Rwanda has launched an innovative program using environmental DNA, or eDNA, to monitor wildlife in Volcanoes National Park, providing scientists with a new way to detect and protect species that are rare, hidden, or difficult to observe.

The technology works by analyzing genetic material left behind by animals in soil, water, feces, hair, or decaying remains. Introduced in early February, it allows Rwandan experts to identify species without disturbing their natural habitat, improving biodiversity monitoring and early detection of environmental threats.

The initiative is part of the TUI Wildlife Programme, funded by TUI Care Foundation and implemented by the African Wildlife Foundation (AWF) in partnership with the Rwanda Development Board (RDB) and the Dian Fossey Gorilla Fund.

Patrick Nsabimana, AWF's Rwanda coordinator, said eDNA opens a new frontier for conservation. "By analyzing soil and water, Rwandan experts can protect every species in Volcanoes National Park using reliable, science-based information," he said.

Traditionally, wildlife monitoring relied on direct observation, camera traps, and acoustic surveys. While still valuable, these methods can miss elusive species and are labor-intensive. eDNA offers a cost-effective, non-invasive molecular approach that complements existing techniques.

Volcanoes National Park, with its steep terrain, dense vegetation, and variable wildlife distribution, presents challenges for conventional monitoring. Conservationists say eDNA increases the likelihood of detecting small, rare, or cryptic species that often disappear first when ecosystems are disrupted.

For more than 20 years, the Dian Fossey Gorilla Fund has led research in the park, tracking gorillas, birds, insects, plants, and wetlands to monitor environmental changes. Officials emphasize that eDNA is not a replacement for traditional research but a powerful addition, creating a complete and dynamic database to guide adaptive management and protect the park's diverse wildlife.