ABSTRACT

The pollination syndrome concept has been a central theory in pollination research, though it is not without controversy. A key issue is that plants often attract multiple pollinator functional groups, challenging the idea of necessary coevolution with specific floral visitors. Two main mechanisms have been proposed to explain plant-pollinator interactions: *neutral processes*, where interactions are driven by the relative abundances of plants and pollinators, and *niche-based processes*, where the traits of both partners dictate the interactions. As a result, interactions may stem from forbidden links or trait-matching. Research has yielded mixed support for both neutral and niche-based processes. Furthermore, spatiotemporal variability affects species' niche breadth and niche partitioning within bird-plant networks, with elevational gradients offering valuable opportunities to test these hypotheses. This dissertation explores the validity of the bird pollination syndrome, the drivers of bird-plant interactions, and their spatiotemporal variability. Additionally, this thesis provides insights into bird-pollination systems from a relatively understudied region of the world and contributes to the understanding of the ecology of sunbirds (Nectariniidae). We highlight the significant asymmetry in sunbird-plant interactions. The bird pollination syndrome remains valid, although certain plant traits, such as corolla tube length and the amount of offered reward, appear to be more relevant than others. Sunbird-plant interactions may not be as tight as previously thought, with periods promoting the evolution of trait-matching between the partners. Likewise, ecological fitting seems sufficient to facilitate these interactions. Additionally, this dissertation has provided valuable insights into the dynamic nature of studied systems with certain structural features of sunbird-plant interaction networks, being influenced by elevation and seasonality. We demonstrate how sunbird-plant networks are as specialised as their New World counterparts, including hummingbird-plant interactions.