

## **Egyptian Vulture Online Conference 2022: An overview of the outcomes and perspectives for further work.**

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### **Abstract**

This proceedings contains 65 extended abstracts of presentations from speakers representing 26 countries made at the Global Egyptian Vulture Online Conference, held from 8-9 November 2022. The proceedings is divided into eleven sections: Status in Europe; Status in Africa; Status in Asia; Status in the Middle East; Threats and Mitigation; Threats – Focus on Poisoning; Engagement with Communities and Communication Campaigns; Monitoring and Research; Innovative Techniques in Egyptian Vulture Conservation; and Round Tables. The individual abstracts cover a broad range of topics about Egyptian Vulture biology, ecology and management, including theory and survey techniques, population monitoring and modelling, case studies, different conservation concepts, and approaches in working with stakeholders. This proceedings provide scientists, conservationists and decision makers with state-of-the-art information on vulture research, conservation and awareness.

### **Introduction**

The Egyptian Vulture (*Neophron percnopterus*) is a globally endangered species with a 50-79% decline rate over its range (BirdLife International 2023). Its global population is estimated at 12,400 – 36,000 mature individuals (BirdLife International 2023) and the breeding range covers Southern Palearctic, Northern and Central Africa (Botha *et al.* 2017). In Africa, Arabia, southern Asia, and some islands the Egyptian Vulture populations are resident, but in Europe, the Middle East and Central Asia they are mainly migratory, being the only regular long-distance migrant species amongst the Palearctic vultures (Oppel *et al.* 2021a). Currently, it is one of the well-studied vulture species (Botha *et al.* 2017, BirdLife International 2023), yet the knowledge is very unequally distributed across its range and among topics with relevance to its research and conservation (Nikolov *et al.* 2016, Arkumarev *et al.* 2019). Additionally, most of the available systematic knowledge in terms of both state-of-art research and evidence-based conservation practices comes from Europe (Iñigo *et al.* 2008), which probably holds just about 40% of the species' global range and population (BirdLife International 2023). These intensive and collaborative efforts at European scale resulted in down-listing the species from Endangered to Vulnerable in the latest update of the European Red List of Birds (BirdLife International 2021). Therefore, the exchange of knowledge and networking between stakeholders, countries and regions is of critical importance for the efficient conservation of this species (Nikolov *et al.* 2016), and particularly for its migratory populations (Phipps *et al.* 2019).

The Egyptian Vulture Online Conference 2022 aimed to address this issue by providing a platform for exchanging of experience and ideas between people around the world working

with the species. Over 300 people registered for the event from more than 50 countries creating a truly global conference. This is a second such narrowly targeted and widely international event after the Egyptian Vulture Flyway Action Planning Workshop held in Bulgaria in 2015 under the auspice of CMS Raptors MoU and EU LIFE programme, in which 70 attendees from 33 countries took part (Barov *et al.* 2015).

### **Conference approach**

The Conference was organised by the Egyptian Vulture New LIFE project (LIFE16 NAT/BG/000874) and was held online due to budget limitations and the ongoing uncertainty of Covid-19 travel restrictions, but also to provide potential participants from all around the world with equal opportunities for attendance. The announcement about the event was shared widely through different online platforms such as the website, newsletter and social media channels of the Egyptian Vulture New LIFE project and its 22 partners; different e-mail groups about vultures and raptors; the mailing list of the CMS Raptors MoU; the newsletter of the IUCN Vulture Specialist Group; and many others; reaching in total dozens of thousands people. Additionally, some of the participants were directly invited by the organisers due to their expertise. Topics were decided upon the known needs in the research and conservation of the Egyptian Vulture, all abstracts received were reviewed by the Organising Committee of the Conference, and all presentations were video recorded. Finally, the presentations and abstracts were grouped into 11 sessions, as follows: Status in Europe; Status in Africa; Status in Asia; Status in the Middle East; Threats and Mitigation; Threats – Focus on Poisoning; Engagement with Communities; Communication Campaigns; Monitoring and Research; Innovative Techniques in Egyptian Vulture Conservation; and Round Tables.

