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IN MEMORIAM

Amotz Zahavi, 1928–2017

Ted R. Anderson

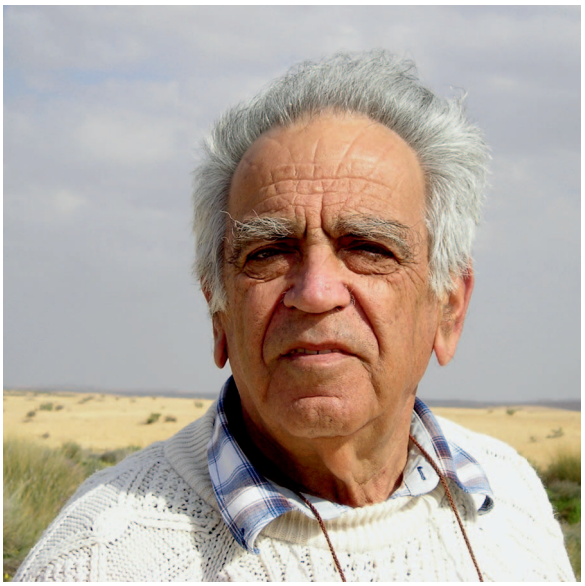
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In 1975, Israeli ornithologist Amotz Zahavi proposed the "handicap principle" to explain the conundrum of the peacock's tail, a problem that had plagued evolutionary biologists, including Darwin himself, for more than a century. A year after *On the Origin of Species* was published, Darwin proclaimed that the sight of the peacock's tail "makes me sick." Darwin's solution to the problem was his introduction of the concept of sexual selection in his 1871 book *Sexual Selection and the Descent of Man*. Zahavi's handicap principle suggests that traits such as the elaborate visual and auditory display of the peacock involve risks to the survivorship of the male, or handicaps, the overcoming of which serve as an "honest" signal to prospective mates of male quality. Although he is best known for his authorship of the handicap principle, Zahavi was also an ardent conservationist. An Honorary Fellow of the American Ornithologists' Union (now American Ornithological Society) since 1992, he passed away on May 12, 2017, in Tel Aviv.

Amotz Zahavi was born on August 14, 1928, in Petah Tiqva in the British Mandate for Palestine. He showed an early interest in nature, particularly birds, an interest that was fostered by Heinrich Mendelssohn, who was director of the zoo in Tel Aviv when Zahavi met him at age 12. Zahavi served in the military during Israel's War of Independence (1948), and then, at Mendelssohn's insistence, pursued university studies in biology rather than agriculture, his original intent. He earned a master's degree from Hebrew University of Jerusalem under Mendelssohn's supervision. His thesis was on the birds of Hula Swamp in northern Israel.

At the time, the Israeli government was planning to drain the swamp to convert the area to agriculture. In response to this threat to an important natural area, Zahavi and his friend Azaria Alon founded the Society for the Protection of Nature in Israel (SPNI) in 1953. For more than a decade after its founding, Zahavi headed SPNI as general secretary. Zahavi and Alon received special recognition when SPNI was awarded an Israel Prize in 1980 for its contributions to the environment and Israeli society. Zahavi also received a lifetime achievement award from the Israel Society of Ecology and Environmental Sciences in 2016 for his lifelong commitment to conservation.



Amotz Zahavi in 2005 (courtesy of Avishag Kadman Zahavi).

In the 1960s, while still serving as SPNI's general secretary, Zahavi began a research project on the social behavior of wintering White Wagtails foraging at Tel Aviv's municipal dumps. He found that experimentally changing the food distribution from clumped to even resulted in the wagtails changing their behavior from territorial to flocking, and vise versa, an observation that suggested that avian roosts act as "information centers." He traveled to the Edward Grey Institute of Field Ornithology at Oxford to write his dissertation and received his Ph.D. from Tel Aviv University in 1970. Later that year, he joined the zoology faculty at Tel Aviv University, where he remained until he retired in 1998 as professor of zoology. He also served as head of the department and was instrumental in the establishment of the Institute for Conservation Research at Tel Aviv, which he headed until 1982.

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During his tenure at Tel Aviv, Zahavi initiated a long-term study of Arabian Babblers at the Hatzeva Field Study Center in the Negev. His research on the babblers focused on social behavior and communication using individually marked birds. In 1975 he introduced his concept of the handicap principle in a paper in the *Journal of Theoretical Biology*. After retirement from Tel Aviv University, he served as head of the Hatzeva Field Study Center for several years and continued his babbler studies.

Zahavi met fellow biology student Avishag Kadman at Hebrew University and they married in 1954. She was a plant physiologist, which did not, however, prevent her from having a close collaboration with Zahavi on his research. They coauthored *The Handicap Principle: A Missing Piece of Darwin's Puzzle* (Oxford University Press), the cover of which appropriately featured the peacock's tail. Avishag survives her husband.

Zahavi received the prestigious International Prize from the Fyssen Foundation in 2001 for his contributions to the fields of social communication and evolution. Clutton-Brock and Ridley identified Zahavi as one of the pioneers in the development of behavioral ecology and sociobiology in the 1960s and '70s in their obituary for him in *Behavioral Ecology* (2017), concluding: "Amotz's insistence on the role of costs in maintaining the reliability of signals has become one of the cornerstones of research on animal communication and has played a central role in the development of modern signaling theory." I thank Uriel Safriel for suggestions and corrections on an earlier draft of this essay.

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