND METHODS

Material for the study consisted of data from the monitoring carried out by tenants of hunting reviers in the scope of the number of stray dogs and cats. In addition, data on the number of ascertained cases of hunting for domestic and game animals by synanthropic predators, were analyzed. The attempt to define so-called *environment losses* in economic terms was undertaken as well. The analysis included data from leased hunting reviers all over the country for five hunting seasons, i.e. 2005/06–2009/2010 financial years. These data are the result of annual monitoring upon stray dogs and cats, as well as remains of killed animals, performed by hunters while their presence in hunting reviers in connection with the implementation of the tasks related to the game management. Every year, these data are provided by tenants of hunting reviers in the form of ŁOW-3 annual reports, which should be submitted to the appropriate Regional Management Boards of Polish Hunting Association.

RESULTS

An upward trend in the number of stray dogs found in hunting reviers was observed during the five hunting seasons (Fig. 1). In hunting season 2005/06, the number of stray dogs was estimated as 38 938 animals, while five years later, this value was found to be close to 40.5 thousand of individual dogs. Estimated number of dogs kept on farms and unheeded ones remained at similar level at an average of about 94 thousand annually, the same period. At the same time, more than 1300 bites by dogs were recorded during the assessed period. The number of stray cats during the evaluation period also increased, while it was greater than that of stray and unheeded dogs. Although their number was estimated for about 90 thousand in the hunting season 2005/06, five years later, the estimates indicated a population more than 102 thousand animals.

During the five studied hunting seasons, stray dogs killed 290 cattle, 582 sheep, and 385 goat individuals. Stray dogs killed an average of 251 domestic animals, most of which sheep (46%), then goats (31%), and remaining proportion of cattle (Fig. 2).

Both stray and unheeded dogs intensively hunt for game animals. Statistics on the estimated amount of dogs that killed particular game species based on the discovered remains of these animals indicate that more than 30 thousand wild animals were killed, on average (Fig. 3). Arranging the number of game animals killed by dogs according to the species specificity revealed that most cases concerned hares – 49.8% of the total ascertained, then roe deer – 29.4% of ascertained cases; the smallest number of cases referred to red deer and fallow deer, the percentage of which in the total number of killed animals was 0.9% and 0.4%, respectively. Stray dogs and cats are most dangerous in winter, when wild animals have difficulties of mobility, especially at deep snow cover; there have been cases that stray dogs had gathered together in larger packs and collectively hunted for wild animals. This results in large numbers of killed animals, much larger than the nutritional requirements of dogs. In one of the Lublin hunting revier, stray dogs have killed 16 roe deer during only two winter days; the killed animals were found left over the area of less than one kilometer radius.

Presented statistics capture remains of the wild animals killed by dogs, but the danger should be also assessed from the angle of predation on juvenile females bearing fetuses, bird's hatchings and eggs, and killed animals that had never been found. If pregnant deer or wild boar female is killed (Phot. 1), the fetus is also killed (Phot. 2), and thus losses are even greater in such cases.

When attempting to assess the environmental damage in financial terms, the value of killed animals was adopted in accordance with the guidelines of the Minister of Environment of 21 June 2005 on the illegally acquired game animals [Rozporządzenie… 2005]. In five assessed hunting seasons and after adopting the minimum rates for each species, the largest values of game animals killed by stray dogs referred to the roe deer, for which the total amount of the loss reached over 91 million PLN (Tab. 1), while annual average sum was over 18 million PLN. Another species in terms of financial loss was hare; losses among this species reached up to almost 77 million PLN within five hunting seasons at annual mean value of slightly above 15 million PLN.

