

# What is environmental DNA (e-DNA)?

January 10, 2022

**In news-** Recently, two independent studies have found that e-DNA floating in the air can boost biodiversity conservation efforts across the world.

## What is environmental DNA (e-DNA)?

- e-DNA is defined as **genetic material obtained directly from environmental samples** (soil, sediment, water, etc.) without any obvious signs of biological source material.
- eDNA is nuclear or mitochondrial DNA that is released from an organism into the environment.
- It is an efficient, non-invasive and easy-to-standardize sampling approach.
- **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.
- It can potentially identify and monitor terrestrial animals and offers an unprecedented opportunity for monitoring native and invasive species, as well as for biodiversity assessments.
- Tracking animals through e-DNA isn't a new idea as biologists have frequently observed aquatic organisms by sequencing e-DNA from water samples.

**Note- eDNA metabarcoding is a novel method of assessing biodiversity** wherein samples are taken from the environment via water, sediment or air from which DNA is extracted, and then amplified using general or universal primers in polymerase chain reaction and sequenced using next-generation sequencing to generate thousands to millions of reads. From this data, species presence can be determined, and overall biodiversity assessed. It is an interdisciplinary method that

brings together traditional field-based ecology with in-depth molecular methods and advanced computational tools.