Introduction

The bearded vulture (Gypaetus barbatus, L.) went extinct in the Alps in the early 20th century. An international reintroduction program was started in 1986, based on the release of young bearded vultures born and reared in captivity (Frey 1992). Up to 2012 a total of 184 birds have been released in the Austrian, French, Italian and Swiss Alps, the vast majority within protected areas. Since 1997 92 bearded vultures have fledged in the wild. By now some of them are already part of breeding pairs.

Methods

Observations from the whole Alpine Arc are being collected in the central online database of the International Bearded Vulture Monitoring (IBM), a collaboration of 12 partners all over the Alps. Currently almost 55,000 observations are documented. Most observations are reported by ornithologists and voluntary birdwatchers, as well as by employees of protected areas. Systematic observations regularly done at the release sites have not been entered into the database to avoid additional biasing. For this study observation data from 2003 to 2012 have been used.

Reproduction data are being collected based on an active monitoring of breeding birds. Only events with at least production of a clutch have been used for the analysis of reproduction data. All collected reproduction events from 1996 to 2012 were used.

For the analysis of observations and reproduction events the following types of protected areas provided by AlpArc have been used: National park, UNESCO Biosphere reserve, UNESCO World heritage, Nature reserve, Regional park. Frame of reference is the Alpine Convention (1991).

Results

Distribution of observations

In the years 2003 to 2012 a total of 22,165 observations from the Alpine region have been documented in the IBM database. Considering the Alpine part of each country, the observations of bearded vultures are quite evenly distributed. 11,358 (51%) reported observations have been located in protected areas. Among core countries, in France 78% of all observations have been located inside protected areas, while in Switzerland this was found for only 28% (table 1). Among the different categories of protected areas bearded vultures are most likely to be found in National parks (9999 or 79% of all observations inside protected areas). No difference in the distribution has been found for the different age classes of bearded vultures on an Alpine scale.

Reproduction

Since 1996 151 breeding events have been recorded in the Alps. Out of these, 92 young bearded vultures have fledged in the wild. 65% of the 151 breeding events have been located within protected areas, but again relevant differences among the countries have been noted (Italy 92%, Austria 62%, France 53%, Switzerland 52%). Based on the proportion of protected areas in each country, reproduction events are more often located in protected areas in all four countries than expected from an even distribution. 61% of 151 documented reproduction events have been successful. On an Alpine scale bearded vultures have been almost equally successful breeding inside (62%) and outside (58%) protected areas.

Discussion & Conclusion

Overall, 51% of all reported observations of bearded vultures and 65% of all reproduction events of the species have been located in protected areas in the Alps, which were estimated at 22% of the area covered by the Alpine arc. Thus protected areas definitely are centres of the known bearded vulture distribution in the Alps. But considerable differences in the use of protected areas by bearded vultures among the four core countries (Austria, France, Italy, Switzerland) have been detected. For a philopatric species like the bearded vulture the place of birth or release (most release sites are situated in protected areas) has an essential influence on the distribution of the species. Still today the observations and also reproductive territories are distributed over wide parts of the Alpine Arc. Apart from these philopatric effects major factors as habitat suitability, availability of suitable nest sites (Zink 2005) and the availability of sufficient food sources are crucial for the distribution of bearded vultures and their breeding units. These factors often distinguish protected areas from non-protected areas, for example through different wildlife and livestock management. Furthermore protected areas can provide extra protection for breeding pairs and their nest sites. Protected areas also form an essential part of the monitoring. On one hand they provide information about wildlife and monitoring systems and thereby facilitate the reporting of chance observations. On the other hand their staff is responsible for major parts of the long-term monitoring efforts including systematic nest surveillance.

The importance of protected areas can be illustrated by the fact that in the last ten years 9999 observations of bearded vultures (41% of all records) have been located within National Parks which cover a mere 6.5% of the Alpine Arc.