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

Annual Report 2015

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Резюме

Това е отчетът за шестата година от началото на реинтродукцията на белоглавия лешояд (*Gyps fulvus*) в Кресненския пролом, която беше започната в началото на 2010 и се изпълнява от Фонд за дивата флора и фауна.

През 2015 броят на белоглавите лешояди присъстващи в района продължи да се увеличава и бяха постигнати някои рекордни числености:

1.) Най-голям брой белоглави лешояди нощуващи в Кресненския пролом – 47 инд. на 15 октомври 2015;

2.) Най –голям брой двойки белогалви лешояди, демонстриращи брачно поведение – шест двойки, от които 4 двойки бяха наблюдавани да копулират, две снесоха яйца;

3.) За трета поредна година бяха регистрирани голям брой непуснати в рамките на проекта белоглави лешояди - „гости", посетили Кресненския пролом за определено време през годината – над 100 индивида. Така заедно с пуснатите в рамките на проекта, общият брой белоглави лешояди регистрирани през 2015 година в Кресненския пролом надхвърля 130 индивида;

4.) За трета поредна година бяха наблюдавани черни лешояди (*Aegypius monachus*) да се хранят на площадката в Кресненския пролом и за първи път бяха категорично идентифицирани четири разлчини птици от вида, едната от които е престояла в района повече от месец, а общото присъствие на вида в района достигна 45 дни.

5.) За първи път бяха установени два нови вида за района и за площадката за подхранване – степен орил (*Aquila nipalensis*) и морски орел (*Haliaeetus albicilla*)

6.) За първи път беше отбелязано присъствие на два възрастни египетски лешояди в района.

7.) За трета поредна година беше наблюдаван царски орел (*Aquila heliaca*) на площадката за подхранване на лешояди.

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

На свой ред индивиди пуснати в Кресненския пролом бяха наблюдавани в Сърбия, Италия, Гърция, БЮР Македония, Унгария, 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", „Кончето", „Тодорка", „Орлите" и „Спано поле" в НП „Пирин".

През 2015 отново беше регистриран смъртен случай на белоглав лешояд от токово удар в района на Кресненския пролом, недалеч от площадката за подхранване, където предпазителите монтирани преди две години вече са „прегоряли" от слънцето и е необходимо да бъдат подменени.

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.

Abstract

This is the Annual Report for the sixth year of the re-introduction of the Griffon Vulture (*Gyps fulvus*) in Kresna Gorge, started by FWFF in early 2010. In 2015 the Griffon Vulture presence continued to increase in the area with record numbers of simultaneously present individuals at the roosting site - 47 on 02 October 2014 and again registered presence of more than 100 exogenous individuals for some time in different periods of the year. Thus in total over 130 different Griffon Vultures have been observed in Kresna Gorge in 2015 including released within the project, but also migrating, summering, wintering and vagrant birds form other parts of the Balkan Peninsula. Marked birds from Israel, Greece, Serbia, Croatia and other parts of Bulgaria (including Eastern Rhodopi) have been again observed. Birds released in Kresna Gorge were observed in Serbia, Italy, Greece, Hungary and FYR of Macedonia, as well as other parts of Bulgaria (Vrachanski Balkan, Sinite Kamani, Central Balkan, Kotel, and Eastern Rhodopi). 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 and Todorka peaks, Koncheto, Orlite and Spano Pole in Pirin National Park.

This year for third year in a row, Black Vultures (*Aegypius monachus*) were observed in the area of Kresna Gorge. This time four different birds were photographed and their presence increased to 45 days and was well documented.

For the first time feeding and presence of a adult pair of Egyptian Vultures and two new species in the face of Steppe eagle *Aquila nipalensis* and White-tailed Sea Eagle *Haliaetus albicilla*. This is the third year in row we also have observed Imperial Eagle *Aquila heliaca* at the feeding site.

At least one mortality case of juvenile Griffon Vulture due to electrocution was again registered not far from the feeding site in the Gorge. It appeared that the some of the perch discouragers, which we mounted two years ago have been “burned” by the sun and started to decompose.

Conservation measures for improving the habitat for 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 power-lines, 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*, Imperial Eagle, *Aquila heliaca.*

Transfers

In 2015 ten Griffon Vultures were transferred to the acclimatization aviary in Kresna Gorge imported from Spain with the support of the Vulture Conservation Foundation and Green Balkans. One juvenile is expected to arrive from France until the end of the year from Bioparc Zoo de Doue.

Releases

In 2015 eight Griffon Vultures were released in Kresna Gorge. Three of them were captive bred in Bioparc Zoo de Doue, France (9 , 01 and 90), while the other four were rehabilitated Spanish birds (F64-12, F82-78, F87, F88-56; 45). Two of the captive bred and two of the rehabilitated birds were released on 21.02.2015 and 15.04.2015 after three months of acclimatization. Three of the rehabilitated birds escaped on their own (thus considered soft released) on 09.05.2015, 19.08.2015 and 09.11.2015 after 4, 7 and 11 months of acclimatization respectively. Another escapee (thus soft released) is 90 that left the aviary on 24.10.2015.

All they, but one - 45 adapted well and were permanently present at the feeding site in Kresna Gorge until the end of the year. The last escapee 45 experienced unsuitable flight conditions and fall down in the Struma Valley not far from the feeding site (about 5 km) and was not able to gain height and to return to the feeding site. While we were unable to capture it, we started feeding it on the spot and it still spends its time on a large tree not far from a busy road.

