



EDITED BY REBECCA L. HOLBERTON

The following critiques express the opinions of the individual evaluators regarding the strengths, weaknesses, and value of the books they review. As such, the appraisals are subjective assessments and do not necessarily reflect the opinions of the editors or any official policy of the American Ornithologists' Union.

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The Handicap Principle: A Missing Piece of Darwin's Puzzle.—Amotz Zahavi and Avishag Zahavi. 1997. Oxford University Press, New York. xvi + 286 pp., numerous text figures. ISBN 0-19-512914-8. Paper, \$16.95.—In this book, the Zahavis explore how their handicap principle hypothesis might explain the selective advantage of behavioral, physiological, and anatomical characters that appear to decrease survival. They expand on Amotz Zahavi's original hypothesis for the adaptive value of extravagant though burdensome male ornamentation (*Journal of Theoretical Biology* 53:205–214, 1975), to include explanations for everything from avian information centers to sociality in slime molds and thickness of human eyebrows. The style of writing and the appearance of the book (including rather remotely located footnoted references) suggest that it is targeted at the well-read amateur naturalist as well as the academician. The authors begin with a parable involving a wolf and a gazelle to exemplify how reliable communication between individuals, in this case predator and prey, requires that signals be costly to the extent that they impair survival of the less-vigorous members of a population. The parable is followed by a very brief historical review of the scientific community's response to the handicapping hypothesis.

The authors remark that “throughout all these years, while our colleagues were debating the validity of the principle, we continued to observe and explore the living world around us.” Unfortunately, it appears from this book that the Zahavis did not design their 25 years of observations and data collection to test *alternative* hypotheses, as well as the handicap principle. This is not to say that the authors do not build a persuasive argument. Many familiar examples of animal behavior can be construed to fit the handicap scenario. Regrettably, to convince the reader that the handicap process is real, the Zahavis frequently use stories of human communication. For example, while playing tag, some children taunt the child who is “it” from nearby, while other children

run away silently. The Zahavis argue that silent children are inadvertently and honestly communicating their poor running ability but that the vociferous ones can get away with such handicapping loud behavior because they are superior runners. Although the authors may be correct, the reader expects data to support the supposition that the silent kids run more slowly than the others, and that the child who is “it” prefers to chase the silent runners. The only chapter that presents any sort of data is the one on the babblers (Timaliidae) that the Zahavis have studied for 30 years at the Shezaf Nature Reserve in Israel, and it is here that they shine. Observations of these fascinating birds vying with one another for the opportunity to be sentinels, allofeeders, and mobbers no doubt explain why the authors developed the handicap principle in the first place.

The handicap principle has been the subject of chronic debate but little empirical research. This book attempts to expand the scope of biological characters that might have evolved as handicaps, but it never presents compelling scientific evidence that sexual ornaments, the original Zahavian handicaps, are maintained by this process. General readers may become convinced by the friendly anecdotes, anthropocentric analogies, and persuasive prose. However, if my experience is representative, behavioral ecologists will find themselves intrigued by the first few chapters and dismayed by the lack of data and the absence of consideration of competing theories in the rest of the book. The Zahavis must be credited for remaining the long-term proponents of an innovative idea initially dismissed as biologically ridiculous. Zahavi's (1975) introductory paper was purely theoretical, providing agreeable examples and anecdotal observations that supported his notion but providing no predictions or data to discriminate handicap traits from those that evolved under alternative selective regimes. Not much has changed. Even though the handicap principle was proposed several decades ago, the definitive work on the subject awaits actual scientific research in the field.—RICHARD BUCHHOLZ, *Department of Biology, University of Mississippi, University, Mississippi 38677, USA.*