Re-introduction of the Cinereous Vulture *Aegypius monachus* in Balkan Mountains, Bulgaria

Biannual Report for **2020-2021**

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BRIGHT FUTURE FOR THE BLACK VULTURE
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Figure 1. *Farman CC - first flight in Vrachnanski Balkan*

Abstract

The 2021 was the **fourth year** of the Cinereous Vultures (*Aegypius monachus)* releases aiming the reintroduction of the species in the Balkan Mountains in Bulgaria that started in 2018. The action is implemented by a consortium of organisations - the Bulgarian NGOs: Green Balkans–Stara Zagora (Green Balkans) , Fund for the Wild Flora & Fauna (FWFF), Birds of Prey Protection Society (BPPS), the International NGOs: Vulture Conservation Foundation (VCF) and EuroNatur Foundation (EuroNatur), and Gobierno de Extremadura (GOBEX). Local support the project receives from the administrations of the "Vrachanski Balkan" Nature Park (VBNP)- and "Sinite kamani" Nature Park (SKNP) in which territories are implemented part of the activities. This document is part of the report on Action C3 – "Black Vulture pre-release care, release and post-release care" of the project "Vultures Back to LIFE" LIFE14NAT/BG/649 financially supported by LIFE – the EU financial instrument.

After the successful reintroduction of the Griffon Vulture *Gyps fulvus* in the period 2010-2016 and the ongoing increase of the locally established colonies, the first release of Cinereous Vultures aiming at reintroduction of the species in Balkan Mountain (and Bulgaria at all) took place in the Eastern Balkan Mountains (EBM) - Kotlenska Planina SPA near Kotel in 2018 and continued with releases in Sinite Kamani Nature Park in 2019 and 2021, and another distinct site - Vrachanski Balkan Nature Park (VBNP) in 2020 and 2021. Fifty one individuals were released so far and local nuclei were successfully established in the two distinct sites in Bulgaria – EBM and VBNP. So far, in total, 31 has survived, 29 birds are successfully settled – 13 in EBM and 16 in VBNP and 2 birds settled abroad (1 in Greece, 1 in Turkey). At least 5 breeding pairs formed and expressed breeding behaviour – 3 in EBM and 2 in VBNP. The very first chick was successfully fledged in the area of Kotel in 2021, becoming the very first successful reproduction of the species in Bulgaria for decades. Here we report on the results in detail.

Highlights from the reintroduction process of the Cinereous Vulture in Balkan Mountains in 2020-2021 are as follows:

1.) Based on releases, but also on attraction of wild "visitors" birds in 2021 were counted 20 Cinereous Vultures in VBNP and 17 in EBM – a new absolute record for the two sites of simultaneously observed individuals of the species;

2.) The exchange of individuals between the colony of the species in Dadia-Soufli-Lefkimi Forest National Park (hereafter Dadia) in Greece and the Balkan Mountains was confirmed by visits of marked birds from each site to the other;

3.) Exchange of individuals between VBNP and EBM nuclei was confirmed.

4.) Fifteen mortality cases were registered in 2020-2021 (19 in total up to now), which provides for an overall survival rate of about 62% from the released individuals (n = 51), so far. The acclimatization aviary method performs better in survivor rate of the released individuals in the area of release (68,18%) compared to hacking (artificial nest) method – 28,57%. The VBNP shows better results in survival compared to EBM (80% and 64% respectively).

5). The acclimatization aviary method performs better in settling the released individuals in the area of release (94% in VBNP and 78% in EBM from the survivals) compared to hacking (artificial nest) method – 0%.

6.) Several wild Cinereous Vultures were observed in both Project's release sites, and two of them were captured and tagged with GPS transmitters. The data received suggests different origin of the two birds – Dadia and Turkey (Middle East).

7.) The Griffon Vultures numbers continue to increase in EBM - 25-28 and VBNP - 23-25 pairs, which produced 14 and 12 fledging respectively in 2021.

8.) Hundred and twenty tones of food per year are deposed in the Project sites along the Balkan Mountains – 60 tones of food were provided in VBNP feeding site in 150 feeding events per year and the same amount of food, but on two feeding sites (SKNP and Kotel) in EBM.

The nature conservation activities in the: SKNP (by Green Balkans), Kotlenska Planina SPA (by FWFF) and VBNP (by BPPS) - all along Balkan Mountains chain in Bulgaria, continued under the "Vultures Back to LIFE" - LIFE14NAT/BG/649 project, by the leadership of Green Balkans - Stara Zagora, funded by the EC LIFE Financial Instrument, in cooperation with FWFF, VCF, EuroNatur and Junta de Extremadura.

Key words: Aegypius monachus, Kotlenska Planina SPA, Kotel, Sinite kamani Nature Park, Sliven, Eastern Balkan Mountains, Vrachanski Balkan Nature Park, satellite tracking, feeding sites, hacking, acclimatization aviary.

Introduction

Within the common LIFE project called "Bright Future for the Black Vulture" (2015-2022) which acronym is "Vultures Back to LIFE" (LIFE14NAT/BG/649), the project partners Green Balkans, FWFF, VCF, EuroNatur and GOBEX aim the reintroduction of the Cinereous Vulture in Bulgaria. Two places were recommended in a feasibility study (Stoynov et al. 2018) – the Eastern Balkan Mountain (EBM) (with two subareas – the Sinite kamani Nature Park (SKNP) near Sliven and Kotlenska planina SPA near Kotel), and Vrachanski Balkan Nature Park (VBNP). The two regions are along Balkan Mountain chain, where in the period 2010-2016 successful reintroduction of the Griffon Vultures took place (Stoynov et al. 2018, Kmetova-Biro et al. 2021) and well established colonies are now present in the sites with continuous increase of number of individuals, breeding pairs and breeding success.

The Cinereous Vulture releases were according to the know-how from VCF from France and Spain where two techniques were successfully used for this species. The 'Hacking' technique consists of releasing nestlings only, similarly to the release of Bearded Vulture in the Alps (Frey & Bijleveld 1994). This method differs from the 'Cage' technique consisting of releasing juveniles or immature birds, kept in captivity in an acclimatization aviary built at the top of a cliff in the middle of the colony (Terrasse et al. 2004). The regular presence of wild vultures feeding nearby helped to accustom the captive birds to their release environment. Birds released by hacking were born in captivity and originated from Cinereous Vulture EEP: zoos or breeding centres from Latvia, Czech Republic, Belgium and France. Birds released by the other method "Cage"came, from rehabilitation centres in Spain (Extremadura).

Figure 2, 3 . *Transport with Cinereous Vultures arrives in Dolno Ozirovo, Vratchanski Balkan.*

Transfers & Releases

In 2020 were imported 15 Cinereous Vultures from Extremadura, Spain. Eleven of them were releasable. They were settled in the aviary in SKNP. Another group of 22 birds was imported in 2021. This group was divided equally between VBNP and SKNP (Tab.1).

Table 1. *Metadata for all Cinereous Vultures imported/released in the period 2018-2021.*

No.	Name	Microchip No.	Ornithological ring No. and side	Colour ring No. and side	Type and No. of GPS transmitter	Origin	Year of fledging	Time of release	Place of release	Method of release	Notes, sex, weight
1.	Boyan	900182001758162	W0669 - left	Yellow - T3 - right	OT-30; 181965 Detached from the birds on its own in June-July 2021 in Turkey.	Riga Zoo	2018	Hacked: 25 July 2018; Fledged: 15.08.2018	Kotel	Hacking	8.200 kg
2.	Ostrava	991001001097085	W0668 - right	Yellow – T2 - left	OT-30; 181964	Ostrava Zoo	2018	Hacked: 25 July 2018; Fledged: 15.08.2018	Kotel	Hacking	Died poisoned on 14.02.2019 in Peloponnese, Greece.
3.	Riga	900182001485440	W0661 - right	Yellow – T5 - left	OT-30; 181968	Riga Zoo	2018	Hacked: 15 August 2018; Fledged: 31.08.2109	Kotel	Hacking	
4.	Zlosten ♂	982000357874452	W0653 - right	Yellow – K5 - left	OT-30; 181967 Fallen off the bird on 04.08.2021 in Kotel.	Spain	2017	Open aviary: 15.03.2019; left it: 16.03.2019	Kotel	Aviary	M; 7.200 kg Set in aviary in Kotel 12.05.2018.
5.	Juana ♀	982000357874423	W0642 - left	Yellow – K3 - right	OT-30; 181966	Spain	2017	Open aviary: 15.03.2019; left it: 16.03.2019 Captured 09.04.2019 near Targu Mures, Romania, Released again in Kotel on 23.05.2019	Kotel – first time and Kotel again second time.	Aviary	F; 7.000 kg.- first time released, 7.400 kg second time released. Set in aviary in Kotel 12.05.2018. Drowned in Marmara Sea, Turkey on 12.07.2020.
6.	Balkan ♂	982000357874591	W0641 - right	Yellow – L5 - left	OT-30; 190514	Spain	2017	Open aviary: 21.03.2019; left it: 26.03.2019	Sliven	Aviary	M; Set in aviary in Kotel 12.05.2018. Moved to Sliven December 2018.
7.	Kutelka ♀	982000357874450	W0659 - left	Yellow – X5 - right	OT-30; 190511	Spain	2017	Open aviary: 21.03.2019; left it: 26.03.2019 Captured 16.04.2019 near Focsani Romania; Released again in Kotel 23.05.2019; Recaptured again near Plovdiv in July/ August 2019 and released again in Kotel August 2019	Sliven – first time; Kotel – second time; Kotel – third time July/ August 2019	Aviary	F; 7.000 kg first time released, 8.500 kg second time released. Set in aviary in Kotel 12.05.2018. Moved to Sliven December 2018.
8.	Extremadura ♀	982000357874521	W0655 - left	Yellow – E2 - right	OT-50; 190485	Spain	2016	Open aviary: 17.04.2019; Left it: 18.04.2019;	Kotel	Aviary	F; 7.835 kg Set in aviary in Kotel 12.05.2018. Moved to Sliven December 2018. Electrocuted near Antonovo on 27.03.2020.
9.	VCF Know-how ♀	982000357874476	W0654 - left	Yellow – X3 - right	OT-50; 190487	Spain	2017	Open aviary: 17.04.2019; Left it: 18.04.2019;	Kotel	Aviary	F; 7.550 kg Set in aviary in Kotel 12.05.2018.
10.	Kamchiya ♀	982000357874479	W0660 - left	Yellow – X2 - right	OT-30; 181964 from Ostrava	Spain	2017	Open aviary: 17.04.2019; Left it: 18.04.2019;	Kotel	Aviary	F; 6.700 kg Set in aviary in Kotel 12.05.2018.
11.	MArina ♀	982000357874539	W0656 - right	Yellow – L2 - left	OT-50; 190493	Spain	2017	Open aviary: 17.04.2019; Left it: 18.04.2019;	Kotel	Aviary	F; 7.900 kg Set in aviary in Kotel 12.05.2018 Died 28.12.2020 killed by fallen beech tree in Bilyarnika area near Kotel.
12	Sliven ♂	982000357874513	W0651 - right	Yellow - E5 - left	OT-50; 190483	Spain	2017	Hard released in Kotel 23.05.2019	Kotel	Aviary (hard released)	M; 7.400 kg Set in aviary in Kotel 12.05.2018. Moved to Sliven December 2018. Drowned in a chicken farm waste basin in Ukraine 12.05.2020.