### **Summary of the results**

#### *State-of-art in vulture monitoring and research*

Comprehensive analysis of telemetry data from 220 tagged Egyptian Vultures across approximately 70% of the species' global distribution allowed estimation of different survival rates throughout the annual cycle of the migratory populations (Buechley *et al.* 2021). Results showed lower survival during migration balanced with higher non-breeding survival at lower latitudes, and that increasing anthropogenic mortality (occurred mainly in northern latitudes) could disrupt the delicate migration trade-off balance. Another large telemetry dataset (n = 94 individuals from 70% of the species range) was used to analyse spatial and temporal variability of migratory movements within and among individuals and populations (Phipps *et al.* 2019). In Bulgaria, three different release techniques for captive-bred birds were compared through experimental study (Oppel *et al.* 2021b). Results evidenced that delayed-release assures higher survival rate during the first fall migration compared to hacking and fostering methods, as well as compared to the wild juveniles. This finding, in line with the results from the genetic study of Bounas *et al.* (2023) about potential source populations for releasing, is of key importance to reduce the mortality of juveniles into the Mediterranean Sea (Oppel *et al.* 2015), and to support the population reinforcement in the Balkans (Arkumarev *et al.* 2022). A presentation given by the Prague Zoo demonstrated the

fundamental role of the European Association of Zoos and Aquaria Ex-situ Program (EEP) in supplying restocking programmes in Europe with captive-bred chicks for releasing into the wild. CERM shared one of the lessons learned from the restocking programme implemented in Italy since 1993: birds released through the hacking method and which had spent the acclimatization phase far from rocky gorges, can develop the habit to select electricity poles as a roosting substrate instead of rocks, which may decrease their survival probability during migration and wintering. A theoretical calculation based on the nesting success and presence of non-breeding individuals was also carried out to estimate the viability of the extremely reduced Egyptian Vulture population living in the southern part of the Italian peninsula. Advanced technologies for distant monitoring of the nests and breeding behaviour in Egyptian Vultures (e.g. drones, video surveillance and trail cameras (Yordanov *et al.* 2023)) is becoming more popular as part of in situ and ex situ activities, and allowed documentation of a case of Cainism in this species for the very first time. Monitoring of raptors in spring at Galala Plateau in Egypt revealed a spectacular migration of 350,000 birds from 28 species, among which over 1200 Egyptian Vultures were observed (3-10% of the global population) (Noby *et al.* 2022). The results from the mid-term review of the implementation of the Flyway Action Plan for the Conservation of the Balkan and Central Asian Populations were also presented with important information and clear priorities for the implementation of this Plan over the next five years (Weston & Nikolov 2023).

#### *Updates on the Egyptian Vulture status by region*

Emphasis was given to the overall improving status of European Vultures (Terraube *et al.* 2022), including the first signs of stabilisation of the Egyptian Vulture population in the Balkan countries (Oppel *et al.* 2023), where the population has declined dramatically between 1980 and 2013 (Velevski *et al.* 2015). In addition, case studies and detailed overviews of the current knowledge and activities were presented for France, Italy (with an example for active management of the population under the project LIFE16 NAT/IT/000659), Türkiye (Arslan & Özuslu 2023) and Albania (Dobrev *et al.* 2023).

Among the highlights for Africa were the recent discovery of a small breeding population in Koutous Massif (Pourchier *et al.* 2023) and evidencing the direct persecution due to belief-based use as the major threat for Egyptian Vultures in Niger. This threat is of regional scale for all the vultures in West Africa, with its epicentre in Nigeria (Buij *et al.* 2015) where the Egyptian Vulture is almost extinct (Ringim *et al.* 2022). Its mitigation requires coordinated trans-border cooperation, and thus IUCN, CMS, BirdLife International and the Nigerian Conservation Foundation joined efforts to develop Regional Plan for West-African Vultures Conservation. However, the situation in Ethiopia is a bit different whereby the country holds the most significant known wintering congregation of the species in East Africa (Arkumarev *et al.* 2014) with nearly 2,000 individuals counted in December 2022. At the same time, the fast economic and infrastructural development of Ethiopia leads to increase of vulture mortality due to electrocution and collision with energy infrastructure, and unintentional poisoning (Oppel *et al.* 2022). To mitigate these threats, different conservation and awareness activities, including cooperation and capacity building in stakeholders, were presented.

The Middle East also holds resident and migratory Egyptian Vulture populations, including high concentrations on the islands of Socotra, Yemen and Masirah, Oman (Angelov *et al.* 2020). Stakeholder and community engagement at these sites is therefore of extreme importance. In Saudi Arabia vulture populations are likely under-recorded which requires further investigation so the implication of threats in the region can be suitably mitigated. The importance of Egypt as a migration bottleneck site is described elsewhere (Noby *et al.* 2022) and new information on the breeding population in southeastern Egypt was presented (Habib & Dobrev 2023). The importance of Iraq for migratory congregations was also highlighted along with the work that is being done to mitigate illegal killing of birds (IKB) in the country.

