White-rumped vulture faces a perilous future in Sigur plateau

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UDHAGAMANDALAM

Despite the protective measures, the future remains extremely perilous for the critically endangered white-rumped vulture (*Gyps bengalensis*) in the Sigur plateau in the Nilgiris, the last southernmost viable breeding population for the species in India.

A study has highlighted the stagnation of the population in Sigur. It was conducted by Samson Arockianathan for his doctoral thesis, 'Studies on Population, Breeding Ecology and Conservation Threats of Critically Endangered White-rumped vulture in the Mudumalai Tiger Reserve'.

Research done in Sigur between 2013 and 2017 has shown that the population had hovered between 152 individuals in 2013 to a peak of 167 individuals in 2017. Along with the late expert tracker R. Bomman, of Chemmanatham village, Mr. Samson spent the best part of four years studying the species that, along with the long-billed vulture and the Asian king vulture, inhabits the Sigur plateau.

Data from the recent synchronous vulture census in Kerala, Tamil Nadu and Karnataka have shown that the white-rumped vulture population remains roughly in the same range, with very few signs of a significant recovery from the last decade. The white-rumped and other vulture species in India have been decimated by the use of diclofenac and a few other Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) in cattle.

Research done in Sigur between 2013 and 2017 has shown that the species' population had hovered between 152 individuals in 2013 to a peak of 167 individuals in 2017. SPECIAL ARRANGEMENT

Vultures in Sigur are also becoming the unwitting victims of retaliatory poisoning of tigers and leopards. Mr. Samson's research has also shown that 46 white-rumped vultures died between 2013 and 2017.

"Of them, autopsies could be performed on the carcasses of only eight individuals. It emerged that these eight vultures died after consuming organophosphorus (insecticides) and urea used to poison carnivores," he said.

Anthropogenic pressures, such as cattle-grazing and poorly designed check-dams, have depleted the habitats over the last few years. Mr. Samson said the species could be wiped out from the region in the next decade unless serious protective measures were taken.

"Due to anthropogenic pressures, one of the three nesting sites of the species in the Mudumalai Tiger Reserve have been abandoned by the vultures, while another prime nesting site at Jagalikadavu has been impacted severely by the check-dams along the Sigurhalla river that have restricted water flow, killing off many *Terminalia arjuna* trees where the vulture nest," he said.

B. Ramakrishnan, an assistant professor in the Department of Wildlife Biology at the Government Arts College in Udhagamandalam, said the issue of check-dams influencing the vulture habitats was taken up with the Forest Department. "The Chief Wildlife Warden has said future projects in the vulture habitats would be reviewed before approval," he said.

Mr. Samson said the future would be bleak for the species unless targeted, species-specific conservation measures were taken in the Mudumalai Tiger Reserve. He said there were three distinct populations in the region – Bandipur and Nagarhole, Wayanad and Mudumalai. "The vulture is a colonial species. Due to anthropogenic pressures and the degrading habitat, the species is having to split up into smaller groups across Mudumalai to survive. This will definitely have an impact on how quickly the species can recover, and also on the success of future breeding seasons," he said. The government should consider making the buffer zone of the tiger reserve into a wildlife sanctuary for vultures so that better conservation efforts could be made, he said.

Corporation plans big to transform waste management at Kodungaiyur

The civic body proposes to set up an integrated wet and dry waste processing plant that could potentially end the crisis of legacy waste and ease pressure on the dump yard; a meeting of stakeholders evoked good response to the proposal

CITY MATTERS

The Hindu Bureau
CHENNAI

The Greater Chennai Corporation will organise an expert committee meeting to take forward its proposal for an integrated wet and dry waste processing plant in Kodungaiyur that could potentially resolve the crisis of legacy waste and lessen the pressure on the dump yard.

The meeting will be attended by experts and officials from IIT-Madras, Anna University, Tamil Nadu Pollution Control Board, Tamil Nadu Electricity Board and the Corporation for a threadbare analysis of the plan and prepare a detailed project report.

