

# Action Plan for the Recovery and Conservation of Vultures on the Balkan Peninsula: activities and projects during 2002 and 2003

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## ABSTRACT

In 2002, an "Action Plan for the Recovery and Conservation of Vultures on the Balkan Peninsula and Adjacent Countries" was drafted as a joint effort of national and international NGOs. Based on the Action Plan, Memoranda of Understanding have been negotiated and concluded between Albania, Macedonia and Bulgaria. The Action Plan is promoted by the Frankfurt Zoological Society (FZS), the Black Vulture Conservation Foundation (BVCF) and the Foundation for the Conservation of the Bearded Vulture (FCBV), with the support of LPO/FIR, BirdLife International, the Royal Society for the Protection of Birds (RSPB), IUCN-Europe, the Eastern Griffon Vulture Working Group (EGVWG), the Bulgarian Environmental Partnership Foundation (BEPF) and NGOs from the range countries. The Action Plan provides the most recent update on the status of the four European vulture species, describes the threats to the individual populations and makes conclusions about the necessity for immediate conservation actions. Additionally it identifies the need for further research (status, threats, conservation situation), conservation actions (increasing natural food availability, establishment of feeding places, habitat conservation, activities against the use of poison, education, restocking and reintroduction) and co-ordination/co-operation events (workshops, seminars, public participation, Balkan Vulture web site) for the four vulture species in Albania, Macedonia, Bulgaria, Greece, Serbia, Montenegro and the Ukraine. It is to be extended to include additional countries. Projects are mainly financed by the FZS and the first activities were implemented in 2002 and 2003, with the involvement of 28

different local NGOs and governmental institutions. First results have been encouraging, and this joint effort could lead to the recovery of vultures and their habitats in south-eastern Europe in the medium- and long-term.

## INTRODUCTION

In the last 20 years, a series of vulture conservation projects has been carried out successfully in south-western and central Europe. These have contributed to the recovery of the populations of the four European vulture species in this part of their former distribution area. The reintroduction of the Griffon Vulture *Gyps fulvus* in the Grands Causses in France was one of the first attempts to reintroduce a vulture species to Europe (Terrasse 1994). This project, in which releases started in 1981, has resulted in a colony of 110 breeding pairs in 2003, with 87 fledglings in that year (M. Terrasse, unpubl. data). Subsequent to 1981, further Griffon Vulture reintroduction projects have been undertaken (Terrasse 1996).

Simultaneously, the reintroduction of the Bearded Vulture *Gypaetus barbatus* in the Alps commenced in 1986 (Frey & Bijleveld van Lexmond 1994). By 2003, 121 captive-hatched nestlings had been released at four sites, resulting in seven breeding pairs in 2003, plus 15 young hatched and fledged in the wild (H. Frey unpubl. data).

Somewhat earlier, the restocking of the nearly extinct Majorcan population of the Black Vulture *Aegypius monachus* started in 1984 (Tewes 1994). This was necessitated by the small population size (less than 20 birds) and irregular breeding of these. The project resulted in the successful recovery of the species in this area and the population increased to  $91 \pm 15$  birds and ten breeding pairs in 2002 (Tewes 2003).

Based on these earlier experiences, the first release of Black Vultures in France took place in the Grands Causses in 1992 (Sánchez 1996; Terrasse & Bagnolini 1998; Tewes *et al.* 1998). After 11 years of annual releases, a colony of 50 birds and 12 breeding pairs has been established (M. Terrasse unpubl. data).

In mainland Spain, until today the most important stronghold of Europe's vultures, populations recovered without the need for restocking; the result of new species conservation and habitat protection laws (Sánchez 1998; Sánchez in press). These formed the basis of further local conservation management measures. Here, the Black Vulture population, estimated at 190 pairs in 1973 (Hiraldo 1974; Garzón 1974), increased to 1334 pairs in 2002 (Sánchez in press). The Griffon Vulture population showed a similar impressive growth from an estimated 3,240 pairs in 1979 (SEO 1981) to 17,089 pairs in 1999 (SEO/BirdLife 2000). The Spanish population of the Egyptian Vulture *Neophron percnopterus*, which numbered 1,074 breeding pairs in 1988 (Perea *et al.* 1990), increased to an estimated 1,320-1,475 pairs in 2000 (del Moral 2002). In 1979, in Spain, 19 Bearded Vulture pairs remained (Heredia 1991), of which 17 were in the Pyrenees and two in the Sierra de Cazorla. The population increased to 93 occupied territories in the Pyrenees, 84 of them with active breeding pairs in 2003 (Rafael Heredia pers. comm.) while the species became extinct in Cazorla in the 1980s.

Parallel to the revival of vultures in the western Mediterranean area, the once equally important vulture populations in the eastern Mediterranean declined tremendously, becoming extinct in many countries (Tewes 1996a).

In 2002, the above-mentioned organizations started the ambitious "Action Plan for the Recovery and Conservation of Vultures on Balkan Peninsula and Adjacent Regions" based on the experience of the successful western and central European vulture conservation projects (Tewes *et al.* 2002 a,b). Particularly for the Black Vulture, the Plan follows the strategy of the BVCF to recover the former Mediterranean distribution range from the thriving western population to the east (Tewes 1998). Conservation actions at European level have also been proposed in the "Action Plan for the Cinereous Vulture" of BirdLife (Heredia 1996) and its revision (Gallo Orsi 2001), as well as in the "European Union Species Action Plan for the Lammergeier (*Gypaetus barbatus*)" (Heredia & Heredia 2001) which are being taken into account during the design of the Balkan Vulture Action Plan.

## METHODS

The "Action Plan for the Recovery and Conservation of Vultures on the Balkan Peninsula and adjacent regions", in short Balkan Vulture Action Plan, is characterised by its supranational approach. The Plan strives for the conservation of the four vulture species but also uses vultures as flagship species for the conservation of their ecosystems. In this sense it also focuses on the conservation of other threatened carcass feeders, such as the Imperial Eagle which has a significant part of its population in these countries. The Plan seeks to improve the situation of the vultures through field projects. The Plan is a dynamic document and is continually revised, depending on the results of field work.

The strategy is based on local and international co-operation, in which international organizations provide expertise and funding, while local organizations, GOs and NGOs, carry out the projects. The local organizations receive support to increase their professional skills and capacity. This co-operation is carried out within the framework of Memoranda of Understanding (MoU) between the governmental and non-governmental vulture conservationists, which provides a basis for long-term co-operation. Baseline funding is being provided by the FZS, while co-ordination of the projects is handled by the BVCF.

Initially, the coverage of the Action Plan area comprised a limited number of Balkan countries. Once the system is operational, it is however anticipated that it will be extended to the surrounding countries, eventually covering the whole Balkan Peninsula, even including Ukraine and Turkey. The strategy was implemented in Albania, Macedonia and Bulgaria in 2002/2003, while in Serbia an early involvement is being prepared. Greece became integrated with regard to information exchange and trans-border activities with other Action Plan countries. Preferably non-EU countries will gradually be added, as these have less funding possibilities for nature conservation.

Local organizations contribute by undertaking projects as described by the Action Plan's logical framework objectives (Tewes *et al.* 2002a). Based on the

spirit of co-operation, detailed planning and implementation is carried out as a joint effort. The individual local projects can be seen as pieces, which create, through the framework of the Action Plan, a comprehensive picture of vulture conservation in an entire geographical region.

