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## The hidden life of trees what they feel how they communicate pdf

Are trees social creatures? In this international bestseller, forester and author Peter Wohlleben makes it convincing that the forest is a social network. He relies on groundbreaking scientific discoveries to describe what trees are like as human families: tree parents live with their children, communicate with them, support them as they grow, share nutrients with those who are sick or struggling, and even warn each other of imminent dangers. Wohlleben also shares his deep love for forests and forests, explaining the amazing processes of life, death and regeneration he has observed in his forest. After reading *The Hidden Life of Trees*, a walk in the woods will never be the same. A New York Times bestseller with more than 2 million copies sold worldwide, this beautifully written book travels deep into the woods to discover the fascinating and surprisingly moving hidden life of trees. At once romantically and scientifically, [Wohlleben's] vision of the forest calls on us all to re-evaluate our relationships with the plant world. --Daniel Chamovitz, PhD, author of *What a Plant Knows* Are trees social creatures? In *The Hidden Life of Trees*, forester and author Peter Wohlleben makes it convincing that the forest is a social network. He relies on groundbreaking scientific discoveries to describe what trees are like as human families: tree parents live with their children, communicate with them, support them as they grow, share nutrients with those who are sick or struggling, and even warn each other of imminent dangers. Wohlleben also shares his deep love for forests and forests, explaining the amazing processes of life, death and regeneration he has observed in his forest. After learning about the complex life of trees, a walk in the forest will never be the same again. Contains a note from a forest scientist, by Dr. Suzanne Simard Published in collaboration with the David Suzuki Institute A review by Peter Wohlleben, *The Hidden Life of Trees: What They Feel, How They Communicate—Discoveries from a Secret World*, trans. Jane Billinghurst. Preface by Tim Flannery. Greystone Books, Vancouver and Berkeley, 2016. In 2015, Peter Wohlleben, a German forester, published a popular book about the 'hidden life of trees'. The English version, titled *The Hidden Life of Trees: What They Feel, How They Communicate—Discoveries from a Secret World*, was published in 2016 and became a bestseller, but not without considerable controversy. Wohlleben began his career as a professional ranger, whose task was to assess the suitability of trees for harvesting. He left this line of work two decades ago to get survival training and log-cabin for tourists to organize, and his interactions with his visitors changed his view of the forest, making him aware of the need to adopt a more ecologically refined approach to the forest Eventually, his community, the village of Hümmler in the Eifel Mountains, hired him to manage their forest according to these ecological principles, which emphasize leaving the forest as undisturbed as possible, promoting species diversity and removing trees with animals instead of heavy machinery. Wohlleben's experiences opened his mind to the daily dramas and touching love stories of the trees, which he wants to convey in this book. This sense of the hidden life of trees in turn forms the basis for what might be called a forest ethic, or the idea that trees may develop completely undisturbed by humans, so that they can live a full life in a way that suits their species. Plantation monocultures and the use of heavy machinery are the villains, and higher ecological standards for forest management are the goals. However, Wohlleben also hopes that management can be linked to the preservation of undisturbed forests where trees are able to meet their social needs, pass on their knowledge to the next generation and grow old with dignity. It's not entirely clear to whom this book is being covered, because it has infuriated professional forestry scientists while being warmly applauded by laypeople, who, Wohlleben acknowledges, seem to intuitively understand that an ecological approach to forest management is better than forestry professionals. The reason for this divided reaction is that the force of its argument depends strongly on provoking an emotional response from readers through its powers of suggestion. As Wohlleben concludes, if we understand the possibilities of plant life and learn to recognize trees' emotional lives and needs, then we will also begin to treat plants differently, will cease to view forests as timber factories, and will understand how forests can serve as oases of interruption and recovery for us. His argument is meant to make us appreciate the benefits to us - as well as the trees - of leaving the forests alone. The foreword to the English translation by Tim Flannery, himself a bestselling environmentalist, invites readers to a magical place where Wohlleben will reveal to us trees with human faces, trees that can talk, and sometimes walk. Yet it is Wohlleben's assertion that his descriptions of the behavior of trees and his depictions of the complex social life of the forest rest on a foundation of science. The book's 76 endnotes point the reader to many authoritative scientific publications, as well as scientific news stories, mostly from the past decade, that seem to support the claim that he simply conveys the actual findings of science in language accessible to the laity. Why are two German in February 2017, an online petition was launched calling on scientific colleagues to challenge these claims? The German title is *Auch im Wald: Fakten statt Märchen, Märchen, statt Wohlleben* (Even in the forest, facts instead of fairy tales, science instead of Wohlleben). In the English version, the title of the petition is *Even in the forest, we want facts instead of fairy tales*. The petition describes the book as a conglomeration of half-truths, biased judgments, and wishful thinking and states that such oversimplified and emotional writing will be neither the environment in general nor forests in particular (English version of the petition available online).