Threats and Mitigation

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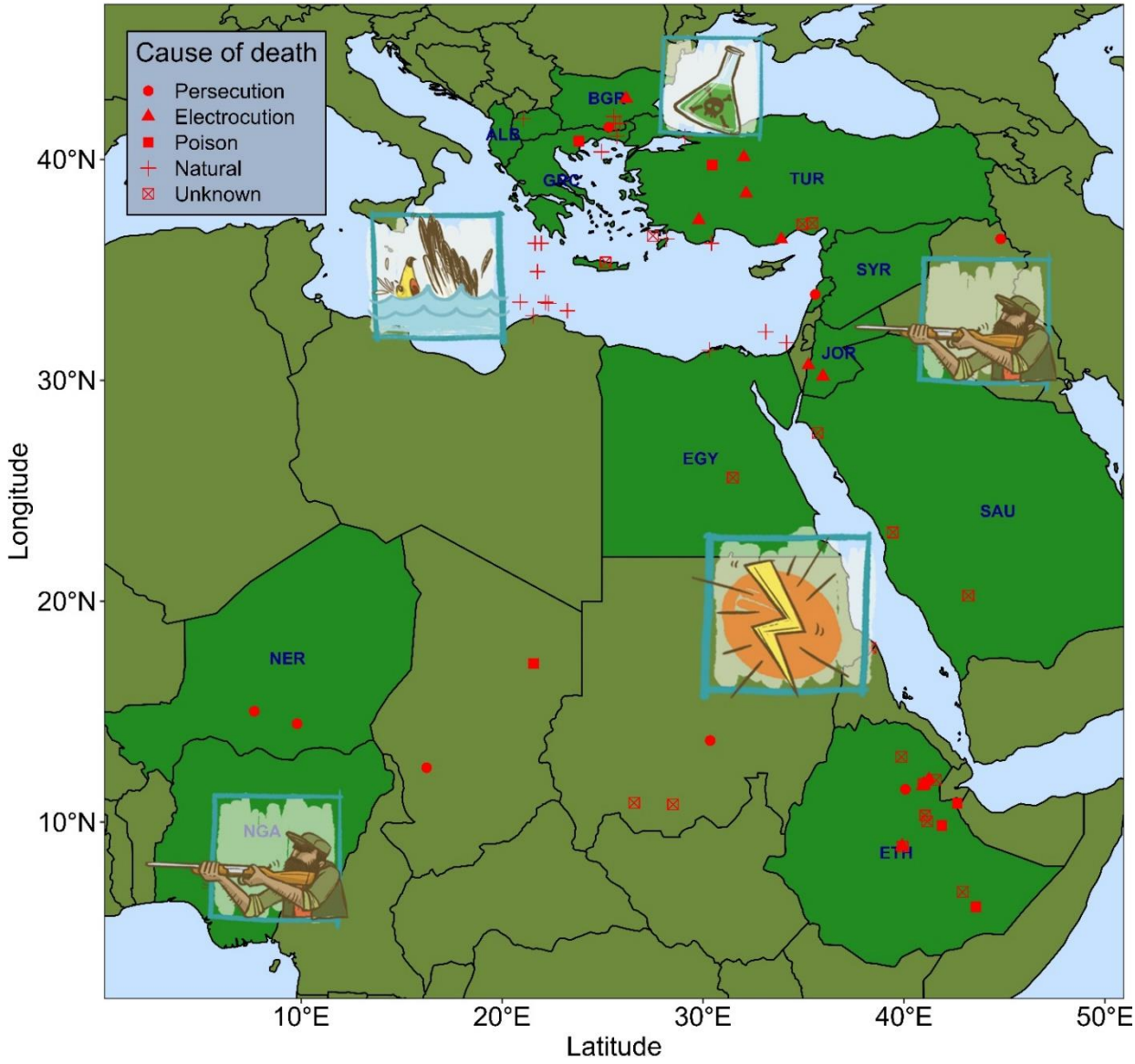
Roadmap for conservation action - prioritising threats to vultures along the flyway

Steffen Oppel*[1]

[1]Royal Society for the Protection of Birds / BirdLife UK
*Correspondence: steffen.oppel@rspb.org.uk

Egyptian Vultures (EV) migrate across dozens of countries, and their conservation depends on safe passage through any of the countries across three continents. To efficiently address the most prominent threats affecting the species, an understanding of the relative importance of threats in different geographic areas is required. We used an expert assessment to prioritise which threats to mitigate in 13 countries along the eastern Mediterranean flyway to protect EVs. We informed this assessment by satellite tracking 71 birds to quantify where and how mortalities occurred, surveying 4,216 km of powerlines to detect carcasses, conducting 910 interviews to quantify poison use, and by surveying markets and hunters to assess direct persecution. Mortality of 50 birds occurred in Europe and the Mediterranean Sea (44%), the Middle East (18%), and Africa (38%), and mortality causes varied geographically. Inadvertent poisoning resulting from rural stakeholders targeting predators occurred along most of the flyway. On the breeding grounds in eastern Europe and in Saudi-Arabia, poisoning and collision and electrocution are the priority threats to mitigate. Electrocution on small and poorly designed electricity pylons was the priority threat in Turkey, Jordan, Egypt and Ethiopia. Direct persecution for belief-based use of vulture products was the priority threat in Nigeria and Niger, while other illegal killing was the priority threat in Lebanon and Syria. Our work cannot quantify which threat has the greatest demographic impact on EVs, but has provided a roadmap which threats to mitigate in each country along the flyway.



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The threat of diclofenac and similar drugs to vultures: Implications for the Egyptian Vulture

Chris Bowden*[1]

[1]Affiliation of presenting author: Royal Society for the Protection of Birds/Birdlife UK
*Correspondence: chris.bowden@rspb.org.uk

Vultures worldwide face numerous threats and poisoning in one form or another is the most prominent. Poison-baits are thought to predominate, but across South Asia, it was a different form of poisoning – dead cattle recently treated with diclofenac that was found to be highly toxic to vultures consuming their tissues. Diclofenac causes elevated uric acid levels and subsequent kidney failure and death of the vulture. This was demonstrated to be the main cause of the catastrophic vulture population crashes across the Indian subcontinent since the early 1990s and bans of veterinary formulations and use imposed since 2006 in several key countries have reduced its use significantly. The population trends for resident Gyps vultures were the most heavily impacted, and for white-rumped vulture these were 99.9% declines by 2007. Egyptian Vulture (EV) trends closely mirrored those declines but at slightly less catastrophic levels, perhaps relating to the dietary differences. Non-steroidal anti-inflammatory drugs (NSAIDs) other than diclofenac have since been found to be similarly toxic (e.g. aceclofenac, nimesulide and ketoprofen) and also in need of regulation along with promotion of known safe alternatives: meloxicam and tolfenamic acid. There have been concerted efforts for the safety-testing, of other NSAIDs on Gyps vultures by the Indian Veterinary Research Institute in India, with important phased work also carried out on African Gyps vulture species in South Africa. There has also been major advocacy by the Bombay Natural History Society and SAVE (Saving Asia's Vultures from Extinction www.save-vultures.org) in India, and important progress with a national ban of veterinary ketoprofen instigated by the Bangladesh National Vulture Recovery Committee and imposed in 2021 in Bangladesh. There have been no experimental NSAID safety-tests carried out on EVs so far and this would still be useful clarification of their susceptibility, although by inference it seems clear that the EV is likely to be similarly susceptible to Gyps vultures for which the case is fully established.

