Population Dynamics of Common Venomous Snakes in Agricultural Landscape -

A Case Study in Southern India and United States of America

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V. Sindhuja
C. Venkatraman

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Author(s) : **Dalia Ghosh Dastidar**
Sindhuja
Venkatraman

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Dr. S. Paulraj, I.F.S., (Retd.)
Executive Chairman

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FOREWORD

India's herpetofauna is rich and varied. A great number of them are endemic and relict forms. India harbours three species of crocodilians, 44 species of turtles and tortoises, 377 species of lizards and 354 species of snakes. This forming approximately 10% of the total reptiles in the world. Reptiles are not only of aesthetic and cultural interest but are also of significance because majority of reptiles especially snakes, are useful and do silently serve the mankind in controlling agricultural pests (insects and rodents). They are also of economic value, if their potential resources are managed wisely. But, they in general received very little attention, especially, in conservation efforts.

Unless there is long-term data on fecundity, mortality, growth or sex ratio in a snake population, it is impossible to understand whether the population is self-sustaining or require immediate conservation measures. Since snake's beha viour and physiology are closely linked to their biophysical environment, a long-term monitoring is not only beneficial to the snake population but also many other related species with which they interact and this way it is important to know changes in the entire ecosystem. In this context, the present book is dealing with population dynamics of common venomous snakes in the agricultural landscape of Kanchipuram district of Tamil Nadu. I am sure that the book would serve the purpose for researchers, academicians and policy makers.

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(Dr. S. PAULRAJ)

Chennai Snake Park Trust, Rajbhavan Post, Chennai – 600 022. Phone: 22353623
Email: cspt1972@gmail.com Web: www.chennaisnakepark.in
Dr. S. Paulraj, I.F.S., (Retd.)
Executive Chairman
Mr.R.Rajarathinam, M.Sc., B.Ed.,
Director.

PREFACE

Snakes are poikilothermic, secretive, legless carnivores belonging to the suborder Serpentes or Ophidia of order Squamata in the class Reptilia. Snakes are interestingly fascinating and form an important component of the biota. They are undoubtedly the most maligned of creatures and probably suffer more than other animals; a state of affairs, brought about largely by superstition and ignorance. Everybody seems interested in snakes, some because of fear and horror, others with respect and some with veneration. But to everyone there is some kind of fascination in seeing a live snake, the scaled skin and the curious mode of propulsion. Their venom and their constricting mechanisms have made them one of the most important group of animals. The idea of a creature with creeping zig-zag motion, shining, agile and cold body immediately puts a wave of fear and repulsion in our minds. Snakes form the most important group of predators, the interaction of which maintains the natural balance in the forests and deserts, the plains and hills of India. By eating insects, rats and mice many of which may carry diseases and destroy crops, snakes perform a major unseen ecological role and for this reason alone they are worthy of conservation by all means. Because of their mode of life and feeding habits, snakes are perfectly suited to follow the rat down to its hole and finish all the young and adults alike.

The Indian folklore and Hindu scriptures abound with references to snakes with which the rural people as well as elite have come in contact in their day to day lives. However, the details given may not stand scientific scrutiny. But the fact remains that Indians were well acquainted with snakes and their habits since time immemorial. Snakes have adapted to the most varied and diverse ecological conditions and have predominantly colonized the warmer, densely vegetated areas of the tropics. At present 3273 species, 364 genera and 12 families of snakes are seen almost in all regions of the world except the Arctics, New Zealand and Ireland. India has 354 species of snakes ranging in size from 100 mm, worm snake Ramphotyphlops braminus to 6 metre long pythons, Python reticulatus.

Studies on the dynamics of snake populations still struggle with basic techniques. The reasons for the retardation are due largely to the less traceable nature of snakes. The relatively extensive and irregular movements of some snakes make it difficult to define the abundance in a population. Hence the information on snake population is not distributed evenly among snake groups. Unless there is long-term data on fecundity, mortality, growth or sex ratio in a snake population, it is impossible to

understand whether the population is self-sustaining or require immediate conservation measures. Since snakes' behavior and physiology are closely linked to their biophysical environment, a long-term monitoring is not only beneficial to the snake population but also many other related species with which they interact and this way it is important to know changes in the entire ecosystem. We believe that the present book would serve as baseline data for researchers who would like to continue their research on population ecology of snakes.

Authors

About Author(s)

Dr. C. Venkatraman

Dr. C. Venkatraman obtained his Master degree in Wildlife Biology and did his Ph.D thesis on the Birds of Vedanthangal waterbird Sanctuary: a Ramsar site. He worked in Andhra Pradesh Natural History Society, Visakapatinam, Zoo Outreach Organisation, Coimbatore, SACON Coimbatore, WII, Dehradun, Tamil Nadu Forest department, Chennai on various capacities. He surveyed birds of Western Ghats and Eastern Ghats. Dr.C.Venkatraman joined in Zoological Survey of India (A subordinate office of Ministry of Environment, Forest and Climate Change, Govt. of India) during 2004 as Scientist. He identified two mammals and one bryozoa species reported as new to science. Further he made 35 species as new records to India. He has written 10 books, 37 chapters in International and National published books. He has published more than 130 research papers in peer reviewed journals. He handled many research projects funded by MoEF&CC, Tamil Nadu Forest department, and West Bengal Forest department. He is a recognized research guide for guiding students leading to M.Phil and Ph.D., degree in Annamalai University, Chidambaram, University of Madras, Chennai and Calcutta University, Kolkata. He has produced 11 students so far. He is CPCSEA main nominee in the Institutional Animal Ethics Committee (IAEC) in Educational and R&D institution in and around Chennai nominated by MoEF&CC, Government of India, New Delhi.

