Re-introduction of Griffon Vulture *Gyps fulvus* in Kresna Gorge of Struma River, Bulgaria

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Резюме

Това е четвъртата година от началото на реинтродукцията на белоглавия лешояд (*Gyps fulvus*) в Кресненския пролом, която беше започната от ФДФФ в началото на 2010. През 2013 броят на белоглавите лешояди присъстващи в района осезаемо се увеличи и бяха постигнати някои рекордни численост: 1.) Най-голям брой белоглави лешояди хранещи се едновременно на площадката за подхранване – 27 инд. на 03 Май 2013; 2.) Регистриран най-голям брой непуснати в рамките на проекта („гости") белоглави лешояди, които са посетили Кресненския пролом за определено време през годината – над 70 индивида. Така заедно с пуснатите в рамките на проекта и всички „гости" общия брой белоглави лешояди регистрирани през 2013 година в Кресненския пролом доближава 100 индивида.

За поредна година бяха наблюдавани маркирани белоглави лешояди от Израел, Гърция, Сърбия, Хърватска и други части на България.

На свой ред индивиди пуснати в Кресненския пролом бяха наблюдавани в Сърбия, Хърватска, Гърция, БЮР Македония, както и в други части на България (Врачански Балкан, Сините камъни, Централен Балкан, Котел и Източни Родопи).

И тази година белоглавите лешояди от Кресненския пролом прекараха най-горещите месеци от годината във високите части на Рила и Пирин. Това освен от радио-предавателите, които носят някои от птиците, беше документирано и от туристи и парковата охрана в района на връх Вихрен и Кончето и от Спано поле в НП Пирин.

През 2013 година за първи път от 1997 (Христов и Стойнов 2002) беше наблюдаван черен лешояд (*Aegypius monachus*) в Кресненския пролом при това двукратно през няколко седмици. Това е първият случай на използване от черен лешояд на площадката за подхранване на лешояди в района и първото фотографско документиране на този вид в ЮЗ България въобще.

Все още намаляващия на Балканите египетски лешояд (*Neophron percnopterus*) беше наблюдаван неколкократно през 2013 година в Кресненския пролом. Бяха установени общо три различни птици – една неполовозряла (III календарна година), една полу-възрастна (IV календарна година) и една полово зряла птица. Най-младата се оказа опръстенена в района на Демир Капия, БЮР Македония през 2011 (М. Велевски, лич. съобщ.).

Три смъртни случая на белоглави лешояди от и в района на Кресненския пролом бяха констатирани през 2013. Един лешояд пуснат през 2010 в Кресненския пролом беше намерен мъртъв на остров Црес в Хърватска (причината за смъртта не стана ясна); една птица беше убита от ток на 20 kV стълб близо до гр. Бобошево; и една птица беше намерена мъртва до село Мечкул в Пирин, най-вероятно вторично отровена от труп на домашно куче.

Природозащитните дейности на ФДФФ в района продължават в рамките на проект „Живот за Кресненския пролом" финансиран от финансовия инструмент LIFE+ на ЕС и съ-финансиран от Клуба на приятелите на Зоопарк Виена, Австрия и Биопарк де Дуе, Франция.

Ключови думи: Белоглав лешояд, *Gyps fulvus*, Кресненски пролом, България, реинтродукция, черен лешояд, *Aegypius monachus*, египетски лешояд, *Neophron percnopterus*

Abstract

This is the fourth year of the re-introduction of the Griffon Vulture (*Gyps fulvus*) in Kresna Gorge started by FWFF in early 2010. In 2013 the Griffon Vulture presence was considerably increased in the area with record numbers of simultaneously present individuals at the feeding site - 27 on 03 May 2013 and registered presence of more than 70 exogenous individuals for some time in different periods of the year. Thus in total nearly 100 different Griffon Vultures have been observed in Kresna Gorge in 2013 including released within the project, but also migrating or vagrant birds form other parts of the Balkan Peninsula. Marked birds from Israel, Greece, Serbia, Croatia and other parts of Bulgaria have been observed. Birds released in Kresna Gorge were observed in Serbia, Croatia, Greece, and FYR of Macedonia, as well as other parts of Bulgaria (Vrachanski Balkan, Sinite Kamani, Central Balkan, Kotel, and Eastern Rodopi). This year the Griffon Vultures spent even more time in the National Parks of Rila and Pirin during the hot summer months, where they have been recorded by the transmitters they bring, but also they were directly observed and photographed by tourists and park authority in the area of Vihren peak and Spano Pole in Pirin National Park.

This year for first time since 1997 (HRISTOV & STOYNOV 2002), a Black Vulture (*Aegypius monachus*) was observed in the area of Kresna Gorge. This was first ever photographed Black Vulture in the area and the first documented use of the feeding site from the species.

In 2013 the still declining on the Balkans Egyptian Vulture (*Neophron percnopterus*) has been recorded in Kresna Gorge with three different individuals – one immature (3-th cy), one subadult (4-th cy) and one adult. The immature Egyptian Vulture appeared to has been ringed near Demir Kapia in FYR of Macedonia in 2011 (M. VELEVSKI pers.comm.).

Some mortality cases of vultures were also recorded in 2013 – one individual released in Kresna Gorge in 2010 died on Island of Cres in Croatia (the reason not clear), one was electrocuted on 20 kV pylon near Boboshevo, and one was most probably secondary poisoned on a dog carcass near village of Mechkul in Pirin Mts.

Conservation measures for improving the habitat for the vultures in Kresna Gorge are still underway – providing food for the vultures, against poison activities, compensation for farmers and prevention programme against livestock depredation, eco-tourism promotion, insulation of dangerous powerlines, introduction of rare breeds of cattle, Fallow deer etc.

FWFF continues to work in the frame of the project “Conservation of birds of prey in Kresna Gorge, Bulgaria” supported by LIFE+ financial instrument of EC and co-funded by private donors as Friends of Vienna Zoo, Austria and Bioparc Zoo de Doue, France.

Key words: Griffon Vulture, *Gyps fulvus*, Kresna Gorge, Bulgaria, reintroduction, Eurasian Black Vulture, *Aegypius monachus*, Egyptian Vulture, *Neophron percnopterus*

Transfers

Only one Griffon Vulture was transferred to Kresna Gorge in 2013, originating from Spain.

Releases

In 2013 in total 14 Griffon Vultures were released in Kresna Gorge- all of them but two transferred to the cage in 2012. One of these- B25-E was second time released after its first release in 2012 and re-entering the cage on its own. The other one- K arrived in Kresna Gorge in June 2013 and was released in December 2013. They adapted well and joined the group of free flying birds in the area.
The release of the 12 birds on 14 March 2013 happened by accident, as an unfortunate situation with stormy wind ruined the acclimatization aviary and all birds escaped. Despite the destruction of the valuable aviary, and the serious injury of the captive bred Black Vulture, the release of the vultures was not a big problem, as all of them were already passed their adaptation period. Some problems occurred with 4 non-releasable birds, that because being disabled, we were planning to keep them in captivity. It took quite some time the disabled birds participated in the feeding queries and it was impossible to be re-captured. Two of them were re-captured three months later anyway.

Figure 1. Releases and observations of the released Griffon Vultures in Kresna Gorge in 2013.

