Tender

Trialling Benthic eDNA Sampling Methods for Monitoring Marine Biodiversity

JNCC SUPPORT CO

UK4: Tender notice - Procurement Act 2023 - view information about notice types
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Changes to notice

This notice has been edited. The previous version is still available.

Scope

Reference

C25-0847-2088

Description

JNCC is undertaking an offshore survey to collect data to assist in monitoring the effectiveness of proposed fisheries management measures covering 42 English Marine Protected Areas (MPAs) including North-West of Jones Bank (NWJB) Marine Conservation Zone (MCZ). This survey is being utilised as an opportunity to investigate the effectiveness of various benthic environmental DNA (eDNA) sampling techniques for monitoring marine biodiversity, and to assess the performance of each method relative to the others to inform future monitoring methodology.

JNCC wishes to commission a contract to undertake an analysis of marine taxa eDNA present in sediment and water samples to be collected at the seafloor on the TC25035 survey of North-West of Jones Bank MCZ. JNCC plan to trial three benthic eDNA collection methods within the survey area.

3. Project Background

The RV Tom Crean will depart from Cork for the TC25035 survey on 9 September 2025 and return on 25 September 2025. Seventeen days of sampling will be carried out as part of the survey, focusing on data collection to support the assessment of potential fisheries management measures. The survey will gather data on the effects of reduced fishing pressure on the recovery of subtidal mud habitats, as well as of sea-pen and burrowing megafauna communities.

North-West of Jones Bank MCZ is situated approximately 165 km offshore from the South-West of England. The site covers 399.14 km2 of continental shelf, and it contributes one of the largest areas of subtidal mud to the MPA network of all designated MCZs. For more information regarding NWJB MCZ please see https://jncc.gov.uk/our-work/north-west-of-jones-bank-mpa/.

DNA and eDNA are increasingly utilised, cost-effective tools for monitoring biodiversity. Traces of DNA (e.g. from scales, faeces, skin, blood) left in the environment (e.g. water and sediments), called environmental DNA, are left behind by all organisms. Using molecular methods, such as eDNA metabarcoding, we can detect an organism's presence in the environment without directly observing it. eDNA techniques can provide high-resolution pictures of biodiversity from micro to macro scales and inform on assemblage composition and biological processes at reduced costs and time. Niskin bottles, metaprobes and sediment samples have been increasingly used in recent years to collect DNA from inshore marine waters, complementing existing traditional survey methods. However, application of these methods in offshore waters has been more limited.

4. Project Objectives

As part of the offshore survey to North-West of Jones Bank MCZ, the primary research

and development objective will be to trial three eDNA sampling techniques to fill significant knowledge gaps on the use of eDNA in offshore environments.

To achieve this objective, the following research questions to be answered are:

1. Which benthic eDNA sampling methods are recommended for sampling offshore marine organisms based on the following factors?

a. Quantity of DNA collected

b. Quality of DNA collected

2. How do the following parameters compare among the benthic eDNA sampling methods?

a. Species detected

b. Species of conservation interest detected

c. Species richness

To answer these questions, JNCC plan to collect four eDNA samples using each of the three methods below, at four stations within the survey area. This will result in up to 48 eDNA samples plus six controls.

eDNA source eDNA collection method Storage Sampling methods

Water Sterivex filter 99% ethanol (volume tbc) Niskin bottles attached to a CTD from a depth 3 metres above the seafloor

Water including sediment particles Gauze 50ml 99% ethanol Metaprobes attached to a towed camera sledge for 30 mins

Sediment Sediment sample Frozen Sediment samples collected from a Day grab

JNCC wishes to commission a contract to undertake this analysis of marine taxa eDNA in water and sediment samples collected on the TC25035 survey of NWJB. JNCC plan to collect a total of 54 samples. However, please note that the resulting sample number will depend on successful sampling delivery, which could be affected by factors such as weather.

JNCC would like to use primers to test samples for the presence of marine vertebrates, fishes, invertebrates, meiofauna and bacteria.

The successful contractor will undertake the analysis as set out below (Section 5) adhering to common standards.

5. Project Objectives: Detailed Tasks

The tenderers should provide a quote broken down into the following elements:

• Transport of 54 samples (48 eDNA samples plus six controls) from Cork, Ireland to the laboratory

• Sample preparation and DNA extraction of 54 samples (48 eDNA samples plus six controls)

• The per-sample analysis of:

o 16 x niskin bottle eDNA samples plus two controls

o 16 x metaprobe eDNA samples plus two controls

o 16 x sediment eDNA samples plus two controls

Using universal primers to target a full range of marine biodiversity such as:

o Bacteria and archaea (e.g. marker 16S rRNA)

o Meiofauna invertebrates (e.g. marker 18SSSU)

o Invertebrates (e.g. marker CO1LB)

o Fish (e.g. marker 12STele)

o Vertebrates (e.g. marker 16SMV3)

• Delivery of a final report, to include:

o Introduction and aims

o Methods

o Results

o Discussion

o Recommendations for future offshore monitoring

The methods section of the report should share sufficient detail for the study to be repeated. It should cover:

• Clear field protocol detailing eDNA sampling and storage for method comparison and validation.