No.	Name	Microchip No.	Ornithological ring No. and side	Colour ring No. and side	Type and No. of GPS transmitter	Origin	Year of fledging	Time of release	Place of release	Method of release	Notes, sex, weight
13	Kotel ♂	982000357874446	W0657 - right	Yellow - L3 - left	OT-30; 190517	Spain	2017	Hard released in Kotel 23.05.2019	Kotel	Aviary (hard released)	M; 7.005 kg Set in aviary in Kotel 12.05.2018. Moved to Sliven December 2018.
14	Iberia ♀ (epileptic)	982000357874435	W0658 - left	Yellow - E3 - right	OT-30; 190510 – taken off. Later deployed to Barnabie, and then on Baraba.	Spain	2016	Hard released in Kotel 23.05.2019	Kotel	Aviary (hard released)	F; 8.200 kg Set in aviary in Kotel 12.05.2018. Moved to Sliven December 2018. On 17.05.2019 hard released in Kotel. 09.06.2019 recaptured and considered non-releasable anymore. Escape from aviary 17.08.2019 Observed in Kompsatos Greece in September 2019.
15	♀	982000357874	W0652-left	Yellow K2– right					Sliven	Aviary	F **Non releasable.** 18.06.2019 left in captivity Sliven aviary.
16	Kotlya ♀	982000357874581	W0676 – right	Yellow - M2 - left	OT-50 190946- Dropped off the bird in August 2020	Spain	2017	Released on 04.06.2020 Weight on release: 9.940 kg	Vrachanski Balkan	Aviary	F; 7.100 kg Set in Aviary in the Vrachanski Balkan in September 2019.
17	Stara Planina ♀	982000357874484	W0677 – right	Yellow - M3 - left	OT-30; 193821	Spain	2017	Released on 14.05.2020	Vrachanski Balkan	Aviary	F; 6.900 kg; Missing tail feathers Set in Aviary in the Vrachanski Balkan in September 2019. Died depredated around 11.06.2020 after released in Vrachanski Balkan.
18	Vratsa ♀	982000357874529	W0678 – right	Yellow – M5 - left	OT-30; 193824	Spain	2018	Released on 14.05.2020	Vrachanski Balkan	Aviary	F; 6.500 kg; Set in Aviary in the Vrachanski Balkan in September 2019.
19	♀ Zhora II	982000357874514	W0679 - right	Yellow – O2 - left	OT-30; 190512 Previously used in A.m. Zhora and Aq. h. Zoro. Dropped down the bird in 24.10.2020 – very strangely broken. Could be that the bird is dead on road close to Stoyanovo, although not found.	Spain	2018	Released 29.07.2020	Vrachanski Balkan	Aviary	F; 6.000 kg Old fracture – 2nd digit right wing; Missing left half of the tail feathers. Set in Aviary in the Vrachanski Balkan in September 2019. Weight on release 7.600 kg. Probably predated by dogs and transmitter crashed by owner of the shepherd dogs.
20	Zhora I ♀	982000357874431	W0680 – right	Yellow – O3 – left	OT-30; 190512 Fallen down in mid July 2020. Previously used in Imperial eagle Zoro.	Spain	2018	Released on 14.05.2020	Vrachanski Balkan	Aviary	F; 6.200kg Set in Aviary in the Vrachanski Balkan in September 2019.
21	Montan ♀	982000357874545	W0671 – right	Yellow – O5 –left	OT-30; 193823	Spain	2017	Released on 14.05.2020	Vrachanski Balkan	Aviary	F; 7.100kg Set in Aviary in the Vrachanski Balkan in September 2019.
22	Varshet ♂	982000357874550	W0672 – left	Yellow – P2 – right	OT-30; 202017 VBNP 1	Spain	2017	Released on 02.07.2020	Vrachanski Balkan	Aviary	M; 5.700kg Set in Aviary in the Vrachanski Balkan in September 2019. Weight on release – 7.050 kg.
23	Vrachanski Balkan ♂	982000357874398	W0673 – left	Yellow – P3 – right	OT-30; 202018VBNP 2	Spain	2018	Released on 02.07.2020	Vrachanski Balkan	Aviary	M; 6.100 kg; Big wounds on both wings (on the digits) – разкъсни рани Set in Aviary in the Vrachanski Balkan in September 2019. Weight on release – 8.770 kg.

No.	Name	Microchip No.	Ornithological ring No. and side	Colour ring No. and side	Type and No. of GPS transmitter	Origin	Year of fledging	Time of release	Place of release	Method of release	Notes, sex, weight
24	Baraba ♂	982000357874508	W0674 – left	Yellow – P5 – right	OT-30; 190510 Previously used in Iberia and Barnabie.	Spain	2018	Released on 14.05.2020	Vrachanski Balkan	Aviary	M; 5.200kg; Set in Aviary in the Vrachanski Balkan in September 2019.
25	Iskar ♂	982000357874475	W0675 – left	Yellow – Y2 – right	OT-50 190485 Previously used in Extremadura	Spain	2017	Released on 04.06.2020 Weight on release: 7.440 kg	Vrachanski Balkan	Aviary	M; 5.700 kg Set in Aviary in the Vrachanski Balkan in September 2019. Captured on 22 June 2020 and released again on 17.07.2020 and then died in the wild on 04.08.2020.
26	Ostrava -2 ♂		W0688 – left	H3 – right	OT-30 190513	Ostrava Zoo	2019	Hacked through the aviary in Sliven 21.07.2019	Sliven	Hacked through aviary, pending	M; 7.300 kg; 92 days old on 21.07.2019 set in aviary in Sinite kamani. Released 03.09.2019. Successful adaptation, but during autumn migration probably got drown in the Mediterranean sea 07.12.2019 south of Rhodos island in Grecee.
27	Zlin ♂		W0689 – left	H2 – right	OT-30 190515	Zlin Zoo	2019	Hacked through the aviary in Sliven 21.07.2019	Sliven	Hacked through aviary, pending	M; 7.200 kg; 100 days old on 21.07.2019 set in aviary in Sinite kamani. Released 03.09.2019, found dead near release site 12.09.2019.
28	Barnabi ♂		W0687 – right	Y3 – left	OT-30; 190510	Belgium Zoo	02.05.2019	Hacked: August 2019; Fledged:	Kotel	Hacking	M Released by hacking in Kotel 07.08.2019. Successful adaptation, but recaptured on 25.11.2019 with broken wing. Send to France.
29	Ultron ♂		W0686 – left	H5 – right	OT-30 190516	Belgium Zoo	06.05.2019	Hacked: August 2019; Fledged:	Kotel	Hacking	M Released by hacking in Kotel 07.08.2019. Successful adaptation. Shot in Zhenda 24.03.2020
30	Jeravna ♀	982000357874396	W0703	H1 - left	OT-50 210386	Spain	2019		Sliven	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani. Predated and died on 09.03.2021 in the night close to the aviary.
31	Vaglen ♂	982000357874430	W0709	Y1	OT-30 202013	Spain	2018		Sliven, Kotel	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani. Recaptured around 15.03.2021. Moved to Ktel on 13.04.2021. Released from Kotel on 12.05.2021.
32	Byala ♀		W0707	T1	OT-50 210429				Sliven	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani. Most probably killed by train near Zhelyu Voivoda village 19.03.2021
33	Bulgar ♂	982000357874426	W0708	X1	OT-50 190485	Spain	2019		Sliven, Kotel	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani. Recaptured around 15.03.2021. Moved to Ktel on 13.04.2021. Released from Kotel on 12.05.2021.
34	Marta ♀	982000357874434	W0705	M1	OT-50 190496	Spain	2019		Sliven, Kotel	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani. Recaptured around 15.03.2021. Moved to Ktel on 13.04.2021. Released from Kotel on 12.05.2021.
35	Galya ♀		W0706	P1	OT-50 210434				Sliven	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani, predated by jackals near the cage 12.03.2021

No.	Name	Microchip No.	Ornithological ring No. and side	Colour ring No. and side	Type and No. of GPS transmitter	Origin	Year of fledging	Time of release	Place of release	Method of release	Notes, sex, weight
36	Kara Kyutuk ♂		W0704	K1	OT-50 210435				Sliven	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani, predated by jackals near the cage 16.03.2021
37	Veliko ♂	982000357 874530	W0702	E1	OT-50 210432	Spain	2019		Sliven, Kotel	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani. Recaptured around 15.03.2021. Moved to Ktel on 13.04.2021. Released from Kotel on 12.05.2021.
38	Bay Ivan ♂	982000357 874413	W0667	L1	OT-50 210431	Spain	2018		Sliven, Kotel	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani. Recaptured around 15.03.2021. Moved to Ktel on 13.04.2021. Released from Kotel on 12.05.2021.
39	Juranlyi ♂	982000357 874523	W0701	A1	OT-50 210433	Spain	2019		Sliven, Kotel	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani. Recaptured around 15.03.2021. Moved to Ktel on 13.04.2021. Released from Kotel on 12.05.2021.
40	Ichera ♀	982000357 874409	W0670	C1	OT-50 210430	Spain	2018		Sliven	Aviary	Soft released by aviary 03.03.2021 on Sinite Kamani. Shot in Hungary April 2021.
41	Blacky Skrill ♂			K67	OT-50 210436				Sliven, Kotel	Aviary	Arrived in Bulgaria on Sinite kamani aviary 03.03.2021. Moved to Kotel on 13.04.2021. Released from Kotel on 12.05.2021.Died 03.06.2021 near Dobriniste – poisoned and shot.
42	Ozzy ♂			K86	OT-50 210437		2020		Sliven, Kotel	Aviary	Arrived in Bulgaria on Sinite kamani aviary 03.03.2021. Moved to Kotel on 13.04.2021. Released from Kotel on 12.05.2021.
43	Hristovich ♂	982091065 667301	W0533 - right	XX - left	OT-50 210439	Spain	2020		Vrachanski Balkan	Aviary	Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Released on 26.05.2021.
44	Pateva ♀	982091065 667295	W0535 - right	PP - left	OT-50 210440	Spain	2020		Vrachanski Balkan	Aviary	Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Released on 26.05.2021
45	Reiser ♀	941000025 961356	W0540	EE	OT-50 210441		2020		Vrachanski Balkan	Aviary	Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Released on 17.06.2021.
46	Atanasova ♀	941000025 961349	W0542	AA	OT-50 210444		2020		Vrachanski Balkan	Aviary	Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Released on 17.06.2021.
47	Arabadjiev ♂	941000025 961351	W0536	KK	OT-50 210442		2020		Vrachanski Balkan	Aviary	Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Released on 17.06.2021.
48	Farman ♀	941000025 961354	W0534	CC	OT-50 210438		2020		Vrachanski Balkan	Aviary	Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Released on 26.05.2021
49	Djuninski ♂	941000025 961350	W0537	TT	OT-50 210443		2020		Vrachanski Balkan	Aviary	Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Released on17.06.2021.
50	Harrison ♂	941000025 961357	W0541	OO	OT-50 210445		2020		Vrachanski Balkan	Aviary	Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Released on 14.07.2021.
51	Finscha ♀	941000025 961353	W0539	LL	OT-50 210448		2020		Vrachanski Balkan	Aviary	Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Released on 14.07.2021.

