



# Tracking India’s elusive grassland nomad

- Once seen soaring in large flocks across India’s grasslands, the Great Indian Bustard is now on the brink of extinction, with fewer than 150 birds left in the wild.
- A year-long tracking study offers fresh, fine-scale insights into how the bird navigates its vast, fragmented landscape in the Deccan.
- These findings challenge old assumptions and highlight the urgent need for coordinated, landscape-level conservation strategies that extend beyond state boundaries.

SNEHA MAHALE

Once seen soaring in large flocks across India’s grasslands, the Great Indian Bustard (GIB) now teeters on the brink of extinction, with fewer than 150 birds left in the wild — a drop of more than 80% in just five decades. Habitat loss, hunting, collisions with overhead powerlines, and changing farming patterns have all played a part in this steep decline.

While conservationists have long known that the GIB roams widely, they’ve lacked fine-scale data on its daily movements. A new year-long tracking study now changes that by showing how the GIB navigates a fragmented, human-dominated landscape.

“To conserve a wide-ranging species like the GIB, especially in such a dynamic and human-dominated landscape, we need to understand how it is using space on a fine scale. These insights are critical not just for understanding the species better, but for informing practical conservation actions, from prioritising protection zones to mitigating threats like powerlines,” says Bilal Habib, scientist at the Wildlife Institute of India (WII) and co-author of the study.

**On track**

Today, GIB populations in Maharashtra, Karnataka, Telangana, and Andhra Pradesh face a serious risk of local extinction. To study their movements and understand their challenges in the region, researchers headed to the Nannaj Bustard Sanctuary near Solapur, Maharashtra — a small grassland patch surrounded by farmland. This semi-arid mosaic of fallow land, degraded grass, stony ground, and cropland sees summer highs of 44°C and modest annual rainfall of about 600 mm.

In April 2015, after days of monitoring feeding spots and water sources, the team captured a sub-adult male using noose traps placed along its regular paths to minimise stress. It was carefully examined for overall health, physical condition, and any signs of injury. Then, it was fitted with a solar-powered GPS/Argos transmitter, recording seven locations daily during peak activity hours (05:30 to 19:30), plus additional satellite fixes every other day.

“The GIB is known for its seemingly random movements, which is why we chose high-resolution GPS telemetry, and used a lightweight, 20-gram Argos solar-powered transmitter that wouldn’t hinder its flight. It gave us the perfect combination of precision, frequent fixes, and real-time data downloads, something earlier studies couldn’t achieve,” says Shaheer Khan, project scientist at the WII and lead author.

Over 410 days, the bird’s movements across parts of Maharashtra and Karnataka were logged, yielding over 3,300 location points. This allowed researchers to reconstruct travel routes, calculate daily distances, pinpoint “core areas,” and link locations with satellite vegetation data to assess habitat preferences.

**A bird on the move**

The tracked bird travelled about 2,209 kilometres in total, with a core range of 2,633 sq km and an overall roaming range exceeding 12,000 sq km. Movement distances varied seasonally — the longest during summer when food and cover was scarce



(about 6.17 km/day), the shortest was post-monsoon when food was likely more abundant (3.15 km/day), and an intermediate distance during winter (about 5.39 km/day).

GPS data showed a Lévy flight pattern — many short movements interspersed with occasional long ones — a search behaviour often seen in species seeking patchy resources. “This implied that the bird was not moving randomly but carrying out a purposeful search strategy,” says Khan.

The study also identified ten “movement clusters”, areas where the bird lingered for several days, mostly open fallow or degraded lands, followed by kharif croplands.

They had moderate vegetation, offering cover from predators and access to prey like grasshoppers and small reptiles. “These are essential foraging

grounds, but many are rapidly changing due to land-use shifts, agricultural intensification, and infrastructure development, and most are privately owned,” says Habib.

Notably, the bird spent most of its time outside protected areas, relying heavily on agricultural land. This underlines the need for conservation approaches that work with, rather than against, farming landscapes.

“We can work with landowners and farmers to make agriculture more conducive to the bustard’s needs, for instance by maintaining short vegetation crops in key seasons or reducing pesticide use,” says Khan.

**Rethinking conservation**

Although this bird avoided major powerlines, it

still crossed them 67 times in a year — a reminder of the collision risk posed by the dense web of wires crisscrossing its range. “The biggest threat to the GIB in the Deccan region today comes from expanding infrastructure, especially overhead powerlines, alongside changing agricultural practices. While habitat loss has long been a concern, collisions with powerlines are now the leading cause of mortality, particularly in open, agriculture-dominated areas where these lines cut across key movement corridors,” says Habib.

The findings add weight to calls for landscape-level conservation: burying or marking dangerous powerlines, restoring degraded grasslands, keeping infrastructure out of core areas, and coordinating efforts across state boundaries. “Even a single bird can cover thousands of kilometres, using fragmented habitats across districts and states,” says Khan.

A long-term conservation breeding and recovery programme is also underway in India. As relocation efforts progress, pinpointing and protecting key habitats will be critical, not just for the remaining wild birds, but also to ensure safe release sites for future populations. “Safeguarding these areas could help support future populations and greatly improve the species’ chances of survival across its range,” says Habib.

Though the study tracked just one bird, it yielded rare fine-scale insights into how a GIB navigates a human-dominated landscape.

“It has shifted our understanding from seeing the GIB as a largely static, grassland-bound bird to recognising it as a wide-ranging nomad dependent on dynamic, connected, multi-use landscapes, an understanding that must guide conservation planning from here on,” says Khan./MONGABAY