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Role of *Leptocoma zeylonica* to maintain Urban Biodiversity: Glimpse on the pollination of *Mucuna pruriens*

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Abstract

Medication is a primordial requirement of mankind since the beginning of our existence. And since the early age, therapeutic values of medicinal plants are extremely exploited thought the world just because of their easy availability. Currently, this extreme exploitation due to increased urbanization, deforestation has raised some alarming issues that if remained unchecked will result in fatal and unrecoverable outcomes related to conservation of medicinal plants. Conservation and management of these plants with rich medicinal possessions slightly depends on the involvement the animal pollinators. It is partially, because the plant species closely plays a major role in their basic requirements as food, and temporary shelter. The present observatory investigation reveals that *L. zeylonica* plays a vital role in pollination of this vine of *M. pruriens*.

Introduction

Pollination is one of the major biodiversity ministrations for the maintenance highly significant ecosystems. Animal pollinators play an essential role in the pollination of many flowering plants (Vega, 2009; Hansen et al., 2007; Anderson et al., 2005). Intense anthropogenic pressures that have resulted threats to pollination and habitat fragmentation, deforestation, desertification, rapid industrialization and infrastructural

development also directly or indirectly threaten to the biology of the pollinators (Kesavan and Swaminathan, 2008; Connolly, 2013; Aizen and Feinsinger, 1994). These eventually impinge on the unique ecological and economic services that pollination renders to sustain life on planet earth.

Role Faunal Pollinators

There are lots of faunal pollinators which serve to aid floral diversity particularly in urban areas. Among them, some avian species play sound role in the process. *Leptocom azeylonica* (Purple- rumped sunbird) a common small avian species is endemic to Indian sub-continent (Sinu et al., 2012). It helps in pollinating the flowers of many plant species such as, *Mucuna, Adina, Anthocephalus, Butea, Clerodendrum, Holmskioldia, Ixora, Delonix, Cana, Plumeria, Acacia, Aloe, Caliotropis, Hibiscus, Hugonia, Lantana, Spathodea*, *Woodfordia*, *Sterculi*, *Calliandra* and *Hamelia* species in both wild and urban areas (Bartos et al., 2012; Arvind et al., 2010).

L. zeylonica is considerable number found in urban areas. Keeping this in view, an attempt has been made to study the avian pollinators of common medicinal vine *Mucuna pruriens* (Valvetbean) locally known as Baidaanka. This vine has ample medicinal properties. The extracts have been long used in tribal communities as an antidote against *Naja*, *Echis* and *Baungarus* species (Dey and De, 2012). It contains L-DOPA, a precursor to the neurotransmitter dopamine and used to treat Parkinson's disease (Lampariello et al., 2012). Vegetative parts of *M. pruriens* used to treat impotence, diabetes mellitus, cancer whereas the seeds contain diverse bioactive compounds which justify the curative properties for various diseases like rheumatoid arthritis, analgesic, antipyretic activities, atherosclerosis etc. (Suresh and Prakash, 2011). Reports are available that seeds showing sound antioxidant activities too (Misra and Wagner, 2007). The frequencies of perching have been recorded in the two urban areas (Bhubaneswar and Cuttack) of Odisha. The present observatory investigation reveals that *L. zeylonica* plays a vital role in pollination of this vine (Fig.2). The presence of this vine also regulates the existence of *L. zeylanica* in urban areas (Fig.1). It was also observed that the experimental observatory bird are also involves in the pollination of *Spathodea campanulata, Hugonia mystex, Delonix regia, Lantana camara, Hibiscus rosa sinensis, Adina cordifolia, Anthocephalu skadamaba, Butea monospera* etc. These plants are very common in urban areas and play prime role to maintain the urban biodiversity. The findings suggest that the conservation of this valuable plant is dependent upon the conservation of *L. zeylanica* to make the environment eco-friendly. The decline of *L. zeylanica*is gradually leads to decline in the distribution of *M. pruriens*, particularly in urban areas and vice versa. Present work enlightened to highlights the importance of faunal pollinators to conserve the urban floral diversity.

Fig 1: Geographical location of study area

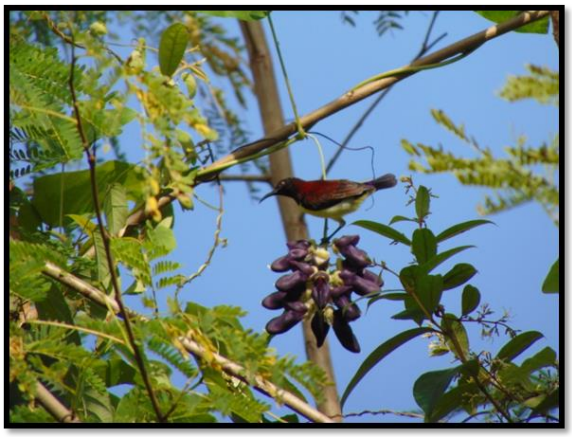

Fig 2: *L. zeylanica* pollinated the flowers of *M. pruriens*

Conclusion

From the above observation it can be assumed that that avian pollinators play a significant role in conservation and sustenance of medicinal plants, which otherwise might come under the category of RET plant. Furthermore it can also be conclusively said that *L. zeylonica* plays a vital role in pollination of this vine of *M. pruriens*. Therefore further research must be carried out in order to verify the specific importance and other pollinators associated with the growth and sustenance of these medicinally importance vines.

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