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Environmental Impact of Genetically Modified Crops Natalie Ferry 2009-01-01 The genetic modification of crops continues to be the subject of intense debate, and opinions are often strongly polarised. Environmental Impact of Genetically Modified Crops addresses the major concerns of scientists, policy makers, environmental lobby groups and the general public regarding this controversial issue, from an editorially neutral standpoint. While the main focus is on environmental impact, food safety issues, for both humans and animals are also considered. The book concludes with a discussion on the future of agricultural biotechnology in the context of sustainability, natural resource management and future global population and food supply.

Host And Pathogen Mechanisms Underpinning Viral Ecology And Emerging Infections Declan C. Schroeder 2021-02-24

The Forgotten Pollinators Stephen L. Buchmann 2012-06-22 Consider this. Without interaction between animals and flowering plants, the seeds and fruits that make up nearly eighty percent of the human diet would not exist. In The Forgotten Pollinators, Stephen L. Buchmann, one of the world's leading authorities on bees and pollination, and Gary Paul Nabhan, award-winning writer and renowned crop ecologist, explore the vital but little-appreciated relationship between plants and the animals they depend on for reproduction -- bees, beetles, butterflies, hummingbirds, moths, bats, and countless other animals, some widely recognized and other almost unknown. Scenes from around the globe -- examining island flora and fauna on the Galapagos, counting bees in the Panamanian rain forest, witnessing an ancient honey-hunting ritual in Malaysia -- bring to life the hidden relationships between plants and animals, and demonstrate the ways in which human society affects and is affected by those relationships. Buchmann and Nabhan combine vignettes from the field with expository discussions of ecology, botany, and crop science to present a lively and fascinating account of the ecological and cultural context of plant-pollinator relationships. More than any other natural process, plant-pollinator relationships offer vivid examples of the connections between endangered species and threatened habitats. The authors explain how human-induced changes in pollinator populations -- caused by overuse of chemical pesticides, unbridled development, and conversion of natural areas into monocultural cropland--can have a ripple effect on disparate species, ultimately leading to a "cascade of linked extinctions."

Agricultural Index 1925

Orchard Mason Bee Brian L. Griffin 1993-01-01

Status of Pollinators in North America National Research Council 2007-05-13 Pollinators--insects, birds, bats, and other animals that carry pollen from the male to the female parts of flowers for plant reproduction--are an essential part of natural and agricultural ecosystems throughout North America. For example, most fruit, vegetable, and seed crops and some crops that provide fiber, drugs, and fuel depend on animals for pollination. This report provides evidence for the decline of some pollinator species in North America, including America's most important managed pollinator, the honey bee, as well as some butterflies, bats, and hummingbirds. For most managed and wild pollinator species, however, population trends have not been assessed because populations have not been monitored over time. In addition, for wild species with demonstrated declines, it is often difficult to determine the causes or consequences of their decline. This report outlines priorities for research and monitoring that are needed to improve information on the status of pollinators and establishes a framework for conservation and restoration of pollinator species and communities.

Popular Medicinal Plants in Portland and Kingston, Jamaica Ina Vandebroek 2020-12-05 This book highlights the results from over a year of ethnobotanical research in a rural and an urban community in Jamaica, where we interviewed more than 100 people who use medicinal plants for healthcare. The goal of this research was to better understand patterns of medicinal plant knowledge, and to find out which plants are used in consensus by local people for a variety of illnesses. For this book, we selected 25 popular medicinal plant species mentioned during fieldwork. Through individual interviews, we were able to rank plants according to their frequency of mention, and categorized the medicinal uses for each species as "major" (mentioned by more than 20% of people in a community) or "minor" (mentioned by more than 5%, but less than 20% of people). Botanical identification of plant specimens collected in the wild allowed for cross-linking of common and scientific plant names. To supplement field research, we undertook a comprehensive search and review of the ethnobotanical and biomedical literature. Our book summarizes all this information in detail under specific sub-headings.

