

The Reintroduction of the Bearded Vulture *Gypaetus barbatus* into the Alps

Hans Frey & Winfried Walter

ABSTRACT

The project of re-introduction of the Bearded Vulture into the Alps (WWF/IUCN - Project 1657/78 and Frankfurter Zoological Society Project No. 832/78) was started in 1978 with the aim of establishing a breeding stock for future releases.

With the generous help of many European zoos it was possible to form 12 breeding pairs. In 1986 the first release took place in the Austrian Alps with 4 birds bred in captivity in the same year. One had to be taken back for future use within the breeding stock after an accident. The remaining 3 are still returning occasionally to the release site, where 2 young of 1987 were set out this summer. Simultaneously another release site in France was furnished with 3 birds. All 5 vultures have left their release ledges making their first flights.

INTRODUCTION

Since the extermination of the Bearded Vulture in the entire region of the European Alps during the last century, several proposals were made for a reintroduction. In 1972 the first attempt, using birds caught in the wild, was initiated by Amigues and Géroutet. Ten Bearded Vultures were imported from Russia and Afghanistan, but the project failed and more birds could not be obtained because the species was becoming increasingly endangered.

Around the turn of the century large numbers of Bearded Vultures were kept in zoos. Several pairs reproduced, but the survival of the young was only rarely achieved (Guggisberg 1975; Psenner 1976; Tschudi 1861). Prolonged and regular breeding success only occurred in Sofia (Schumann 1916, 1928 & 1929; Peters 1935). In 1973/74 a remarkable series of breeding successes started in the Alpenzoo, Innsbruck, Austria, which provided the basis for the present reintroduction project: WWF/IUCN Project 1657/78 and Frankfurt Zoological Society Project 832/78 (Psenner 1975, 1976 & 1977; Pechlaner 1978; Thaler & Pechlaner 1978; Thaler 1981).

The main features of this project are:-

- exclusive use of birds reared in captivity.
- international co-operation (Austria, France, Germany, Switzerland) of several nature conservation organisations and many European zoos.
- strict observation of international guidelines for species introduction (IUCN 1968; Boitani 1977; Nowak 1982).

The Bearded Vulture Project is a long-term enterprise (approx. 20 years) and is divided into several phases. Its first aim and basis was the establishment of a breeding stock (at least 10 reproducing pairs prior to the first releases). The breeding pairs are kept partly at a central breeding station near Vienna, supervised by the University of Veterinary Medicine of Vienna, and partly in several European zoos.

METHODS

The project started with 30 birds in zoos (1978), which included only three reproducing pairs. This number was doubled by 1985 and in 1987 the project had 67 birds with 12 reproducing pairs. As birds of the F1-generation are now regularly producing young, rapid expansion of the breeding stock can be expected in the coming years.

During the first years, the systematic breeding of the Bearded Vulture proved very difficult. Several methods of sex determination (steroid- and chromosome tests, endoscopy) were tried out (Rüdi 1978; Fuchs 1986) and now provide reliable information regarding nestlings.

The project was held back by a heavy surplus of male birds, behavioural defects, intraspecific aggression and the late maturing of the species (6-7 years).

Studies of the bird's breeding biology in the Alpenzoo, Innsbruck have proven that - as with the Lesser Spotted Eagle *Aquila pomarina* (Meyburg 1971) - cannibalism of nestlings is the rule with the Bearded Vulture (Thaler & Pechlaner 1980). Methods were developed (hand-rearing and returning to the nest after "aggression" ceased, rearing by foster pairs) to increase the reproductive rate.

Simultaneously with the build-up of the breeding stock, preparations were made for the release phase. A Swiss team of biologists set out to identify release sites in Austria, France, Germany and Switzerland which fulfilled many criteria relevant to the Bearded Vulture (Müller & Buchli 1982). This study rated the valley of Rauris, Hohe Tauern, Austria, as the best site.

Several methods of release were tested over many years with other species of birds of prey and owls (Frey 1981), stemming from which one method was selected which seemed to offer the best chance of success (Frey 1985). According to this, the young birds are placed in an artificial nest at the age of three months, approx. one month before fledging. Thus they are subjected to the full pressure of natural selection at the earliest possible date, which is one of the main targets of the project: the establishment of a Bearded Vulture population in the Alps completely independent of human support.

After a big PR campaign, the first three young birds were put on a "breeding" ledge at an altitude of 1,800m on the 25th May 1986. A fourth bird followed on the 6th July.

