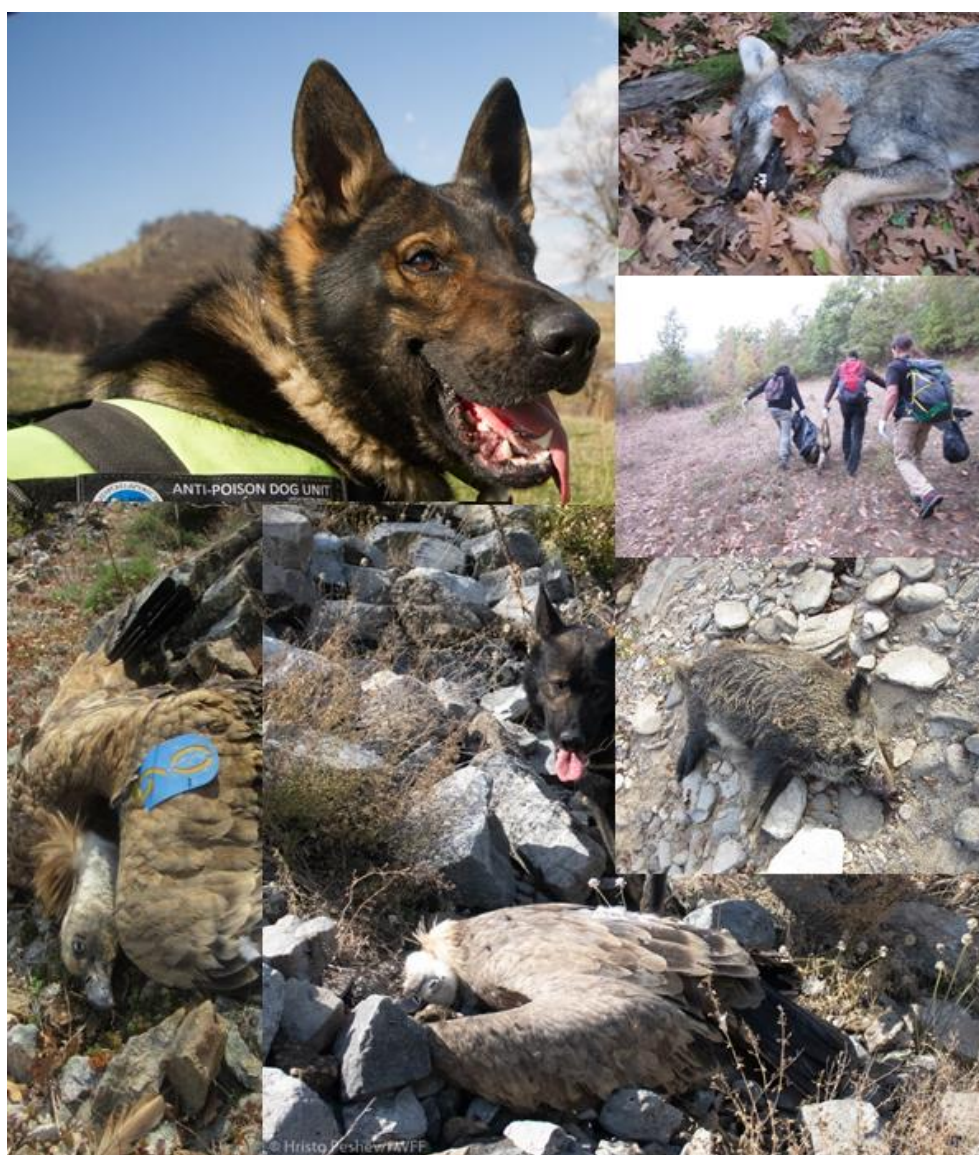


# Anti-poison dog unit operation in Bulgaria (2016-2020)

## Final report



LIFE Re-Vultures  
LIFE14 NAT/NL/000901

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## Резюме

Използването на отровни примамки е сред основните заплахи за лешоядите и е основната причина за неблагоприятния природозащитен статус на тези видове на Балканския полуостров. Едно от най-големите предизвикателства за справянето с този проблем е събирането на достатъчно доказателства и откриването на отровните примамки, разпръснати в природата, както и на всички жертви. Международният опит показва, че незаменими помощници при подобен род инциденти са специално обучените кучета-търсачи.

През 2016 г. БДЗП създаде първия в България антиотровен екип с куче. Този доклад представя резултатите от работата на екипа за период от 4 години (октомври 2016 г. – декември 2020 г.). По време на посочения период екипът е осъществил 153 търсения и патрули, при които са изминати над 300 км от водача и близо 1200 км - от следовото куче. По-голямата част (80%) от патрулите и проверките по сигнал са проведени на територията на Източни Родопи, където са концентрирани популациите на лешояди в България. При проведените търсения са намерени общо 310 животински остатъци, от които 40 са отровени животни, 7 - части от такива и 10 - целенасочено поставени отровни примамки. Установените жертви на отровите са от 11 животински вида. Делът на отровените лешоядни птици е 17.5%, вълците съставляват 22.5% от всички намерени животни, а кучетата (домашни, овчарски, ловни) са 20%. Основните използвани отровни субстанции са карбофуран и метомил. Тези пестициди са забранени за свободна продажба в България и вероятно се внасят незаконно от трети страни. Сред основните причини за използване на отровни примамки са конфликтите човек – хищник и човек – човек, а лешоядите са косвени жертви. Използването на отрови и други неселективни методи за причиняване на смърт по особено жесток начин на защитен или друг вид животно е забранено в България от редица закони, сред които Закона за биологичното разнообразие и Наказателния кодекс. При 8 от всички регистрирани отровни инциденти е започнало разследване, но в нито един случай извършителят не е разкрит и наказан.

Създаването на кучешкия антиотровен екип и неговата работа се доказаха като ефективна мярка за локализирането и разследването на отровни инциденти в дивата природа. Решаването на проблема, обаче, изисква сериозни допълнителни усилия и ангажираност от страна на всички отговорни институции с оглед на съществуващите при

разследванията на тези случаи пропуски. Основните препоръки, които можем да направим, са:

- Разработване и прилагането на планираните дейности в рамките на Национална стратегия за борба с използването на отрови и отровни примамки в България;
- Увеличаване броя на специализираните екипи с кучета за борба с отровите. Такива екипи могат да бъдат създадени към съответните подразделения на полицията в чувствителните зони за опазване на дивата природа;
- Повишаване на координацията и ангажираността на отговорните институции при разследването на инциденти, свързани с незаконното използване на отрови. Подобряване на процедурите за събиране на доказателства и разкриване на извършителите;
- Повишаване капацитета на акредитираните лаборатории за осъществяване на бързи и точни качествени и количествени токсикологични анализи;
- Подобряване на трансграничното сътрудничество между институции и неправителствени организации и това с други водещи европейски държави относно проблема с незаконното използване на отровни примамки;
- Повишаване информираността на населението и изграждане на нетолерантност към подобен тип престъпления.



## Summary

This report presents the work of the first anti-poisoning dog unit established in Bulgaria. It covers a period of more than 4 years (October 2016 – December 2020). During that time 153 searches and patrols were conducted. The majority of the patrols were executed in the Eastern Rhodopes (80%) which is the core area of the vulture populations in Bulgaria. The total number of all findings is 310 with 40 of them being illegally poisoned animals, 7 were animal remains and 10 were poisoned baits. The average number of victims found per poisoning incident is  $2.86 \pm 3.5$ . The anti-poisoning dog unit found poisoned 11 animal species. Vultures comprise 17.5% (n=7) of all victims found. In all these cases vultures were unintentional victims. The main cause of poison use were human-predator and human-human conflicts. Wolves and domestic dogs were the most common victims comprising 22.5% and 20% respectively of all poisoned animals found. Carbofuran and Methomyl were identified as the main poison substances used in the investigated cases. Here we give detailed information about all the poisoning cases investigated by the dog unit. A legal investigation by the police started on 8 occasions but all cases were terminated due to lack of evidences or suspects. We make recommendations for improvement of the work of the authorities against the illegal use of poison.

## Introduction

Poisoning is by far the most significant threat that impacts vulture species. The use of poisons to kill wildlife intentionally has a long history worldwide. Both natural plant and animal based toxins and synthetic pesticides have been used to kill wildlife, a method that is silent, cheap, easy and relatively effective (Ogada 2014). Many classes of pesticides have been used to poison wildlife along Europe, including organochlorines, organophosphates, carbamates and pyrethroids.

The dramatic decline of all vulture species in Bulgaria is associated with the mass poisoning campaigns against predators held in the mid-XXth century (Patev 1950, Bijleveld 1974). At present, poison use is illegal but it is still the main threat causing increased mortality of vultures in Bulgaria and in the Balkans (Demerdzhiev et al. 2014, Parvanov et al. 2018, Pantovic & Andevski 2018). The main driver for this illegal activity is the conflict between livestock breeders and terrestrial predators, mainly wolves and jackals. Carcasses of livestock killed by predators are laced with poison in seek of revenge (Pantovic & Andevski 2018). Griffon Vultures as social foragers have high efficiency in detecting carcasses and are highly susceptible to poisoning (Spiegel et al. 2013, Pantovic & Andevski 2018).

Vultures as gregarious scavengers are susceptible to mass poisoning incidents which may have a dramatic impact on the currently small and fragile vulture populations in the area. Human-carnivore and human-human conflicts are the main incentives for setting poison baits in nature and vultures fall unintentional victims of this illegal practice.

Long list of actions have been undertaken so far to combat the illegal use of poison baits and minimize its impact on wildlife and especially vultures. However, poison incidents still occur and need further addressing and devoted effort. The detection of poisoning cases is challenging and in most cases the perpetrators can not be identified and convicted due to the lack of evidences. Finding poisoned baits and carcasses in the field often is laborious and not successful enough. The use of sniffing dogs for collecting evidences and finding poisoned baits and carcasses has proved to be an efficient method to combat illegal poisoning in many European countries e.g. Spain, Italy, Hungary, Greece (Deak et al. 2020, Vavylis et al. 2020). In 2016 the first anti-poison dog unit was established in Bulgaria as part of the vulture conservation program. Its aim is to strengthen the work against the illegal use of poison baits and prevent vulture mortalities.

## Training of the anti-poison dog unit in Hungary

In April 2016 in collaboration with MME/BirdLife Hungary first meeting was held in Hungary with the professional dog trained Janos Maticsek and the MME dog handler Gabor Deak. After this initial meeting, a male German Shepard dog born in Hungary was selected among 300 other dogs. The dog was named Bars.