Table 1. Releases and observations of the released in 2014 Griffon Vultures in Kresna Gorge

N	ID of the bird\ month	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	9	x	recap	recap	x	x	MK	x	x	x		
2	01	x	x	x	x	x	x	x	x	x		
3	F64-12			x	x	x	x	x	x	x		
4	F82-78							x	x	x		
5	F87				x	x	x	x	x	x		
6	F88-56			x	x	x	x	x	x	x		
7	90									x		
8	45										x	x

recap-means the bird was recaptured

MK- means moved to FYR Macedonia

Monitoring

Methods

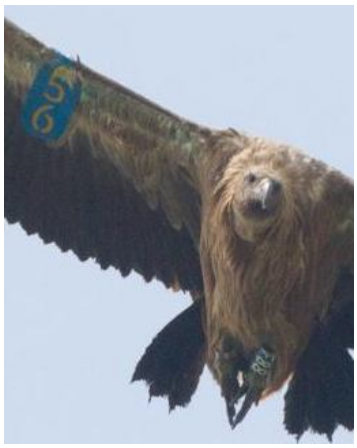
The vultures were frequently (every 2 to 4 days) observed by binoculars and spotting scopes at the feeding site and the known roosting sites.

In 2015 we continued to use blue wing-tags with orange (enlightened to “gold”) inscription of single letter (common letters for the Cyrillic and Latin alphabets) or single digit from 1 to 9 and double vertical digits 01, 12, 23, 34, 45, 56, 67, 78, 89, 90 for the released birds.

In 2015 the released and captured wild birds were equipped with blue rings with letter F and two digits (ex. F64) and a double vertical digit blue wing-tag with yellow inscription as shown above.

Figures 2, 3, 4 and 5. The marking scheme for Griffon Vultures released in Kresna Gorge in 2013, 2014 and 2015.



The marking pattern from the releases in 2012 and 2013 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).

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.

In 2014 we fitted wild caught Griffon Vulture with GPS-GSM logger to check if and to what extend the wild vultures move and use the area compared to released ones. The tagged vulture soon after the

release moved to Vrachanski Balkan. But in late spring 2015 it made great movements visiting all vulture sites in Bulgaria, North-East Greece and FYR of Macedonia and to return in Vrachanski Balkan in late summer.

In 2015 fitted with GPS/GSM transmitters two more released within the project vultures and one wild-caught.

We are using local people and tourists' reports about observations of vultures to keep track on vultures' whereabouts in the area.

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 Black Vulture (*Aegypius monachus*), Egyptian Vulture (*Neophron percnopteurs*), Steppe Eagle (*Aquila nipalensis*), White–tailed Sea Eagle (*Halieaeetus albicila)* using the feeding site.

Figures 6 and 7. Pictures of Griffon Vultures and Black Vulture at the feeding site in Kresna Gorge taken by camera trap

Digiscoping and determination of different individuals

We continued to use digiscoping and took pictures of all observed birds with 400 mm Canon lenses and Canon 7D camera 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.

We continued using the sophisticated "***visual marking***" method (Stoynov & Peshev 2014). We made several thousand photographs of Griffon Vultures, but also of Black Vultures, Egyptian Vultures, Eagles and others mostly in flight with the goal to determine the different individuals. After removing the inappropriate pictures, remained more than 3500, which were catalogued with *Adobe LightRoom*.

Marking of wild vultures

To establish the origin of wild Griffon Vultures present in Kresna Gorge as well as to follow with which age groups the released Project birds are dispersing we capture and mark the birds on passage

through a hole in the aviary's roof mesh in a manner described by (Iezekiel, Woodly & Hatzofe 2003). Blue wing-tags and green rings were used.

