Update Report

GPS-tracking of the endangered Egyptian Vulture *Neophron percnopterus* to inform the species conservation in Nepal



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Submitted By

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Introduction and Background

Egyptian Vulture *Neophron percnopterus* is globally endangered vulture species distributed in the Europe, Africa and Asia. Despite being globally endangered, monitoring and targeted conservation efforts for the Egyptian Vulture in Nepal and South Asia as a whole remain limited. In South Asia, over two decades of monitoring data and conservation success stories exist for resident *Gyps* vulture species. In contrast, such detailed information is lacking for the Egyptian Vulture. Nepal is home to at least 3% of the global Egyptian Vulture population. While GPS tracking of European and Central Asian populations has revealed their migratory routes to Africa and the Arabian regions of the Middle East, the migratory behavior of South Asian populations remains unknown. Among Nepal's six resident vulture species, five species namely White-rumped, Slender-billed, Red-headed, Bearded Vultures, and Himalayan Griffon have been equipped with satellite tags, providing valuable insights for their conservation.

To address this knowledge gap, this project started the coordinated, extensive, and long-term monitoring of Egyptian Vultures in Nepal. This includes GPS tagging of birds and systematic population counts to estimate numbers, understand dispersal patterns, and identify threats across the country. Data from tagged birds will support targeted stakeholder engagement and community awareness campaigns, as well as policy interventions. These may include integrating vulture conservation activities into the operational plans of community forests hosting nests or vital foraging and roosting habitats, and developing site-specific management plans. Additionally, the project will provide crucial insights into the species' movement routes and preferred sites, forming a foundation for long-term monitoring and more effective conservation planning by conservation organizations and government institutions. This project supports the implementation of Nepal's government-endorsed Vulture Conservation Action Plan (2023–2027) and the CMS-endorsed Multi-species Action Plan to Conserve African-Eurasian Vultures.

Objectives

The general objective of this project is improving knowledge on the Egyptian Vulture ecology and conservation needs in Nepal through on-ground and GPS monitoring. Specific objectives are as follows:

Objective 1: Spatiotemporal identification of migration patterns for the Egyptian Vultures in Nepal and, if existing, identify the main factor determining those patterns.

Objective 2: Estimating the Egyptian Vulture population, its distribution and breeding success in Nepal to increase the existing knowledge on the species in Asia.

Objective 3: Identifying major threats to the Egyptian Vulture and provide practical solutions for vulture conservation on the ground (e.g., priority actions and/or places).

Objective 4: Awareness and Advocacy.

Activities Update

1. GPS tagging and monitoring of five Egyptian Vulture

We successfully trapped five Egyptian Vultures at garbage dumping sites in Pokhara Valley using padded leg-hold traps. The traps were placed in and around their preferred foraging areas. Once a vulture was captured, handlers safely picked it up for processing. The team assessed the vulture's health and checked for any injuries. Healthy individuals were fitted with a satellite transmitter (Ornetella 30gm) using the leg-loop harnessing method. Each vulture was released immediately after tagging, with the entire process completed in under 25 minutes to minimize stress.

Each transmitter contains a solar rechargeable battery, which allows the device to work for at least three years (according to the manufacturer), but in practice these transmitters can sometimes continue working for twice as many years. The transmitter is designed to sit comfortably on the back of a large bird, like a vulture.





Figure:-2. Bird roosting on pole displaying tag

Satellite transmitters regularly provided the data and enough charge. They recorded the data eight times daily and transmit it every other day, enabling us to respond promptly to unusual events, such as an injured or dead vulture. The data also provides insights into key locations (e.g., feeding and nesting sites) and activities (e.g., movement or mortality). Ground visits also conducted to verify these activities. Since we are not tracking vultures in real time, we may not always locate a tagged individual but can often find evidence of their presence and behavior (e.g., feeding at a carcass, using a dumpsite, or roosting). Occasionally, we may directly observe the tagged vulture (e.g., at a roost or nest).

Initial tracking of the tagged Egyptian Vultures showed that most remained within the garbage dumping sites of Pokhara Valley, occasionally traveling to Tanahun District, approximately 50 km from the tagging location. This behavior aligns with the post-breeding season when birds tend to stay near foraging sites. Notably, one juvenile vulture made an exceptional journey of about 200 km from Pokhara to Ayodhya, Uttar Pradesh, India, where it stayed for a couple of weeks before

returning. This tracking is providing valuable insights into the ecology and conservation needs of the Egyptian Vulture.



