

Egyptian Vulture status in Asia

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Egyptian vulture status and conservation actions in Armenia

Lusine Aghajanyan^{1*}

¹Armenian Branch of the German Nature Conservation Union (NABU)

*Correspondence: lusin.aghajanyan@gmail.com

The Armenian Branch of the German Nature Conservation Union (NABU) launched the "Birds of Prey research and conservation in Armenia" project since 2018 and one of the core species, involved in the project, is the Egyptian Vulture (EV) (*Neophron percnopterus*). Since 2018, EV nesting areas are being identified by our organization and nesting success is being estimated yearly. In order to study EV local and migration movements, in 2021 we successfully GPS tagged a young EV and in 2022, two young EV from the same nest were also GPS tagged. We hope to enlarge our efforts in this direction. In our work, we also pay attention to the eco-education of the younger generation, rangers and hunters, by organizing theoretical-practical lessons for them. One of the biggest impacts on eco-education had our online camera in the nest of EV, which brought people closer to the species and nature. Besides, various contests, exhibitions, lectures and other types of activities are being organized in order to enhance the eco-educational level in Armenia. We hope to bring communities to the level where conservation becomes a priority for them.



Photo: Artemy Voikhansky[©]

Conservation of Egyptian Vultures in Uttar Pradesh, India

Shivangi Mishra^{1}*

¹Department of Zoology, School of Sciences, JECRC University, India

*Correspondence: mishrashivangi11@gmail.com

Egyptian Vulture (EV) is the most commonly seen vulture species in Uttar Pradesh at present, after the vulture population crash in India. Uttar Pradesh is the market leader in production and export of meat in the country and there are numerous meat processing industries and slaughterhouses in the state which accounts for nearly 50% of the India's export. For e.g., Aligarh-based Frigerio Conserva Allana Limited is one the country's biggest slaughterhouse-cum-meat processing units. The waste grounds of these meat industries serve as the active feeding and communal roosting sites for the endangered EVs in Uttar Pradesh. The survey was done division wise. There are 18 administrative divisions in Uttar Pradesh. The largest population was recorded in Lucknow division (1070.75 ± 968.76) and smallest in Meerut division (32.42 ± 12.91). Administrative divisions show significant differences in adult EV population levels. Significant differences were also observed in inter-seasonal population numbers ($F_{2,129} = 48.39$, $p < 0.001$). The peaks in population numbers were recorded during winters, but no significant population variations were observed between years.

The feeding habitat preference was tested on the basis of (i) landscape, (ii) resource (food, water, roosting site) available, and (iii) human disturbance. Season was also incorporated in the model to test if seasonal variation impacts the population size at feeding habitats. Landscape was categorised based on land-use in the proximity, as follows: agricultural, urban, semi-urban and forest. The semi-urban habitat concentrated higher EV numbers in comparison to the other studied habitats. We found lower number of individuals in the forest habitat, while the highest EV numbers were recorded closer to rubbish dumps. Nest site selection was studied on the basis of substrates where the nests were located. Breeding performance was used to indicate the quality nesting sites. EV generally breeds in the vicinity of human dwellings, utilizing different materials from the surrounding to build the nest. The nests were located on ancient temples, trees, electricity pylons, water tanks, etc. To study the breeding habitat selection, the following variables were used: distance from the nearest road, water body, human settlement, and the height of the nesting substrate. Successful breeding was recorded in 44% of all studied nests.

At present, the EV faces many survival problems in Uttar Pradesh. The potential problems for the species observed during the study were: the lack of awareness, increased population of feral dogs, road accidents, electrocution, and habitat destruction.

The priority conservation areas were identified based on several variables. As result, the sites at Raebareli, Gonda, Lakhimpur Kheri, Lucknow, Bareilly, and Agra were identified as priority areas for EV conservation in Uttar Pradesh.