No.	Name	Microchip No.	Ornithological ring No. and side	Colour ring No. and side	Type and No. of GPS transmitter	Origin	Year of fledging	Time of release	Place of release	Method of release	Notes, sex, weight
52	YY	941000025961352	W0538	YY	OT-50 210447		2020				Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Attempted release on 14.07.2021, but non-releasable. Re-released again in August 2021, found exhausted near Daida and died in rehab center in Thessaloniki.
53	♀	982091065667284	W0532	O1	Non-releasable		2020				Arrived in Bulgaria on Vrachanski Balkan aviary 03.03.2021. Attempted release on 14.07.2021, but non-releasable
54	♀	982091065667306	W0633			Spain		To be released in 2022			
55	♂	982091065667305	W0632			Spain		To be released in 2022			
56	MM ♀	982091065667304	W0638			Spain		To be released in 2022			
57	♀	982091065667303	W0635			Spain		To be released in 2022			
58	♂	982091065667302	W0713			Spain		To be released in 2022			
59	♀	982091065667298	W0713			Spain		To be released in 2022			
60	♀	982091065667297	W0639			Spain		To be released in 2022			
61	♀	982091065667296	W0640			Spain		To be released in 2022			
62	♀	982091065667298	W0714			Spain		To be released in 2022			

Releases by aviary (cage method)

First releases in Vrachanski Balkan Nature Park in 2020

First ever release of Cinereous Vultures in VBNP took place on 05.05.2020. In three different events (3, 4 and again 3) in total 10 individuals (BARABA, ISKAR, KOTLYA, MONTANA, STARA PLANINA, VARSHETS, VRACHANSKI BALKAN, VRATSA, ZHORA and ZHORA 2) were released after a year of acclimatization in the aviary near Dolno Ozirovo. Seven birds adapted well and settled in the area, while three died – STARA PLANINA was depredated by wild predators (wolves or jackals) in a stormy weather during the night; ISKAR died of hearth malfunction; ZHORA 2 was depredated by dogs near a farm.

Second release in SKNP/Kotlenska Planina SPA in 2021

After the successful release of 10 Cinereous Vultures in May/June 2019 in Eastern Balkan Mountain (2 from SKNP and 8 from the aviary in Kotel) the second release in the area took place in 2021. On 03.03.2021 10 individuals (BAY IVAN, BULGAR, DJURANLY, GALYA, JERAVNA, KARA KYUTUK, MARTA, VAGLEN and VELIKO) were released from SKNP aviary. Shortly after the release, three birds (GALYA, JERAVNA and KARA KYUTUK) were killed by jackals (Canis aureus) in the vicinity of the feeding site during three different nights. This malicious outcome let the project

team to recapture the remaining birds and shortly after moved them for release from the aviary in Kotel. Another bird – BYALA, went down the valley and was most likely killed by train. ICHERA also went down the valley and lost contact with the aviary and the feeding site and started roaming large distances until became shot in Hungary. Recaptured birds were released again in early May 2021, all transferred to Kotel birds imported 2020 (BAY IVAN, BULGAR, DJURANLY, MARTA, VAGLEN and VELIKO) adapted well. Two more birds imported 03.03.2021 were also released with this group in Kotel (OZZY and BLACKY SKRILL). OZZY adapted well, while BLACKY SKRILL started long distant dispersal movements shortly after the release and roamed the eastern part of Balkan Peninsula until became first poisoned and then shot near Dobrinishte (SW Bulgaria) on 03.06.2021.

Second release in Vrachanski Balkan Nature Park in 2021

The second release of Cinereous Vultures in VBNP took place in June 2021, three months after the transfer of the group of 11 individuals from Extremadura. In three different events (3, 4 and again 3) in total 10 individuals (ARABADJIEV, ATANASOVA, DJUNINSKI, FARMAN, HRISTOVICH, PATEVA, REISER, OO, LL, YY) were released from the aviary near Dolno Ozirovo. Nine birds adapted well and settled in the area, while one (YY) started long dispersal and was recaptured a month later in the area of NE Greece, not far from Dadia and died from exhaustion in a rehab center soon after.

Figure 4. *Cinereous Vulture eating from horse carcass in Vrachanski Balkan.*

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.

Yellow rings with black two letters or a letter and a digit codes were used, along with standard ornithological rings.

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

Figure 4. *Cinereous Vultures on the feeding site in Vrachanski Balkan.*

Video camera and trial cameras use

The feeding sites in VBNP and SKNP were equipped with permanent on-line video monitoring with video cameras. Additionally, trial cameras were also used. Such was in use also in the feeing site near Kotel.

GPS/GPRS tracking

All released Cinereous Vultures were tagged with GPS/GSM transmitters produced by Ornitela Ltd. http://www.ornitela.com/ – some OT-30 were used, but due to better performance we shifted to OT-50. All attached by leg-loop in accordance with the VCF recommendations (Hegglin & Locher 2018).

Figure 5. *Tagging a Cinereous Vulture in Sinite Kamani NP.*

Figure 6. *GPS/GPRS transmitter OT-30, plastic ring and standard ornithological ring used in marking Cinereous Vultures within the project.*

Measuring the survival

We calculate the survival to certain periods – e.g. a) up to 2 months after the release (acclimation), b) up to 6 months (settling), c) up to 1 year, which will coincide with the differences in the adaptation – post release effect, adaptation/settling effect and managing to survive through extreme winter conditions (the first winter), and then survival to second, third and so on years to assess the suitability of the sites/habitats, later adding also the reproduction success.

Results & Discussion

Up to 2021 in total 66 Cinereous Vultures were imported to Bulgaria in the period 2018-2021 (Tab. 2), of which 9 are still awaiting release and 6 were or became non-releasable.
From the 51 released individuals 7 were released by hacking (artificial nest) of which 3 are alive - 2 in the wild (BOYAN and RIGA), which eventually settled in the area of Cankiri in Turkey and Dadia in Greece respectively, while 1 was recaptured alive (BARNABIE). This accounts for 86% fledging success and survival until the first migration; 57% survival in the first winter; 29% reaching maturity into the wild, but 100% emigration from the release site.
In total, 44 individuals were released by aviaries as follows:
- 24 individuals were released in Eastern Balkan Mountains (14 individuals are still alive – 58% survival; 11 individuals settled in the area, which accounts for 46% of all released birds and 79% of the survivors).
- 20 individuals were released in VBNP (16 individuals are still alive – 80% survival; 15 individuals settled in the area – 75% of all released and 94% of the survivors);

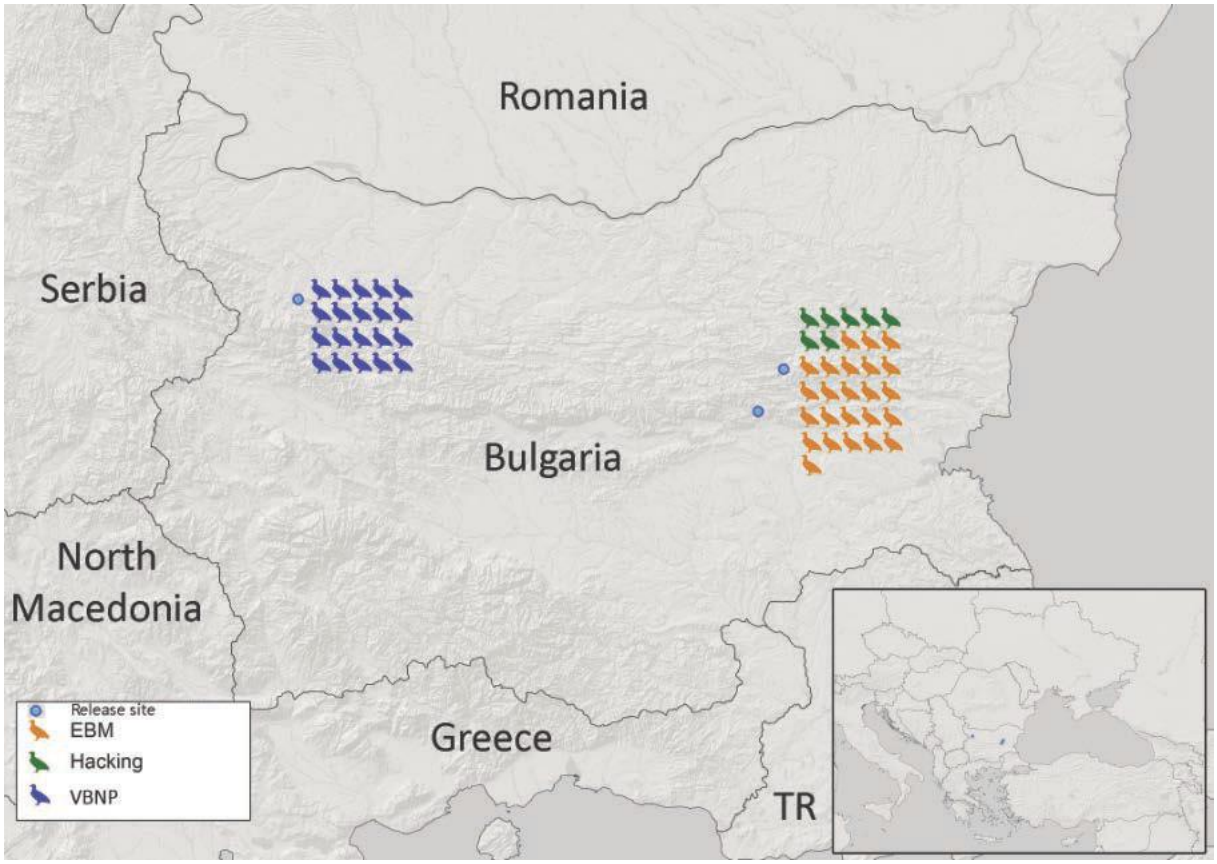

Figure 7. *Map showing the release sites and the respective number of released birds by site and by method.*

For the whole project, all sites and all methods, the average survival rate so far is 63%.