Intensive training for the dog and BSPB's dog handler was held mainly in Jaszbereny and the Service Dog Training Center of the Hungarian Police in Dunakeszi, Hungary for 55 days (24 July - 17 September 2016).

The training included:

- Searches in a variety of natural and artificial habitats, sniffing and pointing preliminary hidden animal carcasses (mainly birds of prey and some small mammals) in different stages of decompositions.
- Searches and detection of baits containing carbofuran and phorate – pesticides widely used for illegal poisoning in Europe.
- Exercises for obedience.

One of the crucial stages of the training was to build a strong bond between the handler and the dog.

All the activities were planned and built around the strong and reliable bond between handler and dog. The dog, very energetic and playful, have the instinct to search and find, but at the same time, it has to have this strong bond with the handler that will prevent the idea of self-rewarding. The dog, however, can easily become a victim if it decides to consume the bait instead of only marking it. The handler must balance between satisfaction and control (with all necessary hardness), which will make the importance of the finding, enhanceable for the positive bond between dog and handler. On the other hand, the dog has to trust and accept the decisions of his human colleague, even when the instincts are calling differently. The bonding must start well before the real patrols and investigations of poisoning incidents with simple exercises, daily training and attitude during the routines



On the 15th of September 2016 Bars and its leader, Nikolay Terziev passed successfully the Hungarian police certified poison and carcass detection exam in a Jaszbereny dogs training field and officially became anti-poison dog unit (APDU).

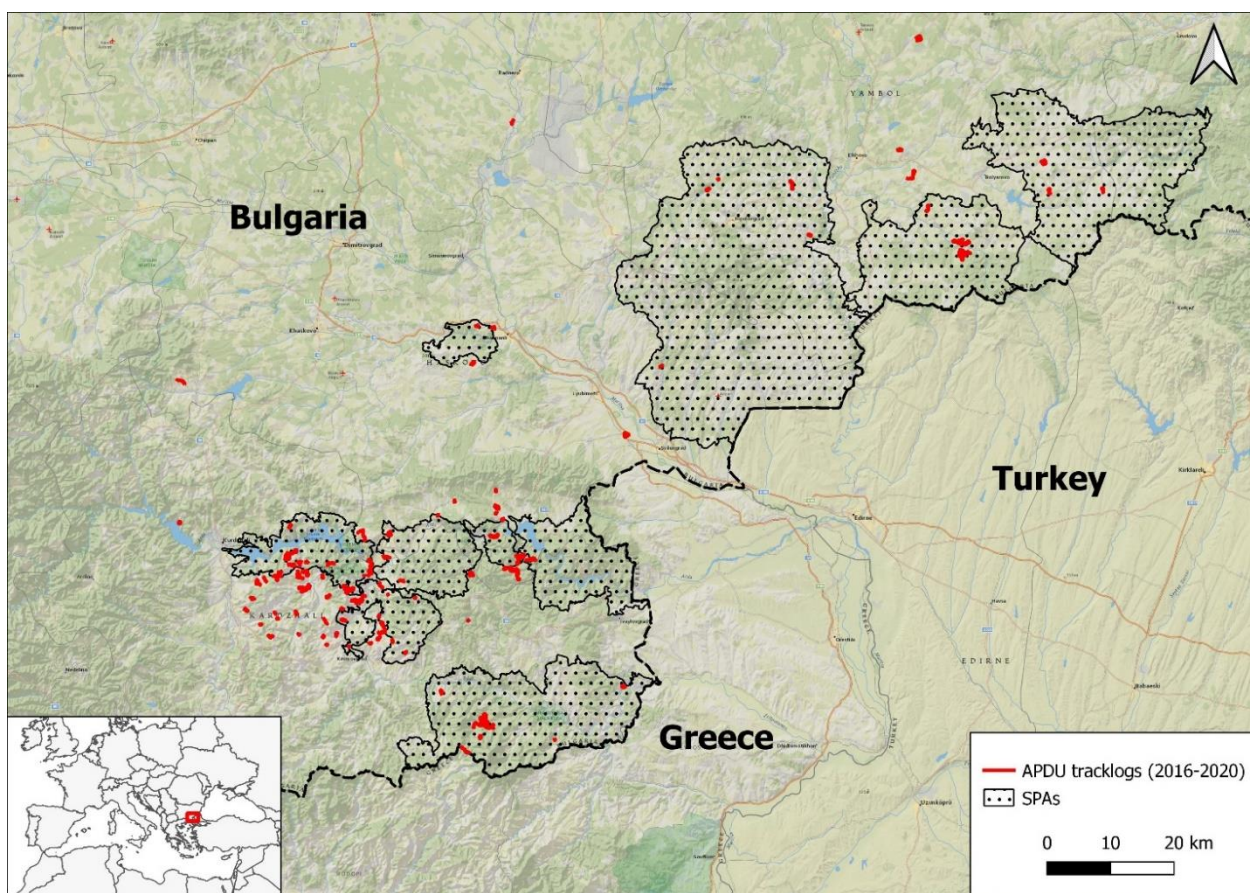
In the summer of 2017, another 10 days of secondary training was held again in Hungary for improving the capacity of the APDU.

## Veterinary care and health problems

In April 2020 our team noticed a small lump on the left side close to Bars' tail. A vet diagnosed it as a small potential peritoneal hernia and recommended a reduction of the intensity and longevity of the dog movements during the patrols. The lump started to grow at the end of August and on the 6th of October successful surgery intervention was made in Plovdiv. Bars was sterilized to reduce prostate pressure. The dog was feeling very good and four hours later began to drink water and enjoy his walks outside. The next day he ate with appetite and everything looked normal. On the 9th of October, however, the swelling appeared again and his condition began to worsen due to a secondary E. coli infection. On the 11th of October, emergency surgery was made in the "Phoenix" veterinary clinic in Stara Zagora. The purulence was cleaned, but the kidneys of the dog were not functioning properly. His condition was very bad. He continued to lose weight and vitality. On the 23rd of October heavy diarrhea appeared. The blood results showed elevated levels of phosphorus, urea and creatinine which were five times above the referent value. Bars spent 40 days in the clinic fighting for his life with the help of the vets and his handler. Surprisingly, in each occasion he was outside for a short walk after the numberless medical procedures, even when he was so weak and could not walk alone without the help of his human colleague, Bars always was trying to search and point to his handler every interesting finding in the neighborhood. The "call of duty" and the heart of a real searcher were much stronger and more important than the way his body feels. In the middle of November, his condition slowly improved and he was checked out from the hospital. The treatment continued from home with regular veterinary inspections and tests. Currently, Bars is healthy and energetic with a strong interest in searching and pointing.

## Methodology

The Anti-poison dog unit (APDU) was operating mostly in the Eastern Rhodopes within and in the surrounding areas of 6 SPAs – ‘Studen kladenets’, ‘Yazovir Ivaylograd’, ‘Most Arda’, ‘Madzharovo’ and ‘Byala reka’. It covers the main Griffon and Cinereous Vulture foraging areas and the core of the Egyptian Vulture breeding population in the country. Besides, the dog unit made frequent patrols also in 4 SPAs in southeastern Bulgaria – ‘Sakar’, ‘Derventski vazvishenia’, ‘Zapadna Strandzha’ and ‘Harmanliyska reka’ (Map 1). These are the main breeding and foraging areas of the Imperial Eagle in Bulgaria. However, in case of poisoning, which potentially might affect vultures, other areas were visited as well upon request – Kresna gorge, Vrachanski Balkan, SPA ‘Provadiisko-Royaksko Plateau’ and SPA ‘Rusenski Lom’.



**Map 1.** Geographical distribution of field searches conducted by the APDU in the Eastern Rhodopes and Sakar Mountain.

Five main types of searches were conducted by the APDU depending on the aim and the source of information:

1. **Poison signals:** field searches conducted in areas where incidents of poisoning of wild or domestic animals were suspected. Signals were usually received by other NGOs, representatives of authorities, hunters, livestock breeders, local stakeholders and residents. The suspected poisoning incidents were usually reported to the APDU team within 1–2 days and field visits by the APDU were conducted usually in 1–3 days after the reception of the signal. These field visits aimed to i) find the poisoned baits or poisoned animals and prevent further mortality, ii) collect samples for toxicological analyses, and iii) facilitate and support the police investigation and collection of evidence.
2. **Patrols in poisoning hotspots:** regular field inspections in areas where poisoning incidents have been reported in the past 5 years or in areas where the risk of poisoning is high due to increased human-carnivore conflicts. During these field inspections, the APDU was conducting thorough searches and collecting information from local informants.
3. **GPS-tracked bird's mortality investigations:** the APDU conducted searches in cases when a GPS-tagged vulture or other bird indicated mortality or abnormal behaviour. First, a thorough investigation of the GPS data was conducted to identify the location where the bird might have died, or fed before it stopped moving. Then, the APDU visited the last locations of the bird and other predefined suspicious locations and conducted a thorough search to locate the dead body, the transmitter and reveal the cause of death. In cases of suspected poisoning police was immediately informed to carry out a proper investigation.
4. **Searches based on GPS-tracked vultures' movements:** In the frame of the project over 30 Griffon vultures were tagged with GSM-GPS transmitters and their movements were closely monitored. We used GPS and accelerometric data to identify Griffon Vultures' feeding locations. The APDU conducted field inspections of these locations to control for threats and identify the carcasses used for food by the vultures (Arkumarev et al. 2021).
5. **Random searches and APDU awareness-raising:** random field inspections were conducted in areas of high conservation priority focusing mostly on SPAs and areas where vultures and eagles are regularly breeding, foraging and feeding. The main aim



was to monitor these sites for threats and also raise awareness among the local community.

Field inspections were conducted throughout the year and at any time of the day depending on the particular case. Google imageries and GPS topographic maps were used to plan and conduct the field searches most efficiently. The dog was transported to the site with a 4WD car and field searches were done without a leash to allow the dog to thoroughly search the entire area. GPS locations were recorded at the start and endpoint of each search transect. The dog handler was using a GPS device to record his tracklog during the searches and take GPS locations of each finding along the transect. The dog indicated its finding by loud barking and close check-ups were done by the handler to decide if the finding is of particular interest or not. In cases of poisoning or suspected poisoning, the responsible authorities were immediately informed to collect evidence and start an investigation. For each poisoned animal information was collected on the species, its age, exact GPS location, its posture, signs of vomiting, diarrhea, the presence of dead insects near the body and other details which might indicate poisoning and be useful in the course of the investigation. Each dead animal found which was supposedly poisoned was carefully collected in a plastic bag and transported for necropsy and toxicological analyses. Gloves were always used to avoid any harm to the dog handler and the team. In the cases when the police started an investigation, all evidences were collected by the criminalists and sent for appropriate toxicological tests. If the carcasses found had to be stored before transportation to a specialized facility they were kept in freezers. For each poisoning incident, we recorded the type of poison used (if known), type of poison baits used (if known), number of victims and outcome of the legal prosecution. We calculated i) detection rate of poisoned specimens as number of surveys with poisoned animals found / total number of surveys; ii) detection rate of poison bait as number of surveys with poison baits found / total number of surveys both presented in percentages.