### **Components of the Action Plan**

The components of this Action Plan, reflected by its specific objectives, are:

1. Gathering facts on the status, distribution, threats and conservation needs of the vulture species, as well as on possibilities of co-operation with local organizations (research, literature survey, Fact Finding Mission, review of national action plans and their adaptation to the framework, revision of the draft Action Plan with the new partners, field surveys, preparation and signing of MoUs with NGOs and Governments).
2. Campaign against poisoning (development of a Balkan "Antidote" Programme, and of linked country programmes, based on earlier successful experiences).
3. Availability of natural food (assessment of the natural food availability, support of traditional livestock raising, starting transhumance and sheep farming in the mountains, reintroduction and conservation of the Balkan Chamois).
4. Feeding programme (review of legislation on dead livestock, legalize standard models for feeding places, identify where artificial food supply is needed, identify suitable sites for feeding, organise a network of feeding places and provide infrastructure, assure source of carcasses, implement refuse dumps).
5. Restocking and reintroductions (feasibility studies: identify sites, where releases will be convenient, ensure that IUCN, BVCF, and FCBV criteria are met, design a Balkan Vulture Reintroduction Programme, identify sources of vultures for release).
6. Monitoring programme (census of the four species in the target countries, monitoring programme for released vultures, monitoring database).
7. Habitat conservation (network of protected areas, management plans for public and private properties which take into account the vultures' requirements).
8. Public awareness (preparation of specific and general resource materials, education campaigns).
9. Public participation (involve stakeholders in the programme)
10. Socio-economic development (ecotourism, agrotourism, commercial strategies and quality signs for meat from transhumance animals, tax benefits for owners of land where vultures breed, etc.)
11. Project administration (identification of project participants, distribution of tasks and responsibilities, Species Action Plans)
12. Fundraising (find sponsors and public economic support to guarantee funding in the long run).



## Implementation method

As a first step, to find out whether the idea of the Balkan Vulture Action Plan was viable, a "Fact Finding Mission" (FFM) of ten days was undertaken by five representatives of the FZS, BVCF, FCBV, LPO and BirdLife International in March 2002. They travelled through Albania, Macedonia and Bulgaria with the aim of proposing the Action Plan to local administrations and nature conservation organizations, collecting data on the status, threats and conservation needs of vultures in each country, and determining priority actions.

On the basis of the results obtained, the draft Action Plan was compiled, a preliminary strategy was designed, and the first local projects were initiated (Tewes *et al.* 2002a).

As a second step, a workshop was organized in October 2002. It served as a first co-ordination meeting of all participants. The draft action plan was revised and the various subjects were discussed in working groups. The results were incorporated into the Action Plan and integrated into the strategy. As a consequence, new projects were approved for 2003.

In cases where there was not enough basic information on the status and distribution of vultures, field studies were given priority in 2002 and 2003.

Methods to mitigate the threat of poison were described in the "Balkan Antidote Programme" (Sánchez 2003). This was built on the experience made by the "Antidote Programme" in Spain and on the results from the LIFE-funded Project of the BVCF (Sánchez & Roig 2001), adapted to the conditions in the different Balkan countries. Here national co-operation programmes were drafted. These programmes comprised the raising of public awareness amongst shepherds, hunters and the general public, improvement of the legal system in each country, training and instruction of public services, improvement in detection of poisoning cases, and co-ordination between institutions, thus building a common alliance against poisoning.

Feeding places can be used as a suitable management technique to provide artificial sources of food for vultures during periods when conditions are unfavourable. Artificial feeding reduces the impact of poisoned carcasses, food shortage, and prolonged bad weather conditions. Feeding places also serve as an important place to monitor vultures. Parallel to the maintenance of feeding sites, threats to vultures need to be eliminated. Unfortunately this requires many years of work, culminating in the situation where the birds can maintain their population numbers at a viable level without additional support. Feeding sites should be supplied regularly with food; for instance, with one carcass delivered per week in times of food shortages. In times of increased poisoning threats, food supply should also be intensified.

For the implementation of restocking or reintroduction initiatives, the IUCN guidelines for reintroductions (IUCN 1998) are taken into account. More specific guidelines for vulture reintroductions have been established by the BVCF and FCBV. They recommend the use of individuals available from captive breeding programmes and recovery centres; therefore not wild birds. This is the policy even when the natural population could easily support a taking of nestlings, which could be misunderstood, misused and, under

uncontrolled circumstances, harm the population. Another guideline sets out the individual marking of all released birds by appropriate methods without the risk of causing accidents or health problems. The release methods of the Balkan Vulture Action Plan are those developed and applied successfully in earlier vulture recovery projects (Tewes 1996b, Tewes *et al.* 1998).

## RESULTS

During the Fact Finding Mission (FFM), governmental and non-governmental organizations in Albania, Macedonia and Bulgaria expressed an enormous interest in participating in the Action Plan. Greek organizations, which met the FFM in Macedonia, also agreed on trans-boundary co-operation. Subsequently, Memoranda of Understanding have been prepared between the NGO consortium – the before-mentioned international organizations - and the national organizations of the respective countries. These have subsequently been signed in Albania, where the Ministry of Agriculture, Ministry of Environment and Albanian Society for the Protection of Birds and Mammals (ASBPM) participated. Likewise, a MoU was signed in Macedonia, involving the Ministry of Environment and Physical Planning, the Ministry of Agriculture, Forestry and Water Economy, the Natural History Museum, the Wild Fauna and Flora Fund (FWFF-Macedonia), BIOECO, and the Macedonia Ecological Society (MES). In Bulgaria, the MoU is being prepared with the Ministry of Environment and Waters, the Ministry of Agriculture and Forestry, the Bulgarian Society for the Protection of Birds (BSPB), Green Balkans Federation of NGOs, the Wild Fauna and Flora Fund (FWFF-Bulgaria), the Birds of Prey Protection Society (BPPS), Le Balkan, Balkani Wildlife Society, Sofia Zoo and the Bulgarian Environmental Partnership Foundation.

A web page ([www.balkanvultures.net](http://www.balkanvultures.net)) was launched for use by all of the organizations willing to participate and contribute to the Action Plan.

Following the visits by the Fact Finding Mission, various projects commenced in 2002; 11 research and conservation projects were started in Albania, Macedonia and Bulgaria with the participation of nine NGOs. In 2003 several new projects were started in the same countries and in total 17 projects were carried out.

## VULTURE STATUS AND DISTRIBUTION

As a result of the FFM, vulture surveys, monitoring projects and information from experts, a preliminary overview on the status and distribution of vultures in the Balkans is now available (Table 1).

### Albania

In 2002 the status of vultures in Albania was unclear. The expeditions of the Albanian organization ASBPM and Ben Hallmann in 2002 and 2003 confirmed the presence of Egyptian Vultures in the south of the country (Hallmann 2003). One adult was observed on Mount Kurvelesh entering its nest hole and a nestling was observed. At eight other sites the species was also observed, of which only two were in the central part of the country. All observations, except one or two, point to breeding pairs. Surveys will continue. Until now, the other

three vulture species could not be located but there are recent indications of the presence of Griffon Vultures. The existence of Bearded Vultures is still possible as suitable habitat is present, but a more intensive survey is needed (Hallmann 2003). For the Black Vulture only historical data are available (Lamani 1998) and at present there are no indications that the species still persists, although Lamani (1998) suspected that it might still survive in the remote northern or eastern mountainous areas.

## **Macedonia**

In Macedonia, all four vultures were once abundant and widely distributed breeding species, with the Egyptian Vulture being the most common of the four (BIOECO 2003). The vulture decline started after World War II and led to very reduced numbers of Griffon and Egyptian Vultures, while the Black and Bearded Vulture possibly disappeared as breeding species in the 1980s (Veleviski 2003a). Of the two latter species, one individual survived in the Tikvesh area (Grubac 1998a, 1991a), where an active Bearded Vulture breeding pair persisted until the female was poisoned in March 1985. Solitary birds of both species were still observed in 2003, with the Black Vulture even coming to feeding sites (Stoynov *et al.* 2004). Grubac (1991b) studied the Egyptian Vulture population during the 1980s and estimated its status at 60-70 pairs, while he later estimated it at 100 pairs (Grubac 2000). In 2003, Egyptian Vultures were monitored at 48 breeding localities, about half of the 80-120 known territories of the 1980s (Grubac 2004). Only 26 pairs were found to be present, while 22 pairs (45%) had disappeared (Grubac 2004). According to the survey of 2003 and observations from former years, the present population is now estimated at 35-40 breeding pairs. The breeding success was also low, being 0.6 juveniles/pair and 1.1 juveniles/successful pair (Grubac 2004). Forty-seven egg-laying Griffon Vulture pairs were counted at the colonies in central and south-eastern Macedonia in 2003 (Stoynov *et al.* 2004). In north-western Macedonia (e.g. Shar mountains, Radika Gorge) it is at present unknown if further breeding pairs exist, although summering groups were recorded during the 1980s and 1990s (B. Grubac pers. comm.). Surveys are at present not possible because of the military presence in this area. The maximum number of vultures observed at a feeding place in Vitachevo was 42 Griffon Vultures and five Egyptian Vultures, while simultaneous feeding at two places revealed a minimum population of 54 Griffon Vultures (Stoynov *et al.* 2004).

