

Reintroduction of the Griffon Vulture (*Gyps fulvus*) in Kresna Gorge, Southwest Bulgaria – results from the ongoing 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.

Breeding performance of the Griffon Vulture in Kresna Gorge 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)
Kresna Gorge UTM, FM73	2010	1	2	0	0	0	0
	2011	1	2	1	0	0	0
	2012	1	0	0	0	0	0
	2013	1	2	0	0	0	0
	2014	1	3	0	0	0	0
	2015	1	3	1	0	0	0
	2016	2	7	2	2	0,29	1
	2017	2	10	4	0	0	0
	2018	1	2	1	1	0,5	1
	2019	1-2	2-3	0-2	0-2	0- 0.67	0-0.67
	2020	1	3-4	2-3	2-3	0.67- 0.75	0.67-0.75

In 2019 following the poisoning of the colony in Kresna Gorge in 2017 the colony is recovering and the permanent presence of more than 40 birds is again seen. Reproduction of at least one pair was successful once again. About 46 tones of food are disposed annually to the feeding site.

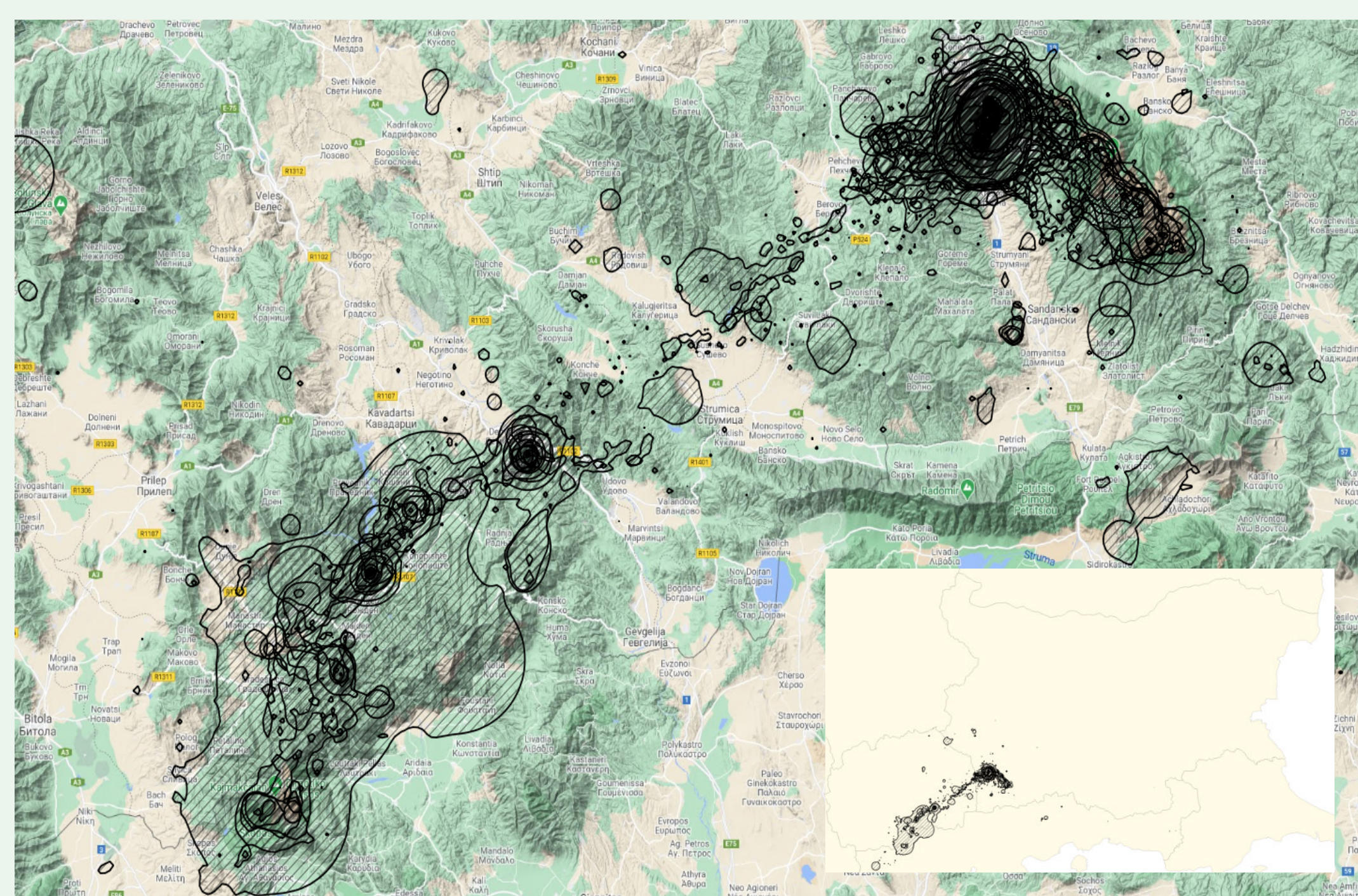
Kresna Gorge' griffon vulture colony is re-established and the Social memory saved. The colony now is integrated to Demir Kapia colony and both form a common griffon vulture population of Northern Macedonia and SW Bulgaria (probably from now –on will be called Vardar-Struma subpopulation).

