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What Good Are Bugs?: Insects In The Web Of Life



Synopsis

We shriek about them, slap and spray them, and generally think of insects (when we think of them at all) as pests. Yet, if all insects, or even a critical few, were to disappear--if there were none to pollinate plants, serve as food for other animals, dispose of dead organisms, and perform other ecologically essential tasks--virtually all the ecosystems on earth, the webs of life, would unravel. This book, the first to catalogue ecologically important insects by their roles, gives us an enlightening look at how insects work in ecosystems--what they do, how they live, and how they make life as we know it possible. In *What Good Are Bugs?* Gilbert Waldbauer combines anecdotes from entomological history with insights into the intimate workings of the natural world, describing the intriguing and sometimes amazing behavior of these tiny creatures. He weaves a colorful, richly textured picture of beneficial insect life on earth, from ants sowing their "hanging gardens" on shrubs and trees to the sacred scarab of ancient Egypt burying balls of cattle dung full of undigested seeds, from the cactus-eating caterpillar (aptly called *Cactoblastis*) controlling the spread of the prickly pear to the prodigious honey bee and the "sanitary officers of the field"--the fly maggots, ants, beetles, and caterpillars that help decompose and recycle dung, carrion, and dead plants. As entertaining as it is informative, this charmingly illustrated volume captures the full sweep of insects' integral place in the web of life.

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Customer Reviews

Bugs. In general, we do not like them. However, if all the insects were to disappear from the earth,

then almost every terrestrial ecosystem would totally unravel. Why are insects so important to terrestrial life on our planet? And how do they achieve this level of importance? In this elegant survey of insect ecology, Waldbauer, an entomologist and author (*The Birder's Bug Book*, 1998) instructs readers on the major roles insects play. He provides numerous examples for every aspect of insect ecology he discusses, sprinkling reports from the scientific literature with personal anecdotes from his many years of research. A 26-page bibliography provides more information, and scattered halftone drawings illustrate many concepts. This is an excellent introduction to insect ecology and will be valued in any library. Nancy Bent Copyright © American Library Association. All rights reserved --This text refers to an out of print or unavailable edition of this title.

Persuasive, rollicking, and informative...He may not get you to hug your termites, but you will see them in a whole new light. Bugs are truly awesome in numbers and variety...On the surface, bugs seem so alien to us. But in anecdote after anecdote, Waldbauer gives us plenty with which we can identify...Waldbauer celebrates not only the good things bugs do but also the bizarre...What Waldbauer shows us is that bugs are vitally important to our planet. They help plant life grow. They are great cleanup crews, removing waste material...They till and aerate soil. They provide food for all kinds of animals, including fish and birds and some mammals...Clearly, bugs are good. (Vicki Croke *Boston Globe* 2003-04-15) This book will open the eyes of readers who, like the great majority of mankind, regard insects with contempt or disgust. It will make them look on our six-legged fellow creatures with more interest and sympathy, and will thus add a new dimension to their own lives. (Anthony Daniels *Sunday Telegraph (UK)* 2003-05-04) Written in a gentle style that is easy to read yet still authoritative, the breadth of insect ecology is paraded before us. (Richard Jones *BBC Wildlife* 2003-11-01) Waldbauer is an entomologist with an unwavering verve for his pursuits. Here he catalogs ecologically important insects by their 'occupations' within an ecosystem, explaining how they live and how they make possible life in general. Among insects' occupations are their roles in regulating plant and animal populations and tilling the soil. In some cases, their capabilities and behaviors are nothing short of mind-boggling. Waldbauer reports that one species of Great Plains ants has brought to the surface about 1.7 tons of subsoil per acre. An average colony of honeybees harvests 44 pounds of pollen and 265 pounds of nectar a year. Such anecdotes combine with the author's keen insight into the mechanics of ecosystems to make a strong case on behalf of the lowly insect. (*Science News* 2004-12-11) Waldbauer gives us a bugs-eye view of the world in this well-written and entertaining book that will change the way you think about insects. (B.F. Southeastern Naturalist)