Beekeeping in Asia Pongthep Akratanakul 1986

Pollinators and Pollination Jeff Ollerton 2021-01-18 A unique and personal insight into the ecology and evolution of pollinators, their relationships with flowers, and their conservation in a rapidly changing world. The pollination of flowers by insects, birds and other animals is a fundamentally important ecological function that supports both the natural world and human society. Without pollinators to facilitate the sexual reproduction of plants, the world would be a biologically poorer place in which to live, there would be an impact on food security, and human health would suffer. Written by one of the world's leading pollination ecologists, this book provides an introduction to what pollinators are, how their interactions with flowers have evolved, and the fundamental ecology of these relationships. It explores the pollination of wild and agricultural plants in a variety of habitats and contexts, including urban, rural and agricultural environments. The author also provides practical advice on how individuals and organisations can study, and support, pollinators. As well as covering the natural history of pollinators and flowers, the author discusses their cultural importance, and the ways in which pollinator conservation has been portrayed from a political perspective. The book draws on field work experiences in South America, Africa, Australia, the Canary Islands and the UK. For over 30 years the author has spent his career researching how plants and pollinators evolve relationships, how these interactions function ecologically, their importance for society, and how we can conserve them in a rapidly changing world. This book offers a unique and personal insight into the science of pollinators and pollination, aimed at anyone who is interested in understanding these fascinating and crucial ecological interactions.

Native Pollinators and Agriculture in Canada 2014 This booklet describes pollinators and their connection to agriculture in Canada. It includes information on the lives of important pollinators (specifically: bees, wasps, flies, butterflies and moths, and beetles) and how to protect wild pollinators, particularly on farms and ranches.--Includes text from document.

Invasive Species in Forests and Rangelands of the United States Therese M. Poland 2021-02-01 This open access book describes the serious threat of invasive species to native ecosystems. Invasive species have caused and will continue to cause enormous ecological and economic damage with ever increasing world trade. This multi-disciplinary book, written by over 100 national experts, presents the latest research on a wide range of natural science and social science fields that explore the ecology, impacts, and practical tools for management of invasive species. It covers species of all taxonomic groups from insects and pathogens, to plants, vertebrates, and aquatic organisms that impact a diversity of habitats in forests, rangelands and grasslands of the United States. It is well-illustrated, provides summaries of the most important invasive species and issues impacting all regions of the country, and includes a comprehensive primary reference list for each topic. This scientific synthesis provides the cultural, economic, scientific and social context for addressing environmental challenges posed by invasive species and will be a valuable resource for scholars, policy makers, natural resource managers and practitioners.

Blair & Ketchum's Country Journal 1982

How to Manage the Blue Orchard Bee Jordi Bosch 2001

Bees and Their Role in Forest Livelihoods Nicola Bradbeer 2009 This volume provides basic information about managing wild bees and on the use of their products. It identifies and describes major bee species and their importance for nature conservation and for sustaining livelihoods of rural people. Bee products are considered at both subsistence and commercial level, and particular attention is given to the potential for further development of managing wild bees in developing countries. The role of bees for pollination of crops and the impact of managing bees on forestry and farming are presented. Wild-bee keeping techniques, honey production and marketing, and the international trade in bee products are described with further references and sources of additional information given. Using this publication, readers will better understand the complexities and opportunities for developing apiculture by rural livelihoods. Also published in French.

Biological & Agricultural Index 1925

Pesticide Risk Assessment for Pollinators David Fischer 2014-04-29 Pollinators play a vital role in ecosystem health and are essential to ensuring food security. With declines in both managed and wild pollinator populations in recent years, scientists and regulators have sought answers to this problem and have explored implementing steps to protect pollinator populations now and for the future.

