



Current Affairs of the Day

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Leopard population tracking gets a new approach

Wildlife specialists have for long faced challenges estimating the density of leopards in areas where some of the spotted cats are melanistic or black. The Estimation population sizes of leopards is very critical for their conservation.

Highlights:

1. Experts from three organisations, one of them Assam-based Aaranyak, have come up with a system that helps in properly estimating the leopard population in areas sustaining a mix of the rosette and melanistic individuals.
2. Rosettes are jagged black circular marks on the tawny coat of a leopard. Like the tiger's stripes, the rosettes of each leopard are unique in shape and size, making the species identifiable individually.
3. But melanistic leopards — commonly called black leopards or black panthers or ghongs (Assamese) — have been difficult to estimate as their rosettes are invisible.
4. This problem is acute in the tropical and subtropical moist forests of South and Southeast Asia where the frequency of melanistic leopards is high and leopards also face the greatest threat. No precise estimates of leopard population could thus be done in protected areas and non-protected areas in India except on some occasions.
5. The Spatial Mark-Resight (SMR) models applied by the scientists of Aaranyak, Panthera and World Wide Fund for Nature-India have provided a way of counting the melanistic leopards too. The new model has been written about in the Animal Conservation journal.

Background:

1. U.S.-based Panthera is the only organisation in the world devoted exclusively to the conservation of the world's 40 wild cat species and their ecosystems. Melanism has been documented in 14 of these species, including the leopard.



Healthy rivers: How DNA tool can help keep tabs on freshwater quality

DNA technologies have revolutionised the amount of data generated from a single river sample.

Pollution monitoring in Rivers

1. Rivers are full of all kinds of small creatures that are highly sensitive to environmental threats. The worms, fly larvae and snails — collectively called macroinvertebrates — that live in the sediment at the bottom of a river (the “benthos”) can serve as biological monitors for water quality.
2. The presence of biological monitor species that are less tolerant of poor water quality is suggestive of a healthy river.
3. Gathering data on these species is challenging: Many watersheds are remote and difficult to access, and the cost of flying to them limits the amount of data that can be collected.
4. Researchers partnered with local community groups to collect river samples so that we could understand river health by identifying macroinvertebrates from their DNA.