Community participation has vital role for the management and utilization of the resources in a sustainable way. Biodiversity and Wildlife Conservation Lab, Department of Zoology, and Institute for Wildlife Sciences, University of Lucknow in a joint effort with U.P. State Biodiversity Board and Regional Science City, Lucknow is celebrating the International Vulture Awareness Day (IVAD) from 2008 onwards. Students were enthusiastically involved in different events like painting, presentations, Nukkad natak, collage and quiz competitions based on vultures. Winners are gifted books. Overall, our

findings emphasize the need for implementing a multi-program conservation approach consisting of different actions to sustain and enhance support for the conservation of the EV by multiple stakeholders. In long-term, monitoring programs could be used to evaluate the effectiveness of conservation measures. There is a need to improve the understanding on how local communities relate with EV, and also encourage society to support and be engaged in conservation actions in future. After setting up the priority conservation areas it is very important to avoid human disturbance in the vicinity of prominent breeding sites and to achieve more Vulture Safe Zones if possible. Conservation workshops, trainings, awareness drives, field trips, online lectures about status and importance of EV and nature trails were some of the approaches being used to interact and communicate. By revealing the potential threats and by planning the future conservation activities the study will contribute to support the conservation of the EV locally.

Conservation of Egyptian Vultures *Neophron percnopterus* (Linnaeus, 1758) in Uttar Pradesh, India

Aim: To assess the population, habitat preference, threats, and conservation implications of Egyptian Vultures and to improve understanding of how humans relate with Egyptian Vultures, and encourage society to support and be engaged in conservation actions in future.

Methodology

Adult population of Egyptian Vulture count was made at the active feeding sites.

Habitat preference, feeding habitat preference was tested.

Season was also incorporated in the model test.

Mixed Generalized Additive Model with (MGAM) and Stepwise GAIC (Generalized Akaike's Information Criterion) method was used.

Findings

The population of adult Egyptian Vulture was maximum at Lucknow division (1070.75±968.76) and minimum at Meerut division (33.42±12.91).

Administrative Divisions show significant differences in adult population levels ($F_{10,121} = 9.641, p = 0.000$).

The highest population was recorded during winters.

Higher number of Egyptian Vulture were recorded, more frequently, closer to rubbish dumps.

Interpretation- The study can improve understanding of how humans relate with Egyptian Vultures, and also encourage society to support and be engaged in conservation actions in future. By revealing the scale of the threats and by planning the future conservation activities the study will contribute to support the conservation of the Egyptian Vulture in big part of its global range.

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**Shivangi Mishra, Adesh Kumar and
Amrita Kanaujia**

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Filling gaps in the Egyptian Vulture population estimation in Uzbekistan

Anna Ten^{1}, Vladimir Dobrev², Valentin Soldatov³, John Burnside³*

¹Institute of Zoology, Uzbekistan Academy of Sciences; ² Bulgarian Society for the Protection of Birds/Birdlife Bulgaria; ³ Prince Mohammad Bin Salman Reserve Development Authority