N	ID of the bird\ month	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	B25 – E imm. (re-released)	x	x	x	VB	VB	ER	ER	ER	ER	ER	ER
2	K40 subad. (imprinted)		x recap									
3	K44 imm.		x	x	x	x	x		x	x	x	x
4	K46 imm.		x	x	x	x	x	†				
5	K47 imm.		x	x	x	x	x		x	x	x	x
6	K0V imm. (disabled)		x	x	x	x	x					
7	K0J subad. (disabled)		x	x	x	x	recap					
8	Orange ring- imm. (disabled)		x	x	x	x	x					
9	B00 imm.		x	x	x	x	x		x	recap		
10	B60 imm.		x	x	x	x	x		x	MK		
11	B61 imm.		x	x	x	x	x					ER
12	B62 imm.		x									
13	B63 imm.		x	x	x	x	x	x	x	MK	x	x
14	K											x
Total number		**1**	**13**	**11**	**10**	**10**	**10**	**2**	**5**	**4**	**3**	**4**

Monitoring

Methods

The vultures were frequently observed by binoculars and spotting scopes at the feeding site and the known roosting sites.

In 2013 we continued to use blue wing-tags with orange (enlightened to “gold”) inscription of single letter (common letters for the Cyrillic and Latin alphabets) for the released birds. But, because the release in March 2013 happened by accident, the birds got free with the existing wing-tags and rings with which they were received- 6 birds with blue wing-tags with vertical black inscription of three alphanumerical code as K44. Five birds bear blue wing tags with vertical yellow three alphanumerical codes as B61.
Concerning the rings in one bird released in 2013 we continued to use the original rings (red with white codes) with which the birds were imported from Spain. But the birds with yellow ing-tags were equipped with the same color and code rings. The birds with the blue wing-tags with three vertical alphanumerical code were equipped with green rings with white inscription with the same code as on the wing-tag as B61.

Figure 2 and 3. The marking scheme for Griffon Vultures released in Kresna Gorge in 2013.

The marking patter from the releases in 2012 are still in use - the wing tags and the rings were set to create a unique combination – e.g. ring on left leg, wing tag on left wing, and opposite and/or crossed. We put two wing tags to one of the birds. Thus even if it is impossible to see the codes, one could recognize the bird only by the situation of the rings and wing tags. The records of the observed birds are made as the number of the ring is followed by the letter of the wing tag (M60-X or B31-U).

We continued using GPS-GSM loggers to track some of the released vultures. The other three just showed the extension of the foraging area and some occasional longer distance movements to Greece, FYROM, Serbia and to the east of Bulgaria.

The definition of the area of presence and the foraging area helps us to address conservation measures such as the compensation of depredated livestock to avoid poison baits use, public awareness raising and insulation of the dangerous power-lines.

The results in 2013 did not show difference from the ones obtained in 2012. The feeding site and the area of about 5 km in radius are the most sites where the vultures could be found.

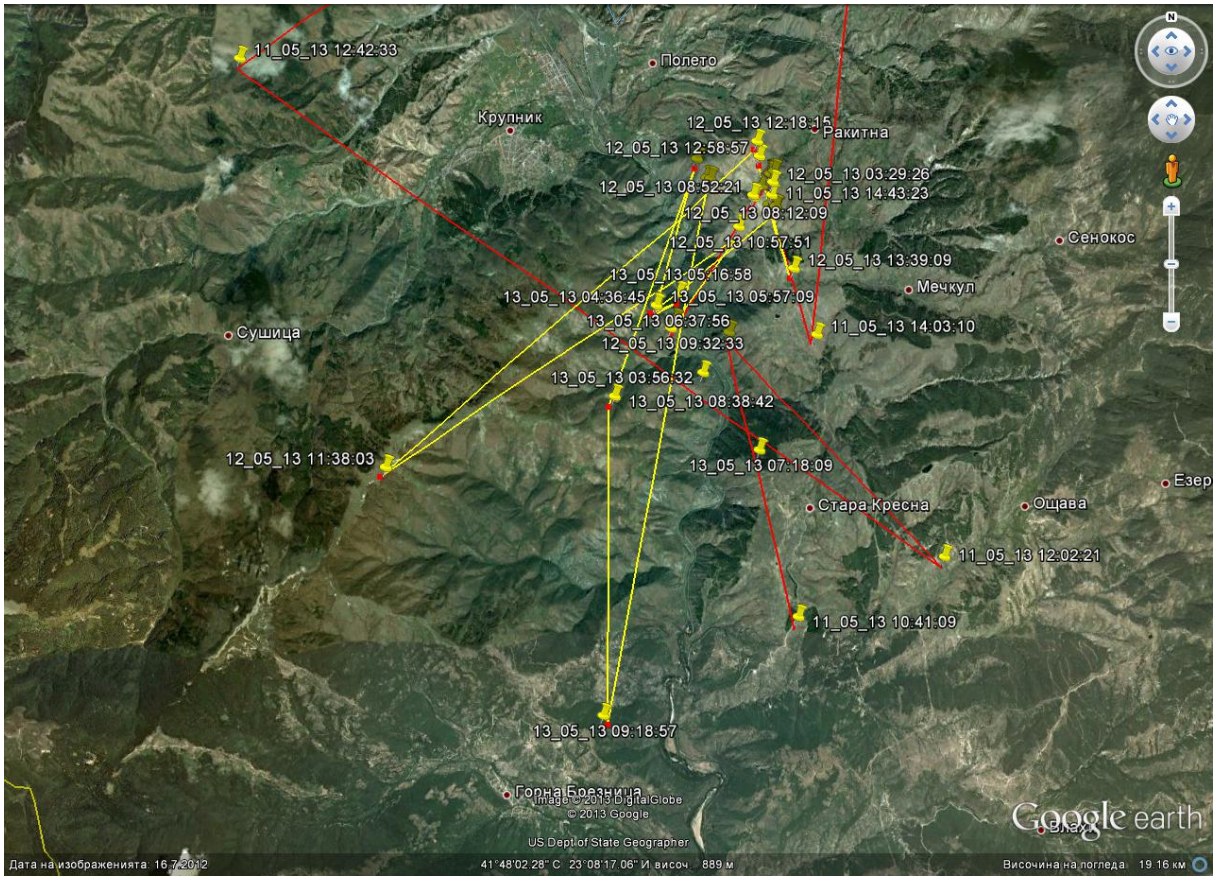


Figure 4. Map of the most frequent movements of the Griffon Vulture B17-M.

This year we continued to use a camera trap to the feeding site and counted and recognized the present individual Griffon Vultures. We succeeded to take pictures of vultures that we were unable to recognize from a distance as well to take pictures of a pair of wolves *Canis lupus*.

Figure 5 and 6. Griffon Vulture and a pair of wolves pictured at the feeding site in Kresna Gorge with camera trap.