An important gap in the knowledge of the Asian range was filled about the breeding biology, population size and migration of Egyptian Vultures in Uzbekistan and Kazakhstan (Karyakin *et al.* 2023). The breeding population in both countries was estimated at about 400 pairs in total and GPS-tagging confirmed that individuals from Uzbekistan winter in Rajasthan, India. Information was shared about an ongoing project since 2018 in Armenia aiming at research and conservation of Egyptian Vultures, including monitoring of breeding territories, GPS-tagging and environmental education of local communities. Overviews of the available knowledge and actions regarding Egyptian Vulture research and conservation were provided also for Uttar Pradesh, India and Pakistan. The importance of landfills in Nepal as feeding sites for the Egyptian Vulture was also presented, suggesting appropriate management of those sites is vital.

#### *Best practices in identification and mitigation of threats*

Overall analysis and assessment of the magnitude of threats for the Egyptian Vulture along the Eastern Mediterranean flyway was presented, with specific attention on poisoning, electrocution and collision with energy infrastructure and direct persecution as the major causes of mortality (Oppel *et al.* 2021c). Further on this topic, several specific issues were demonstrated and discussed. Location-aware alert system to warn about possible exposure of vultures to poison source was developed in Israel. The system is based on the information that is sent by high resolution GPS-transmitters attached to the vultures. Similarly, the data collected from the transmitters fitted to vultures in Africa is being used to support a range of management actions, most notably the rapid response to wildlife poisoning incidents, but also other management actions. Experience from the Saving Asia's Vultures from Extinction (SAVE) programme was shared regarding the approach to identifying the non-steroidal anti-inflammatory drugs (NSAIDs) which pose a threat and advocate this issue with authorities to ban and offer substitutes for vet use. Evidence about high bird mortality caused by electrocution and collision with power lines was presented for Turkey, which is a key area along the Eastern Mediterranean flyway.

To showcase best practices for mitigation of threats, an overview of the Migratory Soaring Birds project was made to demonstrate the key importance of the cooperation with sectors of agriculture, energy, hunting, tourism and waste management to conserve migratory birds along the second biggest flyway in the world, via the Red Sea and Rift Valley. Poisoning of free-range dogs, which is an illegal practice in most of the Egyptian Vulture's range, has been underlined as an underestimated threat for the species. The Wildlife Crime

Academy in Spain was shown as an efficient tool for capacity building in environmental and enforcement services, and international exchange of knowledge and best practices for combating wildlife crime. The operation of the anti-poison dog units was demonstrated as an efficient tool to better assess and expose the extent of the illegal use of poison baits. The prompt removal of poison baits and poisoned animals from the countryside is the most direct and effective way to reduce the risk of wildlife poisoning. The experience from Greece to combat wildlife poisoning was shared by describing a wide range of activities implemented over the years, varying from more traditional and much needed policy actions, capacity building among law enforcement authorities and increase of public awareness, to more innovative activities such as working directly with stakeholders and testing alternative methods against predator attacks. The BalkanDetox LIFE project was also presented aiming to secure long-term engagement of the relevant national authorities from the Balkan countries by establishing national anti-poisoning working groups and developing national strategical frameworks. In Nigeria, a significant result in reducing the belief-based use of vultures was achieved by (i) promoting plant-based alternatives; (ii) building capacity of and increasing cooperation between agencies to monitor, investigate, and prosecute illegal wildlife trade, and (iii) enhancing public awareness at the national and regional level on the social, economic, and ecological impacts of the illegal trade in vultures and wildlife. In Lebanon, one of the black spots for illegal killing of birds in the Middle East, the rate of direct persecution on birds was reduced thanks to the establishment of specialised anti-poaching units and an initiative for responsible hunting. In the Balkans, the network of supplementary feeding stations was demonstrated as an efficient tool to monitor and support vulture populations, by keeping them as much as possible away from dangerous areas, while nest guarding programme was evidenced as beneficial to increase the fledgling success rate. The good results from the efficient collaboration between the Bulgarian environmental NGOs and the police for combatting wildlife crime were also shared. The grid operator EVN Bulgaria presented their best practices for retrofitting power lines to make them safe for birds. In terms of preventive measures, the Bird Portal was presented as a tool to monitor and reduce mortality risks to birds across the electric grid in Europe. To reduce disturbance on nesting vultures by climbing activities in Bulgaria and Greece, web-based tools were developed to assess the risk and inform on the most sensitive areas.