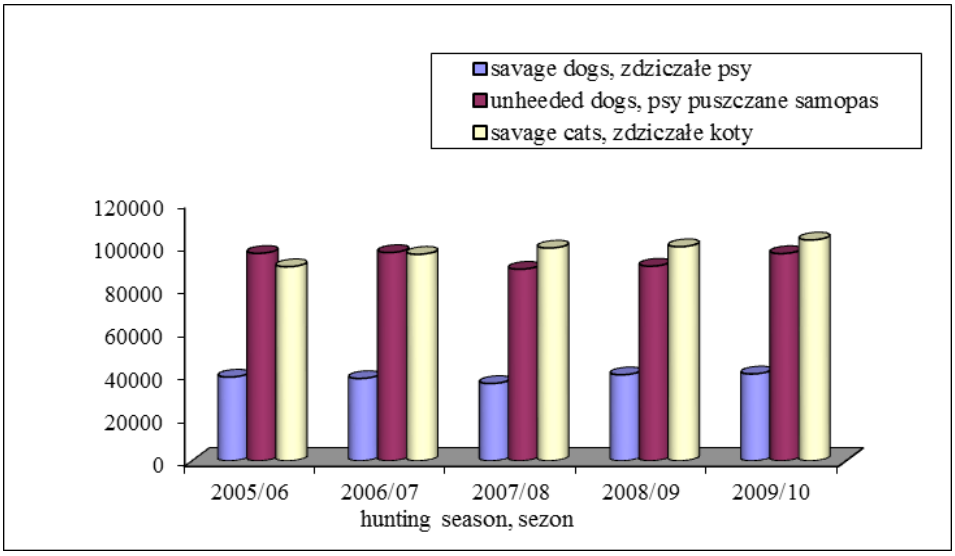

Fig. 1. Estimated number of savage and unheeded dogs as well as savage cats in 2005/2006–2009/2010
Rys. 1. Szacunkowa liczba psów zdziczałych i puszczanych samopas oraz zdziczałych kotów w sezonach 2005/2006–2009/2010

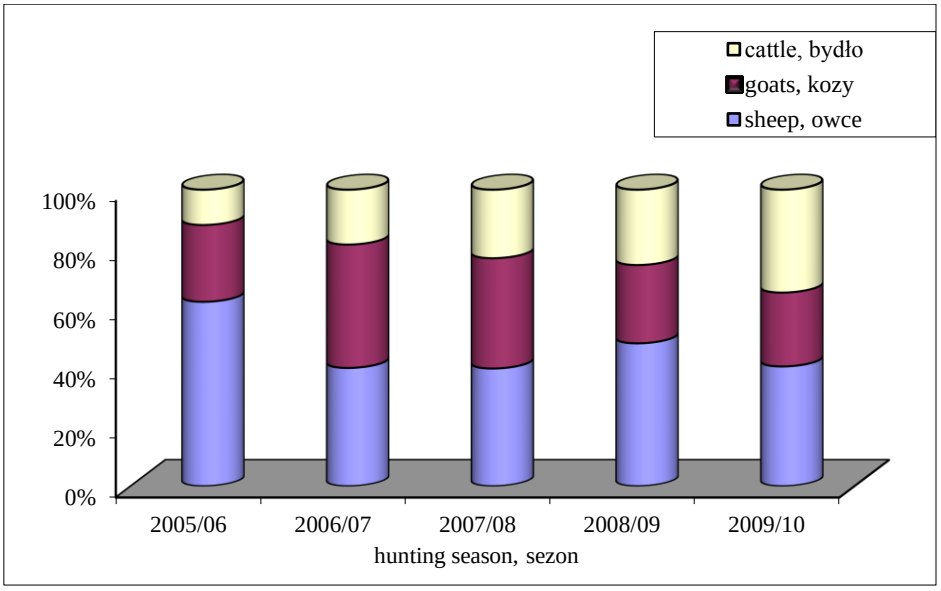

Fig. 2. Structure of biting the pets by dogs during the assessment period
Rys. 2. Struktura zagryzień zwierząt domowych przez psy w okresie oceny

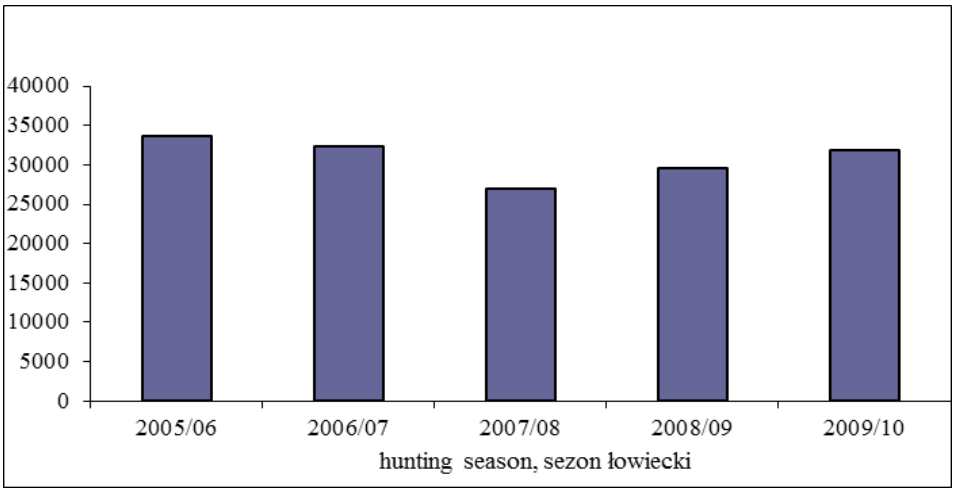

Fig. 3. Total number of game animals bitten by dogs
Rys. 3. Łączna liczba przypadków zagryzień zwierząt łownych przez psy