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Wildlife Crime Academy

Jovan Andevski [1]*

[1]Vulture Conservation Foundation
*Correspondence: j.andevski@4vultures.org

Fighting wildlife crime requires governmental engagement, capacities and multi-sector approach, strengthened through partnerships and collaboration with intergovernmental organizations, CSOs, experts, which are encouraged and lead by national enforcement authorities and combine their efforts to tackle wildlife crime in a comprehensive way. The Wildlife Crime Academy is set on providing the necessary conditions for improvement of law enforcement efficiency in combating wildlife crime in a sustainable framework, based on the exchange of knowledge and best practice experiences of the environmental and enforcement services from Spain. The courses of the WCA are tailored to cover all the different aspects of wildlife crime (illegal killing, trapping, poisoning), and to suit the different professional profiles of the attendees of the training courses. After completing the three level training courses, the attendees are becoming experts in wildlife crime investigation, fully capable to implement wildlife crime investigation and organize similar training courses in their country. The Wildlife Crime Academy have been established in 2021 as Vultures Conservation Foundation initiative in close collaboration with the Regional Government of Andalucía and the Spanish ministry for the ecological transition. So far, we have implemented 4 training courses, two level 1 and two level 2 courses, attended by total of 66 representatives from: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Greece, Egypt, Lebanon, Italy, Morocco, North Macedonia and Serbia. Financially support the LIFE Programme of the European Commission (through: BalkanDetox LIFE, Egyptian Vulture New LIFE, Safe for Vultures and LIFE for Vultures Projects) and MAVA Foundation.

Photo: HOS/ V. Saravia-Mullin, Greek law enforcement agents at international training course in Spain.

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Study on the mortality of birds caused by the power grid in Adana and Mersin Regions, Turkey, during the autumn migration 2019

Lale Aktay Sözüer [1]*, Özgün Sözüer[2]

[1]Akdeniz University; [2] Adana Metropolitan Municipality
*Correspondence: lale.aktay@gmail.com

Adana region in the south of Turkey, offers to be one of the most important hotspots for birds and birding in Western Palearctic due to two main reasons. Firstly it is located on one of the significant migration route for soaring migratory birds and secondly it holds a very rich geographical diversity from alpine zone to coastal line. According to e-bird Turkey database, 348 bird species have been recorded in Adana, which is approximately 70% of the 497 bird species recorded in Turkey. Çukurova Basin, where Adana is located, is a very important bottleneck, for soaring migratory birds including diurnal raptors, not only for Turkey but also for the Western Palearctic and even for the whole globe. The two main flyways from Scandinavia over Bosphorus and Dardanelles, and from Siberia over Caucasus merge over Çukurova Basin in Adana region. Especially the region around Gulf of Iskenderun is the last stop for migratory birds which fly through both main flyways before they continue to their journey through Rift Valley to Africa. The conducted migratory bird counts around Gulf of Iskenderun by various birdwatchers, including the studies conducted by the Egyptian Vulture New LIFE Project team in recent years, reveals the importance of the region. Despite all this importance, very little is known for this bottleneck about the cause of bird deaths. Especially, there is no systematic and specific study on deaths due to electrocution. Therefore, this study was essential to initiate systematic and specific surveys and to address the death-causing hotspots around this bottleneck. The study conducted in southern Turkey, around Adana and Mersin provinces for 15 days in total. The powerlines to visit were preliminary chosen based on their structure and the risk it imposes to birds, considering also the spatial overlap with the areas frequently visited by Egyptian Vultures (EV) (*Neophron percnopterus*) (data provided by telemetry). Data were collected using a standard methodology. The data collected was entered in Survey123 on a daily basis. Powerline surveys (60 transects with total length of 175 km), dumpsites surveys (n=7) and meetings with the electricity company (n = 5) were conducted within the scope of this study. During the surveys a local breed dog used which is being trained for wildlife surveys to detect the carcasses. As a result of the surveys, a total of 59 individuals of 6 species were found dead along the powerline transects. The species found are EV - 2 ind., Black Stork (*Ciconia nigra*) - 1 ind., White stork (*Ciconia ciconia*) - 46 ind., Common Kestrel (*Falco tinnunculus*) - 2 ind., Collared Dove (*Streptopelia decaocto*) - 1 ind., unknown dove (1 ind.), Hooded Crow (*Corvus cornix*) - 1 ind., unknown crow (2 ind.) and unidentified feathers from 3 individuals. Hazardous power poles identified and the pylons were classified based on the risk of electrocution. Additional information was collected through interviews of local shepherds, farmers and villagers during the surveys.

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Development of a sensitivity map and web-based tool for the assessment and mitigation of disturbance risk for nesting birds, caused by climbing activities in Bulgaria and Greece. Methodological approach and interaction with the climbing community.

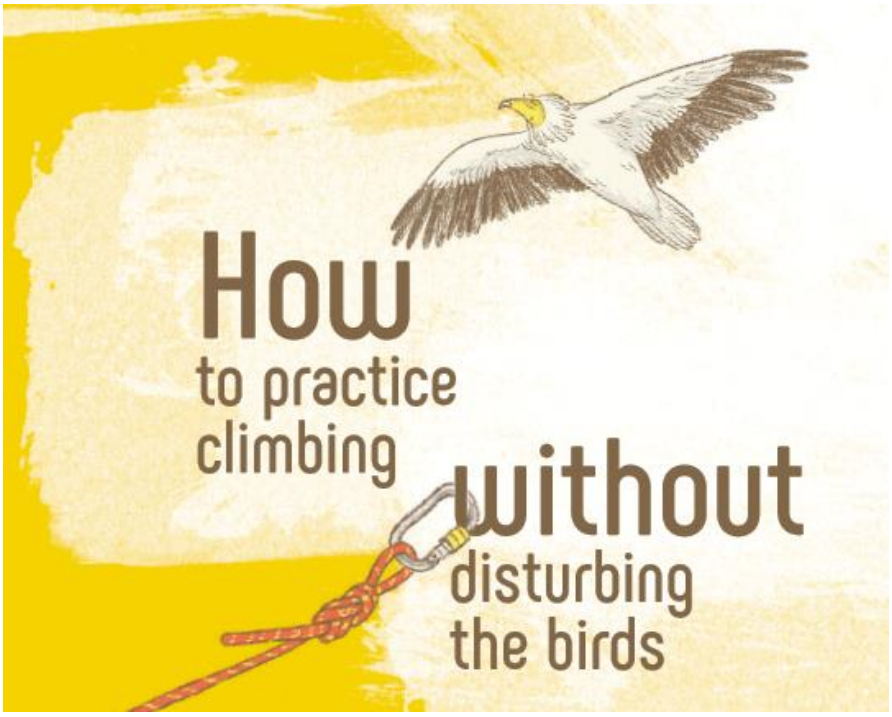
Nikolaos Tsiopelas[1]*, Dimitris Vavylis[1], Svetoslav Velkov[2], Aris Manolopoulos[1], Elitsa Ivanova[2], Georgi Popgeorgiev[2], Vladimir Dobrev[2]

[1]Hellenic Ornithological Society/BirdLife Greece, [2]Bulgarian Society for the Protection of Birds/BirdLife Bulgaria
*Correspondence: ntsiopelas@ornithologiki.gr

Human disturbance of endangered species at breeding sites is a growing threat. This is especially valid for species with small and declining populations where the cumulative effect of human disturbance and stochastic factors like weather can affect the breeding performance of birds. When combined with threats that cause the killing of individuals, like poison baits and collision with infrastructure they can jeopardize the population viability in the long term. The growth of the alternative tourism, outdoor activities and extreme sports is a global trend that has been accelerated by the COVID – 19 pandemic raises the concerns about the negative human impact due to disturbance of endangered species and biodiversity in general. The Egyptian vulture (EV) (*Neophron percnopterus*) and Bonneli's Eagle (*Aquila fasciata*) have small and vulnerable populations in the Balkans. Since both species breed on cliffs, rock climbing is a sport that can have a severe impact on them. This sets the need for conservation action.