*Innovative approaches in community engagement, environmental education and public awareness*

One of the main pillars for the efficient conservation of biodiversity is the involvement of the local communities in conservation activities and wider awareness-raising among the general public. “A Mile for the Egyptian Vulture” was a great example of flyway communication campaign implemented all along the Eastern Mediterranean migration route, directly involving ca. 54,000 runners and reaching 4.5 million people with the aim to spread widely the message about the status and the threats of the species (Ivanova 2022).

In terms of environmental education, a brilliant example was the programme developed in Greece based on a combination of both informal and formal education to fit within the framework of the school curriculum. Through direct and ongoing communication with

schoolchildren, as well as outdoor experiences and awareness events, the next generation citizens develop the skills and attitude to actively participate and engage in activities aiming to benefit the vultures that are intrinsically linked to their own communities. This good practice was further adapted and multiplied in other Balkan countries and along the flyway (the Middle East and Africa). In Lebanon, a similar holistic programme (SNOW) was implemented by encompassing a blend of knowledge, skills and values necessary for children to develop pro-environment behaviour while enhancing their own physical and mental wellbeing.

An innovative approach for public awareness in Albania was the use of LED screens in the capital Tirana and the establishment of WiFi hotspots with information in key locations of the cities near Egyptian Vulture territories, reaching over 750,000 people. Another example of such a powerful campaign was the initiative “Be Our Guest” implemented through a huge screen at the Queen Alia International Airport in Jordan and reaching over 380,000 people.

In Niger, the communication work was focused on reducing belief-based use of vultures. Because of the complexity of this threat and its cultural anchoring, the approach relied on the implementation of diverse activities involving a various range of actors: capacity building in authorities to enforce the legislation; environmental education programmes with local schools; close work with local communities to help them understand the role and value of vultures in the ecosystem (especially for nomad livestock rearing communities). A key tool towards success was the vision for traditional hunters and healers as potential allies rather than enemies, that helped significantly to break the supply chain, reduce the demand for vulture products and promote plant-based alternatives. Similarly, the role of nature-conservation centres in Bulgaria for the purpose of raising public awareness for environmental protection in line with the sustainable development of the local communities was presented.

Finally, the results from ethno-ornithological research of the Egyptian Vulture along its flyway were presented to inform any further communication campaigns about how the species is seen and valued in different cultures, countries and communities (Stara *et al.* 2022).

### *Round tables*

Six round tables were organised during the Conference to exchange experience about fieldwork methods, mitigation of threats and strategical planning of flyway initiatives.

The best methods for trapping and tagging of vultures were discussed and it was concluded that whoosh and cannon nets, walk-in and leg-hold traps are all proven to be successful methods for trapping Egyptian Vultures, while the tagging of birds should be done by experienced staff or experts and in accordance with the practical guide developed by the IUCN Vulture Specialist Group (<https://www.iucnvsg.org/guides>).

The main issues discussed regarding the use and impact of NSAIDs, as toxic substances for vultures were: the level of priority to ban diclofenac at country/region scale; the available knowledge of the prevalence of diclofenac; at what extent can pharmacy surveys or carcass testing be carried out to accumulate data on the prevalence; is safety testing needed for

Egyptian Vultures; can any of these tasks be facilitated. The conclusive notes were about the need to think more regionally, not just nationally; to test, provide evidence and understand the impact of NSAIDs at a regional scale; the need for an economic survey for using alternatives to negotiate with the private sector (two alternative safe drugs are available - meloxicam and tolfenamic acid). In a similar vein, the feasibility for application of the Vulture Save Zones (VSZ) approach in Africa, and more specifically the opportunities and drawbacks, experiences from other VSZ projects and the local factors that may alter the approach was discussed during a separate round table.

There was an additional round table to discuss the problems caused by the use of poison to control feral dogs, particularly at rubbish dumps, that has been understudied as a threat globally (Angelov 2023). In order to address the issue of rabies which is directly linked to the presence of large number of feral dogs, municipalities in different countries throughout the species range (Asia, Middle East, Africa) are culling dogs using poison; these dogs are either directly culled at the rubbish dumps or are disposed of in-situ. It is well documented that Egyptian Vultures congregate at rubbish dumps, and therefore it is important to assess their numbers at these concentrations and the possible impact that culling of dogs with poison may have on vulture populations. As inferences for conservation, it was proposed to adopt a common approach in all countries to map and monitor of Egyptian Vulture congregations at rubbish dumps, and to develop common protocols to mitigate the threat of poisoning at these sites.