Pesticide Risk Assessment for Pollinators focuses on the role pesticides play in impacting bee populations and looks to develop a risk assessment process, along with the data to inform that process, to better assess the potential risks that can accompany the use of pesticide products. Pesticide Risk Assessment for Pollinators opens with two chapters that provide a biological background of both Apis and non-Apis species of pollinators. Chapters then present an overview of the general regulatory risk assessment process and decision-making processes. The book then discusses the core elements of a risk assessment, including exposure estimation, laboratory testing, and field testing. The book concludes with chapters on statistical and modeling tools, and proposed additional research that may be useful in developing the ability to assess the impacts of pesticide use on pollinator populations. Summarizing the current state of the science surrounding risk assessment for Apis and non-Apis species, Pesticide Risk Assessment for Pollinators is a timely work that will be of great use to the environmental science and agricultural research communities. Assesses pesticide risk to native and managed pollinators Summarizes the state of the science in toxicity testing and risk assessment Provides valuable biological overviews of both Apis and non-Apis pollinators Develops a plausible overall risk assessment framework for regulatory decision making Looks towards a globally harmonized approach for pollinator toxicity and risk assessment

Pollination Biology Dharam P. Abrol 2011-10-05 This book has a wider approach not strictly focused on crop production compared to other books that are strictly oriented towards bees, but has a generalist approach to pollination biology. It also highlights relationships between introduced and wild pollinators and consequences of such introductions on communities of wild pollinating insects. The chapters on biochemical basis of plant-pollination interaction, pollination energetics, climate change and pollinators and pollinators as bioindicators of ecosystem functioning provide a base for future insights into pollination biology. The role of honeybees and wild bees on crop pollination, value of bee pollination, planned honeybee pollination, non-bee pollinators, safety of pollinators, pollination in cages, pollination for hybrid seed production, the problem of diseases, genetically modified plants and bees, the role of bees in improving food security and livelihoods, capacity building and awareness for pollinators are also discussed.

The Lives of Bees Thomas D. Seeley 2019-05-28 Seeley, a world authority on honey bees, sheds light on why wild honey bees are still thriving while those living in managed colonies are in crisis.

Drawing on the latest science as well as insights from his own pioneering fieldwork, he describes in extraordinary detail how honey bees live in nature and shows how this differs significantly from their lives under the management of beekeepers. Seeley presents an entirely new approach to beekeeping--Darwinian Beekeeping--which enables honey bees to use the toolkit of survival skills their species has acquired over the past thirty million years, and to evolve solutions to the new challenges they face today. He shows beekeepers how to use the principles of natural selection to guide their practices, and he offers a new vision of how beekeeping can better align with the natural habits of honey bees.

Attracting Native Pollinators The Xerces Society 2011-02-28 With the recent decline of the European honey bee, it is more important than ever to encourage the activity of other native pollinators to keep your flowers beautiful and your grains and produce plentiful. In Attracting Native Pollinators, you'll find ideas for building nesting structures and creating a welcoming habitat for an array of diverse pollinators that includes not only bees, but butterflies, moths, and more. Take action and protect North America's food supply for the future, while at the same time enjoying a happily bustling landscape.

Farming for Bees Mace Vaughan 2007

The Anatomy of the Honey Bee Dr. R. E. Snodgrass 2018-02-27 "As a world authority on insect anatomy, Snodgrass has given us this book a brilliant account of the anatomy of the honey bee and how it relates to the way that bees develop and how and why they function as they do in their interesting communal life. This book should be in the library of every student of the honey bee and bee behaviour--beekeepers as well as scientists. The book is delightfully written and is enjoyable reading."--American Bee Journal "This is not just a technical reference book on honey bee anatomy. It is far more, it is essentially a treatise on entomology, using one species as an example, and including a discussion of the fundamentals of embryology, development, and metamorphosis as well as anatomy. The subject of each chapter is approached from the broadest evolutionary point of view, and its horizon includes all the arthropods and beyond, so that the bee really typifies animal life in general. Finally, the language of the book is such that it can be read straight through with pleasure... It is a delight to follow the author through this complete examination of one insect: how it develops, how it grows, and how it operates."--Entomological News

