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State of the wild cat population (*Felis silvestris* Schreber, 1777) in Bukovina (Carpatians) under intensive influence of anthropogenic factors

Key words: wild cat, *Felis silvestris*, area, Bukovina, Carpatians, population, dynamics, structure, biotopes, hunting, management, Red Book

Introduction

The wild cat (fig. 1) is one of the rarest species of Ukrainian fauna. The current range is limited to western regions of the country. Main population is located in the Carpathians but small habitats remained in Vinnitsa, Zhitomir, Kirovograd, Odessa, Rovno and Khmelnytsky Regions. Although the wild cat is included in the Red Book of Ukraine (1980-2009), the state of its populations is poor known for scientific community.

Material and methods

During the research of 1994–2013 carried out in all districts of Chernovtsy Region (Bukovina), we collected data on habitat distribution of the wild cat ($n = 172$), cases of death ($n = 27$), and also on the species number. In addition, to reveal distribution pattern of this animal and determine a development trend of the Carpathian population there were used departmental data of different hunting farms, and materials of the State Statistics Committee of Ukraine (document form No TP 2 - “Hunting”).



Fig. 1 Wild cat in a tree (*Alnus incana*) in a wetland forest; Photo by S. Chistov

Discussion

Distribution and number

Nowadays within Chernovtsy Region the wild cat occurs in all 12 administrative districts, although in 1955 it was set only in 6 (SHNAREVICH 1959). According to the state census data, in 2013 Bukovina was inhabited by 195 individuals. This figure does not correspond to a real situation because many hunting farms, where the wild cat is common, do not provide

any counts of it. Such neglectful attitude to the fortune of this threatened mammal was provoked by hunting ban for the species in 1980. That is why the departmental data on its numbers are much understated.

According to our research data, Chernovtsy Region is currently inhabited by ~363 individuals of the wild cat, most of them occur in Storozhynets (25.9 %), Putila (17.4 %) and Vizhnitsa (15.2 %) districts (fig. 2). However, the condition of species habitats in the Carpathians is deteriorated, predominantly due to commercial felling of mature forests.

Prior to 1947, the wild cat in Ukraine was killed as a harmful predator, in 1948–1954 protected as endangered species, and from 1955 to 1980 it was a game animal. Over the period 1946–1971 in the Ukrainian Carpathians 1638 individuals were shot and trapped (TURANIN 1973). Nevertheless, its Bukovinian population shows positive dynamics (fig. 3) which supposedly explained by inclusion of this species in the Red Book of Ukraine (SHKVIRA et al. 2009) and reduction of hunting pressure. New habitats of the wild cat even appeared in neighbouring Ivano-Frankovsk Region (KISELUK et al. 1998).

Official data show a positive number dynamics (fig. 3), but it is not. Formerly, the wild cat occurred in all forests of Bukovina, and now has disappeared in many places. The seeming increase in the number in 2008–2013 is related to the fact that the census covered a vaster area than in the previous years.

In the 1970s the Ukrainian Carpathians were populated with 250–300 (TATARINOV 1979), in 1987 – with less than 700 (TURANIN 1988) of these animals, and in 2003 only Zakarpatskaya Region held 260–450 wild cats (BASHTA & POTISH 2004). In 2007, according to the Statistics Committee of Ukraine, 1025 individuals of this species were counted in the Carpathian Mountains. In 1970 the wild cat population density in Zakarpatskaya Region and Bukovina constituted 0.07–0.12 individuals/1000 ha, while in Ivano-Frankovsk and Lvov Regions – only 0.01–0.05 which is connected with dominance of coniferous forests (TURANIN 1973). In Moldova Republic in the 1980s this value reached 0.5–4.0/1000 ha, and in forests with the area less than 400 ha the wild cat did not occur at all (MUNTANU et al. 1989). In 2011 in forests of Bukovina the species population density ranged from 0.08 to 2.44/1000 ha.

