

# Inventory of the population and tracking of the reproduction of the Bearded Vulture (*Gypaetus barbatus*) in the Central Pyrenees (Aragon-Spain), period 2008.

Juan Antonio Gil<sup>1</sup>, Juan Carlos Ascaso<sup>1</sup>, Gonzalo Chéliz<sup>1</sup>, Oscar Díez<sup>1</sup>,  
Álvaro González<sup>1</sup> & M. Alcántara<sup>2</sup>

(1) Foundation for the Conservation of the Bearded Vulture (FCQ). Plaza San Pedro Nolasco 1, 4-F, 50.001 Zaragoza (Spain). Phone/Fax: 0034976299667. E-mail: fcq@quebrantahuesos.org. Web: www.quebrantahuesos.org  
(2) Government of Aragon (GA), Department of the Environment, General Management for Sustainable Development and Biodiversity. Edificio Pignatelli. Paseo María Agustín, 36, 50.071 Zaragoza (Spain). E-mail: malcantara@aragon.es



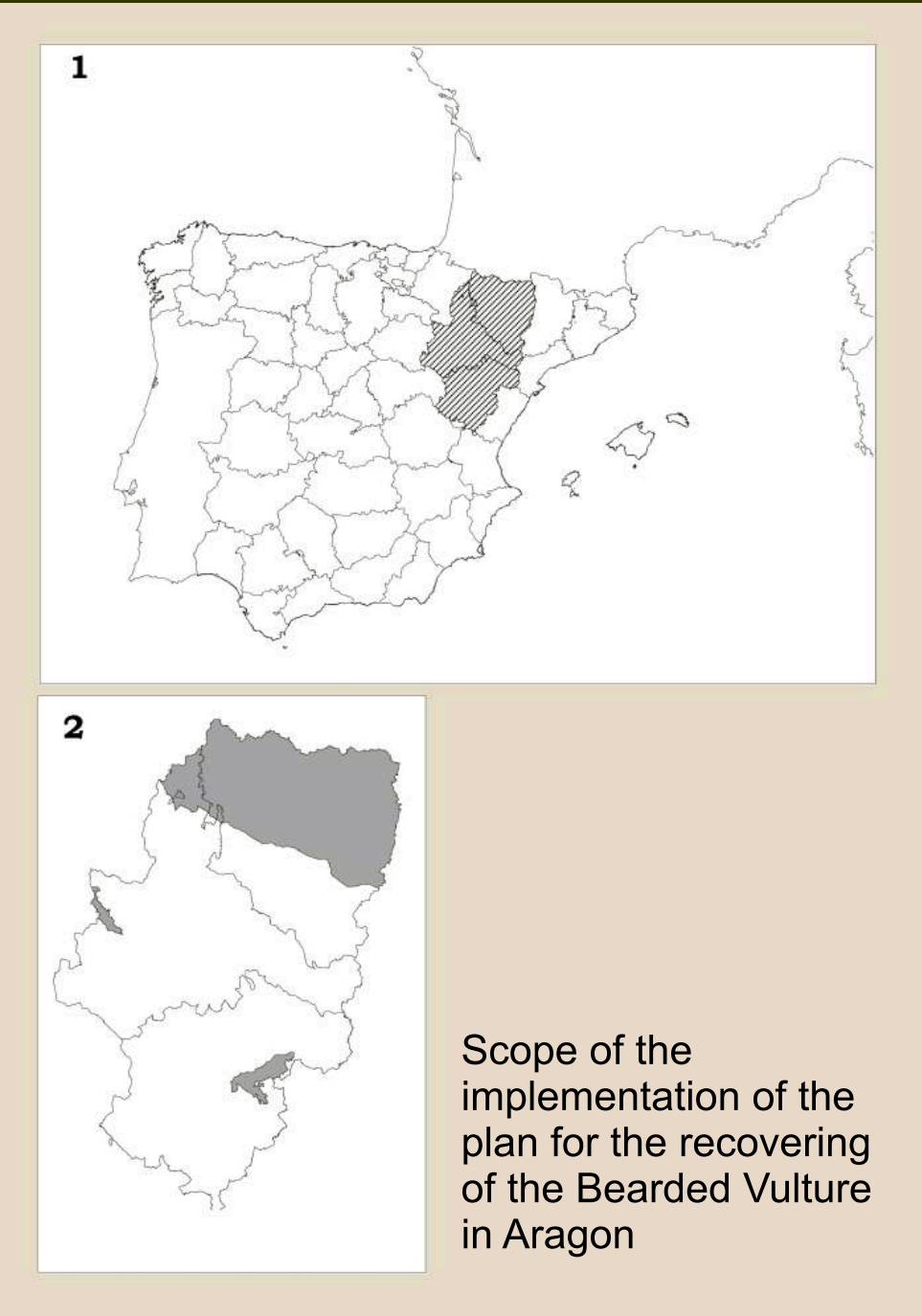
J.C. González

## INTRODUCTION

The bearded vulture (*Gypaetus barbatus*) is considered one of the most threatened birds of Europe. During the past few years it has been the object of various conservation plans in the different European countries (Antor et al. 2004; Heredia, 2005). The inventory of the reproductive population and the monitoring of its reproduction comprise part of the objectives of the Recovery Plan of the Bearded Vulture in Aragon (D. 45/2003).

## MATERIAL AND METHODS

The area of work locates in the field of application of the Plan of Recuperation of the Bearded vulture in Aragon (14,630 km<sup>2</sup>), specifically in the South slope of the Central Pyrenees (42° 55' N-1° 11' W). To make up an inventory of the reproductive population and monitor the reproduction in Aragon, the method used for other great rupicolous predatory birds has been followed since 1984, consisting in a series of consecutive controls carried out in the nest building area of the reproductive units (RU) in the periods of time considered crucial and providing most information for obtaining reproductive parameters (Margalida et al. 2003).



Map #1 Iberian Peninsula and South of France  
Map #2 Aragon with the plan for the recovery of the Bearded Vulture.

In Aragon we localized 77 known territories of Bearded vultures: 67 RU (43 couples y 24 trios) and 10 TU (seven couples and three trios). Aragon is home of 53.6% of all the RU of the Pyrenees (Spain, France and Andorra) (table 1) and 42.4%-43.7% of all the RU in Europe (table 2).

