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Orchid conservation in the city: Case studies from Hong Kong and Singapore

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Spectacular orchid diversity is not only preserved in biodiversity hotspots and protected areas, but also in human-dominated landscapes, such as the cities, which harbour sites of important conservation value. This calls for particular conservation attention. Using case studies from two modern cities, Hong Kong and Singapore, this talk will highlight the challenges and opportunities of orchid conservation in urban environments, where orchids face the threat of extinction. A study of *Bulbophyllum bicolor* in Hong Kong revealed the presence of only 15 genotypes in all 11 extant natural populations, with nine of the populations being monoclonal. This study further revealed that all *B. bicolor* populations depend on clonal growth due to the absence of pollinators and limited mating opportunities in most of the sites. This study indicates that natural populations surviving in modern cities may carry a large extinction debt. Similarly, a significantly high extinction rate was recorded in native orchids, particularly epiphytic orchids, in Singapore. Government-led urban greening and species recovery programmes have successfully reintroduced many extinct species back to urban areas, mainly relying on resources from neighbouring countries. However, the recovery of native orchid diversity in natural habitats remains rare and slow. A study of the population genetics of *Dendrobium crumenatum*, which thrives in the urban areas of Singapore, would reveal the genetic features and population dynamics of naturally recovered species. The recovery of *D. crumenatum* populations highlights the positive impact of urban greening on the recovery of epiphytic orchids in Singapore. Collectively, these case studies can contribute basic knowledge to plant restoration and reintroduction initiatives in modern cities.

Keywords: extinction debt, population genetics, species recovery, urban greening