Figure 3. Movement map of five satellite tagged Egyptian Vulture



Figure 4, 5 and 6. Movement of three tagged bird largely concentrated in the foraging site



Figure 7 and 8. Movement of tagged bird, one travel more than 200km and back to the tagged location after a couple of weeks.

2. Population count and distribution

To understand the distribution and estimate the population of Egyptian Vultures, all systematic counts and occasional records since 2012 were compiled. On International Vulture Awareness Day (7 September 2024), a nationwide vulture count, including Egyptian Vultures, was organized by mobilizing bird watchers, researchers, students, and local communities. Since Egyptian Vultures are relatively easy to identify, participants were visited to previously known congregation sites (e.g., feeding and roosting areas) and explored the potential new sites to gather comprehensive data. Count was conducted during the morning (8–11 AM) and afternoon (3–5 PM).

Since 2012, we have been collecting data on the distribution and population of Egyptian Vultures at various congregation and nesting sites across Nepal. Over this period, 316 counts have been conducted, with a maximum of 232 individuals recorded at the sanitary landfill site in Pokhara. Annual counts covered 15 to 56 locations, with key sites such as the local dump sites of Pokhara, Damauli, and Sandhikharka hosting the majority of the birds (up to 232 individuals). These observations indicate that Egyptian Vultures are primarily distributed in central and western Nepal and have shown a stable population trend during the study period, with no significant fluctuations in numbers.



Figure 9: Map shows the distribution and counts of Egyptian Vulture in Nepal

In the IVAD count 511 individuals of Egyptian Vulture were counted in the 34 different locations of Nepal. This year count is highest count in compare to the previous years. The highest number 388 birds were recorded in the Pokhara Valley.



Figure 10. Total number of Egyptian Vulture counted in the different years IVAD



Figure 11. Egyptian Vulture in the foraging ground

Figure 12. Egyptian Vulture count

3. Nest Monitoring and Breeding Status

We monitored the breeding status of Egyptian Vultures by visiting nesting sites at least three times between February and June 2024. During the first visit, we checked for nest-building activity. On the second visit, we observed whether eggs or nestlings were present. During the third visit, we assessed fledgling status. A breeding territory was considered occupied if signs of reproduction were observed (e.g., copulation, courtship behaviors, a refurbished nest, or the presence of two adults), regardless of whether eggs were laid. Nests were classified as productive if they successfully fledged nestlings. Productivity was defined as the number of young fledged per occupied nest.



Figure 13 and 14. Egyptian Vulture in incubation and chick on nest photo by Deu Bahadur Rana

We monitored 37 active nests of Egyptian Vultures for the breeding season 2024 in Nepal covering lower Terai of 128m to higher mountain 3048m. Most of the nests were recorded in the western mid hills of Nepal. Among them 24 nests were success. Thus the nesting success is 64.86%. We observed double chick success from three nest the fledgling success is 72.97%. Egyptian Vulture nesting were largely concentrated in the Pokhara Valley and Arghakhanchi district. Most of the nests were recorded in the cliffs and outside the protected areas. Only one nest in the Rupandehi district was built in the tree.



Figure 15. Egyptian Vulture nesting distribution in Nepal.

4. Awareness and Advocacy

Commemorate International Vulture Awareness Day (IVAD) 2024, a week-long series of events was organized across Nepal from 1st to 7th September 2024. These activities aimed to promote vulture conservation among diverse audiences, including students, local communities, government officials, and conservationists. Partnering with conservation organization like Bird Conservation Nepal and local communities organized the community awareness and school awareness program in the project site Arghakhanchi, Nawalparasi, Tanahun and Kaski districts.



"Queries on Vultures to Experts" Session

On 2nd September 2024, BCN Pokhara and Institute of Forestry students organized an interactive program featuring experts Krishna Prasad Bhusal, Hemanta Dhakal, and Deu Bahadur Rana. The session allowed students to engage directly with vulture conservation professionals, addressing queries about challenges and opportunities in the field.



School Awareness Program

Students of Agriculture and Forestry University, Hetauda Campus and member of Bird Conservation Nepal organized the several school awareness program and art competition with a theme of Vulture Conservation.



