

Safeguarding Offshore Wind

Comprehensive Marine
Monitoring with eDNA



A message from our CEO

“We take pride in supporting Australia’s transition to sustainable energy. Through eDNA technology, EnviroDNA has solutions that help safeguard the health of our oceans during infrastructure development, operation, and decommissioning. It is essential for industry to adopt science-based methods that enable comprehensive understanding to inform management of impacts. From simple environmental samples, eDNA reveals invaluable insights into ecosystems across land, sea, and air.

This is market-ready technology, right here in Australia.

Our partnerships have successfully used eDNA solutions to guide asset baseline and monitoring plans, effective marine ecosystem restoration, and enable First Nations monitoring and stewardship of sea Country. We are seeing these collaborations transform how sustainable energy development coexists with the health of our oceans and communities.”



Jim Stewart
Chief Executive Officer, EnviroDNA



About us

Founded in 2016 by research scientists Dr Andrew Weeks and Dr Paul Umina, EnviroDNA was born from a belief that:

“you can’t manage what you can’t measure.”

With deep roots in agricultural and genetic conservation, the company transforms cutting-edge eDNA science into real-world solutions that help manage and protect nature. Based in Melbourne, EnviroDNA delivers insights into species and ecosystems by analysing land, water, or air samples. Our solutions transform samples into actionable intelligence for ecosystem management, supply chains, conservation, and community outcomes.

“Our vision is a world where human impacts on nature are understood and sustainably managed.”



Dr Andrew Weeks
Founder



Dr Paul Umina
Founder

Our Mission

To power every nature positive decision using eDNA. Our solutions are in harmony with global trends focused on nature-related reporting.

Compared to conventional methods of environmental monitoring, eDNA is:

- Highly sensitive and is often-usesolution for detecting populations at low diversities and mitigating risks associated with invasive species,
- Efficient and easily scalable,
- Easily deployed across a wide variety of habitats,
- Low cost with fast turnaround times,
- Helps you survey more frequently and decreases time-to-insight. An unmatched tool for data-driven decisions.

EnviroDNA brings together leading expertise across genetics, ecology, and data science. Our postdoctoral experts’ partner on cutting-edge collaborations and ecological consulting. Collectively we have contributed to over 250+ scientific publications.

As Australia’s leading eDNA provider, we have proudly partnered with organisations nationwide and globally. EnviroDNA has analysed over 100,000 environmental samples. We have partnered with over 300 organisations spanning government agencies, conservation groups, natural resource managers, consultants, land managers, and more.

*Unlock insights.
Make informed decisions.
Achieve better results.*

Your project team:

We offer expertise at every stage of the project lifecycle.



Dr Andrew Weeks
Co-founder & Director,
Technical Supervisor

- 27 years' experience,
 - Andrew is an ecological geneticist that has led eDNA research in Australia since 2012
- He provides technical expertise and supervision to our projects.



Dr Luke Noble
Principal Scientist

- 19 years' experience.
 - Luke is a molecular scientist with expertise spanning biology, genetics, genomics, statistics and bioinformatics.
- Luke oversees molecular processes.



Josh Griffiths
Ecologist & Technical
Advisor

- 22 years' experience,
 - Josh is a leading expert on Australia's iconic platypus.
 - Josh designs and manages large scale eDNA programs.



Dr Reid Tingley
Data Science Lead

- 18 years' experience
 - A quantitative ecologist and has 10 years' experience working extensively with eDNA data.
 - Reid oversees data analytics and bespoke client data solutions.



Dr Natalie Rickers
Business Development
Lead

- 18 years' experience in the biotech industry
 - Led global sales teams across research, commercial, pharma and consumer markets
 - Led global marketing teams with strategies spanning Canada, LATAM, EMEA and APA



Madeleine Callas
Service Delivery Lead

- 7 years' experience in project management and consulting
 - Experience delivering impact assessments for infrastructure projects, including solar and offshore wind
 - Delivered biodiversity monitoring programs for clients across Australia and internationally

Our Team

Our expertise

Partner with experts in ecology, genetics and data science.

EnviroDNA brings together leading expertise across genetics, ecology, and data science. We combine deep knowledge and practical experience to help our clients address complex environmental challenges.