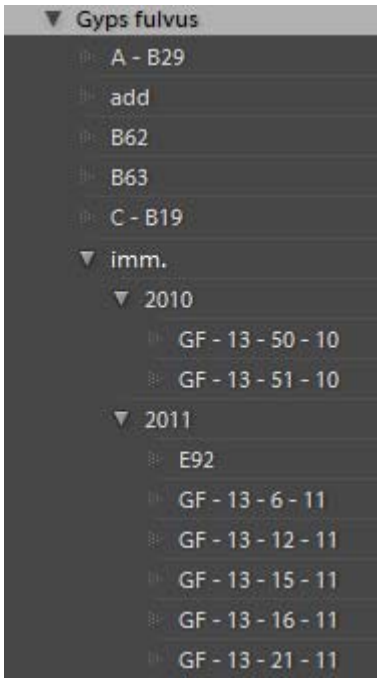
Digiscoping and determination of different individuals

We continued to use digiscoping and took pictures of all observed birds with 300, 400 and 600 mm lenses in RAW format. After that digitally enlarged on a PC screen and improved through *Adobe PhotoShop* we found the number of the photographed birds either pictured from a hide or in flight or anywhere. Taking pictures from a hide on the feeding site allowed us to read even standard ornithological rings.
In 2013 we introduced a new method for establishing the actual number of the Griffon Vultures visiting the feeding site in Kresna Gorge. We used the "***visual marking***" method (individual description of actual molting or scratches, cuts or disorder of feathers,) described by HRISTOV & STOYNOV (2002), but we introduced more advanced technology and thus further developed it. We made several thousand photographs of Griffon Vultures, mostly in flight with the goal to determine the different individuals. After removing the inappropriate pictures, remained 3642.

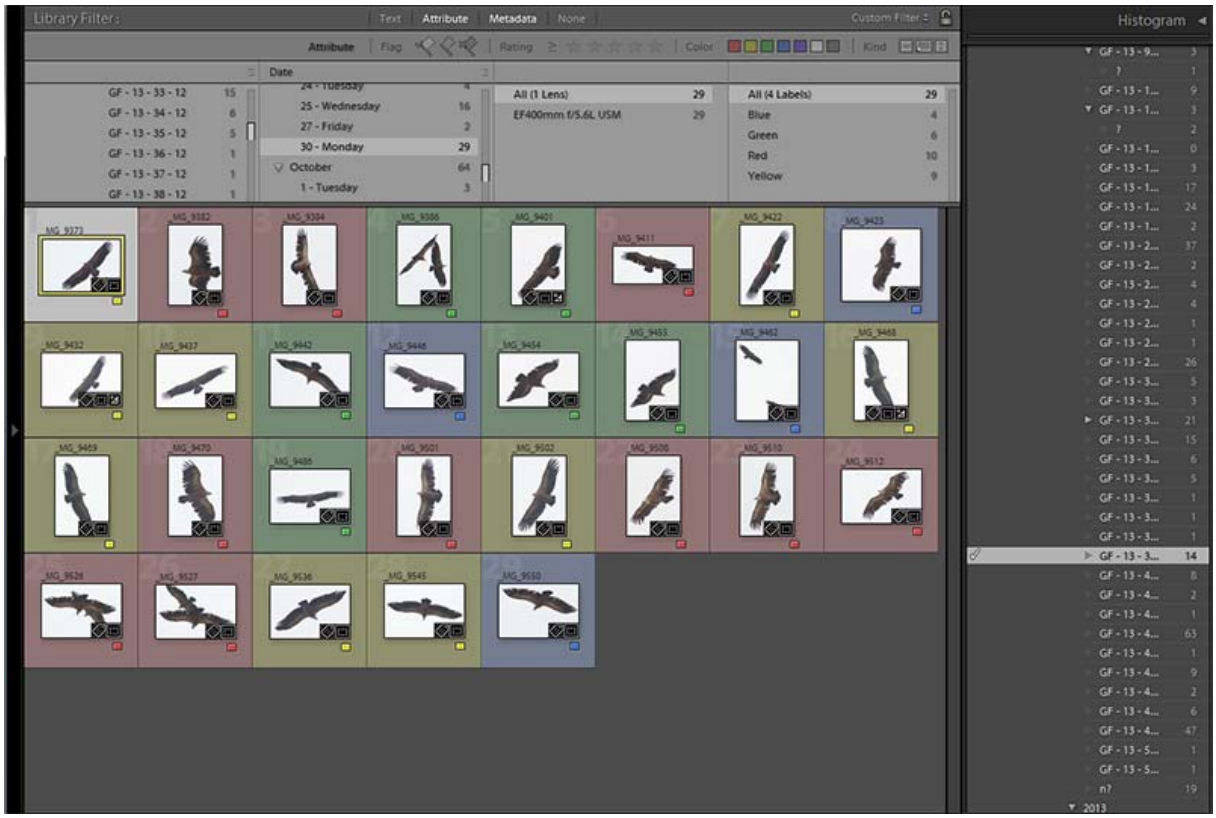
The main tool used was the *Adobe Lightroom*, with its possibilities for cataloguing, comparing and correction of the pictures.

We created hierarchically ordered key words in a catalogue in the programme and after each field trip we entered and attached the new pictures. The main key word is the species name,

as in it we created sub-key word for each different individual, as an example for the released by FWFF birds these are the numbers of the ring and the wing-tag. The exogenous birds we put in groups “imm.” and “add.” in relation to their obvious age. The vultures in the group “imm.” we divided by year of their birth using the molting pattern age determination according to ZUBEROGOITIA et al. (2013). On each different bird we gave own key code (name), it contains the year of observation, number in order and age, as an example (GF-13-27-11).



The identification itself was done, as all pictures from the most current field trip got reviewed and the birds recognized receive their individual key codes. When non- registered until now birds remain, the first picture receives yellow marker (the programmes for cataloguing have got markers in color, rating, and positive and negative vote for the picture). After this the picture have been opened in a parallel view with a next picture with the option for synchronized movement of both pictures together, while signs of “visual marking” are carefully inspected. When the signs match the ones of other bird we marked in yellow, when match was not found we marked in different color (usually red). If matching or lack of matching is not certain, we searched other pictures of the bird if such appeared. When all pictures of the first checked bird are reviewed, comparing with the second colored in red with the rest non marked takes place. Thus using all colors we marked the different individuals, and when the five colors are not enough any other markings were used.