We used the EV and the Bonelli's Eagle as flag species in two different approaches based on web-based tools in Bulgaria and Greece to mitigate the conflict between the rock climbers and rock-dwelling birds. In Bulgaria, we created sensitivity map on one hand and opened direct communication with the climbing community in the country. To create the sensitivity map we extracted information on nests of cliff-nesting species from the BSPB data base. We then created a layer and buffers with different radius (from 200 m to 1 km) depending on the conservation status and the ecological requirements of each species. We also added to this layer all climbing areas in the country, and a layer with Natura 2000 sites and protected areas in Bulgaria. To each buffer, we also added information on the breeding season of the species and when climbing will be a threat to the breeding birds. Collaboration with the Bulgarian Climbing and Mountaineering Federation was initiated and the map was uploaded to a popular website used by Bulgarian climbers use for up-to-date information about the climbing routes in the country. Along with the map, a leaflet with additional information on how to exclude the disturbance of cliff nesting birds as a negative factor resulting from rock climbing has been uploaded on the site and distributed via mail. The sensitivity map is being updated constantly and combined with a communication campaign that we run among rock climbing clubs in the country. In the framework of a 5-year LIFE project (2018-2023) for the Bonelli's Eagle in Greece, another set of activities were implemented in order to ensure the reduction of human-induced disturbance at the Bonelli's Eagle breeding sites. In the framework of the aforementioned activities HOS/BirdLife Greece developed a digital information tool, allowing climbers to be aware of possible sensitive areas within sites where climbing activities take place. The tool produced is a web-based interactive map that enables everyone interested in visiting the climbing areas to check the potential of disturbance in advance. The map does not intend to act as a regulatory, or decision-making tool but rather as an informative tool. Nevertheless, further continuous co-operation with the Hellenic Federation of Mountaineering and Climbing (H.F.M.C) the Hellenic Mountain Guides Association (H.M.G.A) and the climbing community and the ability of interaction that the web provides in general, can assist to the adoption of regulatory actions at a non-legislative level.

Development of the sensitivity scoring was based on a multi-criteria analysis, determining the possibility and the severity of disturbance for nesting birds, taking into consideration variables such as the type and frequency of activity, the species of birds, the season, distance of the activity from the nesting areas a.o. The disturbance risk was described using a four-scale classification system, corresponding to four different colours based on the traffic light risk-assessment template. Regarding the spatial scale used in the tool, we decided to develop the digital map on the level of climbing sector, in order to enable immediate coherence with the system used from the climbing community. Lastly, the web-based tool was developed as to include basic environmental information for each site and to provide the ability of interaction with the users in order to enable acquisition of data from the latter.



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Conserving soaring birds in the Red Sea/Rift valley migratory corridor

Alex Ngari[1]*

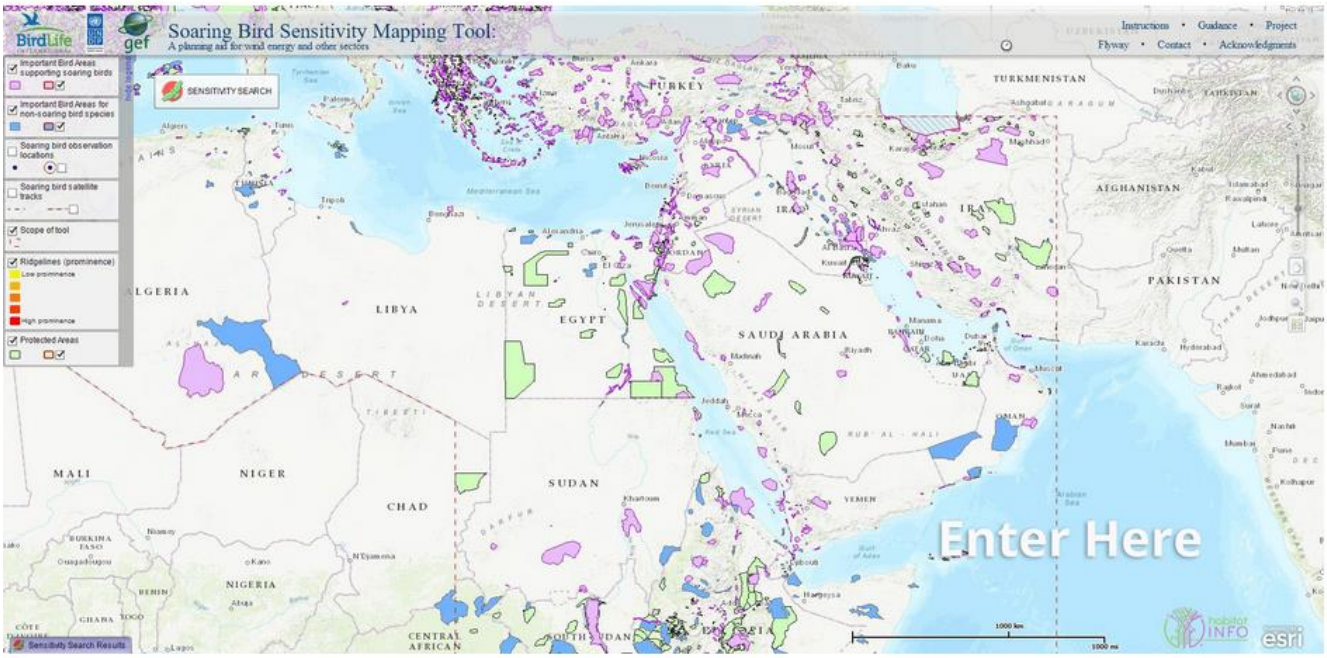
[1]BirdLife International
*Correspondence: Alex.Ngari@birdlife.org

The Red Sea/Rift valley hosts the migration of over 2 million birds through the region, with Soaring Birds in huge flocks numbering tens of thousands migrating from wintering grounds in Africa to breeding grounds in Europe and Central Asia and vice versa along the second biggest Flyway in the world.

Yet this area is also subject to huge development pressures, as increased demands for energy, food supply, and tourism lead to significant changes in land use and generate the need for increased waste management. Indiscriminate hunting and illegal killing of birds is widespread. Thus, these five sectors of Agriculture, Energy, Hunting, Tourism and Waste Management can create an increasingly inhospitable environment for Migrating Soaring Birds and have the potential to affect populations of soaring birds across three continents.

Through GEF/UNDP support, BirdLife International has been implementing a multi-county project spanning Africa and Middle East with the main object of mainstreaming Migratory Soaring Birds (MSB) conservation considerations into the said productive sectors. During the talk, we hope to share our experiences and lessons working with multiplicity of stakeholders to secure safe connecting corridors for MBS.

The Sensitivity Map Tool



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Identifying and addressing local threats to vulture populations in Nigeria: a strategic approach by the Nigerian Conservation Foundation

Stella Egbe[1]*, Joseph D. Onoja, Solomon Adefolu, Memudu Adedayo

[1] Nigerian Conservation Foundation
*Correspondence: stella.egbe@ncfnigeria.org

The population of vultures have rapidly declined in the last couple of years, this also holds true in Nigeria where six of the seven species found here have been extremely decimated. These species are the White-backed Vulture (*Gyps africanus*), White-headed Vulture (*Trigonoceps occipitalis*), Egyptian Vulture (*Neophron percnopterus*), Rüppell's Vulture (*Gyps rueppelli*), Hooded Vulture (*Necrosyrtes monachus*), Lappet-faced Vulture (*Torgos tracheliotos*). Recognizing the ecosystem imbalance and associated impact of the loss of this unique group of birds, the Nigerian Conservation Foundation (NCF, Birdlife Nigeria) embarked on a coordinated national effort to combat the threats to this species and conserve the remnant population. NCF has been recognized at national level and international level (CITES Animal Committee Working Group) as a leading organization delivering pioneering effort on saving West African Vulture. NCF's coordinated vulture conservation efforts began with a nationwide survey to determine and identify areas with remnant population of vultures across the country. The findings from the survey revealed that the vultures have been largely extirpated from areas where they have been historically present.