Core Focus Areas

- Project and sampling design
- Field sampling surveys
- Molecular analysis for species and biodiversity
- Advanced bioinformatics, data interpretation and modelling
- Research and development in molecular ecology
- Strategic environmental consulting and stakeholder engagement



Our Facilities

Scalable sample processing without compromising precision or quality assurance.

Built for Precision and Scale

We operate state-of-the-art laboratories with specialised DNA sequencing and high-throughput automation systems. Our facilities support scalable sample processing without compromising quality assurance.

Purpose-Built for Every Stage

We have invested in four distinct eDNA laboratory areas. Each lab is tailored to a specific stage of sample processing.

Technology That Delivers Quality

Our facilities feature DNA sequencing machines, contamination-free zones and controlled airflow systems. These help us maintain exceptional efficiency and quality throughout the process.



Why partner with us?



Australian Founded.

Leading the way in eDNA technology with local expertise and global impact.



Project Support.

Navigate your project with confidence with dedicated project managers and expert advisory.



Ground Truthed Results.

Data quality matters. We ground truth our biodiversity data to give you reliable nature intelligence.



Comprehensive Reference Libraries.

EnviroDNA have built an extensive repository of both Australia and global species since 2016.




PhD-Founded with

Dedicated R&D. Rooted in scientific rigor, we drive eDNA innovation through peer-reviewed research.

What makes our data different?

Our results are groundtruthed for quality assurance. We use additional species occurrence databases that EnviroDNA has available and leverage expert knowledge of sampling areas. These data sources include both external species records such as the Atlas of Living Australia (ALA) or the Global Biodiversity Information Facility (GBIF), and our internal database we are growing across Australia since 2016. This mean your biodiversity data is validated against many, others in the sampling area.

Your trusted biodiversity
monitoring partner in
Australia and beyond.



Marine surveys powered by eDNA

Environmental DNA, or eDNA, is nature's fingerprint. It's the traces of DNA shed by all living things into the environment, or direct capture of diverse microscopic lifeforms. By extracting DNA from environmental samples collected from land, sea or air, we can understand the dynamic distribution of life on earth.

eDNA is a powerful, non-invasive tool for monitoring marine biodiversity, ecosystem health, and the presence of target or invasive species. It works by collecting genetic material shed by organisms into marine environments to identify what species are or were recently present, without needing to see or catch them. We can analyse a diversity of samples in marine environments, including seawater, sediment, biofoul, deposition arrays, and plankton tows. Water and sediment (including biofilm) sampling are highly complementary.

eDNA is market-ready technology for Australia.

eDNA has emerged across the UK as a game-changing tool for monitoring marine infrastructure. eDNA typically outperforms traditional and modern visual survey methods in efficiency and power, however all methods have biases. The unique scalable and measurable nature of eDNA makes it easier to understand potential impacts, in an approach that is faster and reduces disturbance to the environment.

Early adoption will enhance sustainability of Australia's journey towards offshore wind. This is proven technology that can help protect ocean health by guiding data-driven decisions. Our partnerships show how eDNA can help a range of objectives including management of invasive marine communities, species of national environmental significance, and supporting culturally led surveys of Sea Country.

Advantages for offshore wind

eDNA eliminates the need for direct observation of species. This approach overcomes common marine survey barriers, such as high costs and resources, OH&S risks, and ecosystem disturbance. These restraints often impact data reliability, frequency of collection, and the capacity for scaling surveys.

Using eDNA, you can:

- Sensitive and non-invasively monitor marine ecosystems
- Scale environmental data from onshore activities to offshore easily with versatile sampling
- Detect entire communities from marine mammals to benthic microbes
- Support early detection of invasive species or biosecurity threats and enhance adaptive management strategies

Recognised protection technology by industry

eDNA technology announced as Protection Technology winner by Southerly Ten for the Ocean Impact Organisation Offshore Wind Net Positive Challenge

EnviroDNA was announced as the winner of the Protection Technology category by Ocean Impact Organisation and Southerly Ten in the Offshore Wind Net Positive Challenge. This recognition demonstrates how eDNA technology can contribute to sustainable wind energy progress in Australia.