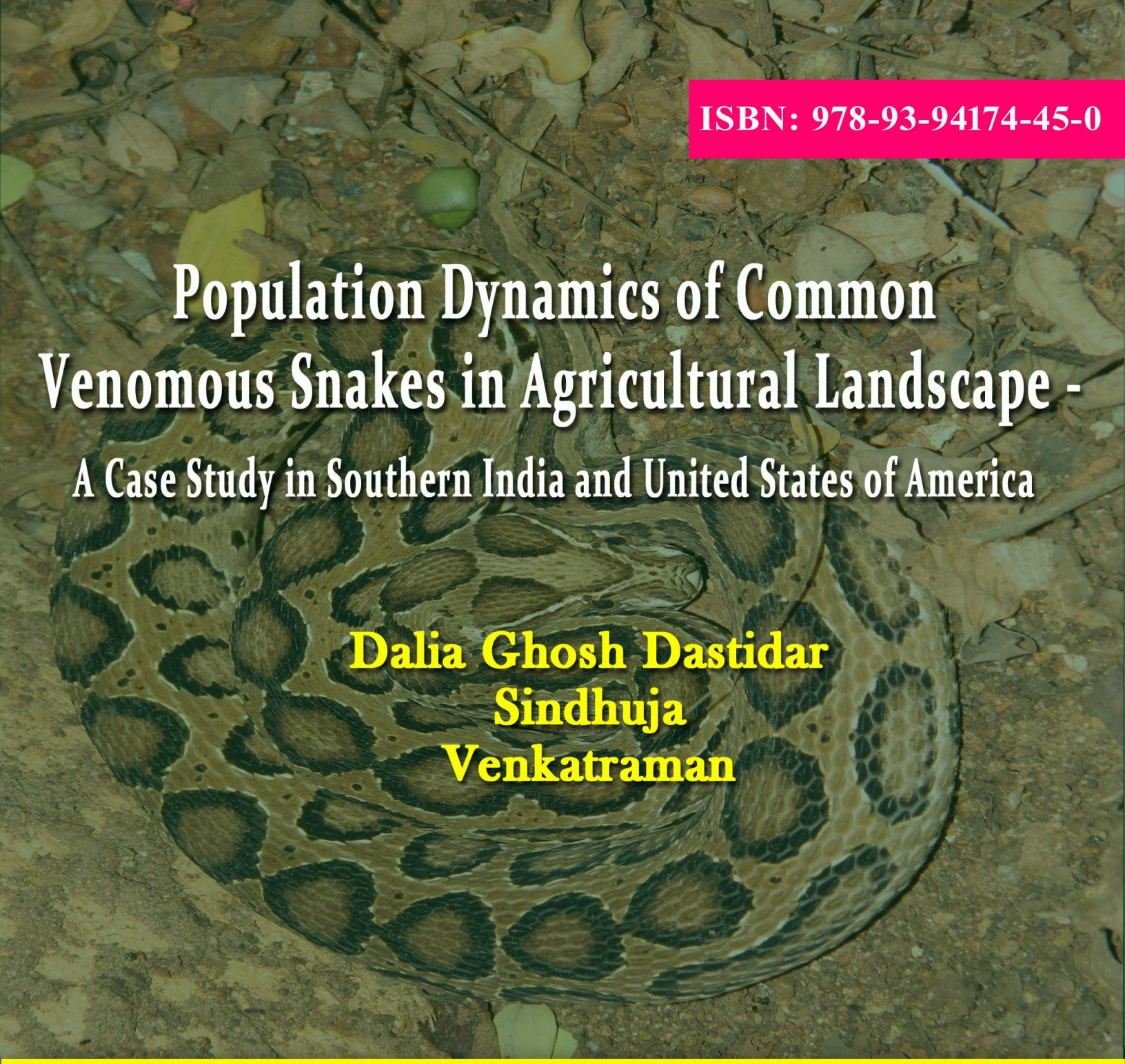
Dalia

Dalia is a Ph.D holder. She worked in SACON Coimbatore as research scholar for some time. Experienced researcher with nearly 20 years in biodiversity conservation in general and herpetology, climate change adaptation, Population ecology conflict resolution and sustainable development. Passionate about integrating scientific research to real-world applications, enhancing planetary health and empowering vulnerable communities. She has been awarded for Fulbright-Nehru fellowship programme.

Sindhuja

Sindhuja is Masters in Geography. Her interest is biodiversity research and mapping of coastal areas. She has been awarded for Rev.SR. Edwin memorial merit scholarship for proficiency in Geography during 2020-21 and 2021-22 and awarded for General proficiency in Geography during 2021-22.

Table of Contents



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