Two flyway initiatives were discussed. In relevance to the Central Asian flyway, the identified needs were to substantially improve communication and networking between stakeholders, establish strong partnerships and develop regional conservation projects, which can facilitate the mitigation of threat, transferability and application of the best conservation practices from elsewhere. Similarly, BirdLife International aim to analyse the needs, options and interest for stronger collaboration of BLI partners (and close allies) to conserve migratory birds in the Eastern African-Eurasian flyway. The first step is to assess the available information on migratory birds, what different organisations are doing, and determine how to add value and ensure the biggest impact for finite conservation investment through an online questionnaire which will be distributed to all range states in early 2023.

#### *Nick Williams Conservation Award*

At the close of the conference the winner of a special award in memory of our colleague and friend Nick Williams was announced by the Head of the CMS Raptors MoU Umberto Gallo-Orsi on behalf of the conference organising committee. The selection criteria were based on work covering well-defined gaps in vulture research or conservation, with clearly demonstrated conservation benefit, and implemented in low or middle income country, all this presented in a well-written abstract. Dr Stella Egbe of Nigeria Conservation Foundation was presented with this award for her presentation on “Identifying and Addressing Local Threats to Vulture Populations in Nigeria: A Strategic Approach by the Nigerian Conservation Foundation”. Dr Egbe is the senior conservation manager of the species programme for NCF. The work presented at the conference was a great example of a multidisciplinary conservation work which was well planned and executed. This approach

will hopefully be repeated and expanded to guide work currently being done in West Africa on vultures. We offer our congratulations to Dr Egbe and all at NCF.

### **Conclusions and recommendations**

Although the conference covered a large variety of topics and countries, several common needs and recommendations became apparent during the event which can inform further work for the Egyptian Vulture. It is evident that any strategic planning that aims for long-term conservation impact needs a regional or flyway level approach rather than focusing at a national scale. All aspects of the work with the Egyptian Vulture, from research and monitoring to active management, conservation and awareness activities, can benefit from the sharing of best practice and methods, joint work with neighbouring countries and multi-sectoral approach. It is also worth noting that the effort and resources still do not correspond to the gaps in knowledge and conservation needs across the species' range. Most of the work is concentrated in Europe with substantially lower focus on Asia and Africa, despite the Egyptian Vulture populations in these regions suspected to have similar negative trends and severity of threats. Generally, the main problems and difficulties in the struggle to reduce threats are attributed to low awareness, insufficient engagement of the relevant governmental authorities, unclear legislation, responsibilities and jurisdictions, and lack of resources and capacities when it comes to dealing with investigation or mitigation.

To avoid any further extinctions, urgent actions are needed to identify and reduce the main threats present in the breeding grounds and along the flyway, cooperate with and build the needed capacity in stakeholders, as well as to develop or update Species Action Plans wherever these are still missing. It is also of key importance to continue ongoing monitoring programmes at migration bottleneck sites and large wintering congregations, as well as to initiate such programmes at potential new sites to monitor the status of Egyptian Vulture populations and threats. In the long-term, monitoring programs such as these could be used to evaluate the effectiveness of conservation measures. Carefully planned population reinforcement programmes might help to slowdown population declines until all threats are mitigated. The use of modern equipment (GPS tags, drones, trail cameras, video surveillance, etc.) can provide useful information about Egyptian Vulture movement ecology, threats and behaviour that cannot be achieved by direct observation methods. Such approaches can significantly help to improve the overall quality of the field work, saving time and effort optimizing conservation and management effort, while ensuring minimum disturbance and impact on the species monitored.

Further research is encouraged in the field of movement ecology and population persistence in a rapidly changing world. In terms of communication and awareness, international campaigns with innovative approaches to engage public attention and well-targeted environmental education programmes are an effective vehicle to approach and disseminate conservation messages. Human attitudes, perceptions and degree of species awareness are often directly or indirectly linked to the conservation and threatened status of wildlife. The Egyptian Vulture has some perceptual advantages (being distinctly white, migratory and endangered) which determine its suitability as a charismatic flagship species



that can potentially benefit other vulture species and thus support wider vulture conservation initiatives.

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In addition to these proceedings, a supplement (17) to the peer-reviewed journal *Acta Zoologica Bulgarica* will be published later in 2023 and features articles from some of the work presented at the conference.

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