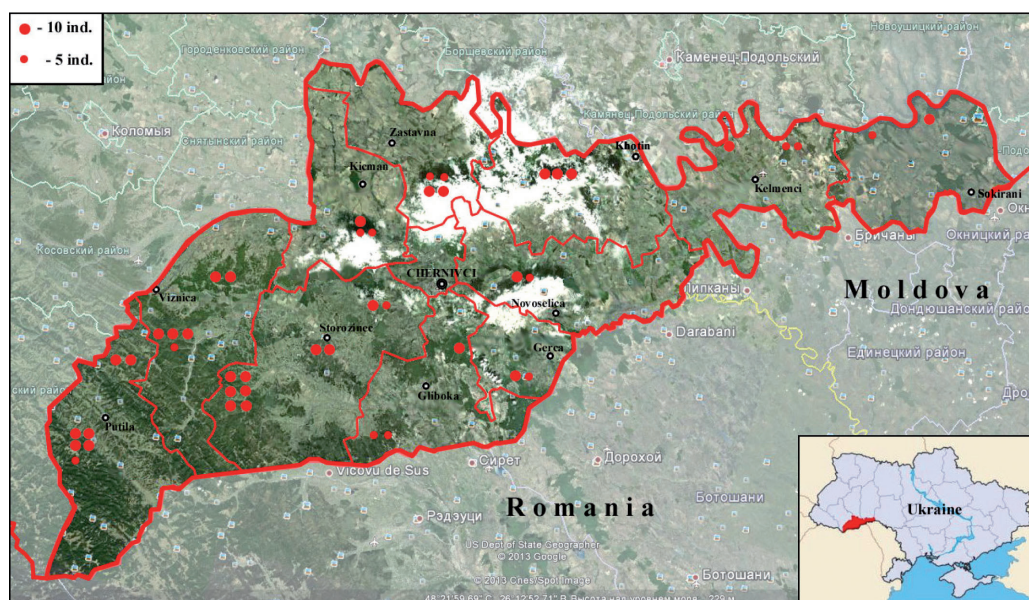


Fig. 2 Distribution and number of the wild cat in Chernovtsy Region in 2013

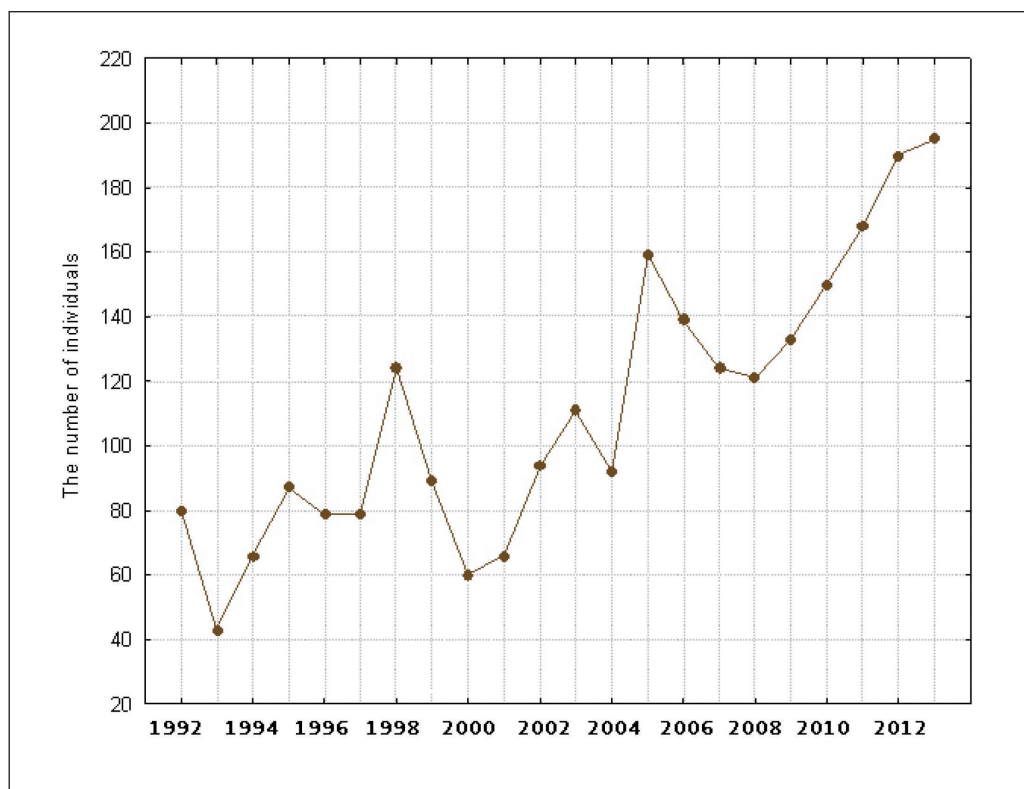


Fig. 3 Number dynamics of the wild cat (TP 2 – “Hunting”)

Use of habitats

Main habitats of the wild cat in Bukovina are mixed mature deciduous and coniferous forests (fig. 4, 5). Sometimes, searching for prey, the animals rise to mountain Carpathian meadows – “*poloniny*”.

Much rarely the wild cats are recorded in reed beds, forest glades, forest fellings, at the pond banks, in fields located near forests, and on roads (TKACHUK 1999). Some cases are recorded ($n = 4$), when old animals went to villages and attacked the poultry.

Within Chernovtsy Region the wild cats mostly use old holes of the badger and fox (88.2 %) as a temporary shelter or home ($n = 17$) to raise their young, and very rarely – holes of trees or unused wood-piles.

Analysis of revealed cases of death for the wild cat (fig. 6) shows that almost 63 % of animals