	Nº RU	Chickens
Spain	95	38
Aragon	67	28
Andorra	1	1
France	29	10
TOTAL	125	49

Table 1. Number of RU and flying chickens of Bearded vulture in the Pyrenees (Spain-France) 2008 (LPO, 2008).

	Nº RU	Chickens
Pyrenees	125	49
Alps	15-20	7
Corsica	9	2
Crete	4	2
TOTAL	153-158	60

Table 2. Number of RU and flying chickens of Bearded vulture in Europe 2008 (LPO, 2008).

Five RU are shared: one with France, one with Navarra and three with Catalonia. Of the 58 controlled RU, 45 realise egg laying and 13 don't. Of these 45, eight RU failed during the incubation and in 35 the chicks were born. Of these, seven chicks die and 28 fly. In Aragon flew 57.1% of the chicks of the Pyrenees and 46.6% of the chicks of Europe.

The productivity (nº of controlled flown chicks/nº of RU) was 0.48 chicks. The reproductive success (nº of flown chicks/nº of egg laying RU) was 0.62 chicks. The productivity of the population of bearded vultures in Aragon shows a negative tendency (linear tendency with  $R^2=0.2021$ ) from 1995 to 2008 (figure 1). The average value of the annual productivity is 0.44 ( $\pm sd=0.12$ ,  $n=14$  years), but the tendency shows fluctuations during some years, being 0.67 the maximum value registered for the year 1999 and 0.23 the lowest value for the period of 2006 (figure 1).

The number of RU in Aragon has increased annually at an average pace of 4.51% ( $\pm sd=3.45$ ,  $n=13$ ) from 1995. During the period of 2000 we registered a maximum value of the annual increase (10.42), while the lower value was registered in 2001 (0.0). The tendency of the annual increase is negative (linear tendency with  $R^2=0.140$ ) (figure 2), although there are fluctuations during some years.

## CONCLUSIONS

The productivity of the species in the Aragonese Pyrenees has suffered a progressive drop from 1995. The reasons of this drop are not clear and they can be due to several factors that should have to be studied in detail. Nevertheless, the number of RU has increased annually at an average pace of 4.5%, from 38 RU in 1995 to 67 in 2008. In 14 years 29 new RU settled.

