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Abundance and diversity of insects associated with citrus orchards in two different agroecological zones of Ghana

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Statement of the Problem: Citrus is one of the world's major fruit crops recognized for its popularity in contributing to food and nutritional security. Citrus orchards serve as a habitat for plethora of arthropods including harmful and beneficial insects. However, these beneficial insects such as butterflies, moths, bees, predators, parasitoids face the same fate as harmful insects during pesticide and herbicide applications. An inventory of an entomofauna associated with citrus orchards is poorly documented making it difficult for an economically and ecologically sound integrated pest management (IPM) strategy to be adopted.

Aim: The purpose of the study was to document entomofauna associated with citrus.

Methodology & Theoretical Orientation: A passive sampling technique using malaise, flight interception, pit fall, forceps and yellow pan traps were utilized on monthly basis for a period of six months in two agro-ecological zones of Ghana.

Findings: A total of 20,285 individual insects belonging to 387 species from 107 families and 13 orders were recorded. Diversity indices such as Shannon-Wiener index, Pielou's evenness and Margalef index were higher in the Coastal Savannah zone than the semi-deciduous rainforest zone during both the wet and the dry seasons. *Oecophylla longinoda* Latreille was the most dominant insect species in each agroecological zone, however, they were more abundant in the semi-deciduous rainforest than the Coastal Savannah zone. Nine percent (9%) of all the 387 insects collected were pests of citrus.

Conclusion & Significance: Citrus orchards are potential habitats for insect biodiversity conservation. We recommend that management tactics which have less or no negative effects on natural enemies, pollinators among others, but can effectively suppress insect pest populations and should be adopted. Our study has also provided the first comprehensive inventory of insect species associated with citrus agroecosystems serving as a baseline data for further studies to encourage adoption of economically sound IPM approach for citrus production.

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Avifaunal diversity needs attention and conservation? Status report from Chennai

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Understanding the diversity and structure of bird communities is essential to delineate the importance of regional or local landscapes for avian faunal conservation. Birds are an essential "bio-indicator" and are very sensitive to environmental changes. The use of bio-indicator as a tool in conservation of landscape ecology is becoming widespread. Based on this aspect, we have taken an effort to study the avifaunal diversity of south Chennai lakes and also to conserve the lakes from anthropogenic activities. A random survey was conducted in five lakes of south Chennai from 2013 onwards. We recorded 43 different bird species belonging to 29 families and 12 orders. The results revealed that, in the habitat status, 11 species come under resident migrant and 32 species come under resident. Moreover, from the noticed species 1 sp. is very common, 22 sp. are common, 9 sp. are rare and occasionally 11 sp. were noticed. According to the International Union for the Conservation of Nature (IUCN) Red list 2015 status, we have recorded near threatened 3 sp., (*Pelecanus philippensis, Mycteria leucocephala, Threskiornis melanocephalus* and least concern 40 species. Among these 43 species, 17 sp. are terrestrial and 26 sp. are aquatic. These bio-indicators are a good medium for pollination, seed dispersal and biological control and even they play a vital role to continue the ecological cycle. Increasing urbanization, industrialization and other anthropogenic activities are posing a great threat to this avifaunal diversity.

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