

It appeared that the hawk captured the toad and rolled it onto its back, presumably to avoid contact with toxins which are freely exuded under stressful conditions. Cassels (1966) reported a similar hunting technique used by rats when preying on giant toads. How well Red-shouldered Hawks may be able to exploit this novel and locally abundant food source is unknown.

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White Ibis—Wetland Wanderer.—Keith L. Bildstein, 1993. Smithsonian Institution Press. Cloth, 272 pp., 23 black-and-white photos, 44 line drawings, in 12 chapters, and 3 appendices, \$22.50.—The White Ibis (*Eudocimus albus*) is one of the most numerous large birds in the southeastern United States. Although this species is locally very conspicuous in large flocks and colonies, it has received little attention in any form of literature outside of the scientific journals. *White Ibis* is a thorough discussion of nearly all aspects of the ecology of this nomadic species, told in a story-like prose that encompasses Keith Bildstein's 13 years of research on this species in South Carolina and Trinidad. Written in a style that is easy and often entertaining to read, the book appeals to those unwilling to delve into the journals, yet is also of real value to the professional ecologist or ornithologist. The text is well referenced, and Bildstein's points are regularly illustrated with tables, graphs, and scientific illustrations. The literature Bildstein cites provides both a complete history of the White Ibis literature, and includes key references for general ecological principles. The latter is of considerable value to lay readers and beginning ecologists. The numerous pen-and-ink illustrations of ibises by Michelle Davis and Pamela Cowart-Rickman are of very high quality, and add tremendously to the overall quality of the book.

The book is presented in twelve chapters. The first is on ibises in historical literature, and is exceedingly well researched. Even after my own 14 years of studying ibises, I was shocked to learn that the reverence of ancient Egyptians for the Sacred Ibis (*Threskiornis aethiopicus*) went as far as raising huge numbers in captivity for the apparent purpose of religious sacrifice and mummification, to the tune of several millions of animals.

The following ten chapters focus on modern-day research on White Ibises. Although Bildstein is careful to highlight work done by others, a majority of the recent ecological research has been accomplished by Bildstein and his students. Bildstein's work is a tour de force of the value of long-term research, and the research spans foraging ecology, reproductive biology, blood chemistry, developmental biology, nutrient flux in ecosystems, the ecology of prey organisms, and regional conservation. Bildstein addresses questions about how flocks are formed, how ibises select food, why juveniles have poorer foraging success than adults, the costs and benefits of sexual dimorphism, how parents recognize young, why ibises are dark when young and white when adults, why ibises feed in groups, and why ibises have curved bills. Undoubtedly the crown jewel of Bildstein's research was the discovery that juvenile ibises could not tolerate salty prey. This finding was illustrated in a series of simple but elegant experiments, and turned out to be a key determinant of the distribution and timing of nesting by ibises. Bildstein and co-workers found that young ibises were fed salty fiddler crabs only in low-rainfall years when the adults could not feed inland on freshwater prey, a linkage which has important ramifications for conservation. As illustrated in the last several chapters, this single physiological limitation has the power to predict how many ibises will nest in a given year, why they abandon estuaries that have become salinized, and why hurricanes such as Hugo should have a severely depressive effect on reproduction in ensuing years.

The final chapter is devoted to conservation. Unlike the usual passionate pleas with generalized, empty recommendations, Bildstein is able to propose specific region-wide action with regards to the conservation of this species (retention of both coastal breeding sites and inland foraging sites). In addition, Bildstein offers a modern, and realistic philosophy towards coastal conservation: ". . . we may fast be approaching a time when we realize that preserving the functional integrity of coastal ecosystems is in the best interests of not only the species within those ecosystems but also us as well. Altruistic conservation, as laudatory as it may be, can use all of the human selfishness it can muster."

The information in this book is accurate, clearly presented, and the conclusions have been reached in the best of scientific tradition. If this book has a fault, it is in attempting to serve both the lay and scientific audiences. The professional ornithologist is occasionally confronted with explanations of basic physiology and ecological processes, and may find the occasional story telling mildly disruptive. For instance, I found Bildstein's attempt to invent a fable on how ibises came to breed in the North Inlet marsh to be unappealing and out of place. Similarly, the lay reader may find references to the scientific literature in the middle of sentences disconcerting, and tables and graphs which (even at their simplest) can be imposing. This is a difficulty inherent in the job of striving for both audiences, but my overall opinion is that Bildstein has done an excellent job. There is more than enough substance for the professional reader, and enough background and anecdotes to keep the lay reader reading.

This book is readable and enjoyable. It is readily understood by the educated lay person, and is a valuable addition to the collections of ornithologists of all levels. It is also an able and eloquent spokesman for the value of long-term ecological research, and a primer on exactly how careful studies initially focusing on single species can be expanded to demonstrate powerful ecosystem processes. The rationale, philosophy, and methods for conservation of coastal processes are a strong point of this book, and may be of equal value for educators and those seeking conservation action. This book is highly recommended for a wide variety of readers, including non-professionals, ornithologists, ethologists, conservationists, coastal ecologists, and especially, students. Given such wide potential readership, the book is a must for both public and institutional libraries. —**Peter C. Frederick**, Dept. Wildl., 118 Newins-Ziegler Hall, University of Florida, Gainesville, Florida 32611.