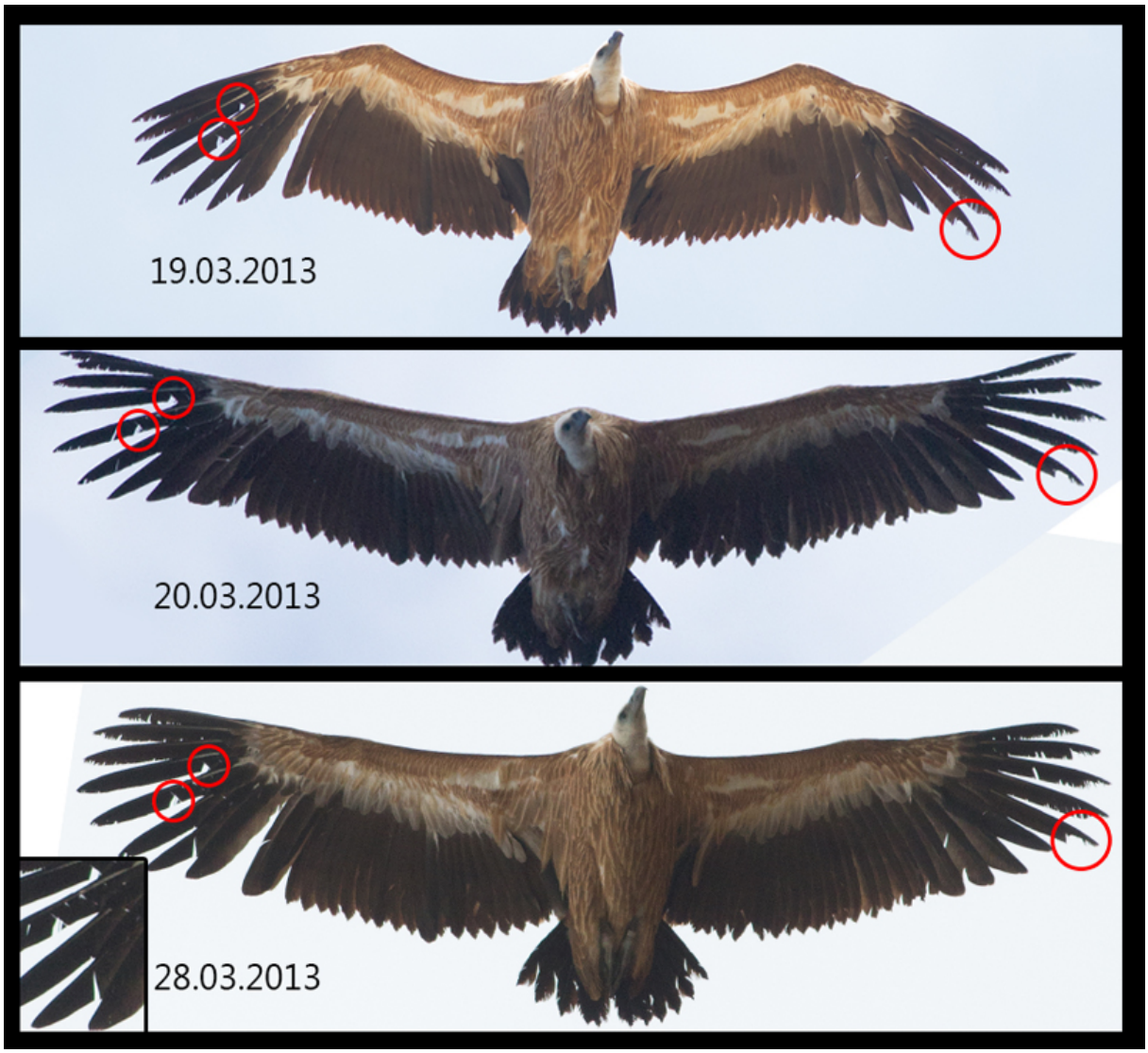


From the pictures marked in yellow, for the same bird we chosen the best picture, giving optimal view (usually with most spread wings) pictured right from bellow. Then we compared it with already identified in previous days from the latest observed birds to the previous.

Few examples are following here:

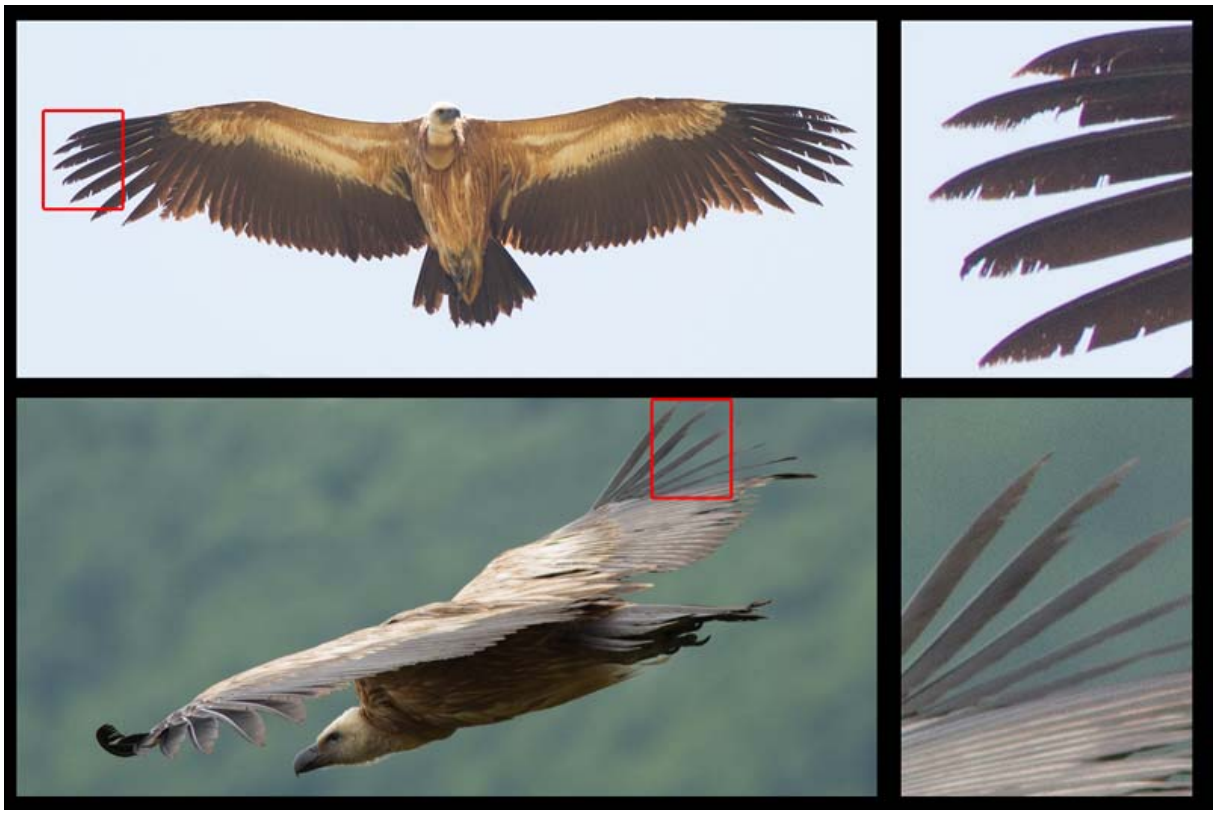
The less enlighten pictures hide some of the signs, while the pose could hide others.


13.01.2013
28.03.2013
13.06.2013



When a single feather is cut across, then it turns in a long lasting sign, while if it is only disheveled (as shown on the small crop picture down left), the bird could repair it and the sing to disappear.

A bird with already several feathers molted after the first picture taken, but still enough signs remained on non-molted feathers to enable its identification.



Although in an unsuitable pose the bird of the second picture still could be identified, comparing with picture taken few days ago.

Even picture with poor quality could provide information.

Results

In 2013 the Griffon Vulture presence was considerably increased in Kresna Gorge with record numbers of simultaneously present individuals at the feeding site - 27 on 03 May 2013 and registered presence of more than 70 exogenous individuals for some time in different periods of the year. Thus in total nearly 100 different Griffon Vultures have been observed in Kresna Gorge in 2013 including released within the project, but also migrating or vagrant birds form other parts of the Balkan Peninsula. Marked birds from Israel, Greece, Serbia, Croatia and other parts of Bulgaria have been observed. Birds released in Kresna Gorge were observed in Serbia, Croatia, Greece, and FYR of Macedonia, as well as other parts of Bulgaria (Vrachanski Balkan, Sinite Kamani, Central Balkan, Kotel, and Eastern Rodopi). This year the Griffon Vultures spent even more time in the National Parks of Rila and Pirin during the hot summer months, where they have been recorded by the transmitters they bring, but also they were directly observed and photographed by tourists and park authority in the area of Vihren peak and Spano Pole in Pirin National Park.
To some extend the high number of identified Griffon Vultures in 2013 is related to improving of the monitoring methods, but anyway the number is increased also on the base of directly observed birds at the feeding site.

