BLACK VULTURE CONSERVATION IN ARMENIA

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Funded by
THE RUFFORD MAURICE LAING FOUNDATION,
UK.

ACKNOWLEDGMENTS

We would like to extend our thanks to the Rufford Maurice Laing Foundation for the financial support to this project which was made available in the most critical time for the species.

Special thanks are extended to Departments of Biodiversity and Protected Areas of the Ministry of Nature Protection of RA.

We would like to thank the administration of the State Khosrrov Preserve which showed great interest in how direct conservation can be organized in the area and for providing their support on this project. Special thanks are extended to local village government and community members who offered their help in timely acquisition of animal carcasses (horses, donkeys) that were used in vulture feeding and made this project possible.

INTRODUCTION

Armenia is a small, montane country in the north-eastern part of the Armenian Upland plateau. Armenia is landlocked and is the highest of the Transcaucasian countries (mean elevation > 1830 m (Baghdasarian *et al*. 1971).

Three of the four vulture species found in Armenia are listed in the Red Data Book of Armenia, and the Black Vulture is classified as 'Endangered' (Red Data Book 1987). While globally Birdlife International (2000) classifies it as a 'Near Threatened' species, its status is critical within Armenia (population reduction > 60% in 40 years). Before 1952 there was no monitoring of Black Vulture population, and available data were fragmentary (Leister and Sosnin 1942, Dal 1954). B.O. Geilikman (1959) initiated a study of this species that extended through 1986, and additional information being collected in 1993-1997 as part of the international *Birds of Armenia (BOA) Project* In addition *ad hoc* records appear in the trip reports of researchers and ranger services at the Ministry of Nature Protection and Department of the Forest Management in Armenia.

The black vulture population was stable until the 1970s, and numbered ca. 50 pairs (Geilikman 1965). After the 1980s they declined drastically so that by 2002 only 4-6 pairs existed. In 2002 the Armenian Society for the Protection of Birds (ASPB) launched a Black Vulture Conservation project, funded and directed by BirdLife International, which showed that breeding of Black Vulture (6 pairs) was restricted to the State Khosrov Preserve, and that foraging occurred within and outside the preserve. Continuing threats to the species in Armenia include: a) poaching, changes in traditional methods of animal husbandry and the number of livestock in foraging areas which resulted the amount of food available to all scavengers, including the Black Vulture. This is within the context of huge reductions in livestock numbers since the collapse of the Soviet Union, and (c) natural predation at the nest.

PROJECT DETAILS

On-site monitoring and full-time guarding of nests

During the initial phase of the Black Vulture Conservation in Armenia Project funded by the Rufford Maurice Laing Foundation, members of the Armenian Society for the Protection of Birds (ASPB) and the volunteers recruited to assist the project implementation have surveyed previous and the newly established nest sites within the State Khosrov Preserve and its close proximity. Surveys covered habitats of mountain steppe with open juniper woodlands.

Figure 1. Open juniper woodland growing on rocky terrain

Figure 2. Open juniper woodland on hillside

Upon completion of the first phase of surveys which was location of the existing and occupied nests of the Black Vulture, an observation schedule for nests and nesting territories has been established. Human persecution and destruction of Black Vulture nests by individuals collecting wild plants and trespassing of the territory of the Preserve during spring and summer seasons were considered as well. The personnel available at the preserve is poorly trained and insufficiently equipped to carry out a meticulous survey of the area. Thereby alongside the nest observations, a full time guarding of nests was also organized. The staff of the protected area was recommended specifically to visit the identified nests occupied by the Black Vulture and patrol the areas trespassed by avid collectors of wild plants. This trespassing occurs in areas bordering the nesting grounds of the species during spring which overlaps with the critical breeding stages of the Black Vulture. The rumours about observers and nest guards spread in the public facilitated the beginning stages of nest monitoring.

By mid May following an agreement with the administrative body of the preserve a stationary camp was established in the protected area. The camp was positioned in such a way as to command a wide view of the two vulture nests using the 20-60X spotting scopes. Beyond the stationary observation site, we have positioned three more which allowed observing nests through binoculars. The distance and positioning of the observation points was arranged in a way to allow an approach to and monitoring of nests and avoid any disturbance to birds and their breeding success. Birds were observed from a distance of 400-600 m. Hence, all of the seven nests were fully monitored on the permanent basis. As agreed with the preserve's personnel, during the rest of the time these nests were watched over by their personnel that reside near the guard-post at the entrance to the preserve.

Figure 4. Adult vulture on the nest

Out of nineteen examined nests built in different years only seven were occupied by the species just like in 2002. The minimum distance between occupied nests was 500 m. All occupied nests were situated in juniper trees growing out of crevices on hillsides of various inclinations ranging from 30 to 85° and facing south and south east.