Our eDNA solutions deliver rapid, actionable marine insights to help offshore wind projects understand and reduce ecological impacts and guide positive outcomes. Thank you to Ocean Impact Organisation and Southerly Ten for the recognition and the opportunity to expand our networks across Australia.



The role of eDNA in the project lifecycle

Early screening through to rehabilitation

eDNA provides an unparalleled approach to translating biodiversity data into practical insights. Its straightforward sampling process greatly enhances the capacity for high-frequency monitoring across large spatial scales. By collecting insights at this scale, you can significantly enhance outcomes throughout every phase of the offshore wind lifecycle. This method effectively supports all vital stages of an offshore wind project, from initial planning to decommissioning.

Here's how eDNA aligns with each stage:

Unlock the insights.
Make informed decisions.
Achieve better results.

1

Early screening surveys

Make informed site selection with fewer environmental risks. eDNA helps to safely gather ecological data and identify risks upfront. It can detect fish, marine mammals, migratory birds, invertebrates, and seabed communities.

- Detect priority species and high-sensitivity zones
- Complement desktop studies and stakeholder engagement

2

Build baseline data

Gather comprehensive biodiversity data for establishing strong baselines across ocean communities. This is an effective tool to complement traditional survey techniques. Near real-time eDNA data can be compared with historical baselines to evaluate the ecosystem's overall condition.

- Establish biodiversity baselines
- Enhance data from traditional survey techniques

3

Ongoing monitoring

The scalability of eDNA solutions supports long-term monitoring. Insights are decision-ready, enabling key metrics such as species composition over time. Consistent monitoring demonstrates the spread of invasive species and aids in developing mitigation strategies for adaptive management. Scale data to distinguish between natural variability patterns and isolate wind farm impacts.

- Scale data rapidly and understand impacts
- Implement informed adaptive management strategies

4

Rehabilitation

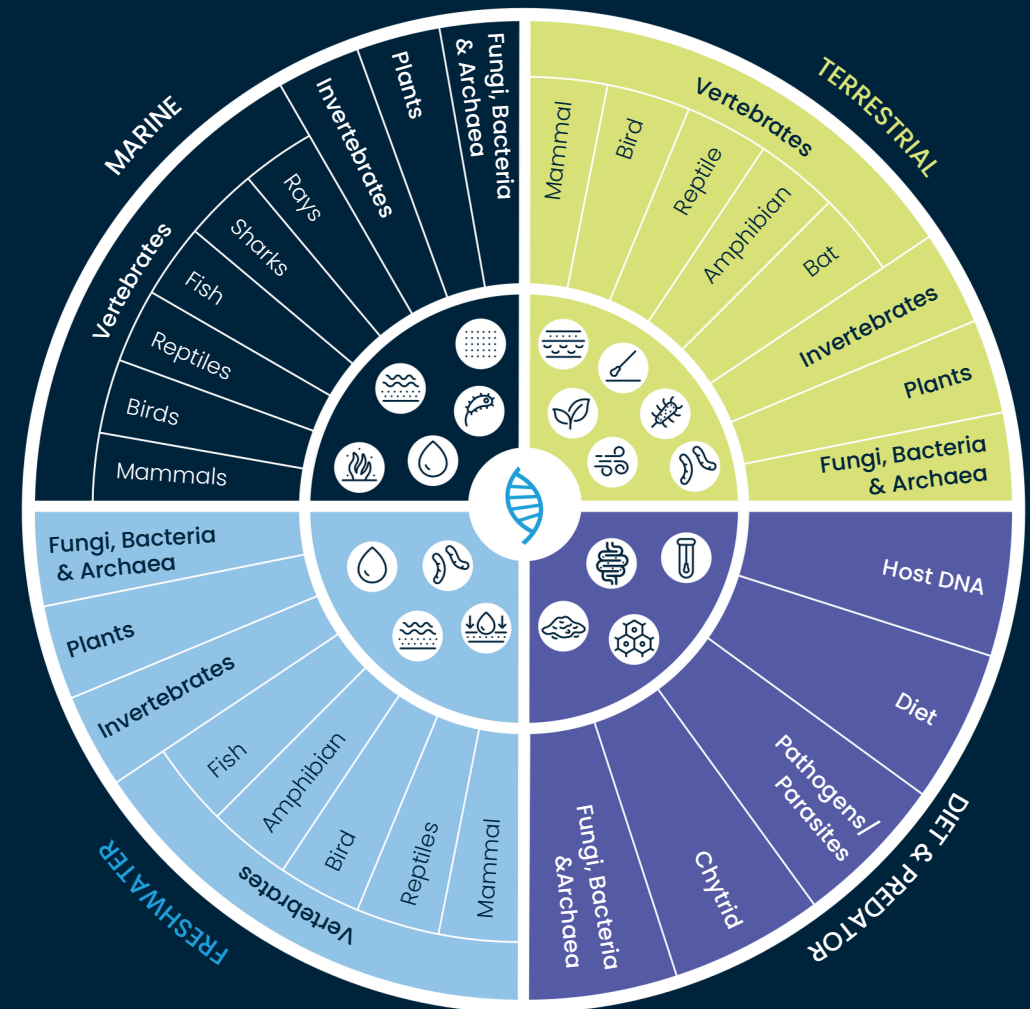
Monitor how marine ecosystems respond to the removal of infrastructure. Compare post-decommissioning biodiversity data with baseline and operational phase records. eDNA helps to determine whether key species are returning, whether invasive species persist, or if there is a lasting impact.

