

Vultures in Romania

Report on the assessment of public attitudes towards vultures and the potential reintroduction of Griffon Vultures (*Gyps fulvus*)

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Introduction

Romania has been home to significant vulture populations up to the first decades of the 20th century. All four European vulture species (*Gypaetus barbatus*, *Gyps fulvus*, *Aegypius monachus*, *Neophron percnopterus*) are reported to have existed in this country. The birds used to be widespread all over the Romanian Carpathians but mainly concentrated in mountain ranges with extensive rocky areas such as the Bucegi and Piatra Craiului Massifs (in the Curvature Carpathians), the Retezat Massif (in the Southern Carpathians) and the Ceahlau Massif (in the Eastern Carpathians). However, all four species are now extinct in Romania although occasional sightings of Egyptian Vultures occur in the Southern part of the country. The causes for the population decrease and extinction of all the species seemed to be mainly collection of eggs and poisoning.

Successful vulture reintroductions and population restocking programs have been done in several sites in Europe. The experience from these projects has shown that the most successful procedure is to begin with a reintroduction of the Griffon Vulture and then, on the long term, eventually attempt the reintroduction of the other species.

One of the main conditions for a successful reintroduction and the conservation of a species is the support of the local human population. Considering that in Romania vultures have been eradicated by humans it can be assumed that if the necessary public support does not exist locals might jeopardize the existence of these species in this country a second time. It is therefore of primary importance to know whether the local communities would support a potential reintroduction, under which conditions, and how to increase this support as much as possible.

During several conversations that the project staff has had with local inhabitants the assumption arose that these generally have a problem in distinguishing vultures from eagles or other large raptors, which is why most of the people believe that vultures are dangerous for livestock. This can be a threat for vultures since people might to fight the birds in order to reduce livestock depredation.

Therefore, in the frame of the project "Vulture in Romania" a public opinion survey was performed among the inhabitants of the towns and villages in the Retezat National Park. In July 2005 292 people were interviewed with the help of a specific questionnaire. The survey revealed that in fact people seem to be scarcely able to distinguish between vultures and eagles. Still, the general attitude towards vultures was relatively positive and there was little opposition towards a potential reintroduction.

Study area

The opinion poll was carried out in settlements within the border of the Retezat National Park. Covering a surface of 38,000 ha, of which 1,800 ha are strictly protected area, it is located in the County of Hunedoara, south of the city of Deva, in the Southern Carpathians. Altitudes range from 900 to 2509 m (Mount Peleaga). The vegetation of the forests consists principally of beech (*Fagus* sp.), conifers (spruce [*Picea abies*] and fir [*Abies alba*]), oak (*Quercus* sp., 18%) and mountain maple (*Acer pseudoplatanus*). The lower hills are covered by beech or mixed beech–conifer forests, whereas the vegetation of the higher areas is made up mainly by spruce forests. The ranges above the timberline (above 1,900 m) consist of rock ranges and of mountain pastures that are widely used for livestock raising.

Both from the point of view of flora and fauna the Romanian Carpathians hold an extremely high biodiversity, with many endemic and subendemic species. There are 1650 plant species, almost half of the Romanian flora, in over 200 vegetal associations. Of the total Romanian fauna more than 1,000 species are considered endemic although the geographical distribution of many of these species is only poorly known. The country hosts more than 33,000 species, sub-species and varieties of animals, out of which 33,085 invertebrates and 707 vertebrates. Except for the bison (*Bison bonasus*) and elk (*Alces alces*) all the original large mammal fauna is still present in Romania. Wolves, bears and lynx are the main predator species, red deer (*Cervus cervus*), roe deer (*Capreolus capreolus*), wild boars (*Sus scrofa*), and chamois (*Rupicapra rupicapra*) the main prey species. To a small degree, wild cats (*Felis sylvestris*) prey on roe deer. In the past couple of years also golden jackals (*Canis aureus*) have shown up in the Carpathians. Also among the birds some species are present which are rare in other European countries, like the raven (*Corvus corax*), the cappercaillie (*Tetrao urogallus*), the golden eagle (*Aquila chrysaetos*), whereas only few species, such as all the vultures, are extinct.