In 315 pages, Prof. Waldbauer drills it home how important insects are to the biological mechanics of life on Earth. Put it this way- no bugs, no life (as we know it). Insects do much of the heavy lifting in such vital services as plant pollination, seed dispersal, and waste removal and conversion back into nutrient cycles and they do it with incredible efficiency. For many species of birds, amphibians and mammals, insects are their main diet. A wide spectrum of insects are covered in great detail along with many detailed line drawings. The efficacy of biological pest controls- pitting one insect or parasite against another for control of crop infestations vs chemical control methods is well covered and in such a manner that one might wonder why man-made chemicals are even still used anymore and especially in light of the fact that man-made chemicals almost always hit non-targeted animals often causing explosions of previously non-problematic insects. Insects have an incredible ability to build resistance to chemical assaults while higher forms of animals and humans do not. Plant and insect beneficial relations are well covered in detailed explanations of "mutualism" (I prefer to call this "symbiotic relationships") and many examples of this phenomenon are discussed. This book is highly recommended for those interested in the study and appreciation of insect ecology.

This is a detailed text, by an author who can convey the wonder of nature. If you are a science nut like I am, and like bugs, you will find it interesting

Of course, we know what bugs are good for, but just in case there is anybody out there who doesn't, Professor Waldbauer makes an elaborate argument in twelve chapters under four general headings: Helping Plants, Helping Animals, Limiting Population Growth, and Cleaning Up. Waldbauer manages to be fascinating, as indeed, I think an entomologist ought to be, since insects really are something amazing, as well as thorough, but never boring or tedious. He has that rare gift of being able to present the reader with a lot of information and to make it clear, interesting, and a pleasure to read. One is left with the overwhelming conviction that without bugs we humans could not exist, period. Next to microbial life, bugs form the most fundamental life force on this planet, and like the microbes, they will be here long after we are gone. We need to make our peace with them, and join with them in keeping the planet's life in balance. The subtitle, "Insects in the Web of Life," really says what this book is about as well as it can be said in just a few words: all life forms are interconnected and interdependent and part of the larger web of life. It isn't just the pollination of our plants by insects that is irreplaceable, nor their control of one another, nor their policing of the landscape, nor even their position near the base of the entire food chain that serves us, but it is their

gigantic presence in nearly all the diverse ecologies of the planet that cannot be replaced. Remove the insects and the entire eco-structure collapses. Demonstrating this truth, Waldbauer's text emphasizes how bugs interact especially with plants, how plants take advantage of them as well as how they take advantage of plants for subsistence and reproduction, and how in many cases a symbiosis has been reached so that plant and animal work together for their mutual good. The stories of ants protecting trees and of wasps and bees and others pollinating plants are marvelous tales of intricate mutualisms honed by nature over the eons, tales so startling as to defy belief, except that we know they are true. An orchid shaped like female insect, giving off the female pheromone so as to entice the male insect to "mate" in order to spread the plant's pollen, is one example. The nutritious elaisomes that grow on the seeds of plants that attract and feed ants so that they might distribute the plant's seeds and even protect the plant from predators, is another. The ants that live on acacias that can actually smell large animals (including humans) and thereby congregate on the branches nearest the approaching animal ready to swarm and bite should the animal dare to touch the tree, is still another. Waldbauer shows us what bugs and their stories can teach us about the nature of life itself--what life is truly like beyond the artificial confines of human culture--and not so incidentally, about ourselves, if we care to recognize the many affinities between our lives, especially our economic lives, and that of bugs, most notably of course the social insects who herd animals, plant crops and harvest them, who fight battles and construct dwellings. I could go on and on, but just let me say that this is the most informative book on bugs that I have ever read (and I've read dozens) and one of the most readable. Moreover it is beautifully designed (by Marianne Perlak) and beautifully edited (by Nancy Clemente). The black, white and gray illustrations of bugs and plants by Meredith Waterstraat are elegant and serve as a fine complement to the text. This book should win some awards. It is the kind of book you might want to buy for yourself and to give as a present to anyone interested in nature from gardeners to professors of biology. This is a gem that can be appreciated by and benefit both professionals and the general public.