• DNA extraction methods - including the names of kits if used. State how the DNA was quantified and discuss the quality of DNA extracted.

• PCR amplification - specify the primers, PCR cycle conditions and reagents used.

• Sequencing - detail how the DNA products were prepared for sequencing including reagents, primers and conditions. State how the DNA was quantified, and the model of the sequencing machine used. In addition, the methods should allow the reader to understand the confidence in the sequences obtained.

• Bio-informatic processing: State in detail how the bio-informatic processing was completed, by specifying the steps taken. State any programs that were used.

• State any reference libraries used, and if a custom database was created the rules used.

• Where sequences are being used for taxonomic assignment, please explain the methods used to assign a species and why any reads may have been discarded.

The results and discussion sections of the report should include the following:

• The efficiency of DNA extraction and correct amplification of expected PCR products at each stage.

• A discussion of any problems and how they were resolved, such as issues with PCR leading to a change of reagents or amplification conditions.

• A detailed discussion explaining the results and confidence levels of the bioinformatic processing.

• Detailed results, including statistical analysis of data, to address Questions 1 and 2 above.

• To answer Question 2b, the results should include tables on species of interest, detected using each method. The list (to be provided by JNCC) includes UK BAP Priority Species, OSPAR Threatened and/or Declining Species, Annex II species, Species listed as Features of Conservation Interest (FOCI), and invasive non-native species.

Tenderers are invited to provide a description of how these requirements will be met.

Please ensure you provide a quote per sample.

Please also include details of internal quality assurance processes to ensure quality is assured in the project outputs. For example, this could include inclusion of negative control DNA extraction samples, quantification and purity checks to assess DNA yield and quality, and review of the project report by multiple experts.

6. Outputs

Any products or outputs submitted to JNCC should adhere to JNCC's house-style and should be produced in an accessible format (see product specification for more information).

Output / Deliverable Format

Spreadsheet listing the species identified (Latin and common names)

the fragment of DNA extracted as part of the study identified as that species,

and the reference library and sequence ID used to identify the species MS Excel spreadsheet (.xlsx)

(proforma to be provided by JNCC)

All raw sequence data generated FASTQ format

Final report MS Word document (.docx) and

Adobe PDF (.pdf)

7. Product Specification

JNCC is committed to making its publicly available resources and documents accessible, in accordance with the Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations 2018.

Making material accessible means making sure it can be used by as many people as possible. This includes those with:

? impaired vision

? motor difficulties

? cognitive impairments or learning disabilities

? deafness or impaired hearing

The outputs and material that JNCC publishes should be compliant with the Web Content Accessibility Guidelines version 2.1 AA standard.

To meet this standard, all reports and other documentation which are to be made publicly available must adhere to JNCC's house-style (to be provided) and be produced using a JNCC template (to be provided), unless otherwise stated. All reports (draft and final) should be provided electronically via email both as a Microsoft Word document and an Adobe PDF.

Copies of documentation associated with case studies should be provided in electronic format with an associated reference catalogue.

For any other outputs or products which are to be made publicly available through JNCC, evidence regarding how the accessibility standard will be reached should be included.

Total value (estimated)

- £32,083.33 excluding VAT
- £38,500 including VAT

Below the relevant threshold

Contract dates (estimated)

- 8 September 2025 to 13 February 2026
- 5 months, 6 days

Main procurement category

Services

CPV classifications

- 71900000 - Laboratory services
- 73200000 - Research and development consultancy services

Contract locations

- UK - United Kingdom

Participation

Particular suitability

Small and medium-sized enterprises (SME)

Submission

Enquiry deadline

25 August 2025, 5:00pm

Tender submission deadline

1 September 2025, 9:00am

Submission address and any special instructions

To be eligible for consideration your tender must arrive by 09:00 hours on Monday 1st September 2025. Please submit your return by email to the following address: TenderResponse@jncc.gov.uk.

https://jncc.gov.uk/

Tenders may be submitted electronically

Yes

Award criteria

Name	Type	Weighting
Quality of Bid	Quality	50%
Cost	Cost	20%
. Details of Contractor	Quality	20%
Sustainability	Quality	10%

Procedure

Procedure type

Below threshold - open competition

Documents

Associated tender documents

C25-0847-2088.zip

You are invited by JNCC Support Co (JNCC) to submit a tender for the supply of works or services required under the above project. If interested, you should download and carefully read the documents contained within the zip file.

C25-0847-2088-V1.zip

You are invited by JNCC Support Co (JNCC) to submit a tender for the supply of works or services required under the above project. If interested, you should download and carefully read the documents

Clarification Questions and Answers Log_C25-0847-2088.xlsx

Clarification of Question & Answers Log

Clarification Questions and Answers Log_V2_C25-0847-2088.xlsx

Clarification of Question & Answers Log

Contracting authority

JNCC SUPPORT CO

- Companies House: 05380206
- Public Procurement Organisation Number: PRPL-6981-TDJT

QUAY HOUSE, 2 EAST STATION ROAD, FLETTON QUAYS

PETERBOROUGH

PE2 8YY

United Kingdom

Email: contractqueries@jncc.gov.uk

Region: UKH11 - Peterborough

Organisation type: Public authority - central government

Devolved regulations that apply: Scotland