Within the territory of the Retezat National Park there are 24 communes, subdivided into villages that are scattered mainly in valleys north and south of the main mountain massif. Generally, socio-economic conditions of the locals are very simple and infrastructures are poor. Similarly to the rest of the Romanian Carpathians traditional agricultural activities are still widely in practice in and around the park. These consist mainly in traditional livestock production, especially sheep husbandry.

Methods

In July 2005 a questionnaire was administered to 292 persons over the age of 18, in 9 communes and 28 villages (20 interviews in each commune, 4 interviews in each village) in the territory of the Retezat National Park. In each settlement the people to which the questionnaires were submitted were chosen casually. The interviewers started from randomly chosen points, then they selected every third house or apartment. If more than one person was present in the household at the moment of the interview, the person with the closest birthday was chosen as the respondent. If nobody was home or the present people refused to answer the questionnaire, the interviewer went on to the next house/apartment. The questions were asked and the answers recorded by the interviewer.

The interviews were carried out by two students of the University of Cluj Napoca, with the logistical assistance of the personnel of the RNP.

The questionnaire consisted of 50 questions plus 7 additional questions concerning generic information about the respondents. It was divided into 5 sections: (1) 9 questions to assess the respondents' capacity to identify vultures, (2) 10 questions about the respondents' general knowledge about the ecology of vultures, (3) 10 questions on the knowledge of the respondents about the extinction of the species in Romania, (4) 15 questions on the general attitudes about vultures and (5) 6 questions exploring the attitudes of the respondents towards a potential reintroduction.

Three different scales were used for different groups of questions:

- Questions with possible answers ranging from "strongly disagree" or "strongly dislike" (1 point) to "strongly agree" or "strongly like" (5 points).
- Questions which answers were "yes", (1 point), "no" (2 points) and "don't know" (3 points).
- The question about the level of interest of the respondents towards vultures was ranked on a scale from 1 to 10 (1 = Not at all interested; 10 = Very interested).

During the interview a panel with pictures of four bird species (Golden eagle (*Aquila chrysaetos*), Griffon vulture (*Gyps fulvus*), Black stork (*Ciconia nigra*), Buzzard (*Buteo buteo*)) (Annex II) was shown to the interviewee and the respondent was asked to identify the four species.

Data analysis

In order to analyse the attitudes of the respondents to certain sets of questions these questions were pooled and a medium score was calculated. To assess the knowledge of the respondents the questions were subdivided as follows:

1. What do vultures eat?
2. Feeding behaviour score: (Statements to be answered with "true", "false", "don't know")
 - Vultures are predators
 - Vultures kill animals to eat them
 - Vultures feed on dead animals
 - Vultures kill livestock
3. General ecology score: (Statements to be answered with "true", "false", "don't know")
 - Griffon vultures live in groups
 - Griffon vultures nest in rocks
 - Griffon vultures use warm air to fly
 - Griffon vultures don't see well
4. Do vultures attack people? (Statements to be answered with "yes", "no", "don't know")
5. Total knowledge score: All the previous questions pooled together

The score of the respondents' opinion about the importance of vultures was calculated from questions pooled as follows:

- Vultures are important for nature
- Vultures are a richness for Romania
- It's important for me that vultures exist in Romania

For testing for different attitudes between groups of respondents we used the χ^2 test whereas for checking for correlation between different factors we used Spearman correlation.

Results

General information

In the course of the opinion poll 292 persons were interviewed in the area of the Retezat National Park, of which 63% were men and 37% were women. Of the interviewees 41% were livestock raisers, 11,5% were hunters, 2% were foresters and 45,3% farmers. Of the people who owned livestock 76% owned cattle, 71,2% owned pigs, 33,5% owned horses, 27,5% owned sheep and 1,8% owned donkeys, goats and hares. The average age of the interviewees was 47,8 years, ranging from 18 to 82.