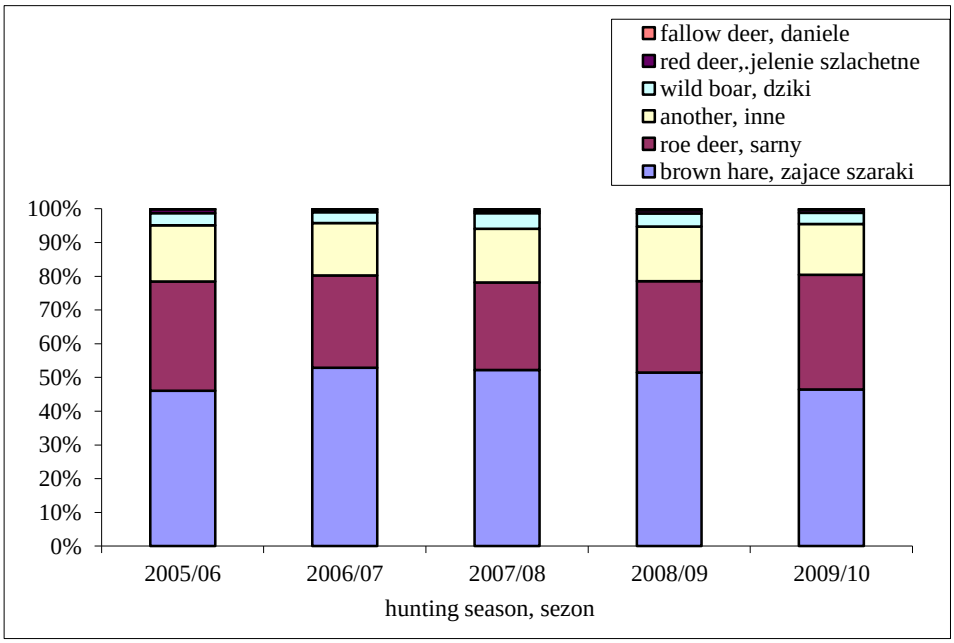

Fig. 4. Structure of game animals bitten by dogs
Rys. 4. Struktura zagryzień zwierząt łownych przez psy

Phot. 1. View of the female roe deer bitten by dogs
Fot. 1. Widok sarny – kozy zagryzionej przez psy

Phot. 2. View of two fetuses lying near bitten roe deer
Fot. 2. Widok dwóch płodów leżących w pobliżu zagryzionej sarny

Table 1. Value of damages made by stray dogs on game animals (in PLN)
Tabela 1. Wartość szkód środowiskowych wyrządzanych przez wałęsające się psy na zwierzętach łownych (w złotych)

Hunting season Sezon łowiecki	Species – Specyfika gatunkowa					
	Red deer Jelenie szlachetne	Fallow deer Daniele	Roe deer Sarny	Wild boar Dziki	Brown hare Zające szaraki	Another Inne
2005/06	2 105 400	363 000	21 788 000	2 801 400	15 529 000	5 620 000
2006/07	1 432 600	478 500	17 708 000	2 382 800	17 071 000	5 057 000
2007/08	939 600	1 067 000	13 996 000	2 861 200	14 062 000	4 282 000
2008/09	1 687 800	731 500	16 006 000	2 631 200	15 232 000	4 798 000
2009/10	1 525 400	638 00	21 644 000	2 456 400	14 743 000	4 767 000

Unfortunately, presented statistics do not contain any information on cat's predation due to the fact that their victims are mostly small game birds, eggs, and chicks nesting both on the ground, on shrubs, and trees. However, this type of predation usually does not leave visible traces, and is difficult to monitor, but judging by the number of stray cats estimated, the range of the problem may be greater than above presented effects of predation due to stray dogs. In addition, it should be noted that both stray dog and cat predation does not refer only to wild game animals. The size of predation on birds and mammals being under various forms of legal protection, that are common in all types of ecosystems, where synanthropic predators are also common, is not recognized yet.