## Results

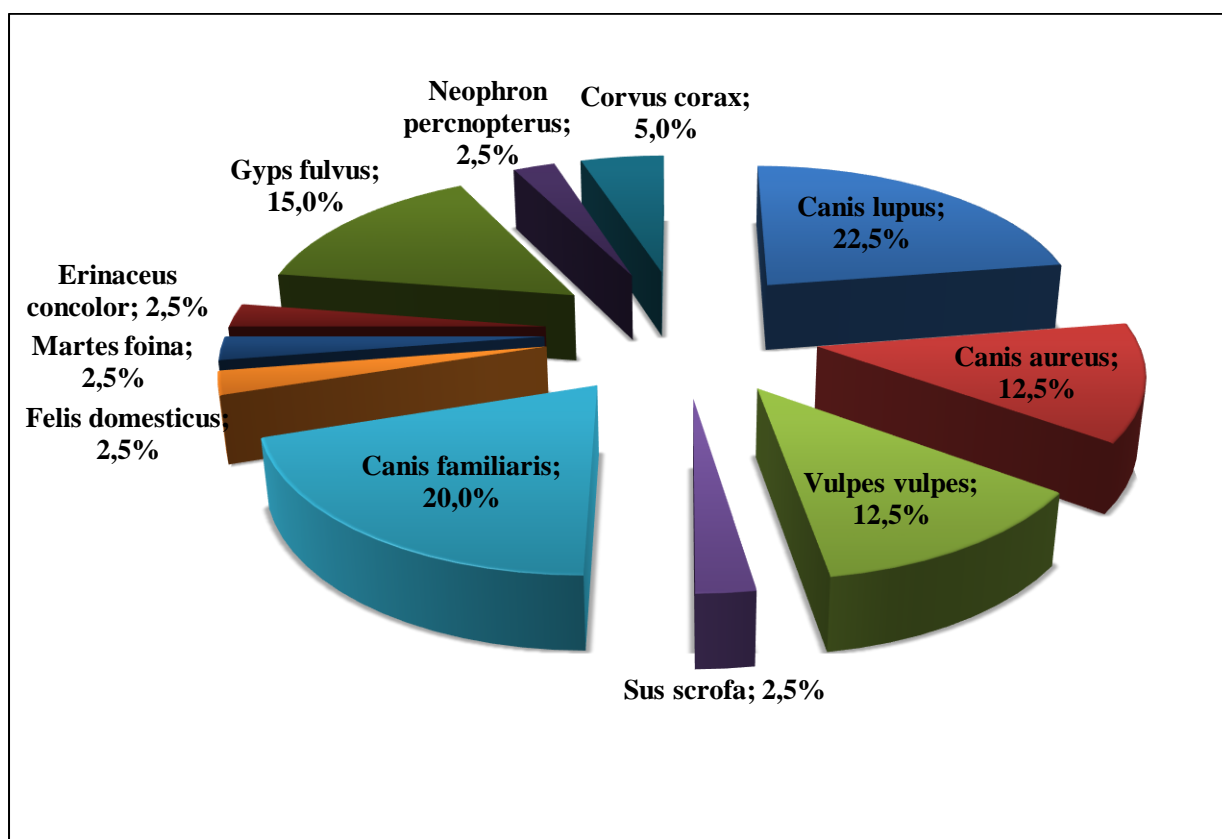
A total of 153 searches have been conducted by the APDU in the period October 2016 – December 2020. The total distance covered by the handler during the field surveys exceeds 300 km (min-max: 0.1–15 km). Since the dog covers a 2–4 times greater distance than the handler (Deak et al. 2021) we can assume that Bars covered 600–1200 km for the study period.

The majority of the patrols were conducted in the Eastern Rhodopes (80%) which is the core area of the Griffon and Egyptian Vulture populations in Bulgaria and also an area with high importance for the foraging Cinereous Vultures. However, searches were also done in Sakar mountain, Dervent Heights and Western Strandzha which are the main breeding and foraging areas of the Imperial Eagle. The APDU conducted searches in other parts of the country mainly based on signals – Kresna gorge, Western Balkan mountain, Provadia-Royak Plateau.

The total number of all findings is 310 with 57 of them being poisoned animals, 7 were animal remains and 10 poisoned baits. In the rest of the cases (n=236), various items were found but they were not related to any poisoning incident. Most often these were animals or their remains which died due to other reasons such as predation, electrocution, shooting or natural causes. The average number of victims found per poisoning incident is  $2.86 \pm 3.5$ . The detection rate of poisoned specimens was 10.45%, while it was only 2.61% for poisoned baits. The probability to find poisoned specimen or baits was highest (up to 100%) when searches were done as a response to a signal and were lowest on random patrols.

The APDU found 57 poisoned animals. However, 17 of these were voles found dead in a crop field after treatment with rodenticides. The illegally poisoned animals detected by the APDU were 40 from 11 species (Table 1). Vultures comprised 17.5% (n=7) of all victims found (Fig. 1). Wolves and domestic dogs were the most common victims comprising 22.5% and 20% respectively of all poisoned animals found.



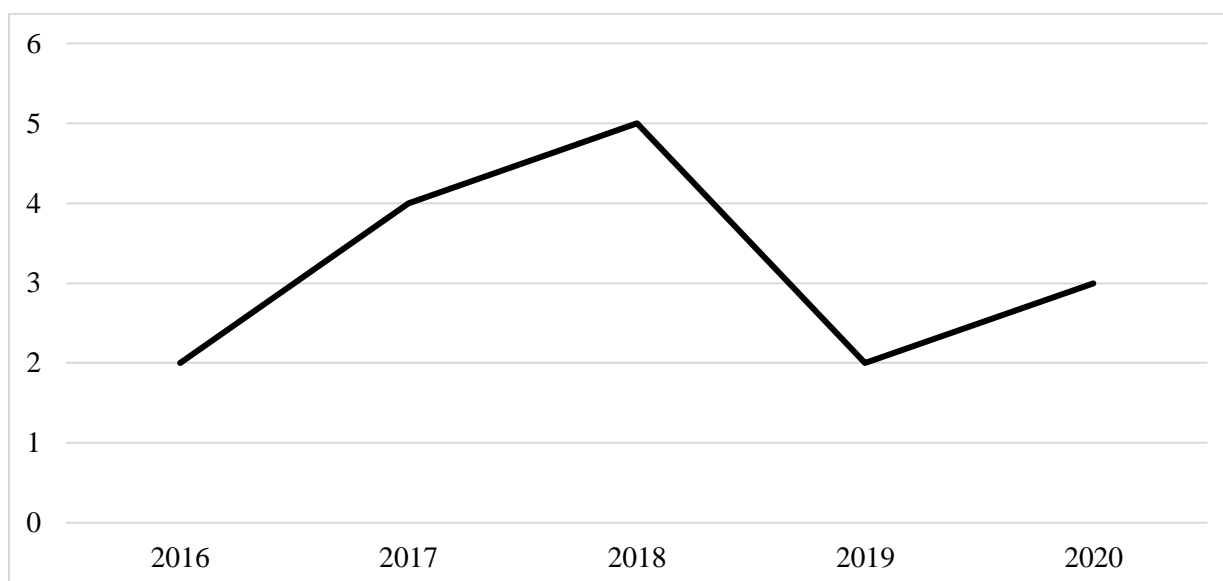


**Fig. 1.** Proportion of the poisoned species found by the APDU

**Table 1.** Number of poisoned animal species found by the APDU

	Species	Number	Proportion (%)
1	Canis lupus	9	22.5%
2	Canis familiaris	8	20%
3	Gyps fulvus	6	15%
4	Canis aureus	5	12.5%
5	Vulpes vulpes	5	12.5%
6	Corvus corax	2	5%
7	Sus scrofa	1	2.5%
8	Felis domesticus	1	2.5%
9	Martes foina	1	2.5%
10	Erinaceus concolor	1	2.5%
11	Neophron percnopterus	1	2.5%
<b>Total</b>	<b>11</b>	<b>40</b>	<b>100%</b>

The APDU took part in the investigation of 16 incidents with poisoned animals, and in 4 of them the poison baits were found. The highest number of poisoning incidents was recorded in 2018 (n=5). In 2016 and 2019 only 2 incidents were recorded by the APDU (Fig. 2).



**Fig. 2.** Number of poisoning incidents detected by the APDU per year

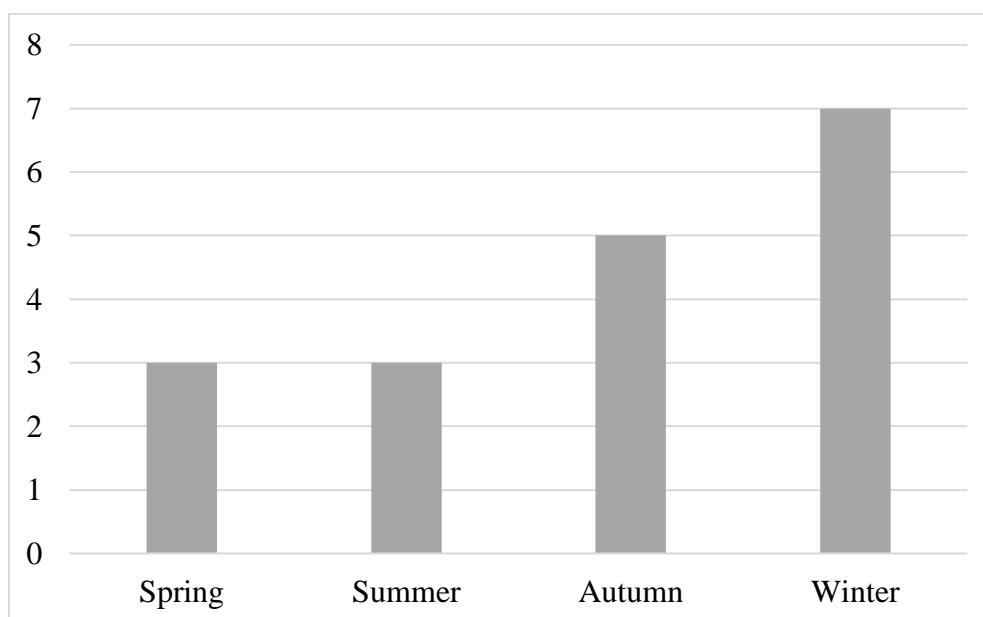
The poisoning incidents were distributed as follows: 12 in the Eastern Rhodopes (Strazhec 2 in 2016 and one in 2018; Haskovo 2017; Malko Bryagovo 2018 and 2020; Pchelari 2018; Chernichino 2018; Malko Popovo 2020; Ostar kamak 2017; Biser 2018; Harmanli 2019), 2 in South-Western Bulgaria – Kresna gorge and Tzerovo (2017), 1 in Western Balkan Mountain (Bov 2019), 1 in Derwent Heights (Sitovo 2020) (Table 2). In only 5 cases the exact poisonous substance could be identified. Carbofuran was used in two cases, Lannate (Methomyl) in one case and in two other cases antifreeze was used. The use of both Carbofuran and Lannate is prohibited in Bulgaria, thus these pesticides most probably are illegally imported. According to informants, Lannate is illegally imported from Turkey where it is legally on sale. In one case 17 voles were found dead in a crop field probably after spraying with a rodenticide.