Identification

Most interviewees (99,3%) stated that they knew what a vulture is and more than half (65,2%) stated that they knew what an eagle is. However, only 45% of the people stated that they knew the difference between eagles and vultures, and only 34% of these told a difference that can be considered to be correct (Tab. 1).

Table 1. Differences between vultures and eagles according to the declarations of the interviewees

Differences	Number of times mentioned
Vulture is bigger	16
Vulture is smaller	31
Vulture lives in lower altitudes	2
Vulture feeds on carcasses, eagles on live animals	2
Vulture has naked neck and is smaller	1
Vulture has bigger bill	1
Vulture has longer wings	2
Eagle has shorter tail	1
Shape	1
Colour	6
Different head	1
Other hunting style	1
Eagles are more predators	4
Vulture has bent bill	2
Eagle has naked neck	1
Eagle has straighter wings	1
Eagle is a night hunter	1

Also, when asked to determine four species from pictures they were shown, only 16,1% of the interviewees correctly identified an eagle and 55% identified a vulture (Fig.1). Moreover, of the people who identified a wrong species 104 stated that the eagle was a vulture and 34 stated that the vulture was an eagle.

The χ^2 test revealed a significant difference in the number of people who correctly identified the griffon vulture among the four professional groups ($\chi^2 = 7,98$; df 3; p = 0,46), given by the fact that foresters gave more correct answers (75%) than livestock raisers (49%), hunters (53,3%) and farmers (55,3%).

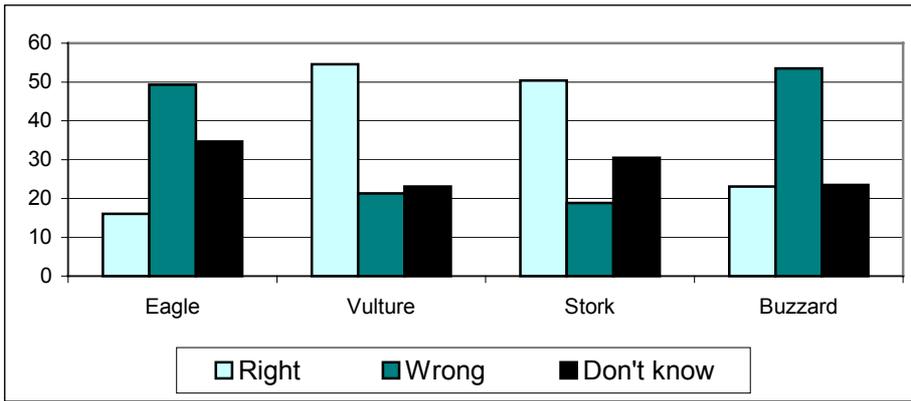


Figure 1. Number of people that were able or unable to identify the four species that were shown on pictures

Very heterogeneous definitions were given to the four species that were requested to be identified (Fig. 2), ranging from mammals (bats) to exotic bird species.