- Determine if ecosystems have reverted to baseline or changed
- Closure reporting and future project planning

Comprehensive analysis for all living things

Monitor coastal activities to offshore

eDNA technology enables comprehensive monitoring of biodiversity from land, sea and air. Gain insights into everything from microscopic organisms to larger mammals, while collecting scientifically-backed data on the impacts of land and coastal infrastructure, as well as offshore sites and vessel operations.



Sample experience:

FRESHWATER

- Water
- Sediment
- Bulk invertebrates
- Groundwater

MARINE

- Water
- Sediment
- Biofoul
- Deposition arrays
- Plankton tows

TERRESTRIAL

- Soil
- Plants
- Surface swab
- Air
- Bulk invertebrates
- iDNA

DIET & PREDATOR

- Scat
- Gut contents
- Tissue
- Swab

eDNA Surveys vs Traditional Marine Monitoring Methods

Here's a comparison between eDNA surveys and traditional marine monitoring methods, focusing on key aspects of field surveys, data analysis, interpretation and engagement:

	Traditional Methods	eDNA Surveys
Field surveys	Often invasive techniques that require specialised expertise. Visual assessments, trawling, netting, BRUVS, and acoustic monitoring require costly resources and significant time spent in the field.	Detect species without capturing or disturbing marine life, reducing impact on sensitive ecosystems. Sampling requires minimal equipment or prior expertise.
Analysis	Transforming field surveys into actionable data is a slow process that requires specialists to taxonomically identify species. This can result in delays in data turnaround and potential inaccuracies. Additionally, the data may overlook mobile or low-density species.	Samples provide a diverse array of species data, encompassing fish, marine mammals, invertebrates, and algae or microbes. The laboratory analysis of these samples is conducted swiftly, and the ecological data is gathered cost-effectively with pricing per sample.
Interpretation	Gathering species data from diverse sites and ecosystems can pose challenges in interpretation. The amalgamation of vast ecological information from multiple sources impedes the ability for fast, informed decision-making.	Insights are scalable across various temporal and site locations. Data is easily measurable and allows for tracking metrics over time. This helps identify trends, making it ideal for comprehension and reporting on environmental performance.
Engagement	Inabilities to streamline data can result in ineffective stakeholder and community involvement in environmental monitoring.	The ease of eDNA sampling and reporting enhances stakeholder and community engagement in impact monitoring.

Our innovative partnerships

Solutions for marine infrastructure monitoring

Smith-Root Inc.