**Table 2.** Details on the poisoning incidents recorded by the APDU

Year	Place	Track length (km)	Number of victims found by the APDU	Number of victims reported by other sources	Species recorded by the APDU	Bait found	Poison substance
2016	Strazhec	15	15		7 wolves 3 dogs 2 foxes 1 wild boar 1 stone marten 1 hedgehog	Yes	Lannate (Methomyl)

2017	Kresna gorge	11	2	18 Griffon Vultures	1 wolf 1 Griffon vulture	No	Carbofuran
2017	Tzerovo	5.9	2		1 hunting dog 1 fox	Yes	Unknown
2017	Haskovo	0.5	4		2 stray dogs 2 ravens	No	Antifreeze
2017	Ostar kamak	0.5	1		1 domestic cat	No	Antifreeze
2018	Malko Briagovo	2.7	1		1 Griffon vulture	No	Unknown
2018	Pchelari	6.9	3	2 dogs	1 shepherd dog 2 jackals	No	Unknown
2018	Strazhec	6.9	2	1 hunting dog	1 wolf 1 fox	No	Unknown
2018	Chernichino	3.7	1		1 shepherd dog	No	Unknown
2019	Harmanli	3.5	2		2 jackals	Yes	Unknown
2019	Beli briag	1.2	1		1 Osprey	No	Not a poison incident
2019	Bov	5.3	2	1 Griffon Vulture 1 Golden eagle	2 Griffon vultures	No	Unknown
2020	Sitovo	12.7	2		1 jackal 1 fox	Yes	Unknown
2020	Malko Briagovo	7.8	2	1 Griffon Vulture	2 Griffon vultures	No	Carbofuran
2020	Malko Popovo	13.4	1		1 Egyptian vulture	No	Unknown
<b>Total</b>		<b>97</b>	<b>40</b>	<b>24</b>			

In 38.9% of the cases (n=7) the poisoning incidents were recorded in winter, while in autumn were recorded 33.3% (n=5) of the incidents. In spring and summer the APDU was involved in the investigation of 3 incidents each (Fig. 3).



**Fig. 3.** Number of poisoning incidents per season

### GPS-tracked bird's mortality investigations

The APDU conducted searches in cases when a GPS-tagged vulture or other bird indicated mortality or abnormal behavior. Searches were done in 4 cases of suspected mortality of GPS-tracked birds. In one case a poisoned Griffon Vulture was found. In the second case, a dead Griffon Vulture was found but the autopsy and the toxicological analyses revealed that the bird most probably has died as a result of a gunshot lead pellet embedded in the bird's right wing. In the third case, only the GPS transmitter was found and later the Griffon Vulture was observed at a supplementary feeding station and identified by the code of its wing tag, thus it was concluded that the bird managed to remove the GPS tracker. Tagged Osprey from Finland was found dead in a crop field. The investigation and the necropsy done by the vets in the Wildlife Rehabilitation and Breeding Center (WRBC) of Green Balkans revealed that the bird has died from electrocution.



## Case studies

**2016**

### Strazhec, Eastern Rhodopes

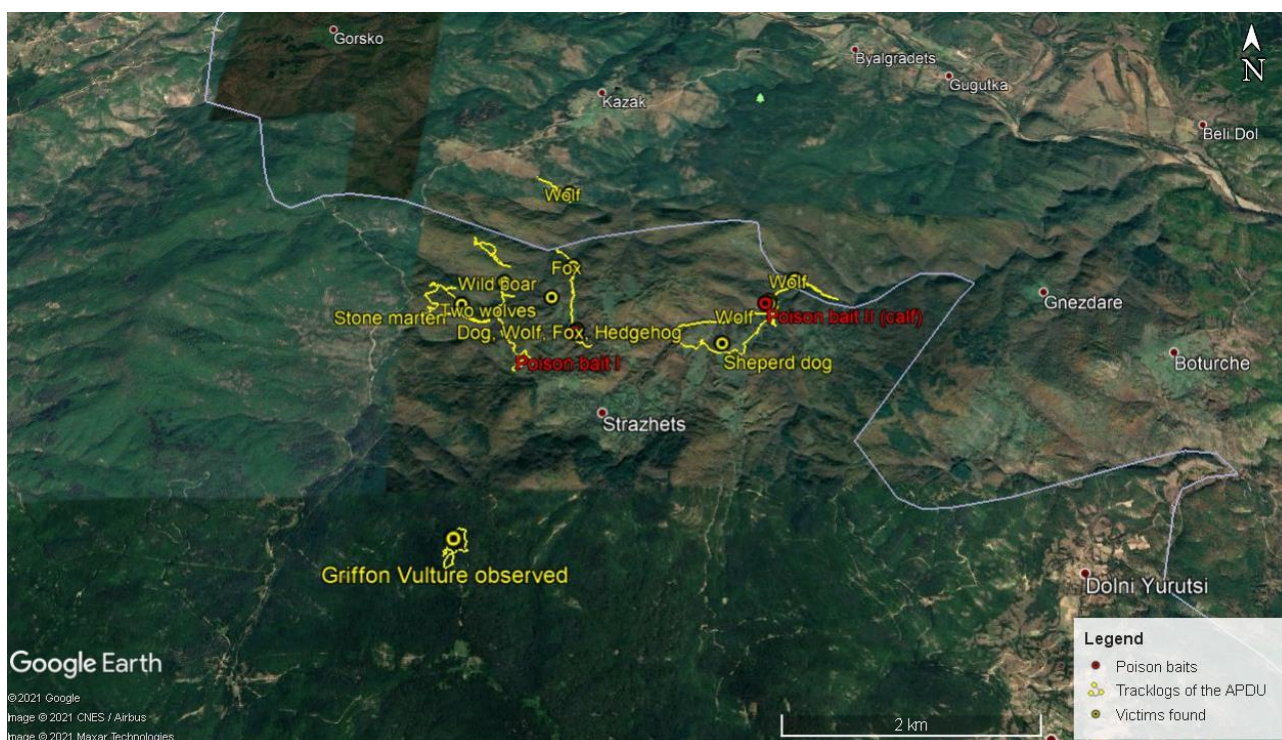


In October and November 2016 a series of poison incidents were reported to the APDU from the area of Strazhec village, near the border with Greece within the SPA “Byala reka”. On 10<sup>th</sup> October signal was received by local hunters who found poisoned animals. On the next day, the APDU visited the site together with representatives of the authorities. Intensive searches were conducted by the APDU and the support of the local hunters and the police. Due to the magnitude of the case help was sought and received by the APDU of WWF-Greece. Ela Kret and her dog Kiko took part on the second day of searching. On the 27<sup>th</sup> of November another signal from the same area was received. During these searches, two poison baits were found about 2 km from each other. The first poison bait found was fat and intestines from an animal (probably sheep) and the second was part of a calf probably killed by wolves. Most of the victims found were within 1 km from the poison baits but one wolf was found almost 2 km away. A local hunter observed a Griffon Vulture falling from the sky and running away in the



forest about 2.5 km south of the poison baits. The APDU intensively searched the area but could not find any trace of the vulture so its faith remains uncertain. The bodies of the dead animals and the poisoned baits were collected and burnt. Samples were taken and send for toxicological analyses.

A meeting whit local authorities, prosecutors and police was organized to raise awareness and support on this and any future cases. During the project, a series of random patrols were held from the anti-poison dog unit in this territory.



**Map 2.** Map of the APDU tracklogs and findings

**Possible cause of bait use:** Human-carnivore conflict. Most probably, wolves were targeted due to an increased number of attacks on cattle.

**Victims found:** 7 wolves, 3 dogs, 2 foxes, 1 wild boar, 1 hedgehog and 1 stone marten. One Griffon vulture is suspected to have been affected but was not found.

**Baits found:** Yes, two baits were found – intestines, fat and parts of a calf powdered with the poison.

**Legal investigation:** Yes, legal investigation has started but was terminated due to lack of direct evidences. The criminal investigators searched the household of the suspect but no trace of a poison substance was found.

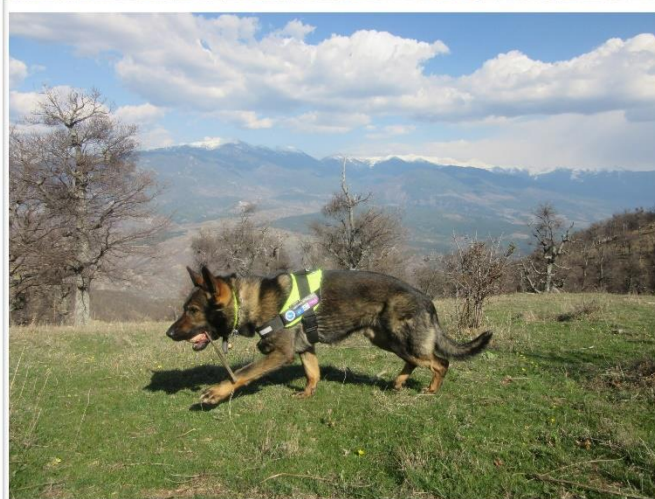
**Presence of authorities:** Yes, representatives of the police, Regional Inspectorate of Environment and Waters(RIEW) and the local vet service visited the site.