Rare and Exotic Orchids Joel L. Schiff 2017-12-08 Comprising some 28,000 different species, orchids are by far the largest flowering plant family on Earth. Every year, new species are being uncovered in the wild or created by humans, and so this number has only continued to blossom. This book is intended for those who wish to learn about the multifaceted nature of this amazing plant. It covers many different aspects of orchid study, from its cultural history to its evolutionary development and from its first discoveries to ongoing scientific research. No matter your specialty or level of orchid expertise, you can find in this book new and fascinating facts and stories that will make you gasp, laugh, and read on. Through the many exotic and beautiful pictures permeating these pages, you will come to know something of the infinite diversity of this plant family and at last learn why so many orchid growers and fanatics have embarked on this same endless path. "I was smitten with this book after reading the very first chapter on the history of Orchids... There are plenty of interesting facts to charm your orchid friends and impress even the most studied researcher... All in all a fabulous read that is well illustrated and with a reference section the likes of which I have never seen before with its vast and varied appendices on a slew of subjects. If you are looking for a book that is engaging and educational with lots of good humor thrown in, then this book is for you. I know that I will treasure my copy for years to come." -- Laura Newton, American Orchid Society Awards Registrar and

Accredited Judge, ORCHIDS Magazine (May, 2018) "Joel L. Schiff brings to life not just the science surrounding orchids, but the human process of recognizing, cataloging, and appreciating them...It's this approach, combined with lovely close-up color photos throughout, which makes Rare and Exotic Orchids a recommendation not just for professionals or botany libraries, but for general-interest readers who will enjoy a highly accessible study that invites an in-depth interest in orchids and their importance to human affairs."-- Diane Donovan's Pick of the Month (April, 2018)

Beekeeping in the United States United States. Agricultural Research Service 1967

Agricultural Resilience Sarah M. Gardner 2019-05-02 Offers an interdisciplinary exploration of resilience in agriculture, and implications for producers seeking to adapt to change and uncertainty. Agricultural Bulletins Pennsylvania State University 1884

Encyclopedia of Insects Vincent H. Resh 2009-07-22 Awarded Best Reference by the New York Public Library (2004), Outstanding Academic Title by CHOICE (2003), and AAP/PSP 2003 Best Single Volume Reference/Sciences by Association of American Publishers' Professional Scholarly Publishing Division, the first edition of Encyclopedia of Insects was acclaimed as the most comprehensive work devoted to insects. Covering all aspects of insect anatomy, physiology, evolution, behavior, reproduction, ecology, and disease, as well as issues of exploitation, conservation, and management, this book sets the standard in entomology. The second edition of this reference will continue the tradition by providing the most comprehensive, useful, and up-to-date resource for professionals. Expanded sections in forensic entomology, biotechnology and Drosophila, reflect the full update of over 300 topics. Articles contributed by over 260 high profile and internationally recognized entomologists provide definitive facts regarding all insects from ants, beetles, and butterflies to yellow jackets, zoraptera, and zygentoma. * 66% NEW and revised content by over 200 international experts * New chapters on Bedbugs, Ekbom Syndrome, Human History, Genomics, Vinegaroons * Expanded sections on insect-human interactions, genomics, biotechnology, and ecology * Each of the 273 articles updated to reflect the advances which have taken place in entomology research since the previous edition * Features 1,000 full-color photographs, figures and tables * A full glossary, 1,700 cross-references, 3,000 bibliographic entries, and online access save research time * Updated with online access

Insect Pollination of Cultivated Crop Plants Samuel Emmett McGregor 1976

Beekeeping in the United States 1980

Crop Pollination by Bees Keith S. Delaplane 2000 The collapse of the ubiquitous honeybee population during the past 20 years has caused a pollination vacuum for many crops. Surveys and grower experience indicate that a crisis exists in our pollinator populations. This book is an accessible, practical and authoritative research-based guide to using bees for crop pollination. It emphasizes conserving feral bee populations as well as more traditional methods of culturing honeybees and other bees. There are three main sections that address the biology of pollination, culturing and managing bees for optimum crop pollination, and individual crop pollination requirements and recommendations. This last section includes 42 short chapters on different crops.