<sup>1</sup> The petition has received just over 4,500 signatures and has led to a discussion, more visible in German and French media than in English language media than in English media, about how we represent scientific knowledge to the lay public. In English publications, critical reviews have been written by Erin Zimmerman, a plant biologist who became a science writer, and Sarah Boon, also a former scientist and now science writer. These critical evaluations are exceptional. For the most part, the book has received enthusiastic reviews for revealing amazing discoveries and countless wonders. These discoveries are not limited to the results of scientific research; Wohlleben also describes his own psychological and spiritual awakening over his many years of working in the forest. It's not so much what science says, but what science makes Wohlleben think and imagine, which is the subject of this book. Perhaps because of the controversial reception of the book in Europe, the English translation ends with an appreciative afterword by one of the scientists whose work is being discussed, Suzanne Simard at the University of British Columbia. Since the early 1990s, she has studied the networks linking tree roots with mycorrhizal fungi, forming a web of underground relationships that has been called the wood wide web. As she points out, there is a huge amount of research now done worldwide on the ways trees communicate with each other above and below ground. The future surrounding the book stems from the quiet way Wohlleben describes tree communication and other aspects of forest ecology. This controversy raises many interesting questions about how we can motivate people to take steps that will protect and protect our environment and our natural resources. On the surface, Wohlleben's book seems to suggest that we should look to science to discover ecological complexity and reasons to maintain that complexity. But paradoxically, the book indirectly suggests that plant science is lacking, has developed slowly and can only be stimulated if we believe that plants are like animals, and therefore just like us. This book is a profession emotions more than our interest in how scientists make new ecological discoveries. Wohlleben's book steadfastly adopts a language completely devoid of any scientific jargon. His reason for doing so most scientific writing is incomprehensible to the public-is fair enough. One of his goals is to explain fundamental adaptations of trees that may not be known to most people, and to show the reader how, from an ecological point of view, we should see trees not as isolated individuals, but as communities connected in a complex set of ecological relationships, with organisms of the same species, with organisms of different species, and especially with the soil fungi that help to transfer nutrients to plant roots. In parts of the book, Wohlleben's description of these ecological relationships is undisputed. Based on scientific literature on plant physiology and ecology, he reveals some remarkable adaptations of trees and their dependence on other species for nutrition and reproduction. His goal is to show that in natural forests that have remained undisturbed, there is a great diversity of species, the environment is relatively stable and the forest can persist for a very long time. For Wohlleben, this means a real forest environment, compared to forests planted for wood, where the entire ecological community never develops and trees are harvested long before they reach adulthood. But to convey this difference between the planted forest and the natural forest, Wohlleben slips into a language that is strongly anthropomorphic and teleological. Not only are trees like us in having an emotional and social life, but they seem able to plan ahead to promote the optimal environment to ensure their longevity. Trees not only interact by accident, but form friendships in natural forests, while in planted forests trees behave like loners suffering from their isolation. Why are trees social creatures? he asks, he replies The reasons are the same as for human communities: there are advantages to working together. A group of silver-gray birches that feed sick individuals reminds him of a herd of elephants: Like the herd, they also take care of their own, and they help their sick and weak back up on their feet. They are even reluctant to abandon their dead. Trees also possess a secret language of smell that Wohlleben compares to the way animals communicate using pheromones, or chemical messengers. Trees record pain when creatures nibble them, give chemical alarm calls, and as Dr. Simard found, they can also alert each other through chemical signals sent through the fungal networks around their root tips. The fungi act as intermediaries to ensure a rapid spread of news, working as fiber optic internet cables to transmit information and help the trees news insects, drought and other hazards. In a chapter on reproduction entitled *Love*, some trees agree in advance not to flower each each so that herbivores can't count on it. Beech and oak take breaks from flowering because they fear deer and wild boar, while conifers don't have to worry about taking breaks. In a chapter on tree school, we are told that trees learn to become stable by responding to the painful micro-tears that occur when they bend with the wind. This chapter illustrates