Figure 5. Nest positioned in a denser part of the woodland facing S

From the experience of the past project when a 10-12 day-old chick was taken away by a lynx at night, we undertook efforts to prevent predation in the current year and applied a solution of chemical reagents to individual nest trees once in 3-5 days. No case of predation (lynx, bear, etc.) was recorded in the reporting period. The end of the nesting period was earmarked by 7 nestlings which fledged successfully and represented 100% of the fledging success. Hence, in summary, our efforts allowed to eliminate two of the limiting factors discussed below, predation and human disturbance.

In order to more effectively monitor the post fledgling dispersal of young birds around the nesting territory, all fledglings were tagged using aluminium rings and special wing tags which were placed on the wings of birds.

Figure 6. Installing a tag on the black vulture wing

Figure 7. Vulture banded with a wing tag and an aluminium metal ring

Supplemental feeding at nest sites

Supplementary feeding to vultures in the State Khosrov Preserve commenced in early days of the project and was carried out through the entire breeding season and well into winter. Feeding stations were established in suitable places in subalpine, mountain steppe and semi-desert habitats, taking into account inaccessibility for mammalian predators/scavengers. Based on experience of the previous practice, a feeding station was established within the area of preserve, because carcasses placed outside the protected area which covered mountain meadows were basically taken away by shepherd dogs which kept vultures away from the food. Carcasses spread out within the area of preserve were often visited by bears during the night which did not react to chemical repellents and dragged the carcass into bushes and buried in forest. The entire research team and volunteers working on the project had to guard permanently the carcasses intended for vultures to accomplish the task of supplemental feeding of Black Vulture.

Figure 8. Laying down a donkey carcass for vulture feeding

Figure 9. The feeding area treated with chemical repellents to flush away the mammalian predators (bear, lynx, etc.)

Supplemental feeding was aimed at the conservation of Black Vulture and increasing the species' breeding success and maintaining the fidelity to the breeding and wintering grounds. Increased success intended to have long-term affects by ensuring the availability of breeding recruits in the future. Lack of food which was apparent in the previous years did not seem to be critical in the reporting period. However, considering the current state of livestock production and wildlife availability in the country, the need in the similar practical actions to rescue and maintain the viability of remaining Black Vulture population is obvious.

Increasing education efforts and public awareness

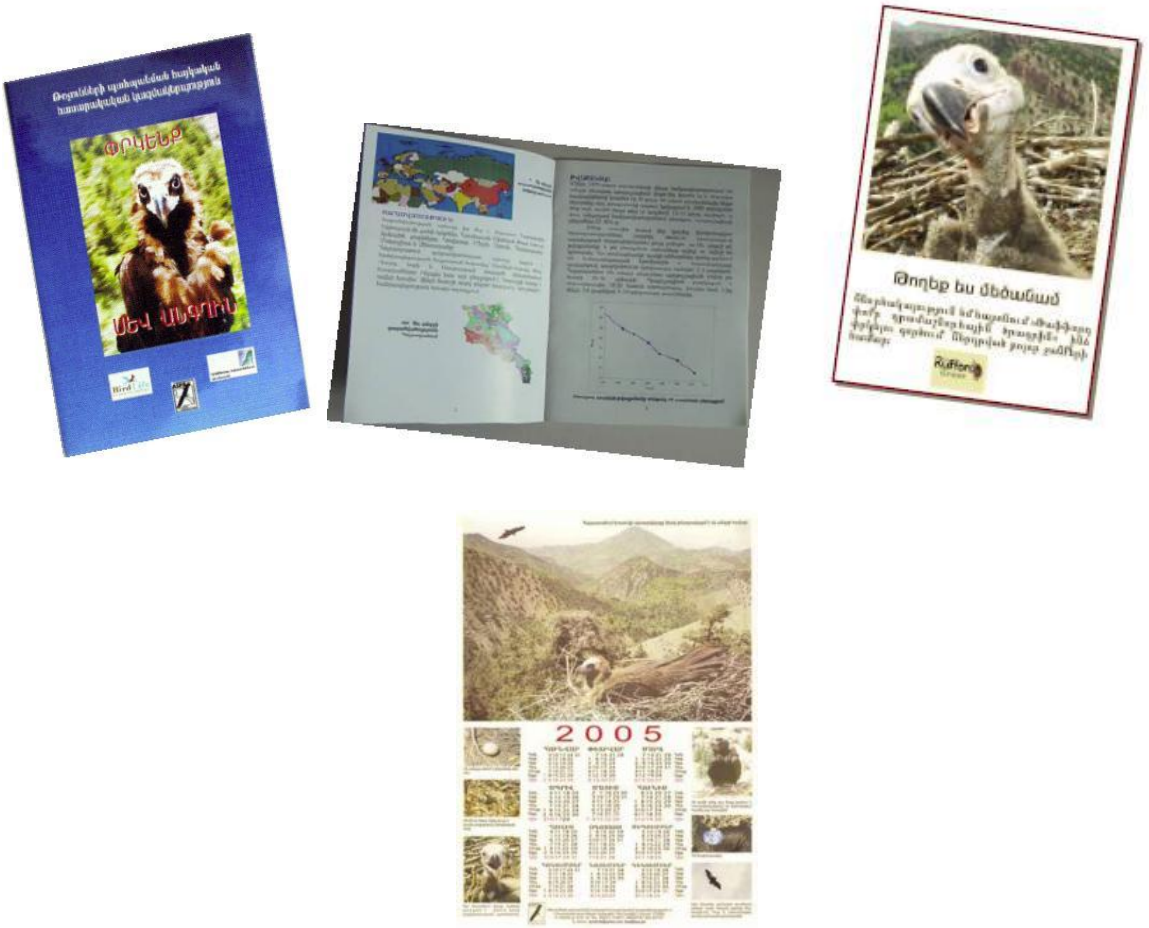
Our training sessions were scheduled to match the beginning stages of the species' breeding period. Training was delivered to the protected area personnel and local administrative staffs who were introduced to the Armenian conservation priorities of the Black Vulture, the threats affecting the species population and ecology of the bird. A public education program was composed of a PowerPoint presentation on the Black Vulture featuring the above mentioned aspects followed by an interactive workshop which helped to measure the knowledge of local community about the species.

