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Gifts of the Crow: How Perception, Emotion, and Thought Allow Smart Birds to Behave Like Humans.

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the book is a laminated plastic reference card that functions as a superbly useful index to all the passerine bird families covered in the last nine volumes of the HBW series.

Volume 16 maintains the exceptionally high standards set by the preceding volumes in every way. The book is simply a must-have, and I expect that for many bird enthusiasts this volume will complete their collection of the most comprehensive and beautifully illustrated series of bird reference books ever published. I have no doubt that this volume and the HBW series as a whole will prove a fundamentally important reference for many years to come, always providing a fascinating read, together with a great sense of pleasure when you come back to it time and time again.—Rauri C. K. Bowie, *Museum of Vertebrate Zoology & Department of Integrative Biology, 3101 Valley Life Science Building, University of California, Berkeley, California 94720, USA. E-mail: bowie@berkeley.edu*

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Gifts of the Crow: How Perception, Emotion, and Thought Allow Smart Birds to Behave Like Humans.—John Marzluff and Tony Angell. 2012. Simon and Schuster, New York. 287 pp. ISBN 9781439198735. Cloth, $25.—I found this book to be an excellent reading in the field of modern zoology, covering many details of recent findings in behavior, ecology, physiology, and neurobiology of corvids. I liked *Gifts of the Crow* because it tells us not only how amazing and intelligent these birds are, and how complicated bird brains can be, but also how similar their behavioral patterns and underlying mechanisms are to those of humans. My impression is that *Gifts of the Crow* may have more serious and far-reaching effects by attracting the attention of the general reader and biology students to bird research. While readers might find it easy to follow the numerous anecdotes on crows, ravens, jays, and magpies, understanding of modern science often requires a far better education than most nonbiologists may have. I see this as an important problem of society: that science and technology get out of reach of ordinary people. In this respect, Marzluff and Angell make an excellent attempt to build a bridge between scientific discovery and the need of society to understand living organisms, to make the world a better place to live. However, this appears to be a difficult task, and this is why *Gifts of the Crow* may seem to be not one book, but two.

One contains fascinating reports on the ability of crows to recognize individual people and remember the faces of their "enemies" for years, and other examples demonstrating intelligence, family ties that last for life, their ability to dream as a part of their learning process, and their emotional, communicative, and tool-designing capabilities. I am sure this part will interest bird lovers of any education or age and, thus, perhaps encourage younger ones to get in closer contact with these "feathered apes" and join universities to become researchers. However, *Gifts of the Crow* also deals with the bird brain and explains neurobiology and biochemistry of the brain and how these mechanisms lead to behavioral responses. This part might seem to be a different book for many readers, especially when, in many places, the text suddenly switches to a technical description related to the internal works of the brain and the biochemical machinery involved. These sections of the book read as if the authors were unable to decide whether they were writing a textbook or a work for a general audience. Perhaps the book would have been more accessible to more readers if this biochemistry and neurobiology material had been removed from the main text. However, I am quite sure this is not the case, for it is more useful to show the complexity of the field than to avoid giving readers the most recent knowledge on the subject. The authors use a mix of their own and other peoples' laboratory and field research results, anecdotal observations, and some basic science to convince us that research on corvid intelligence may have even greater potential for scientific research in the very near future.

The most striking feature that makes this book different from others is a citizen-science approach. Citizen science is scientific research conducted, in whole or in part, by amateur or nonprofessional scientists, and it has proved a highly effective tool, for example by the Cornell Lab of Ornithology. Although many scientists are dismissive of anecdotal evidence provided by citizen observers, the authors make a serious attempt to systematically sort the anecdotes and understand them. The readers will find a number of citizen reports of birds that drink alcohol, leave gifts to human benefactors, ring doorbells to obtain food, call dogs by imitating human voices, and many others. Citizen science may merit a skeptical attitude when each report is taken alone. However, I see great potential in this approach, because when many similar reports are taken together, they may stimulate production of novel ideas and encourage new research.

I am quite impressed by the authors' positive attitude and openness to new information. For example, they write that a Japanese observer watched jungle crows pick up deer feces and deftly wedge them in the deer's ears. The authors claim that the crows did this in the spirit of fun. Let's leave the right to accept this claim or reject it to the reader. However, another claim deserves a more serious analysis. The authors suggest that researchers would not be particularly surprised if language were discovered in cognitively complex birds and mammals. I do not agree that human language can be equated to language-like communication in animals. However, I fully agree that recent studies in some birds and mammals (and also such claims made by the authors themselves) may stimulate more research in the field of animal communication.

Finally, I really enjoyed the drawings in this book. Those of human beings are sometimes not quite to scale or amateurish, but overall the illustrations enhance the stories. I am sure that for readers who are interested in animal intelligence or bird behavior, this is a "must read" for exploring the fascinating world of crows, ravens, jays, and magpies. This is a book that will increase positive attitudes and love of nature and birds.—Indrikis Krams, *Institute of Ecology and Earth Sciences, University of Tartu, Estonia. E-mail: indrikis.krams@ut.ee*

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