Research Association Hattisar-RAH, Dharan's students organized different school and community awareness program in the occasion of 16th International Vulture Awareness Day.



The IVAD week also featured a national vulture count and the publication of 35 news articles to further amplify the conservation message. These efforts reached a wide audience, including students, conservationists, journalists, and local government representatives, fostering a collective commitment to safeguarding vultures. These activities highlighted the importance of community involvement, education, and cultural integration in vulture conservation efforts across Nepal.

News link

- 1. Time to highlight South Asia's less-studied vultures: Interview with Krishna Bhusal <u>https://news.mongabay.com/2024/08/time-to-highlight-south-asias-less-studied-vultures-</u>interview-with-krishna-bhusal/
- 2. International Vulture Awareness Day information https://www.youtube.com/watch?v=fVnAf88GQiY&t=131s
- 3. GPS tracking of endangered vulture begins <u>https://risingnepaldaily.com/news/49646</u>
- 4. Egyptian vultures fitted with satellite tags to study migration patterns <u>https://theannapurnaexpress.com/story/50774/#:~:text=Conservation%20activists%20in</u> <u>%20Pokhara%20have,and%20released%20in%20the%20wild</u>.

- 5. Tracking of Egyptian Vultures begins in Nepal https://save-vultures.org/2024/09/trackingof-egyptian-vulture-begins-in-nepal/
- 6. Gherabhir cliff in Arghakhanchi is buzzing with nesting vultures https://kathmandupost.com/province-no-5/2024/06/10/gherabhir-cliff-in-arghakhanchi-isbuzzing-with-nesting-vultures

GPS tracking of endangered vulture begins

BY A STAFF REPORTER Kathmandu, Sept. 27

For the first time, GPS Tracking of the endangered Egyptian Vulture has begun in Nepal. In the third week of September, a team led by vulture expert Krishna Bhusal successfully trapped and fitted GPS tags on five Egyptian vultures in the Pokhara Valley.

vultures in the Pokhara Valley. The team included Egyptian Vulture scientist Vladimir Dobrev and Demita Cherneva from the Central Asian Vul-tures Project, along with Ankit Bilash Joshi, Ishwari Chaudhary and Yam Mahato from Bird Conservation Nepal,

Mahato from Bird Conservation Nepal, said a press statement issued by ICUN. IUCN Valture Specialist Group mem-ber Hemanta Dhakal was also in the team. The birds were captured using the leg-hold trap method and fitted with 30g Ornitela GPS-GSM transmitters using the leg-loop harnessing tech-nique, it said. According to Bhusal, despite being a globally endangered species, there is limited monitoring and targeted con-servation action for the Egyptian Vul-ture in Nepal and across South Asia. Out of the six resident vulture species, five-- White-rumped Vulture, Slen-der-billed Vulture, Red-headed Vulture,

2



Himalayan Griffon, and Bearded Vul-ture – have been tracked with satellite tags and monitored closely. Telemetry tagging has provided valu-able information on movement, nesting, foraging and roosting sites, as well as major causes of mortality for these large vultures. However, similar data for the Egyptian Vulture is still unavailable, the statement said. Three subspecies of the Egyptian Vulture are recognised glob-ally. Neophron percnopterus is found across Europe, Africa, and Central Asia,

express • news

Neophron percnopterus majorensis is native to the Canary Islands, and Neoph-ron percnopterus ginginianus is distrib-uted in India and Nepal, according to the

uted in India and Interes, assess statement. "Satellite tagging and monitoring of the European Egyptian Vulture popu-lation has revealed their winter migra-tion to Africa and the Arabian regions of the Middle East. It remains unclear whether the Asian population and its subspecies undertake long migrations or not'it said.

To address these knowledge gaps, Bhusal initiated a study on the ecology and conservation needs of the Egyptian Vultures in Asia through on-ground surveys and GPS monitoring as part of hisPhD research. This study is a collaboration between the Biodiversity Research Institute, IMIB (University of Oviedo – CSIC – Principality of Asturias Mianes Spain

This study is a collaboration between the Biodiversity Research Institute, IMIB (University of Oviedo – CSIC – Principality of Asturias), Mieres, Spain, the Royal Society for the Protection of Birds (RSPB), Saving Asia's Vultures from Extinction (SAVE), Central Asian Nepal (BCN) and supported by The furford Foundation. GPS tracking of Egyptian Vultures will previde valuable insights into their breeding, foraging, movement patterns, and the threats they face. "We are also doing the system-atic census of the Egyptian vulture pop-ulation, its distribution and breeding success in Nepal,"said Bhusal. Initial tacking of the tagged Egyp-tian Vultures shows their movement is largely confined to garbage dumping sites in Pokhara and Tanahun. This study also contributes to the imple-mentation of the Vulture Conserva-tion Action Plan (2023-2027), which has been endorsed by the Department of Sational Parks and Wildlife Conserva-tion and the Department of Forests and Soil Conservation, he said.