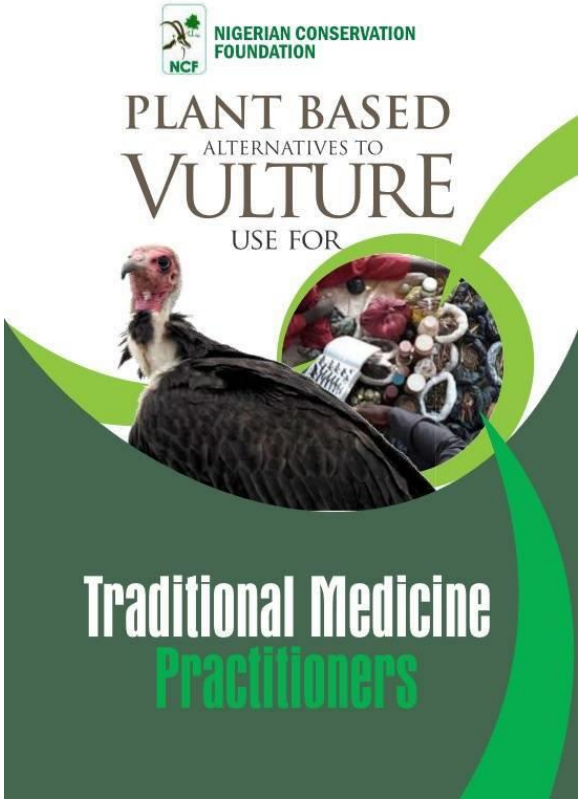
With support from the Egyptian Vulture New LIFE project and other stakeholders, NCF embarked on a strategic nationwide conservation effort with the following objectives i. Demand for illegally traded vulture parts is reduced by 50% in the three key Nigerian States by promoting the use of locally identified viable and sustainable plant-based alternatives to the use of vultures and their parts in belief-based use and practices. ii. Build and increase the capacity of and cooperation between special criminal investigation agencies improved to monitor, investigate, and prosecute illegal wildlife trade related crimes. iii. Public awareness enhanced at the national and regional level on the social, economic, and ecological impacts of the illegal trade in vultures and wildlife.

To meet the first objective, a nationwide survey of the renowned wildlife markets across the northern and southern parts of the country was carried out to ascertain the nature of trade in vulture and vulture parts. The findings from this survey revealed that belief-based use which promotes the demand and trade in vulture and vulture parts is one of the major factors that drive the decline of vultures nationwide. This was followed by an attitudinal baseline survey on the perceptions and attitudes of consumers, traditional healers and traders of wildlife products that influence the beliefs surrounding the illegal trade of vultures and their parts. From this survey, Focus Group Discussions was employed in three main state to discuss sustainable and viable alternatives to the use of vulture and vulture parts in belief-based use. A total of two hundred medical practitioners were involved in this exercise and some of the plant substitutes identified include *Ficus platyphylla*, *Tamarindus indica* amongst others. This was then promoted amongst stakeholders which include traditional medicine practitioners in two separate workshops. A book on these sustainable alternatives has been published and embrace by registered members of the traditional medicine practitioners.

To meet objective two, there was capacity building for law enforcement officers from several agencies through properly designed materials using the national Endangered Species Act (ESA) as guide. This was aimed at raising awareness and improving the technical know-how in the discharge of their duties where wildlife trade is concerned. The Nigerian Conservation Foundation produced a manual and a user-friendly guide on the Endangered Species Act for the capacity building workshops on investigations and prosecutions on vulture and other illegal wildlife trade, focused on key special criminal investigative agencies. The agencies represented include the Nigerian Police Force, the Nigerian Customs (Anti-Smuggling Unit, and Border Control Unit), the National Drug Law Enforcement Agency (NDLEA), the National Environmental Standards and Regulations Enforcement Agency - NESREA and the Department of Public Prosecution.

To meet objective three, public awareness campaigns on a national scale using traditional and social media was implemented. The awareness campaigns focused on the negative impacts of the illegal wildlife trade, focusing on vultures, the legislation and penalties, myth busting on (lack of) medical or magical qualities of wildlife body parts. For more effect using the social media, NCF engaged the services of three Nigerian celebrities whose engagement increased the reach of the message to the public. There were also series of radio and TV documentaries and programmes recorded in the three major local languages, Hausa, Igbo, Yoruba and English. NCF representatives were also involved in media rounds to continuously raise awareness on the conservation of vultures. Other public awareness programs include the commemoration of the International Vulture Awareness Day in various sites and on several media platforms. These series of activities, engagement, capacity building and actions has directly and indirectly reached at least 500,000 persons in the country. It has also provided the

knowledge on the remnant population which we plan to conserve through the establishment of Vulture Safe Zones in selected sites across the country.



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Securing overhead power lines for bird protection

Dilyana Vasileva[1]*

[1]EVN Bulgaria
*Correspondence: dilyana.vasileva@evn.bg

With growing industrialization and electrification of urban populations overhead transmission and distribution powerlines became a compulsory element of the landscape in Europe over the past century. While already at the stage of planning and construction their significant negative impact on bird's habitat was foreseen such constructions were preferred as their cost was much cheaper compared to underground cable lines. As a result, nowadays majority of electricity transmission and distribution grids in Bulgaria and most of the European countries are based on overhead powerlines. There are many studies evidencing that thousands of birds die due to electrocution or following a collision with overhead electric powerlines annually. Electrocution generally takes place when birds are making a bridge between the pole and the lines while perching, flying away or defecating. The risk of electrocution increases with weather humidity and precipitation. Collisions occurs when birds are in flight, and due to

low visibility of the cables. EVN Elektrorazpredelenie Yug (EP Yug) is part of the EVN Bulgaria Group, which in turn is part of the Austrian EVN AG . It is one of the three grid operators functioning in Bulgaria and operates in south-eastern Bulgaria. The company has 34 Client Energy Centres and operates and maintains nearly 60,000 kilometres of medium and low voltage powerlines in south-eastern Bulgaria. EP Yug as acts not only on its responsibility to distribute electricity, but also as an important stakeholder in the process of preserving and protecting biodiversity in the country. Inter-company sustainability policies and objectives, as well as the biodiversity regulations at EU level led to re-consideration of the term "safe grid", not only from the perspective of safe delivery of electricity, but also taking into account the mitigation of bird mortality due to overhead power-lines.

The pilot activities for retrofitting powerlines in Bulgaria started in 2009 through installing nesting platforms for White Storks (*Ciconia ciconia*) and insulation of medium- and low voltage power-lines. Retrofitting powerlines to make the electric grid safe for birds is beneficial both economically and ecologically. On one hand, this guarantees technically stable transmission and distribution process of electricity to the customers, with reduction of technological losses and much lower carbon footprint. On the other hand, this provides ecologically sustainable infrastructure with significantly lower risk for birds.

Initially, the insulation caps are installed on segments along the grid, where higher frequency of electric outages caused by perching and flying birds was detected. These are generally power-lines located in open landscapes, such as arable lands, grasslands and around wetlands, where there are large congregations of birds during migration and wintering.