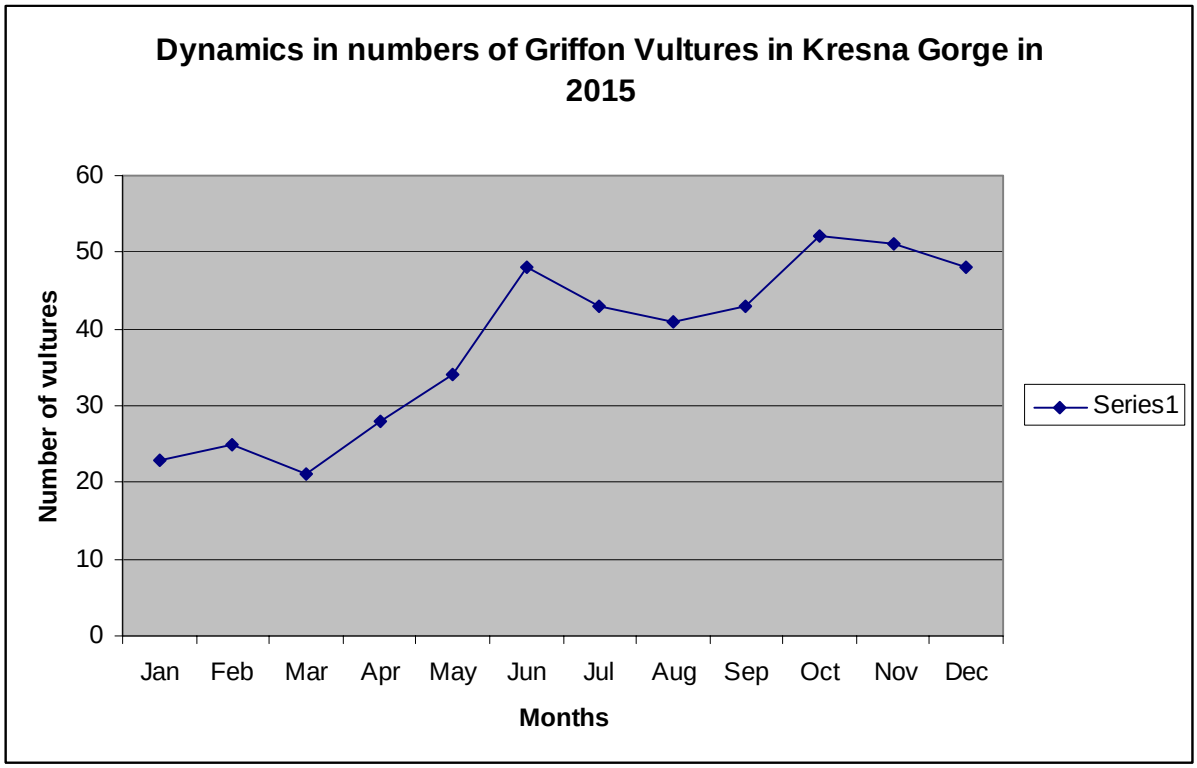
Results

In 2015 the Griffon Vulture presence was stable in Kresna Gorge with record numbers of simultaneously present individuals at the feeding site 32-34 on 17 May 2015 and more than 47 on 15 October 2015. The registered presence of minimum 80 exogenous individuals for some time in different periods of the year resembles and even builds on the results from 2013 and 2014. Thus in total minimum 110 different Griffon Vultures have again been observed in Kresna Gorge in 2015 including released within the project, but also migrating, vagrant, wintering or summering birds form other parts of the Balkan Peninsula. Marked birds from Israel, Greece, Serbia, Croatia and other parts of Bulgaria (including one marked bird from Eastern Rhodope) have been observed. Birds released in Kresna Gorge were observed in Serbia, Italy, Greece, FYR of Macedonia and Hungary as well as other parts of Bulgaria (Vrachanski Balkan, Sinite Kamani, Central Balkan, Kotel, and Eastern Rhodope). This year too, the Griffon Vultures spent the hottest summer days in Pirin National Park, where they have been reported by the tourists, shepherds and Park officers.

***Table 2**. Numbers of Griffon Vultures observed in Kresna Gorge in 2015 (without November and December)*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Number of identified birds (Table 1 and 2)	23	25	20	25	34	48	43	41	43	52	50	47
Highest number of birds observed at once at the feeding or roosting site	22	21	21	28	32	33	31	32	35	47	44	40
Total number of recorded birds	**23**	**25**	**21**	**28**	**34**	**48**	**43**	**41**	**43**	**52**	**50**	**47**

***Figure 8**. Seasonal dynamics in numbers of Griffon Vultures in Kresna Gorge in 2015 (all birds identified within the month)*



Mortalities and misfortunes

In October 2015, one juvenile Griffon Vulture with Balkan origin was found electrocuted not far from the feeding site in Kresna Gorge. Unfortunately it died on a pylon that was insulated two years ago. The reason for this misfortune is the destruction of the plastic perch discourager that was mounted on this particular console. All others are metal and they are not problematic. It is necessary new perch discourager to be mounted preferably metal one instead of plastic.

Dispersals and movements

B41-H was released in Kresna Gorge 22 October 2011 and moved away from the area shortly after the release, reaching Dadia in Greece. This bird moves a lot around the feeding sites on the Balkans. This year it was reported as follows: 24.05.2015 – Vrachanski Balkan (George Stoyanov- BPPS); 08.06.2015 – Kotel (Lachezar Bonchev-FWFF); in July 2015 it returned to Vrachanski Balkan (George Stoyanov- BPPS).

B17- M was released 25 June 2012 and was frequently present at the feeding site in Kresna Gorge. On 25.06.2015 was observed on Demir Kapiya in FYR of Macedonia (Bobi Delov) and the next day was observed at the feeding site on Vitachevo in FYR Macedonia (Emanuel Lisichanets – NCA Aquila). Few days latter the bird has returned to Kresna Gorge.

B19- C was released 29 Jun 2012 and was frequently present at the feeding site in Kresna Gorge. In February 2015 – Studen kladenets (Marin Kurtev); 01.03.2015 – back to Kresna Gorge; 10.05.2015 – Hungary (Data by Boris Nikolov – BOC, Matias Prommer); 18.05.2015 – back to Kresna Gorge; 11.06.2015 – Demira Kapiya, FYR of Macedonia (Metodiya Velevski; Bobi Delov); 27-29.09.2015- Vitachevo, FYR of Macedonia Emanuel Lisichanets- NCA Aquila).

B34- O was released 25 Jul 2012 and was frequently present at the feeding site in Kresna Gorge. The bird was reported as follows: 25.06.2015 – Demir Kapiya (Bobi Delov); 26.06.2015- Vitachevo Feeidng site (Emanuel Lisichanets- NCA Aquila). Few days latter the bird has returned to Kresna Gorge.

B25- E was released 25 Jul 2012, but was recaptured in November 2012 and released again 20 Feb 2013. This bird moves a lot around the feeding sites on the Balkans. This year it was reported as follows: 30.05.2015- Vrachanski Balkan (George Stoyanov). July 2015- Vrachanski Balkan;

B63 was released 14 Mar 2012 and was frequently present at the feeding site in Kresna Gorge. It moved away from Kresna Gorge in 2013 and was reported mainly from Eastren Rhdope. In 2015 we

have the following records about this bird: 15.03.2015 – Studen Kladenets (Marin Kurtev); 17.06.2015- feeding site in Kresna Gorge; 19.06.2015- Studen kladenets (Marin Kurtev);

K - Escaped from the aviary in Kresna Gorge on 06.12.2013. Permanent presence in Kresna Gorge until July 2015; July 2015 moved to Vrachanski Balkan (George Stoyanov) and is still there;

B97- 7 was released 28 May 2014 stayed for two weeks around the feeding site in the Gorge and on 29 Jun 2014 was reported from Vrachanski Balkan (George Stoyanov) and is permanently observed there in 2015 too.

9 - Hard released 21.02.2015; entered the cage on its own on 01.03.2015. It was hard released again on 15.04.2015. Until July 2015 permanently present in Kresna Gorge. In July 2015 moved to FYR Macedonia and Northern Greece, where spent about 10 days between Demir Kapiya and Kaymakchalan. It returned to Kresna Gorge in August 2015 and is permanently present in the area.

