# Seed Dispersal By Bats In The Neotropics By Tatyana A Lobova

This book describes how competition between plant species, and succession in plant ecosystems, operate in grasslands and grazed pastures, both natural and sown. It discusses how competition both affects botanical structure, productivity and persistence of pastures and is itself regulated by biological, environmental and management factors, such as grazing animals. The book also examines the ways in which competition and succession are analysed, evaluated and measured, and brings to the agricultural arena the considerable progress made in understanding the principles of competition from theoretical and experimental ecology.

The average kilometer of tropical rainforest is teeming with life; it contains thousands of species of plants and animals. As The Ornaments of Life reveals, many of the most colorful and eye-catching rainforest inhabitants—toucans, monkeys, leaf-nosed bats, and hummingbirds to name a few—are an important component of the infrastructure that supports life in the forest. These fruit-and-nectar eating birds and mammals pollinate the flowers and disperse the seeds of

hundreds of tropical plants, and unlike temperate communities, much of this greenery relies exclusively on animals for reproduction. Synthesizing recent research by ecologists and evolutionary biologists, Theodore H. Fleming and W. John Kress demonstrate the tremendous functional and evolutionary importance of these tropical pollinators and frugivores. They shed light on how these mutually symbiotic relationships evolved and lay out the current conservation status of these essential species. In order to illustrate the striking beauty of these “ornaments” of the rainforest, the authors have included a series of breathtaking color plates and full-color graphs and diagrams.

This book provides information on the historical and theoretical perspectives of biodiversity and ecology in tropical forests, plant and animal behaviour towards seed dispersal and plant-animal interactions within forest communities, consequences of seed dispersal, and conservation, biodiversity and management.

Interactions between plants and animals are incredibly diverse and complex and span terrestrial, atmospheric and aquatic environments. The last decade has seen the emergence of a vast quantity of data on the subject and there is now a perceived need among both teachers and undergraduate students for a new textbook that incorporates the numerous recent advances made in the field. The

book is intended for use by advanced level undergraduate and beginning graduate students, taking related courses in wider ecology degree programmes. Very few books cover this subject and those that do are out of date.

Sexual reproduction is the predominant mode of perpetuation for flowering plant species. Investigating the reproductive strategies of plants has grown to become a vast area of research and, in crop plants, covers events from flowering to fruit and seed development; in wild species, it extends up to seed dispersal and seedling recruitment. Thus, reproduction determines the extent of yield in crop plants and, in wild plants, also determines the efficacy of recruiting new adults to the population, making this field important both from fundamental and applied plant biology perspectives. Moreover, in light of the growing concerns regarding food and nutritional security for the growing population and preserving biological diversity, reproductive biology of flowering plants has acquired special significance. Extensive studies on various facets of reproduction are being carried out around the world. However, these studies are scattered across research journals and reviews from diverse areas of biology. The present volume covers the whole spectrum of reproductive ecology, from phenology and floral biology, to sexuality and pollination biology/ecology including floral rewards, breeding systems, apomixis and seed dispersal. In turn, transgene flow, its

biosafety and mitigation approaches, and the ‘global pollinator crisis’, which has become a major international concern in light of the urgent need to sustain crop yield and biodiversity, are discussed in detail. Given its scope, the book offers a valuable resource for students, teachers and researchers of botany, zoology, ecology, agriculture and forestry, as well as conservation biologists.

A book of recipes that include ingredients made possible through bat pollination, seed dispersal, and insect control. More than 500 kinds of plants rely on bats for one, two or all three, including many food vegetables and fruit.

This book focuses on central themes related to the conservation of bats. It details their response to land-use change and management practices, intensified urbanization and roost disturbance and loss. Increasing interactions between humans and bats as a result of hunting, disease relationships, occupation of human dwellings, and conflict over fruit crops are explored in depth. Finally, contributors highlight the roles that taxonomy, conservation networks and conservation psychology have to play in conserving this imperilled but vital taxon. With over 1300 species, bats are the second largest order of mammals, yet as the Anthropocene dawns, bat populations around the world are in decline. Greater understanding of the anthropogenic drivers of this decline and exploration of possible mitigation measures are urgently needed if we are to retain global bat diversity in the coming decades. This book brings together teams of international experts to provide a global review of current understanding and recommend directions for future research and mitigation.