These outages are generally short and repaired automatically after 5-6 minutes, without intervention of a team in-situ. During the most intensified migration periods, the frequency of these outages could reach hundreds per month in specific locations of the grid. This can lead to fluctuations in the quality of electricity supplied to domestic and industry customers, which may result in disturbance or interruption of production processes as well as damage to appliances. Since 2009 EP Yug annually retrofits powerlines in south-eastern Bulgaria applying pilot state-of-art at national level approaches. The collaboration with BSPB/BirdLife Bulgaria started in 2011 with insulation of additional 595 electric poles, which resulted in mitigating the probability of electric shock in 80% of the nesting territories of the Eastern Imperial Eagles (*Aqualia heliaca*) in Bulgaria. This catalysed closer cooperation between EP Yug and BSPB and by 2021 this resulted in the insulation of additional 1,500 electric poles under 10 different conservation projects. Moreover, over the last 12 years EP Yug invested own resources for the insulation of 27,729 poles. In 2013, EP Yug together with BSPB developed the project life 12 NAT/BG/000572 - LIFE for Safe Grid with which EP Yug became the first infrastructure company in Bulgaria to implement a LIFE funded project. The aim of the project was to protect the globally endangered Eastern Imperial Eagle. "Life for Safe Grid" continued the long-term cooperation between the company and BSPB in the field of bird conservation.

The EP Yug continues to look for new and more efficient technologies to make its infrastructure safer for both people and birds. This is why in its new LIFE project Safe grid for Burgas (LIFE20 NAT/BG/001234) EP Yug intends to use new materials, which are more resistant to weather conditions and thus have longer life-span.

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Bulgarian police against wildlife crime

Kamen Nikolov[1]*

[1]Ministry of Interior, Bulgaria
*Correspondence: kamenpalazov@gbg.bg

Since 2011 in the Republic of Bulgaria, actions related to acts of cruelty to vertebrates and offenses on protected species of plants, animals and protected territories have been declared crimes.
The main function of the police in Bulgaria is the prevention and investigation of crimes. The legal framework, the state bodies that the police interact with when responding to reports, the role of non-governmental organizations, statistics on the number of registered crimes, the main challenges, proposals for overcoming them, and good practices are presented in the current presentation.

With changes in the Penalty Code in the Republic of Bulgaria, several categories of acts related to the protection of nature and the protection of animals from cruelty have been declared as crimes. For example: the destruction or damage of protected territories and habitats; the illegal destruction, damage, acquisition, possession, or alienation of specimens of a protected species of wild flora or fauna; the illegal destruction, damage, acquisition, possession, or alienation of specimens of European or globally endangered wild vertebrates; organizing or participating in animal fighting, raising, training, or providing animals for fighting; cruelty to a vertebrate animal, which caused its death, severe or

permanent damage; the failure to exercise sufficient care over a vertebrate animal by a person under whose supervision the animal is, due to which the animal causes moderate, severe bodily injury or death to another person.

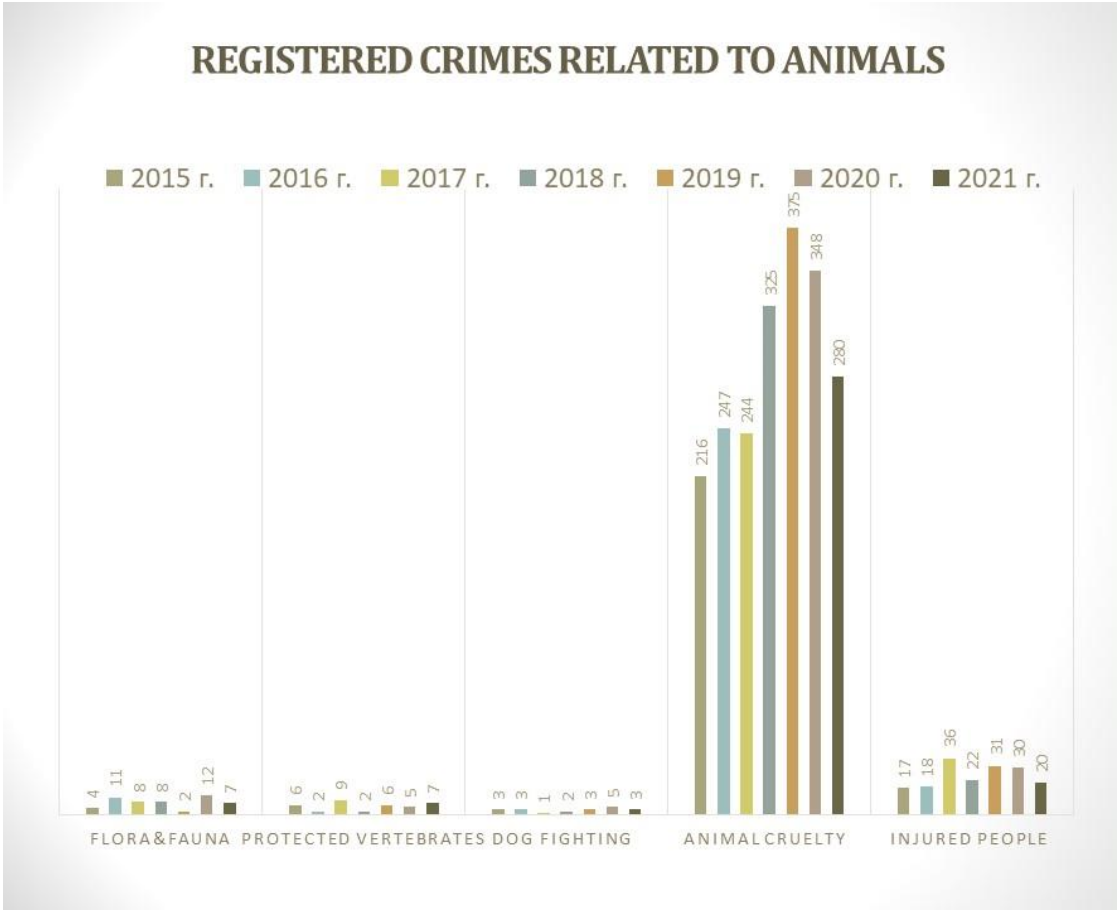
In 2015, police officers were appointed with the responsibility to investigate this type of crime in each regional directorates of the police. In 2016 in the General Directorate National Police “sector Animal police and Cynology” was established.

The police investigation of crimes in the Republic of Bulgaria is regulated by three acts: the Criminal Code, which defines the concept of a crime, as well as defines specific socially dangerous acts such as crimes, the Criminal Procedure Code, which defines the basic principles and procedure of conduct of criminal cases, methods of proof, evidence, means of proof, etc. The law on the Ministry of Interior gives police authorities the power to investigate crimes.

Authorities of the Ministry of Interior can also carry out administrative punitive activities under the Law on Forests, the Law on Hunting and Game Protection, and the rules for carrying out this activity are in accordance with the Law on Administrative Violations and Penalties.

The main challenges in the field of these crimes are: the high latency in crimes against protected species; difficult exchange of information between control bodies from different institutions; lack of coordination or poor coordination in receiving, registering and responding to signals; need for training and building of capacity of control bodies; insufficient human resources in the territorial structures of the control bodies; difficult interaction between police authorities and authorities from other competent structures at night and on weekends and holidays.