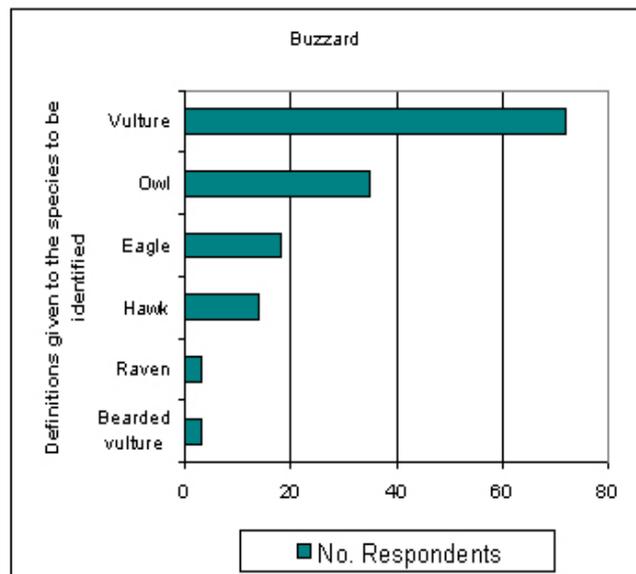
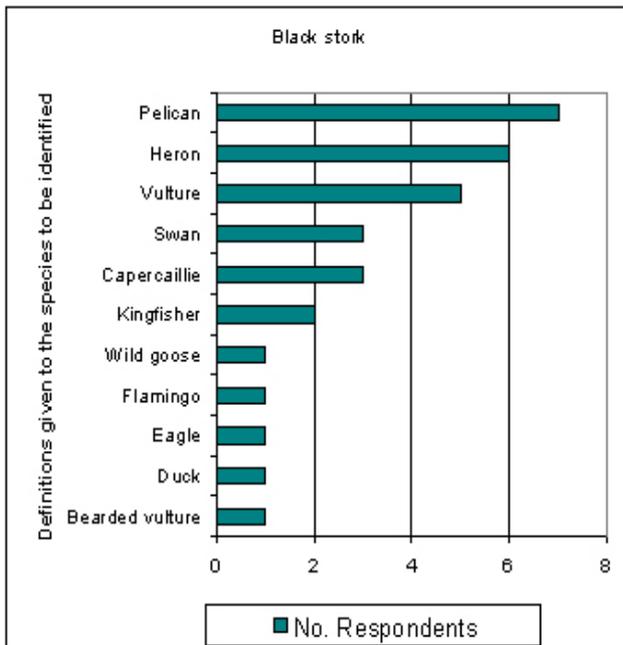
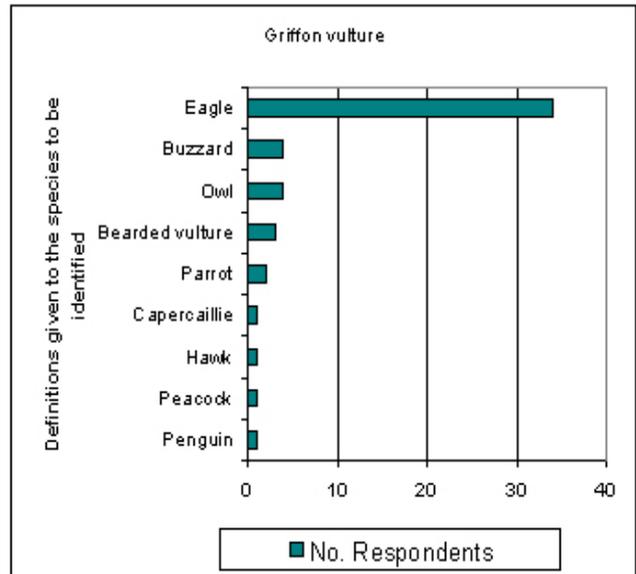
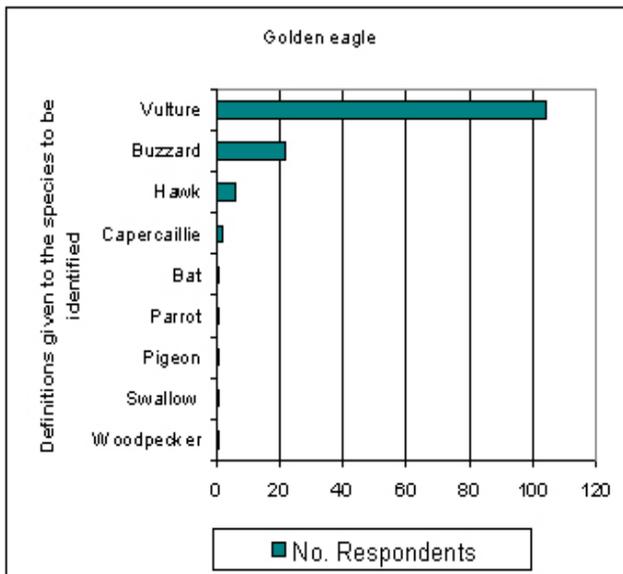


Figure 2. Number of times different definitions were given to the species that were asked to be identified on pictures