were killed by poachers. It means that illegal hunting is an important limiting factor for this species. Given the hidden nature of poaching, the real number of bags for the wild cat is much higher than we could imagine. The very cold and snow winter of 1986/1987, when about 50 % of wild cats died in the Ukrainian Carpathians, caused great damage to the population (TURANIN 1988).

Though, according to the Criminal Code of Ukraine (2001) Article 248, hunting on animals listed in the Red Book is punishable by fine to 100 untaxed minimums of profits of citizens or by arrest for the term to 3 years, we do not know cases when it was implemented in practice.

Now a major factor of the wild cat disappearance in the Carpathians is felling of old forests and further use of their area for building and agriculture (fig. 7).

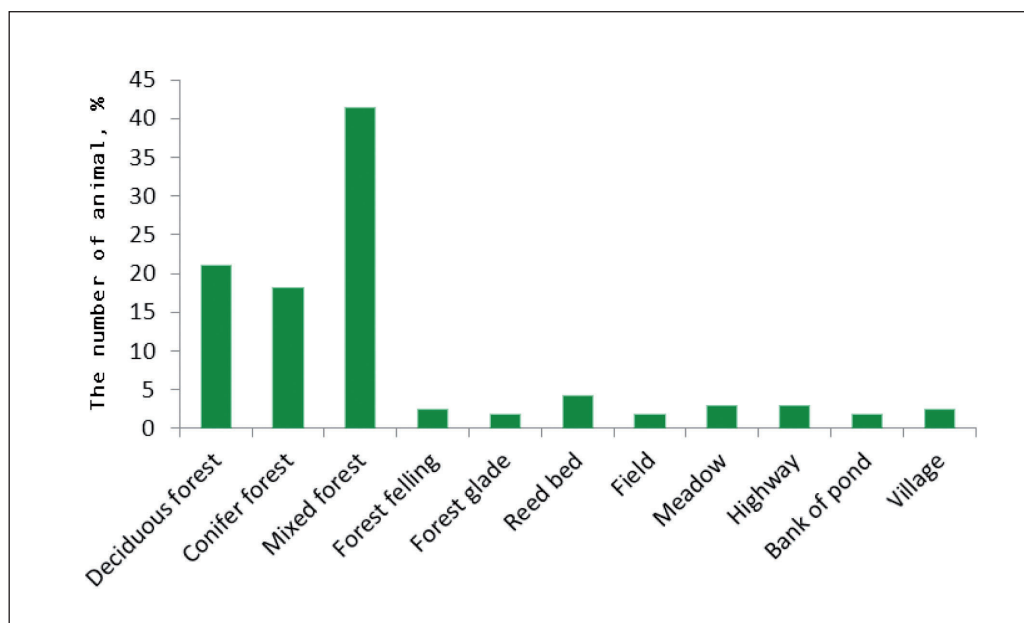


Fig. 4 Habitat distribution of the wild cat ($n = 172$)