**Toxicological analyses and results:** Toxicological analyze was conducted in both Bulgaria and Hungary. The Bulgarian Agency of Food Safety could not determine the exact substance but identified it as an organophosphate pesticide. The lab in Hungary revealed that the substance used was methomyl.



2017

## Kresna gorge, South-Western Bulgaria



In March the APDU received a signal from FWFF for poisoning of Griffon Vultures in the Kresna gorge, south of Blagoevgrad. The first poisoned vulture was reported to FWFF on 12<sup>th</sup> March. In this incident, 18 poisoned Griffon vultures were found but it was estimated that about 30 birds probably have died (Peshev et al. 2018). On 30<sup>th</sup> and 31<sup>st</sup> March, the APDU took part in the search of poison baits and victims of that incident. During the search were found already buried poisoned wolf, Griffon vulture and fur remains. However, the source of the poisoning was not found. It was discovered only a week later after a report from a local man was received. A cow carcass was used as a poison bait and it was placed near Tzeroovo village or 30 km north from the area where most vultures were found. The poison that was used was identified as carbofuran.

**Possible cause of bait use:** Human-carnivore conflict. Most probably, wolves were targeted in this case.

**Victims found:** 1 wolf, 1 Griffon vulture. 18 more Griffon Vultures were found poisoned by FWFF and volunteers.

**Baits found:** No.

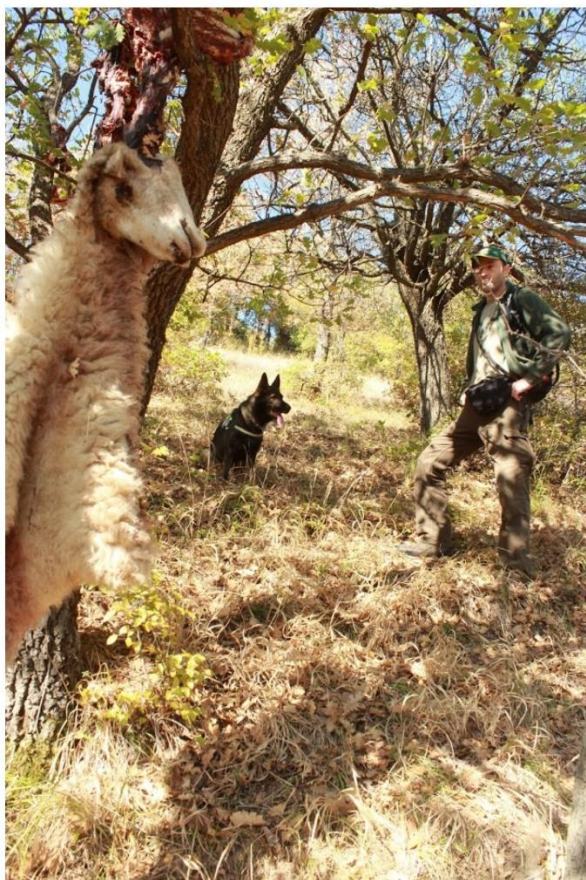
**Legal investigation:** Yes, a legal investigation has started under the observation of FWFF. However, the case did not reach the court due to the lack of a suspect.

**Presence of authorities:** During the search of the APDU there were no authorities. However, during the process the site was visited by the police, the RIEW and the local vet service.

**Toxicological analyses and results:** The Bulgarian Agency of Food Safety detected carbofuran.



## Tzerovo, South-Western Bulgaria



On 14<sup>th</sup> October 2017, the APDU received another signal from FWFF for the same area – Tzerovo village. Locals reported a dog missing. The APDU conducted an intensive search in rough mountainous terrain and managed to find a dead fox, hunting dog and the poison bait – sheep carcass hanging from an oak tree. The poisoned carcass and the victims found were removed to avoid secondary poisoning.

**Possible cause of bait use:** Human-carnivore conflict. Most probably, wolves were targeted due to an increased number of attacks in the area.

**Victims found:** 1 dog, 1 fox.

**Baits found:** Yes, sheep carcass tighten and hanged from an oak tree.

**Legal investigation:** No legal investigation has started.

**Presence of authorities:** During the search of the APDU there were no authorities.

**Toxicological analyses and results:** No toxicological analyze was conducted.



## **Haskovo town, Eastern Rhodopes**

On 21<sup>th</sup> June a neighbor living close to the place where the anti-poison unit is situated signalled for vomiting dog in the town park “Kenana”. Our team found a dead animal (stray dog) and a piece of sausage which was used as a poison bait. All victim and the bait were found in the area of the skater’s playground in the park where kids are often playing. On the next day in the northern part of the same park, the APDU found two ravens which most probably were poisoned as well. The police informed us that the used poison substance was antifreeze. The most probable reason for the incident is the problem with the stray dog population in the town.

**Possible cause of bait use:** Problems with the stray dogs in the town park.

**Victims found:** 2 dogs, 2 ravens.

**Baits found:** No.

**Legal investigation:** Police started investigation but the case was terminated due to lack of evidences and a suspect.

**Presence of authorities:** During the search of the APDU there were no authorities.

**Toxicological analyses and results:** The toxicological analyze revealed that antifreeze was used as a poisoning substance.

## **Ostar kamak, Eastern Rhodopes**

On 17<sup>th</sup> June the unit received a signal for poisoning in Ostar kamak village, south of Harmanli town. The APDU searched on the same day and found the dead cat and some bones. The survey was very difficult due to the presence of stray dogs and food (mainly bones) around the houses. The person who sent the signal and the mayor of the village cooperated in the survey. The local police was informed of the incident. The most possible reason was human-human conflict. All the findings were buried. Possible cause of bait use: Human-human conflict between neighbors. The cat was the target of the poison use.

**Victims found:** 1 cat.

**Baits found:** No.

**Legal investigation:** The police was informed. No legal investigation has started, because the owner of the cat did not wanted to.

**Presence of authorities:** During the search of the APDU the mayor and the owners of the houses were present.

**Toxicological analyses and results:** The substance for poisoning was antifreeze.

2018

### Malko Briagovo, Eastern Rhodopes



During the regular patrols and visits of sites visited by tagged Griffon Vultures to feed we came across another poisoning incident. The area near Malko Briagovo was visited because a Griffon Vulture with a GPS transmitter has fed there a few days ago. On 23<sup>rd</sup> February the APDU visited the site and found a dead adult Griffon Vulture in small bushes close to an oak tree forest patch. The bird was lying on its chest with wings half-open and there were signs of liquid (vomit) on its beak, washed by the rain in the previous night. Near the beak of the vulture white grainy substance was found as well. About 10 m away Bars found the remains of a calf carcass consumed by the vultures. No other dead animals were found in the area. Most probably the carcass was laced with poison after it was almost fully consumed by the vultures, including the one with the transmitter. This would explain the presence of only one victim. Immediately after the APDU found the dead vulture it called the police and they arrived at the site. The dead body was collected for autopsy and toxicological analyses. An investigation has started but after 6 months the case was closed due to lack of evidence and a suspect. The samples taken from



the bird failed to reveal the poison substance. After the incident, this territory was regularly inspected by the APDU since it is in very close proximity to a Griffon Vulture breeding colony and poses a high risk of mass poisoning. The most possible reason for the use of poison was human-predator conflict, due to the increased number of wolf attacks on livestock in the area.



**Map 3.** Map of the APDU tracklogs and findings

**Possible cause of bait use:** Human-carnivore conflict. Most probably, wolves were targeted due to an increased number of attacks in the area.

**Victims found:** 1 adult Griffon vulture.

**Baits found:** No, but a white grainy substance was found next to the dead vulture, probably a liquid substance, which was too little to be properly analyzed. Most probably the calf carcass was used as poison bait.

**Legal investigation:** Yes, legal investigation has started but was terminated due to lack of direct evidences.

**Presence of authorities:** Yes, representatives of the police, Regional Inspectorate of Environment and Waters and the local vet service visited the site.

**Toxicological analyses and results:** Toxicological analyze was conducted in Bulgaria, but failed to reveal the poison.

## Pchelari, Eastern Rhodopes

On 2<sup>nd</sup> November 2018, we received a signal for two dead dogs from the local vet in Pchelari village, Eastern Rhodopes. The APDU arrived at the place later on the same day and after collecting more information from the mayor, made searches to the north and east of the village. The anti-poison dog located fir, small bones, another dead Shepherd dog and a female jackal close to the main tar road coming into the village from the north. Another jackal was found south of the village. Birds of prey were not found. The police and the vet took samples from the poisoned animals. Small pieces of sausages, undoubtedly the poisoned bait, were easily collected from the stomach of the female jackal. The samples were sent for toxicological analysis. However, they indicated that poison was used but did not manage to identify the exact substance. The poisoned animals were collected and buried. The case was closed after sixth months due to the lack of a suspect. The most possible reason for the incident was human-human conflict. One of the Shepherd dogs used to be aggressive and there were complaints from the locals that it attacking them. According to the locals, someone used poison to “solve” the problem with this dog.



**Map 4.** Map of the APDU tracklogs and findings

**Possible cause of bait use:** Human-human conflict. One of the shepherd dogs was aggressive to people.

**Victims found:** 1 sheperd dog and 2 jackals. Two more dogs were found by local people.



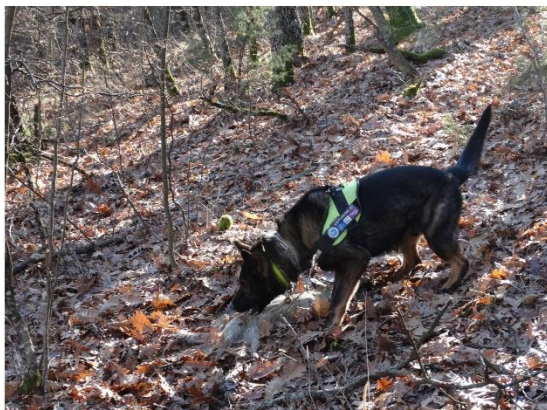
**Baits found:** No. However, sausage remains were found in the stomach of the dead jackal.

**Legal investigation:** Yes, legal investigation has started but was terminated due to lack of direct evidences and a suspect.

**Presence of authorities:** Yes, representatives of the police and the local vet service were present during the operation of the APDU.

