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WILDLIFE CONSERVATION

How the decline in India's harrier population hurts its farmers

On World Wildlife Day on Friday, a focus on a critical species that feeds on the locusts and grasshoppers that could damage crops.

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Harriers are a group of birds that belong to the hawk family that are active during the day and mostly found in vast open plains and grasslands. There are 16 species of harriers distributed worldwide throughout tropical and temperate regions, and six of these species migrate to India from central Asia and neighbouring areas during the winter. They can travel between 3,500 km and 5,000 km during this migration. Studies on tagged harriers in Africa show that they follow different routes during spring and autumn migrations. We do not really know much about the migration of harriers from India – the routes they fly from, or their breeding grounds – but researchers once found that a tagged harrier from Gujarat migrated to Kazakhstan.

Like many other birds, harriers not only nest on the ground in their breeding areas, but also roost communally in large numbers in tall grasslands with a few occasionally roosting on trees. This is a behavior unique to harriers. So far, the world's largest harrier roost has been reported from India – in Velavadar National Park in Gujarat where more than 1,000 birds converge every evening to roost inside the park. Harrier roosts can comprise up to three to five species roosting at the same site.

Rollapadu sanctuary in Andhra Pradesh. (Photo credit: Prashanth MB).

Harriers are solitary tireless wanderers scanning open agricultural lands, grasslands and thin scrub jungle relentlessly for insects, lizards, rats and birds to prey upon. Their diet varies with the harrier species in question. For instance, the small Montagu's harrier preys on a large quantity of grasshoppers, while the slightly larger Pallid harrier prefers small birds. Hen harriers prefer larger birds, and the largest of them, the Marsh harrier, preys on big snakes as well as waterfowl like ducks, rails and small herons, and is also known to scavenge.

Harriers are also indicators of the health of grassland ecosystems. They feed on locusts or grasshoppers that can be harmful to agriculture. The late Roger Clarke, an expert on harriers from the UK, has surveyed harriers in Velavadar National Park. He estimated that harriers consume 1.5 million locusts each year in India mostly while foraging over dryland crops like jowar, maize and other millets. They are therefore economically important, and finding harriers in fields augurs well for the crops.

Harriers in decline

Though harriers are not a popular species like large eagles, falcons or vultures, birdwatchers and ornithologists have been recording their presence regularly across India for years. Some dryland

harriers species such as the Montagu and Pallid harriers only dwell in savanna – grasslands with scattered tree growth – or just grasslands. These areas are among the most threatened ecosystems in India.

For instance, co-author T Ganesh's monitoring of harriers at a roost site near Hyderabad for seven years from the mid-1980s found that the harrier population showed fluctuating numbers until the site was converted into a plantation. Another roost site near Bengaluru was lost as the habitat around it changed. Over the years we have documented numerous such cases from almost everywhere across the wintering range of harriers in India.

We know that most of our large-bodied animals, be it mammals or birds, are under threat. The alarming decline in the number of vultures followed by Great Indian bustards in India should lead to watchfulness about a similar decline in other species.

Based on the collation of information on harriers from literature and personal observation over 25 years, it is clear that a decline in the number of harriers is already underway. For instance, the Rollapadu bustard sanctuary in Andhra Pradesh once reported about 1,000 harriers in the mid-1980s. Now, less than 100 harriers visit it.

The decline in Rollapadu could be caused by multiple reasons such as the loss of grasslands due to the creation of the Alaganur reservoir, which submerged dry grasslands – the foraging area of harriers. Agriculture expansion due to drip irrigation, solar farms and excessive use of pesticides could be other factors. Several birds, including harriers, have died in the past after they ate insects that were killed by the spraying of pesticides. In birds of prey such as harriers, which are tied closely to the agriculture-grassland matrix, bioaccumulation of poison in the food chain can lead to death.

Spraying pesticides on a chilli crop. (Photo credit: Prashanth MB).

Shrinking grasslands

Further, natural grasslands have shrunk dramatically in semi-arid India and Africa over recent decades despite their being an important resource for cattle herding and traditional livelihoods. In India, grasslands are classified as wastelands, unfortunately. This makes them vulnerable to developmental projects and conversion to farmlands, solar farms, and plantations by private and government agencies. Many grasslands are also threatened by invasive species such as *Prosopis* juliflora and overgrazing by livestock due to limited grazing area elsewhere. All this leads to a decline in the health of the grassland ecosystem, and poses a threat to the fauna dependent on it such as wolves, bustards, harriers and several smaller species of birds and other animals of which we know very little.

Science can help

While it is hard to isolate the specific reason behind the decline in the harrier population, a combination of factors including changes in breeding areas, changes in their wintering areas and migratory routes could all affect their numbers. But unless we can monitor them in all these areas, the reasons for their decline will remain in the realm of speculation.We need good science to get a handle on what is happening to these species and ecosystems before we formulate policy to manage and conserve their nesting and roosting grounds. First, we need to put in place a proper monitoring system that would allow researchers to estimate the number of birds that migrate to India and how their population is changing. Unfortunately, studying migratory birds in India comes with a plethora of problems. Internationally, migratory birds are tagged with transmitters to track them across space and time. Such tagging of birds is not allowed in India due to quite unjustified reasons of national security.

Livestock graze on grassland. (Photo credit: Prashanth MB).

Ironically, while researchers in India cannot study migratory birds in the country, those from abroad can easily do so using similar transmitters, which gives them information on where the birds arrive in India and their migratory pattern. In fact, researchers abroad are atleast a decade ahead of their colleagues in India in understanding migration patterns and the conservation of such species.

For instance, the Montagu's harrier breed in agricultural farms in many parts of Europe, and tracking them has helped researchers see what agricultural patches they use and how these can be protected with the help of farmers. This is a successful model. It also allowed researchers to identify bottlenecks in their migration route, where conservation action could help the species.

Harriers differ from other grassland birds in the size of habitat they require. They may be commonly seen in large open areas but they require compact roosting sites that can be as small as one square km or even less. These small grassland patches can be identified if we could track birds. Once identified, these can be selected for regular systematic monitoring, conservation and sustainable grassland management for a number of species, not just harriers. With large patches of grasslands not existing in India, we need to shift our focus on conserving the remaining smaller patches, or even creating such small patches of grasslands to sustain biodiversity in India's dry lands.

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(Photo credit: Prashanth MB).