## **Bulgaria**

Historically, all four vulture species were widely distributed in Bulgaria. The Bearded Vulture, once present at all major massifs, became extinct during the 1970s, and today only one bird is observed irregularly (Stoynov 2001b). During the last decade, there have been mainly observations of juvenile and immature birds in the eastern Rhodopes, usually during spring (H. Hristov & M. Kurtev pers. comm.), as well as in the eastern Balkan Mountains and Mount Pirin (Marin *et al.* 2002). The Black Vulture became extinct as a breeding species during the late 1960s, but a natural re-colonisation from the colonies in Greece took place (Iankov 1998; Iankov *et al.* 1994). One Black Vulture pair nested in 1993 (successfully) and 1994 (unsuccessfully), close to Studen

Kladenez in the eastern Rhodopes (Marin *et al.* 1998; S. Marin pers. comm.). In 2003, a new successful breeding pair was recorded in the same region (H. Hristov pers. comm.), where a group of seven Black Vultures is resident. The Griffon Vulture colonies in the eastern Rhodopes were reduced to 16-20 birds in 1978 but had increased to more than 100 in 2000. In 1998, a new colony was found close to Studen Kladenetz, a distance of 18km from the first one near Madjarovo (Stoynov 2001a). The numbers of Griffon Vultures is slowly increasing. In 2002 31 Griffon Vulture pairs bred and 20 nestlings fledged (BSPB/BirdLife Bulgaria, 2002), increasing to 33 Griffon Vulture pairs, 29 breeding attempts and 21 fledged young during 2003. In total, a minimum of 118 individuals is now present (H. Hristov, BSPB/BirdLife Bulgaria, *in litt.* to BSBCP, 2004). In 2003, the Egyptian Vulture population was estimated at 65-80 breeding pairs. This species is suffering from a slow but continuous decrease, having lost, in the past seven years, 14 breeding territories, and, since 1980, 45 breeding pairs have disappeared (M. Kurtev, BSPB/BirdLife Bulgaria, *in litt.* to BVCF, 2004).

## Serbia

In Serbia, all four vulture species were widely distributed at the beginning of the 20<sup>th</sup> century (Marinkovic & Orlandic 1994). The Bearded and Black Vulture became extinct after World War II and during the following decades birds have only been sporadically observed (Grubac 1998b). Maps detailing Bearded Vulture observations for the past few decades can be found in Grubac (2002). Today there are three Griffon Vulture breeding colonies, with a total of 65-75 breeding pairs, producing 56 young in 2003. In the south of the country, 2-3 Egyptian Vulture breeding pairs are still present (Grubac & Pusovic 2003).

## Greece

In the past, all four vulture species were abundant in Greece (Handrinos 1985). The Bearded Vulture recently became extinct on the mainland, although observations of single birds have been made in the Pindos and Pinovo Mountains. On Crete, the population dropped from 10-12 pairs in the 1980s (Geroudet 1981; Vagliano 1981) to 9-10 pairs in 1995 and to four pairs in 2002 (Xirouchakis 2002). The Black Vulture's last refuge on the Balkan Peninsula is in the Dadia Forest Reserve (Evros, Thrace) where, in 1993, a colony of about 15 breeding pairs remained (Spyropoulou 1998; Hallmann 1998a). In 2003, the colony was stable, consisting of 19 breeding pairs (T. Skartsi *et al.* 2003.). A small colony of two pairs and seven birds on Mount Olympos became extinct only a few years after having been discovered in 1983 (Hallmann 1998b). The Hellenic Ornithological Society (HOS) and the Eastern Griffon Vulture Working Group (EGVWG) recently showed that the Griffon Vulture colonies on mainland Greece have declined by 50% in the last 10 years. In 2001 the population was estimated at 21-34 breeding pairs in nine colonies. A stable population is present on Crete (34 colonies) and the Cyclades (two colonies), where 154-158 pairs were found in 2002 (Bourdakis 2003). The population figures provided by the Hellenic Vulture Working Group for 2003 are 98-144 pairs (22 colonies) for Crete and the Cyclades and a total of 115-178 pairs for Greece (Hallmann 2004; B. Hallmann pers. comm.). During the last ten years,

13-15 colonies on the mainland (60%) have been deserted and these birds are now absent on the Peloponnese, Macedonia and Ionian Islands. This dramatic decline will continue unless immediate action takes place (Bourdakis 2003). Hallmann (1996) estimated the population of Egyptian Vultures in Greece to be less than 70 pairs. During the 1994-1996 survey he found that many of the 1980 nesting sites were deserted, indicating a rapid decline of the species in Greece.

### Ukraine (Crimea)

Griffon, Black and Egyptian Vultures were historically present in the Crimea, with the populations decreasing during the past century. The Egyptian Vulture became extinct some time during the 1930s-1950s and there have only been five observations of the species during the past 20 years (Osipova *et al.* 2003). Three to four breeding pairs of Black Vultures and a total of 10-12 birds were found during a survey in 2002 (Osipova *et al.* 2002). In the same survey 12 Griffon Vulture breeding pairs (32-25 individuals) were found (Osipova *et al.* 2002). In 2003, three Black Vulture pairs were found breeding in the Crimean Nature Reserve (B. Appak pers. comm.) and two additional pairs were nesting outside the Reserve, although their breeding success was not determined. Six additional Black Vulture nest sites were found, while a total of 19 birds were observed at one locality (Osipova *et al.* 2003). During 2003, 12-14 pairs of Griffon Vultures were recorded and up to 63 birds were counted simultaneously (Osipova *et al.* 2003).

**Table 1. Number of breeding pairs of the four European vulture species in some Balkan countries and adjacent regions**

Country	Bearded V.	Black V.	Griffon V.	Egyptian V.
Albania	0?	0	0?	(1-7?)*
Macedonia	0-1?	0-1?	47*	35-40
Bulgaria	0	1	29	65-80
Serbia	0	0	65-75	2-3
Greece mainland	0	19	17-34	<70*
Greece Crete + Cyclades	2-4	0	98-144	0
Ukraine (Crimea)	0	3-5*	12-14*	0

\* Results from a preliminary survey.

**Table 2. The level of knowledge about vultures in the various Balkan countries, as provided by the participants at workshops convened in Sofia, October 2002 (0 = Unknown, 1= little known, 2 = well known).**

	Knowledge	Albania	Macedonia	Bulgaria	Serbia	Greece	Crete
Griffon	distribution	0	1-2	2	2	2	2
Vulture	population trend	0	1	2	2	2	2
Black	distribution	0	1	2	2	2	-
Vulture	population trend	0	1	2	2	2	-
Egyptian	distribution	1	2	1-2	1-2	1	-
Vulture	population trend	0	1	2	1	2	-
Bearded	distribution	1	1	2	2	2	2
Vulture	population trend	0	1	2	2	1	2

## THREATS

### Albania

According to the FFM, direct persecution (shooting) (see Table 3) is the main reason for the scarce presence of birds of prey in general in this poor country, where the use of poison is virtually unknown. The surveys of Hallmann (2003) and ASPBM, however, showed that the Golden Eagle *Aquila chrysaetos* population is quite healthy, which makes it unlikely that shooting alone caused the disappearance of the large vulture species. Food for vultures from livestock carcasses appears nowadays to be scarce and less accessible in the north and central part of the country, where small numbers of livestock are kept close to buildings and under intensive management. In the south, larger herds provide carcasses for the vultures. In the alpine areas, the Balkan Chamois still occurs, which is a potential food source for the Bearded Vulture. Habitat appears so far to be untouched in the remote alpine areas while, in lower areas, reclamation, urbanization and overgrazing have led to extensive habitat destruction and erosion. Potential nesting habitats are apparently available for all four vulture species. Beside birds of prey, many other bird species are surprisingly scarce and this should be taken into account when studying the threats to vultures in this country (Hallmann 2003).