In 2015 the group of Griffon Vultures from Kresna Gorge was several times reported from and photographed in Pirin National Park. It seems the birds are moving there in the hot summer days of July and August to drink water and to benefit from carcasses of grazing on the alpine pastures livestock. Roosting sites in the mountain were reported in the area of “Orlite”, but also from Spano Pole.

Breeding

Eggs laying by two pairs of Griffon Vultures has been registered in 2015 in Kresna Gorge. Both were unsuccessful. The first pair started copulating still in early January and laid an egg around mid March. The egg hatching was expected around 20.04.2015, but the birds were seen laying until 05.05.2015 and gave up around 10.05.2015. The second pair B34-O x G92 laid an egg in late February and stopped incubating in early March after heavy snowfall.

This year we had a record number of pairs expressing breeding behavior. From six pairs in total that built nests, four copulated and two laid eggs. The reason for the lack of successful breeding could

probably be found in the lack of experience of the birds as they are all young and at the beginning of their reproductive age.

In 2015 six pairs expressed breeding behavior. Here are the details:

Pair		Behavior observed	Period of the year	Notes
Male (year born)	Female (year born)			
G92 (2009)	B34-O (2010)	Flight displays+ Keeping territory +nest building + Copula + egg laying	February – March 2015	
M60-X (2009)	B39-H (2010)	Flight displays+ Keeping territory +nest building + Copula + egg laying	February – March 2015	
K47 (2011)	K44 (2011)	Flight displays+ Keeping territory +nest building + Copula	February – March 2015	
B17- M (2010)	5 (2012)	Flight displays+ Keeping territory +nest building + Copula	February – March 2015	
B00-A (2011)	6 (2012)	Flight displays+ Keeping territory +nest building	February – March 2015	
B35-P (2010)	B61 (2011)	Flight displays+ Keeping territory +nest building	February – March 2015	

Attracted exogenous birds

From the 80+ exogenous birds that visited Kresna Gorge in 2015, fifteen were marked and their origin established. Four Griffon Vultures ringed in Serbia, one in Croatia, one in Israel, one in Greece, six released and one wild-caught marked from the re-introduction project sites in Balkan Mountain in Bulgaria and one from Bulgarian part of Eastern Rhodope were observed in Kresna Gorge in 2015. Details follow here:

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 14.06.2012 and it is since then frequently present and formed pair in the area with B34-O and made a breeding attempt in 2015.

CUZ – a Griffon Vulture ringed as a juvenile in the nest on 08.05.2014 on Cres Island in Croatia (Goran Susic pers. comm.) was present at the feeding site in Kresna Gorge on 19.10.2015.

S?? - 33 – a Griffon Vulture ringed as juvenile in the nest (2015) in Radoyna colony in Serbia (Sasha Marinkovich pers. comm.) was present at the feeding site in Kresna Gorge on 18.10.2015.

S?? - 34 – a Griffon Vulture ringed as juvenile in the nest (2015) in Radoyna colony in Serbia (Sasha Marinkovich pers. comm.) was present at the feeding site in Kresna Gorge on 01.10.2015.

S27 - 16 – a Griffon Vulture ringed as juvenile in the nest on 06.06.2015 in Uvats colony in Serbia (Sasha Marinkovich pers. comm.) was present at the feeding site in Kresna Gorge from 05.06.2015 to 22.06.2015.

S25- 19 – a Griffon Vulture ringed as juvenile in the nest (2014) in Uvats Gorge in Serbia (Sasha Marinkovich, pers. comm.) was present at the feeding site in Kresna Gorge from October 2014 to May 2015.

K5U – an immature Griffon Vulture released in March 2015 in the frame of LIFE08 NAT/BG/278 at Vrachanski Balkan Nature Park (Western Balkan Mts., Bulgaria) was present at the feeding site in Kresna Gorge on 01.10.2015.

K6F – an immature Griffon Vulture released in the frame of LIFE08 NAT/BG/278 at Vrachanski Balkan Nature Park (Western Balkan Mts., Bulgaria) was present at the feeding site in Kresna Gorge from 16.09.2015 to 01.10.2015.

K70 – an immature Griffon Vulture released in the frame of LIFE08 NAT/BG/278 in Kotlenska Planina (Eastern Balkan Mts., Bulgaria) arrived to Kresna Gorge on 07.05.2015 and is still present.

K3X – an immature Griffon Vulture released in the frame of LIFE08 NAT/BG/278 at Vrachanski Balkan Nature Park (Western Balkan Mts., Bulgaria) on 23.03.2014, was present at the feeding site in Kresna Gorge from 19.04.2015 to 22.06.2015.

K53 – an immature Griffon Vulture released in the frame of LIFE08 NAT/BG/278 at Vrachanski Balkan Nature Park (Western Balkan Mts., Bulgaria) in March 2013, was present at the feeding site in Kresna Gorge from 16.04.2015 to 07.05.2015.

K52 – an adult Griffon Vulture released in 2012 in the frame of LIFE08 NAT/BG/278 from Sinite Kamani Nature Park (Eastern Balkan Mts., Bulgaria) was present in Kresna Gorge on 15.07.2015. It is interesting to note, that this bird is a male from a breeding pair in Dadia National Park in Greece, which hatched young this year, but failed in the rearing period. The presence of the bird in Kresna Gorge was recorded, after the failure of the chick rearing (Theodora Skartsi/WWF Greece – pers. comm.)

B16 – a Griffon Vulture ringed as a juvenile fallen from the nest in the Bulgarian part of Eastern Rhodope, marked by BSPB in the area of Studen kladenets dam 08.08.2014 (Hristo Hristov and Vladimir Dobrev pers. comm.) was present at the feeding site in Kresna Gorge on 03.06.2015 and 05 .06.2015.