Theimer, an accomplished ecologist.

The World Almanac Education Group Inc. presents information on bats as part of the Explore Animals section of The World Almanac for Kids Online. Bats are found throughout the world and are the only mammals capable of sustained flight. Bats eat insects and play a role in both plant pollination and seed dispersal. Most species are nocturnal.

This dissertation, "Patterns of Seed Dispersal by Flying Frugivores in Hong Kong" by Jacqueline E S, Weir, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: Abstract of thesis entitled PATTERNS OF SEED DISPERSAL BY FLYING FRUGIVORES IN HONG KONG Submitted by Jacqueline E. S. Weir for the degree of Master of Philosophy at The University of Hong Kong in March 2004 Seed dispersal is a critical process in forest regeneration, particularly in degraded landscapes. In Hong Kong most seed dispersal is carried out by a small number of frugivore species. The main aim of this study was to quantify the pattern of seed dispersal by the most important flying frugivore, the light-vented bulbul (Pycnonotus sinensis). Seed shadows were predicted for this and three other common frugivores: the red-whiskered bulbul (Pycnonotus jocosus), hwamei (Garrulax canorus), and dog- faced fruit bat (Cynopterus sphinx). Gut passage times for seeds were measured in newly captured and long-term captive birds. Median times until first appearance of a seed were 14-20 minutes in the two bulbul species and 37 minutes for hwameis. Median times until the last appearance of seeds from multi-

seeded fruits were 36-38 minutes for bulbuls, with some retained over 100 minutes, and 61 minutes for hwameis, with some retained over 150 minutes. Movement patterns were measured by attaching tail- mounted radio-transmitters to birds caught in mist-nets and using triangulation to locate them every 10 minutes. These were then used to calculate how displacement from an arbitrary starting point, representing a fruiting shrub or tree, increased over time. The displacement-time graphs and gut passage data were combined to produce estimates of seed dispersal distances. Predicted median seed dispersal distances were typically 40-50 m for adult light- vented bulbuls in winter, 100-200 m for juvenile light-vented bulbuls in summer, 100- 150 m for juvenile red-whiskered bulbuls in summer, 30 m for adult hwameis in winter and 30-40 m for juvenile hwameis in summer. Bulbuls occasionally moved over 1 km within the gut passage time for seeds. Dog-faced fruit bats had median dispersal distances of 150-200 m, based on gut passage times from the literature, and maximum movement distances up to 900 m. Range analysis for the species studied, and visual observations of movements by frugivorous birds were carried out in order to modify the symmetrical predicted seed shadows in terms of the heterogeneous real landscape. Non-breeding light-vented and red-whiskered bulbuls appeared to be nomadic and willing to cross open areas, although they appeared to prefer forest and shrubland. Hwameis were sedentary and very rarely crossed open areas. Light-vented bulbuls were most willing to use isolated perches in open areas. Movements within grassland and shrubland were increased during fruiting peaks of the shrubs Rubus reflexus and Eurya spp. Dog-faced fruit bats had varying range sizes and crossed open lowland areas, but willingness to enter upland degraded sites needs investigation. Bats dispersed cultivated and native fruit species. Seed shadows for

small, defecated seeds may be diffuse, but for the larger seeds dropped under feeding roosts would be patchy. Management actions to encourage seed dispersal into degraded areas should consider landscape features used by these species and the distances they are willing to travel. The provision of suitable perches should increase seed input to open areas and the attractive nature of fruiting shrubs could be utilised in planting strategies. DOI: 10.5353/th_b300

Based on graph theory studies this book seeks to understand how tropical species interact with each other and how these interactions are affected by perturbations in some of the most species-rich habitats on earth. Due to the great diversity of species and interactions in the tropics, this book addresses a wide range of current and future issues with empirical examples and complete revisions on different types of ecological networks: from mutualisms to antagonisms. The goal of this publication is not to be only for researchers but also for undergraduates in different areas of knowledge, and also to serve as a reference text for graduate-level courses mainly in the life sciences.