As the behaviour of potential enemies (Golden Eagle, fox) could not be foreseen, an adult "nurse" bird, unable to fly, was also placed on the ledge for protection during the first days. A team of guards supervised the birds constantly. Food was thrown onto the ledge without visual contact. In order to monitor their dispersal, telemetry was tried, each bird being fitted with a harness transmitter. A weak point in the harness should free the birds of the transmitter automatically after exhaustion of the batteries. The impulses from these transmitters were tracked by portable direction finders and two automatic receiving stations.

The first young Bearded Vulture left the ledge on 10th June, the two others following a few days later. During the next weeks it was found that the birds showed a most surprising adaptability. After two to four weeks they were able to find their own natural food, which was abundant in the area around the "breeding" ledge. The first "prey" were parts of sheep and chamois killed by avalanches. The Bearded Vultures preferred this to the food put out for them. One month later the first act of bone-breaking was observed.

The feeding strategy of the Bearded Vulture is extraordinary and of great interest. Its food consists exclusively of bones, sinews and parts of skins, remnants of the food left by other animals. It has an extraordinary ability to swallow bones. Those which cannot be swallowed, despite its elastic gorge, are carried into the air in the feet and smashed by being dropped on rocky areas. This behaviour was slowly developed in August by the released Bearded Vultures, to begin with being practised with unsuitable objects on different types of surfaces.

After a very short time, the young Bearded Vultures developed full manoeuvrability in flight and could easily outfly mobbing Golden Eagles and Griffon Vultures. Contrary to the Griffons, the Bearded Vultures were practically independent of thermals and were observed flying under all weather conditions, even during snowfall, fog and pouring rain.

Already in August, but especially in September and October, the birds extended their range. They always came back to the release site, sometimes after an absence of several weeks, but rarely touched the food laid out for them. Only the last bird, released alone two months later, differed in its behaviour, staying nearly always in the vicinity of the release ledge and showing only little initiative in finding its own food.

In autumn the Griffons departed for their breeding area in Yugoslavia. The young Bearded Vultures displayed no signs of joining them. During the first heavy snowstorms at the end of October, their range shrunk considerably and they stayed for several days in the release area. The beginning of the hunting season and the first avalanches provided abundant food, which they preferred to the bones put out for the last released bird. When the snow cover became thicker and the frequency of avalanches increased, they roosted on a small rock face protected from avalanches in the main valley. Daily flights took them into the smaller side valleys where they could be observed feeding on animals killed by avalanches, often together with Golden Eagles.

From January 1987 onwards, the three older young took up residence in another side valley, which has an especially high density of roe and red deer, together with chamois, during the winter months. The youngest bird also left the release area. Apparently attracted by some carrion about 70km from the release site, it fell into a river. It managed to reach the bank but its plumage was entirely frozen and it was rescued. In spite of its otherwise good condition, it was decided to take it back into the cage, since its behaviour had shown that it was not as independent as the first three birds. The other three survived the winter and spring and are still seen occasionally near the release site and in a part of another side valley, in which three historic breeding sites of the Bearded Vulture are situated (Frey & Walter 1986).

In May 1987 two of these birds, a pair, were seen showing courtship behaviour in this part of the valley. Diving together with locked talons and "double-decker" flights were observed.

Release 1987:

The same release site as in 1986 was used. On the 19th May two young birds were put on the ledge. This immediately attracted the attention of the surplus female of 1986, who spends much time in the vicinity of the release area and seems to act as a guide for the two newcomers. These also have adapted extremely well and have already shown bone-breaking actions to perfection.

A second release site in Haute Savoie, France, was tried out for the first time with three birds. All have left the "breeding" ledge in a normal manner, but one has been missing since 12th July 1987.

The experiment with telemetry in 1986 proved to be very costly and the automatic stations provided only very few data. Telemetry was therefore not used in 1987. The five young were marked by bleaching single feathers so that they could easily be recognised individually.

It is too early to make a final judgement on the success of the project. To date the following can be assumed as certain:

- 1) The method of release is useful in producing birds which are completely independent and fully adapted to the wild.
- 2) The area of the Hohe Tauern, Austria, still has plenty of habitat for the Bearded Vulture. In particular, the food supply is sufficient to carry a population of Bearded Vultures throughout the year.
- 3) The human population and hunters in the area in question have a very positive attitude towards the project.

For France it is too soon to make a definite statement.