Knowledge about the ecology of vultures

Most of the respondents (63,2%) were aware of the fact that vultures are carnivores whereas 32,9% replied that vultures feed both on vegetables and meat. However, the knowledge score about feeding behaviour was relatively low (38,97% of questions answered correctly). This low score was mainly due to the fact that most of the respondents believed that vultures are predators (80,4%) and that they kill animals to feed on them (76,9%). Contrarily, a big proportion of the people (76,5%) were aware that vultures feed on dead animals whereas half (44,9%) believe that vultures do kill livestock. Contrarily to what could have been expected more hunters and farmers than livestock raisers believe that vultures kill livestock, but the difference was not significant ($\chi^2 = 5,36$; df 3; p = 0,146). There was no significant difference between knowledge scores about food habits of griffon vultures between different professions of the interviewees ($\chi^2 = 0,005$; df 3; p = 0,99).

In the section about general ecology of vultures the knowledge score was slightly higher (57,5% of the questions answered correctly). The main question answered wrongly was whether vultures live in groups, where only 14,7% of the people gave a correct answer.

The total knowledge score (52,56% of the questions answered correctly) was in addition increased by the fact that most of the people (78,6%) answered correctly that vultures do not attack people. No significant difference appeared in the total knowledge scores of the four professional groups ($\chi^2 = 0,25$; df 3; p = 0,97).

Extinction of vultures

To the question “do you think vultures still exist here?” over half of the people (52,3%) gave a positive, incorrect answer. Of these, almost half (43,5%) stated that they have seen vultures lately, two of them stating that they saw one in their courtyard. Of the people that believe that vultures are not present in Romania most (78%) believe that the extinction of vultures is a loss for the country.

When asked what they believed is the cause for the extinction of griffon vulture, most of the respondents (28,2%) mentioned shooting, whereas the collection of eggs, which is actually one of the important causes, was mentioned by only 7,4% of the respondents (Fig. 3).

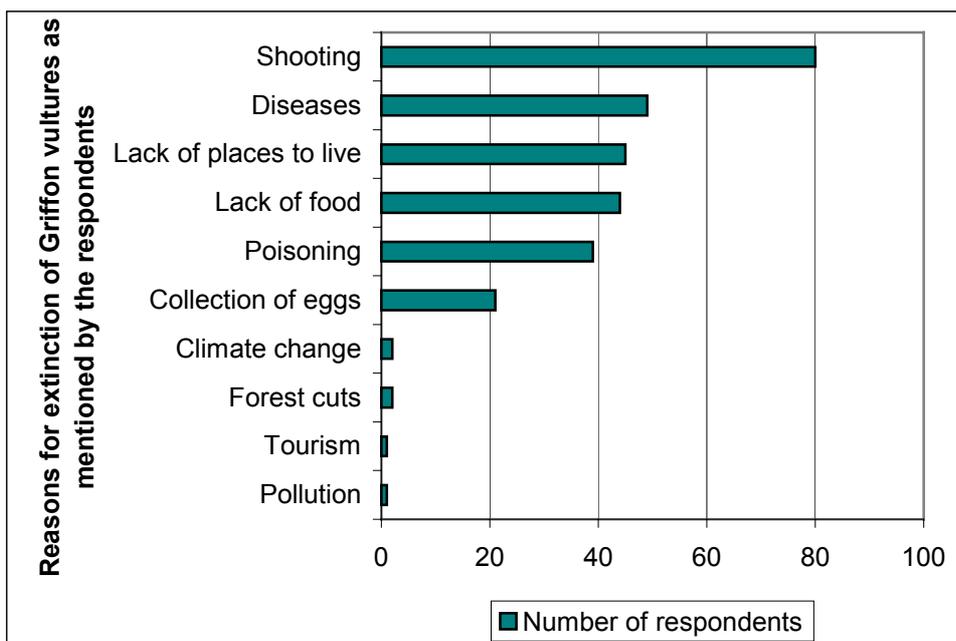


Figure 3. Different reasons for the extinction of Griffon vultures mentioned by the respondents of the opinion poll

Attitudes towards vultures

The interests of the respondents towards vultures resulted to be medium, (5,21 on a scale from 1 to 10), as was also the general attitude (3,62 on a scale from 1 to 5). This second parameter appeared to be strongly correlated with the knowledge scores (the number of correct answers in the knowledge section) (Spearman: $r_s = 0,24$; $p = 0,000$).

