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Freshwater and Invasion Biology Research in Singapore and tropical Asia



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Freshwater systems in tropical Asia face numerous anthropogenic challenges, including land use change, pollution, and invasive species. Despite the extensive goods and services these ecosystems provide, they remain relatively poorly studied in the region, with much of our existing knowledge based loosely on studies in temperate areas. As an island city-state, possessing numerous urbanised catchments and a small but significant native freshwater biota dwelling within remnant fragments of natural areas (e.g., in forest streams), Singapore represents a microcosm of these challenges, making it an ideal model for tropical freshwater research. The overall goals of my research group are to advance fundamental knowledge and understanding of freshwater environments in Singapore and tropical Asia, and to translate such information into applied or industry-relevant areas such as biodiversity conservation and the enhancement of relevant human/societal health and well-being, particularly in urbanised fresh waters. We focus on three primary research areas—freshwater biodiversity and ecology, aquatic invasions, and freshwater decapod crustaceans—which though distinct, nevertheless overlap in many aspects both physically and conceptually. Field and laboratory studies in these areas contribute towards both basic and applied knowledge of tropical fresh waters leading to a better understanding of these systems. This talk will provide a brief overview of research carried out in the Freshwater and Invasion Biology Lab, highlighting examples of work on various aquatic species/groups in Singapore (including some well-known invasives), as well as investigations into fundamental (e.g., invasion mechanisms) and applied (e.g., conservation, restoration) aspects of freshwater ecology.