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Death of predators (Carnivora) in South Ukraine and their reasons

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Introduction

Now 17 species of predatory animals inhabit the territory of South Ukraine (ABELENCOV 1968, BOROVIK 2002, ROZHENKO 2006, WOLOCH 2007), many of them are listed in the Red Book. Though the list of protected species was extended (table 1), their populations remain to be rather vulnerable, and the animals often die from different causes.

Therefore, we set the aim to investigate cases of death of predators in different regions of South Ukraine, analyze the causes and reveal the most serious population risks.

Material and methods

Over the period from 1976 to 2012 within Donetsk, Zaporozhye, Luhansk, Odessa, Nikolaev and Kherson Regions of Ukraine the authors collected the data on death of many predators ($n = 479$).

A majority of them are common species (the fox, wolf, racoon dog, least weasel, stone marten). The animals, rare in the wild, were much fewer in the sample. Among them: the corsac fox ($n = 2$), American mink ($n = 3$), marbled polecat ($n = 4$), European polecat ($n = 4$), European stoat ($n = 4$), pine marten ($n = 5$), European mink ($n = 7$), wild cat ($n = 7$), steppe

polecat ($n = 11$), European otter ($n = 12$), jackal ($n = 16$) and European badger ($n = 18$). Well preserved carcasses were anatomized to find out additional causes of death.

Discussion

Hunting always was the most important mortality factor for the predators, most of them have beautiful and warm fur. In the 20th century in South Ukraine it essentially affected populations of the fox, raccoon dog and wolf, since other species occur in low numbers in the steppe zone. Hunting was used for effective management of the wolf number which was allowed to shoot any day throughout a year (fig. 1). However, since 2010 the law has been changed, and hunting is limited to the period from October to February, only in hunting days and with license. It considerably reduced the mortality rate of this species and contributed to increase in its number.

Nowadays the steppe zone of Ukraine is inhabited by ~2500 wolves or 97 % of all the counted animals in Ukraine, and hunters got 711.1 ± 54.04 (607–982) individuals per year (2000–2009). A certain number of animals die of gunshot wounds. In spite of high mortality from hunting (fig. 2), the wolf number in the country steadily grows.

Table 1 Fauna of predatory animals in South Ukraine

Nr.	Species	Red Book of Ukrainian SSR (1980)	Red Book of Ukraine (1994)	Red Book of Ukraine (2009)
1.	Wolf (<i>Canis lupus</i> L.)	–	–	–
2.	Jackal (<i>Canis aureus</i> L.)	–	–	–
3.	Red fox (<i>Vulpes vulpes</i> L.)	–	–	–
4.	Corsac fox (<i>Vulpes corsac</i> L.)	–	–	+
5.	Raccoon dog (<i>Nyctereutes procyonoides</i> Gray)	–	–	–
6.	Wild cat (<i>Felis silvestris</i> Schreber)	+	+	+
7.	European otter (<i>Lutra lutra</i> L.)	–	+	+
8.	European mink (<i>Mustela lutreola</i> L.)	–	+	+
9.	American mink (<i>Mustela vison</i> Schreber)	–	–	–
10.	Pine marten (<i>Martes martes</i> L.)	–	–	–
11.	Stone marten (<i>Martes foina</i> Erxleben)	–	–	–
12.	Least weasel (<i>Mustela nivalis</i> L.)	–	–	–
13.	European stoat (<i>Mustela erminea</i> L.)	–	+	+
14.	Steppe polecat (<i>Mustela eversmanni</i> Lesch)	+	+	+
15.	European polecat (<i>Mustela putorius</i> L.)	–	–	+
16.	European badger (<i>Meles meles</i> L.)	–	+	–
17.	Marbled polecat (<i>Vormela peregusna</i> Güld.)	+	+	+
Total of species:		3	7	8



Fig. 1 A gamekeeper with wolves killed 12.–13.02.2013; Photo by A. Volokh

Prior to 1992, the hunting was a major mortality factor for the fox, when foxhounds and earthdogs were used. High price for a fox's pelt (~100 \$ USA) contributed to intensification of hunting use of resources of this animal (fig. 3.) The highest population density of foxes was recorded in reed beds at small rivers (table 2).

Though a total area of investigated reed patches ($n = 231$) constituted only 653.5 ha, there were found 1011 foxes (1984–1987), and 529 of them were killed by hunters.

In 1996–1999 price of a fox's pelt dropped to 3–4 \$ USA, and since that the hunting ceased to be a major mortality factor for this species as

well as for most of predators in Ukraine. Now the most significant factor is the death from animal-car collisions (fig. 4), where the number of cases increased in hundreds times.