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Satellite tags for Egyptian vultures to study migration patterns

The satellite tags allow researchers to track where the vultures go. Researchers can study their flight times, locations visited, nesting sites, and flight altitudes, among other details

KRISHNA MANI BARAL | Pokhara

KRISHAR MANI BARAL | Pokhara Manager (Exprime values) on endar-gered Exprime values on endar-ter Exprime values on endar-ter Exprime values on endar-ter Exprime values on endar-ter Exprime values of the endar-ter Exprime values of the endar-ter endarity the problems and unreas the vare facing. Krishna Bussal, a valuer expert with the conservation of valuerse for a long inter, is conducting this research on durines in Exprime values have been conducted on five of the six resident values pared on five of the six resident values precise found in Nepal. Blussal stared that this is the first time a study stated that this is the first time a study to identify threats to Egyptian vultures has been initiated.

to identify threats to Egyptian vultures has been initiated. The satellite tags allow researchers to track where the vultures go. Research-ers can study their flight times, loca-tions visited, nesting aites, and flight altitudes, among other details. Accord-ing to Bhusal, the study will also reveal their main resting and feeding sites. If tagged vultures become sick or injured, they can be located and rescued based on their movement patterns. Even if a tagged vulture dies, a post-mor-tem examination can be conducted to determine its physical condition, Bhusal explained. It is estimated that there are about



All nine species of vultures found in Nepal can be observed in Pokhara

1,000 Egyptian vultures in Nepal. Unlike other vultures that primarily feed on animal carcases, Egyptian vultures also consume small meat scraps and insects that grow on waste, thus helping to clean the environment. Studies have shown that Pokhara has the highest concentration of Egyptian vultures in Negal. According to Bhusal, Pokhara is home to about 50 percent of the total Egyptian vulture population the total Egyptian vulture population recorded in the country. After Pokhara, Tanahu district and Arghakhanchi also have significant populations of Egyp-tian vultures. This species nests on cliffs in the mid-hills and occasionally

In the the Terai region. Ankit Bilas Joshi, the Vulture Con-servation Program Chief at Bird Con-servation Nepal, said that the study will provide information on the breed-

will provide information on the breed-ing rate and lifespan of Egyptian vultures, as well as identify the threats they are facing. All nine species of vultures found in Nepal can be observed in Pokha-ra, The Pokhara Valley, netled in the lap of the Annapurna Himalayas, is considered a paradise for vultures. Six species-Himalayan Griffon, Beard-ed, Slender-billed, White-rumped,

Red-headed, and Egyptian vultures-are resident in Nepal. The remaining three species-Eurasian Griffon, Cine-reous Vulture, and Indian Vulture-are winter visitors. All nine species of vultures found in South Asia can be seen in the Pokhara Valley. All six resi-dent species of vultures nest and breed in Kasid district. The Egyptian vulture subspecies found in India and Nepal. The European, African, and Central Asian subspecies found in Europe, Africa, and Central Asia differs from the subspecies found in India and Nepal. The European, African, and Central Asian subspecies not been studied in detail. This is why the study of migration patterns, move-ments, and threat identification for the Egyptian vultures found here has been builtered en dire Broot Egyptian vultures found here has been initiated, said Bhusal.

Vladimir Dobrev, a vulture scientist from Bulgaria, expressed his happi-ness at being able to directly observe ness at being able to directly observe and participate in vulture conserva-tion and research work in Nepal. He came to Nepal after learning about the satellite tagging of Egyptian vultures to observe the process firsthand and exchange experiences. Bird enthusiasts from various coun-

tries come to Nepal to observe, photo graph, and research vultures, raptors and water birds.

and water birds. Ramji Gautam, who holds a PhD in white-rumped vultures, suggests that Pokhara could be developed as a bird tourism destination while conserving all bird species and the region's biodiversity



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