

eDNA Frontiers at a glance



Applications

- Invasive and conservation species detection
- Ecosystem-wide biodiversity audits
- Environmental impact assessments
- Port and shipping biosecurity monitoring
- Remediation and restoration of natural areas
- Dietary and food-web studies
- Long term temporal and spatial observation

Our client groups

- Environmental consultants
- Government and regulators
- Research organisations
- Ports and shipping
- Oil and gas
- Mining and infrastructure
- Community and conservation groups

Contact information

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eDNA Frontiers

Statement of Capabilities

ENVIRONMENTAL DNA
BIOMONITORING SOLUTIONS



Leaders in eDNA analysis

Transforming environmental decision-making through high-resolution biodiversity intelligence.

eDNA Frontiers delivers advanced eDNA analysis services that provide rapid, sensitive and comprehensive biodiversity insights across marine, freshwater and terrestrial ecosystems. Our mission is to embed eDNA analysis into routine biomonitoring and environmental assessment, enabling industry, government and research partners to make confident, evidence-based decisions.

eDNA Frontiers has extensive expertise in isolating and characterising environmental DNA (eDNA) to identify species diversity across ecosystems and environments.

eDNA is virtually ubiquitous in natural ecosystems, being shed by organisms through their natural processes of existing. By analysing eDNA, the need to observe, collect and identify individual organisms is removed, and instead users can gain a rapid assessment of entire communities across taxonomic groups from a simple environmental sample.

As leaders in this field, eDNA Frontiers specialises in using a customised metabarcoding technique with

in-house next generation DNA sequencing, allowing us to sensitively audit environmental samples for DNA signatures. Generated sequence data can be matched against global databases that hold catalogues of all life on Earth, producing a wealth of information for studies on biodiversity, food web dynamics, diet analysis, detection of rare or difficult to visualise species, and identification of invasive species for monitoring.

eDNA analysis is a disruptive technology to environmental studies, delivering biodiversity insights in spectacular new ways.



Our facilities

- eDNA Frontiers laboratories are located at Curtin University's main Bentley campus in Perth, Western Australia.
- Labs are accredited to receive domestic and international samples for analysis as an 'Approved Arrangement' facility under Class 5.1.1 biosecurity containment level 1 (BC1) Microbiological facility.
- Import permits facilitate analysis on international and interstate soil, water, animal tissues, DNA and biologically complex substrates.
- Dedicated molecular biology spaces for demand driven contract research and routine service provision.

Sample preparation laboratory

An isolated and dedicated space for handling environmental samples from the field, and prepping them for DNA extraction. Contains multiple robotic DNA extraction systems capable of hundreds of samples per day.

Amplification and sequencing laboratories

Dedicated post-PCR rooms for amplification, DNA fragment analysis, size selection and sequencing library preparation, ensuring strict contamination control and high-quality sequencing outputs on our own in-house Illumina MiSeq and NextSeq 2000 sequencing instruments.

Trace Research Advanced Clean Environment (TRACE)

A 434 m², pressurised, class 100 (ISO 5) clean air space housing five class 10 (ISO 4) ultra-trace laboratory modules. The facility contains cutting edge technology and preparative robots to eliminate contamination and increase precision and accuracy in pre-PCR set-up. This facility is a major contributor to why the Curtin team can provide confident data detection at the most sensitive of levels, which other testing facilities can't duplicate.

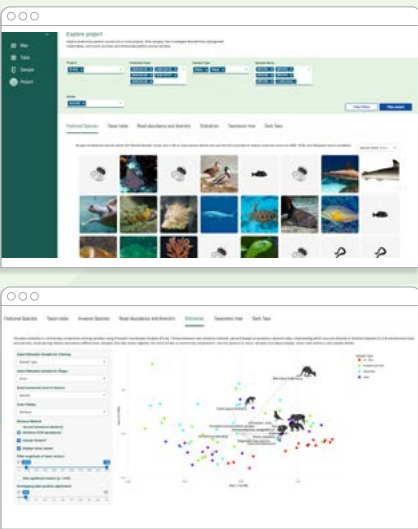
Quality Management System

Quality underpins every stage of service delivery through validated protocols, trained and experienced staff, calibrated equipment, and rigorous documentation practices. Together, these measures ensure the confidentiality, reliability, and consistency in processes and results.

Our website: ednafrontiers.com

The eDNA Frontiers website contains many helpful resources for Clients such as:

- information on ways to sample, protocols and video demonstrations
- thorough transport instructions, locally, domestically and internationally
- online sample submission portal with auto-generating Chain of Custody forms and database compatible input templates
- eDNA Viewer:** eDNA Frontiers' online application that allows users to view their own and public datasets, with multiple analytical formats to display results. More features being added regularly.



Bioinformatics and Data infrastructure

The amount of sequencing data produced by high throughput sequencing technology can be vast. eDNA Frontiers has access to the **Pawsey Supercomputer Centre**, which is one of two Tier-1 High Performance Computing facilities in Australia, with expertise in supercomputing, data, cloud services, and visualisation. Access to this facility's resources allows us to complete the highly computationally intensive quality filtering and matching of sequence datafiles to taxonomic reference databases.

Methodology

eDNA Frontiers is the service focussed shopfront of the Trace and Environmental DNA (TrEnD) laboratory, one of the early adopters and global leaders in eDNA research. Techniques have been honed over 20 years on complex substrates and highly degraded material.

Methods leverage ultra clean laboratories, unique sample **metabarcoding** strategies, validated and verified protocols to facilitate highly sensitive and reliable detections from valued samples.

eDNA Frontiers can extend analysis options with **species specific qPCR** from eDNA samples. These are best suited when the target is rare and/or elusive, of conservation or invasive interest, or needing broad sampling programs. Select from our panel of in house assays or we can work with you to design a customised assay.

Our expansive eDNA experience translate to intelligent, relevant sampling to give reliable, robust outcomes that are being depended upon by clients in long term monitoring programs.

Sampling experience



* International sites not shown. Please contact us for more information.



Why work with eDNA Frontiers?

World leading methodology – published and respected

Practical experience delivering invasives detection, in port monitoring, infrastructure builds, freshwater biomonitoring and more

Reliable, robust, scientifically valid results suited to long term studies

Responsive commercially sensitive team

Translating new research into demand-driven commercial needs

Cutting edge technology with continual method improvement from field leading researchers

Active Quality Management System delivering reliable and repeatable results