Table 2. *Metadata for all Cinereous Vultures imported to Bulgaria in the period*

	Number of birds released	Fledging	Acclimation	First autumn migration/ dispersal	First winter	First spring migration/ dispersal	One year after release	Two years after release	Three years after release
Hacking	7	7 (100 %)	6 (86 %)	4 (67 %)	3 (75 %)	2 (67 %)	2 (100 %)	2 (100 %)	2 (100 %)
Aviary EBM 2019	11	N/A	11 (100 %)	11 (100 %)	10 (91 %)	8 (80 %)	7 (88 %)	7 (100 %)	N/A
Aviary EBM 2021	13	N/A	9 (69 %)	7 (78 %)	6 (86 %)	N/A	N/A	N/A	N/A
Aviary VBNP 2020	10	N/A	7 (70 %)	7 (100 %)	7 (100 %)	7 (100 %)	7 (100 %)	N/A	N/A
Aviary VBNP 2021	10	N/A	9 (90 %)	9 (100 %)	9 (100 %)	N/A	N/A	N/A	N/A
Aviary Total	44	N/A	38 (86 %)	33 (87 %)	31 (94 %)	(88 %)	N/A	N/A	N/A
TOTAL	**51**	**(100 %)**	**44 (86%)**	**37 (84 %)**	**33 (89 %)**	**(85 %)**	**(94 %)**	**(100 %)**	**(100 %)**

Figure7. *Cinereous Vultures in aviary , Vtachanski Balkan.*

Comparing the release methods hacking (artificial nest) and release from aviary, one can see that the survival rate during acclimation is the same – 86%. However, larger losses during the first migration and dispersal in the individuals released by hacking were observed and thus difference in the survival rate 67% compared to 84% of the birds released by aviary. This could be attributed to the generally lack of migration and dispersal of the birds released by aviary (due to their age >1 year old and related to this starting of mate search and territory occupancy that fixes them). Similar pattern is observed also in the first winter and the spring migration dispersal in both methods. Although the survival is equal in the released by hacking or aviary birds after the first year onwards, it is important to note that the emigration of the hacked birds from the release site is 100%, while the birds released by aviaries largely remained and settled in the release area (>77% from the survivors). The remaining 23% of the birds that emigrated from the release area settled in the other one project site – one bird from EBM went to VBNP and vice versa. It is interesting to note that both birds that settled in the other project area were females attracted by locally settled males. This provides an idea, that the males are those that establish territories and then attract females in there. The sample is too small and should be further studied, as far as this might have implications of the reintroduction process and creating local nuclei from the zero.

The cost of release and related acclimation, settling and dispersal are the biggest 11-16 % per period or cumulatively it is about 35%. Survival increases and stabilizes to around 90% after the first year in the wild (Tab. 2).

Table 3. *Number of Cinereous Vultures present in Eastern Balkan Mountains in 2020 and 2021 by months.*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Number of Cinereous Vultures observed at once (max.) at the feeding or roosting site in **2020**	10	9	8	8	8	9	9	8	7	5	7	7
Number of Cinereous Vultures observed at once (max.) at the feeding or roosting site in **2021**	5	7	5	6	17	15	14	13	13	14	13	13

Table 4. *Number of Cinereous Vultures present in Vrachanski Balkan Nature Park in 2020 and 2021 by months.*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Number of Cinereous Vultures observed at once (max.) at the feeding or roosting site in VBNP in **2020**	0	0	0	1	4	7	13	10	9	10	9	9
Number of Cinereous Vultures observed at once (max.) at the feeding or roosting site in VBNP in **2021**	10	10	10	10	10	15	20	19	18	17	16	16

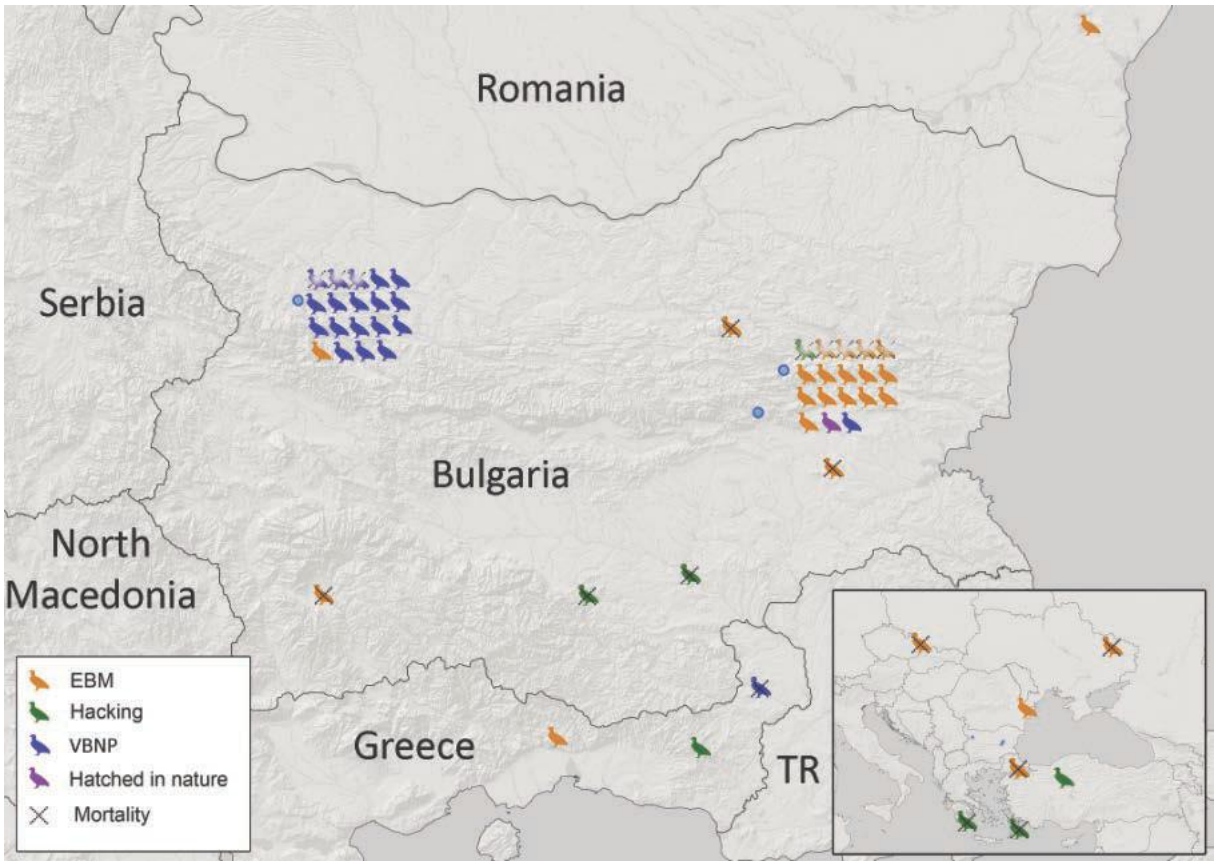

Figure 8. *Map showing the release sites and the sites where the released birds settled or died.*

The territory use of the Cinereous Vultures in VBNP and EBM in 2020 and 2021, according to GPS tracking data is presented in the maps bellow.

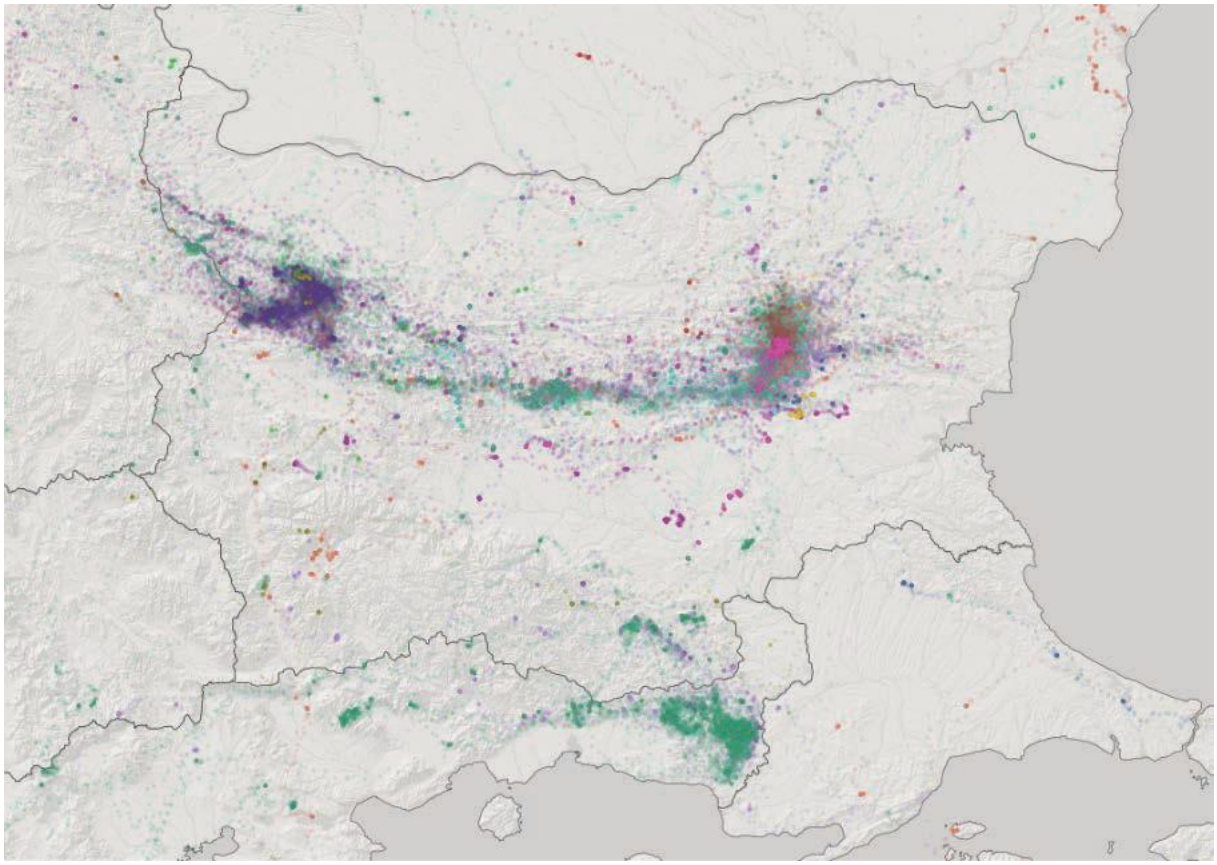

Figure 9. *Territory use of the Cinereous Vultures in EBM, VBNP and beyond in 2020-2021. Legend: each colour is different individual*

In both areas, EBM and VBNP, the Cinereous Vulture shows tendency with the gaining experience and studying the territory to increasingly explore the areas to the valleys north of the Balkan Mountains ridge, which differs from the pattern observed in the Griffon Vulture, which prefers mountain slopes and rarely goes to the valleys.