*Correspondence: aini.ten@gmail.com

The Central Asian population of the Egyptian Vulture (EV) is the most poorly studied throughout the range of the species. Underestimated in both numbers and distribution, pieces of evidence exist, that a large proportion of the species' population could be residing in Central Asia and adjacent regions. Moreover, this population, in contrast to the rest across the species range, uses a different flyway. The only reliable study on the status of the EV in the region was undertaken in Uzbekistan by the Uzbekistan Society for the Protection of Birds (UzSPB). The UzSPB conducted a survey in 2010 in several regions of Uzbekistan and created the database. These data formed the basis of the EV Action Plan where the species population was estimated at 135 pairs and a decrease of 26% compared to 1980 was noted. A characteristic feature of these data was that the assessment of the population of the EV in a particular region was made based on the number of observed birds but not a robust population survey. The assessment was also based on personal communication with specialists from reserves and other protected areas, as well as scientists who constantly work in a particular region. In the present study, we aim to update the population numbers for the country and the regions and present alternative methods to monitor population numbers. We first collected information on the number of breeding pairs in some regions of the country and visited known breeding territories and areas with suitable breeding habitats to confirm the number. As a second step, we monitored congregation sites of the species to assess population numbers in other regions where former estimations were very poor. Then we compared our data with those stated in the Action Plan and updated the information. Lastly, we give recommendations for further steps that need to be undertaken. Out of 15 different sites on which information was gathered in the National Action Plan for the EV we updated the data for four sites. In two of them, the number of breeding territories was doubled in comparison to the previous data (4 and 22 breeding pairs respectively in the current study). The congregation counts conducted in the Kashkadarya region at two dumps in 2022 have shown the congregation of 130-150 and 180-200 Egyptian vultures at each site, a number far more significant compared to numbers previously stated for this region. Furthermore, the registered number of birds is most probably underestimated. The counts of dumps in the Tashkent region showed a low number of birds. Nevertheless, we expect that dumps in Surkhandarya and Djizzak regions are important, as there is already information about large congregations of the species there. In addition, one tagged bird visited dumpsites in these regions in 2021 and 2022. We recommend further work and the establishment of proper monitoring of all dumpsites across the country that are known to host large congregations and population surveys in other regions. Thus, conservation measures could also be addressed which would benefit the whole Central Asian population of the EV, as Uzbekistan is an essential part of the entire Central Asian flyway.



Photo: Vladimir Dobrev

Egyptian Vulture (*Neophron percnopterus*) in Kazakhstan

Igor Karyakin¹, Elvira Nikolenko^{1*}

¹Russian Raptor Research and Conservation Network (RRRCN)

*Correspondence: elnik2007@ya.ru

In Kazakhstan, the Egyptian Vulture (EV) (*Neophron percnopterus*) breeds on the northern border of the range, in the Aral-Caspian region and in south and southeast Kazakhstan.

Present-day breeding range of the EV in Kazakhstan was outlined on the basis of the authors' research in 2003–2022, involving data on encounters with other ornithologists and birdwatchers confirmed by photographs. In total, 96 breeding territories and 55 active nests (2003–2019) were identified by authors, 160 adult birds were recorded. There are at least 150 more registrations of the EVs on photo sites and in databases. Comparison with the literature data from 1960–1980s revealed areas where vulture nesting has not been confirmed in the last 20 years.

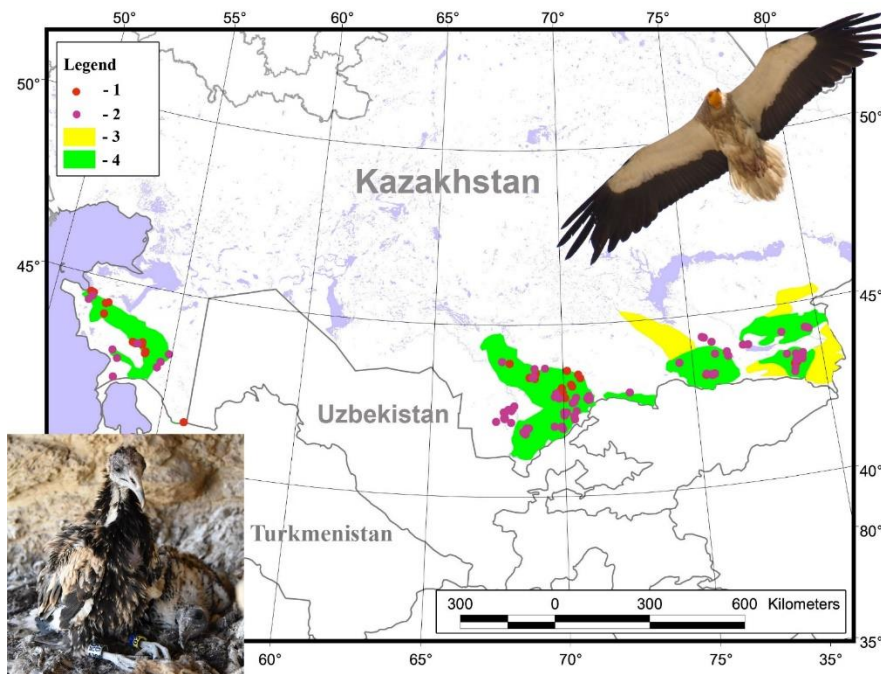
As of 2015, the number of EVs in Kazakhstan was estimated at 200–260 breeding pairs (b.p.), including: in the Aral-Caspian region – 30–40 b.p., in the Karatau mountains with adjacent territories –