B64-B64 - a Griffon Vulture ringed when was caught in the aviary in Kotlenska Planina, Bulgaria in early 2013 (Lachezar Bonchev/FWFF, Ivelin Ivanov / Green Balkans pers. comm.) was present at the feeding site in Kresna Gorge from 05.06.2015 to 22.06.2015.

X33 – Y34 - a Griffon Vulture ringed in Israel in November 2013 (as wintering or on passage bird, born 2013) (Ohad Hatzofe, pers. comm.) was present in Kresna Gorge from 12.05.2015 to 17.05.2015. It is interesting to note, that this bird was photographed on passage at Boshporus on 25.04.2015 (Bird Migration at Bosphorus (Istanbul) site http://bosphorusbirdmigration.com/) and later observed at the feeding site in Studen Kladenets in Bulgaria 08.05.2015 (Marin Kurtev – pers. comm.). Having in mind that this is most probably Serbian or Croatian bird we became witnesses of the migration and temporal use of "stepping stones" after arriving on the Balkans towards its colony of origin.

In 2015 we have the biggest recorded number of juveniles born in the same year present in Kresna Gorge. On 20.10.2015 at the feeding site with the camera-trap we have photographed 14 non marked juvenile Griffon Vultures fig. 9.

Figure 9. *Record numbers of juvenile from of the year Griffon Vultures in Kresna Gorge in 2015- 14 pictured at once by camera trap on the feeding site.*

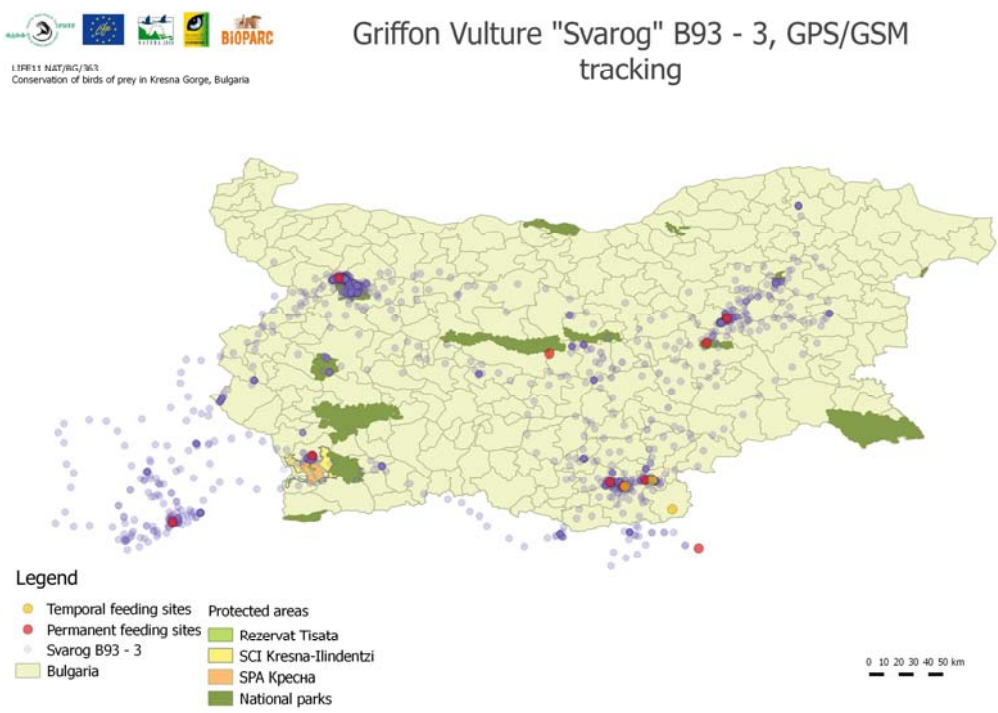
Griffon Vultures wild-caught and marked on passage in Kresna Gorge and their whereabouts

Attracted by the feeding site and the conspecifics into the aviary some wild Griffon Vultures that pass through during migration or spent some time in Kresna Gorge are entering the acclimatization aviary on their own. We use this opportunity to mark them and to try to establish their origin, or to learn more about their whereabouts. Since 2012 we marked 8 Griffon Vultures with wing-tags of which two were fitted also with GPS/GSM transmitters. Details follow here:

G48- E (left wing) – aged using molting pattern (Zuberoigoitia et al. 2013) as bird born in 2010 was caught, marked and released on 24.06.2012. It was observed in the Kresna Gorge a week later at the roosting site. Since then there is no information about it.

X (left wing) – aged using molting pattern as bird born in 2013 was caught, marked and released on 10.01.2014. It was present in Kresna Gorge until the spring of 2015, when left the area, but has returned again in October 2015.

B93- 3 - aged using molting pattern as bird born in 2012 was caught, marked and released on 26.06.2014. Also GPS/GSM transmitter was fitted to the bird. Two days after the release it headed north and arrived to Vrachanski Balkan; It spent the summer, autumn and winter in Vrachanski Balkan; 14.05.2015 moved to Kotel; 09.06.2015- 22.06.2015 moved to Studen Kladenets/ Madzharovo; 04.07.2015 moved to Vitachevo in FYR of Macedonia; 14.07.2015 came and stayed for two days in Kresna Gorge; in July 2015 moved again to Vrachanski Balkan; on 06.10.2015 it headed SE, the transmitter stopped above Botevgrad, and the bird was no longer observed in Vrachanski Balkan.