Education efforts targeting local shepherds were held in summertime when the livestock is herded into mountain meadows. Because no documentary was available on the Black Vulture specifically, documentary films featuring other vulture species and wild birds of prey were shown to shepherds to explain their benefit to nature. Although, it was apparent that shepherds were deeply conversant about vultures and their behaviour and possessed the most practical and hands-on information about these birds. Similar practical meetings were held with hunters during the Fall, i. e. during an official hunting season which lasts through the end of winter. Meetings were held both at the hunting clubs and in the field.

However, education efforts were most extensive with university students and schoolchildren aged 10-15 years old that live in the close proximity to the protected area. These local schoolchildren are engaged in destruction of nests (robbing or breaking eggs, taking nestlings away for the purpose of pet maintenance which results in the death of a nestling). Extensive training in schools was delivered by way of two specific initiatives: (a) lectures and PowerPoint presentations, (b) school contests for the best thematic performance (sketch drawings, stories, songs, essays, staged presentations, etc.) related to black vulture conservation, and (c) and use tagging data to explain the purpose of the conservation work and the importance of conserving this species on a global scale.

Overall, general public awareness about black vulture in Armenia was raised by running a second printing and posting of the outreach brochure entitled "Saving the Black Vulture" and the species Calendar 2005 which were produced in the national language.

Figure 10. Materials produced include brochure "Saving the Black Vulture" and the species Calendar 2005 on the Black Vulture.



Parallel to general education programs, we held public surveys among local villagers, predominantly shepherds, hunters and collectors of wild plants. The primary objective of the public survey was to obtain their knowledge of vultures, their distribution range, abundance, behavioural traits and how they are treated. On our trip to areas with grazing livestock and hunting sites for teaching and promotional purposes we have faced an interesting situation. The results of this survey revealed that: (a) shepherds were best informed about the wildlife condition; (b) less knowledgeable were hunters of various backgrounds and (d) local villagers engaged in agricultural practice possessing the least information.

Analyzing the data obtained from shepherds and hunters and comparing it with the situation examined firsthand during the period of observation of nests, we assume that one of the major factors affecting the species population numbers is shortage of food. This has a number of reasons behind:

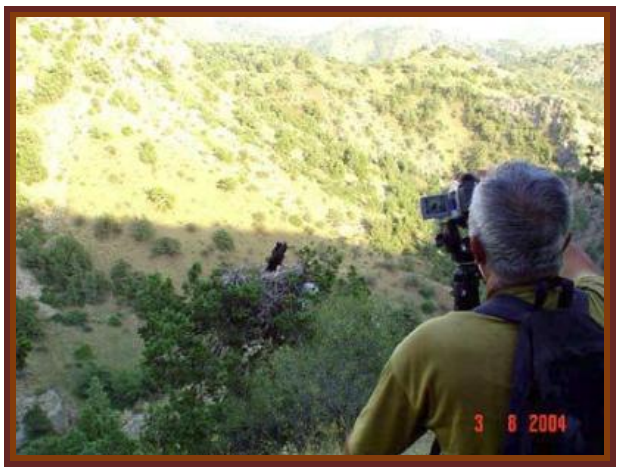
Firstly, the period of time during which the wild plants and grasses are collected by local villagers overlaps with the period of incubation and hatching (April – May), and major breeding habitats (open juniper woodlands) of Black Vulture. Groups of people collecting wild plants are composed of three to five individuals where children are common. Because vulture nests appear to be large constructions and are seen at a distance, a disturbed bird attracts more attention, especially those of children who ascend to a fairly accessible height (nest platform). Inquisitively, they break their eggs open to look inside, or if a nestling is found in the nest they would take it home for the purpose of pet maintenance which results in the death of a nestling.