The main solutions to combat these crimes are: national action plan to combat the illegal use of poisons into the wild (2021-2030); cooperation and capacity building (Ministry of the Interior, "Animal police and Canine", NGOs such as BSPB, Green Balkans, Association of Prosecutors in Bulgaria, WWF, etc.); capacity building including training at the University of Thrace, Bulgaria organized in cooperation with BSPB, Green Balkans, with the participation of experts from regional relevant institutions; interinstitutional working group to create a specialized unit in the Ministry of Internal Affairs for combating crimes against the "Environment, wildlife and animals"; training of service dogs to search for poisonous baits in nature; and the use of service dogs to search for poisonous baits are going to be introduced into the work of the police



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Sustainable hunters tackling the illegal killing of birds

Louis Junior Saad [1]*

[1]Society for the Protection of Nature in Lebanon / BirdLife Lebanon
*Correspondence: lsaad@spnl.org

Lebanon is situated along Eastern part of the Mediterranean Sea, making a key flyway for bird migration. Combined with the fact that the Lebanese community has a long history of hunting, this facilitated the creation and establishment of key black spot areas along the Lebanese mountains and inlands, being North of Lebanon, Mount Lebanon, and the Beqaa, mainly. Therefore, these actions led to a major turmoil, whereby which many bird species have been impacted by the illegal killing of birds (IKB). Needless to mention, the Lebanese Government had banned hunting for years, this added to the troublesome that the country due to instability the country was facing since the 1970s till recent years. Many studies done by various NGOs, have showed the death of thousands of raptors, utilization of lime sticks, and decoy machines. As such, due to extensive advocacy and policy making discussions, a new hunting law was enforced permitting hunting with strict rules and regulations. However, conventional approaches of awareness deemed inefficiency, due to that fact that, Lebanese communities are raised on

hunting and prey killing. Therefore, SPNL established in 2017, the Anti-Poaching Unit (APU), whose main responsibility to raise awareness on illegal practices among hunters, and to support law enforcement in tackling poachers. Therefore, SPNL has trained and supported sustainable hunters, known by the hunting community, to highlight a trend and raise a new concept of hunting, known as sustainable hunting. Such hunting involves hunting etiquette, types of shooting and hunting law trainings. Since then, the APU has embarked on a long journey whereby which continuous patrols have been done with the support of the Internal Security Forces (ISF) and Army Intelligence to report IKB cases and raise awareness among the hunting community. These actions have led to the rescuing of various raptors and songbirds. One of these rescues are "Anahita", a juvenile Egyptian Vulture, which was shot, saved, and transported back to Prague to be re-introduced in the breeding program. Other cases involve the rescue of five Egyptians Vultures from 2 illegal zoos. One, named "Louis" was released back into the wild, where the rest are being transported back to Prague to be re-introduced in the breeding program as well. In addition, other raptors such Lesser-Spotted Eagles, Black Kites, Griffon Vulture, Buzzards, and Storks to name a few have been rescued. Between 2021 and mid 2022 over 40 birds were saved. Finally, such actions resonated among local community, which in turn are supporting the APU through either changing the hunting attitude of their surrounding or reporting IKB cases.

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Nest guarding during the fledgling period of the Egyptian Vulture as a conservation tool

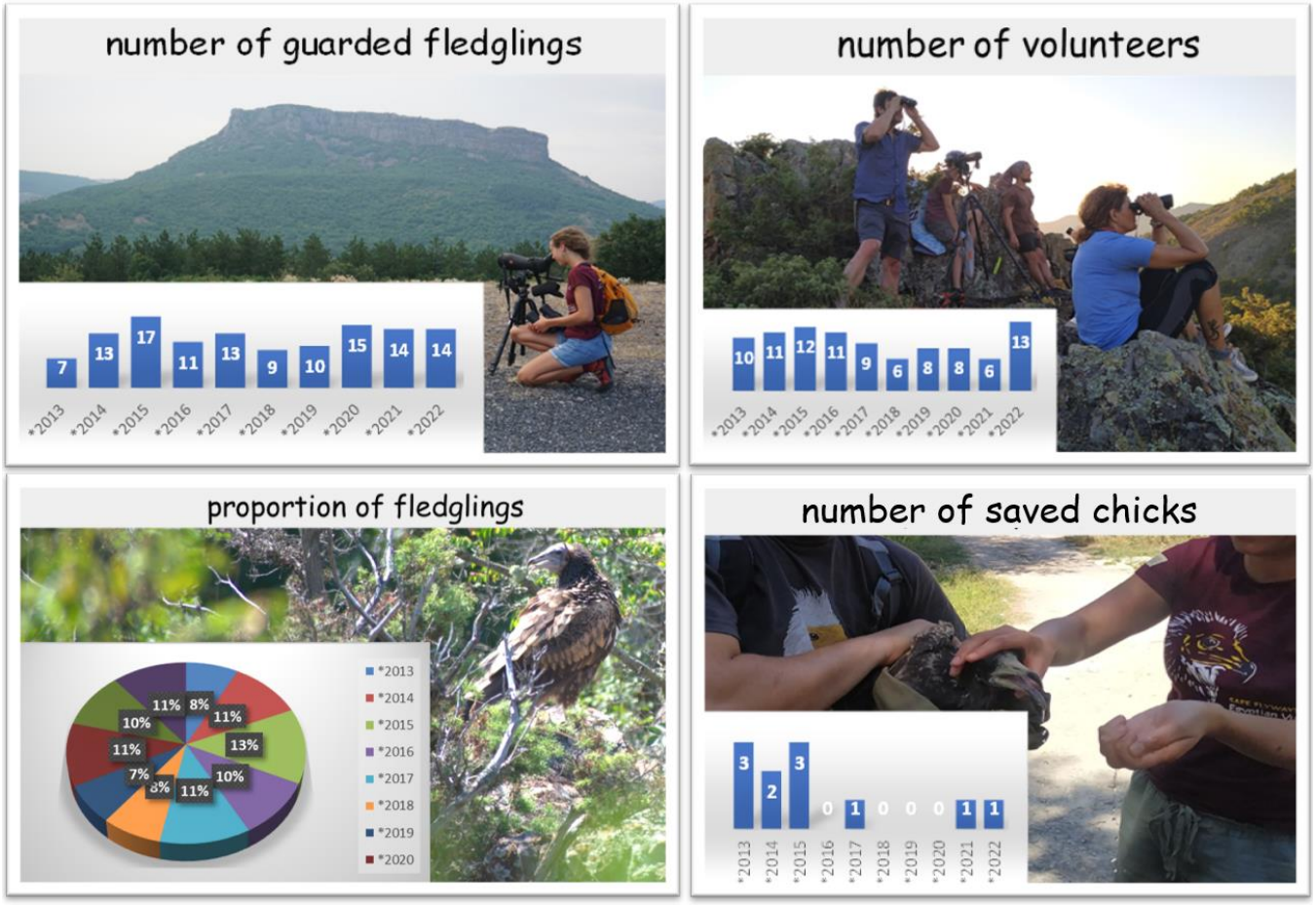
Emil Yordanov [1]*

[1]Bulgarian Society for the Protection of Birds/BirdLife Bulgaria,
*Correspondence: gorataem@gmail.com

Conservation management strategies for endangered species are general responses to halt their population decline. Raptor species and vultures in particular, due to their crucial ecological function and value is one of the groups to have received much attention in this regard. Popular conservation activities applied to these species are supplementary feeding, reduction of disturbance, and nest guarding to prevent persecution and poaching. They aim to improve breeding outcome, and decrease the risk of poisoning and the direct killing of individuals. Moreover, conservation management activities have also a communication role and are often used to popularize vulture species and their role in ecosystems. One of the species, subject to intensive conservation activities is the globally endangered Egyptian vulture (EV) in the Balkans. Due to the rapid population decline for decades, the species numbers only about 50 pairs across the peninsula. Intensive conservation management has been applied there in the last 10 years aiming to halt and reverse the population trend of the EV. Thus, a region where only 1 out of 10 juveniles survive until maturity needs adaptive conservation measures at multiple levels. Hence, considering the value of each bird, except for all above mentioned popular conservation measures we started a campaign to recruit volunteers to guard EV nests during the fledgling period. This is time of crucial importance for juvenile birds and might have a lethal outcome.