100 Plants to Feed the Bees The Xerces Society 2016-11-29 The international bee crisis is threatening our global food supply, but this user-friendly field guide shows what you can do to help protect our pollinators. The Xerces Society for Invertebrate Conservation offers browsable profiles of 100 common flowers, herbs, shrubs, and trees that support bees, butterflies, moths, and hummingbirds. The recommendations are simple: pick the right plants for pollinators, protect them from pesticides, and provide abundant blooms throughout the growing season by mixing perennials with herbs and annuals! 100 Plants to Feed the Bees will empower homeowners, landscapers, apartment dwellers — anyone with a scrap of yard or a window box — to protect our pollinators.

Pear Production Max W. Williams 1978

Pollination Biology, Vol.1 Dharam P. Abrol 2015-11-16 The book covers interplay between pest management strategies and safety of pollinators. Detailed information is provided on pests and pollinators of temperate, subtropical and tropical fruit crops. Most of the fruit crops are highly cross pollinated and depend upon insects or benefit from insect pollination for fruit set. Insect pests on the other hand cause major economic damage on fruit crops in tropics, subtropics and temperate. Evidently, pest management in fruit crops on one hand and providing safety to the pollinators on the other is a challenging task in the context of increasing horticultural productivity without upsetting the ecological balance. This book aims to integrate and develop pest control strategies in a way to minimize their impact on beneficial insect species such as natural enemies and pollinators to enhance fruit production and quality. The book covers interplay between pest management strategies and safety of pollinators. Detailed information is provided on pests and pollinators of temperate, subtropical and tropical fruit crops. Pollinators play a crucial role in flowering plant reproduction and in the production of most fruits and vegetables. Most of the fruit crops are highly cross pollinated and depend upon insects or benefit from insect pollination for fruit set. Insect pests on the other hand cause major economic damage on fruit crops in tropics, subtropics and temperate. Evidently, pest management in fruit crops on one hand and providing safety to the pollinators on the other is a challenging task in the context of increasing horticultural productivity without upsetting the ecological balance. This book aims to integrate and develop pest control strategies in a way to minimize their impact on beneficial insect species such as natural enemies and pollinators to enhance fruit production and quality. The book covers interplay between pest management strategies and safety of pollinators.

Phylogenetics of Bees Rustem Abuzarovich Ilyayov 2019-12-20 Bees are flying insects of the order Hymenoptera closely related to wasps and ants. The ancestors of bees are assumed to be predatory wasps, which switched to pollen consumption. Further, bees co-evolved with flowering plants and divided into several species according to climatic conditions. Widely known bees are western bees *Apis mellifera*, and eastern bees *Apis cerana*. This book sheds light on features of evolution, phylogenesis, speciation, adaptation to environment, and taxonomy of bees. It will be of particular relevance to evolutionists, geneticists, taxonomists, ecologists, population geneticist, and breeders.

Toxicity of Pesticides on Health and Environment Robin Mesnage 2018-12-07 Public policy is regularly shaken by health crises or unexpected discoveries; future directions in toxicology assessment are therefore urgently needed. Convergent evidences suggest endocrine or nervous disrupting effects of pesticides, as well as effects on wildlife and the environment. These effects are amplified by the use of surfactants and/or combinations of different active principles. The usual concepts of regulatory toxicology are challenged by endocrine, nervous or immune disruption, or epigenetic effects. Indeed, most pollutants alter cell-cell communication systems to promote chronic diseases. They may accumulate in the food chain. Mixtures effects with other pollutants may change their bioavailability and their toxicity. The lack of scientific knowledge in these matters has large costs for public health. This Research Topic focuses on the toxic effects of pesticides associated with large scale cultivation of genetically modified (GM) plants.