**Table 3. Table of threats in Albania. Result of the workshop in Sofia, October 2002, updated in 2004 by Action Plan participants (U = Unknown, N= Not existing, L = Low, M =Medium, H = High).**

<i>Threat</i>	<i>Bearded V.</i>	<i>Black V.</i>	<i>Griffon V.</i>	<i>Egyptian V.</i>
1 Poisoning	U	U	U	U
2 Lead poisoning	U	U	U	U
3 Food shortage	U	U	U	U
4 Closing of offal dumps/slaughter houses	N	U	N	U
5 Changes in veterinary practice	N	N	N	U
6 Changes in agricultural practices	N	U (M)	H	N
7 Food competition	N	N	N	N
8 Reduction in livestock numbers	L	M	U	U
9 Reduced available of natural food sources	U	U	U	U
10 Illegal hunting	H	H	H	H
11 Disturbance by new roads	N	N	N	N
12 Disturbance by open pit mining/ geological	N	N	N	U
13 Disturbance at breeding sites	U	U	U	M-H
14 Disturbance by military conflict and training	U	M	H	U
15 Breeding habitat loss or changes	U	U	M	N
16 Forest fires	N	U	N	N
17 Electrocutation	N	U	U	U-L
18 Wind farm construction	N	N	N	N
19 Poaching eggs and nestlings	N	N	U	U
20 New diseases	U	U	U	U
21 Critical low population number	H	U	H	U
22 Lack of public awareness	H	H	H	H
23 Lack of human recourses for conservation	H	H	H	H

## Macedonia

The direct persecution (see Table 4) of vultures was one important reason suggested to be responsible for their decline, as documented in the official statistics of bounties (given when hunters provided the legs of birds of prey). For example in 1955 alone, 452 “carcass-eating eagles” (eagles and vultures were not separated) were killed (Velevski 2003a). Subsequent to this period, direct persecution has continued, although to a lesser degree, especially after the bounties were withdrawn. Nowadays, it is considered to be of low importance, although in the post-war period unregistered weapons were left in the Kosovo area, which could pose a potentially high threat to Griffon Vultures in that region. Generally, hunters are nowadays more aware about nature conservation and the plight of vultures (Petkovski *et al.* 2003). Nevertheless, there are indications that 5-6 Egyptian Vultures were killed in the past four years (Grubac 2004). Poisoning is the most important factor responsible for the vulture decline in Macedonia (Velevski 2003a). Poisoned baits are used to target wolves and other carnivores. Recorded cases of poisoning are one female Bearded Vulture (Grubac 1991b), 150 Griffon Vultures and 63-74 Egyptian Vultures, 60-70 of them in one poisoning incident at the Negotino slaughter dump in 1992 (Velevski 2003a). These known cases obviously reflect only a proportion of the actual number of poisoned vultures. During the most recent incident, close to Sveti Nicole in central Macedonia, in February 2003, 12 Griffon Vultures and two Imperial Eagles *Aquila heliaca* were found dead (Stoynov *et al.* 2004). During 2000-2003, four Egyptian Vultures were found poisoned (Grubac 2004). There have been no recorded powerline electrocution or collision incidents. Because of the construction of new hydro-power plants close to vulture colonies, this may be a future threat (Velevski 2003a). Another new threat is the construction of an extensive low-voltage network of powerlines in many regions, with the design comprising a configuration which could result in vulture electrocutions (Ben Hallmann pers. comm.).

Poaching of eggs and nestlings: There are incidents of egg-collectors removing eggs from the nests of Black (3), Griffon (>4, large numbers of individuals) and Egyptian Vultures (>6), especially at the Demir Kapia and Veles breeding colonies (Velevski 2003a). This is no longer considered to be an important threat.

Habitat loss is caused by road and dam construction, afforestation and forest fires. Road constructions also open up the area, potentially creating additional disturbances. Afforestation reduces grazing land used for foraging and this is a potential threat to Griffon Vultures. Forest fires and afforestation potentially affect Black Vultures, as they destroy their tree nesting sites (Velevski 2003a). There are plans for the construction of windfarms, including in the Ovce Pole plains, used by vultures and Imperial Eagles (M. Velevski pers. comm., B. Hallmann pers. comm.).

Disturbance, as mentioned, could occur because of access created by newly constructed roads (Velevski 2003a). Military exercises inadvertently disturbed the Griffon Vulture colony of Demir Kapija (Velevski 2003a). Alpine climbing, locally done at some colony sites, does not seem to have a negative

effect. Low military flights take place in Demir Kapija and Matka Gorge. Quarrying is not much of a problem at present but may potentially become a threat at Demir Kapija. Hunting does not have a disturbing influence. Low flying by military airplanes may cause disturbance in the north-west of the country.

A reduction in food availability is one of the main reasons for the decline of vultures (Velevski 2003b). Wild ungulates decreased due to habitat degradation and human pressure. The Red Deer *Cervus elaphus*, formerly widespread, became extinct. First reintroductions started in hunting reserves and National Parks in the 1980s, with a population today of about 300 individuals (Velevski 2003b). The Roe Deer *Capreolus capreolus* is the most widespread ungulate, found in the mountainous forests, and estimated to number about 5,000 individuals. The Chamois *Rupicapra rupicapra* numbers at least 2,000 individuals and represents the most important food source for vultures in terms of wild ungulates. 2,000-3,000 Wild Boar *Sus scrofa* are estimated to exist in Macedonia. For Hares *Lepus europaeus* only numbers of shot animals are known, with a decrease from 17,000 in 1995/96 to 6,605 in 1999 being recorded (the reasons for this are unknown) (Velevski 2003b). Traditional farming has gradually been abandoned. Present livestock numbers consist of 265,267 cattle (2002), including 605 buffaloes, while in 1949 there were 408,877 cattle and in 1957 20,247 buffalo. 33% of the cattle belong to the local native race, used for traditional grazing. There are c. 77,320 horses, mules and donkeys. The number of horses declined from 82,338 in 1949 to 45,656 in 2001 (Velevski 2003b). Goats were forbidden as domestic animals because of their damage to forests but the ban was withdrawn and in 2002 there were 81,553 individuals and the numbers are increasing. Sheep are the most important livestock animal and food source for vultures. Extensive farming and transhumance are still in existence. 1,285,100 sheep were counted in 2002, compared to 2,387,943 in 1947. Most holdings keep small flocks (20-200 sheep). If in the past transhumance moved about 200,000 animals during 20 days in spring and 30-40 days in autumn, but today these movement patterns are much more reduced. A calculation of food availability (Velevski 2003b) shows that the area could sustain larger vulture populations. Therefore, today food shortage is considered to be of low to medium importance for Griffon and Black Vulture (Velevski 2003a), although the low breeding success of Egyptian Vultures in 2003 may well indicate a food shortage (Grubac 2004).

Competition with other animal species for food (i.e. carcasses) is considered to be of low importance (Velevski 2003a).

The critically low population numbers of Bearded and Black Vultures is considered to be a serious threat.

The low breeding potential is considered to be highly important for Bearded and Black Vultures, but less important for Griffon and Egyptian Vultures.