Figure 7. Previously released and marked and non-marked exogenous Griffon Vultures observed in Kresna Gorge in 2013.

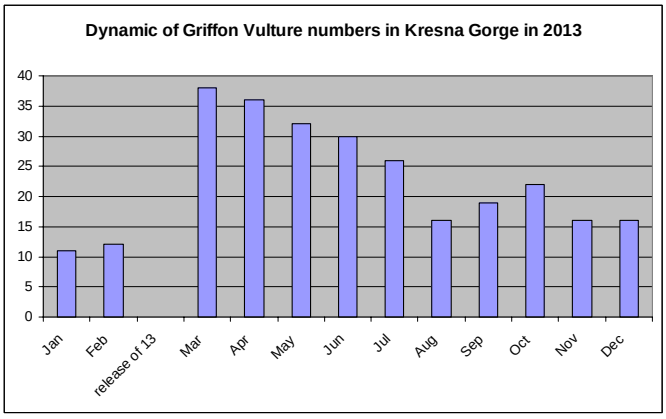
N	ID of the bird\ month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	M60 -X imm	x	x	x	x	x	x	x	x	x	x	x	x
2	B31 – U imm., (re-released)	x	x	x	x	x	x	x	x	x	x	x	x
3	B17– M imm.	x	x	x	x	x	x	x	x	x	MK	x	x
4	B19 – C imm.	x	x	x	x	x	x	x	x	x	x	x	x
5	B34– O imm.	x	x	x	x	x	x	x	x	x	x	x	x
6	B35– P imm.	x	x	x	x	VB	x	x	x	x	x	x	x
7	B37– K imm.	x	x	†									
8	B39– H imm.	x	x	x	x	x	x	x	x	x	MK	x	x
9	G10 (released 2010)		ER										
10	G38 (released 2010)			† CR									
11	B40 (released 2011)							ER	ER				
12	B41– H imm. (released 2011)		EB	EB+CB	EB	EB	CB	EB	EB	ER			
13	G92 – Greek (2010)	x	x	x			x	x		x	x	x	x
14	S083 – Serbian (2012)					x							
15	K34 from Sinite Kamani NP, Bulgaria (2011)								x				
16	K54 from Sinite Kamani NP, Bulgaria - ad			x									
17	K55 from Sinite Kamani NP, Bulgaria- ad			x	x								
18	K56 from Sinite Kamani NP, Bulgaria - ad				x		x						
19	E92 Marked in Israel					x							

	(2011)												
20	S03 - 7 Serbian (2013)										x	x	x
21	UA 3065 – Croatian (2011)			x	x								
22	Exogenous 1 (2012)	x	x	x									
23	Exogenous 2 (2012)	x	x	x	x	x	x						
24	Exogenous 3 (2012)			x									
25	Exogenous 4 (2012)			x									
26	Exogenous 5 (2012)			x		x	x						
27	Exogenous 6 (2011)			x			x						
28	Exogenous 7 (2012)			x									
29	Exogenous 8 (2012)			x	x								
30	Exogenous 9 (2012)			x									
31	Exogenous 10 (2012)			x									
32	Exogenous 11 (2012)			x	x								
33	Exogenous 12 (2011)				x	x							
34	Exogenous 13 (2012)				x	x							
35	Exogenous 14 (2012)				x								
36	Exogenous 15 (2011)				x	x							
37	Exogenous 16 (2011)				x	x							
38	Exogenous 17 (2012)				x	x							
39	Exogenous 18 (2012)				x	x							
40	Exogenous 19 (2012)					x							
41	Exogenous 20 (2012)					x	x	x	x				
42	Exogenous 21 (2011)					x							
43	Exogenous 22 (2012)					x							
44	Exogenous 23 (2012)					x							
45	Exogenous 24 (2012)					x							
46	Exogenous 25 (2011)				x	x	x	x		x	x		
47	Exogenous 26 (2012)						x						
48	Exogenous 27 (2011)						x						
49	Exogenous 28 (2012)						x						
50	Exogenous 29 (2012)					x	x						
51	Exogenous 30 (2012)						x						
52	Exogenous 31 (2012)							x	x				
53	Exogenous 32 (2012)							x					
54	Exogenous 33 (2012)							x					
55	Exogenous 34 (2012)							x					
56	Exogenous 35 (2012)							x					
57	Exogenous 36 (2012)							x					
58	Exogenous 37 (2012)								x				
59	Exogenous 38 (2013)									x			
60	Exogenous 39 (2013)									x			
61	Exogenous 40 (2013)										x		
62	Exogenous 41 (2013)										x		
63	Exogenous 42 (2013)										x		
64	Exogenous 43 (2012)					x							
65	Exogenous 44 (2012)					x							
66	Exogenous 45 (2012)					x							
67	Exogenous 46 (2012)					x							
68	Exogenous 47 (2012)				x	x							
69	Exogenous 48 (2013)										x		
70	Exogenous 49 (2012)				x								
71	Exogenous 50 (2013)										x	x	x

72	Exogenous 51 (2013)									x	x	x	x
73	Exogenous 52 (2012)				x								
74	Exogenous 53 (2012)					x							
75	Exogenous 54 (2012)				x								
76	Exogenous 55 (2012)								x				
77	Exogenous 56 (2012)			x									
78	Exogenous 57 (2012)			x									
79	Exogenous 58 (2012)						x						
80	Exogenous 59 (2012)												
81	Exogenous 60 (2012)												
82	Exogenous 61 (2010)								x	x			
83	Exogenous 62 (2010)					x					x	x	
84	Exogenous 63 (2013)									x	x	x	x
Number of identified birds (Table 1 and 2)		11	12	38	36	32	30	26	15	19	22	16	16
Highest number of birds observed at once at the feeding site		10	11	21	18	27	22	20	16	19	14	14	16
Total number of recorded birds		**11**	**12**	**38**	**36**	**32**	**30**	**26**	**16**	**19**	**22**	**16**	**16**

Legend:
x – Observed in Kresna Gorge during the month.
Recap. – recaptured in the cage, through the hole in the mesh.
† - the bird died
ER- observed in Eastern Rodopi (either in Studen kladenets or Madjarovo in Bulgaria or Dadia in Greece).
EB – observed in Eastern Balkan (either Kotel or Sinite kamani NP).
CB – observed in Central Balkan.
VB – observed in Vrachanski Balkan.
MK – observed in FYR of Macedonia
CR – observed in Croatia
x – Juvenile born in 2013
x – Immature born in 2012
x – Immature born in 2011
x – Born in 2010 or earlier

Figure 8. Seasonal dynamic in numbers of Griffon Vultures in Kresna Gorge in 2013.



Mortalities and misfortunes

In 2013 three cases of dead Griffon Vultures were recorded – one individual released in Kresna Gorge in 2010 died on Island of Cres in Croatia (the reason not clear), one was electrocuted on 20 kV pylon near Boboshevo (40 km N from the release site), and one was most probably secondary poisoned on a dog carcass near village of Mechkul in Pirin Mts (4 km SE from the release site).

B37- K that was released on 25 July 2012 and was found dead near the village of Visoka Mogila, Municipality of Boboshevo on 13 March 2013 and reported to us by local people. The bird was obviously electrocuted when perched on a 20 kV concrete electric pylon from a dangerous for birds type.