Black vulture which was kept in household as pet and died

Second, with the collapse of the soviet agricultural system total livestock populations fell by 60-70%, depending on the region.

Third, when the livestock is lost its carcass is almost completely fed to the many livestock guarding dogs, irrespective of what caused the death of an animal. In spring until May – early June, the livestock is permanently grazed in lowland pastures without any dislodgement and the carcasses of fallen animals are given away right at the camps. In the June / July period, the livestock is being slowly herded higher up the mountains, and the fallen animals are left behind on the road as the camp is moved to another place. This order is reversed on the way back. Besides, as maintained by shepherds, even during relocation they attempt to pick up pieces of animal carcasses to feed their dogs and ignore only intestinal organs and skins. This obviously explains the lack of vulture food.

And last but not least, in fall time when the hunting season is open for quail, most hunters are found in hayfields and alpine pastures, and illegal shooting of foxes and hares flushed from their hides are frequent. Because the fox skin has little value at that time of year, their rejected bodies are picked up by scavengers, namely Black Vulture which often becomes another target for hunters.



Recording of video materials

Video recording occurred throughout the term of the project and features all aspects of the work on the Black Vulture Conservation project in Armenia. The material is available as draft and needs to be assembled and edited.

Figure 11. Shots from a vide film featuring the feeding of vultures

The video material produced over a course of the project is meant to be incorporated into a documentary film featuring the feeding techniques of Armenian wildlife (mammals, reptiles, birds and insects). The aim of the video material is to highlight how vulnerable is the Black Vulture and other carrion feeders which unlike other birds of prey using what is called an "active" hunting, are believed to be the weakest link in the whole of food chain, due to their scavenging habits and the feeding upon animal carcases and other waste. When complete, the film will be made available to biology teachers in schools of the region for use in educational programs. Also, another short film is planned to be prepared and disposed for public awareness programs on national TV channels.

RESULTS

Upon completion of the Black Vulture project, the results were as follows:

1) (i) Population size of black vulture in Armenia is 7-8 pairs.

   (ii) Breeding of Black Vulture in Armenia is confined to the territory of Khosrov Preserve, however foraging occurs both within and outside of the protected area.

2) Major limiting factors include: (a) human disturbance/persecution, (b) human destruction of nests; (c) shortage of food; (d) illegal shooting: direct (immediate destruction of birds) and indirect (destruction of main objects hunted by birds, e.g. wild ibex, wild boar, etc.); (e) predation of eggs

3) Constant monitoring which involved permanent guarding of nests and direct protection of breeding pairs allowed to conserve all nestlings of Black Vulture hatched in that year. This direct conservation measure also allowed to eliminate disturbance / destruction of nest sites during incubation and nestling development and removed predation as one of the limiting factors.

4) Supplemented feeding to vultures organized on the territory of the Preserve inside and outside of the breeding season ensured protection of juvenile birds that fledged successfully which is 100% of hatched eggs.

5) A monitoring itinerary is designed for preserve personnel which encompasses all breeding grounds of Black Vulture.

6) Use of chemical / odorous repellents (shot bullets, rags smeared in technical oil, etc.) had a positive impact and excluded any predation only at the nest. Food intended for vultures was taken by bears irrespective of the repellents used.

RECOMMENDATIONS

1) With fundamental changes in traditional methods of animal husbandry (e.g. above ground disposal of livestock carcasses and offal is no longer practiced) and huge reductions in livestock numbers with the demise of the Soviet infrastructure, there is substantially less food for vultures. Domestic stock which is slaughtered for human consumption and those that do die of natural causes are seldom left out in the field. This fact indicates a compelling need to provide animal carcasses as an artificial food source for vultures on a year-round basis to ensure viable population of Black Vulture in Armenia. By establishing a vulture feeding station, not only is it possible to attract vultures, but also help by providing food for other scavenging raptors.

2) Raise public awareness and disseminate knowledge and education information about the Black vulture status in areas where it bred historically, in south and northeast of the country.

3) Provide information about the Black Vulture status in Armenia and its economic importance to hunters receiving a licence in all hunting clubs.

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This report is a result of a project which was undertaken based solely on the immediate need to rescue what is left of the Black Vulture population in Armenia. Human impact manifested in various forms appeared to be the key reason causing reduction in Black Vulture population in the country. However, shortage of food is paramount among many factors involved in the decline of this species and required human intervention.

This project aimed at maintaining the viability of the existing Black Vulture population in Armenia and ensuring 100% of the breeding success which was accomplished.