Mortalities and misfortunes

On 24.03.2020 ULTRON was shot in "Djenda" Game Reserve (Eastern Rhodopes) and later died in the Wildlife Center of Green Balkans in Stara Zagora.
On 27.03.2020 EXTREMADURA died due to electrocution near Antonovo.
On 12.05.2020 SLIVEN died due to drowning into a farm's waste water basin in NE Ukraine.
On 11.06.2020 STARA PLANINA died due to depredation by wolves or jackals during the night in a stormy weather in VBNP – a month after the release in VBNP.
On 12.07.2020 JUANA died due to drowning while attempting to cross Marmara Sea in Turkey.
On 04.08.2020 ISKAR died due to heart malfunction not far from the release site in VBNP.
On 24.10.2020 ZHORA 2 most probably died due to depredation of farm dogs during the night – two months after the release in VBNP.
On 28.12.2020 MARINA died in Kotlenska Planina SPA on its roosting site due to old dry beach tree (Fagus sylvatica) crashed by storm during the night and felt over it.

Figures 10, 11, 12. *The beech tree that killed the Cinereous Vulture MARINA in EBM. Stamen Stanchev and Lachezar Bonchev inspecting the remains of the bird.*

On 09.03.2021 JERAVNA was depredated by jackals near the feeding site in SKNP 6 days after the release in SKNP.
On 12.03.2021 GALYA was depredated by jackals near the feeding site in SKNP 9 days after the release in SKNP.
On 16.03.2021 KARA KYUTUK was depredated by jackals near the feeding site in SKNP 13 days after the release in SKNP.
On 19.03.2021 BYALA was killed by train near Zhelyu Voivoda Village not far from Sliven - 16 days after the release in SKNP.
In April 2021 ICHERA was shot in Hungary nearly a month after the release in SKNP.
On 03.06.2021 BLACKY SKRILL was poisoned and then shot near Dobrinishte in SW Bulgaria – A month after the release in Kotel.
In August 2021 YY died of exhaustion in NE Greece, nearly a month after its release in VBNP.

The Table 5 summarizes the mortality site/period of all released Cinereous Vultures so fare in the period 2018-2021 and the relative importance of the site/period from all mortality cases.

Table 5. *Cinereous Vulture relative mortality by period after the release and area.*

Mortality site/period	During acclimation period	Beyond acclimation period
Within Project areas	7 (36.84%)	1 (5.26%)
Outside Project areas	6 (31.57%)	5 (26.31%)

From the 51 released Cinereous Vulture in the period 2018-2021, in total 19 individuals were lost for the wild population (18 died and one - BARNABIE was recaptured injured but alive). It can be stated that the mortality is higher during the acclimation period and generally outside the Project areas.

Table 6. *Detailed division of mortality factors according to the period after release and site – all cases in the period 2018-2021.*

Mortality factors	During acclimation period		Beyond acclimation period	
	Within Project areas	Outside Project areas	Within Project areas	Outside Project areas
Depredation (6)	6 (31.58%)	-	-	-
Drowning (3)	-	1 (5.26%)	-	2 (10.52%)
Shooting (2)	-	1 (5.26%)	-	1 (5.26%)
Poisoning (2)	-	1 (5.26%)	-	1 (5.26%)
Electrocution (1)	-	-	-	1 (5.26%)
Exhaustion (1)	-	1 (5.26%)	-	-
Hit by train (1)	-	1 (5.26%)	-	-
Natural disaster (1)	-	-	1 (5.26%)	-
Hit in vineyards wires (1)	-	1 (5.26%)	-	-
Preceding health problems (1)	1 (5.26%)	-	-	-

From the manageable ones, the single most serious mortality factor is the depredation over newly released birds and especially such by jackals around the aviary and the feeding site in SKNP (Tab. 6). Four Cinereous Vultures were killed and eaten by jackals – ZLIN, which was released by hacking in 2019 and JERAVNA, GALYA and KARA KYUTUK released by aviary in 2021. The shooting outside Project areas is also important factor, especially with some additional cases suspected – e.g. BYALA (considered hit by train) and ZHORA 2 (considered depredated by dogs), that might also have been shot and transmitters intentionally thrown to railway and highway by the perpetrators to hide their crime.

Breeding behaviour and reproduction

Pairs 2021:

1. KOTEL x VCF KNOW-HOW (2017/2017) – Kotel. In 2021 nested in artificial platform in Sessile oak (Quercus petraea) tree. Incubated an egg from 20.03.2021 to 11.05.2021 – unsuccessful.

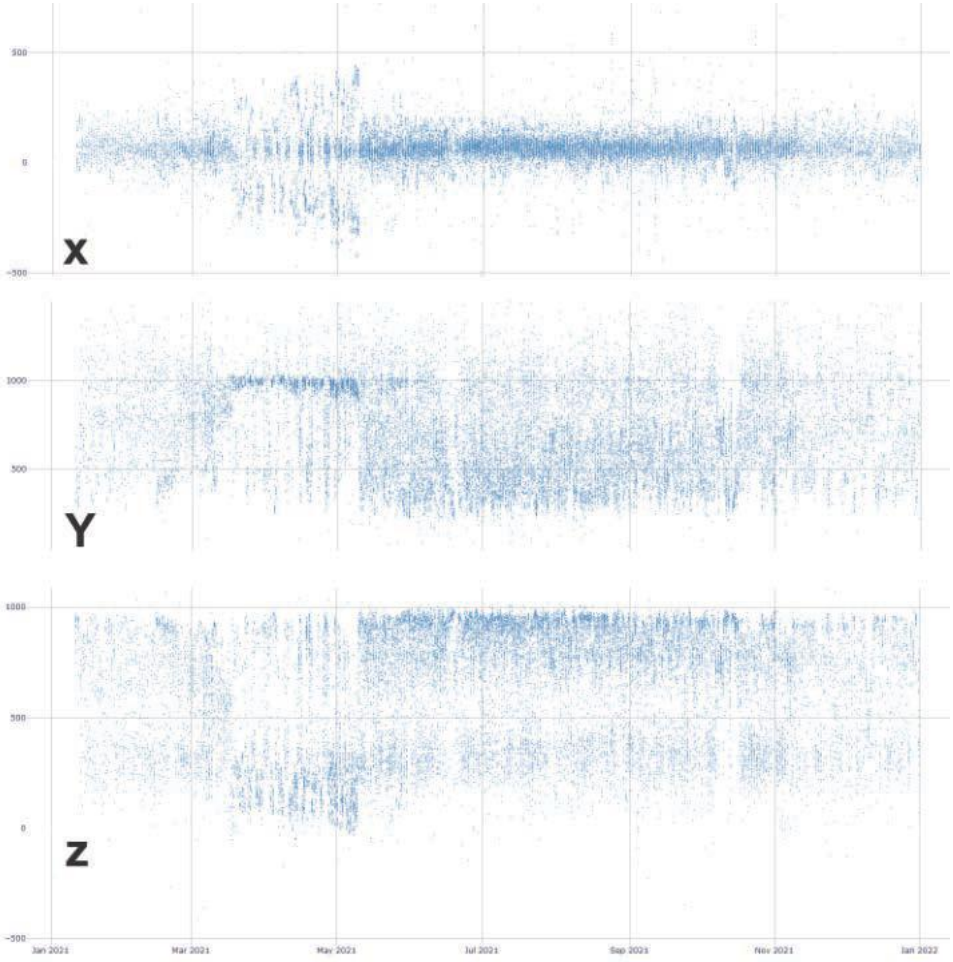

Figure 13. *Picture of the GPS transmitter's accelerometer graph of the female VCF KNOW-HOW in 2021. Well visible is the distraction of the ordinary model during the incubation period 20 March 2021 - 15 May 2021.*

Figure 14. *Picture of the nest of the pair KOTEL x VCF KNOW-HOW in 2021.*

2 . ZLOSTEN x MARINA (2017/2017) – Kotel – Changed to ZLOSTEN x MONTANA (2017/2017). In 2021 built nest on the ground in a branch of a fallen Beech (Fagus sylvatica).

Figures 15, 16, 17. *Pictures of the nest of the pair ZLOSTEN x MONTANA in 2021. photo by Stamen Stanchev (10 and 11) and Lyubomir Andreev – Lupy (12).*

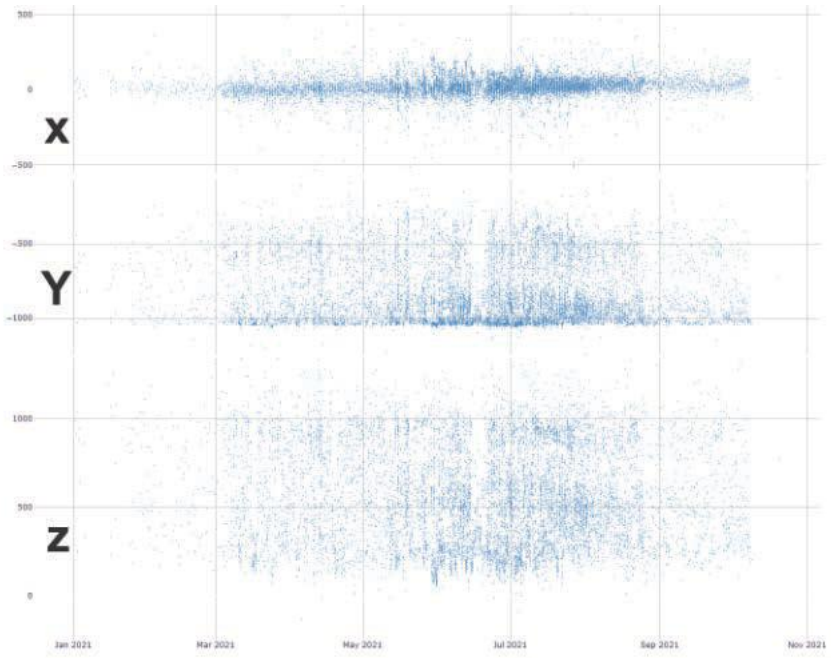

Figure 18. *GPS transmitter's accelerometer graph of the female MONTANA in 2021. Compared to VCF KNOW-HOW and KAMCHYA which have been proven they were incubating for 52-55 days, here we do not observe similar pattern, so we assume MONTANA did not incubate in 2021. It is likely, however, that it may have laid an egg and incubated in the late June 2021 for some 10 days period.*

3 . BALKAN x KAMCHIYA (2017/2017) – Kotel. In 2021 nested in artificial platform in Sessile Oak (Quercus petraea). Incubated from 17.03.2021 to 12.05.2021, successfully fledged first chick 02.10.2021 (145 days). The chick was tagged in the nest on 25.07.2021 with GPS transmitters and was named MICHEV-BOEV after two of the most famous Bulgarian ornithologists/conservationists that first proposed reintroduction of the species in 1980.