The Corporation's plans include an automated material recovery facility, which is a mechanised way of segregation. Under this, waste placed on a conveyor belt will be subjected to magnetic waves that will separate the recyclable from non-recyclable waste.

Non-recyclable waste will then be sent to the adjoining proposed waste-to-energy (WTE) plant, said Chief Engineer N. Mahesan. Two phases have been mapped out for the WTE plant with an expected generation capacity of 20.76 MW in phase I and 10.30 MW in phase II.

Containing pollution: The Greater Chennai Corporation has come up with an ambitious proposal to set up a integrated wet and dry waste processing plant at Kodungaiyur. B. JOTHI RAMALINGAM

The capital cost of this plant is ₹301 crore. A bio CNG plant for wet waste with a capacity of 500 tonnes with a capital cost of ₹99 crore is part of the plan.

The benefits of this integrated facility for wet and dry waste include enriching the soil, reducing the smell that nearby residents experience, reducing and removing the carbon dioxide and methane emissions and the production of sustainable energy.

The Corporation had conducted a study on a 550 tonnes Bio CNG plant at Indore as well as incineration plants in Singapore.

Work on reclaiming the Kodungaiyur dump yard through bio mining is expected to begin in July and be completed in two years. The reclaimed land will be converted into an eco park.

Stakeholders meeting

Earlier this week, the Corporation conducted a meeting of stakeholders, which was attended by zonal officials of Tondiarpet, the Regional Deputy Commissioner of north Chennai M. Sivaguru Prabakaran and representatives of the solid waste management and health department, including Mr. Mahesan, as well as resident's welfare associations of the area.

According to Mr. Mahesan, the meeting served to help the stakeholders understand what the Corporation's plans were and he added that the resident welfare associations responded positively.

The civic body has drawn up an extensive plan regarding this plant and sees it as a 'mega project'.

Some of the civic body's projects that were in progress include reclaiming the Perungudi dump yard through bio mining, a performance-based system to measure the work done by Urbaser Sumeet and Ramky in their respective zones and 67 resource recovery centres and 71 material recovery facilities which together have a capacity of 353.75 tonnes.

Making it count

Including disability in the NFHS-6 will serve the government well

The significance of data in influencing policy constructs and thereon, decisions, is non-contestable. The country takes periodic stock of various parameters just to inform welfare policies better. In context, the recent decision of the Union government to drop the disability-specific question from the National Family Health Survey (NFHS)-6 seems churlish and sends out wrong signals. After years of campaigning for the same, activists rejoiced when the government added one question on disability in the NFHS-5, and were hopeful that this would be built upon in subsequent versions of the nationwide survey. The deletion, and reluctance to map the minutiae that will help understand their lives and needs better, leaves the question: is the government serious about its commitment to the disabled in the country, who number, as per the 2011 Census, about 2.68 crore? The Ministry of Health and Family responded that questions about disability were already asked as part of the Sample Registration Survey (SRS) 76th round, conducted between July and December 2018, and that any specific information can be tabulated from the raw data, which is also available in the public domain. It has also gone on record stating that disability data will 'not change fast'. That might be an erroneous supposition.

While gross data on disabilities will change marginally (but still be substantial given the numbers), the count of 6.1 lakh sample households that the NFHS relies on will make the data set truly representative. The elaborate questions asked by NFHS will provide valuable specifics on the lives of the disabled; something on that scale hitherto conspicuous by its absence. While the SRS does a good job with marking the prevalence and incidence of disability, education level, living arrangements, care-givers, certificate of disability, accessibility and unemployment rate, among others, the NFHS asks more comprehensive questions. It seeks answers on health and nutrition status, access to health schemes, insurance, sexual behaviour, availability of family planning, use of contraception, domestic violence, household amenities and possessions, lifestyle indicators, and access to drinking water and toilets. There is no doubt that the latter will yield better, more robust, data on the disability sector. While Health Ministry officials claim that the sole NFHS question on disability too resulted in under-reporting, that might actually be a function of training for field staff who ask the questions. The state must employ these efforts – adding questions on disabilities, training field staff, because nothing really justifies any attempt to keep a significant section out of a massive scale count of the Indian population.

