

Results of the reintroduction of Griffon Vulture (*Gyps fulvus*) in Vrachanski Balkan Nature Park, Northwest Bulgaria – completion of the establishment phase 2010-2020



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Abstract: Here we present and analyze the results from the just completed 11 years establishment phase of the reintroduction of the Griffon Vulture (*Gyps fulvus*) in Vrachanski Balkan Nature Park in the northwest of Bulgaria that took place in the period 2010-2020. The number, age and origin of the released birds, methods of release, survival rate, roosting and breeding sites selection, conservation management techniques applied, breeding performance and home-range's dynamics were studied, analyzed and presented. After the first successful breeding in 2015 the species is considered restored in the area after more than 60 years of absence as breeder. In 2020 the local population counts of about 50-80 individuals, 18-20 pairs in 3 different colonies and two more frequently used roosting sites, raising 12-14 offspring. The establishment phase of the reintroduction of the species in this particular area is considered completed now.

INTRODUCTION

The Griffon Vulture (*Gyps fulvus*) was numerous and widespread breeding species in Bulgaria up to 1940s (Patev 1950). After the middle of the last century the species is rarely observed in various parts of the country (Boev, Mitchev, 1981). In 1978 in the Eastern Rhodopes a new breeding locality of the species was established with one nesting pair (Mitchev and others, 1980), or 1-4 breeding pairs (Yankov, Profirov 1991). Based on complex conservation measures the species recovered slowly to 70 breeding pairs in 2014 (Dobrev & Stoychev, 2014). Eastern Rhodopes appear the only place in Bulgaria, where the species breeds at the beginning of the 21st century- until 2010, when reintroduction projects and releases of Griffon Vultures began in the Balkan Mountains (Stoiev et al., Yankov et al. this volume) and in Kresna Gorge (Peshev et al. 2015).

For Vrachanski Balkan lacks specific data on the nesting of the species in the literature. Based on information collected by interviews of elderly local residents are located 7 areas where with high reliability can be assumed that the species bred to about 1950s (Stoyanov, 2010 a; Stoyanov, 2010 b).

The work on the restoration of Griffon Vulture in Vrachanski Balkan went through several stages:

1. Study and preparation for the start of the main actions- 2003.
2. Initiation of field work, preliminary studies carried out on samples feedings, inspections of areas, construction of the first feeding site, preparation of the Viability Study for the reintroduction of the species in Vrachanski Balkan (Stoyanov et al. 2006), establishment of contacts with various authorities, feeding, monitoring, etc. 2004 – 2008.
3. Building a second site for feeding and adaptation aviary, feeding, monitoring and others - 2008 – 2009.
4. Import of Griffon Vultures from Spain and France, keeping them in the acclimatization aviary and periodic release into the wild; feeding, monitoring and others- 2009 – 2015.

The actions for Griffon Vulture in Vrachanski Balkan are part of a large international project. For Bulgaria it is implemented along the entire Balkan Mountain chain (Stara Planina) in four target sites Vrachanski Balkan (UTM FN99), Central Balkan (UTM LH32), Snite Kamani (UTM MH43) and Kotlenska Planina (UTM MH65). Overall this project from Bulgarian side is implemented by Green Balkans, Fund for Wild Flora and Fauna (FWFF) and the Birds of Prey Protection Society (BPPS). In the area of Vrachanski Balkan the main local partner is the Directorate of Natural Park "Vrachanski Balkan" (NPVB). The Bulgarian Environmental Partnership Foundation was a partner in the project in the period 2004 to 2009. Foreign partners are the Frankfurt Zoological Society, German Environment Agency, Black Vulture Conservation Foundation and later the Vulture conservation Foundation. Since 2010 the project "Vultures Return in Bulgaria" LIFE08 NAT/BG/278 co-funded by the financial instrument of LIFE+ of EC was in implementation until the end of 2015.

MATERIALS AND METHODS

It was used the the Griffon Vulture release methodology successfully developed and implemented for the restoration of the species in France (Choisy et al. 1992; Terrasse & Choisy, 2007).

One of the important activities started from the very beginning and developed over the years is the establishment of a system for supplying food for vultures. These are mainly corpses of domestic animals by farmers in the area, but also from more distant industrial farms. The feeding of Griffon Vultures is done on purpose built special feeding site, which is securely fenced and certified by the veterinary services in Bulgaria (NVS), as required by the EC (Commission Regulation (EC) № 1774/2002), (Regulation (EC) № 1069 / 2009). Regular feeding has been provided, with the aim of permanent food availability to the site, accessible for the released and wild Griffon Vultures.