We bring world-class eDNA water sampling equipment to Australia & New Zealand

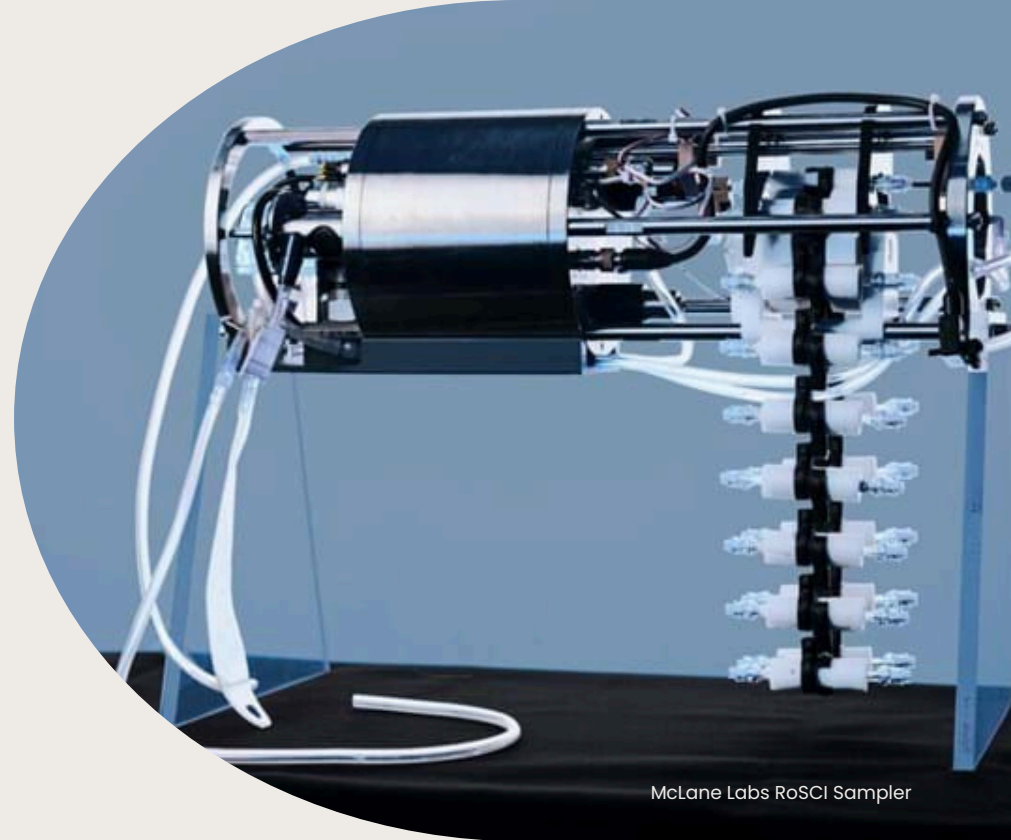
We proudly partnered with leaders in eDNA water sampling technology, Smith-Root Inc. They have designed market-leading technology for rapid, scientifically-backed collection of eDNA water samples. Developed by engineers and researchers, the Smith-Root sampling systems help maximise species detection and streamline sampling for large or technical water surveys.



McLane Labs

EnviroDNA distributes autonomous marine sampling equipment in the Oceania region

McLane manufactures time-series oceanographic profilers, samplers, and flotation. EnviroDNA partners with McLane Labs to provide advanced ocean monitoring technology. The RoCSI Sampler by McLane enhances marine sampling efficiency with its compact design, capable of collecting over fifty water samples at depths of 6,000 meters. RoCSI is versatile and can be used with various platforms, including vehicles, mooring systems, and ships. EnviroDNA distributes autonomous samplers in Australia.



McLane Labs RoCSI Sampler

DHI

Advanced water modelling software and digital solutions

We have partnered with DHI to develop collaborative solutions that support data-driven marine monitoring. DHI has been solving complex challenges in coastal and marine environments worldwide since 1964. They focus on understanding how you can achieve sustainable, customised and future-proof solutions for ecosystem-based coastal management.

Transformative data platforms for the offshore wind sector

This is an exciting collaboration merging eDNA data with dedicated platforms designed by DHI to assist the offshore wind sector with meeting regulatory requirements, maximising operational efficiency, ensuring employee safety, and safeguarding local ecosystems.