G38 that was released in Kresna Gorge on 21 September 2010 was reported dead on the Island of Cres in Croatia on 21 March 2013 by Goran Susic. The reason for the dead became unknown. Poisoning was suspected, but not proved.

K46 was released on 14 March 2013 and was found dead near the village of Mechkul, Municipality of Simitli on 17 August 2013 fallen in an small artificial lake. It was reported to us by a local person. The autopsy and the carcass of a dead dog near by resumed for a poisoning incident, which was not proven by the toxicological analyzes. However the laboratory was able only to check for CB/OP pesticides, which far does not exhaust the full spectrum of possible substances.

On 14 March 2013 during strong stormy wind weather, the acclimatization aviary of FWFF in Kresna gorge was completely destroyed. Twelve Griffon Vultures got spontaneously been released (escaped) and only the Black Vulture kept in captivity in the aviary got seriously injured by the fallen parts. An urgent surgery intervention made in Green Balkans Wildlife Rescue Centre in Stara Zagora led to amputation of one of the wings of the bird, but in several days it was recovered for a second life (although disabled).

Figure 9. The captive Black Vulture is heavily injured by the ruined aviary.

Figure 10. The aviary is totally destroyed.

Figure 11. Injured but alive.

In a very sad incident on 06 November 2013 the captive Black Vulture and Egyptian Vulture in the FWFF Vulture reproduction center in Kresna Gorge were fatally poisoned. This happened when a goat carcass killed by wolves near the village of Gorna Breznitsa has been supplied as food for these vultures by our team. No signs of anything wrong with this carcass have been noticed. Thus it routinely was disposed as food for the vultures on 04 November 2013. On 6 November 2013 the workers in the Center reported the dead of the two vultures and 4 domestic cats and two Great tits *Parus major* that used to feed from the vultures food in the cage. Strangely the Griffon Vulture that accompanied the Black and the Egyptian Vultures in the same aviary did not eat from this carcass and thus is still alive. The investigation of the case showed that most probably the goat carcass has been used as poisoned bait by setting a liquid poison on it (thus non detectable visually) few hours after being killed from the wolves and few hours prior to be collected from our team as food for the vultures. Samples for toxicological analyzes were taken and any competent authorities informed for the accident. The results have not been ready until the report was issued, but most probably *strychnine* was used.

Figure 12. The poison found them even the aviary.

Dispersals

G10 was released on 21.09.2010 in Kresna Gorge, was observed on 13 February 2013 at the feeding site of Dadia National Park, Greece (reported by Theodora Skartsi – WWF Greece, Dadia Project).

G38 that was released on 21.09.2010 in Kresna Gorge was found dead on 21 March 2013 on Cres Island in Croatia (reported by Goran Susic).

B40 was released on 12 November 2011 in Kresna Gorge was this year observed on 31 July 2013 and 05 August 2013 at feeding site in Dadia National Park, Greece (reported by Theodora Skartsi – WWF Greece, Dadia Project).

B41-H was released in Kresna Gorge 22 October 2011 and this year was observed on 28 February 2013 and 08 March 2013 in Kotel; on 18 March 2013 in Central Balkan near Tazha; than again in Kotel on 06 May 2013 and 04 June 2013; again in Central Balkan on 12 June 2013; to come back to Kotel on 28 July 2013 and to pass by Sinite kamani on 01 August 2013 And to arrive in Dadia National Park in Greece on 23 November 2013 (reported by the team members of "Vulture's return in Bulgaria" Project (LIFE08 NAT/BG/278) and Theodora Skartsi – WWF Greece, Dadia Project respectively).

B17- M was released 25 June 2012 and was frequently present at the feeding site in Kresna Gorge. On 23 October 2013 it was observed in FYR Macedonia at the feeding site maintained by NCA Aquila in the area of Vitachevo. (reported by Emanuel Lisichanets – NCA Aquila). Few days latter the bird returned to Kresna Gorge.

B35- P was released 25 July 2012 and was frequently present in Kresna Gorge. On 20 May 2013 it was observed to the feeding site in Vrachanski Balkan (reported by Georgi Stoyanov-BPPS). Few weeks later the bird retuned to Kresna Gorge.

B25- E was released 25 July 2012, but was recaptured in November 2012 and released again 20 February 2013. Some time it was present in Kresna Gorge, but moved to Vrachanski Balkan on 11 May 2013 and stayed there until 25 July 2013 (reported by George Stoyanov – BPPS). On 31 July 2013 it was observed in Dadia National Park (reported by Theodora Skartsi – WWF Greece, Dadia Project), since then the bird was several times observed visiting the area of Studen Kladenets and in late December 2013 is still there (reported by Marin Kurtev and Stefan Avramov).

B39-H was released 2 August 2012 and was frequently present at the feeding site in Kresna Gorge. On 23 October 2013 it was observed in FYR Macedonia at the feeding site maintained by NCA Aquila in the area of Vitachevo. (reported by Emanuel Lisichanets – NCA Aquila). Few days latter the bird returned to Kresna Gorge.

B60 was released 14 March 2013 and was frequently present at the feeding site in Kresna Gorge. On 23 October 2013 it was observed in FYR Macedonia at the feeding site maintained

by NCA Aquila in the area of Vitachevo. (reported by Emanuel Lisichanets – NCA Aquila). Few days latter the bird returned to Kresna Gorge.

B61 was released 14 March 2012 and was frequently present at the feeding site in Kresna Gorge. On 15 March 2013 it was observed in the area of Studen Kladenets (reported by Marin Kurtev).

B63 was released 14 March 2013 and was frequently present at the feeding site in Kresna Gorge. On 23 October 2013 it was observed in FYR Macedonia at the feeding site maintained by NCA Aquila in the area of Vitachevo. (reported by Emanuel Lisichanets – NCA Aquila). Few days latter the bird returned to Kresna Gorge.

In 2013 a group of Griffon Vultures from Kresna Gorge was photographed in Spano Pole in Pirin National Park, which is historical summering place of the species reported by BAUMGART (1971). The picture bellow is taken on 20 September 2013 and kindly provided to the project team by the Pirin National Park Authority.

Breeding

No breeding attempts of Griffon Vultures have been recorded in Kresna Gorge in 2013.
Breeding displays of two newly formed pairs of subadult birds were observed in December 2013, but breeding in 2014 is unlikely, as these birds still roost on 400 kV electric pylons and have not chose a suitable cliff.

Attracted exogenous birds

From the 72 exogenous birds that visited Kresna Gorge in 2013, nine were marked and thus identified. Two Griffon Vultures ringed in Serbia, one in Croatia, one in Israel, one in Greece and four in Sinite Kamani Nature Park in Eastern Balkan Mts in Bulgaria were observed in Kresna Gorge in 2013.

S083 - On 12 and 13 March 2013 a Griffon Vulture ringed in June 2012 in Uvats Gorge in Serbia (Sasha Marinkovich, Irena Hrisbek pers. comm.) was observed at the feeding site in Kresna Gorge.

CMZ – a Griffon Vulture ringed as a juvenile in the nest (2011) on Plavnik Island in Croatia (Goran Susic pers. comm.) was present at the feeding site in Kresna Gorge from 16 March 2013 to mid May 2013.

G92 – a Griffon Vulture captured as juvenile near Nestos Gorge in Greece in 2010 rehabilitated in the Hellenic Wildlife Hospital and released back on the same place in 2011 (Theodora Skartsi – pers. comm.) was present frequently at the feeding site in Kresna Gorge since 14-th of June 2012 and with some gaps it was present year round in 2013 too.