**Table 4. Importance of threats to vultures in Macedonia: L: low, M: medium, H: high, VH: very high, C: critical, P: potential (from Veleviski 2003a)**

<i>Threat</i>	<i>Bearded V.</i>	<i>Black V.</i>	<i>Griffon V.</i>	<i>Egyptian V.</i>
Direct persecution	PC	PC	M	L
Poisoning	PC	PC	VH	VH
Electrocution	L	L	M	M
Poaching eggs and nestlings	L	L-PM	L-M	L
Habitat loss:	L	L	L	L
a. Road construction				
b. Dams	L	L	L-M	L
c. Afforestation	L	L	L-PM	L-PM
d. Forest fires	L	PM	L	L
Lack of suitable breeding sites	L	M	L	L
Disturbance:	L	L	M-H	M
a. Military exercise				
b. Alpine climbing	L	L	L	L
c. Aircraft disturbance	L	L	M (PVH)	L-M
d. Quarries	L	L	L (PVH)	L
e. Hunting and shooting	L	L	L	L
f. War conflicts	L	L	PH	L
Food shortage	L	L	L-M	L-M
Food competition	L	L	L	L
Critical low population number	C	C	M-H	L
Low breeding potential	H	H	M	L

## **Bulgaria**

Use of poisons (see Table 5) against predators and a dramatic reduction in the availability of food were the main reasons given for the decline and disappearance of vultures in Bulgaria (Stoynov 2001a). The use of poison is related to the presence of wolves, and sometimes jackals. Incidents during the past five years are from the Rhodopes (3 Griffon and 2 Egyptian Vultures), Kraishte, Western Bulgaria (1 Egyptian Vulture) and the Western Balkan Fore-mountains (2 Egyptian Vultures) (Stoynov 2004). In the Eastern Balkan Mountains only a few wolves still persist and poisons are not used as pigs, farmed extensively by local people, could fall victim. In the Western Rhodopes a stable wolf population is present, but poison has not been used up to now, although it is a potential future threat (Ivanov 2004). In the Eastern Rhodopes, in addition to the three Griffon Vultures mentioned above, an additional 8-10 individuals, which disappeared from the colony, probably died after consuming poison (H. Hristov pers. comm.). The importance of this threat factor is increasing as financial incentives are given for the killing of wolves and jackals, with the intention of establishing big private hunting reserves. The

proximity of seven Egyptian Vulture pairs to dangerously managed garbage dumping sites (illegal surface poisoning of rats) could potentially result in these birds being poisoned (Kurtev 2004).

Declining food availability may be an issue in the Eastern Balkan mountain range. Hunting stations exist where low numbers of Wild Boar, Red Deer and Roe Deer occur. Traditional livestock keeping by the Turkish minority does not leave much food for the vultures as dead animals are discarded in inaccessible sites, such as gorges or forests. In the Western Rhodopes, livestock farming has declined since the 1950s and 1960s and relatively large numbers of sheep, goat and cattle can be found in only a few areas. There are hunting stations with healthy populations of Wild Boar, Red Deer and Roe Deer (Ivanov 2004). Food shortage is, however, one reason for the decline of the Bulgarian Egyptian Vulture population, especially in parts of the Eastern Rhodopes, where villages and farms have been abandoned (Kurtev 2004). In general there has also been a significant reduction in the numbers of game animals through poaching.

Disturbance of Egyptian Vulture nest sites has been caused by paragliding and rock climbing. There are even cases of the destruction of nests (Kurtev 2004).

Habitat in the important former vulture areas of the Eastern Balkan mountains and the Western Rhodopes is still intact, although in the Western Rhodopes developments, including roads and ski tracks, may in future reduce the natural habitat available to vultures (Ivanov 2004). Geological research and open mining, as well as the building of recreation centres, are a potentially low future threat.

Electrocution on electricity poles has been shown to be an important threat to Egyptian Vultures (Kurtev 2004).

Poaching eggs and nestlings is a potentially high threat although the real extent of such activities is unknown. Several cases of nest robbery were reported in the 1990s (BSPB/BirdLife Bulgaria *in litt.* to BVCF).

## **Serbia**

Main threats (see Table 6) are occasional poisoning incidents, shooting and disappearance of the main food sources, while other less important threats are land degradation, electrocution, trapping, nest robbing and disturbance (Grubac & Pusovic 2003).

Poisoning of wolves and other carnivores was the main reason for the disappearance of vultures in Serbia. Nowadays poisoning is forbidden and it only occurs sporadically, but still remains a potential threat.

The reduction of food sources is a consequence of a decrease in livestock numbers, lower game numbers, as well as the drafting and implementation of veterinary laws, obliging farmers to bury livestock carcasses (Grubac & Pusovic 2003).

Shooting occurs sporadically for trophies, outside the protected areas, where implementation of the law is less enforced. Shooting is however decreasing (Grubac & Pusovic 2003).

**Table 5. Table of threats in Bulgaria. Result of the workshop in Sofia, October 2002, updated in 2004 by Action Plan participants. U = Unknown, L = Low, M =Medium, H = High, P = potential**

	<i>Threat</i>	<i>Bearded V.</i>	<i>Black V.</i>	<i>Griffon V.</i>	<i>Egyptian V.</i>
1	Poisoning	M-H	M	M	H
2	Lead poisoning	U	U	U	U
3	Food shortage	H	H	H	H
4	Closing of offal dumps/slaughter houses	L	M	M	H
5	Changes in veterinary practices	L	H	H	H
6	Changes in agricultural practices	M	M	M	M
7	Food competition	L-M	L	L	H
8	Reduction in livestock numbers	H	H	H	H
9	Reduction of natural food sources	H	H	H	M
10	Illegal hunting	H	L	L	M
11	Disturbance by new roads	M	H	M-H	L
12	Disturbance by open pit mining/ geological research	L (PH)	H	L (PH)	M
13	Disturbance at breeding sites	H	H	H	H
14	Disturbance by military conflict and training	L	L	L	L
15	Breeding habitat loss or changes	H	H	L (M)	M
16	Forest fires	L	H	M	U
17	Electrocution	L-M	U (L)	U (M)	M
18	Wind farm constructions	L	L	U	L
19	Poaching eggs and nestlings	L	U(PH)	U (PH)	H
20	New diseases	U	U	U	H
21	Critical low population number	H	H	M	L (M)
22	Lack of public awareness	M	M	M	M
23	Lack of capacity to undertake conservation work	L-M	L-M	L-M	L-M

## Greece

The reasons for the decline of vultures prior to the early 1990s were a reduction in food, use of poison for killing wolves, jackals and foxes, habitat change, including large-scale forest degradation, and shooting (Spyropoulou 1998).

An overview of present threats was obtained from the workshop in Sofia in 2002 (see Table 7). A similar table was prepared by HOS (Bourdakis 2003), which showed that, for Griffon Vultures, the decrease of food and indirect poisoning on both the mainland as well as on the islands are critical threats.

Poisoning on the mainland is aimed at wolves, foxes and jackals as well as other predators (e.g. feral dogs), while, on the islands, ravens, crows and martens and even Golden and Bonelli's Eagles (on Crete) are the target.

Hunting and disturbance at breeding sites by quarries, road construction and hunting activities are considered to be most relevant.

**Table 6. Table of threats in Serbia. Result of the workshop in Sofia, October 2002. U = Unknown, L = Low, M =Medium, H = High**

<i>t Threat</i>	<i>Bearded V.</i>	<i>Black V.</i>	<i>Griffon V.</i>	<i>Egyptian V.</i>
1 Poisoning	L-M	L-M	M	L-M
2 Lead poisoning	M	M	M-H	U
3 Food shortage	L-M	M	M-H	M
4 Closing of offal dumps/slaughter houses	M	M	M-H	M
5 Changes in veterinary practice	M	H	H	M
6 Changes in agricultural practices	L	M	L	L
7 Food competition	L	L	M	L-M
8 Reduction in livestock numbers	M	M	H	M
9 Reduction of natural food sources	M	H	M	M
10 Illegal hunting	M	L-M	L-M	M
11 Disturbance by new roads	L	L	L-M	L
12 Disturbance by open pit mining/ geological research	L	L	L	L
13 Disturbance at breeding sites	U (M)	U	M	L-M
14 Disturbance by military conflict and training	L	L	L	L
15 Breeding habitat loss or changes	L	L-H	L	L-M
16 Forest fires	L	M	L	L
17 Electrocution	L	L	L	L
18 Wind farm constructions	L	L	L	L
19 Poaching eggs and nestlings	L	L	L	L
20 New diseases	U	U	U	U
21 Critical low population number	H	H	L	H
22 Lack of public awareness	H	H	L	H
23 Lack of capacity to undertake conservation work	H	H	M	H

**Table 7. Table of threats in Greece (mainland). Result of the workshop in Sofia, October 2002, updated in 2004 by Action Plan participants. U = Unknown, N= Not existing, L = Low, M =Medium, H = High**

