The University of Hong Kong
School of Biological Sciences

Qualifying Seminar

Long-term Ecological Responses to Human Impact and Eutrophication in Tokyo Bay by Using Ostracod Fossil Records

Date: 27 January 2026

Time: 15:00

Venue: 6N-11

About the speaker:

Binbin Xia is a PhD candidate supervised by Prof. Moriaki YASUHARA and Prof. Timothy BONEBRAKE. Her research interest focuses on paleoecology and anthropogenic impacts on marine ecosystems.

Abstract:

Tokyo Bay is among the most heavily urbanized coastal systems worldwide and has been subjected to intense eutrophication and recurring hypoxia throughout the past century. However, instrumental observations captures only a short portion of this environmental history and provides limited insight into long-term ecological change. To address this gap, this study reconstructs century-scale benthic ecosystem dynamics in Tokyo Bay using ostracod fossil assemblages preserved in short sediment cores. Temporal patterns in ostracod diversity, abundance, and community composition were quantified using relative abundance metrics and Hill numbers and compared between inner-bay and offshore sites. Results revealed marked spatial differences: the inner bay exhibited significant diversity loss, featuring zones entirely devoid of ostracods, whereas offshore areas retained more stable but gradually decreasing ostracod communities. These ecological patterns closely align with documented phases of urbanization, nutrient enrichment, and eutrophication. Overall, the findings highlight ostracods as sensitive indicators of long-term human impact and provide essential ecological baselines to support restoration and management of highly urbanized coastal embayments.