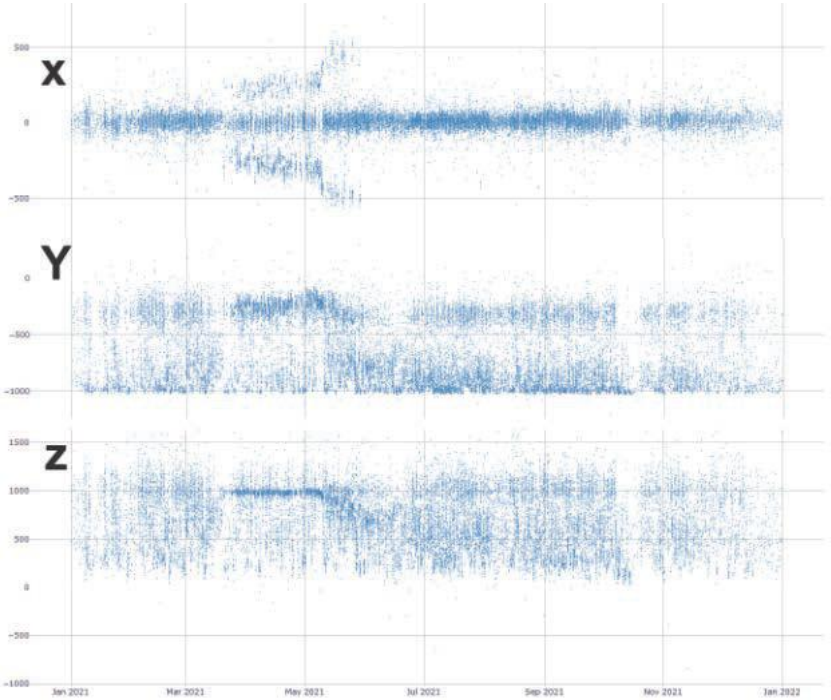

Figure 19. *Picture of the GPS transmitter's accelerometer graph of the female KAMCHIYA in 2021. Well visible is the distraction of the ordinary model of acceleration during the incubation period 20 March 2021 - 12 May 2021.*

***Figure 20**. The nest of the pair BALKAN x KAMCHIYA in 2021. photo by Lyubomir Andreev – Lupy*

***Figure 21.** The nest of the pair BALKAN x KAMCHIYA in 2021 with the ready to fledge offspring MITCHEV-BOEV. photo by Lyubomir Andreev – Lupy*

4 . VR. BALKAN x KUTELKA (2018/2017) - Vrachanski Balkan; This pair build nest in a Silver Pine (Pinus sylvestris) in Ponor mountain SPA (~30 km from the release site in Vrachanski Balkan). It is likely that the pair built the nest in the spring/summer period of 2021 but has not laid egg that year.

Figure 22. *The nest of the pair VR. BALKAN x KUTELKA in 2021.*

5 . VARSHETS x KOTLYA (2017/2017) – Vrachanski Balkan; This pair build nest on the ground of a rock edge in VBNP (less than 10 km from the release site).egg that year.transmitters and was named MICHEV-BOEV after two of the most famous Bulgarian ornithologists/

Figure 23. *The nest of the pair VARSHETS x KOTLYA in 2021. photo by George Stoyanov.*

6 . BARABA x MONTANA (2018/2017) – Vrachanski Balkan – Montana shifted the female and paired with ZLOSTEN in Kotel. It is likely that BARABA paired with another female VRATSA or ZHORA in Vrachanski Balkan, but both females have no transmitters for a while and this is hard to prove. conservationists that first proposed reintroduction of the species in 1980.

Dispersals and movements

Although move a lot along the Balkan Peninsula and beyond, the most birds keep attached and explore intensively the focal reintroduction area of Balkan Mountains with centers the two release sites in EBM and VBNP (see Fig 24). Although move a lot along the Balkan Peninsula and beyond, the most birds keep attached and explore intensively the focal reintroduction area of Balkan Mountains with centers the two release sites in EBM and VBNP (see Fig.29).

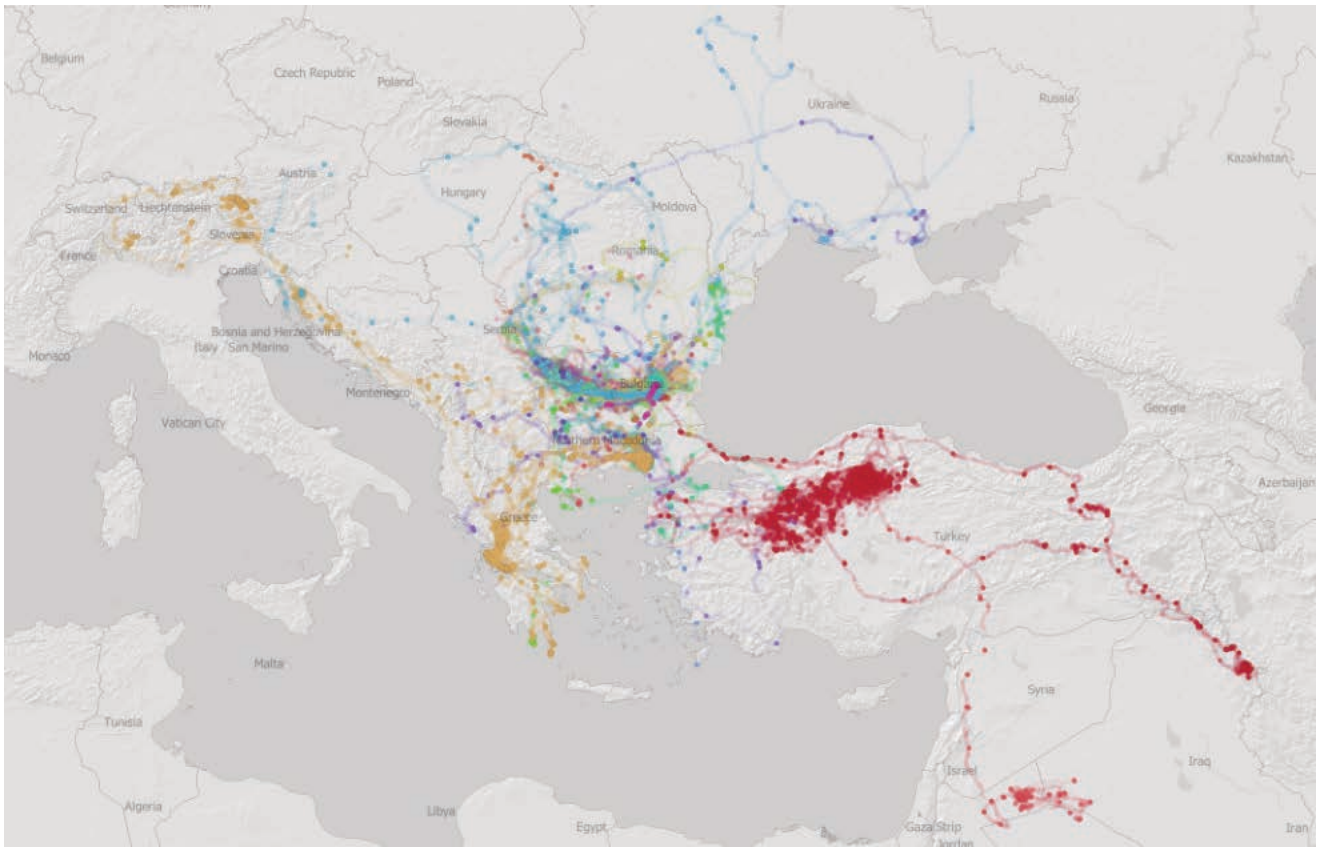

Figure 24. *The movements of tagged Cinereous Vultures.2018-2021.*

All the birds released by hacking emigrated from EBM in their first autumn (see Fig.25).

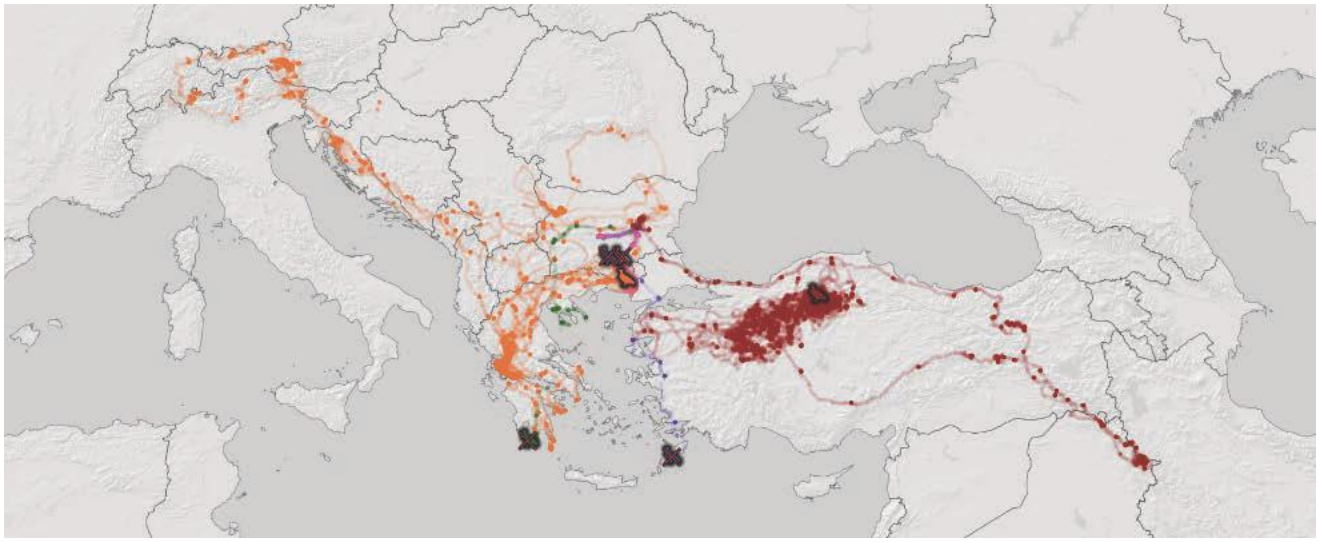

Figure 25. *The movements and last position of Cinereous Vultures released by hacking*

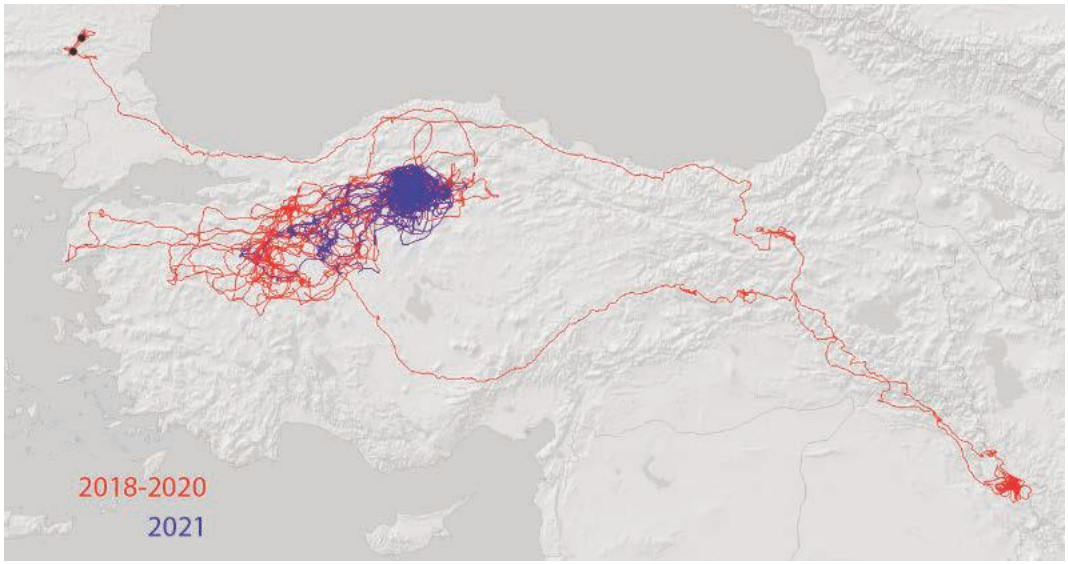

Figure 26. *The movements of BOYAN.*

BOYAN – after the wintering near Suleymaniah (Iraq on the border with Iran), in spring 2019 it moved backwards NW and with few attempts to pass the Marmara Sea it remained in Turkey, where still is roaming the central NW provinces and obviously settled in the area of Cankiri. BOYAN's transmitter has detached in summer 2021 and was recovered by Turkish ornithologists/conservationists (Fig 26.).