We are determined to see moral qualities in nature. We might describe a hero as lionhearted, but a villain as a snake or a rat. Or an insect. Insects are generally regarded as bad creatures. They sting, bite, spread disease, and eat our homes and food. Of course, they are no more bad than lambs are bad. They are simply doing what evolution has equipped them to do. It can be argued that they are not good, too, but in What Good Are Bugs? Insects in the Web of Life (Harvard), entomologist Gilbert Waldbauer makes the case that as far as making the natural world go around, insects are very good indeed. In fact, he calculates that only about 1.5% of the known insects do us any harm,

and a very much smaller percent of the total insects do so, since we have only identified about a tenth of them all, and are better at identifying the pests. Waldbauer, who is professor emeritus of entomology and in this book reflects on decades of loving interest in his subject, says that without insects "...virtually all the terrestrial ecosystems on earth... would unravel." His book, usefully organized with each chapter about a particular activity that insects perform, makes an entertaining and convincing case. We could not have evolved ourselves without insects, and could not keep living if they were to disappear. It is not surprising that Waldbauer's first chapter is about pollination. Most people know that insects are the pollinators of many flowers and other plants, but people didn't always know this. Pretty flowers were said to be merely a manifestation of God's eagerness to give us pleasure. It was only in 1793 that an observer wrote about flowers, scent, and nectar as a lure for insects, and the discovery that the plants could not be fertilized without them. Most of the plants we eat are fertilized by insects. Insects also help plants by spreading their seeds, thus keeping sibling plants from breeding with each other and spreading the range of the plants. Dung beetles roll the seeds away, locusts carry undigested seeds in their guts, and ants and termites bring seeds into their nests. Ants also protect plants; a species of ant lives on the acacia tree and when these ants smell a mammal, they go on alert ready to sting anything that would take a nibble of a leaf. They also clear out the plants that live nearby which would compete for the acacia's nutrients. Insects directly help animals, besides being food for them. Many birds bathe in ants ("anting") to get their mites and lice eaten away. Ants protect birds in particular trees, and other birds deliberately make their homes near wasp nests. Insects do harm plants and animals, but in Waldbauer's larger evolutionary view, this is merely a limitation of population growth, a prevention of a species burning out in uncontrolled profusion. Harvester ants, for instance, compete with rodents for seeds, and thus keep the rodent population down. Insects are vital in the role of cleaning up. They clean up dead flesh, manure, and dead plants. Bacteria are the ultimate decomposers, but they cannot work on rough plant litter. Once the litter has passed through the guts of maggots, springtails, termites, and others, bacteria and fungi can go to work on it, turning it back into soil. The action of termites simply shows why we think them bad. Termites do nothing except make a living off dead wood, as they have always done. We are the ones that have turned things topsy-turvy by valuing dead wood in our buildings. Waldbauer's book is hugely valuable in taking this larger view of fascinating fellow creatures. It gives many instances of clever experiments that entomologists have done, bothering the bugs until they give up their secrets. It provides countless examples of evolutionary design that is intricate, even witty. For instance, the botfly has to get its eggs deposited onto a mammal for them to develop, but the female never has to worry about getting swatted; she catches a fly or mosquito,

glues her eggs to it, and releases it. The botfly larvae know to pop out when they are delivered to a warm-blooded animal. The book's many examples of this kind can only increase one's admiration for the clever humans who have figured out such things, and for the intricate ways insects have adapted themselves to become a cornerstone of all our planet's life.

I purchased this book after "For Love of Insects" and found it to be substantially dryer and less enthused than that work. Though every bit as informative, it lacks the oomph of that fascinating book.

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