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FROM *EX-SITU* TO *IN-SITU* CONSERVATION: THE RETURN OF THE BEARDED VULTURE, *GYPAETUS BARBATUS*, INTO THE EUROPEAN ALPS

Abstract – In 1986 the return of the largest bird species in the European Alps started with the release of 4 zoo-born Bearded Vultures. The methods of enforced breeding and rearing has been developed by Alpenzoo Innsbruck, where the continuous breeding results since 1973 gave the initiative for the International Bearded Vulture Reintroduction Program. Nearly 40 Zoos and 5 Breeding Centres are organised by the EEP under the chair of Dr. Hans Frey, Vet. med. Univ. of Vienna, Austria. Under the umbrella of WWF, Frankfurt Zoological Society and some other conservation bodies, the releasing and monitoring program is in progress to establish a stable population of Bearded Vultures in the Alps. Within 20 years from 1986 up to 2006 146 fledglings have been released on 12 sites across the Alps. In 2007 in addition 8 zoo-born specimens were at disposal. In 1997 the first successful breeding in the field occurred. Within 10 years 43 offspring have been raised by their parents in the wild.

Key words – Bearded Vulture, conservation, reintroduction, population dynamic.

Riassunto – *Conservazione da* ex-situ *a* in-situ*: il ritorno del Gipeto,* Gypaetus barbatus*, nelle Alpi europee.*

Nel 1986 il ritorno della più grande specie ornitica delle Alpi europee iniziò con il rilascio di 4 gipeti nati in cattività. Le metodiche di riproduzioni e allevamenti controllati furono sviluppate dall'Alpenzoo di Innsbruck, dove i continui risultati riproduttivi fin dal 1973 portarono all'iniziativa dell'International Bearded Vultur Reintroduction Program. Una quarantina di zoo e 5 Centri riproduttivi sono organizzati dall'EEP sotto la presidenza del Dr. Hans Frey, medico veterinario dell'Università di Vienna. Sotto l'egida del WWF, della Società Zoologica di Francoforte e di altri istituti per la conservazione, il programma di rilascio e monitoraggio dei gipeti è in funzione allo scopo di fondare una popolazione stabile di questi avvoltoi sulle Alpi. Nello spazio di 20 anni, dal 1986 al 2006, 146 giovani involati sono stati rilasciati in 12 siti sulle Alpi. Nel 2007 ulteriori 8 esemplari nati in cattività erano disponibili per il rilascio. Nel 1997 si verificò la prima riproduzione in libertà con esito positivo. In dieci anni 43 piccoli sono stati allevati dai loro genitori in natura.

Parole chiave – Gipeto, conservazione, reintroduzione, dinamica di popolazione.

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Introduction

The current reintroduction program for *Gypaetus barbatus* is carried out as a LIFE-Nature Project and is conducted by the National Park authorities of the participating alpine countries, and by the "Foundation for the Conservation of the Bearded Vulture". It also includes the "International Bearded Vulture Monitoring" (ZINK, 2004). Thus the return of the Bearded Vulture is an outstanding example of teamwork in conservation by several NGO's and GO's, such as IUCN, WWF, both national and international, the Frankfurt Zoological Society, the National Park authorities in several countries, and of course Zoos and Universities, and so on.

Looking back to history an intensive persecution in the 18th and 19th century caused the extinction of the Bearded Vulture in the entire Alps. The last documented shooting occurred in the Aosta Valley, in the area of the later founded National Park "Gran Paradiso". The reason for the lethal persecution was simply a myth: this vulture was condemned to death due to killing farm animals and even kidnapping little children. In contrast to such stories this bird is feeding on carcass and even more on bones.

The persecution was in many ways intensive and effective. Today, especially in Spain, Greece and Turkey poisoning is still the main cause for death. In Central Europe lead poisoning due to feeding on carcass of animals shot with lead bullet is becoming more and more a risk of survival for Bearded Vultures and other birds of prey.

After the showdown in the Alps in 1913 the status of the population in Europe stayed extremely poor for many decades, with a small population in the Pyrenees on the French and Spanish border, and with some birds on the islands of Corsica and Greece. Even in the scientific community the Bearded Vulture seemed to have been completely forgotten despite some sporadic breeding results in the Zoos of Sofia and Berlin. However, in the 70ies serious attempts of reintroducing this species to Switzerland were undertaken but failed, just because the wild caught birds from Central Asia got lost soon after release, due to immediate dispersal.

Data and methods

The initiative for a new start was based on the continuous breeding success of Bearded Vultures in the Alpenzoo Innsbruck since 1973. The birds had been a donation from the Zoo of Dresden, Germany. The male is still alive today and one of the most successful breeders in the Zoo population.