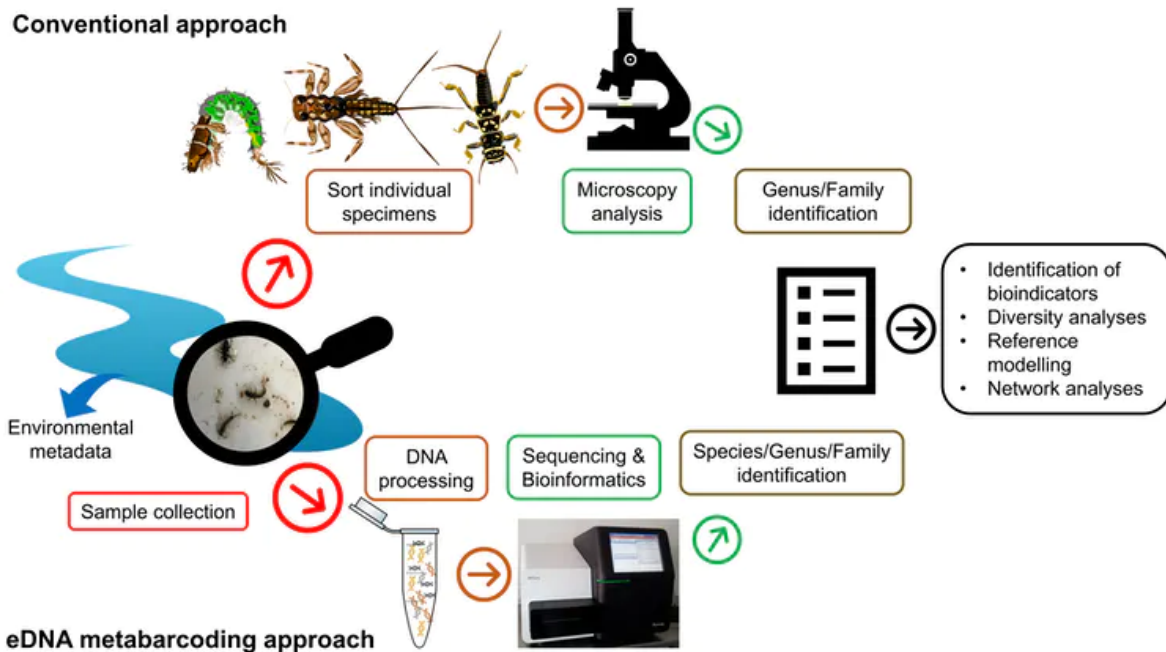
DNA profiling

DNA technologies have revolutionised the amount of data we can generate from a single river sample.

For example, one technique called “environmental DNA metabarcoding,” or eDNA for short involves taking samples of soil or water and searching for fragments of DNA specific to certain species. This method eliminates the time-consuming process of sorting individual samples and enables us to identify the different species present in a river system.



Conventional approach



Char Dham project: Is development equal to disaster?

A significant portion of the project falls under dry deciduous biome along dry slopes of rivers. Ruthless harvesting can be perilous for biodiversity and regional ecology.

The Char-Dham Road Project

1. The Char-Dham Road Project is a prestigious two-lane expressway scheme being executed in the Himalayan state, Uttarakhand. The project proposes widening of roads up to 10 meters to improve the accessibility to Char-Dham (shrines); Yamunotri, Gangotri, Badrinath and Kedarnath.
2. A significant portion of the project area falls under the dry deciduous biome along the dry slopes of the rivers. Ruthless harvesting or uprooting of vegetation in the widening of roads can prove to be perilous for the biodiversity and regional ecology.
3. The existence of river slopes depends on the vegetal cover. These slopes become fragile for flush floods and landslides in the absence of vegetal cover. River-slope vegetation contributes to slope stability by increasing the resisting force in the form of root-cohesion; reduces the pore water pressure; reduces



the weight of the soil mass by absorbing the moisture; reduces surface run-off, and intercepts rainfall.

4. Besides, river slopes act as conduits for species migration from low areas to mountains.

Biodiversity within the project corridor

1. Leopard, Sambhar, Kakad, Goral, Siyar, Sehi, Khargosh, Udbilav and many species of bats are common mammals of this biome.
2. Birds like Kalij Pheasant, Tragopans, and various species of Vultures (Schedule-I) along with endangered fish Golden Mahseer are among the wonderful species found there.

Adverse impacts

Forest Loss

1. Forest loss is among the major impacts of the project — about 508.66 hectares of forest area would be diverted into the non-forestry purpose and 33,000-43,000 trees would be cut down to build roads.
2. The loss of forest will reduce the probability of maintaining effective reproductive units of plant and animal populations in the project zone.
3. Removal of roadside trees will lead to patch isolation, reduced canopy cover and decreased the number of successful dispersers that can be devastating in community establishment and ecosystem functioning.
4. The road edge effect is a common ecological phenomenon that wraps wide areas and creates ecological pressures on nearby plant and animal communities.

Unique Biodiversity

1. The plentiful population of scorpion resides along road edges than normal forest. Scorpion has significant roles in food-chain as they control the population of insects and arthropods.
2. Disturbances in the scorpion population can lead to an increase in insects and arthropods population, which is harmful to agriculture.
3. As small mammals manage the community structure of their predators, a slight population decline will augment the migration of predator species such as hawks, owls, jackals and foxes.



4. A big portion of the Char Dham road corridor falls within Chir Pine forest zone. Chir pine is known for its high head-weight and the presence of this species in slopes increases landslide events in monsoon.
5. Endangered Golden Mahseer fish present in the Ganga in Uttarakhand that migrates upstream towards small tributaries in the search of suitable spawning ground. A small increase in pollution load may create trouble for fish in catching their migratory path and finding food.
6. Otters are secretive and shy animals take a sunbath and make dens at river banks. Dumping of mucks on river banks may disturb their daily activities and destroy their dens.