B94- 4 - aged using molting pattern as bird born in 2013 was caught, marked and released on 28.05.2014. First time observed after the release on 16.06.2014- Vrachanski Balkan (George Stoyanov- pers. comm.); 09.06.2015 – Studen kladenets (Marin Kurtev – pers.comm.); 08.07.2015 – Kotel (Lachezar Bonchev - FWFF); July 2015- Vrachanski Balkan (George Stoyanov- pers. comm.); 01.10.2015 in Kresna Gorge;

B95- 5 - aged using molting pattern as bird born in 2012 was caught, marked and released on 28.05.2014. On 01.06.2014 was observed at Demir Kapiya, FYROM (Metodiya Velevski- pers. comm.) together with other birds from Kresna Gorge, but which later returned; On 26.07.2014 returned to Kresna Gorge and was present all the time until 25.06.2015 –when was again observed at Demir Kapiya, FYROM (Bobi Delov- pers. comm.); 26.06.2015- Vitachevo Feeding site, FYROM (Emanuel Lisichanets- pers. comm.); in the early July 2015 returned to Kresna Gorge and is till present there.

B2A - aged using molting pattern as bird born in 2014 was caught, marked and released on 22.07.2015. It was equipped with GPS/GSM transmitter. Less than a week after the release it moved to Eastern Rhodope. It is still there, while frequently moves from the Greek part of the mountain to the Bulgarian part along Arda River valley and back.

2X - aged using molting pattern as bird born in 2015 was caught, marked and released on 26.10.2015.

X5 - aged using molting pattern as bird born in 2013 was caught, marked and released on 26.10.2015.

Vultures “visually marked” in Kresna Gorge that have been observed elsewhere

With advancing of the use of the “visual marking” as monitoring technique, we are able not only to recognize different individuals, that are present in Kresna Gorge permanently, seasonally and/or on passage, but also to compare them with individuals photographed elsewhere on the Balkans. In 2014 we recognized an Eurasian Black Vulture that first was observed and photographed in Kresna Gorge in May and later was observed and photographed in Zlatibor, Serbia. Thanks to the “visual marking method” we proved this is the very same bird. Thus we learnt about the movements of this individual, without using conventional marking schemes. In 2015 we also succeed to establish the movements of vultures that have passed through Kresna Gorge and moved or came from areas where they were also object of observation. Two Griffon Vultures have moved from Kresna Gorge to Serbia, a Black Vulture moved from Kresna Gorge to Kotlenska Planina and an Egyptian Vulture moved from Serres (Northern Greece) to Kresna Gorge. All they were identified through “visual marking” thanks to cooperation with colleagues that work in these regions.

Here is presented picture of the Griffon Vulture that moved from Kresna Gorge to Serbia, which most probably originates from that country, but passed through Kresna Gorge on migration. The picture of the bird from Serbia was provided by the local NGO “Fund for the Protection of Birds of Prey”.

The other bird was B64, which is wing-tagged, but the Serbian colleagues where not able to read the code and we used the “visual marking” to determine which bird is it. The presence of a blue wing-tag let the Serbian colleagues to contact us and ask if we recognize the bird. If they send us more pictures of also other birds we may also find that they were present in Kresna Gorge earlier. This shows the necessity of use of large lenses and photographing of as many as possible vultures site by site and comparison with the data bases of other areas using “visual marking”. May be also some software could be elaborated or adapted to be used as to ease the identification of the birds - kind of fingerprinting.

The pictures and stories about the Black and Egyptian Vultures recognized by “visual marking” method are presented in the following chapter “Other species”.

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 Imperial Eagles *Aquila heliaca,* Steppe Eagle *Aquila nipalensis*, White –tailed Sea Eagle *Haliaeetus albicilla*, two or three Egyptian Vultures *Neophron percnopterus* and minimum three Eurasian Black Vultures *Aegypius monachus*. The White –tailed and the Steppe Eagles were first time recorded in Kresna Gorge in 2015.

Eurasian Black Vulture *Aegypius monachus*

Four different Black Vultures were observed and photographed in Kresna Gorge in 2015, which is a record for the area and also their presence was increased in time to 45 days minimum. The birds were identified based on "visual marking" method (Stoynov & Peshev 2014).

An immature Eurasian Black Vulture (Figure 10 and 11) was observed and photographed on 05.05.2015 at the feeding site in Kresna Gorge. The bird was present in the area until 12.05.2015 when moved to Kotlenska Planina (Lachezar Bonchev – FWFF), where it stayed for more than a month. The bird was recognized by "visual marking".

Figure 10 and 11. *Immature Eurasian Black Vulture in Kresna Gorge in May 2015.Picture by Hristo Peshev/FWFF.*

On 15.07.2015 an immature Eurasian Black Vulture visited the feeding site. Figure 12.

Figure 12. *Immature Eurasian Black Vulture in Kresna Gorge on 15.07.2015. Picture by Hristo Peshev/FWFF.*

Another immature Eurasian Black Vulture was present in the Kresna Gorge from 21.07.2015 to 01.09.2015. We have a good reason to consider that this bird was joining the flock of more than 30 Griffon Vultures in the alpine pastures of Pirin National Park. Figure ??.

Figure 13 and 14. *Immature Eurasian Black Vulture in Kresna Gorge in July and August 2015. Picture by Hristo Peshev/FWFF.*

The fourth for the year immature Eurasian Black Vulture was present in the Kresna Gorge from 30.10.2015 to 05.12.2015. It was aged as a bird born in 2013. The bird was photographed by Hristo Peshev in Kresna Gorge and also in Madjarovo on 18.12.2015, where this Black Vulture obviously moved during the bad weather conditions in mid December. This individual was also identified and

followed using “visual marking” method. Most probably the same bird was observed on Vitachevo feeding site in FYR of Macedonia on 29.10.2015 (data by Emanuel Lisichanets – NCA Aquila), just a day before its arrival to Kresna Gorge.