The score about the importance of vultures for nature and for Romania was relatively high (Fig. 4) and only few people believe that in Romania there are too many vultures (4,82%).

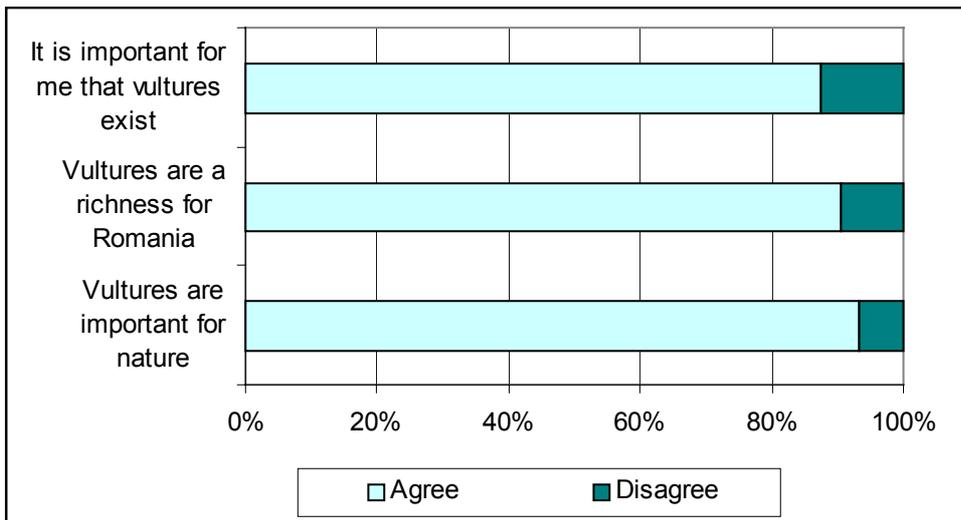


Figure 4. Number of respondents that agree/disagree with statements about the importance of vultures for nature and Romania

Also, the respondents generally considered vultures not to be a danger for people (1,6 on a scale from 1 to 5) and only very few people (11,38%) stated that they are scared of these birds.

The belief that vultures cause damage on agriculture was low (1,58 on a scale from 1 to 5) whereas the belief that these animals are a danger for livestock was higher (2,39 on a scale from 1 to 5). But when asked which species, vultures, eagles, buzzards or ravens, in their opinion is most dangerous for livestock, the respondents did not point out vultures (Fig. 5). The belief that these birds are a danger for domestic animals was inversely proportional to the total knowledge score of the respondents (Spearman: $r_s = -0,33$; $p = 0,000$).

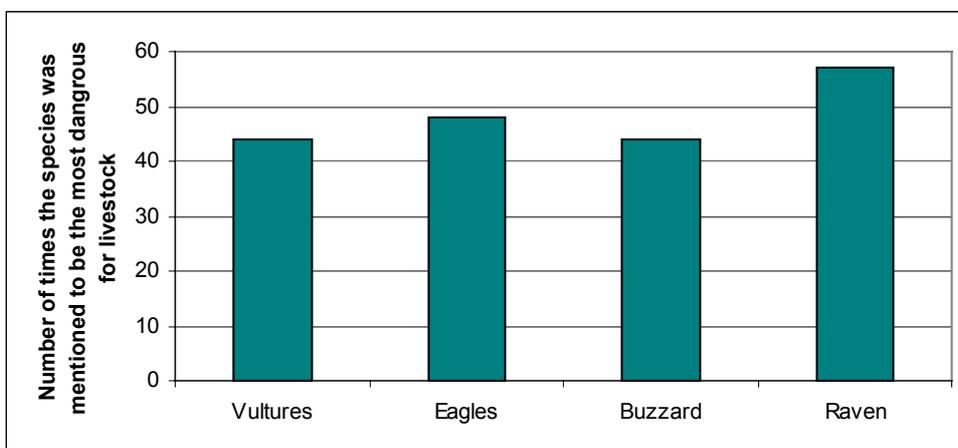


Figure 5. Number of times the respondents mentioned the different species to be most dangerous for livestock