<i>Threat</i>	<i>Bearded V.</i>	<i>Black V.</i>	<i>Griffon V.</i>	<i>Egyptian V.</i>
1 Poisoning	H	H	H	H
2 Lead poisoning	U	U	U	U
3 Food shortage	L	H	H	U
4 Closing of offal dumps/slaughter houses	L	L	L	H
5 Changes in veterinary practice	N	L	H	H
6 Changes in agricultural practices	N	L	L-H	M
7 Food competition	N	U	U	M
8 Reduction in livestock numbers	M	L	H	L
9 Reduction of natural food sources	M	L	L	L
10 Illegal hunting	L	L	L	L
11 Disturbance by new roads	M	L	L	L
12 Disturbance by open pit mining/ geological research	L	N	L	M
13 Disturbance at breeding sites	N	L	M	L
14 Disturbance by military conflict and training	U	L	U	L
15 Breeding habitat loss or changes	L	M	M	L
16 Forest fires	N	M	L	L
17 Electrocution	N	N	L	L
18 Wind farm constructions	N	U	H	N
19 Poaching eggs and nestlings	U	U	U	U
20 New diseases	U	U	U	U
21 Critical low population number	H	H	H	H
22 Lack of public awareness	M	M	M	M
23 Lack of capacity to do conservation work	M	M	M	M

**Table 8. Table of threats in Crete (Greece). Result of the workshop in Sofia, October 2002, updated in 2004 by Action Plan participants. U = Unknown, N= Not existing, L = Low, M =Medium, H = High**

	<i>Threat</i>	<i>Bearded V.</i>	<i>Griffon V.</i>
1	Poisoning	H	M
2	Lead poisoning	U	U
3	Food shortage	L	L
4	Closing of offal dumps/slaughter houses	N	L
5	Changes in veterinary practice	N	U
6	Changes in agricultural practices	L	L
7	Food competition	N	L
8	Reduction in livestock numbers	L	L
9	Reduction of natural food sources	L	L
10	Illegal hunting	H	L
11	Disturbance by new roads	H	H
12	Disturbance by open pit mining/ geological research	N	U
13	Disturbance at breeding sites	M-H	H
14	Disturbance by military conflict and training	U	U
15	Breeding habitat loss or changes	L	L
16	Forest fires	N	L
17	Electrocution	N	U
18	Wind farm constructions	U	H
19	Poaching eggs and nestlings	U	U
20	New diseases	U	U
21	Critical low population number	H	L
22	Lack of public awareness	L	L
23	Lack of capacity to do conservation work	L	L

### **Ukraine (Crimea)**

The reasons for the disappearance of Egyptian Vultures in Ukraine are unclear, as the habitat is intact (Osipova *et al.* 2002).

A reduction in the numbers of cattle and wild ungulates was the main reason for the decline of Griffon and Black Vultures (Osipova *et al.* 2002).

Disturbance at nest sites, poaching, poisoning, collision with power lines, and the inadvertent trapping of vultures have also been recorded.

Nest site competition with Peregrine Falcons has been considered as a possible threat to the Griffon Vulture. A chick starved to death as the nearby pair of Peregrine Falcons hindered the Griffon Vulture pair when they tried to approach their nest (Osipova *et al.* 2002).

## **CONSERVATION**

### **General**

The raising of public awareness about vultures is considered a priority. In all participating countries, a public awareness campaign will use a general leaflet on vulture ecology and identification of the different vulture. The leaflets have a common design and are being translated into all local languages.

The illegal use of poisons was identified as one of the most important causes of decline of the vulture populations in many regions of the Balkan countries. At the Action Plan workshop in Sofia in October 2002, it was decided that each country should give maximum priority to the establishment

of multidisciplinary anti-poisoning working groups and national strategies with the necessary actions to combat the problem. A draft proposal for a Balkan Anti-poisoning Programme has been prepared for the participants by the BVCF, based on the experience of the Spanish Anti-poisoning Programme (Sánchez 2003). It proposes investigations, preventive actions and judicial procedures, as well as research on the impact of poison on wild and domestic animals and reasons for its use, inspections of the potential use of poison in risk areas, collection of bait and animals presumed poisoned, inspection of points of sale of highly toxic products, toxicological analyses, legal proceedings, training of technical and administrative personnel, promotion of good hunting practises, promotion of compensatory measures for livestock affected by predators, maintenance of feeding places for vultures and Imperial Eagles, and public awareness. In Bulgaria an "Against Poison Working Group" has been established while an Anti-poison Group is being created in Macedonia.

### **Albania**

Direct conservation activities are not carried out at present in Albania. General education and information material, as mentioned above, is in preparation.

### **Macedonia**

In Macedonia, from 1948 to 1951, vultures were protected by law and hunting was therefore illegal. From 1965 the protection of vultures was provided by new legislation on Natural Rarities Conservation and today they are protected by article 4 of the hunting law of 1996 (Petkovski *et al.* 2003).

An anti-poison group has been established. Some of the proposals of the Balkan Antidote Programme have been adopted officially in the Macedonian Biodiversity Conservation Strategy. The poisoning incident in February 2003 (Stoynov 2004) led all involved administrations and NGOs to co-operate. A mass media campaign was subsequently carried out (Emilian Stoynov pers. comm.).

As a result of the Balkan Vulture Action Plan, three new feeding places were established, close to Griffon Vulture colonies, initially as an experiment. Subsequently, the successful sites have been fenced. 8,020kg of food in 41 deliveries were distributed to these restaurants during 2002 (Stoynov 2002) and 143 deliveries of 21,000kg during 2003 (Stoynov *et al.* 2004). The biggest gathering of Griffon Vultures observed at a feeding site was 32 in 2002 and 42 in 2003 in Vitachevo. Seven Egyptian Vultures and on three occasions a single Black Vulture were also observed (Stoynov 2002). The provision of food at sites on the Bulgarian border area attracted Griffon Vultures from the Osogovo mountains, while the Black Vulture was observed twice in the south of the Kresna Gorge (Stoynov 2002). After the poisoning incident in February 2003, an emergency feeding place, initiated under a conservation programme for the Imperial Eagle in Sveti Nikole, Central Macedonia, was set up to ensure that no additional Griffon Vultures and Imperial Eagles were poisoned. Its establishment was funded by the Dutch Department for Nature Management, while subsequent management of the site was carried out by FWFF.

## Bulgaria

Prior to the Balkan Vulture Action Plan, several NGOs were already working on vulture recovery projects. These initiatives are now supported by the Action Plan and have been integrated in its supra-regional conservation concept. In Bulgaria, Species Action Plans were already in development and a Management Plan for the four species had been presented to the Bulgarian Government (Stoynov 2001b).

An anti-poison campaign is currently being undertaken by all participating NGOs. FWFF is currently busy with a project to study the impact of poisons in Bulgaria and collect information on poisoning incidents. A Bulgarian Antidote Programme, the National Against Poison Working Group (NAPWG) was created. It held a workshop in October 2003. During the workshop it became evident that poisons are not commonly used in Bulgaria but isolated cases occur all over the country. The reasons for poison incidents vary from accidental ingestion of treated agricultural seeds (no birds of prey affected) to animals ingesting poisoned baits used to control wolves and occasionally jackals (most cases in the Rhodope mountains, as well as the Pirin and Rila Mountains). The latter has resulted in the death of vultures (Stoynov 2004). Green Balkans is currently determining measures that can be used to replace poisons, especially in nature parks (Ivanov 2004). In 2003, BSPB/BirdLife Bulgaria held a seminar on poisoning prevention for the police and forestry officers. In the 1990s, this organization lobbied successfully to legislate against the use of poisons in hunting reserves. This has now been included in the Biodiversity Act. To avoid conflicts between shepherds and wolves, which could lead to poisoning incidents, several NGOs breed Karakachan dogs, an old race of shepherd dog, which are given to the shepherds to protect their herds. A compensation programme has been started by the FWFF to assist farmers whose livestock are killed by wolves. Sheep killed by wolves are replaced by other sheep from a flock specifically kept for this purpose.