Figure 15. *Immature Eurasian Black Vulture in Kresna Gorge in November and December 2015, that was photographed and stayed in Kresna Gorge about 35 days and later was photographed by Hristo Peshev in Madjarovo 19.12.2015. Pictures by Hristo Peshev/FWFF.*

Egyptian Vulture *Neophron percnopterus*

An adult Egyptian Vulture was photographed by the camera trap at the feeding site on -06.06.2015. It was also reported from birdwatchers group in the same time in Kresna Gorge (Lyubomir Profirov – pers. comm.).

On 11.08.2015 an adult Egyptian Vulture arrived to the feeding site in Kresna Gorge. On the next day another one joined the first one. The two birds roosted around the feeing site and several times were observed feeding. The second bird disappeared after 14.08.2015, while the first one was present until 20.08.2015. One of these birds was well distinguished using "visual marking" method. We made an inquiry among our colleagues on the Balkans through the mailing groups balkanvultures@yahoogroups.com as well as via Facebook. We received feedback from Lavrentis Sidiropoulus – The Return of the Neophron project and it appeared that this same bird was photographed in May 2015 in the area of Serres in Northern Greece. In this area for several years there is data for territorial Egyptian Vultures and attempts for pair formation (Lavrentis Sidiropoulus – pers. comm.).

Figure 16. *Adult Egyptian Vultures in Kresna Gorge in August 2015. Picture by Hristo Peshev/FWFF.*

Figure 17 and 18. *Comparison and identification through "visual marking" of one of the birds from Kresna Gorge observed in August 2015 and one observed in May 2015 near Serres. Pictures by Hristo Peshev/FWFF and Lavrentis Sidiropoulus – HOS (The Return of the Neophron Project).*

Eastern Imperial Eagle *Aquila heliaca*

For third year in a row also an Imperial Eagle was observed in Kresna Gorge. A juvenile bird was observed and photographed in flight on the feeding site on 12.09.2015.

Figure 19*. Imperial Eagle at the feeding site in Kresna Gorge, picture by Hristo Peshev/FWFF*

Steppe Eagle *Aquila nipalensis*

A Steppe Eagle was photographed by trial camera at the feeding site in Kresna Gorge on 20.05.2015. It was feeding with a large group of Griffon Vultures. This is the very first record of the species at the feeding site and the Kresna Gorge.

***Figure 20**. Steppe Eagle at the feeding site in Kresna Gorge, picture by trial camera Hristo Peshev/FWFF.*

White-tailed Sea-eagle *Haliaeetus albicilla*

A White-tailed Sea-eagle was photographed by trial camera at the feeding site in Kresna Gorge on 20.10.2015. It was feeding with a group of Griffon Vultures. This is the very first record of the species at the feeding site and the Kresna Gorge.

***Figure 20**. White –tailed Sea Eagle at the feeding site in Kresna Gorge, picture by trial camera Hristo Peshev/FWFF.*

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.