DISCUSSION

Here presented figures are extremely alarming, although confirm data reported by other authors on a significant threat to wild animals from the growing population of synanthropic predators. The local density of stray dogs and cats are higher than the density of foxes [Krauze and Goszczyński 2008], that according to many authors, have the greatest negative impact on the functioning of wild animals, especially small ones, the sharp decline of which can be observed in recent years [Goszczyński 1995, Panek 2007, Juszko 2008, Panek 2008, Wasilewski 2007, Budny *et al.* 2010, Flis 2012b].

Krauze and Goszczyński [2008], during their research on the size and influence of synanthropic predators on populations of small animals in central Poland, reported that remains of roe deer and hares were the most common type of food. The survey conducted in the hunting season 2000/2001 shows that 55% of species killed by wild dogs were small animals, whereas for stray cats the figure was 90% of all prey. Considering the species structure of killed animals, hares and pheasants dominated, while partridges made up the smallest proportion [Wierzbowska *et al.* 2008], which is likely to be the result of low rates of this species concentration in many hunting reviers of Poland [Panek and Kamieniarz 1998, Panek 2005, Panek 2008, Flis 2009b]. Moreover, presented results related to losses made within the environment by killing wild animals and their hatchings by stray dogs in quantitative terms, which in relation to the annual hunting harvest of these species, is equivalent [Budny *et al*. 2010].

CONCLUSIONS

Presented results are extremely disturbing, because the estimated number of stray and unheeded dogs, as well as stray cats manifested an upward trend during the five-year assessment period. The persisting tendency in the number of synanthropic predators affected the increase of losses number caused by these species, both in livestock and wildlife. In turn, legal possibility of eliminating these predator species by means of culling has been considerably reduced in recent years. It can be supposed that these factors will lead to a progressive increase in the number of stray dogs and cats in the nearest future, and in consequence to the increase in the number of killed animals, both wild and domestic ones. Such situation, which is some kind of ecological imbalance, is extremely detrimental to the functioning of diverse ecosystems, particularly in relation to the recent dramatic decline in small animal populations, that are a fundamental prey for stray dogs and cats. Furthermore, the aspect of destruction of many hatchings and litters of species other than game ones, seems also to be important. This is because the range of the phenomenon is not recognized, yet it can be supposed to be even greater than in the case of game animals.

These results suggest the need for changing the environmental policy that has remained unchanged for several years in our country. In subsequent years, it should take into account the need to eliminate obstacles to the functioning of many ecosystems and to restore a balance, particularly within predator–prey relationship. Thus, it appears necessary to introduce legislation allowing for the effective reduction of the large number of synanthropic predators as well as legal conditions of purchase and sale opportunities, particularly getting rid of dogs by their owners, as well as more responsibility for kept animals.

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Streszczenie. Obserwowane w ostatnich latach zjawisko gwałtownego zwiększania się liczebności wałęsających się psów i kotów stanowi dość istotne zagrożenie dla funkcjonowania wielu ekosystemów. Wynika to z wzmożonego drapieżnictwa, a tym samym zabijania wielu gatunków zwierząt dzikich, a niejednokrotnie także zagryzania przez zdziczałe psy zwierząt domowych. Utrzymująca się taka tendencja powoduje zagrożenie równowagi ekologicznej, a w przypadku zwierząt łownych, których zagryzień przez psy stwierdza się rocznie średnio ok. 30 tys., wpływa w sposób dość istotny na liczebność i lokalne zagęszczenia, a także dalsze funkcjonowanie populacji niektórych gatunków. Taki stan jest wyjątkowo niekorzystny dla podstawowych gatunków zwierzyny drobnej, których populacje w ostatnich latach się zmniejszają, a dodatkowo gatunki te stanowią podstawę drapieżnictwa zdziczałych psów i kotów. Drapieżniki synantropijne również niszczą wiele lęgów ptaków i ssaków – gatunków niebędących łownymi, których rozmiar strat nie jest znany. Prezentowane wyniki sugerują konieczność zmian utrzymującej się od kilkunastu lat polityki ekologicznej w naszym kraju dotyczącej statusu drapieżników synantropijnych, jak również prawnych i praktycznych możliwości ograniczania ich liczebności. Dodatkowo konieczne wydaje się być doprecyzowanie prawnych uwarunkowań możliwości nabywania i zbywania, a szczególnie pozbywania się psów przez ich właścicieli, jak również większej odpowiedzialności za utrzymywane zwierzęta.

Słowa kluczowe: zdziczałe psy, psy puszczane samopas, zdziczałe koty, zagryzienia zwierząt