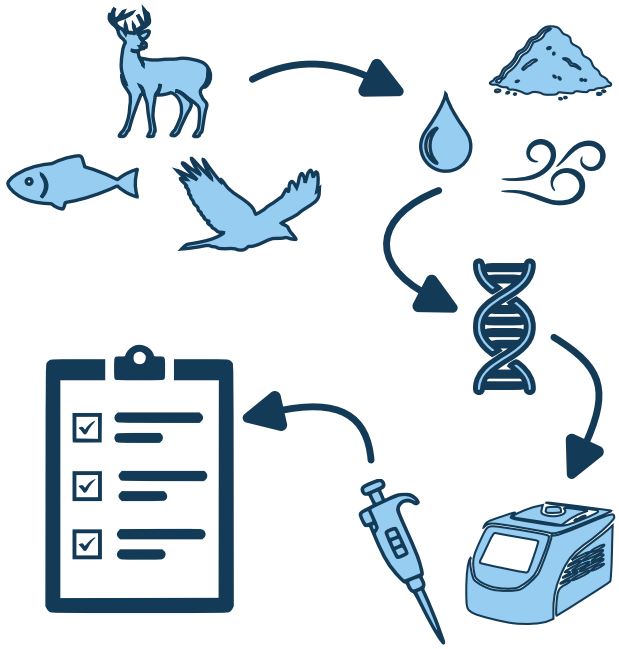
Environmental DNA (eDNA)

WHITE OTTER BIOTECH

What is eDNA?

eDNA is genetic material that living things naturally shed into their environment. Hair, feathers, scales, mucus, saliva, and excretion products release DNA into air, water, soil, and sediment, leaving behind a detectable molecular signature. By collecting these environmental samples and processing them in a molecular laboratory, we can extract and analyze this DNA. Using Polymerase Chain Reaction (PCR), a highly sensitive molecular technique, we identify species by detecting the presence or absence of their genetic markers without directly observing or capturing them. eDNA enables applications such as biodiversity monitoring, invasive species detection, endangered species assessments, and mapping species composition across different habitats.



Metabarcoding

Metabarcoding is a genomic approach used to characterize groups of organisms within an environmental sample. Instead of targeting one species at a time, this method sequences broad genetic markers shared across taxonomic groups such as fish, insects, or mammals. The resulting DNA sequences reveal which species are present and how diverse they are, even when closely related species cannot be reliably distinguished by conventional PCR techniques. Metabarcoding is useful for conducting community surveys, tracking changes in community composition, identifying unexpected groups, and generating snapshots of overall biodiversity from a single sample.