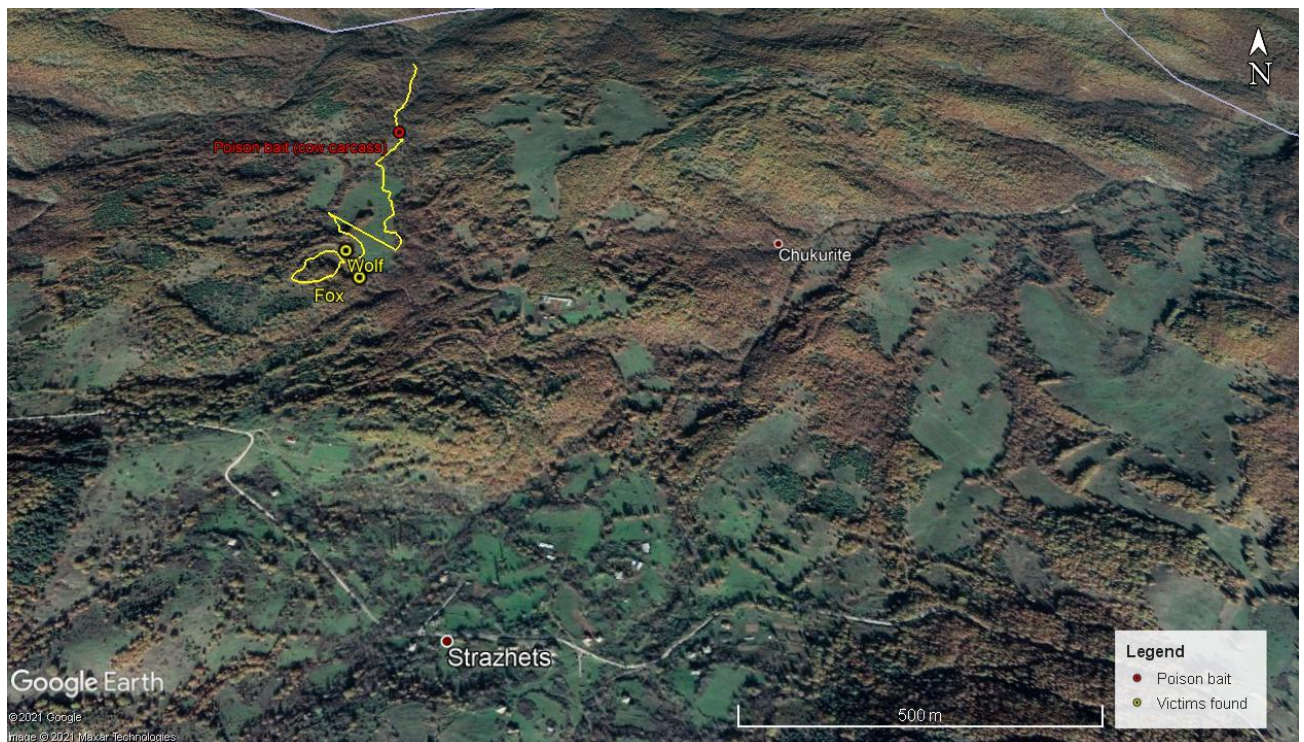
**Toxicological analyses and results:** Toxicological analyzes were conducted in Bulgaria. The analyses revealed that poison was used but could not identify the exact substance.

## Strazhec, Eastern Rhodopes



In the evening on 25<sup>th</sup> December, we received a signal from the local hunters from the Strazhec region about a poisoned dog. On the next day, the APDU visited the place and searched the area. The hunter explained that the dog ate something near the cow so most probably as poison baits were used small pieces of meat and not the entire carcass. He witnessed other dogs eating from the cow the previous day and they were all alive. The APDU found nearby a dead fox and a young wolf that were few days old. The police and the regional vet were present at the site, they took samples and sent them to the lab for toxicological analyses. All dead animals found were collected and buried. The most probable reason for the poisoning was the human-carnivore conflict due to the increased number of wolf attacks on livestock in the area.





**Map 5.** Map of the APDU tracklogs and findings

**Possible cause of bait use:** Human-carnivore conflict, most probably against wolves.

**Victims found:** 1 wolf, 1 fox. One dead hunting dog was reported by a local men.

**Baits found:** No, but most probably pieces of meat with poison were scattered around the cow carcass.

**Legal investigation:** Yes, legal investigation has started but was terminated due to lack of direct evidences and a suspect.

**Presence of authorities:** Yes, representatives of the police and the local vet service visited the site.

**Toxicological analyses and results:** A toxicological analyze was conducted in Bulgaria, but the poison was not registered. Since the samples were collected a few days after the death of the animals we can suspect that the poisonous substance has disintegrated which could explain the negative lab results.

## **Chernichino, Eastern Rhodopes**

On 29<sup>th</sup> December 2018 local livestock breeder informed the APDU about a poisoned shepherd dog in Chernichino village, Ivaylovgrad district. With the support of the local shepherd, the APDU searched the area around the village and the route used by the livestock and the shepherd dogs. No dead animals or poisoned baits were found except that shepherd dog. The dog was found by the shepherd dead in the yard of the house. There were other dogs roaming freely around that have not been affected by the poison. The dead body was burnt. The poisoned dog was described as aggressive and attacking other dogs and the livestock of other livestock breeders. So most probably the dog was the target of the poisoning as a result of human-human conflict and its aggressive behaviour.

**Possible cause of bait use:** Human-human conflict. Aggressive dog behavior to other shepherd dogs and livestock.

**Victims found:** 1 sheperd dog.

**Baits found:** No.

**Legal investigation:** No, legal investigation has not started. The owner of the dog did not wanted to participate in the procedure.

**Presence of authorities:** No, the owner of the dog did not wanted the involvement of any authorities.

**Toxicological analyses and results:** No.



## **Biser, Eastern Rhodopes**

On 29<sup>th</sup> October 2018 female red deer tracked with a GSM transmitter in the frame of the LIFE Re-Vultures project stopped transmitting from the area of Biser village, Harmanli district. On 31<sup>st</sup> the APDU visited the area to search for the body of the deer and the transmitter. At first, Bars found 17 dead voles in the nearby sunflower field which was treated with some rodenticide. Later the dog also found the remains of the deer with clear signs of poaching. The police was informed and started an investigation.

**Possible cause of bait use:** No baits were used. The sunflower field was treated with unknown rodenticide which cause the mass vole mortality.

**Victims found:** 17 voles in a sunflower field.

**Baits found:** No.

**Legal investigation:** No. The legal investigation has started for poaching.

**Presence of authorities:** Yes, representatives of the police, due to the poaching incident.

**Toxicological analyses and results:** Information from the toxicological analyze for the vole poisoning revealed the use of legal agricultural rodenticide.

## 2019

### Harmanli, Eastern Rhodopes

A local man from Harmanli informed the APDU that poisons were used against jackals in the vicinity of the town. The information was received in verbal conversation with workers at a small dam and hunters. On 07<sup>th</sup> May 2019, the APDU made two searches in the area guided by the man. We found goat carcass which most probably was used as poison bait. The carcass was old and mostly consumed. Nearby a dead nutria was found as well but the signs on its body suggest that it was cut half by a man and possibly was used as poison bait. The remains of two dead jackals were found nearby. However, the carcasses were old and not suitable for toxicological examination. Therefore, they were collected and buried. The local informant did not want to get police involved as he was afraid that the people who used the poison would easily track the case back to him. Most probably the poison was set by hunters targeting jackals.



**Map 6.** Map of the APDU tracklogs and findings

**Possible cause of bait use:** Human-carnivore conflict. Most probably jackals were targeted by the hunters due to an increase in their numbers.

**Victims found:** 2 jackals.

**Baits found:** Yes, goat carcass and nutria remains.

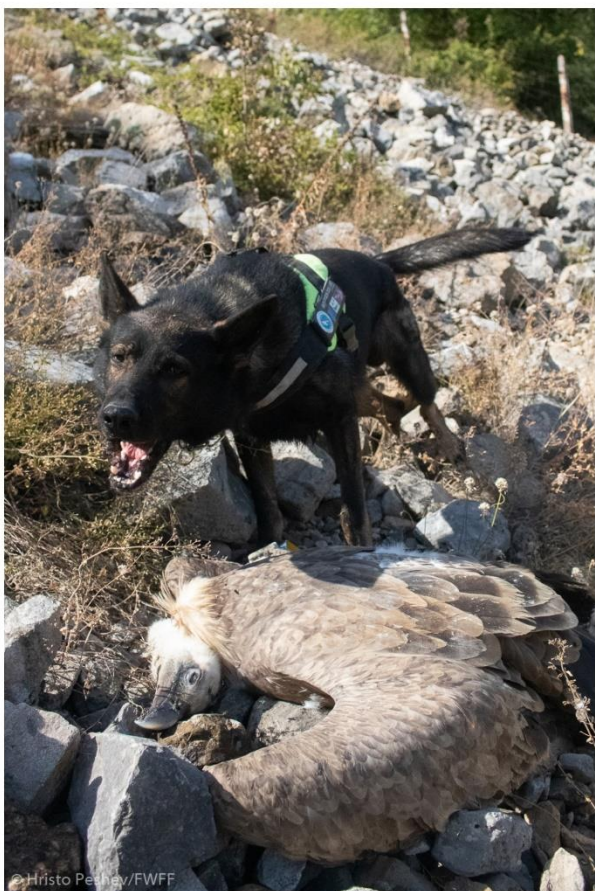
**Legal investigation:** No.

**Presence of authorities:** No.

**Toxicological analyses and results:** No. The carcasses and the potential baits were too old for toxicological analysis.