In order to promote the conservation of the environment in Bulgaria, the Balkan Green Belt project is supported by the Balkan Vulture Action Plan, via the Green Balkans Federation. It implements the already signed nature conservation agreement of 2000 between Bulgaria, Macedonia and Albania, as it covers many of the important present and future vulture habitats and represents the idea of the Balkan Vulture Action Plan of "vultures without borders", promoting in particular trans-border projects. Large areas of the Eastern Rhodopes have been legally protected following the BSPB/BirdLife Bulgaria work (Stoychev & Petrova 2003). The 12 most important Griffon and Egyptian Vulture breeding habitats in the Eastern Rhodopes are protected, and they include 87% of the Griffon Vulture breeding pairs and 44% of the Egyptian Vulture breeding pairs (Marin Kurtev, BSPB/BirdLife Bulgaria, *in litt.* to BVCF, 2004). In 1997, BSPB designated four Important Bird Areas (IBAs) in the Eastern Rhodopes with a total surface of 50,200ha. Three of these contain 90% of the Griffon Vulture breeding pairs in Bulgaria, while the fourth IBA (Byala Reka) is the feeding and roosting site of the area's Black Vultures. 70% of the Bulgarian Egyptian Vulture breeding population are located within 11 IBAs.

In order to address food supply issues, several NGOs have been promoting the increase of flocks of sheep, especially those of old local races, such as the Karakachan sheep. A first reintroduction of the Balkan Chamois is being carried out in the Vitosha Nature Park. The conservation of tortoises is being promoted in areas where future Bearded Vulture reintroductions may take place. The BSPB successfully lobbied for maintaining the hunting reserve in Studen Kladenez, where more than 1,000 Fallow Deer are kept for breeding and which is the main foraging area of the vultures close to the Arda River.

The first vulture feeding places were established in the area of Studen Kladenez and Madjarovo, Eastern Rhodopes, by BSPB in 1988 to support the last small Griffon Vulture colony. Currently three feeding sites are active, where 17 tons of meat were placed during 2003 in support of the local Griffon, Black and Egyptian Vultures (Hristo Hristov, BSPB/BirdLife Bulgaria, *in litt.* to BSBCP, 2004). During the past six years another vulture feeding place has been maintained by the Green Balkans Federation in the Eastern Rhodopes (Biala Reka valley) close to the Greek border, for the benefit of the Greek Black Vulture colony and the surrounding Griffon Vultures (Ivanov 2004). A new feeding place in south-western Bulgaria, close to the Macedonian border, and managed by FWFF, was operational in 2002 and 2003, supporting the only Egyptian Vulture breeding pair of the region. For the first time this pair raised two chicks in 2003 (Stoynov 2002, E. Stoynov pers. comm.). In the western Balkan Mountains, and for the recovery of the Griffon Vultures at Vrachanska Planina Mountain, a pilot project was carried out by BPPS. This involved experimental feeding at different places in order to select the most suitable site for Griffon and Egyptian Vultures, Golden Eagles and Ravens (Dobromir Domuschiev *in litt.* to BVCF, 2004). Since June 2003, a feeding place has been maintained in the Eastern Balkan Mountain Range, close to Kotel village.

In south-western Bulgaria, close to the Macedonian border, in 2002 and 2003, FWFF guarded the nest of the only Egyptian Vulture breeding pair in the region, which was successful in 2003 (Stoynov 2002, E. Stoynov pers. comm.).

Within their Action Plan project, Green Balkans will participate in the Bearded Vulture EEP Breeding Programme. A breeding cage for one pair was constructed in 2003 at their Wildlife Rehabilitation Centre in Stara Zagora (Ivanov 2004). Within the framework of the VULTURA programme, promoted by BSPB, FWFF and Sofia Zoo, Griffon Vultures are also bred at the zoo, with one nestling being raised in 2003. Offspring will be made available for release into appropriate areas. The Sofia and Skopje Zoos (Macedonia) are co-operating with the breeding and release projects.

The BSPB prepared a leaflet on Egyptian Vultures and maintained the Nature Information and Conservation Centre in the Eastern Rhodopes (BSPB/BirdLife Bulgaria 2002). The educational programme of this organization includes lectures with slide shows, printing of information material, media events, exhibitions, ornithological Olympics, with all the projects having vulture conservation as their main topic. A vulture cage has been built by FWFF-Bulgaria in the Eastern Balkan Mountain Range, close to the village of Kotel. Three Griffon Vultures are kept there for education purposes, as a preparatory measure for a possible future reintroduction. Green



Balkans prepared a poster and leaflet for the reintroduction of the Bearded Vulture and a leaflet against the use of poison. BPPS prepared a leaflet to create an awareness about vultures in the western Balkan Mountain Range.

## **Serbia**

In Serbia, vultures have been protected since 1949 and are now included in the Nature Conservation and Hunting laws of 1993. Two special nature reserves were established for Griffon Vultures (Uvac Gorge and Trencjica Gorge), while other important areas for vultures are being protected. The Institute for the Protection of Nature in Serbia promotes conservation activities, such as two feeding places, which have been operating since 1996 (Grubac & Pusovic 2003). Educational programmes have been carried out for many years, including lectures, television programmes, newspaper articles, distribution of posters, etc. Serbia and the adjacent regions (Bosnia-Herzegovina and Montenegro) have a central position on the Balkan Peninsula and therefore play an important role in the vulture recovery strategy in south-eastern Europe and in connecting the Eastern and Western vulture populations. Serbia and the adjacent regions will be integrated in the Balkan Vulture Action Plan in 2004.

## **Ukraine**

Research on threats and possible conservation measures in the Ukraine is being carried out, while feeding places have been established to provide additional food and to facilitate monitoring (Osipova *et al.* 2002). A National Action Plan for the recovery of vultures is underway.

## **Greece**

The first efforts to conserve vultures in Greece started in the Dadia Forest Reserve in 1980. In 1979 this Reserve became a protected area, being an outstanding biotope for birds of prey (Hallmann 1998a; Spyropoulou 1998). At that time the four vulture species were still breeding in the Reserve. Thanks to conservation measures, the Black Vulture colony increased from 10-14 pairs in 1986 (Hallmann 1998a) to 19 pairs today (Skartsi *et al.* 2003). A management plan for the Black Vulture and its habitat is being carried out by WWF-Greece (Katsadorakis *et al.* 1998).

The Griffon Vulture started breeding again in the Dadia Forest Reserve with seven pairs in 1990, having not done so for the previous 12 years (Spyropoulou 1998). They then stopped breeding, possibly moving to adjacent areas in Bulgaria. The last two pairs of Bearded Vulture disappeared from Thrace in the late seventies, though one individual remained until 1995 (Ben Hallmann pers. comm.). Feeding places were established in the Dadia Forest Reserve in 1987, providing food for all four vulture species.

In 1987, the second small Black Vulture colony in Greece, at Mount Olympos, numbered two breeding pairs and at least seven individuals. A feeding site was established at Kato-Olympos with support from the Swiss Foundation for Birds of Prey and the Larissa Forestry Service, which was then used by these birds (Hallmann 1998b). In spite of this, however, the birds started to disappear, possibly because of poisoning in the surrounding areas. In 1989, the Black Vultures were still using the feeding site. The Black Vulture

Conservation Foundation and Frankfurt Zoological Society undertook a conservation project that tried to save the last birds as a basis for a future restocking project. An education programme, collaboration with the authorities and the continuing operation of the feeding site were, however, not enough and the last two birds also disappeared in the early 1990s (Hallmann 1998b). The project was subsequently stopped.

Several LIFE projects of the EU fully or partly support vulture conservation in Greece, including the operation of feeding sites: Dadia Forest Reserve (all four vulture species), Nestos Gorge (Griffon Vultures), and Giouxtas Mountain on Crete and Klokos mountains (Griffon Vultures). For the Bearded Vulture additional food is supplied at 15 sites on Crete and one site at Mount Pinovo close to the border with Macedonia, while for the Egyptian Vulture additional food is supplied at Antixasia Mountain. Most vulture management actions are carried out within SPAs (Ben Hallmann & Rigas Tsiakiris, 2004, *in litt.* to BVCF).

The Hellenic Vulture Working Group was established by Greek experts for the co-ordination of its monitoring and conservation activities. An e-mail group has been established for rapid exchange of information. In addition, in 2003 the group organized the first national survey of all Griffon Vulture colonies in the country (Rigas Tsiakiris pers. comm.).

