Preface to the English Edition

This book, already translated into ten languages, may at first sight appear to be just about honeybees and their biology. It contains, however, a number of deeper messages related to some of the most basic and important principles of modern biology. The bees are merely the actors that take us into the realm of physiology, genetics, reproduction, biophysics and learning, and that introduce us to the principles of natural selection underlying the evolution of simple to complex life forms. The book destroys the cute notion of bees as anthropomorphic icons of busy self-sacrificing individuals and presents us with the reality of the colony as an integrated and independent being—a "superorganism"—with its own, almost eerie, emergent group intelligence. We are surprised to learn that no single bee, from queen through drone to sterile worker, has the oversight or control over the colony. Instead, through a network of integrated control systems and feedbacks, and communication between individuals, the colony arrives at consensus decisions from the bottom up through a type of "swarm intelligence". Indeed, there are remarkable parallels between the functional organization of a swarming honeybee colony and vertebrate brains.

The Buzz about Bees will appeal to many; natural historians will enjoy the exquisite photographs; students considering studying biology should read this book as a primer to appreciate the principles upon which the biological sciences are based, and to get a small taste of the fascination and complexity of biological systems. Apiarists will find here the underlying scientific principles of much of the behavior that they already know, and some basic information that may lead to a reconsideration of some traditional practices. Teachers will find easily understood, practical illustrations of basic biological principles, and an example of how understanding biological systems requires an integration of all scientific disciplines. Professional biologists will enjoy the restatement of evolutionary principles, the introduction of the bee colony as a superorganism, and the consequences of kin selection and natural selection for such systems. Those still persuaded by the creationist arguments and intelligent design may pause to think about the emergent properties of self-organizing and adaptive complex systems.

We are all becoming increasingly conscious of climatic change that is occurring in our world. Climate change brings home to us an awareness of which organisms are living at the edge. Highly specialized for their niches to which they have been adapted, even a very small environmental change over a relatively short time span spells the end for these living forms. Unable to complete enough generations in this time to take advantage of small genetic variation that may allow them to escape their niche, they die and join the long list of beings registered forever in the time capsule of the fossil world, or more recently, in the sobering records kept by mankind. It may be thought that organisms, like mankind and the honeybees, that can exert some measure of control over their immediate environment, would be advantaged. Highly mobile, we are able to move to where it is comfortable, and where it is not, to construct enclosures in which we live, that are. This is an encouraging but unfortunately oversimplified and misleading thought, because there is a great deal more to the interwoven web of life that includes us and on which we depend. We are all in this together and the greatest threat is our own staggering ignorance and cavalier treatment of the natural world to which we belong.

Our exploitation of natural systems without understanding them and their vulnerabilities in detail, has disturbed fine balances, established over thousands of years. Left alone, a new natural balance will, in time, be established, but this is often not to our advantage. Honeybees are important to us. No honeybees means no pollination of most of our crops. No pollination means no fruit, no seed—that simple. If honey bees are in trouble, so are we. And there is more than a little to suggest that honeybees are in trouble. We would do well to understand them, and through them gain a broader appreciation of the enormous complexity of the natural world. This book is a good place to start.

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» Contents