



Assessment of Fresh Water Macroinvertebrate Biodiversity in Hong Kong Streams using environmental DNA

Date: 2nd February 2026

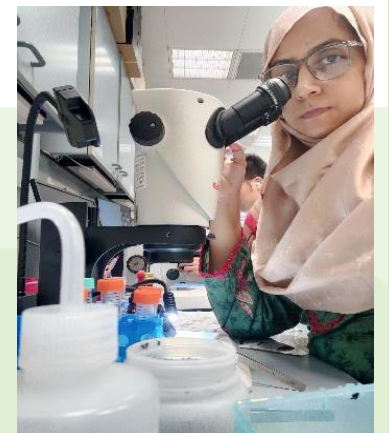
Time: 3 pm & Zoom

Venue: 6N-11



About the speaker:

Aleeza Fatima is a PhD candidate in Environmental DNA and environmental Ecology Lab supervised by Dr. Mathew S. Seymour. Her research focuses on assessing freshwater macroinvertebrate biodiversity using eDNA based methods, enabling precise ecological assessments.



Abstract:

In the past two decades, freshwater biodiversity has experienced an alarming decline due to various anthropogenic activities, posing a significant threat to ecosystem health. Current biomonitoring methods, using morphological identification of indicator species to create biotic indices, are often time-consuming and labor-intensive, hindering their wider adoption for routine ecosystem monitoring. Environmental DNA (eDNA) refers to DNA extracted from environmental samples (i.e., water, air and soil) offers enhanced ecological assessment by increasing sampling efficiency, reducing time and cost. However, a comprehensive and systematic implementation of eDNA-based methods is necessary to effectively address the biodiversity crisis.

My PhD research develops and evaluates eDNA-based biomonitoring methods for macroinvertebrates in freshwater systems. This work aims to enhance conservation efforts by offering a less time-consuming approach to uncover hidden biodiversity. The four main aims of my study are 1) Develop a high-throughput DNA barcode library for freshwater macroinvertebrates of Hong Kong 2) Compare traditional biomonitoring methods with eDNA metabarcoding for ecological assessment 3) Assess the eDNA persistence and transport signals in lotic ecosystem 4) Predict the ecological quality status of freshwater using supervised machine learning.