120–150 b.p. (no less than 60%), in the mountains of southeast Kazakhstan – 50–70 b.p. However, these abundance estimates are already outdated and will be revised upwards to end 2022.

EVs predominantly make their nests in rock niches, less than a third of all pairs nest on open shelves, and sometimes they use old nests of the Black Stork (*Ciconia nigra*) and the Long-Legged Buzzard (*Buteo rufinus*). The clutch usually contains 2 eggs. 1.2–1.6 chicks fledge from a successful nest and 0.8–1.3 from an active one.

Survey of Karatau Mountains in 2022 showed changes in the distribution of the species: the proportion of nests on small rocks on the mountains' periphery increased up to 20%, while no nests were found on large rock masses in the center of the ridges.

The species occupies a narrow trophic and spatial niche: it needs pastures with a sufficient number of small dead animals, as well as mountainous terrain that provides orographic rises. No significant attraction to landfills has been observed throughout the range in Kazakhstan, while proximity to farms, water bodies, and a good road network is essential. Amidst a large-scale depression in the number of Gerbils and Ground Squirrels (2018–2022), a substantial share in the vulture's diet except for the carcasses of livestock falls on animals that die on roads: Long-eared Hedgehog (*Hemiechinus auritus*), European Glass Lizard (*Pseudopus apodus*), Steppe Agama (*Trapelus sanguinolentus*), small turtles, small and medium birds, especially European Rollers (*Coracias garrulus*) and Rosy Starlings (*Pastor roseus*).



Distribution of the Egyptian Vulture in Kazakhstan. Legend: 1 – breeding territories, 2 – summer records, 3 – territories where the species has not been recorded for breeding in the last 20 years, 4 – breeding range. Photos by I. Karyakin.

Peer-reviewed research derived from the abstract:

Karyakin, I., Nikolenko, E., Knizhov, K., Pulikova, G., Kapyonkina, A. and Ongarbaev, N. (2023): Modern status, distribution and abundance of Egyptian Vulture in Kazakhstan. *Acta Zoologica Bulgarica*, Suppl. 17: in press.