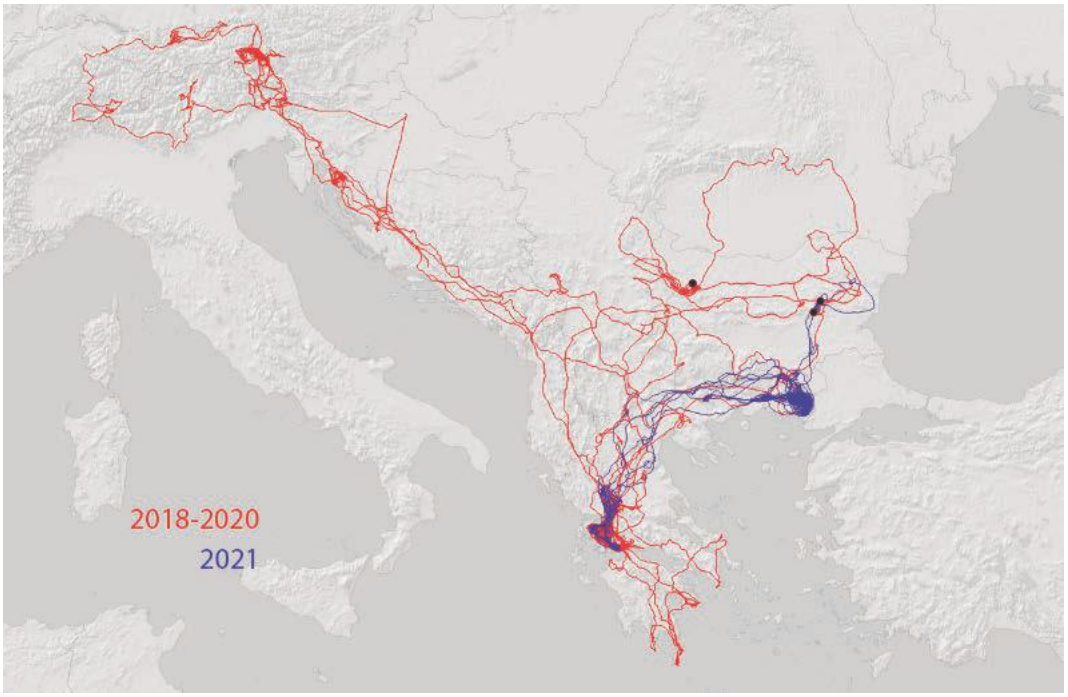

Figure 27. *The movements of Riga.*

RIGA – after two times overwintered in SW Greece in the areas of Messolonghi – Akarnanika – Empesos, where small colonies and gathering of wintering Griffon Vultures are known to be present, and two times summering in Hohe Tauern in 2019 and 2020, in 2021 RIGA moved to Bulgaria visited Kotel (the release site), but then moved and settled to Dadia (Fig 27.).

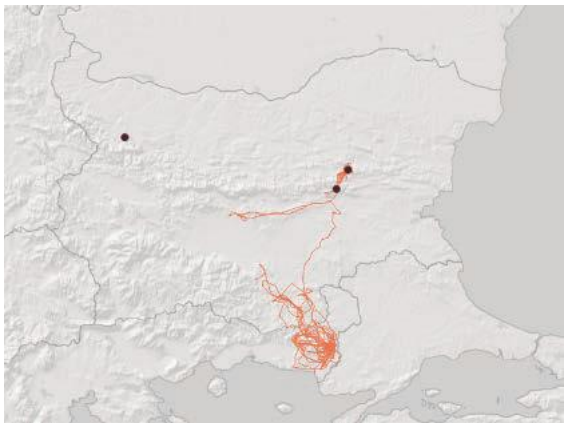

Figure 28. *The movements of ULTRON*

ULTRON – After wintering in Dadia in winter 2019-2020, in March 2020 it moved to the Bulgarian part of the Eastern Rhodopes and was shot in the game reserve "Djenda". Although recaptured alive, soon after ULTRON died in the Wildlife Breeding and Rehab Center of Green Balkans in Stara Zagora.

visiting the Alps and finally find a mate and settled in the VBNP, where build nest in summer 2021 together with the male VR. BALKAN.

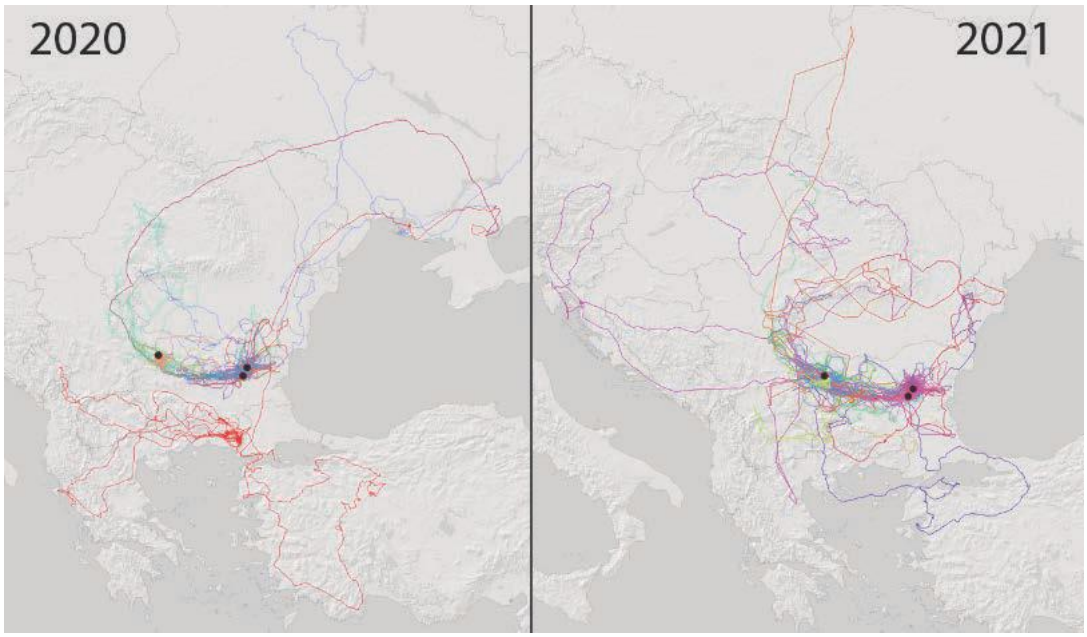

Figure 29. *The movements the Cinereous Vultures relased from aviary.*

From the Cinereous Vultures released by aviary, the following ones have made some remarkable movements that are worth mentioning:

JUANA – this female quite some time after the release being attached to the release site of EBM, in 2020 this bird started exploring large distances and visited Romania, Ukraine, Turkey (Asian part) and after large detour through Balkans and passing through Dadia it headed again towards Asia Minor, but drowned in Marmara Sea in July 2020. These movements are most probably related with a search of a partner, as such was not available in the release site in EBM, while all other paired females remained attached to the release site.

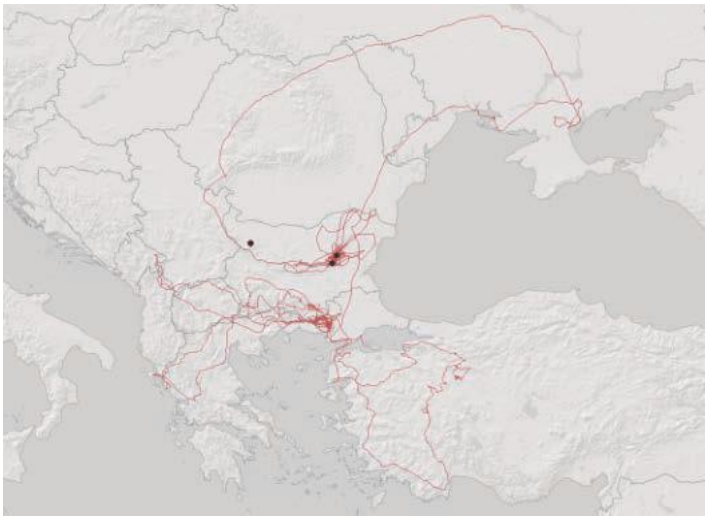

Figure 30. *The movements of JUANA.*

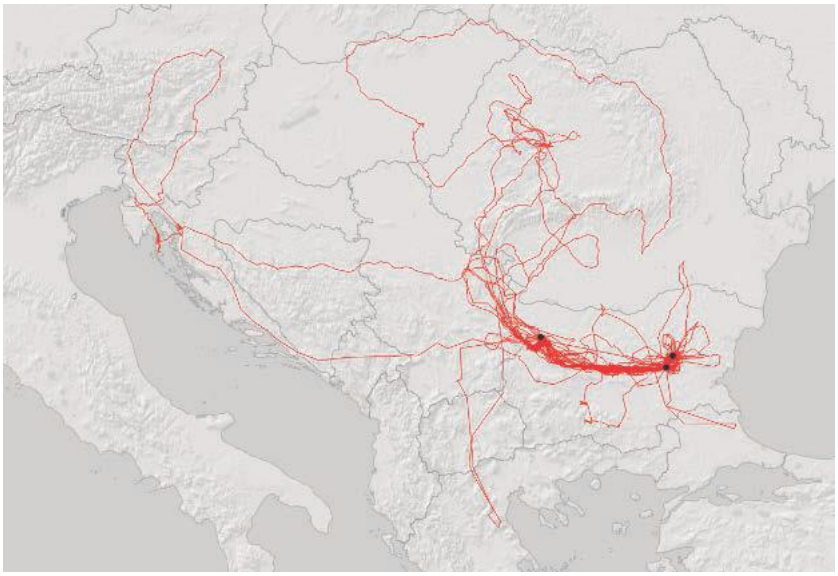

Figure 31. *The movements of KUTELKA.*

KUTELKA – the other female that did not find mate in the release site of EBM and started long distant movements – Romania, Hungary, Serbia, Bosnia and Herzegovina, Croatia and Slovenia towards Austria, visiting the Alps and finally find a mate and settled in the VBNP, where build nest in summer 2021 together with the male VR. BALKAN.