Stewardship of Sea Country

EnviroDNA Traditional Owner eDNA Training Program

The EnviroDNA Traditional Owner Program enables First Nation-led environmental monitoring, co-created by EnviroDNA and Traditional Owner collaborations. This program empowers First Nations communities by providing them with the tools, training, and authority needed to enhance biodiversity restoration using eDNA technology. This program is grounded in cultural governance and aimed at achieving long-term results. It fosters a two-way exchange between cultural knowledge systems and molecular scientific practices, all in the effort to care for Country, protect species, and ensure the well-being of community.

Traditional Owners have profound ties to Sea Country, making their participation crucial in the transition to offshore wind energy. Their expertise in species and land management is vital for preserving cultural heritage and fostering effective conservation strategies. EnviroDNA is partnering with Traditional Owners to implement eDNA technology in the management of Sea Country and coastal regions.

Impact Snapshot

Program delivery & outcomes

21,700

Square kilometres of land and sea surveyed

19

First Nations groups formally trained in EnviroDNA's Traditional Owner Program

25

Preservation projects completed across VIC, NSW, WA, NT & QLD

316

Species detected through EnviroDNA technology, including 275 native species and 41 introduced species



Case Study:

Mapping Port Phillip Bay biodiversity with Traditional Owners using eDNA

Overview

Port Phillip Bay is home to many important habitats that support high levels of biodiversity and provide a range of social and economic benefits. Characterising biodiversity across the bay, from microbes to fish, is crucial for management and understanding future impacts. This project aimed to provide training and certification in eDNA sampling methods for Bunurong and Wadawurrung Traditional Owners. The outcomes enable Traditional Owner-led biodiversity mapping at priority locations around Port Phillip Bay. This builds local capacity in biodiversity assessment to help improve and protect the health of the Bay.

Approach using eDNA

EnviroDNA co-developed a training program with Bunurong and Wadawurrung Traditional Owners. The Traditional Owners of Port Phillip Bay undertook the training and collected critical baseline biodiversity data across Port Phillip Bay. Traditional Owners sampled and analysed over 210 sites throughout the bay and its estuaries, with a focus on culturally significant areas using both sediment and water eDNA.

Results

Over 3,500 unique taxa were detected across this project, covering species including bacteria, plants, seaweeds, invertebrates and vertebrates. This project detected species of cultural importance and conservation concern such as platypus, grey headed flying fox, short-finned eel, dwarf galaxias, river black fish, seven gill shark and tupong.

Long-term impact

- eDNA provides a simple, cost effective and innovative biodiversity survey tool that supports Traditional Owners to undertake on-ground environmental sampling.
- This program provides training skills in eDNA assessment that can be accessed by other potential partner organisations (e.g. CMAs, Councils, DEECA, Melbourne Water, Park Victoria) to undertake future on-ground environmental activities, building further economic capacity.





**Non-invasively monitor
ecosystems and drive data-
driven decision-making.
eDNA supports objectives
balancing ocean health with
OSW progress.**

Case Study:

Monitoring marine biodiversity around offshore wind infrastructure using eDNA

Overview

Working with a multi-national consultancy who conducted post-construction monitoring surveys at a Scottish offshore wind farm. To support sustainable wind farm and ocean health management, these surveys determine any potential effects of the wind farm on benthic habitats and to characterise the fouling communities associated with the turbine jackets. eDNA monitoring was integrated into a wider sampling programme using traditional methods to provide a more robust dataset. This enabled the detection of species not visible in ROV footage, strengthening biodiversity baselines and supporting informed, risk-reducing decisions for offshore wind development.