Dr. Timothy Schowalter has succeeded in creating a unique, updated treatment of insect ecology. This revised and expanded text looks at how insects adapt to environmental conditions while maintaining the ability to substantially alter their environment. It covers a range of topics- from individual insects that respond to local changes in the environment and affect resource distribution, to entire insect communities that have the capacity to modify ecosystem conditions. Insect Ecology, Second Edition, synthesizes the latest research in the field and has been produced in full color throughout. It is ideal for students in both entomology and ecology-focused programs. NEW TO THIS EDITION: * New topics such as elemental

defense by plants, chaotic models, molecular methods to measure disperson, food web relationships, and more * Expanded sections on plant defenses, insect learning, evolutionary tradeoffs, conservation biology and more * Includes more than 350 new references * More than 40 new full-color figures

The conventional wisdom says that the devolution of Classic Maya civilization occurred because its population grew too large and dense to be supported by primitive neotropical farming methods, resulting in debilitating famines and internecine struggles. Using research on contemporary Maya farming techniques and important new archaeological research, Ford and Nigh refute this Malthusian explanation of events in ancient Central America and posit a radical alternative theory. The authors-show that ancient Maya farmers developed ingenious, sustainable woodland techniques to cultivate numerous food plants (including the staple maize);-examine both contemporary tropical farming techniques and the archaeological record (particularly regarding climate) to reach their conclusions;-make the argument that these ancient techniques, still in use today, can support significant populations over long periods of time.

This book provides a comprehensive treatment of all known bat-dispersed plants in the New World tropics and covers a total of 549 species in 191 genera from 62 plant families. It places a special emphasis on the flowering plants and bat fauna of the relatively undisturbed forests of central French Guiana. In particular, detailed descriptions of 112 bat-dispersed species from that area are complemented by color photographs that will help other researchers identify fruits and seeds throughout the Neotropics. Going beyond merely describing these species, the authors compare and analyze the diverse traits of plants dispersed by bats to reexamine bat

preferences of some fruiting plants over the others, a phenomenon known as the "bat-fruit syndrome." The seed dispersers too are given ample treatment, with descriptions of the foraging ecology and feeding behaviors of the 37 fruit-eating bats found in central French Guiana. The monograph includes complementing appendices that allow the reader to determine all bat species reported to feed on the fruits of a particular plant and all fruiting plants in the diet of a particular bat species. It summarizes decades of research on bat-plant interactions from many parts of the Neotropics, providing a stimulus for further ecological and evolutionary studies--

A bat is a mammal with the front limbs developed as wings, which makes it the only flying mammal in the world. A bat's scientific name Chiroptera means 'hand wing' in Greek. Indeed, a bat's open wing resembles an outspread human hand, with slim, elongated fingers and elastic skin membranes stretching between the fingers and connecting the wing to the body. The bat's wings are much lighter and thinner than the bird's feathered wings; that makes a bat much more maneuverable than a bird.

Invasion ecology is the study of the causes and consequences of the introduction of organisms to areas outside their native range. Interest in this field has exploded in the past few decades. Explaining why and how organisms are moved around the world, how and why some become established and invade, and how best to manage invasive species in the face of global change are all crucial issues that interest biogeographers, ecologists and environmental managers in all parts of the world. This book brings together the insights of more than 50 authors to examine the origins, foundations, current dimensions and potential trajectories of invasion ecology. It revisits key tenets of the foundations of invasion ecology, including contributions of

pioneering naturalists of the 19th century, including Charles Darwin and British ecologist Charles Elton, whose 1958 monograph on invasive species is widely acknowledged as having focussed scientific attention on biological invasions.

Fresh concepts in the study of seed dispersal are spurring a host of exciting new questions, new answers to old questions, new methods and approaches, and a reinvigoration of the field.Seed Dispersal: Theory and its Application in a Changing World presents both recent advances and reviews of current knowledge demonstrating the vigour and vibrancy of the field. It provides new perspectives and directions at a time when efforts to meet growing environmental challenges threatening natural systems are of utmost importance.