Especially high numbers of young foxes, which start their independent life in August–September, are killed on roads. In recent years there is often recorded death of the European otter, jackal and other predators under car wheels (fig. 5).

Rather specific is death of the stone martens ($n = 21$) from electrocution. These animals like to use transformer vaults as their shelters where often get fatal inquiries.

Table 2 The fox population in reed beds and hunting results (1984–1987)

Parameters	Mean $\pm$ SE	Range
Area of reed patch	2.8 ± 0.20	0.5 – 25
Number of foxes in 1 patch	4.4 ± 0.18	0 – 17
Density (ind. /10 ha)	26.6 ± 1.37	0 – 140
Individuals taken from 1 patch	2.3 ± 0.10	0 – 11
Hunting efficiency, %	54.0 ± 1.77	0 – 100

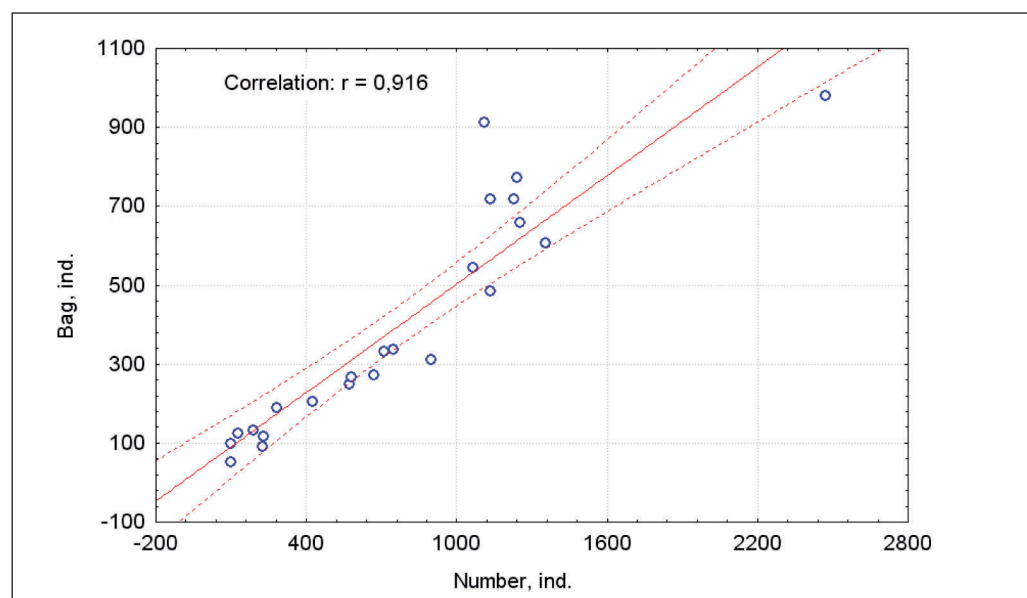


Fig. 2 Correlation between the wolf number in the steppe zone of Ukraine and the number of bags



Fig. 3 Foxes killed by hunters ($n = 4$) for one hunting day with foxhounds in 1987