Approach using eDNA

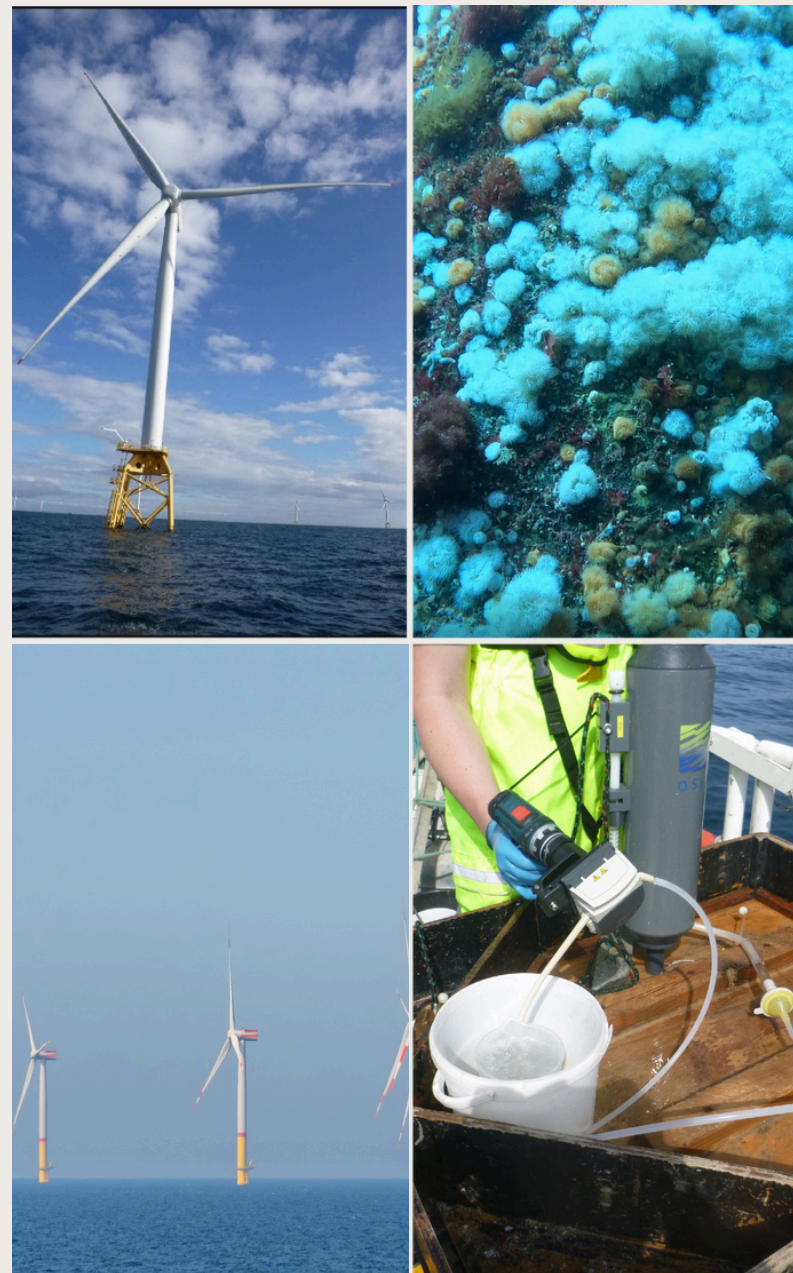
A particular focus of this project was to understand the potential presence of non-native species colonising the turbine jackets. At each site, one sample was taken at the water surface, and a second sample was collected from the middle of the water column. A field negative sample was also collected to identify the presence of any contamination in the field. Seawater samples were filtered using an eDNA Smith-Root self-preserving filter kit and filters were stored and transported to EnviroDNA's laboratory in Melbourne, Australia, for processing.

Results

EnviroDNA performed eDNA analyses using a multi-assay approach. Samples were screened with 7 metabarcoding assays targeting vertebrates and invertebrates: vertebrate 12S, fish 12S (2 assays), fish 16S, and general eukaryote assays targeting mitochondrial COI and nuclear 18S ribosomal RNA (2 assays). The eDNA samples collected resulted in a comprehensive list of species, many of which were not detected through the other sampling methods used. This comprehensive dataset enhances understanding of marine biodiversity and supports proactive environmental stewardship. Importantly, no non-native species were detected, corroborating findings from other survey techniques and reinforcing confidence in the site's ecological stability.

Long-term impact

- Robust marine biodiversity baselines underpin effective management decisions around marine infrastructure.
- Validated absence of non-native species, supporting regulatory confidence.
- Demonstrated the value of integrating eDNA into ongoing monitoring, efficient, scalable, and adaptable to Australian offshore wind projects.