The basics of the behavioural development and the techniques of enhanced breeding and rearing of the Bearded Vulture have been investi-

gated at Alpenzoo Innsbruck (Psenner, 1976; Thaler, 1981; Thaler & Pechlaner, 1979). Some of the research focused on the Cainism, an aggressive behaviour belonging to sibling competition, which is also known in other raptor species. Cainism may have evolved favouring the survival of the stronger chick above the smaller and weaker sibling. This phenomenon was observed in Bearded Vulture chicks at first at an age of 7 days and lasted until the siblings were 2-3 month old. It is important to mention that this specific aggressive behaviour is not caused by food competition. Moreover it will be established regardless the amount of food delivered by the parents to the chicks (Thaler & Pechlaner, 1980).
Encouraged by the continuous breeding success of Alpenzoo in 1978 an international meeting was held in Morges, Switzerland with the goal to starting a reintroduction project using captive bred, zoo-born birds. A breeding network was established, consisting of in some 34 wild caught birds (today there are 30 founders and 100 reproduced individuals within the network).

The EEP (coordinated by Dr. Hans Frey, Vet. med. University of Vienna) is joined by nearly 40 Zoos, 5 breeding centres and 3 private facilities. Today 25 pairs are reproductive. About 300 offsprings have been produced with a 10 % contribution from Alpenzoo Innsbruck.

The return of the largest bird species of the European Alps started in 1986 with the release of 4 zoo-born fledglings. For identification several feathers are bleached, the legs are equipped with colour rings and since 2004 the birds are monitored by telemetry (Hegglin, 2004).

The bleaching of feathers is resulting in an individual bar code easily spotted by any observer of the flying bird (Zink, 1999). The monitoring program includes 4000-5000 people (biologists, hikers, hunters etc.) along the Alpine chain with about 2500 reports per year. The 12 locations for releasing are situated in 5 regions of National Parks in France, Switzerland, Italy and Austria (Otto & Gressmann, 2006).

Releasing is undertaken by using the so called "hacking back" method (Frey & Zink, 2000; Frey, 2003). At an age of 3 months the young birds are transported to a cave on the releasing site. There the birds stay under constant observation and are provided with food. During the next 3 to 4 weeks the birds visually get acquainted with or even imprinted on the surrounding habitat. At an age of about 4 months the birds will fledge, flying around and searching for food. At the beginning the site remains as a centre of confidence, that means the birds return to the cave several times before disappearing.

The dispersal occurs during the first 3 years of life (Zink, 2002). In some cases the maximum flight distance is several hundred km per day. The home range of a Bearded Vulture covers from 100 to 700 km^2 with an average of 300 to 500 km^2.

In 1997 we did celebrate the first successful breeding in the wild and

in 2006 we celebrated 20 years of return of the Bearded Vulture into the Alps. Up to 2007 154 birds have been reintroduced. Minus a proven mortality rate of 24 birds there exists a calculated population of 130 birds living in the Alps.

Several aspects are influencing the population growth (OTTO & GRESSMANN, 2006):

- The lifespan of the Bearded Vulture lasts on average 21-28 years.
- The current population is estimated of about 130 individuals.
- Losses totalling about 17% of the growing population.

Causes for loss are various: collision with electric wire or loss by avalanches. Many causes of death remain unknown, but still some Bearded Vultures are trapped, poisoned or even shot.

In 2007 10 young hatched in the wild: 3 in Northern Italy, 4 in France, 3 in Switzerland (for the very first time). In the same year there were approx. 9 breeding pairs, 18 territory holders and 10 reproductive pairs under observation with in sum 43 offsprings from 1997 on (ZINK, pers. comm.).

In sum, the breeding success is increasing through the years, whereas the losses decrease or at least stagnate. If this trend will continue we probably will be allowed to reduce and even stop releasing in the next years (SCHAUB *et alii*, 2007).

Today there is a large population of about 400 birds existing in the Pyrenees, mainly due to the fact of artificial feeding in so called "Vulture restaurants". However the population of Corsica and Greece are unstable and need urgent support. Unfortunately there are no more sightings of Bearded Vultures in the Balkan Peninsula. Therefore no more connection exists between the Alpine and the Eastern population, especially with Turkey. In this country a former estimation of 100 to 500 breeding pairs had to be corrected recently to the alarming low number of only 34 reproductive pairs.

Conclusion

In conclusion we may summarize that the reintroduction of the Bearded Vulture in the Alps was an act of successful conservational efforts.

Continuing this project for about 5 to max. 10 years will probably be sufficient to guarantee a healthy, stable population in the Alpine region of Central Europe. However regarding the situation for the populations of Bearded Vultures in the Southern parts of Europe and especially Turkey there is still great need of intensive conservational work for saving the survival of this impressive large bird species.

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