



Tracking Animals through e-DNA

Why in News

According to some studies, [DNA floating in the air](#) (i.e. e-DNA) can boost biodiversity conservation efforts across the world.

Key Points

▪ About:

- Researchers from two teams have independently shown that **environmental DNA (e-DNA) can potentially identify and monitor terrestrial animals.**
 - **Animals shed DNA through their breath, saliva, fur or faeces** into the environment and these samples are called **e-DNA.**
- Airborne e-DNA sampling is a **biomonitoring method** that is rising in popularity among biologists and conservationists as it provides abundant information.

▪ Significance:

- It can **help understand the composition of animal communities** and detect the spread of non-native species.
- This method will work with the current techniques to monitor endangered species after some fine-tuning.
 - Typically, **biologists observe animals in person or by picking up DNA from animals' footprints or faeces**, which demand extensive fieldwork.
 - Spotting animals can be challenging, especially if they inhabit inaccessible habitats.
- It can **aid in tracking long-distance migratory birds** and other birds' flying patterns. It can also capture **DNA from smaller animals including insects.**
 - Last year (2021), a proof-of-concept study used airborne e-DNA to monitor terrestrial insects.
- As wildlife ecosystems become rapidly and extremely chaotic owing to the alarming effects of [climate change](#), terrestrial biomonitoring techniques are expected to adapt and progress rapidly for accurate and timely monitoring.

▪ Related Initiatives:

- **Global EDNA Project:** [UNESCO](#) launched the project to **study the vulnerability of species** to climate change at [Marine World Heritage Sites](#) in October 2021.

DNA

- **DNA, short for deoxyribonucleic acid, is the hereditary material in organisms** that contains the biological instructions for building and maintaining them.
- The **chemical structure of DNA is the same for all organisms**, but differences exist in the order of the DNA building blocks, known as base pairs.
- Unique sequences of base pairs, particularly repeating patterns, provide a means to identify

species, populations, and even individuals.

e-DNA

- Environmental DNA (e-DNA) is **nuclear or mitochondrial DNA that is released from an organism into the environment.**
- **Sources of eDNA** include secreted feces, mucous, and gametes; shed skin and hair; and carcasses. eDNA **can be detected in cellular or extracellular** (dissolved DNA) form.
- **In aquatic environments, eDNA is diluted** and distributed by currents and other hydrological processes, but it only lasts about 7–21 days, depending on environmental conditions.
- Exposure to UVB radiation, acidity, heat, and endo- and exonucleases can degrade e-DNA.

[Source: DTE](#)

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