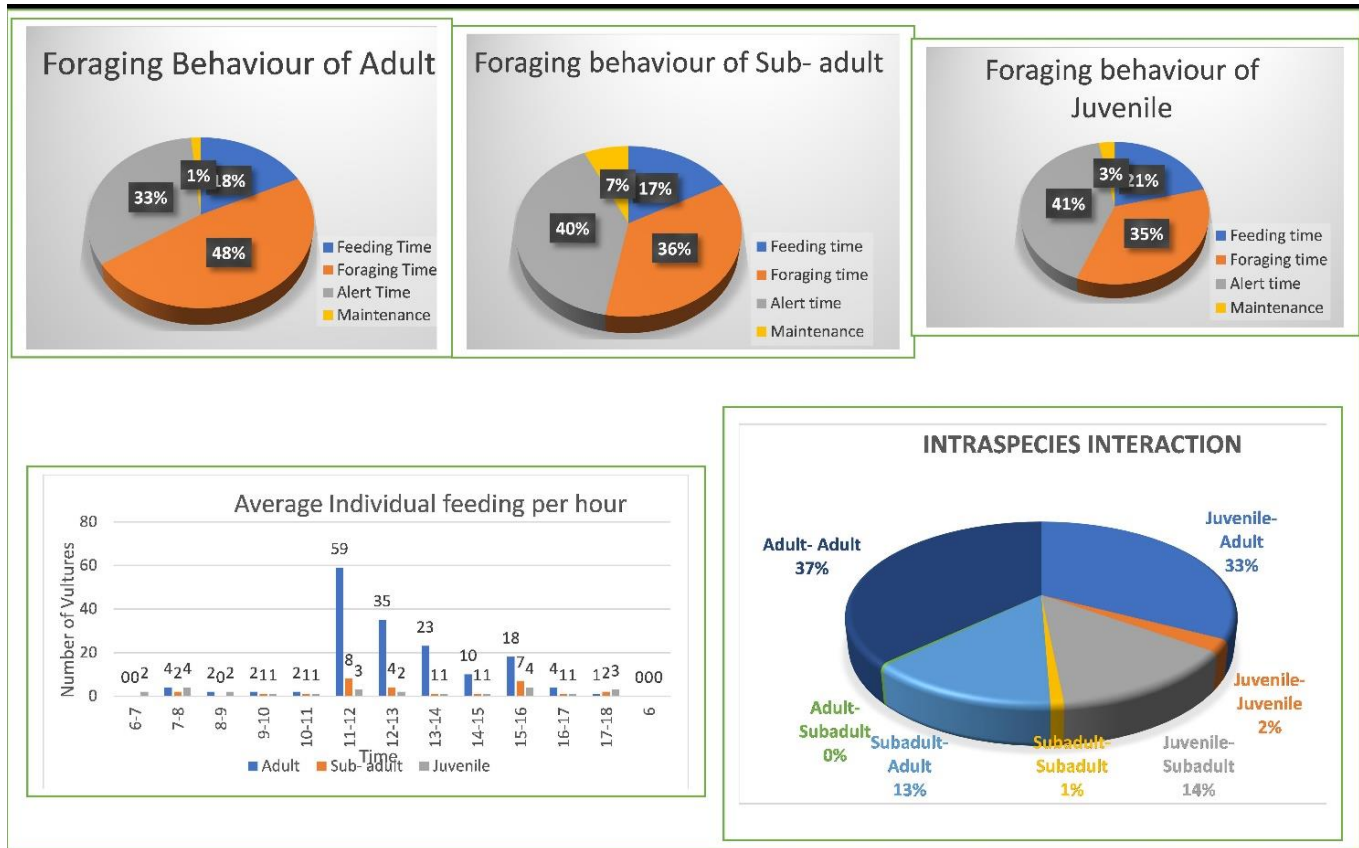
Foraging behaviour, feeding ecology and diet of Egyptian Vulture in the landfill site of central-west Nepal.

Milan Baral¹, Sandesh Gurung, Anisha Neupane, Tulsi Ram Subedi and Rajkumar Koirala*

¹Himalayan Nature, Nepal

*Correspondence: milanforraptors03@gmail.com

Information on the biology of an endangered species is a solid background for action planning and management decisions regarding its conservation. However, such information lacks for Egyptian Vulture (EV) in south Asia. The present study was conducted to generate the information on the foraging behaviour, feeding ecology and diet of the EV in the landfill site of central west of Nepal. Studies was carried out 06:00-18:00 hrs in the month of September 2021 using the video cameras surveillance for foraging study, while feeding activity including dietary items were observed directly. The present study found that the adults spend more time foraging compared to feeding itself, feather maintenance and alert time behaviours. In contrast, subadults and juveniles spend more time on alert behaviour (scanning the surroundings) than on foraging, feeding and feather maintenance. In adults, foraging time was in negative correlation with maintenance and alert time period. Similarly, feeding time correlated positively with the number of pecks while but negatively - with alert time. Results indicated that the subadult EVs spend less time on feeding and maintenance when they were foraging while more time on scanning. However, feeding time correlated positively with the number of pecks while negatively correlated with foraging time and alert time. Our analysis showed that in juveniles, foraging time vs feeding time and maintenance time showed negative correlation. Similarly, the pecking behaviour decreases with the time spent in alert. Numbers of pecks increased with the time spent on feeding, while simultaneously EVs were found to be less alert and preening. Juveniles were the first to reach the feeding site and the subadults were the last to leave it. The dominance of juvenile over adults was seen frequently, but no interspecies interaction was observed during the feeding. Birds formed the highest proportion in the EV diet, followed by mammals. Our result suggested that appropriate management of the food and disturbance level in the landfill site would support the conservation of the EV.