E92 a Griffon Vulture ringed in Gamla Nature Reserve in Israel (as wintering bird) in 2011 (Ohad Hatzofe NPA Israel pers. comm.) was present in Kresna Gorge on 3 and 4 May 2013.

K56 – a Griffon Vulture released in Sinite Kamani Nature Park in Eastern Balkan Mts in Bulgaria was present at the feeding site in Kresna Gorge on 22 April 2013.

K54 – a Griffon Vulture released in Sinite Kamani Nature Park in Eastern Balkan Mts in Bulgaria was present at the feeding site in Kresna Gorge in the period 10 - 17 March 2013 and again 8-15 May 2013.

K55 – a Griffon Vulture released in Sinite Kamani Nature Park in Eastern Balkan Mts in Bulgaria was present at the feeding site in Kresna Gorge in the period 11 - 17 March 2013 and again 18-22 April 2013.

K34 – a Griffon Vulture released in Sinite Kamani Nature Park in Eastern Balkan Mts in Bulgaria was present at the feeding site in Kresna Gorge on 13 August 2013.

S03- 7 on 22 October 2013 a juvenile Griffon Vulture ringed in 2013 in Uvats Gorge in Serbia (Sasha Marinkovich, Irena Hrisbek pers. comm.) was observed at the feeding site in Kresna Gorge. This bird stayed until the end of the year in the area is obviously will overwinter in Kresna Gorge.

Other species

The Griffon Vultures presence and the feeding site became a reason for attraction and observations of other rare and threatened species in the area like the Lanner *Falco biarmicus* and Eleonora's *Falco eleonorae* Falcons, Black Kite *Milvus migrans*, two Imperial Eagles *Aquila heliaca* three Egyptian Vultures *Neophron percnopterus* and one or two Eurasian Black Vulture(s) *Aegypius monachus*.

Egyptian Vulture *Neophron percnopterus*

A subadult Egyptian Vulture (Figure 13 to the right) was first observed on 21 May 2013 and stayed in the area of the feeding site in Kresna Gorge until 05 June 2013. At the beginning we thought that this might be the same bird that was present in the area in 2012 (Figure? To the left), but analyzing the face markings in detail (RODRIGUEZ 2013), we found that it is a different individual.

Figure 13. Egyptian Vultures individuals observed in Kresna Gorge in 2012 and 2013 compared.

An adult Egyptian Vulture (Figure 14) was observed on 09 Jul 2013 at the feeding site in Kresna Gorge.

Figure 14. Adult Egyptian Vulture in Kresna Gorge in 2013.

An immature Egyptian Vulture (Figure 15) was observed on 17 and 18 July 2013 at the feeding site in Kresna Gorge. It was marked bird with a blue plastic ring with dark inscription MBL. Checking the facts it appeared that it is a bird ringed in 2011 as fledgling in the nest near Demir Kapia in FYR of Macedonia (VELEVSKI pers. comm.).

Figure 15. Immature Egyptian Vulture in Kresna Gorge in 2013.

Eurasian Black Vulture *Aegypius monachus*

An immature Eurasian Black Vulture (Figure 16) was observed on 5 and 6 May 2013 in flight with Griffon Vultures in the Kresna Gorge. It spent the night on 5 to 6 of May near the village of Mechkul and returned to the area of the feeding site on 6 of May 2013 at about 10.30 a.m. On 28 May 2013 an immature Eurasian Black Vulture visited the feeding site together with more than 20 Griffon Vultures and took part on the feast eating from the offal disposed. It could not be said certainly if this is the same bird, which was observed on 5 and 6 May 2013, but it is most likely the case.
This is the first observation of Black Vulture in Kresna Gorge since 1997 when the species was reported by HRISTOV & STOYNOV (2002) and the first ever photographed. This is also the first case a Black Vulture is observed to use the feeding site (established by FWFF in late 2009) in the area.

Figure 16. Immature Eurasian Black Vulture in Kresna Gorge in 2013.

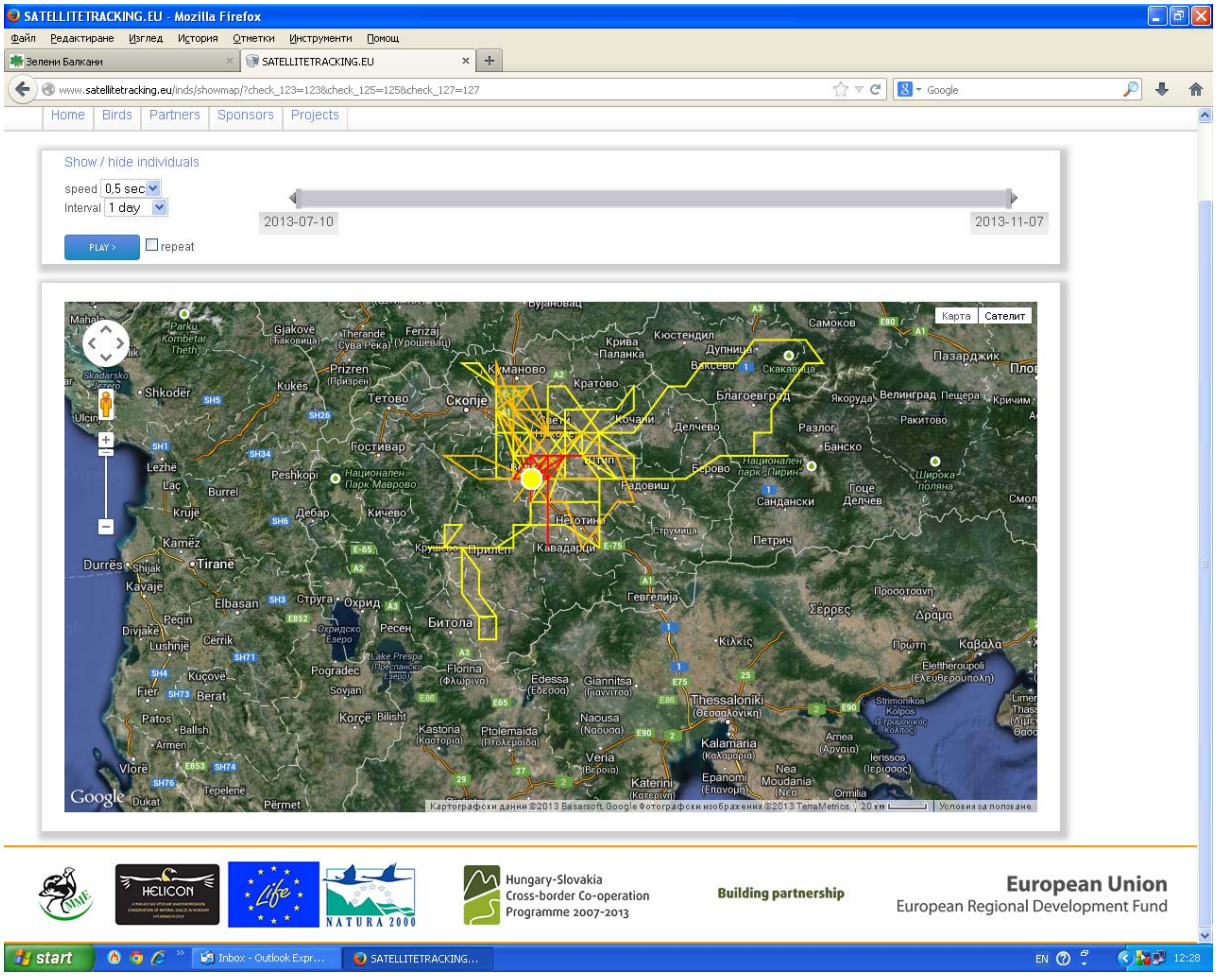
Eastern Imperial Eagle *Aquila heliaca*

In 2013 Imperial Eagle presence was twice documented around the feeding site in Kresna gorge. On 19 March 2013 around 02.00 p.m. an immature (2 cy) Imperial Eagle flew over the feeding site in Kresna Gorge from North to South. This is one of the very few observations of the species in this part of Bulgaria for the last 50 years.

