



The University of Hong Kong
School of Biological Sciences

Qualifying
Seminar

Ecological genomics of reef-associated sharks: combining demographic modelling and seascape genetics to guide conservation management

Date: February 10th

Time: 4-5pm

Venue: 6N-11



About the speaker:

Carolyn Dahms is a PhD student supervised by Alice Hughes and Paolo Momigliano. Her previous research intersects ecology and population genetics and is broadly centered around how species adapt to environmental change. Her current interest is to bridge population genetics with conservation management.



Abstract:

The accelerating loss of marine biodiversity calls for innovative and cost-effective approaches to ecosystem management. Due to limited resources, management should be strategically maximising populations' long-term viability by preserving their potential to adapt to changing environments. A species' evolutionary potential, being proportional to genetic diversity, can be enhanced by implementing conservation units prioritising high-diversity populations with unique evolutionary histories. However, determining genetic diversity and connectivity, i.e., gene exchange between populations, across species distribution ranges is challenging as extensive sampling is often not feasible.

This research proposes a framework predicting genetic diversity and connectivity across species ranges to guide the delineation and prioritisation of conservation units. Using the grey reef shark (*Carcharhinus amblyrhynchos*), an important coral reef predator listed as Endangered by the IUCN Red List, as a model, I aim to integrate whole-genome data spanning its global distribution with environmental predictors to estimate genetic diversity and gene flow in unsampled populations. Using a newly assembled reference genome, identified unique local adaptive genetic variation across grey reef shark populations will help prioritize the evolutionarily most unique populations. This framework can be applied to any mobile marine species with limited empirical data, offering a scalable conservation management tool.