REFERENCES

- BOITANI, L. (ed.) 1977. Proceedings of Seminar on Reintroductions: techniques and ethics. Rome, 29-30 June 1976. WWF Italia (Seria atti e studi) 2: 303.
- FREY, H. 1981. Diskussion verschiedener Freilassungsmethoden für Greifvögel und Eulenarten. *Forsch. Ber. Natpark Berchtesgaden* 3: 41-44.
- FREY, H. 1985. Die Auswilderung von Bartgeiernestlingen über Horste - Detailvorschlag zur Durchführung. Bulletin Project Bearded Vulture 7. *Gypaetus barbatus*. Zürich: Swiss Wildlife Information Service, University of Zürich.
- FREY, H. & WALTER, W. 1986. Zur Ernährung des Uhu, *Bubo bubo* (Linnaeus 1758), Aves, an einem alpinen Brutplatz in den Hohen Tauern (Salzburg, Österreich). *Ann. naturhist. Mus. Wien* 88/89 B.
- FUCHS, R. 1986. Beitrag zur Geschlechtsbestimmung beim Vogel. Inaug. Diss. Vet. Med. Univ. Wien.
- GUGGISBERG, C. A. W. 1955. *Das Tierleben in den Alpen*. Bd. 2: Hallwag, Bern.
- IUCN 1968. Problems in species introduction. *IUCN Bulletin* 2: 70-71.
- LOUWMAN, J. W. W. 1981. Breeding and Hand-rearing the Bearded Vulture at the Wassenaar Zoo, Holland. *Avicultural Magazine* 87, 4: 223-231.
- MEYBURG, B.-U. 1971. Versuch zur künstlichen Steigerung der Vermehrungsrate des Schreiadlers (*Aquila pomarina*) zu seinem Schutze. *Beitr. Vogelkd.* 17: 207-227.
- MÜLLER, H. & Ch. BUCHLI 1982. Zwischenbericht Projekt Bartgeier. Vergleich von fünf potentiellen Wiedereinbürgerungsgebieten im Alpenraum. WWF Projekt Nr. 1657, Frankf. Zool. Ges. Nr. 832/78. Fornat, April 1982.
- NOWAK, E. 1982. Wiedereinbürgerung von Tieren. Bericht über ein Kolloquium und dessen Ergebnisse. *Natur Landsch.* 57: 30-31.
- PECHLANER, H. 1978. *Gypaetus barbatus* at the Alpenzoo, Innsbruck. Report of proceedings: meeting on the reintroduction of the Bearded Vulture, *Gypaetus barbatus aureus* (Hablizl 1788) into the Alps. Morges, 17-18 November 1978.
- PETERS, H. B. 1935. Beitrag zur Brutbiologie des Bartgeiers *Gypaetus barbatus*. *Vögel ferner Länder* 9: 41-44, 57-60, 76-79 & 92-96
- PSENNER, H. 1975. The Bearded Vulture (*Gypaetus barbatus*) in captivity. Proc. ICBP World Conference on Birds of Prey, Vienna 1975.
- PSENNER, H. 1976. Haltung und Zucht des Bartgeiers (*Gypaetus barbatus*). *Zool. Garten N.F.* 46: 293-304.
- PSENNER, H. 1977. The successful breeding of the Bearded Vulture in the Alpenzoo, Innsbruck. Proc. ICBP World Conference on Birds of Prey, 1975, 370-371.
- RÜDI, D. 1978. Sex determination in birds with reference to the Bearded Vulture (*Gypaetus barbatus*). Proc. IUCN 1979, 39-40.
- SCHUMANN, A. 1916. Erfolgreiche Zucht von *Gypaetus barbatus* im Königlich Zoologischen Garten von Sophia. *Zool. Beob.* 57: 209-216.
- SCHUMANN, A. 1928. Über die erfolgreiche Zucht von *Gypaetus barbatus* im Königlich Zoologischen Garten von Sophia. *Mitt. königl. naturw. Inst. Sofia* 1, 145-155.
- SCHUMANN, A. 1929. Einige Bemerkungen über die Aufzucht junger in Gefangenschaft erbrüteter Bartgeier. *Zool. Garten* 1: 32-35.
- THALER, E. & PECHLANER, H. 1978. Volierenbrut und Handaufzucht beim Bartgeier (*Gypaetus barbatus aureus*): Beobachtungen aus dem Alpenzoo Innsbruck. *Gefied. Welt* 103: 21-25.
- THALER, E. 1981. Der Bartgeier (*Gypaetus barbatus*) im Alpenzoo Innsbruck: Methoden zur Verbesserung des Bruterfolgs. *Forsch. Ber. Naturpark Berchtesgaden* 3: 45-46.
- TSCHUDI, F. 1861. *Das Tierleben der Alpenwelt*. Leipzig, Verlagsbuchhandlung Weber, 1861.

Hans Frey
Institut für Parasitologie und Allgemeine Zoologie
Vet. med. Universität Wien
A-1030 WIEN
Austria

Winfried Walter
WWF Österreich
Postfach 1
A-1162 WIEN
Austria