Communication is an essential factor underpinning the interactions between species and the structure of their communities. Plant-animal interactions are particularly diverse due to the complex nature of their mutualistic and antagonistic relationships. However the evolution of communication and the underlying mechanisms responsible remain poorly understood. Plant-Animal Communication is a timely summary of the latest research and ideas on the ecological and evolutionary foundations of communication between plants and animals, including discussions of fundamental concepts such as deception, reliability, and camouflage. It introduces how the sensory world of animals shapes the various modes of communication employed, laying out the basics of vision, scent, acoustic, and gustatory communication. Subsequent chapters discuss how plants communicate in these sensory modes to attract animals to facilitate seed dispersal, pollination, and carnivory, and how they communicate to defend themselves against herbivores. Potential avenues for productive theoretical and empirical research are clearly identified, and suggestions for novel empirical approaches to the

study of communication in general are outlined.

For over one hundred years, ornithologists and amateur birders have jointly campaigned for the conservation of bird species, documenting not only birds' beauty and extraordinary diversity, but also their importance to ecosystems worldwide. But while these avian enthusiasts have noted that birds eat fruit, carrion, and pests; spread seed and fertilizer; and pollinate plants, among other services, they have rarely asked what birds are worth in economic terms. In Why Birds Matter, an international collection of ornithologists, botanists, ecologists, conservation biologists, and environmental economists seeks to quantify avian ecosystem services—the myriad benefits that birds provide to humans. The first book to approach ecosystem services from an ornithological perspective, Why Birds Matter asks what economic value we can ascribe to those services, if any, and how this value should inform conservation. Chapters explore the role of birds in such important ecological dynamics as scavenging, nutrient cycling, food chains, and plant-animal interactions—all seen through the lens of human well-being—to show that quantifying avian ecosystem services is crucial when formulating contemporary conservation strategies. Both elucidating challenges and providing examples of specific ecosystem valuations and guidance for calculation, the contributors propose that in order to advance avian conservation, we need to appeal not only to hearts and minds, but also to wallets.

Presents a guide to what scientists know about bats, detailing their origins, evolution,

diet, habitat, reproductive process, and social structure, and offers a discussion of echolocation and these mammals' role in the ecosystem.

Among living vertebrates bats and birds are unique in their ability to fly, and it is this common feature that sets them apart ecologically from other groups. Bats are in some ways the noctumal equivalents of birds, having evolved and radiated into a diversity of forms to fill many of the same niches. The evolution of flight and echolocation in bats was undoubtedly a prime mover in the diversification of feeding and roosting habits, reproductive strategies, and social behaviors. Bats have successfully colonized almost every continential region on earth (except Antarctica), as weIl as many oceanic islands and archipelagos. They comprise the second largest order of mammals (next to rodents) in number of species and probably exceed all other such groups in overall abundance. Bats exhibit a dietary diversity (including insects, fruits, leaves, flowers, nectar and pollen, fish. other vertebrates, and blood) unparalleled among other living mammals. Their reproductive pattems range from seasonal monestry to polyestry, and mating systems inelude promiscuity, monogamy, and polygyny. The vast majority of what we know about the ecology of bats is derived from studies of only a few of the approximately 850 species, yet in the past two decades studies on bats have escalated to a level where many important empirical pattems and processes have been identified. This knowledge has strengthened our understanding of ecological relationships and encouraged hypothesis testing rather than perpetuated a catalog of miscellaneous

observations.

As dusk settles over the Costa Rican forest, the short-tailed fruit bat, Carollia perspicillata, stirs from its cave roost. Flying out to search for ripe fruit, Carollia returns to a night roost in the forest vegetation to eat. After a few such flights Carollia rests, and the fruits pass through its short digestive tract. The seeds are excreted onto the ground, to be eaten in turn by mice and insects, but a few are pushed into crevices where they await the necessary conditions for germination. In The Short-tailed Fruit Bat, Theodore Fleming examines Carollia's role in the ecology of tropical forests. Based on more than ten years' research, this study provides the most detailed ecological and evolutionary account to date of the life history of a Neotropical mammal and includes striking photographs of the bats in flight.