Vulture reintroduction

Most of the interviewees (88,7%) stated that they would agree if a vulture reintroduction was tried in the Retezat Mountains and most of them (79,8%) said that they would be happy if these birds would exist again in the area where they live. Also, only few people (5,8%) would be scared of this option. The number of people that agree with a reintroduction did not vary significantly among the three classes of knowledge levels (0-1 correct answers; 4-6 correct answers; 7-9 correct answers) ($\chi^2 = 1,97$; df 2; p = 0,37).

Contrarily to the previously mentioned belief that vultures in general are a danger to livestock only few of the respondents (16,8%) stated that they believe that the presence of vultures would cause problem to livestock.

When asked whether in their opinion a vulture reintroduction would be possible most of the respondents (81,3%) gave a positive answer. In the few cases in which people did not believe that this is possible almost all the reasons were bonded to socio-economic or policy reasons and only few ones about ecological issues (Tab. 2).

Table 2. Reasons for which the respondents believed that a reintroduction of Griffon Vulture in Retezat National Park is not feasible

- Because they damage livestock
- Because good things are not done here
- Because they are not shy enough
- There are no conditions (not specified)
- Because nobody is interested in them
- Because nobody would agree
- Because of the mentality of the governors
- Because of financial reasons

Conclusions

The results of the part of the opinion poll that explored the capacities of the respondents to identify different bird species, among which vultures and eagles, indicate that in general quite consistent confusion is made between these two species/groups of species. Also in general, the knowledge about bird species appeared to be relatively low, considering that all the species that were asked to be identified (except for the Griffon vulture) are species that are commonly found in the study area. The fact that the Capercaillie was mentioned by several respondents can be explained by the fact that this bird is common in the Carpathians and is an important game species in the area. Contrarily, also exotic species were named (penguin, parrot, peacock), which suggests that the knowledge of people about birds might be influenced by the mass media. Foresters appeared to have a better capability to distinguish vultures from eagles, which is expectable due to their professional activities.

The hypothesis that many people are unable to distinguish between eagles and vultures is supported by the fact that the knowledge score about feeding behaviour was low. In fact the majority of the respondents wrongly stated that vultures are predators and that they kill animals to feed on them. Also, half of them stated that these birds kill livestock. All these are typical characteristics of eagles.

This is even further supported by the fact that most people wrongly believed that vultures are solitary (which instead is true for eagles), whereas the other three questions of the section "general ecology", which correct answers apply also to eagles, were more often answered correctly.

These findings are extremely important for a potential reintroduction of Griffon vulture in Romania because they indicate that there is a strong need for people to be informed about the difference between birds of prey and vultures, equally across the professional categories.

The importance of public information about vultures is also supported by the correlation that appeared to exist between the attitudes of people towards these animals and the general knowledge, and by the inverse correlation between knowledge and the belief that these birds kill livestock.

The generally positive attitude towards vultures and the lack of resistance towards a reintroduction is remarkable considering that all four vulture species have been eradicated from Romania by humans and considering that reintroductions often do meet strong resistance by local communities. This is even more remarkable in the light of the fact that most respondents believed that a reintroduction is possible and thus apparently this option is considered realistic.

This fact is encouraging for a potential reintroduction. However, it should be kept on mind that some prejudice towards vultures does exist, such as the fact that they kill livestock. Such kind of wrong belief can easily become a driving force for opposing a potential population once the animals are really present. Also, the fact that apparently vultures and eagles are mixed up calls for strong carefulness since it suggests that many people might not be viewing a potential vulture reintroduction realistically.

Therefore it is strongly recommendable that whatever steps are done for reintroducing vultures in the Retezat Mountains (or in other areas in the Carpathians), the attitudes of the local inhabitants are constantly monitored, that an in-depth information campaign about vultures and other raptors is made and that the local communities are permanently informed about the steps that are being taken.