Interestingly most of the released birds that are initiating long-distant movements are heading north and explore to larger extend Romania. Southward movements towards Greece and Turkey are observed only in classic autumn migrations of the young.

Figure 32. *VCF Know-how.*

Figure 33. Exogenous Cinereous Vultures on the feeding site in Sinite kamani NP.

Attracted exogenous birds

From the >9 recognised exogenous Cinereous Vultures that visited Balkan Mountains release sites in 2020-2021, 4 were marked and their origin established (Tab. 7). All marked birds were from the colony in Dadia - Lefkimi-Soufli Forest National Park in Greece. Additionally, two non-marked birds were captured in the aviary of SKNP and tagged with GPS transmitters by the Project team before release.

Table 7. *Attracted in Balkan Mountains release sites exogenous marked and Cinereous Vultures in 2020-2021.*

№	wingtag	ring	origin	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	A4	HKT	Dadia	2020							EB, VB					
2	E6		Dadia	2020							EB					
3	M4	HKU	Dadia	2020							VB					
4	M4	HKU	Dadia	2021							EB					
5	Regenerat	B1L	Unknown, but likely Dadia	2021				EB								
6	Ultramarin	B1M	Unknown, but likely Turkey	2021					EB							

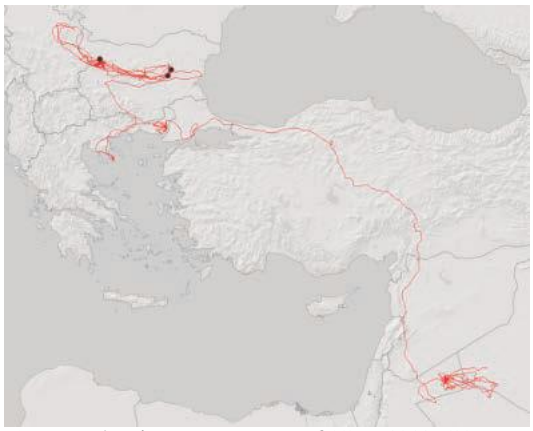

Figure 34. *The movements of ULTRAMARIN.*

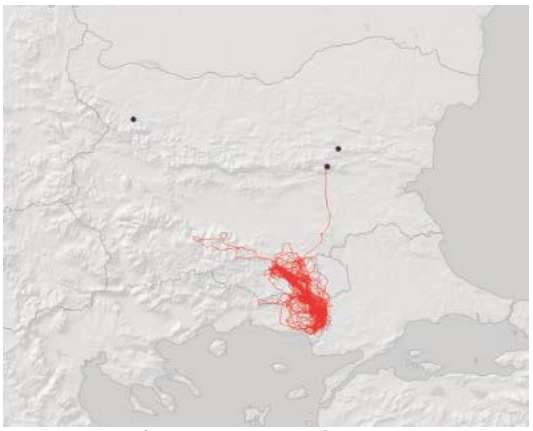

Figure 35. *The movements of REGENERAT.*

Figure 36. *M4 in Kotel mountain*

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, or support the reintroduction process. 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, intensive in-time tracking of vultures to detect and prevent poisoning etc.

Feeding

In 2020 and 2021 we continued to organize feeding of vultures at minimum 2 to 3 times per week (and every time upon availability of carcasses - sometimes up to 7 days a week). Each feeding site was supplied annually of between 16 to 60 tons of carcasses in up to 150 events per site (Tab. 8-13). Two feeding sites were running in EBM (SKNP and Kotel) and one in VBNP in 2020 and 2021. The respective number of feeding events and amounts per month are summarized per feeding site and year in the tables provided bellow:

Table 8. *Number of feedings and amount of food (kg) provided at the feeding site in Kotel (EBM) in 2020.*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	total
Feeding events	11	9	12	17	12	14	11	8	11	12	12	11	**140**
Amount of food in kg	2600	2950	2490	2650	2480	2800	2860	1220	2630	1950	2520	2240	**29390**

Table 9. *Number of feedings and amount of food (kg) provided at the feeding site in Kotel (EBM) in 2021.*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	total
Feeding events	10	14	14	15	16	7	10	9	11	10	12	13	**141**
Amount of food in kg	3560	3980	4290	3660	4440	3260	3560	3820	3965	2070	3330	2548	**42483**

Table 10. *Number of feedings and amount of food (kg) provided at the feeding site in SKNPI (EBM) in 2020.*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	total
Feeding events	2	2	1	5	5	7	5	2	5	5	4	2	**45**
Amount of food in kg	950	1400	550	725	1875	2190	1300	640	2200	1610	2020	1300	**16760**

Table 11. *Number of feedings and amount of food (kg) provided at the feeding site in SKNPI (EBM) in 2021.*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	total
Feeding events	2	7	7	7	10	8	5	6	5	6	6	7	**77**
Amount of food in kg	850	1490	1520	1340	2685	3270	3150	1390	1190	1370	715	1695	**20665**

Table 12. *Number of feedings and amount of food (kg) provided at the feeding site in VBNP in 2020.*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	total
Feeding events	12	8	12	13	14	13	14	12	16	12	11	13	**150**
Amount of food in kg	5680	3760	3430	4070	4890	4910	6030	4110	5930	4540	5250	3820	**56420**

Table 13. *Number of feedings and amount of food (kg) provided at the feeding site in VBNP in 2021.*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	total
Feeding events	12	15	13	16	16	17	14	12	10	8	8	13	**154**
Amount of food in kg	4780	3910	5310	3710	5450	6650	5480	3830	4440	4420	3950	4530	**56460**

Nest platforms building in trees

As a nesting in trees species the Cinereous Vultures' one of the most serious threat and reason for local extinction in the pest was lack of suitable trees for nesting. In order to support and facilitate the initial establishment of breeding nuclei out of the currently classic range of the Cinereous Vulture (coniferous trees in the Mediterranean), we established artificial nests/nest platforms in EBM. More than 60 such were build/designed/formed for nesting and perching around the possible nest. Most were built in deciduous oak, beech, ash and filbert trees, but also in black and silver pines. As mentioned earlier in this report, the first laid eggs in 2021 by the newly formed Cinereous Vultures pairs were in 2 artificial platforms in Sessile Oak trees, and also in such the first chick fledged.

Figure 37. *Construction of artificial nest.*

Insulation of dangerous power-lines

Only one case of electrocuted Cinereous Vultures released within the project has been recorded. Upon to order of Regional Inspectorate of Environment and Water Shumen the responsible electricity disturbing company (Electrodistribution North AD, ENERGO PRO group) has urgently insulated dangerous posts of the powerline cause death of the bird.

Figure 38. *Electrocuted Cinereous Vulture*

Poison and other problems detection by using intensive tracking of vultures with GPS/GPRS transmitters.

A Manual for establishing and use of early detection system for poisoning was published by Stoynov, Peshev and Grozdanov 2018, find it here: https://www.researchgate.net/publication/330563619_Early_warning_system_for_wildlife_poisoning_using_intensive_GPS_tracked_vultures_as_detectives). The transmitters are be checked from a person called “Alarmist” from the Project team in the internet platform minimum once a day in periods with lower vultures’ activity (e.g. winter or prolonged periods of poor weather). While in case of periods with high vultures’ activity, in good sunny or clear windy days, the checks are provided minimum twice a day. In situations with received some information or signs of inadequate behaviour, the transmitters are set up to provide data every 10 minutes and the internet platform with the data from the transmitters is observed permanently. When possible and if necessary the Project team member visits the place where the vulture is and checks the reason for landing.

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 (Dama dama) in Kotlenska planina SPA – two release sites - one near Kotel and another near Ticha continues. In 2020 and 2021 more than 50 individuals were released and are now free ranging. The first results show the animals are adapting well to life in nature and they can afford the dogs' and wolves' attacks. The only problem still remains the poaching, but so far the most of local people and authorities are supportive to the initiative and this prevents any illegal attempts.

The Green Balkans is running a sheep farm in SKNP raising more than 250 sheep that are grazing the pastures in the core area for the vultures in the site.

The FWFF is running a sheep farm in Kotel raising more than 600 sheep that are grazing the pastures in the core area for the vultures in the site.

European Souslik were restocked in SKNP and reintroduced in Kotel and their habitats are now maintained by extensive grazing of the above mentioned sheep herds.

Against poisoning activities

The compensation programme and the public awareness activities are continuing although less reports and claims are received, may be based on the increase in professionally run livestock breeding compared to some years ago when most holdings were village and amateur.
It seems, however, that the feeding site operation in an area with permanent wolf presence is the most effective anti-poison tool. Maintaining permanent feeding sites for vultures in regions of sympatric presence with wolf is an irreplaceable conservation tool.
The existence of an aviary with Griffon Vultures inside, placed just at the feeding site increases the attraction of wild and free-ranging reintroduced vultures and this is a way of keeping them away of occasionally present and potentially dangerous (poisoned) food.
However, constant monitoring on the problem and the underlying causes and preventively addressing them is a must.

Overview

Conclusions:

The first phase of the reintroduction of the Cinereous Vulture in Bulgaria is successful. Two nuclei were established along the Balkan Mountains - EBM and VBNP consisted of some 13 and 16 individuals and 3 and 2 pairs respectively.

The hacking, although successful as a method to release Cinereous Vultures into the wild, is not too effective in establishing a local population/nucleus from the zero, it could however be useful for restocking regional populations. It could, however, be useful in areas, where no aviaries and permanent feeding sites are established, but the area is worth trying to be repopulated by the species.

The release by aviaries method is a very good and effective tool to establish Cinereous Vulture nucleus aiming at precisely spatially focused reintroduction initiative.

The Cinereous Vultures are less prone to electrocution compared to Griffon Vultures, probably because they prefer landing on the ground if there is no suitable tree or rock instead of power line pylons.

The shooting is still a problem for the Cinereous Vulture, mainly in the acclimation period and especially in areas, where there have not been provided specific and intensive vultures' conservation actions.

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- for Green Balkans activities:

- for the FWFF activities: BIOPARC Zoo de Doue Conservation, and Sainte Croix Conservation from France, Gorlitz Zoo Germany.

BRIGHT FUTURE FOR THE BLACK VULTURE

VULTURES BACK TO LIFE LIFE14NT/BG/649

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European Endangered Species Breeding Programme

Zoo Ostrava

Zoo Zlin

Zoo Planckendael

Parc des Oiseaux

Riga Zoo

www.greenbalkans.org/VulturesBack
www.fwff.org