Seed Dispersal focuses on the mechanics and processes involved in seed dispersal, including its implications in ecology, animal behavior, plant and animal biogeography, speciation, and evolution. The selection first elaborates on the aerial motion of seeds, fruits, spores, and pollen and seed dispersal by water. Discussions focus on seed dispersal by rain, river, and flood, effective seed dispersal by ocean currents compared to other vectors, aerodynamic forces and their effects, and launching and release mechanisms. The text then takes a look at seed dispersal syndromes in Australian Acacia, including inference of dispersal syndromes, seed dispersal syndromes, ecological consequences of seed dispersal, and evolutionary derivation of dispersal

syndromes. The publication ponders on seed dispersal by fruit-eating birds and mammals, rodents as seed consumers and dispersers, and seed dispersal in relation to fire. Topics include fire as a dispersal vector, long distance dispersal, granivorous rodents and the fates of seeds, determinants of the fate path, population ecology of seed dispersal, and foraging for fruits. The selection is a valuable reference for researchers interested in the factors involved in seed dispersal.

The Study of Plants in a Whole New Light “Matt Candeias succeeds in evoking the wonder of plants with wit and wisdom.” ?James T. Costa, PhD, executive director, Highlands Biological Station and author of Darwin's Backyard #1 New Release in Nature & Ecology, Plants, Botany, Horticulture, Trees, Biological Sciences, and Nature Writing & Essays In his debut book, internationally-recognized blogger and podcaster Matt Candeias celebrates the nature of plants and the extraordinary world of plant organisms. A botanist’s defense. Since his early days of plant restoration, this amateur plant scientist has been enchanted with flora and the greater environmental ecology of the planet. Now, he looks at the study of plants through the lens of his ever-growing houseplant collection. Using gardening, houseplants, and examples of plants around you, In Defense of Plants changes your relationship with the world from the comfort of your windowsill. The ruthless, horny, and wonderful nature of plants. Understand how plants evolve and live on Earth with a never-before-seen look into their daily drama. Inside, Candeias explores the incredible ways plants live, fight, have sex, and conquer

new territory. Whether a blossoming botanist or a professional plant scientist, In Defense of Plants is for anyone who sees plants as more than just static backdrops to more charismatic life forms. In this easily accessible introduction to the incredible world of plants, you'll find: • Fantastic botanical histories and plant symbolism • Passionate stories of flora diversity and scientific names of plant organisms • Personal tales of plantsman discovery through the study of plants If you enjoyed books like The Botany of Desire, What a Plant Knows, or The Soul of an Octopus, then you'll love In Defense of Plants.

This revised edition of a book first published in 2010 supplements the original account of the 116 bat species then known to be found in Southern and Central Africa with an additional eight newly described species. The chapters on evolution, biogeography, ecology and echolocation have been updated, citing dozens of recently published papers. The book covers the latest systematic and taxonomic studies, ensuring that the names and relationships of bats in this new edition reflect current scientific knowledge. The species accounts provide descriptions, measurements and diagnostic characters as well as detailed information about the distribution, habitat, roosting habits, foraging ecology and reproduction of each species. The updated species distribution maps are based on 116 recorded localities. A special feature of the 2010 publication was the mode of identification of families, genera and species by way of character matrices rather than the more generally used dichotomous keys. Since then these matrices have been tested in the field and, where necessary, slightly altered for this edition. New photographs fill in gaps and updated sonograms aid with bat identification in acoustic surveys.

The bibliography, which now contains more than 700 entries, will be an invaluable aid to students and scientists wishing to track down original research.

"The Phyllostomidae family of bats is extremely ecologically diverse, displaying more morphological variation than any other mammal family. It also provides one of the most famed examples of adaptive radiation, an area of study that allows biologists to see the dramatic evidence of the power of natural selection and opportunism in the evolution of life on Earth. The bats are also a beloved subject of study by biologists-from mammologists to evolutionary biologists to conservation biologists-for the role they play in the health of tropical ecosystems, especially as key pollinators. Phyllostomid bats are abundant, occupying systems from the southwestern United States to Argentina and throughout the West Indies. The family's diversity represents itself through two hundred species and manifests mainly in skull morphology and diet. They suck blood, eat small vertebrates, enjoy occasional fruits, and sip nectar here and there, too. They have a distinctive nose, reminiscent of a creature from a Hieronymus Bosch painting, thought to have evolved in various forms to reflect the preferred diet of different species. This collection presents in great detail what is currently known of the bats and divulges a trove of information about this incredible example of mammalian radiation"--