India, China ramp up infra on north bank of Pangong lake

India is building a black-topped road on the north bank and China is building a bridge across glacial lake; both await 19th round of Corps Commander level talks to find a resolution to dispute

Dinakar Peri
NEW DELHI

Three years after the violent clash between Indian and Chinese forces in Galwan followed by tanks facing each other around the Pangong Tso – a lake spanning eastern Ladakh and western Tibet – there is hectic activity in the area from both sides. While China is rushing to complete a bridge across the Pangong Tso, connecting the north and south banks, India is also building a black-topped road on its side on the north bank.

These are among a number of infrastructure projects initiated on both sides since the stand-off, permanently altering the status quo on the ground in eastern Ladakh, even as the two sides await the 19th round of Corps Commander-level talks to find a resolution to their dispute in the region.

"Construction of black-topped road towards Finger 4 on our side is on and is expected to be completed by 2025. There is major impetus on infrastructure, road networks, advanced landing grounds and so on," an official source said, on condition of anonymity. This was also confirmed by another official source. In addition, construction work is at an advanced stage on the alternative axis to the critical Darbuk-Skyok-Daulat Beg Oldie road through the Saser La, the source stated.

There have been a number of infrastructure projects initiated around Pangong lake, since the stand-off began in 2020. FILE PHOTO

Chinese construction

On the Chinese side, the source said that work is now under way on the main bridge, while the secondary bridge has been completed. Recently, large-scale construction activity was observed on the north bank. Apart from the bridge, work on road connectivity along the south bank towards Shandong village is also under progress, another official source said, citing intelligence inputs. A Chinese air defence site is located east of the Khurnak fort.

A 22-km tunnel is under construction along the G-0177 expressway at Yuli, connecting to the very important G-216 highway in Tibet.

As over one lakh troops continue to be deployed on either side of the lake since 2020, the Corps Commander-level talks remain gridlocked over two remaining friction points at Depsang and Demchok. At both locations, the Chinese side has been blocking Indian patrols, the source said, while adding that there has been some climb-down on Chinese position during the talks.

The budgetary allocation for the Border Roads Organisation has increased sharply over the past few years; in 2023-24, for instance, BRO's capital budget was ₹5,000 crore, 43% higher than the ₹3,500 crore allocated in 2022-23. Much of that has been spent on the India-China Border Roads (ICBR) plan.

The first source said that there has been significant progress under the second phase of the ICBR plan. It envisages the construction of over 1,400 km of strategic roads along the LAC.

The BRO is close to finishing some key infrastructure projects in the eastern sector, improving all-weather connectivity along the LAC.

Genome-sequencing screening for babies unlocks blueprint of health

Newborn screening programmes are now in vogue in different countries, and have been deployed in India as well. They are based on the fact that an early diagnosis could allow use of effective treatments and save an infant from death or disability; in the U.S., healthcare workers screen for around 30 diseases, including treatable ones

Vinod Scaria
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Imagine a situation where a severely ill newborn is in the ICU and a fast, effective diagnosis could enable effective treatment – a scenario that plays out practically in every neonatal ICU on a regular basis. The situation is complicated when the disease affecting the baby is not common and known to many clinicians, and could be buried in medical textbooks or databases.

There are 6,000 or so genetic diseases, of which around 3,500 diseases have been documented, and a much smaller number have had their molecular and/or genetic defects mapped.

A significant number of diseases in the population are also treatable but are nevertheless prevalent.

Newborn screening programmes now in vogue in different countries, and which have been deployed in some states in India as well, are based on the fact that an early diagnosis could allow us to use effective treatments and save an infant from death or disability.

For example, in the U.S., healthcare workers screen for around 30 diseases, including treatable ones of the blood, the endocrine system, and metabolism.

Then again, in many cases, they lose the window of opportunity because standard newborn-screening programmes are limited on the menu of genetic tests they cover.

Thanks to recent advances, genomic-sequencing is now available, accessible, and in many ways more affordable. It also offers a much better coverage of genetic diseases to screen for. Importantly, this could help healthcare workers make a fast and effective diagnosis, helped by the fact that sequencing is also a 'single' test, versus the multitude of tests performed as part of routine newborn-screening.