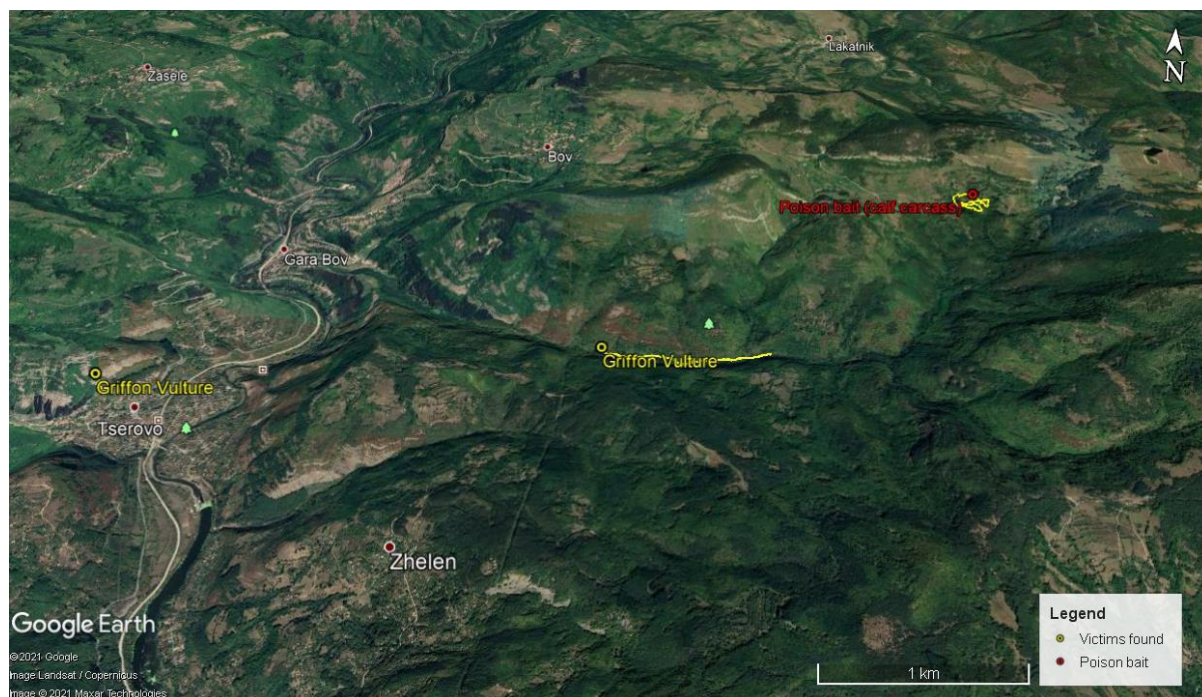
## Bov, Western Balkan Mountain



On 16<sup>th</sup> September 2019, the APDU was informed about a poisoning incident in the Western Balkan Mountain. The first signal was received by our colleagues in the Nature conservation centre “Poda” who were contacted by a local man from Bov village. He has found a dead Griffon Vulture near his house. Then our team was contacted by Fund for wild flora and fauna (FWFF) and asked for support in investigating the case. The Griffon Vulture was found not far away from the release site in Vrachanski Balkan where the species was reintroduced by BPPS in collaboration with FWFF and Green Balkans. On 16<sup>th</sup> September Hristo Peshev of FWFF arrived at the location where the poison bait was placed. It was identified by the GPS transmitter that some of the vultures were carrying. At the site, Hristo found a dead Golden Eagle and remains from a calf that most probably was laced with the poison. On the next morning, APDU arrived at the site together with the police and representatives of the Regional Inspectorate of Environment and Waters, vets, BPPS and FWFF. However, the golden eagle found the previous day was not there anymore. The calf carcass was fully consumed and there were lots of dead flies around. The data from the GPS transmitters helped the team to locate



two poisoned Griffon Vultures which managed to leave the area but eventually died few kilometers away. All vultures found were collected by the police and sent for toxicological analyses and autopsy in Sofia. However, other Griffon Vultures have probably died as well.



**Map 7.** Map of the APDU tracklogs and findings

**Possible cause of bait use:** Human-carnivore conflict. Most probably, wolves were targeted due to an increased number of attacks on livestock.

**Victims found:** 2 Griffon vultures. A third Griffon Vulture was found by local men in Bov village, FWFF also found one poisoned Golden eagle.

**Baits found:** Yes, calf carcass was used as a poison bait.

**Legal investigation:** Yes, legal investigation has started but was terminated due to lack of direct evidences and a suspect. FWFF were following the case.

**Presence of authorities:** Yes, representatives of the police, Regional Inspectorate of Environment and Waters and the local vet service.

**Toxicological analyses and results:** Toxicological analyze was conducted in Sofia, Bulgaria. The poison substance used was identified as carbamate or organophosphate.

## **Beli Briag, Galabovo region**

The signal of tagged with satellite transmitter Osprey from Finland was lost near Beli Briag village, Galabovo district. Two times volunteers were searching for the bird and the transmitter but could not find them. On 26<sup>th</sup> April 2019, the APDU was asked for support. On the next day, a search was done south of the village where the last GPS coordinates received from the transmitter were. After 10 minutes Bars located the carcass in the field. It was brought to the WRBC of Green Balkans in Stara Zagora for autopsy. The vets revealed that the bird died due to electrocution. However, the bird managed to fly a few kilometers away from the pylons before it succumbed in the middle of a wheat field.

**Possible cause of bait use:** No poison used. The Osprey died from electrocution.

**Victims found:** 1 Osprey.

**Baits found:** No.

**Legal investigation:** No.

**Presence of authorities:** No.

**Toxicological analyses and results:** No.



## **Sarnitsa, Eastern Rhodopes**

On 14<sup>th</sup> February 2019 the APDU received signal from local men from Sarnitsa village, 20 kilometres west of Haskovo town. After the search the only suspicious findings were two plastic buckets in wheat field that were buried in the ground and contained some grains. A conversation with local shepherd revealed that roe deer were grazing in the crop field, so the owner was trying to poison them with grains mixed with pesticide. The information was sent to the police and forestry service.

**Possible cause of bait use:** Possible use of poison against roe deer grazing crop fields.

**Victims found:** No.

**Baits found:** No.

**Legal investigation:** No.

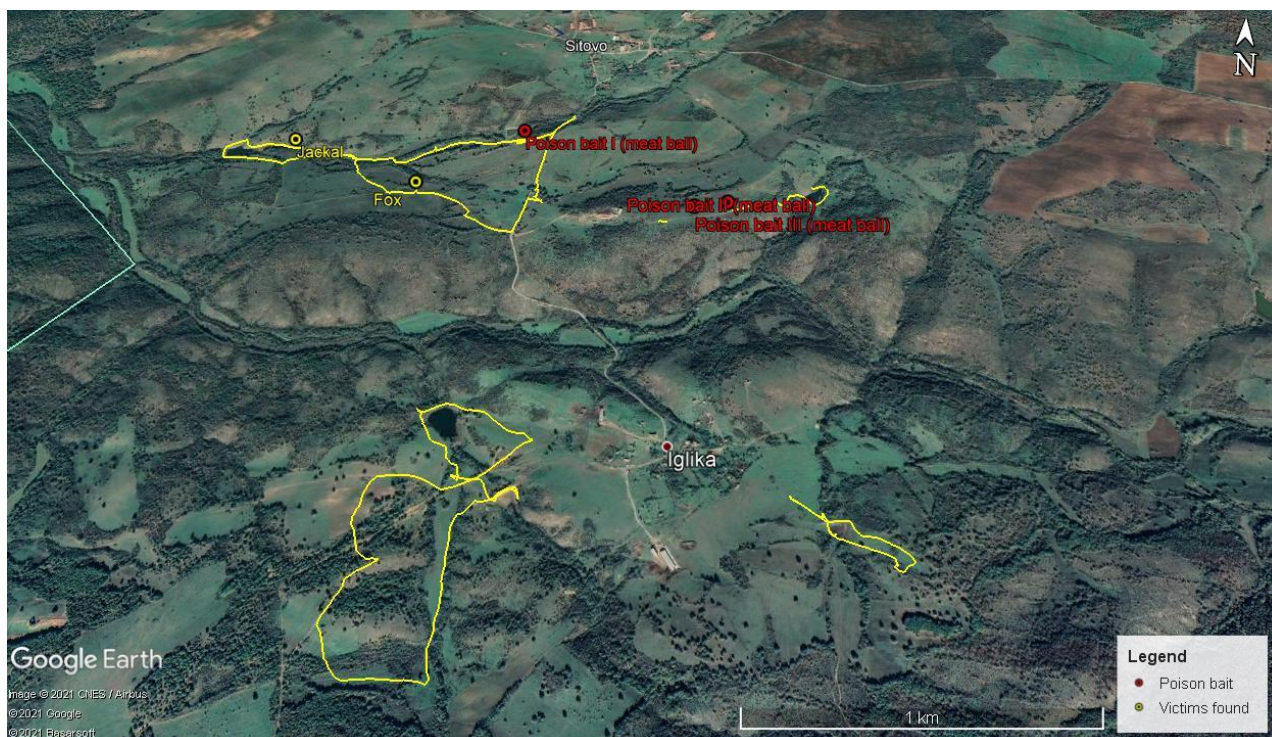
**Presence of authorities:** No.

**Toxicological analyses and results:** No.

## 2020

### Sitovo, Dervent Heights

On 19<sup>th</sup> January 2020, our team received a signal for potential poisoning close to Sitovo and Iglica villages in Dervent Heights. We tried to contact the source for more information, but the person did not answer our e-mails. On the next day, 20<sup>th</sup> January the APDU searched around the villages and found decaying fox and jackal carcasses and 3 poison baits - small meatballs placed in natural holes in the ground covered carefully with dust. The baits were undoubtedly placed for land predators and were difficult to be spotted from birds of prey. This time our team did not call the police. We immediately contacted the landowners who had cattle and sheep in the area in an attempt to gather more information. The reason for our decision was that we already know these people well, they have free-roaming hunting and shepherd dogs so it is very unlikely that any of them would use poison. Furthermore, they could have important information and collaboration with them is much needed. In addition, the carcasses found were too old and as proved in other cases the investigation of the police usually is terminated due to lack of evidence or a suspect. At the meeting with the livestock breeders and landowners we were informed that some of them had long-lasting conflict with local poachers who have threatened them that will poison their dogs. So most probably the poison was set to eliminate shepherd dogs. All the animals and remains were collected and the area was cleaned. The APDU is in close contact with the owners and till this moment have not received any information for poisoning in the area. The territory was visited again for regular patrol in June but nothing was found.



**Map 8.** Map of the APDU tracklogs and findings

**Possible cause of bait use:** Human-human conflict. Local poachers had conflict with livestock owners and threatened to poison their dogs.

**Victims found:** 1 jackal, 1 fox.

**Baits found:** Yes, three baits were found – small pieces of minced meat placed in natural holes in the ground and carefully covered with dust.

**Legal investigation:** No. We made a different approach to the case, due to the relationship we have with the land and livestock owners. For the moment we do not have information for another poisoning in the area.

**Presence of authorities:** No.

**Toxicological analyses and results:** No.



## Malko Briagovo, Eastern Rhodopes



On 25<sup>th</sup> February 2020 the APDU, was alerted that a GPS tagged Griffon Vulture most probably was dead. The ACC data sent by the transmitter indicated mortality. A poisoning incident has happened in the same area in 2018. The APDU immediately visited the location and found the carcass of the bird. The police was informed for the incident and until the arrival of officers, the unit checked the surrounding area for more victims or suspicious substances. Two jackals and some old bones were found, but they were shot during the past week hunting. The Griffon vulture that was found was only 500 m eastern from the 2018 poison incident. The poison bait was not found even though, the entire area was intensively searched. Unfortunately, the battery of the GPS transmitter was low and we have not been receiving regular data from this bird so based on the data we had we could not localize the last feeding event of the bird. The vulture has died far from the source of the poisoning which could not be found.

