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Large share of India's threatened endemic species in Kerala, Tamil Nadu and Karnataka: Study

Tackling threats from agro industry, small-holder farming, grazing plantations most effective in reducing extinction risk

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By Susan Chacko (https://www.downtoearth.org.in/author/susan-chacko-2310)
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Kerala, Tamil Nadu and Karnataka host a large share of India's threatened and endemic species of amphibians, birds and mammals, according to a new study.

The three states account for 51 per cent of the country's species threat abatement and restoration (STAR) score, noted the study published in *Environmental Research Letters (https://iopscience.iop.org/article/10.1088/1748-9326/ac5d99)* April 25, 2022. A higher STAR score indicates greater presence of threatened species.

The score is a measure of the contribution that investments can make to reduce species extinction risk. It can help national and subnational governments, cities and other entities target their investments and activities to achieve conservation outcomes, said International Union for Conservation of Nature (IUCN) (https://www.iucn.org/regions/washington-dc-office/our-work/species-threat-abatement-and-recovery-star-metric).

India's total national STAR score was 41,817, of which 11,585 was for mammals, 10,843 for birds and 19,389 for amphibians.

The global STAR score for the three species groups combined was 1,223,500. India's national STAR score represented 3.4 per cent of the global STAR; it was 3.7 per cent for mammals, 2.9 per cent for birds and 3.6 per cent for amphibians.

The top 20 per cent of all 36 states contributed 80 per cent to the national STAR score. These include Kerala (20 per cent), Tamil Nadu (18 per cent), Karnataka (13 per cent), Arunachal Pradesh (6 per cent), Assam (5 per cent), Maharashtra (5 per cent) and the Andaman and Nicobar Islands in the Indian Ocean (12 per cent).

In contrast, the 20 states with lower STAR scores contributed only 6 per cent to the national STAR score. This is because several of them are small in area and host few threatened species.

Several bigger states such as Uttar Pradesh, Bihar, Odisha and Telangana, however, contributed less than 1 per cent to the national STAR score, the study said.

The high STAR scores of the top three states (51 per cent combined) were primarily due to the presence of a number of endemic amphibian species that are critically endangered like *Indirana phrynoderma* (Kerala Indian frog), *Fejervarya murthii* (Ghats wart frog), *Indirana gundia* (Gundia frog), *Micrixalus kottigeharensis* (Kottigehar dancing frog) and others, the report noted.

The high scores of the northeastern states of Arunachal Pradesh and Assam were due to the presence of a high number of threatened birds and mammals such as *Liocichla bugunorum* and *Biswamoyopterus biswasi*.

Addressing threats from annual and perennial non-timber crop production can contribute the most to reducing extinction risk for amphibians, birds and terrestrial mammals. Such threats alone account for 44 per cent of the total Indian STAR score. The next important threats are biological resource use — hunting and collecting birds and animals, logging and wood harvesting as well as residential and commercial development.

The study calculated the STAR metrics to identify which threats are negatively affecting which species in each state and where habitat restoration will yield the maximum returns for individual species. The research was led by Abhishek Chaudhary, IIT-Kanpur.

The relative contribution of each of the 97 individual threats listed in the threats classification scheme of the IUCN Red List database (https://www.iucnredlist.org/) was calculated to the total STAR metric threat-abatement score of each species in each state / district, by considering the scope and severity of each threat.

The STAR metric restoration scores per state / district was calculated, considering the rate of recovery of a species' population to calculate how much restoring the lost historical habitat of each species in each state/district of India could contribute towards reducing their global extinction risk, according to the authors of the report.

An important step to reduce biodiversity loss in India will be the generation of high spatial resolution quantitative information on threats affecting individual species in different regions as well as regions where habitat restoration can yield best outcomes for the species, they added.

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Gir awaits locally made CDV vaccine for lions, experts divided on outcome

Lions vaccinated earlier still in captivity; experts fear similar fate this time as well

By Shuchita Jha (https://www.downtoearth.org.in/author/shuchita-jha-197346)
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The Gujarat Biotechnology Research Centre has developed and completed the first trials of the Canine Distemper Virus (CDV) vaccine on guinea pigs and rats, according to official sources. The vaccine is being prepared for the Asiatic lion (*Panthera leo persica*) population in Gir National Park to prevent disasters like the one in 2018, where around 27 lions had succumbed to the disease.