Why is it important?

The rarity of many genetic diseases, the narrow window of opportunity, the long diagnostic paths, and the unfortunate deaths of ill babies makes it very difficult to document and understand these diseases. However, population-scale genome-sequencing efforts have provided insights into the prevalence of many of these diseases in an unbiased manner.

Discoveries in the past three decades have also allowed a small but significant number of diseases to be treated or managed effectively. This in turn opened up a newer opportunity: to diagnose and treat genetic diseases through genomic-sequencing in newborn babies, especially sick ones.

Researchers at the Rady Children's Institute, led by Stephen Kingsmore, earlier showed that whole-genome sequencing could provide a much higher number of positive cases with a diagnosis, around 40% (compared with standard genetic tests at 10%), with 26% of the diagnosed children benefiting from reduced severity of illness due to the rapid diagnosis and, consequently, a significant reduction in the cost of treatments.

Another report a year later from researchers in the U.K. also reported numbers consistent with previous reports.

A technician prepares to sequence genetic material at a research facility. RD/UNSPLASH

Why screen healthy babies?

The benefits of sequencing may not just be limited to babies who are unwell. The BabySeq project funded by the U.S. National Institutes of Health is one of the most comprehensive studies to evaluate sequencing of newborns for routine newborn care.

One recent study conducted by the project, and published in the *American Journal of Human Genetics*, evaluated the sequences of 127 apparently healthy and 32 sick infants. It found that just over 10% of infants had an unanticipated risk of genetic diseases. When these infants were followed up for three to five years, sequences revealed the causes of disease in three infants; in the remaining 14, a better picture of the risk made way for better medical surveillance.

The sequencing also warranted additional at-risk family members of 13 infants to have their genes sequenced. Three of them benefited from subsequent surgeries.

> As the vast potential of rapid newborn whole-genome sequencing unfolds, we stand at a crossroads of hope and introspection. There is no doubt that this technology will help clinicians detect genetic disorders

Another recent study, published in *JAMA Network Open*, surveyed over 200 genetic experts. Most of them firmly believed that sequencing babies should be part of routine care.

So it is not surprising that the U.K. National Health Services recently launched a nationwide programme to sequence 100,000 sick babies.

Need for speed

The fight for who can sequence the fastest started with the first Guinness World Records entry: in 26 hours, by Dr. Kingsmore & co., a mark his team broke in 2018 for a time of 19.5 hours. In 2021, Euan Ashley and team got there in just over 5 hours and 2 minutes

Records apart, a large study with more than 100 children with different disease complexities, and published in 2019, suggested a median time for sequencing, clinical interpretation and reporting of just over 20 hours, suggesting the approach could have far-reaching impact in clinical settings.

With technological advances, including better AI-based tools to assist clinical decisions, rapid sequencing is likely to become a diagnostic mainstay for unwell infants in clinics.

Ethics and hope

Newborn whole genome sequencing presents multiple ethical challenges. First: the issue of disclosing and managing incidental and secondary findings raises concerns about privacy and the psychological impact on families. Updated recommendations by the American College of Medical Genetics and Genomics regarding secondary findings could help deal with incidental findings.

The equitable distribution of benefits and burdens associated with accessing and utilising this technology also invoke issues of justice and fairness .

As the vast potential of rapid newborn whole-genome sequencing unfolds, we stand at a crossroads of hope and introspection. There is no doubt that this technology will help clinicians with the means to detect rare genetic disorders, anticipate susceptibility to disease, and give them the evidence required to prescribe better treatments and shape a healthier future. Yet we must also tread carefully, considering the delicate balance between benefits and harm.

If we do, then it may not be far-fetched to imagine that rapid whole-genome sequencing will be the right of every child in the years to come.

The authors are scientists at the CSIR Institute of Genomics and Integrative Biology. All opinions expressed here are personal.

(This article is part of a fortnightly column exploring contemporary concepts and issues in genetics.)