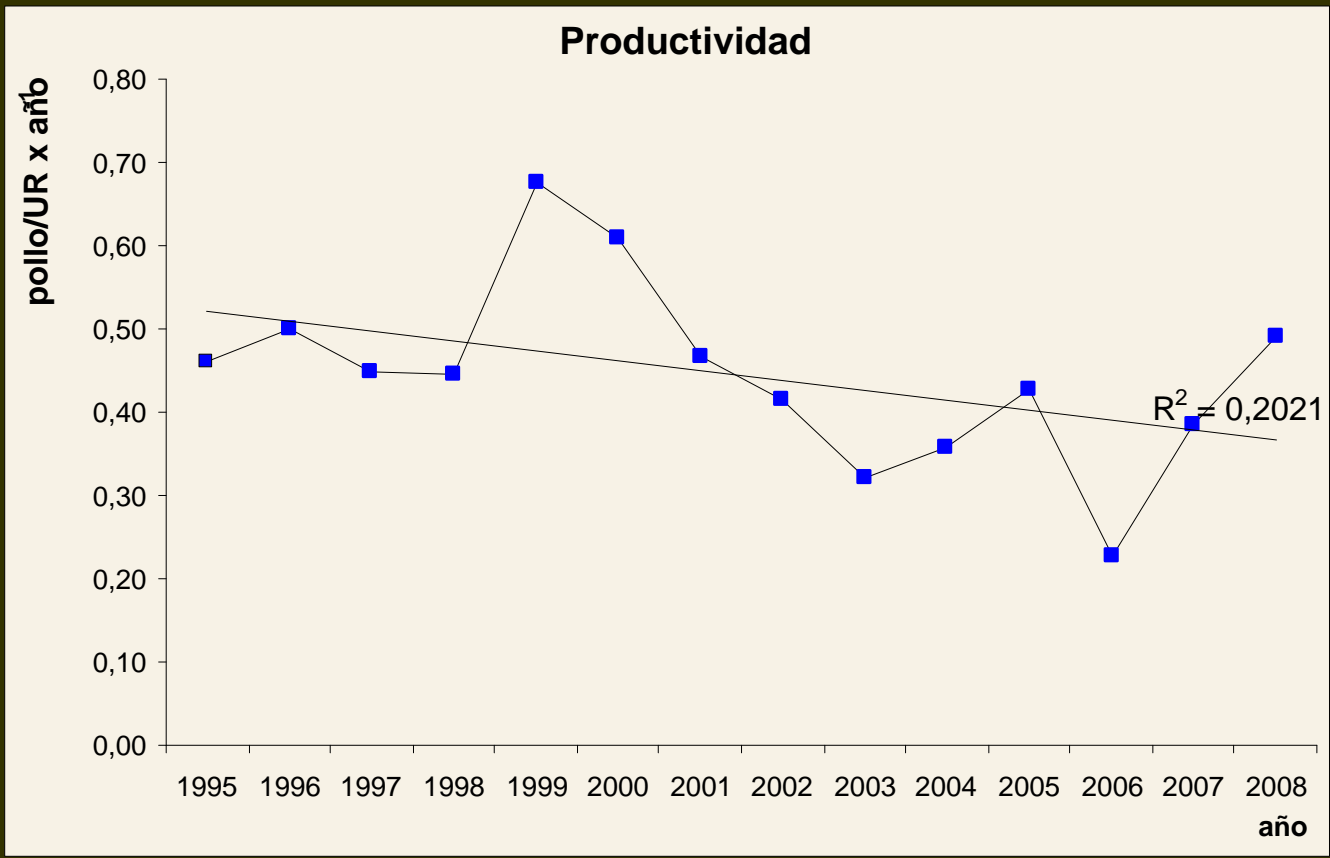


Figure 1. Annual productivity of the population of Bearded vultures in Aragon (Spain) 1995-2008. It presents the linear tendency with the value of the regression coefficient.