The Griffon Vultures were reared in an aviary built on the territory of NPVB, 4 km from Dolno Ozirovo village (municipality Varshets, Montana). It has a solid metal supporting structure spouse of concrete bricks and wooden roof. The cage is surrounded by a wire mesh that the roof has a large "eye" (up to 20x20 cm) not to hold a lot of snow. The cage is divided into two cells: large dimensions 16 m × 10 m and a small 6 m x 10 m. The height of the two cells at the front end is 4 m, and the rear end 2 m. In both cells are constructed concrete basins of 150 liters of water for drinking and bathing vultures during the warmer months of the year. At the feeding site outside the cages, in moveable containers water was also supplied to released and wild vultures coming to eat here.

Periodically, groups of Griffon Vultures from Spain and France were transferred to the acclimatization aviary. They were kept about one year in captivity and then were released into the wild. The first group of 6 birds was set up in April 2009. In October 2010, the first release of eight birds together took place. By the end of 2020 in Vrachanski Balkan release site were released 61 Griffon Vultures.

Observations of Griffon Vultures were carried out mainly in the area of the feeding site and the adaptation aviary in the vicinity of Dolno Ozirovo village. In addition to the standard optics for observations – powerful telescope and binoculars, since 2013 a motion detection camera is in use. Periodic observations for the presence of vultures have been conducted in other important sites of Vrachanski Balkan - especially large rocks. Besides personally collected data, in certain cases also information from other sources was also collected and analyzed – e.g. by Directorate of the National Park Vrachanski Balkan, tourists, locals, etc.

RESULTS AND DISCUSSION:

In the period 2010 - 2020, a total of 61 Griffon Vultures imported from Spain and France were released from the Vrachanski Balkan release site.

CONCLUSION:

The Griffon Vulture is successfully reintroduced to Vrachanski Balkan Nature Park, yet since the first successful breeding in 2015, and in 2020 with the first reproduction of locally fledged individuals. Thus the establishment phase of this local reintroduction is considered finished.

The newly established colonies in Vrachanski Balkan are forming a common refuge and are acting as source with a positive balance of produced individuals and are now well integrated within the Balkan Griffon Vulture population. Many birds with origin of Serbia, Croatia, Eastern Rhodopes and others are using it for summering, wintering, during migration or short visits etc.

The breeding success of the new colonies is around the average and higher.

The feeding site in Vrachanski Balkan is now attracting Cinereous Vultures (locally released and immigrants), Egyptian Vulture, Golden Eagle, Imperial Eagle, White-tailed Eagle, Black Kite, Raven etc.