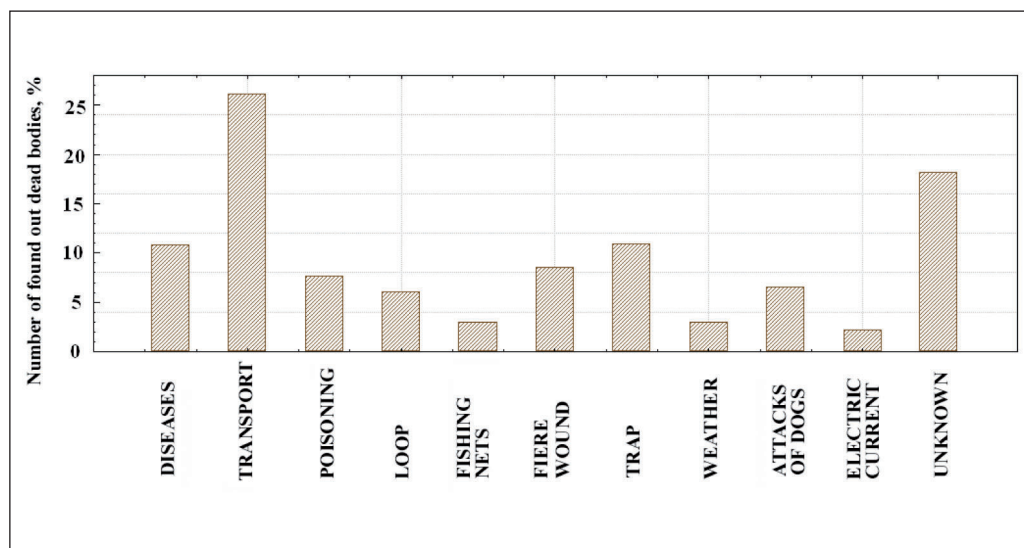


Fig. 4 Causes of death for predators ($n = 479$) in South Ukraine

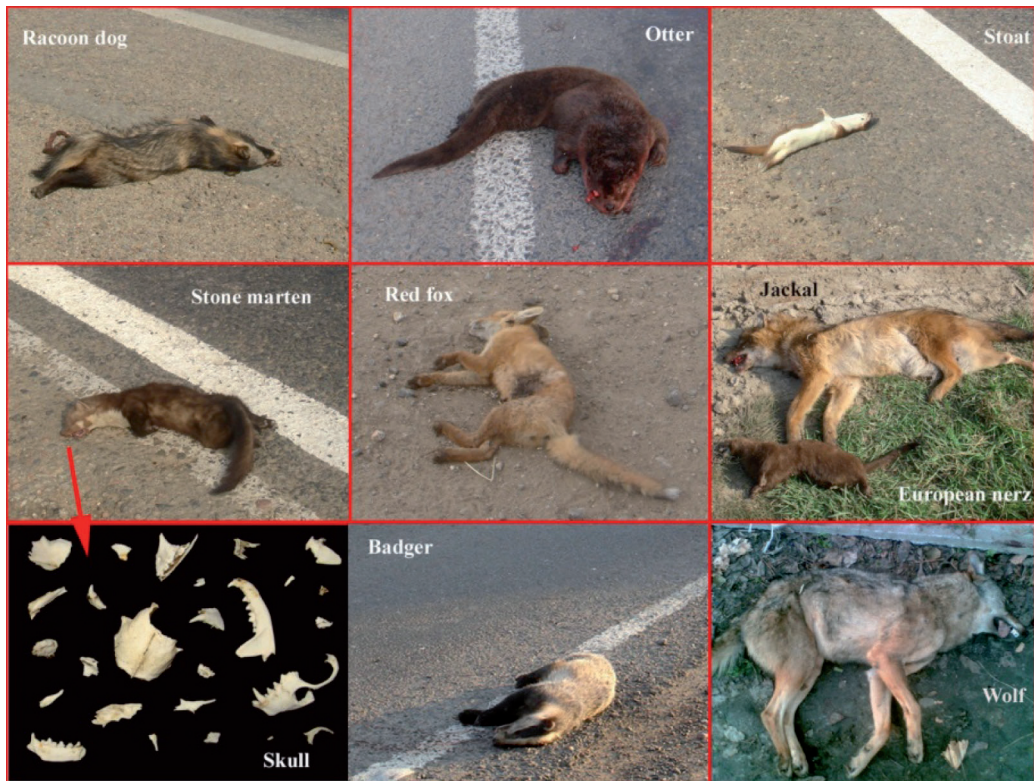


Fig. 5 Predators, died from animal-car collisions; Photo by N. Rozhenko & A. Volokh

Death of predators from poisoning was significant in 1965–1985 since it was a period of wide use of chloro- and phosphoorganic pesticides for pest control. It is their cumulative properties that added to death of many predators after they had eaten poisoned prey.

Many game animals die from diseases, among which the most crucial are rabies (SHEVCHENKO & SCHERBAK 1978) and sarcoptic mange (CHIRKOVA 1957) revealed everywhere in South Ukraine (fig. 6). A part of small predators, especially juveniles, die from attacks of domestic dogs. And they never eat their prey but just kill it and bring to their masters or leave where it was.

Conclusions

- Nowadays the highest number of predators in South Ukraine dies from animal-car collisions.

- For the wolf, hunting still remains a major mortality factor.
- In years, when foxes and raccoon dogs reach high numbers, rabies is developed in populations and causes death for huge number of animals.

Summary

Hunting always was the most important mortality factor for the predators. In the 20th century in South Ukraine it essentially affected populations of the fox, raccoon dog and wolf. However, now for most species, except the wolf, the most critical is death from animal-car collisions, and only after that – pesticide poisoning, diseases and other causes.



Fig. 6 Raccoon dog ill with sarcoptic mange; Photo by V. Vetrov

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