



# The rapid advance of airborne eDNA technologies for terrestrial ecology

**By Dr. Elizabeth Clare**

Environmental DNA was first found in the terrestrial biome, trapped in ice and soils. However the technology and applications have most rapidly been developed in aquatic systems. One main challenge on land has been our reliance on indirect measures, DNA trapped in the gut of invertebrates or washed into rivers and ponds. Direct methods of collecting eDNA on land have been creative and widespread but none has really established itself as the key method to use moving forward. In this presentation we will look at the advantages and challenges of air as a medium for eDNA collection and filtration on land. Using case studies from species at risk monitoring to the potential for landscape level measurements we will consider what we can learn from the aquatic community as we move to apply this to terrestrial ecosystems. Among the key questions I will attempt to address includes what evidence we have for travel distance and persistence, where active vs passive monitoring is most appropriate and what new opportunities we might have for deployment of this approach. Many of the questions we are asking were already answered in rivers and oceans, and we can use these as a model, but there are also challenges unique on land which will require creative solutions. The policy implications of this cannot be understated and the extremely rapid advance of this field will have implications for how we consider terrestrial ecological study moving forward.