

## Carnivore Damage to Livestock in Romania

by

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Romania is the only country in Europe out of Russia where still healthy populations of all three large carnivore species, bears (5500), wolves (3000) and lynx (1800) exist (Ionescu O., Institute for Forest Research and Management, Brasov, Romania, personal communication). This, together with the presence of 9 million sheep and 3 million cattle, of which probably half are kept in the mountains during summer, makes Romania a place in which very high densities of livestock and predators live in the same range. Livestock protection is still fairly well preserved in this country - sheep are penned during night and they are always guarded by shepherds and livestock guarding dogs. Still, large carnivores manage to kill discrete amounts of livestock and this can influence negatively the attitude of livestock raisers towards the wild predators. In order to identify and implement an effective management strategy we gathered information about (1) the amount of damage caused by large carnivores to livestock in mountain camps, (2) what the vulnerability of the shepherd camps is due to and (3) if electric fences can be a good protection for livestock.

Summer 2001 was the fourth summer in which we researched the spatial distribution of livestock, monitored the attacks caused by large carnivores, and analysed the effect of these attacks on the economy of livestock raisers. According to the information provided by the shepherds of the 30 camps we monitored, this year 152 animals were killed by wild predators. Of these, 146 (96 %) were sheep, 1.4 % of all the sheep present in the shepherd camps, for an average of 5.92 sheep per flock. This damage is lower than the one we found in the first two years of our research (1998 and 1999), in which we were reported 2.08 % of all the sheep killed, for an average damage of 9.94 sheep per camp. But it is higher than the damage reported last year (2000), with 0.62 % of all sheep killed, for an average damage of 2.92 sheep per camp. All four years taken together, there resulted to be a damage of 1.48 % of all sheep. Wolves appear to have killed 64 % of the livestock, and bears 34 %. In these four years only two sheep have been reported to be killed by lynx.

Testing the data for Spearman correlation we found direct correlation between the amount of kills in the different shepherd camps and the relative number of dogs (no. of sheep/dog) present in the camps ( $p=0.018$ ) and the relative number of shepherds (no. of sheep/shepherd) ( $p=0.035$ ). Also in 1998 and 1999 we found direct correlation between these factors (kills vs. sheep/dog:  $p=0.017$ ; kills vs. sheep/shepherd:  $p=0.013$ ) (Mertens & Promberger in press.). Similarly, taken together the data from 1998, 1999 and 2001 there is positive correlation between kills vs. sheep/dog ( $p=0.0014$ ) and kills vs. sheep/shepherd ( $p=0.001$ ). Although this correlation does not exist in the data of the year 2000 (kills vs. sheep/dog:  $p=0.1$ ; kills vs. sheep/shepherd:  $p=0.56$ ), these data suggest that the vulnerability of the flocks is probably influenced by the amount of shepherds and of dogs in the camps. We found no correlation between the number of sheep killed in the camps and the distance of the camps from the border of the forest ( $p=0.15$ ). The number of kills per camp was positively correlated to the number of sheep in the camps ( $p=0.004$ ). This and the fact that the amount of sheep in the camps was directly correlated to the amount of dogs ( $p=0.000$ ) and the amount of shepherd ( $p=0.000$ ) suggests that bigger flocks are more exposed to successful predator attacks than small flocks.

Shepherds and good livestock guarding dogs are often not present in adequate numbers in Romanian shepherd camps because they increase costs considerably. Salaries and food for shepherd make our 55% of the costs of a shepherd camp, dogs make 4.5%. Through the „community development and conservation fund“, supported by income through ecotourism, the Carpathian Large Carnivore Project aims to help livestock raisers to improve the quality and number of livestock guarding dogs. In addition, we wanted to test a new protection method which does not exist in Romania yet: we bought ten electric fences and installed them at livestock camps in the study area. We want to monitor the effectiveness of these fences and promote their use as protection against large carnivores. The results of this activity will be presented in the next issue of the CDPN.

See also the *Carpathian Large Carnivore Project* on: [www.clcp.ro](http://www.clcp.ro)

### References:

Mertens A. and C. Promberger in press: Economic aspects of large carnivore-livestock conflicts in Romania. *Ursus* 12.