On 20<sup>th</sup> July 2020 during a regular patrol, the APDU found the remains of another dead Griffon Vulture. They were about 1.5 kilometers south of the place where the first vulture was found in February. A week earlier local people from the nearby village reported to us that they found remains of a dead vulture in their crop field when they were harvesting it. It was 2 km away from the location of the first victim and less than 1 km from the other one. Most probably these two vultures have died in the same poisoning incident and probably other vultures have died too but were not found.

**Possible cause of bait use:** Human-carnivore conflict. Most probably, wolves and/or jackals were targeted due to an increased number of attacks in the area.

**Victims found:** 2 Griffon vultures. Remains of another Griffon Vulture were found by local people in a crop field

**Baits found:** No.

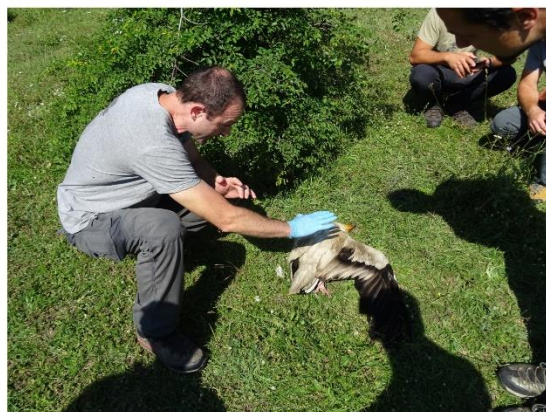
**Legal investigation:** Yes, legal investigation has started but was terminated due to lack of suspect.

**Presence of authorities:** Yes, representatives of the police and the local vet service visited the site during the searches of the APDU.

**Toxicological analyses and results:** Toxicological analyze was conducted in Bulgaria and revealed that the poison substance was carbofuran.



## Malko Popovo, Eastern Rhodopes

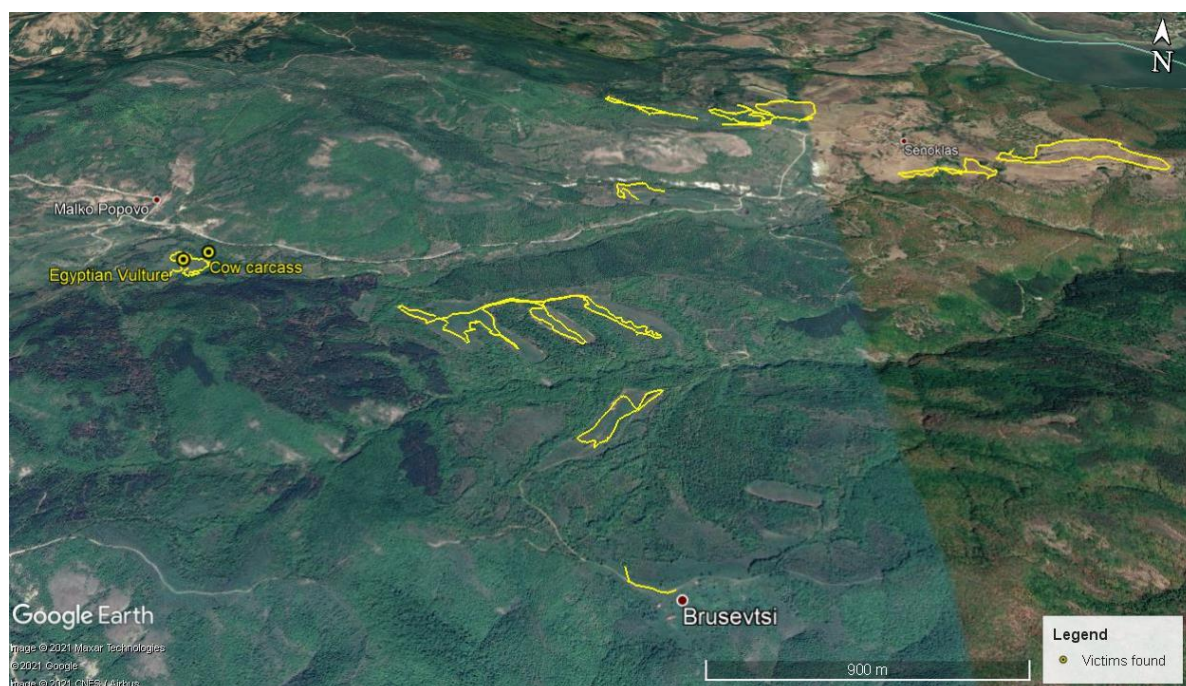


In the evening on 22<sup>nd</sup> June 2020 local livestock breeder from the village of Malko Popovo, Madzharovo district contacted our team with information for dead Egyptian vulture. He saw the bird when driving off the place. On 23<sup>th</sup> the APDU visited the site and found the carcass of the adult Egyptian Vulture. Based on the facial characteristics the bird was identified as the female from the nearby breeding pair which was part of BSPB's long-term monitoring program. The APDU intensively searched the area and also the surroundings of the nearby Senoklas village which was also regularly visited by this Egyptian Vulture pair on foraging. All locations recently used by tagged Griffon Vultures for feeding were checked as well but no other victims or poison baits were found. Police and criminalist arrived at the site and started an investigation. The officials took the carcass of the vulture and sent it for examination in the WRBC of Green Balkans in Stara Zagora.

The nest of the pair was equipped with a camera trap which revealed the exact sequence of events. On 15<sup>th</sup> June the parents brought food to the chick which eventually died soon after feeding. On 19<sup>th</sup> June the parents leave the nest and never return so most probably it is when



they got poisoned. The male Egyptian Vulture was not found and was never observed again so most probably it died somewhere and remained unrecorded.



**Map 9.** Map of the APDU tracklogs and findings

**Possible cause of bait use:** Unknown. The motivation for the poison use remained unclear since no evidences were found.

**Victims found:** 1 Egyptian vulture and the chick of the pair. The male from that pair certainly have died as well but was never discovered.

**Baits found:** No.

**Legal investigation:** Yes, legal investigation has started but was terminated due to lack of direct evidences and a suspect.

**Presence of authorities:** Yes, representatives of the police visited the site during the searches of the APDU.

**Toxicological analyses and results:** Toxicological analyze was conducted in a private lab in Bulgaria but did not detect any of the tested substances. However, the vulture was found 4 days after its death and most probably the poison substance has disintegrated until the sample reached the lab. The vulture had all clinical signs of poisoning.

## Conclusion and recommendations

The establishment of the anti-poisoning dog unit in the Eastern Rhodopes was a successful pilot action and an important milestone in the work against the use of poisons in Bulgaria. The dog unit played a significant role in the investigation of key wildlife poisoning cases in Bulgaria in the last 4 years and through its efficiency promoted this action among institutions and NGOs. The dog unit showed great efficiency in the search of dead animals and poison baits in rugged and complex terrain. Its work was accepted very well and is thus a great tool for engaging the attention of the public and institutions on poisoning issues.

The operation of the APDU, however, is not a panacea to stop the illegal use of poisons. Active involvement of the state authorities must be pursued to achieve better results in the fight against poisons. Human-carnivore and human-human conflicts were in the root of most of the poisoning incidents. However, even in the cases when the poison baits were found, the use of poison was proved by toxicological results the investigations failed to identify a suspect and were terminated due to lack of evidences. As a result no one has been accused or convicted for illegal use of poison baits. Hence, a clear state policy to fight this issue is mandatory to be developed. Evidence collection by the police must be improved and supported by the active involvement of the other relevant authorities. This threat must be ranked higher in the priorities of the state authorities as it lead to loss of protected species and might even affect humans.

Various sources of information can be used to inform the work of the APDU and make it more efficient. Such could be local informants (e.g. hunters, livestock breeders, nature lovers, majors), forest officers, park rangers, NGOs, police. The use of GPS transmitters and detailed daily monitoring of tagged vultures has the potential to timely reveal the occurrence of poisoning incidents and thus prevent mass mortalities of wildlife. Based on our experience with poisoning cases we can make the following recommendations:

- Develop and adopt a National Antipoison Plan as a frame of all foreseen anti-poison actions in Bulgaria. The development of the Plan has already started in 2019 but yet it has not been adopted by the Ministry of Environment and Waters.
- Increase the number of APDUs in Bulgaria. This can be achieved by involving the police, other authorities and NGOs in the establishment of dog units and their operation. Dog trainers from the Bulgarian police can receive additional training in Hungary or Spain and start training anti-poison sniffing dogs in Bulgaria. The establishment of APDUs within the police has the potential to increase their efficiency in investigating

poison cases and collecting evidences. Furthermore, this would ensure sustainability of the anti-poison activities in long term. NGOs may support evidence collection through the GPS data from tagged vultures and raptors and create an early warning system against poisons

- The country can be divided into poisoning sensitive zones depending on the distribution of vultures and other protected species which are directly affected by the illegal use of poison. At least one APDU can be established and operates in each zone.
- Increase the capacity of the accredited labs to timely conduct quantitative and qualitative toxicological analyses in order to determine the exact substances used.
- Continue and further improve the trans-border cooperation in cases of poisoning. Keep in touch with the APDUs operating in Greece. In some cases vultures are poisoned on one side of the border but eventually die on the other side so the good collaboration between the established APDUs both in Bulgaria and Greece is essential.



## Acknowledgments

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We are grateful to the following organization and people who took part in the field surveys and/or the process of setting up the APDU in Bulgaria: Marton Horvath, Gabor Deak and Tibor Juhasz from MME/Birdlife Hungary, Janos Maticsek, The Hungarian police dog training centre in Dunakeszi, HOS/Birdlife Greece, WWF – Greece, Rewilding Europe, Dimitar Demerdzhiev, Atanas Delchev, Vladimir Dobrev, Georgi Georgiev, Vanya Georgieva, Hristo Hristov, Desislava Kostadinova, Stoycho Stoychev, Emil Yordanov, Valentin Zlatanov, Wildlife rehabilitation and breeding centre of Green Balkans in Stara Zagora, dr. Stefanov from vet clinic “Starvet” in Plovdiv, Vet clinic “Phoenix” in Stara Zagora and to all people who donated funds for the continuation of the work of the team after the end of the project.

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