

Talk 1:Development, selection, and species diversification: the case of the semi-aquatic bug

Summary

The evolution of adaptive traits can open new ecological opportunities and facilitate species diversification. However, the nature and utility of such traits during colonization of new niches is often unclear. The semi-aquatic bugs (Heteroptera, Gerromorpha) adapted to water surface life and diversified to colonize a wide range of niches including lakes, stream, ponds, and even oceans. In this talk, we will get introduced to this system and discuss various aspects of the process of colonization of water surfaces and the diversification that followed.



We will cover a wide range of approaches, including developmental genetics, ecology, evolution and biomechanics, to try garner a comprehensive understanding of the process of species diversification. We will see how natural models (in this case water striders) can greatly help understand how the emergence of new traits, through changes in developmental genetic processes, can shape adaptive phenotypes during development and evolution. We will also try to understand why such phenotypes have been favoured by natural selection.

Talk 2: Sexual selection and sexual conflict in water striders.

Summary

Selection in males and females is often antagonistic in that traits favoured in one sex may be disfavoured in the other. Extensive empirical and theoretical data on the co-evolution of the sexes established sexual conflict as a major force in evolutionary change within lineages and even in the divergence of lineages. Sexually antagonistic selection describes the divergent evolutionary interests of males and females, and its consequences are spectacularly manifest in the development and evolution of water striders, one of the most prominent model systems for the study of sexual antagonism in nature. Males of certain species are favoured to mate repeatedly, but females pay increasing fitness costs for multiple mating. In this talk, we will explore the consequences of these antagonistic interactions on the co-evolution of the sexes in various species of water striders. We will also explore other types of mating systems and how they can drive sexual dimorphism. These questions will be addressed following an integrative approach combining multiple fields including behaviour, development and to comparative transcriptomics.

