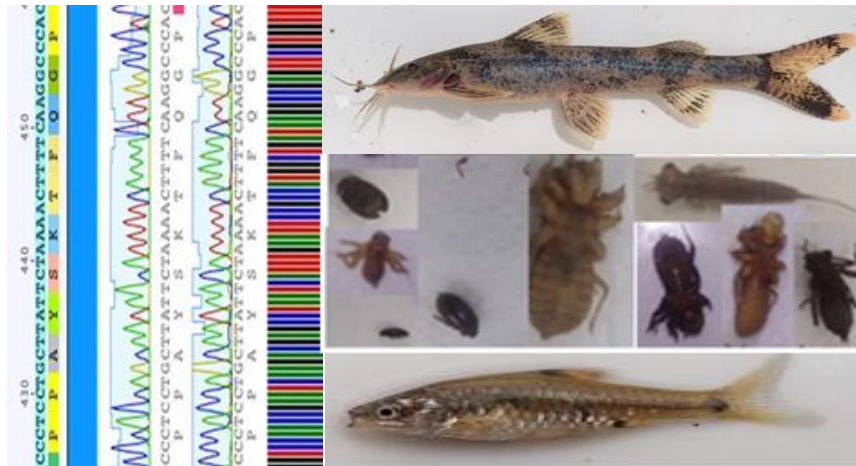


POST CONFERENCE TRAINING WORKSHOP

6th and 7th June 2024

NANO SEQUENCING TECHNOLOGY FOR SPECIES IDENTIFICATION TRAINING



Course contacts: mwauran@gmail.com & mwangiwangui25@gmail.com , 2kipscham@gmail.com

Brief course introduction:

- Identification of specimen to species level is key in biodiversity studies and conservation. Morphological identification has its limitations including when only parts of an organism are available. DNA barcoding has become a novel technology in species identification even though the cost of sequencing is a hindrance to mass application especially in African countries.
- Nano pore sequencing offers rapid and cost-effective sequencing solution where hundreds of specimens are being sequenced in a single flow cell with minimal destruction to voucher specimen.

Aim of the course:

Participants will be trained on non-destructive way of barcoding fish and macroinvertebrates using nanopore sequencing techniques.

The technique is:

- Economical- far much less expensive compared to normal sanger sequencing costs
- Efficient- Extraction of DNA process so simplified and takes less than 30minutes, Can purify and sequence hundreds of samples at once, Hundred thousands of sequences generated at one reaction
- Data generated can form reference database for identification since it's easy to merge data with voucher specimens, requires minimal taxonomic expertise involvement

Background reading & Reference: <https://dx.doi.org/10.17504/protocols.io.rm7vzy974lx1/v1>

What to bring:

- Lab coats
- Laptops if available

Provisional Course Outline:

Day 1 (6 th June 2024)	Day 2 (7 th June 2024)
800am: Opening Ceremony (Louis Leakey Auditorium)	Pooling and cleaning
Sample sorting	End prep.ligation
Tissue sub-sampling	Demo DNA library loading
DNA Quick extraction & dilution	Exploring sequence data
COI amplification	Training survey
PCR electrophoresis	Issuance of certificates and closing

Students will:

1. Be expected to fill a simple training survey
2. Do a brief training report at the end

FACILITATOR PROFILES:



Dr Ann Mwaura

Ann is Senior Scientist and the Head of the Molecular Genetics Section, CBD department at NMK. She holds a PhD degree in Genetics. Her research interests are in Biodiversity and population genetics, DNA barcoding for identification and verification, forensic science and application of sequencing technology to study populations and contribute to agriculture and conservation. She is keen in building the capacity of young upcoming scientists and trains in Molecular Biology, DNA barcoding/metabarcoding and Nanopore sequencing. She has extensive knowledge in molecular biology and genetics.



Esther Mwangi

Esther is a Research Scientist at the Zoology Department under the Directorate of National Repository and Research, NMK. She holds an MSc. In Bioinformatics and is currently pursuing a PhD in Biotechnology. Her main research interest is in using genetics to study the relationships of different species in the wild. She is currently studying the effect of hybridization in two sister species of birds and how this interaction affects the genetic diversity of the less abundant species.



Gilbert Kosgei

Gilbert is a Research Scientist at the Ichthyology Section, Zoology Department, National Museums of Kenya. He holds MSc degree in Biology of Conservation. His main focus is in freshwater fish taxonomy and systematics. Phylogenetics come in handy to aid in solving taxonomical challenges often experienced while using traditional morphometric characters.

A brief introduction of National Museums of Kenya

NMK is a State Cooperation established by the Museums and Heritage Act. It is a registered Multidisciplinary Research Institution and a center of excellence in heritage research, conservation and management. The Directorate of National Repository and Research (DNRR) coordinates research at NMK and manages the National Scientific Reference Collections. DNRR collaborates with National and International institutions in implementing its mandate, and has a mission to collect, preserve, study, document and present Kenya's past and present cultural and natural heritage. The vision of DNRR is to be a center of excellence in heritage management and research for posterity. The directorate has various departments whose mandate is research and dissemination through publications, exhibitions, industrial attachments and trainings. The institution has one of the best equipped molecular biology laboratory that has capacity of running majority of molecular techniques that includes and not limited to microbiology, DNA barcoding, population genetics, wildlife forensic analysis and nanopore sequencing. The reference data generated from this laboratory analysis is utilized in various research areas across the globe.

Map outline of NMK showcasing the training venues