There were 674 lions in the National Park, according to the 2019 census.

Gujarat's Chief Wildlife Warden Shyamal Binoy Tikadar told *Down to Earth (DTE)* that the vaccine would go through three trials before being administered on lions. "After guinea pigs, the researchers will test it on domestic cats, then on leopards, before being given to lions."

But wildlife researchers feel that giving vaccines to wild lions is not a great idea because once captured, the lions do not remain 'wild' anymore.

The 33 lions that were vaccinated against CDV in Gir in 2018 with the purevax ferret distemper vaccine imported from the United States are still in captivity, said Ravi Chellam, CEO of Metastring Foundation (a not-for-profit) and a member of Biodiversity Collaborative (a network of institutions and individuals working to promote biodiversity science in India), told *DTE.*

This defeats the very purpose of vaccinating wild lions and is indicative of the challenges of the exercise, he said, adding:

> Once you capture wild lions and take them out of their natural habitat, they do not remain 'wild' anymore. Not only that, nature abhors vacuum and the territory freed up by the captured lions would have been quickly occupied by other lions. This effectively means that these lions can never be released into the wild again.

Vaccinated lions had been in captivity for a long time and have gotten accustomed to it, DT Vasadava, retired chief conservator of forests, wildlife circle, Sardarbaug, Junagadh told *DTE*. It would be unwise to release them in the wild again as they would not be able to survive there now, he said. They may get into territorial fights as other younger lions have taken up their space.

"The lions are doing well. They have had around 60 cubs so far, who are being raised in captivity. They are all pure-bred Asiatic lions that can be used for exchange with other countries," said Tikadar.

Since Gir is spread over an area of 1,412 square kilometres, it does not offer enough space for the lions to migrate to in case a disaster or epidemic hits; and with no plans for translocation in sight, this has led to debates among wildlife conservationists and researchers whether or now vaccination is the way to go.

"Vaccinating wildlife is a point of discussion globally, and there is no right answer. As a biologist, I would prefer that natural selection takes its course. However, these are the only wild

populations of Asian lions," said Uma Ramakrishnan, professor at National Centre for Biological Sciences, Bangalore, implying that one cannot risk the spread of the disease that may threaten their population.

There are lions even outside the protected area, feeding primarily on livestock, Chellam added. It is very likely that at least some of the livestock are carrying diseases which can in turn infect the lions. Even when healthy livestock are hunted by the lions, there are possibilities of feral dogs feeding on it too, which can be a source of infection.

Canine distemper is caused by the paramyxovirus virus. It spreads through body fluids like infected urine, blood and saliva. The virus attacks the respiratory, gastrointestinal and nervous systems of puppies and dogs and can be transmitted to lions, tigers, leopards and other wild cats as well as seals, according to the American veterinary medical association.

The virus is also found in wild foxes, wolves, coyotes, raccoons, skunks, mink and ferrets. Its symptoms include dullness, lacrimation, cough, diarrhea and seizures.

"There are suggestions from many experts that it would be better to vaccinate dogs instead of lions so that the disease does not spread from the dogs in the first place," added Ramakrishnan.

The *Standard Operating Procedure to Deal with Stray/Feral Dogs in Tiger Reserves* released by the National Tiger Conservation Authority of India in 2020 lists vaccinating dogs against CDV as one of the protocols to be followed to ensure the safety of the tigers from the disease.

The Gujarat Forest department officials say that the idea is to have a vaccine readily available in the country, instead of importing it from US. So far in India, no such programme of vaccinating wild animals has been undertaken.

This is a vaccine made in India, and for this, the inactive virus has come from the Indian strain of CDV, said Tikadar. "The one we had imported earlier had the ferret strain of CDV."

We are not going to randomly vaccinate the lions, he added. "This will be a symptomatic and situational decision that will be made by the veterinarians in the National Park."

It was not necessary that the lions who will be administered the new vaccine will have to stay in captivity forever like the other lions, the official said.

An outbreak of CVD also led to the death of around 1,000 lions in the Serengeti National Park, Tanzania in early 1994.

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