Crop Pollination by Bees, Volume 1 Keith S. Delaplane 2021-07-30 Since the second half of the 20th Century, our agricultural bee pollinators have faced mounting threats from ecological disturbance and pan-global movement of pathogens and parasites. At the same time, the area of pollinator-dependent crops is increasing globally with no end in sight. Never before has so much been asked of our finite pool of bee pollinators. This book not only explores the evolutionary and ecologic bases of these dynamics, it translates this knowledge into practical research-based guidance for using bees to pollinate crops. It emphasizes conserving wild bee populations as well as culturing honey bees, bumble bees, and managed solitary bees. To cover such a range of biology, theory, and practice from the perspectives of both the pollinator and the crop, the book is divided into two volumes. Volume 1 focuses on bees, their biology, coevolution with plants, foraging ecology and management, and gives practical ways to increase bee abundance and pollinating performance on the farm. Volume 2 (also available from CABI) focuses on crops, with chapters addressing crop-specific requirements and bee pollination management recommendations. Both volumes will be essential reading for farmers, horticulturalists and gardeners, researchers and professionals working in insect ecology and conservation, and students of entomology and crop protection.

Bee Pollination in Agricultural Ecosystems Rosalind James 2008-09-09 Managed and wild bees are critical for successful pollination of numerous fruit, vegetable, oilseed and legume seed crops and both are considered here. So is treatment of how bees also impact the agro-ecosystem in ways beyond simple pollination, such as by transporting pollen from genetically modified plants.--Résumé de l'éditeur.

Honey Rajesh Kumar 2021-12-15 Honey is a supersaturated solution of sugar made by bees. Honeybees collect a liquid secretion from flowers, called nectar, and take this back to their hives. It is an appreciated natural gift to humanity derived entirely from honeybees. Honey is the by-product of nectar collected by bees from the flowers, with some digestive enzymes produced by the honeybees themselves. Honey: A Miraculous Product of Nature summarizes the current status of honey, it's uses and related aspects. This illustrated volume describes use of honey in traditional medicines, i.e. Ayurveda, Siddha, and Unani by acting as a preservative and nourishing agent. Also, other properties like digestibility, palatability, deliciousness, refreshing, thirst quencher, stomachic, anti-obtrusive, expectorant, anti-oxidative, anti-tussive and blood purifier are explained in beautiful manner. The role of honey in improving eyesight, strengthens gums and teeth and it's use in jaundice, spleen enlargement, sore throat, chest diseases, sexual debility, renal and cystic calculi, intestinal worms, heart diseases and leprosy is very well described. The compiled knowledge from range of bee scientists, Honey: A Miraculous Product of Nature aims to provide broad knowledge on honey to the researchers, apiculturists and students to continue their work on honey and honeybees.

Ecological Risk Assessment for Chlorpyrifos in Terrestrial and Aquatic Systems in the United States John P. Giesy 2014-04-10 Reviews of Environmental Contamination and Toxicology attempts to provide concise, critical reviews of timely advances, philosophy and significant areas of accomplished or needed endeavor in the total field of xenobiotics, in any segment of the environment, as well as toxicological implications.

Urban Services to Ecosystems Chiara Catalano 2021-09-15 The aim of this book is to bring together multidisciplinary research in the field of green infrastructure design, construction and ecology. The main core of the volume is constituted by contributions dealing with green infrastructure, vegetation science, nature-based solutions and sustainable urban development. The green infrastructure and its ecosystem services, indeed, are gaining space in both political agendas and academic research. However, the attention is focused on the services that nature is giving for free to and for human health and survival. What if we start to see things from another perspective? Our actions shall converge for instance to turn man-made environment like cities from heterotrophic to autotrophic ecosystems. From landscape ecology to urban and building design, like bricks of a wall, from the small scale to the bigger landscape scale via ecological networks and corridors, we should start answering these questions: what are the services that are we offering to Nature? What are we improving? How to implement our actions? This book contains three Open Access chapters, which are licensed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0).

Pollination with Mason Bees Margriet Dogterom 2002-01-01 This book is suitable for gardeners, naturalists and biologists who want to learn more about mason bees & other wild solitary bees. Book jacket.