Migration of Egyptian Vultures from Central Asia

Robert Burnside^{1*}, Vladimir Dobrev², Anna Ten³, Valentin Soldatov³

¹Prince Mohammad Bin Salman Reserve Development Authority; ² Bulgarian Society for the Protection of Birds/BirdLife Bulgaria, ³ Institute of Zoology, Uzbekistan Academy of Sciences

*Correspondence: robertjohnburnside@hotmail.com

The Egyptian Vulture (EV) occurs from Europe through Africa to Asia. Populations of this globally endangered species from Eurasia migrate to Africa and the Arabian Peninsula. In contrast to Europe and some parts of the Middle East, where the migration of the species is well studied, almost nothing is known about the migration routes, stopover, or wintering sites of birds originating in Central Asia. The Central Asian population of Egyptian Vultures is considered declining although due to the vastness of the region the species is poorly studied and pivotal data on it is missing. Hence, we aim to provide (1) the first description of migration routes, stopover and wintering sites of birds originating in Central Asia, (2) to describe connectivity with other populations of the species, and (3) to identify major threats. During 2021, we tagged three juveniles on their breeding territories in the Kyzylkum Desert, Uzbekistan, and in 2022 we tagged another five birds (2 immatures and 3 subadults). The latter were trapped using leg hold traps on dumpsites in the south of the country. The migration routes of the three juvenile vultures, that departed Uzbekistan in September 2021, varied. Two individuals crossed the

Hindu Kush Mountains to the southeast and reached their wintering grounds in Rajasthan, India. The third bird crossed the Iranian plateau to the southwest, then the Arabian Peninsula and finally settled in Yemen. Only one juvenile returned to Uzbekistan in the summer of 2022, while the other two remained on their wintering sites. This establishes for the first time that the Central Asian populations show connectivity to the European/Balkan, Arabian and Oriental Asia populations and therefore share threats and any conservation benefits on these wintering areas. Data is still being collected on the migration of the five birds tagged in the summer of 2022 and results will be updated at later stage of this study.



Photo: Torsten Prohl

Distribution, population status and threats to the Egyptian Vulture (*Neophron percnopterus*) in Pakistan

Muhammad Jamshed Iqbal Chaudhry^{1*}

¹WWF-Pakistan

*Correspondence: jichaudhry@wwf.org.pk

The Egyptian Vulture (EV) is resident and a winter visitor in Pakistan. The species is very widespread and adaptable, being encountered in the plain areas, remote Cholistan and Thar desert regions of Punjab and Sindh provinces, along the Makran coast of Balochistan and mountain regions of Azad Jammu and Kashmir, Khyber Pakhtunkhwa and Gilgit Baltistan. The EVs nest on trees and cliff ledges. The status

of EV in Pakistan is not clearly known except few studies in Sindh province and Azad Jammu and Kashmir. Poisoning, habitat degradation and human disturbance are threats to the EV in Pakistan. There are reports of wintering birds coming from central Asia (Uzbekistan) to Rann of Kutch and Khokhrapar area of district Tharparkar in Sindh province of Pakistan, where the resident population exists and their further movement across the border in India. This migration establishes for the first time that Central Asian populations of EVs show connectivity to the Oriental Asian populations. The migratory birds face a number of threats including poisoning, collision and electrocution and therefore these congregation sites should be considered a priority for the conservation of the species not only along the Central Asian Flyway but in general. There is need to start with establishing monitoring programs for these sites, exchange information to understand better the origin of the birds and their seasonal dynamics. Moreover, there is also need to conduct a population assessment, including surveys of the nesting population at national level, to better understand distribution and population status of EVs in Pakistan.



Photo: Khemthong Tonsakulrungruang