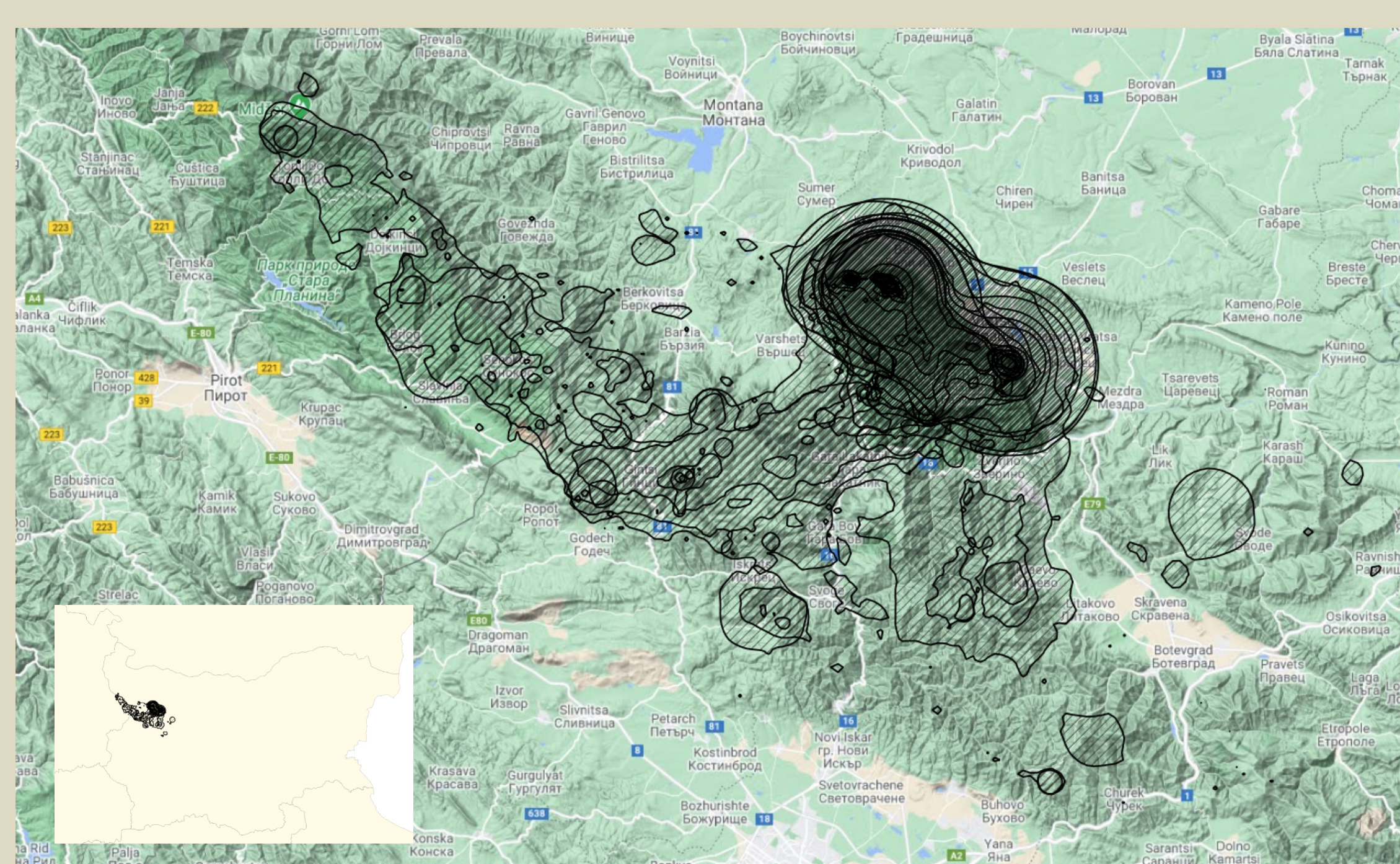
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Year	Vrachanski Balkan UTM FN99
2010	8
2011	7
2012	5
2013	8
2014	12
2015	3
2016	4
2017	5
2018	4
2019	3
2020	2
Общо	61



Home ranges calculated by dBMM



Fate of the released Griffon Vultures in Kresna Gorge in the period 2010-2020.

A. Number of dead individuals in the area of release (by reason)			B. Number of dead individuals outside the release area (by reason)			C. Breeds/sojourn anywhere out of the release area	D. Breeds/sojourn in Vrachanski Balkan (the release area)	E. Unknown fate
electrocution	poison	other	electrocution	poison	other			
4	8	1	1	3	4	3	33	4
13			8					
21			36			61		

Breeding performance of the Griffon Vulture in Vrachanski Balkan in the period 2010-2020. Years of successful breeding are given in bold.

Site	Year	# Colonies	# Territorial pairs (b)	# Breeding pairs (c)	# Fledglings (d)	Breeding success (d/b)	Fledging success (d/c)
Vrachanski Balkan NP UTM, FN99	2014	1	2	0	0	0	0
	2015	1	5	2	1	0.2	0.5
	2016	2	8	6	4	0.5	0.67
	2017	2	12	10	6	0.5	0.6
	2018	2	14	11	9	0.64	0.81
	2019	2	23	20	12	0.52	0.6
	2020	2	18	13	7	0.39	0.53

Dynamics of the number and mortality of the Griffon Vulture in Vrachanski Balkan by year in the period 2010-2020. And analysis of the population source/sink balance – the number of locally died immigrants vs. the number of the locally fledged individuals.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Max. # observed Griffon Vultures*	8	16	18	25	32	44	52	58	63	68	53	
# dead individuals (of them - immigrants)**	0	1	2	1	0	0	-1	1	0	15 (7)	0	21 (8)
Balance – fledged locally vs. destroyed immigrants in the area	0	0	0	0	0	1	3	6	9	4	11	33

With positive balance of 33 individuals Vrachanski Balkan is population source for the Griffon Vulture as 41 chicks are produced and some 8 immigrants died locally.