Nest guarding aimed to (1) rescue juveniles which fail to successfully accomplish their first flight, (2) use the rescued chicks for the species restocking program in Bulgaria, and (3) to raise awareness among people about vultures role in the natural ecosystems.

The nest guarding in the fledgling period has been conducted between 2013 and 2022 as a conservation tool in Bulgaria to support the EV population. The mean number of guarded nests of EVs per year is 9 ± 1.5 and the total number for that period is 86 ± 1.5. The total number of guarded fledglings is 123, which is 61% of the fledglings in Eastern Rhodopes. Most of the chicks left the nests naturally with no recorded incidents. However, 10 chicks were saved during the period. They were either extracted from the nest due to health or other problems as very late hatching or saved on the ground after an unsuccessful first flight, and then transported to a rescue centre. The guardians managed to prevent cases of disturbance during the fledgling period mostly caused by tourists. Basic data on the behaviour of the birds and their biology was collected. The total number of volunteers that took part in this action is 94. Either they come from Bulgaria or abroad (Canada, Romania, Lithuania, Germany, Belgium, France, United Kingdom, and the United States) and have taken part in nest guarding.



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Methodology and role of the supplementary feeding stations in Bulgaria

Dobromir Dobrev [1]*, Anton Stamenov[1], Volen Arkumarev[1], Ivaylo Angelov[1], Atanas Delchev[1], Vladimir Dobrev[1], Hristo Hristov[2] and Dimitar Demerdzhiev[1]

[1]Bulgarian Society for the Protection of Birds/BirdLife Bulgaria, [2] Rewilding Rhodopes Foundation
*Correspondence: dobromir.dobrev@bspb.org

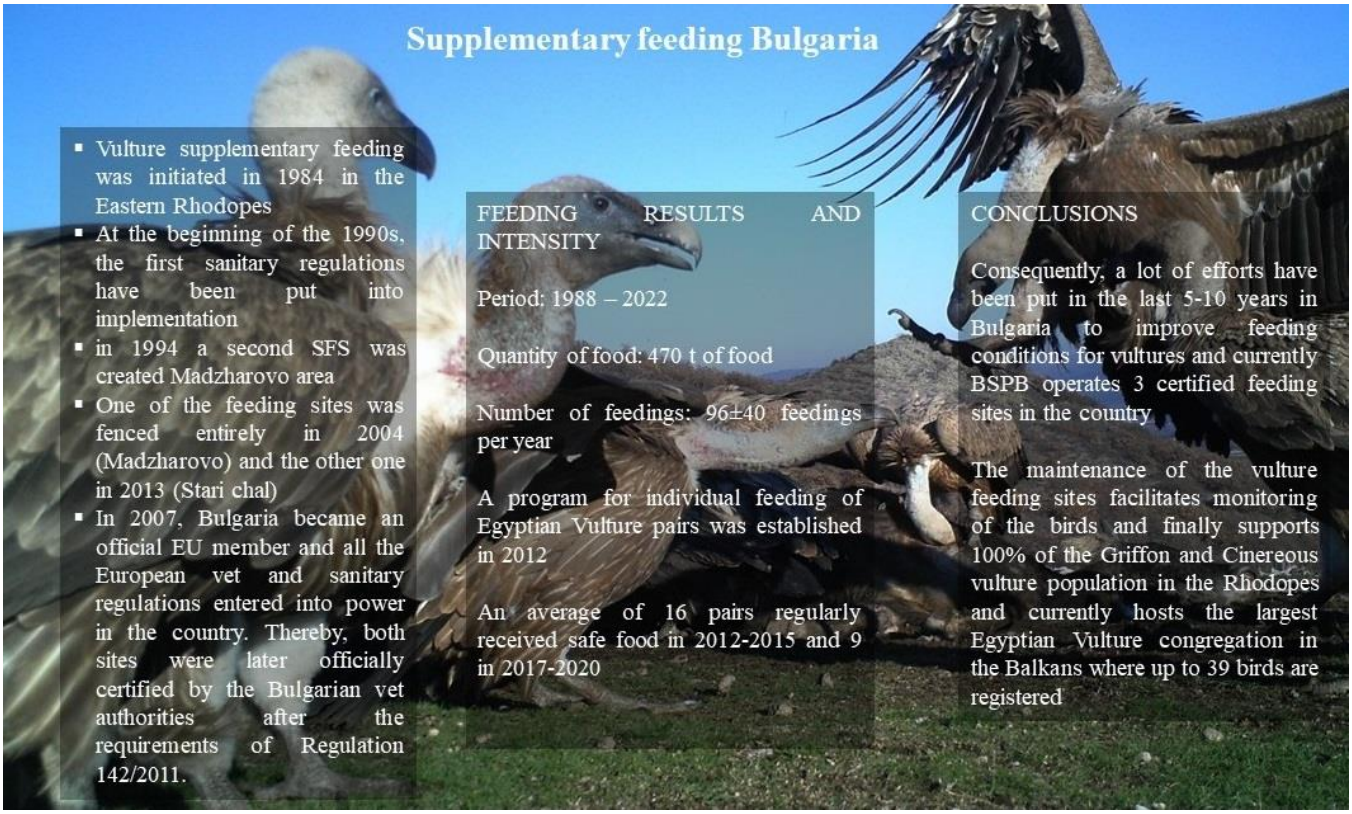
Supplementary feeding sites are essential management tools for vultures' conservation and have been widely used across Europe to control vulture populations in diverse aspects. Supplementary feeding stations (SFS) may improve breeding output, and birds' survival, optimize territory occupancy, enhance vulture safe zones and counteract unintentional poisoning. The outbreak of Bovine Spongiform Encephalopathy in the late 1990s and the following veterinary restrictions completely changed carcass disposal rules. They brought new regulations and restrictions to address both human sanitary needs and maintain scavengers' ecological role across Europe. Vulture species have different preferences regarding the size of the disposed animals. However, the location of the SFS and the interspecific competition may play a significant role in the efficiency and exploitation of any given SFS. Therefore, supplementary

feedings should be based on rigorous information that allows evaluation of management and consequent control. Recently, new terminology has been proposed with respect to feeding site classification based on management goals and food sources.

In Bulgaria, vulture supplementary feeding was initiated in 1984 in the Eastern Rhodopes to manage and rescue the last birds of the once abundant Griffon vulture (*Gyps fulvus*) population in the country. During the first years, feedings were irregular and voluntary organised but since 1988 became more frequent and planned temporarily. At the beginning of the 1990s, the first sanitary regulations have been put into implementation to manage vulture populations in the Eastern Rhodopes. Then, in 1994 a second SFS was created Madzharovo area. Back then, the first strategy and relevant program for vulture supplementary feeding according to the veterinary regulations in Bulgaria was designed and introduced in the area. The strategy proposed basic recommendations and outlined the important role of the location of the feeding sites, the type of supplementation, carcass collection from local communities and disposal, and species-specific measures. In the Eastern Rhodopes, SFS were situated between the active Griffon vulture colonies and based on the built strategy to avoid disturbance of vultures and ease their approach to the place. One of the feeding sites was fenced entirely in 2004 (Madzharovo) and the other one in 2013 (Stari chal). In 2007, Bulgaria became an official EU member and all the European vet and sanitary regulations entered into power in the country. Thereby, both sites were later officially certified by the Bulgarian vet authorities after the requirements of Regulation 142/2011. Between 1988 and 2022 these two SFS were sustained and maintained in the Eastern Rhodopes, though with different intensity. More than 470 t of food were provided at both sites during this period with 96±40 feedings per year. In meantime, species-specific measures with respect to Egyptian Vulture (EV) (*Neophron percnopterus*) conservation brought the need for individual feedings of different pairs in 2012. Then, a program for individual feeding of EV pairs was established. It aimed to increase pairs productivity and adult survival of different pairs. This program is still ongoing. An average of 16 pairs regularly received safe food during the breeding season each year (15 in 2012, 17 in 2013, 16 in 2014 and 2015 (including Greece) and nine pairs with 66.12±23.66 kg of safe food annually during the period 2017-2020 (Bulgaria only).