Within the framework of the Balkan Vulture Action Plan, trans-boundary co-operation projects with Macedonia and Bulgaria – and possibly in Albania in coming years – are carried out. The feeding place of the Griffon Vulture colony in Tembi (Olympos) is being supported.

### **Strategy for the recovery of viable population numbers**

Once conservation activities to reduce the threats to vultures in the Balkan Peninsula start to become effective, the number of individuals and of breeding pairs should increase again which in turn would make a natural recovery possible. However, this can only happen if a minimum number of individuals is still present. This is particularly true for the Egyptian Vulture and in some situations for the Griffon Vulture as well as for the last Black Vulture colony in Greece. For the Bearded Vulture, natural recovery starting from existing populations (such as from the reintroduced Alpine population or from dispersing birds from the Caucasus or Turkey) is unlikely in the near future. Where natural recovery cannot be expected, the possibility of restocking or reintroduction should be considered.

Within their former range, where conditions seem favourable, viability studies systematically analyse the habitat quality and remaining threats. These sites are then evaluated for the possible reintroduction of vultures. In the case of the Griffon Vulture, reintroductions between isolated colonies will improve the interchange of individuals and re-establish a continuous Balkan population and, subsequently, the connection between the western and more eastern colonies. As a first step, Stoyanov (2001b) presented a strategy of natural recolonization, accelerated by restocking or reintroductions, connecting the slowly increasing colonies of the Eastern Rhodopes with the Macedonian colonies by establishing colonies in the Western Rhodopes, Pirin, Rila, thereby encouraging the continuing expansion of the population to the north, i.e. to the

western and eastern parts of the Balkan Mountain Range, which would also signify a further step in the direction of the last Serbian colonies.

Once the suitable restocking or reintroduction sites for Griffon Vultures have been determined, the first releases have important secondary advantages: they can accelerate the local awareness and information process and serve as an example for possible projects in other regions. Also the possibility of future releases may encourage local authorities and NGOs to co-operate in the elimination of threats.

Griffon Vulture restocking or reintroduction projects can serve as valuable preparatory actions for a later reintroduction of the rarer species, such as Black or Bearded Vultures. The success of a Griffon Vulture reintroduction project confirms that conditions are favourable for the release of other species and provides the local management team with valuable experience.

The sources of vultures for release have been identified. All four vulture species belong to international breeding networks of the European Association of Zoos and Aquaria (EAZA), such as the EEP (European Endangered Species Breeding Programme) or ESB (European Studbooks) co-ordination programmes, which are in principle agreeing to contribute to the Action Plan. The Bearded Vulture FCBV/EEP breeding programme provided nestlings for the reintroduction in the Alps and there is a good chance that birds will be made available after releases in the Alps have been terminated. In the same way the Black Vulture BVCF/EEP programme, the Griffon Vulture ESB and the Egyptian Vulture EEP could support the recovery of the species with the release of captive-bred birds. In addition, rehabilitated Griffon and Black Vultures from Spain or France will be available for release in the Balkan Peninsula. Current genetic studies will, however, be taken into account.

## DISCUSSION

One and a half years after the project started, the first results of this long-term programme can be evaluated. A good response and excellent co-operation has been received from local governmental institutions and nature conservation organizations in the first target countries, this being the prime condition for the Balkan Vulture Action Plan to be viable. Local experts joined the project and a growing number of volunteers participate and are being trained for local nature conservation tasks.

The image of vultures has improved considerably throughout Europe in recent years. More countries, including Romania and Hungary, have announced their interest to participate in the Balkan Vulture Action Plan, one of the consequences of this increased awareness.

Within the framework of the Action Plan, an update on the status and distribution of vultures has been compiled, although in some cases numbers are still incomplete. In the coming years, a more intensive survey will give a better picture of the status, population trends, prevailing threats and hence conservation needs of vultures in the Balkan Peninsula. One example is Albania, where the first surveys showed that Egyptian Vultures still exist and breed, but nest sites of the other three species have not yet been located. For the Egyptian Vulture, a good monitoring system has been put in place in Bulgaria,

from which quite good population data are available, while in the other countries rough estimations presently exist for this species. For the other species quite good information is available. Unfortunately, it confirmed the extinction of the Bearded Vulture in all Balkan Countries apart from Crete, where the population is in severe decline and its continued existence on the island now seems highly unlikely. The Black Vulture finds itself in a similar position, as it is now extinct all over the Balkan area, except for the small but stable colony in the Dadia Forest Reserve. Thanks to the intensive conservation management programme of WWF-Dadia, Black Vultures from this colony are re-colonising the Eastern Rhodope Mountains. Regarding the Griffon Vulture, some colonies still exist in most of the Balkan countries, although with very varying population trends. Whilst in Bulgaria and Serbia the colonies are slowly increasing, fluctuating or stable in Macedonia (where the north-west of the country is in need of further survey) the population is in precipitous decline in Greece. The population trend of Egyptian Vultures is generally negative in all countries, probably as breeding pairs are distributed all over the countries and do not receive the same protection as the colonially-breeding Griffon Vulture. This species may face as yet undetermined threats in its wintering areas in Africa. It is anticipated that surveys in the Crimea may reveal additional pairs of Black and Griffon Vultures.

As a result of the collaborative effort of all participants, past and persisting threats to vultures could be identified and evaluated for most areas, necessary measures to mitigate prevailing threats have been identified, and the implementation of the priority actions has started.

In general terms, the most severe threats at present are the illegal use of poisons and, to a lesser degree, the lack of natural food. Both threats are difficult to eliminate and actions against the use of poisons will be needed for many years. One particular solution, which addresses both threats, is the provision of poison-free food at feeding stations. These sites can also be used to monitor the status of vultures in the Balkan Peninsula. In future years an extensive network of feeding places may well be established in the Balkan countries until the natural food base can be restored.

Especially in reducing the illegal use of poison in the natural environment, as many measures as possible have to be used simultaneously to ensure the survival of the vultures in the affected areas or to prepare a suitable area for a reintroduction. The proposal to use a similar programme as the Antidote Programme in Spain, i.e. building a joint front of all local NGOs and governments, was adopted in Macedonia and Bulgaria, and implementation started immediately. The lack of food resources has not been a major threat in the western and central European vulture conservation projects, thus no measures can be learnt from the projects underway in these areas about how to address this factor. However, the following action can be undertaken: (1) the conservation and restoration of populations of wild ungulates in mountainous habitats and (2) extensive farming of livestock. Several initiatives, especially in Bulgaria, to address the food shortage threat have been initiated.

The transfer of knowledge of vulture management techniques from the Western European projects to the Balkan Action Plan projects began when some of the project leaders and their assistants from Macedonia, Serbia and Bulgaria visited the Griffon and Black Vulture reintroduction projects in France. Transfer of management experience is also already ongoing locally, as the management team of the Dadia Forest Reserve in Greece participates in training the teams of the Eastern Rhodopes, especially to ensure the systematic and coordinated monitoring of vultures in the border area of Greece and Bulgaria.

It can be expected that in some areas it may be more difficult to eliminate existing threats. Therefore reintroductions and restocking projects will start step by step at the different sites, to be undertaken only in those areas which are free of threats and provide favourable breeding and foraging conditions for the species concerned. These first release sites may, additionally, serve as a political and socio-economic attraction and as an example to be followed in other regions of the country, resulting in more efforts to combat the persisting threats and directly favour the vultures in particular and nature conservation in general.

Another positive effect is the possibility to work in border areas, where the same vultures use the mountainous habitat of two countries. Trans-border projects are of special interest in the Balkan Vulture Action Plan, not only to protect the vultures and their habitats in their entire home range, but also as a political means, offering countries that are currently in conflict with a neutral tool for co-operation, with beneficial consequences for nature conservation and the socio-political development of this large region.

The Action Plan for the Recovery and Conservation of Vultures on the Balkan Peninsula and adjacent Regions is a long-term initiative and will probably need several decades before coming close to reaching its objective. Some of the basic conditions for its success have already been fulfilled, including a strong local and international willingness to co-operate and implement the strategy, and principal funding by the Frankfurt Zoological Society. Its success will depend on the perseverance of all participants, political developments in the respective range countries and the availability of additional funding. It is anticipated that the Action Plan could support a sustainable socio-economic development in these generally poor areas.

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