Dust Hazards and Muck Disposal

1. Fugitive dust emission during construction activities may influence the stomatal activities in plants. Dust can contaminate herbivores' food by settling down on the food's surface. A direct intake of dust may affect these species through the disruption of endocrine function, organ injury, increased vulnerability to stresses and diseases and lower reproductive success.
2. Muck disposal is a big issue; there are insufficient muck-disposal sites that have been identified and a huge portion of muck is being dumped directly into rivers. High concentrations of suspended sediment directly kill river organisms and impair aquatic productivity.

Bihar forest dept officials on toes after tigress kills 3

She is wounded and weak and is hence unable to prey on animals for food. She is battling hunger, hence hunting down human beings.

Highlights:

1. The tigress strayed out of the Valmiki Tiger Reserve (VTR), the only tiger reserve in the state of Bihar, at the beginning of February 2021, according to forest department officials. It is 13-14 years old, they added.

The Valmiki Tiger Reserve (VTR)

1. The VTR, spread over 899 square kilometres near the Indo-Nepal border in the West Champaran district, has been ranked the fifth-best tiger reserve in



India. According to VTR officials, the number of tigers has now gone up to 37 in 2021 from eight in 2010.

2. It is also home to various animals such as sloth bear, leopard, Indian bison, hyena, wild dogs, several species of deer and antelopes, leopard cat, wild cat, fishing cat, wild boar, flying fox, serow, civets and flying squirrels.
3. Forest department officials said the increased grassland at the tiger reserve has seen a rise in the number of bison, which resulted in the growth of tiger population.

Six elephants die of haemorrhagic septicaemia in a fortnight in Odisha's Karlapat Sanctuary

All bodies were found along the Ghusurigudi nullah, leading experts to think the water is contaminated.

Highlights:

1. Six elephants died of haemorrhagic septicaemia in Karlapat Wildlife Sanctuary in Odisha's Kalahandi district in the last 14 days, according to the forest department.
2. All bodies were found along the Ghusurigudi nullah, leading experts to think the water is contaminated.
3. The pattern has led experts to suspect that the water there is contaminated with the bacteria *Pasteurella multocida* that cause the disease.
4. A team of experts of Odisha University of Agriculture and Technology (OUAT) who examined the elephant's post mortem, found haemorrhagic septicaemia as the reason behind the deaths of jumbos.
5. Haemorrhagic septicaemia is a contagious bacterial disease which infects animals that come in contact with contaminated water or soil.
6. The respiratory tract and lungs of the animals are affected, leading to severe pneumonia. The disease generally spreads in the period right before and after the monsoons. It can affect cattle, buffalo and other animals.



India lost crops on 18 million hectares to extreme floods from 2017-2019: Govt

Madhya Pradesh hardest-hit; figures show a gross underestimation of crop losses due to floods.

Highlights:

1. India has suffered a huge crop loss on 18.176 million hectares (mha) of land, roughly 8.5 per cent of the total gross cropped area due to floods from 2017-2019, according to data shared by the government in the Lok Sabha.
2. The intensity of extreme floods has increased in the country, affecting newer areas that were not flood-prone earlier.
3. The flood-prone states of Assam, Bihar and Uttar Pradesh saw extreme floods. They were also witnessed in Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Odisha, Maharashtra, Chhattisgarh, Madhya Pradesh and Rajasthan due to 'excess' or 'large excess' rainfall in these states, combined with extremely heavy rainfall in a short span of time.
4. Madhya Pradesh was the hardest-hit among all. It had zero crop loss in both 2017 and 2018. However, it suffered the highest loss of 6.047 mha among all states in 2019 due to extreme rainfall.
5. In 2019, the state also saw the second-highest claims, after Maharashtra, by farmers for crop insurance under the Pradhan Mantri Fasal Bima Yojana. Other states where crop losses were comparatively more were Uttar Pradesh, Assam, Gujarat, Rajasthan and West Bengal.