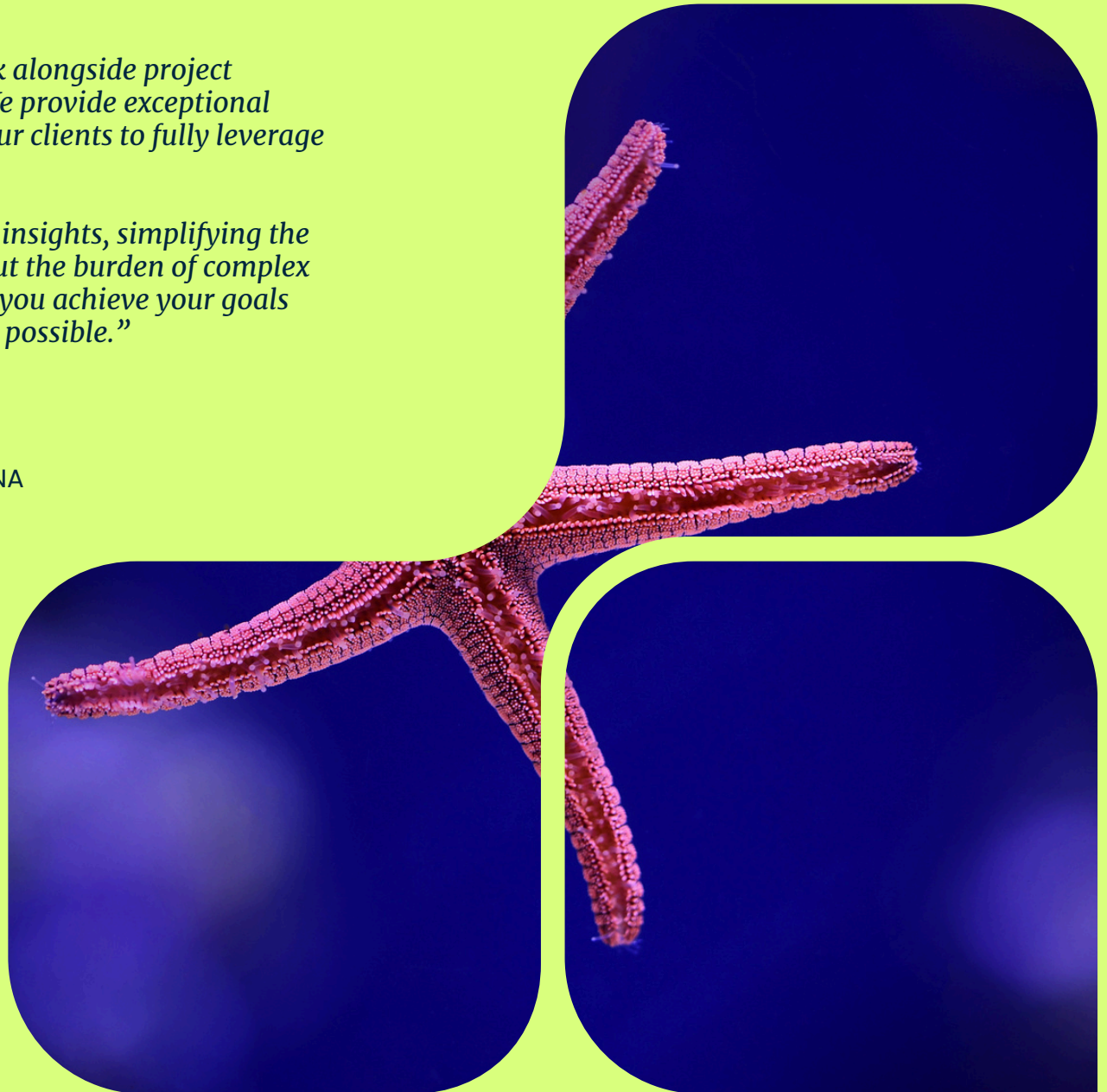


“By collaborating with EnviroDNA, you work alongside project managers who are also trained ecologists. We provide exceptional assistance in data interpretation, allowing our clients to fully leverage the impact of our information.

Our aim is to provide valuable guidance and insights, simplifying the process of making informed decisions without the burden of complex ecological data. We are dedicated to helping you achieve your goals and strive to make this journey as smooth as possible.”



Madeleine Callas
Service Delivery Lead, EnviroDNA





Combining world-class service
and scientific innovation to
support sustainable energy and
protect ocean health.

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