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## **Pollination and seed dispersal services by Indian forest birds**

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Nectar-feeding and fruit-eating birds have been monitored to assess their role in pollination and seed dispersal services in the forests of southern India for 20 years. Two decades of work in southern India and a review of literature from other parts of India indicate that nearly one-third ( $n=292$ ) of the Indian forest bird species are involved in pollination/seed dispersal services. Although the predominant nectar-feeding bird families are Muscicapidae (50 species), Pycnonotidae (20) and Sturnidae (17), quantitative data on foraging visits to various plant species indicate that Nectariniidae, Sturnidae and Zosteropidae represented by sunbirds *Nectarinia* spp., mynas and starlings and Oriental White-eye *Zosterops* sp., respectively, are the most frequent flower visitors. Birds belonging to these three families made the majority (78%) of the foraging visits, indicating that they could form the prime avian pollinators in Indian forests. Predominant fruit-eating bird families include Muscicapidae (59 species), Pycnonotidae (19) and Sturnidae (17) whose members contributed >50% of the fruit foraging visits. Pycnonotidae and Sturnidae members are 'pivotal' in the forest ecosystem due to their role in both pollination and seed dispersal. Analysis indicates that hornbills and fruit pigeons are the principal seed dispersers in the wet evergreen forest and bulbuls *Pycnonotus* spp., and Koel *Eudynamis scolopacea* in the dry forests. Crows (*Corvus* spp.), which are widely distributed from coastal to high-elevation forests, are also significant seed dispersers as they consume fruits of various sizes and disperse the seeds successfully. Frugivory observations in different forest types indicate that seed dispersal of >50% of woody plant species is affected by birds. Seed germination experiments clearly indicate that bird dispersal is highly useful to the plant as bird-defecated seeds show enhanced germination. It is highlighted that the services of forest birds are essential for the survival of wild plants.