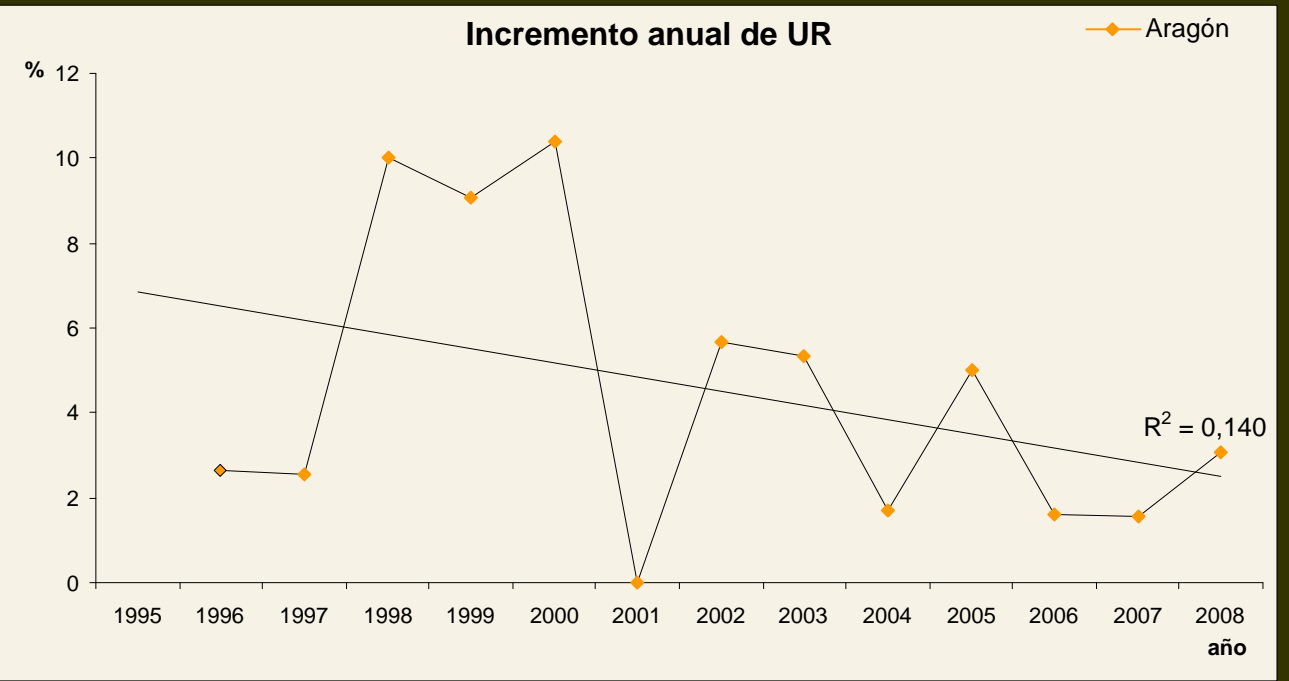


Figure 2. Annual increase of reproductive units (RU) of the population of Bearded vultures in Aragon (Spain) 1995-2008. It presents the linear tendency with the value of the regression coefficient.

## ACKNOWLEDGEMENTS

We want to express our gratitude to all the people of the FCQ and GA.

## BIBLIOGRAPHY

ANTOR, R., MARGALIDA, A. & HEREDIA, R. 2004. Quebrantahuesos, *Gypaetus barbatus*. En A. MADRÑO, C. GONZÁLEZ Y J.C. ATIENZA (Eds.): Libro Rojo de las Aves de España. Dirección General para la Biodiversidad-SEO/BirdLife. Madrid.  
HEREDIA, R. 2005. Status y distribución del quebrantahuesos en España y diagnóstico de la situación de la población en la UE. En: MARGALIDA, A. y HEREDIA, R. (Eds.). Biología de la Conservación del Quebrantahuesos (*Gypaetus barbatus*) en España: 21-37. Organismo Autónomo Parques Nacionales.Madrid.  
LPO. 2008. Gypaete Barbu. Pyrenees Versant Nord. Circulaire nº 51.  
MARGALIDA, A., GARCÍA, D., BERTRAN, J. & HEREDIA, R. 2003. Breeding biology and succes of the Bearded Vulture (*Gypaetus barbatus*) in the eastern Pyrenees. Ibis 145: 244-252.



Presented at the 18th International Conference of the European Bird Census Council  
22rd-26th of March 2010, Cáceres, Spain  
"Monitoring, indicators and targets".