Fig. 5 Typical habitats of the wild cat in Bukovina

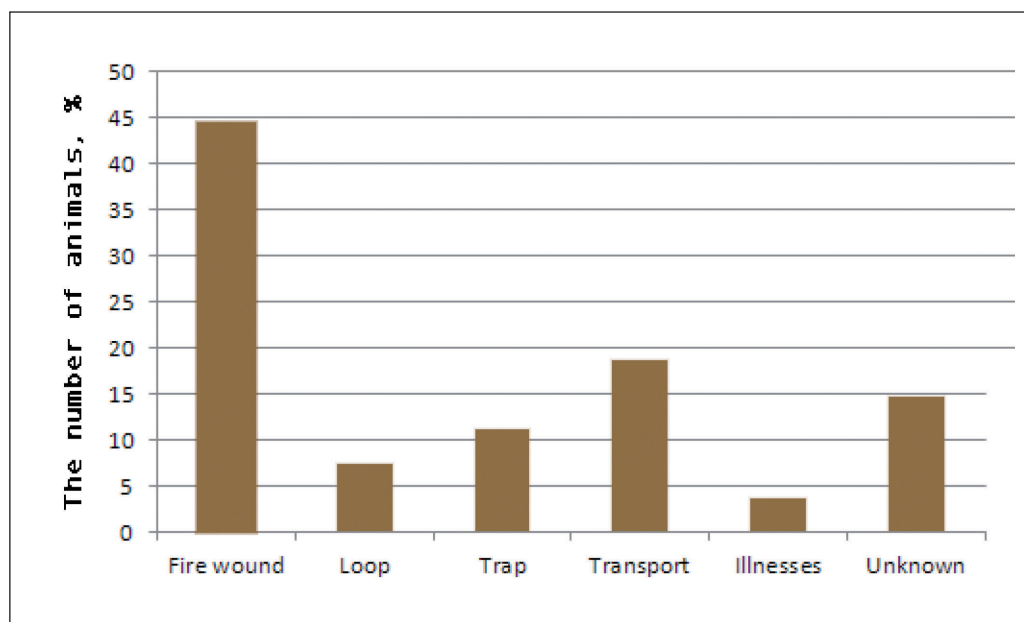


Fig. 6 Causes of death for the wild cat ($n = 27$)



Fig. 7 The commercial use of forests in the Carpathians often results in their disappearance

Conclusions

In spite of wide distribution of the wild cat in Bukovina and positive dynamics of its number, the population of this species is under threat of extinction. It is caused by rejuvenation of forests in the process of intensive main felling, solarisation, death from animal-car collisions and poaching. Especially dangerous is appearance of feral domestic cats, since hybridization with them can level results of natural selection.

Summary

In Chernovtsy Region the wild cat occurs in all administrative districts. Nowadays there dwell about 400 animals, which density in 2011 made up 0.08–2.44/1000 ha. Main habitats of the wild cat are mixed mature, deciduous and coniferous forests, rarer it occurs on mountain meadows, in reed beds, forest glades, forest fellings, at pond banks, in fields located near forests, and also on roads.

In spite of wide distribution of the wild cat in Bukovina and positive dynamics of its number, the population of this species is under threat of extinction. It is caused by rejuvenation of forests in the process of intensive main felling, solarisation, death from animal-car collisions and poaching. Especially dangerous is appearance of feral domestic cats, since hybridization with them can level results of natural selection.

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