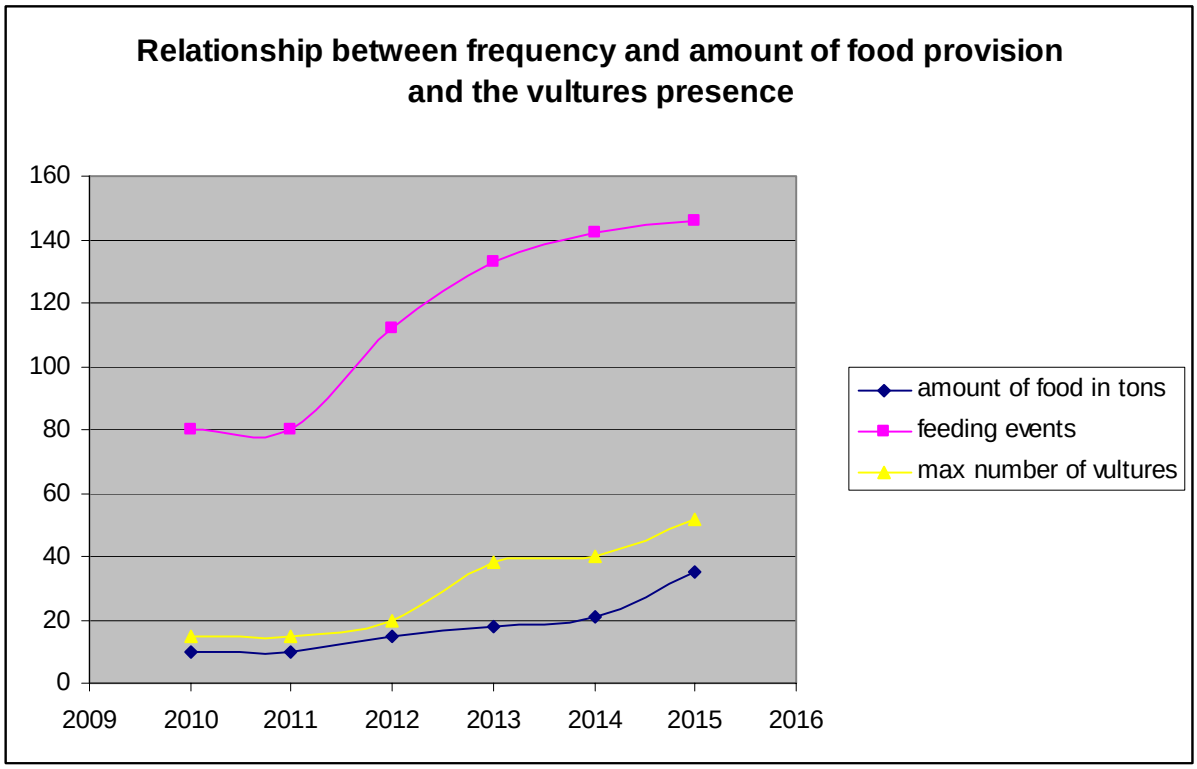
Feeding

In 2015 we continued to organize feeding of vultures at minimum 3 to 4 times per week. More than 33 tons of carcasses were deposed in 163 events at the feeding site in 2015. This has proven to be the most important factor for attachment of the formed group released in 2012 and the new released birds in the period 2013 - 2015 in the area, as well as for the successful adaptation and survival of newly released birds. Corpses of dead animals collected in the villages around the Gorge were used to feed the vultures. The feeding site continues to work as official dump site for dead animals in the area. When larger animal corpse was available during the summer months, meat was preserved in a freezer and disposed in smaller quantities more frequently. In addition to the vultures' feeding Programme of FWFF, in minimum 18 cases we received reports about vultures feeding on carcasses elsewhere in the area of Kresna Gorge, or in the near-by Maleshevska or Pirin Mountains. Occasional foraging movements of small groups of vultures to the feeding site in the area of Vitachevo in FYR of Macedonia were also reported (Emanuel Lisichanets/ NCA Aquila, pers.comm.). In the table bellow could be seen the frequency and amounts of food deposited to the feeding site near the village of Rakitna in Kresna Gorge. Also the numbers of the vultures present in the area and the reported feeding events outside the feeding site.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	total
Feeding events	14	11	12	13	13	14	15	15	17	15	12	12	**163**
Amount of food in kg	2100	2210	4750	4500	1970	1740	3080	4040	2120	3100	2490	1360	**33460**
Vultures present	23	25	21	28	34	48	43	41	43	52	44	40	-
Other feeding events	0	0	1	1	1	2	2	3	3	2	1	2	**18**

On the graph bellow (Table 4.) could be seen, that the intensification of the feeding leads to increase of the number of vultures in the area. This is also true for the presence of the Eurasian Black Vulture.

Not least, the permanent availability of food leads to repeated visits by vultures not native for Kresna Gorge and with the time their number increases.



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

The action for reintroduction of the Fallow deer in the area continues.

In 2015 three offspring were produced from two Fallow Deer hinds in the fenced sanctuary of FWFF. With one loss in early 2015 the number of the Fallow Deer flock in the FWFF's Sanctuary in Kresna

Gorge is now 14 (4 stags, 4 yearling males, 3 hinds and three offspring). Release will be started when the herd number reaches 50. This could be achieved sooner if some more animals are obtained from other breeding facilities.

Against poison activities

The compensation programme and the public awareness activities are continuing in their full spectrum. It seem, however, that the feeding site operation in area with permanent wolf presence is the most effective anti-poison tool, based on new study titled “Is the Wolf presence beneficial for vultures in Europe” published by Stoynov et al. 2015. As stated in the study, the relationship between wolf and vultures is rarely studied in Europe. Some authors report positive interaction between wolf as a predator and vultures as scavengers benefiting to feed on predator’s preys’ leftovers. Some most recent studies, however, highlight the danger of Man-wolf conflict and the consequent use of poison baits, as a great threat for vultures. Vultures and wolves followed a dramatic decline in last two centuries in Europe. Poison baits use is a major factor for their decline. Vultures are recently only found patchily in Southern Europe, where they previously have been abundant. Conservation measures are underway across Europe and it is still unclear why the Iberian Peninsula vulture populations are increasing and huge, while the ones on Balkan Peninsula are small and still declining, despite generally common features and the conservation measures applied.

The results of Stoynov et al. 2015 show that the most common reason for vultures poisoning on Balkans is the use of poison baits to kill wolves. The comparison of vultures and wolf populations shows that Iberia harbors between 17 and 65 times more vultures from the four species than Balkans, where in turn there are two times more wolves on three folds bigger area of occupancy. There was reported strong, positive correlation thus a huge overlaps between the four European vultures breeding territories and the area free of wolf's presence in Europe. Stoynov et al. 2015 also concluded that maintaining permanent feeding sites for vultures in regions of sympatric presence with wolf is an irreplaceable conservation tool.

Important conclusion from the same study is also that conservation of both wolves and vultures in sympatric presence is a complicated and up to now hardly proven working in Europe. Priorities in

conservation of threatened species should be set up and any relationship between different conservation dependent groups taken in mind.

Overview

With the continuation of releases and intensive feeding programme the group of Griffon Vultures in Kresna Gorge is enlarging smoothly. These factors are attracting more and more exogenous birds and the Kresna Gorge is now a host of more than 40 permanently occurring and more than 100 passing, wintering or summering Griffon Vultures. The Kresna Gorge is more and more playing the role of 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 begin to produce by ten juveniles per year.

The formation of six breeding pairs and egg laying of two of them are good signs for establishment of a colony of the species in Kresna Gorge. The unsuccessful breeding is most probably caused by inexperience of these young adults involved.

The permanent feeding two to three times a week seems very important to fix the birds in the area and it should continue and may be some municipal and state authorities to also be involved in feeding sites maintenance (e.g. Municipality of Simitli, Munisipality of Kresna, Pirin National Park, Rila National Park, Rila Monastery Nature Park etc.).

The continuing spontaneous return of the Eurasian Black Vulture should be boosted with starting releases of captive bred and/or rehabilitated birds in Kresna Gorge as soon as possible. A new LIFE project that is aiming the reintroduction of Black Vulture on three sites in Bulgaria has been approved in 2015 and its implementation started. Within this project “Bright future for the Black Vulture in Bulgaria” LIFE14 NAT/BG/649 it is planned Black Vultures imported from Extremadura, Spain to be released from 2018 onwards in two places in Balkan Mountain and Kresna Gorge.

As much as possible 20 kV power-line pylons should be safeguarded for birds in Kresna Gorge. 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.

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.

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