The releases of immature Griffon vultures should continue with at least 10 birds per year until natural colony is established and begin to produce by ten juveniles per year. However, the area, having a central place in Balkan Peninsula and although keeping small breeding nucleus is still important as a summering, on-passage and wintering site.

As much as possible 20 kV power-line pylons should be safeguarded for birds in Kresna Gorge. The actions for establishment of wild population of Fallow deer and establishment of extensive raised sheep and cattle herds should continue. The wild nucleus of Fallow deer should now be shortly supplied with some more animals until they reach et least 30 females. Feeding sites in the high mountain areas of Rila and Pirin National Parks should be established, as these areas are obviously preferred by the vultures in summer, and lesser risk of poisoning or electrocution exists there.

The poisoning is still hard to control along Struma Valley and this will obviously always be the case until people and predators share the same habitat. Thus feeding of vultures on traditional feeding sites still is a must, while any measures for minimizing the poison baits use are underway as permanent and long-term measures.

Year	Number of released Griffon Vultures in Kresna Gorge UTM.FM73
2007	0
2009	0
2010	19
2011	7
2012	12
2013	14
2014	4
2015	8
2016	1
2017	15
2018	14
2019	1
2020	4
Общо	99



Home ranges calculated by dBMM

Number and origin of the Griffon Vultures observed in Kresna Gorge by years in the period 2010-2019.

Origin	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Kresna Gorge	19	15	13	23	21	24	29	12	25	26
Central Balkan	0	0	0	0	4	0	1	1	0	0
Eastern Balkan Mountains	1	1	1	4	2	2	0	0	0	1
Vrachanski Balkan	0	0	0	0	0	4	1	0	1	0
Eastern Rhodopes	0	0	0	0	0	1	1	0	0	0
Serbia	1	2	1	2	3	4	6	6	5	1
Croatia	1	1	3	1	3	1	1	0	1	2
Israel	0	1	0	1	3	1	2	2	7	4
Greece	0	1	0	0	0	0	0	0	0	1
Unknown	6	8	12	62	51	78	84	73	75	79

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Max. # observed Griffon Vultures*	15	11	16	27	28	47	61	54	49	74	>60	-
# dead individuals (of them - immigrants)**	3	1	2 (1)	1	0	-1	-2	42 (17)	1	1	10 (5)	64 (26)
Balance – fledged locally vs. destroyed immigrants in the area	0	0	-1	0	0	-1	0	-17	1	2	-2	-18

Dynamics of the number and mortality of the Griffon Vulture in Kresna Gorge 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.

* Simultaneously observed; ** in brackets is given the number of immigrant Griffon Vultures that died in Kresna Gorge.