In 2022, the establishment of a network of small local feeding sites (LFS) in key roosting areas and historic nesting sites was initiated in Bulgaria where the first site of this type was set in the north-eastern corner of the country. This approach is relatively new to Bulgaria but has already been implemented in northern Greece where local authorities and livestock breeders participated and maintained 6 LFS sites built by WWF Greece in the period 2016-2021. Consequently, a lot of efforts have been put in the last 5-10 years in Bulgaria to improve feeding conditions for vultures and currently BSPB operates 3 certified feeding sites in the country. Vultures save huge amounts of greenhouse gas emissions emerging from the transport of dead livestock from farms to authorized incinerators. Vulture-related tourism brings additional income to the local economy enabling locals to start their businesses in the region. The maintenance of the vulture feeding sites facilitates monitoring of the birds and finally supports 100% of the Griffon and Cinereous vulture population in the Rhodopes and currently hosts the largest EV congregation in the Balkans where up to 39 birds are registered. Moreover, four intensive and one light feeding stations in different parts of Bulgaria are managed by other organizations creating a network of feeding sites. Nevertheless, there are still many constraints in fulfilling vet regulations in the country for which veterinary authorities would hardly agree to issue official permits to directly leave animal

carcasses as food for vultures, as it cannot be guaranteed that TSE and other contagious and dangerous diseases that are transmitted to humans and animals will not spread.



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Bird Portal: A tool to monitor and reduce mortality risks to birds on the electric grid

Liam Innis*[1]

[1]Renewables Grid Initiative
*Correspondence: liam@renewables-grid.eu

This project is the culmination of collaborative efforts of RGI, NABU (BirdLife Germany) and German grid operators on monitoring and reducing mortality risks to birds on the grid.

The core idea of the project is a portal, by which members of the public can contact NABU upon finding a dead bird around a power line. This data is then analysed by an expert ornithologist and uploaded to an interactive map of Germany, which contains different layers of information on bird finds, electricity grid pathways, presence of certain birds and special protected areas (SPAs). All finds are discussed with grid operators and used to inform the most important mitigation measures (such as visible bird markers).

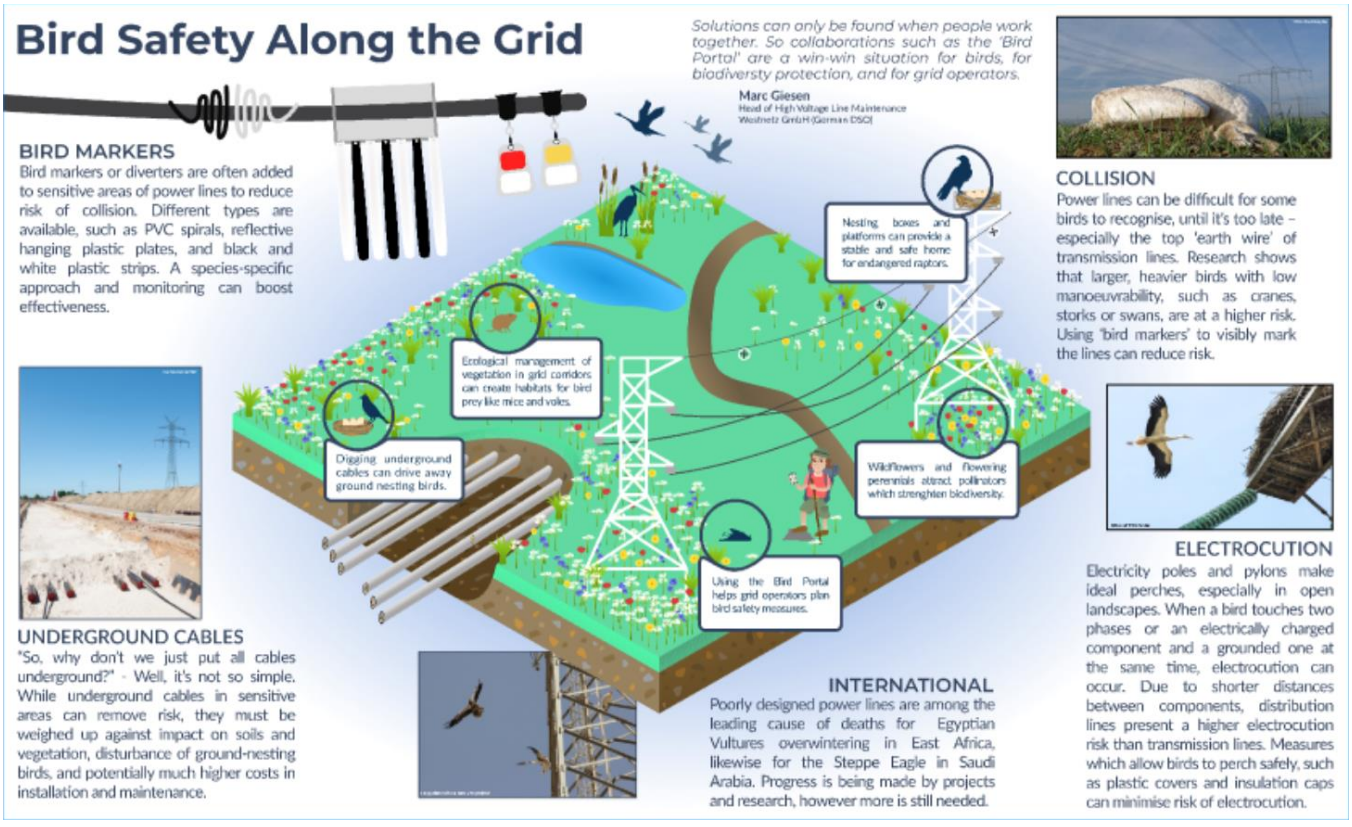
The impetus behind the project was to enable the identification of critical line sections and build upon the insights in future planning processes. For the first time, NABU and the involved transmission and

distribution grid operators jointly and systematically collect data to improve the information base upon which they identify where there is a need to act and what is the right approach to increase bird protection.

So far, there are 7 German grid operators taking part in the project: all 4 transmission system operators (TSOs - 50Hertz, Amprion, TenneT and TransnetBW) as well as 3 distribution system operators (DSOs - Bayernwerk, Netze BW, Westnetz).

Aside from the portal itself, the project offers a forum for grid operators to learn from one another and to learn from NABU's conservation experience. Between the projects partners, topics highest on the common agenda are: a) bird flight diverters/markers, i.e. comparing experiences, internal guidelines, and reported effectiveness, b) data, i.e. standards for gathering, interpreting, and sharing data on bird presence and mortality, and c) planning and permitting – with a specific interest in the value of sensitivity mapping.

Furthermore, the project provides a base for exchange with diverse actors from across the spheres of infrastructure management and nature conservation in Germany and further afield. For example, in September 2022, a national conference was held to discuss the main challenges and opportunities faced in the German context in achieving better protection for birds along the electricity grid. The results of 'Shared Airspace: Towards a bird-friendly grid' can be found here in German and English. Furthermore, the project partners collaborate on communication campaigns, video materials and information brochures, to raise awareness of the bird-grid interactions and aiming to indirectly foster more such collaborations in other contexts.



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