On 31 October 2013 the species was second time registered in the area of the feeding site, where it obviously spent the night as it could be seen from the Satellitetracking.eu website, in which the route of the Imperial Eagle “Victoria” born in 2013 in FYR Macedonia is shown.

(http://www.satellitetracking.eu/inds/showmap/?check_127=127). Following the data from the site the bird have visited the area of the feeding site in Kresna Gorge on 31 October 2013 arriving from its core area in FYR of Macedonia and have spent the nigh in the area, while the next day 01 November 2013 it moved to north and have left the area.

Figure 17. Print Screen of the site Sattelitetracking.eu, with the visit of the Imperial Eagle "Victoria" to Kresna Gorge



Urgent Conservation actions

As such actions we recognize those providing an immediate effect and are not necessarily sustainable, but increasing the extinction time of a threatened species. Such actions may be implemented for endangered species to support them increase at least to a better conservation status or until any sustainable and long-term measures produce results. We recognize these to be feeding of vultures, to minimize dispersal and avoid poisoning. Nest guarding to ensure safe reproduction, brood management and captive birds release to increase recruitment, insulation of dangerous power-lines etc.

Feeding

In 2013 we continued to organize feeding of vultures 2 to 3 times a week. More than of 18 tons of carcasses and slaughter offal were deposed in 133 cases at the feeding site in 2013. This has proven to be the most important factor for attachment of the formed group released in 2012 and the new released birds in 2013 in the area. Corpses of dead animals collected in the villages around the Gorge were used to feed the vultures, but also slaughter offal from slaughterhouse of the town of Blagoevgrad. When larger animal corpse was available during the summer months, meat was preserved in a freezer and disposed in smaller quantities more frequently.

Insulation of dangerous power-lines

This year following the two electrocution cases in 2012, eight 20 kV power-line poles were equipped with perch discouragers as an urgent measure to avoid future electrocutions. These were the closest to the feeding site, as no financial capacity to safeguard more was available at the time. However these very few poles appeared to be the most important for the vultures to perch on, near the feeding site. This year we observed several times vultures attempting to perch on these pylons, but the perch discouragers proved to work and no fatalities have been recorded.

Figure 13. Installation of perch discouragers, designed by FWFF.

Before…

After…

It works …

Long-term Conservation Actions

As such actions we recognize those that not necessarily provide an immediate effect, but are sustainable and change the habitat and the local people attitude to better for the target species. Such actions rarely are regarded to a certain endangered species, which could be stated as *flagship species*, but more for its habitats and entire ecosystem.

Restoration of food source for vultures

Along with direct vulture re-introduction actions we continue the work on re-introduction of the Fallow Deer *Dama dama* as a natural food source for wolves and vultures. Having this species back into the nature of Kresna Gorge, it is believed the depredation over livestock and the consequent man/predators conflict will be minimized. Thus food for vultures will be available and no poison baits used. Also sheep and goats and cattle herds have been established and the livestock is grazed into the Gorge to maintain the habitat for tortoises, hares, and finally for vultures.

Against poison activities

Started back in 2003 the FWFF continues to implement the Livestock Prevention and Compensation Programme and has reached 218 farmers in 2013, helping to reduce conflict between the farmers and the predators. Managed by the Fund for Wild Flora and Fauna (FWFF), the scheme works by directly replacing the livestock the farmers have lost to predator attacks from FWFF's own herds. By directly compensating farmers for their losses, the project hopes to reduce the desire of farmers to resort to the use of poisoned baits. The project is based on the belief that effective vulture conservation depends on a return to traditional means of managing and protecting livestock, without the need for farmers to resort to illegal practices. The return to traditional practices, such as the use of livestock-guarding dogs, is fundamental. For this reason, the project has also donated 24 such dogs to farmers to help protect their source of income without endangering the wild carnivores and birds of prey.

To avoid human/predators conflict our team analyzed the reasons for livestock depredation and started to promote shifting from sheep and goats rearing to cattle in certain areas with permanent predator attacks over livestock (STOYNOV et al. 2013). To easy the process of finding suitable autochthonous breeds for such terrain FWFF established its own cattle herd of 30 rare Bulgarian Grey and Short –Horn Rhodopean Cattle, that are very much suitable for that, but hard to find.

In 2013 the wolf population and consequently the man/predator conflict has dramatically increased along Struma Valley. This increases the risk of poison baits use.

Overview

With the release of well attached to the area groups of immature Griffon Vultures in 2012 and 2013 and with intensive feeding and thus attracting more and more exogenous birds the Kresna Gorge is now a host of 16 to nearly 100 Griffon Vultures throughout the year. Now there is no doubt that the Kresna Gorge is an important "stepping stone" site for the vultures in this part of the Balkans.

The releases of immature Griffon Vultures should continue with at least 10 birds per year until natural colony is established and start producing ten juveniles per year.
In the meantime the colonies of the Griffon Vulture in FYR Macedonia should be supported through establishment of at least one well supplied feeding site, as the area now plays the role of an ecological trap. With establishment of permanent feeding site in FYR Macedonia it is very likely the birds from Kresna Gorge that reach maturity to move there for breeding. This will boost the population there and it will hopefully recover to a size that would one day play the role as source population for re-population of Struma River Valley in Bulgaria and eventually Greece when the long-term conservation measures produce results.

The permanent feeding two to three times a week seems very important to fix the birds in the area and it should continue until stable colony of about 10 pairs is established.
The spontaneous return of the Egyptian Vulture should be boosted with supporting the population in FYR of Macedonia and providing food especially for the species in Kresna Gorge (poultry carcasses and offal). Any release of birds bred in captivity, should be postponed until the reasons for the fatal migration of the young through the Mediterranean (BSPB, the Return of the Neophron http://www.lifeneophron.eu/en/Tagging.html) becomes clear or overcame one way or another.

The eight 20 kV power-line pylons that have been safeguarded for birds in Kresna Gorge in 2013 is the minimum that should be done on this topic. The Electricity companies should be encouraged to take action on their own.

The actions for establishment of wild population of Fallow deer and establishment of extensive raised sheep and cattle herds should continue.

Since the Ravens *Corvus corax* and Golden Eagle *Aquila chrysaetos* are not disturbing the Griffon vultures as severely as we reported previous years (may be because the first got used with the later and the later got more experienced to avoid interactions), establishment of the two more feeding sites along the Kresna Gorge should be postponed to avoid dispersal of the Griffon and Egyptian Vultures thus avoiding the risk of poisoning in a wider less controlled area.
Instead 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 there lesser risk of poisoning or electrocution exists.

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 implemented.

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