particularly well how Wohlleben moves from reference to the scientific literature to imaginative guessing about what trees experience. When trees are really thirsty, he tells us, they start screaming, referring to a study by the Swiss Federal Institute of Forest, Snow and Landscape Research, which recorded ultrasonic vibrations in tree trunks when the flow of water from the roots to the leaves was interrupted. Wohlleben explains that the scientists saw these sounds as a purely mechanical event that probably means nothing. But he then raises the possibility that it means something, at least in his imagination: When I think of the research results ... it seems to me that these vibrations can indeed be much more than just vibrations – they could be cries of thirst. The trees may be shouting a serious warning to their colleagues that the water level is running low. The debate that this anthropomorphic language generated is reminiscent of an earlier controversy at the beginning of the 20th century, involving nature writers who in this case wrote about animal behavior in a way that made animals look very much like humans. Historian Ralph H. Lutts wrote about this controversy in his book *The Nature Fakers: Wildlife, Science and Sentiment*, published in 1990. Readers of Wohlleben's book may be interested in Lutts reflections on how this earlier controversy developed. The targets were popular nature writers such as Ernest Thompson Seton (who wrote under Ernest Seton-Thompson's nom-de-plume) and especially William J. Long, a popular animal story writer who was also a congregational fun. It was a question of whether the descriptions of animal behavior by these and other authors were correct. Long, for example, theorized that the animals practiced a harsh form of medicine by treating wounds with pine height, spruce resin, or clay. Seton-Thompson told a story about a fox that jumped on the back of a sheep, riding it for a few hundred yards, to throw chasing dogs out of its scent. These kinds of claims about the complexity or intentionality of animal behavior drew criticism from John Burroughs, especially American earth writer, who argued that animal behavior was more instinctive. The controversy, which unfolded between 1903 and 1907, also drew in Burroughs' friend Theodore Roosevelt, then U.S. President, who himself was a Was. The question was whether these writers report accurately about behavior they had observed, or that they made things up- hence the accusation that they were nature fakers. The controversy played out in newspapers and popular magazines, reached its peak in 1907, and died gradually down, with Long as the main victim. Lutts doesn't see Long as a con artist, but simply as someone who is looking for a new relationship with nature, one with emotional and ethical dimensions, but who wasn't equipped to use science to explore that new relationship. Wohlleben claims to use science and bring the hard evidence of scientific research to support his arguments. But while he makes many valid points about how ecological relationships operate in the forest, his use of the scientific literature, as in the examples above, is often a springboard to an imagined conclusion that goes beyond the scientific facts. Towards the end he invites us to tune in to the language of the trees as we go hiking in the forest. If we experience health benefits and a sense of fun while walking in an old forest, he imagines that it is because there are fewer alarm calls compared to artificially planted trees, and therefore the messages exchanged between trees are satisfied, which makes us intuitively record the health of the forest. Wohlleben does admit that plant researchers are skeptical that planting behavior suggests anything similar to animal intelligence, the faculty of memory, or emotions. Biologists, in his words, get worked up about translating findings from animals to plants and blurring the boundaries between plants and animals. His answer is: And then what? What would be so terrible about that? According to him, the distinction between plants and animals is arbitrary. He believes in the importance of erasing this distinction because he thinks that recognizing the similarities would lead to more attention paid to trees and other vegetation. Wohlleben's impression is that the plant science has been woefully neglected, an impression that is reinforced by the fact that his quotes are fairly recent and by his frequent reference to discoveries, as if everything he describes has been discovered only in recent years. While he can't be faulted for not writing a full history of plant science in a short popular book like this, this impression of science stagnating or retarded is seriously misleading. As Simard points out in her afterword, the amount of research on topics like tree communication is huge. Some of the discoveries Wohlleben describes, such as the ability of trees to record the length of the day, go back a century and has been the subject of decades of intensive research. A century ago, plant physiologists would have been appalled at the idea that comparing animals with plants would be a good way to They tried to go beyond previous tendencies to see plants as animals, precisely to encourage more accurate scientific research on plants, research that plants would try to understand on their own terms. Much of the progress of the past century in plant physiology – the progress that forms the basis of Wohlleben's book – was made by scientists who had focused on the idea that plants were different from animals. When Wohlleben does not acknowledge, and downplay the long research tradition and the long slow process by which scientific knowledge progresses, he also obscures and trivializes the amount of effort and level of long-term support from society needed to promote scientific fields. Page 2 2