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Peer reviewed

Review: *The Grizzly Bears of Yellowstone: their ecology in the Yellowstone ecosystem, 1959-1992.*

By John J. Craighead, Jay S. Sumner, and John A. Mitchell

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Craighead, John J., Jay S. Sumner, and John A. Mitchell. *The Grizzly Bears of Yellowstone: their ecology in the Yellowstone ecosystem, 1959-1992*. Washington, D.C.: Island Press, 1995. 535 pp. US \$100 cloth ISBN: 1-55963-456-1.

John Craighead and his colleagues report on grizzly research conducted over a third of a century. This big volume is organized in two parts. The first part deals with the pioneering study initiated in 1959 by John and his brother, Frank C. Craighead, Jr. The second part reports on bear research conducted in the Yellowstone ecosystem from 1974-1992. Concluding chapters assess the status of the grizzly in the early 1990's and provide the authors' critique of the federal plan for recovery of grizzly populations in the contiguous United States. The gap in this chronology represents a period between the forced termination of the Craighead study, due to conflicts with the National Park Service, and the initiation of work by the Interagency Grizzly Bear Management Team that was formed in response to widespread criticism of Park Service policies and management approaches.

In a historical perspective, the authors document the slowly rising numbers of grizzlies in Yellowstone during the twentieth century in response to growing quantities of food in the form of garbage created by human visitors. Garbage dumps are characterized as "ecocenters", defined as seasonal concentrations of high-energy food, which attract large numbers of bears. Aside from aesthetic considerations, the authors argue that the Yellowstone dumps were no different ecologically than concentrations of migrating salmon that attract bears in Alaska and elsewhere.

The social hierarchy that formed annually during the early summer, allowing these powerful animals to co-exist in dense aggregations, is carefully described. Chapters on reproductive biology, rearing of offspring, population dynamics, food habits, and patterns of mortality, provide rich detail on the natural history of this species, much of it first

introduced to science by the Craigheads and their colleagues. Frank Craighead presented a non-technical overview of these results in a popular 1979 book, but, for the most part, this information has been scattered through the scientific literature until now.

A chapter on the topic of ecocenters further develops the authors' view of this phenomenon and presents arguments that such features occurred historically and are an important influence in the grizzly's evolutionary development.

Section II begins with an attempt to reconstruct events that occurred during and following the closure of Yellowstone garbage dumps in the late sixties and early seventies. The bear population is believed to have undergone a significant decline at that time, due to Park Service control measures and to the disruption of behavior by the loss of centralized food resources and associated social interactions.

Chapters on food habits, reproduction, and mortality compare these factors before and after dump closure. In an assessment of the size and trend of the Yellowstone grizzly population, the authors criticize the technique of counting "unduplicated females with cubs of the year" which has been used by the Interagency Grizzly Bear Study Team to estimate population size and trend. An estimated 312 bears occupied the Yellowstone ecosystem prior to closure of the garbage dumps; Craighead and colleagues suggest that this number had been cut in half by the early 1980's.

The final chapter discusses the prospects for long term grizzly recovery and offers suggestions for managing this population in and around Yellowstone.

This book is a valuable compendium of scientific information about the grizzly. Tables and charts are easily readable due to the book's large format. Illustrations are of exceptional quality. The book can be read with profit by the scientist interested in bear biology, but it also has much to offer readers with an interest in the history of science and the effects of socio-political factors on the conduct of research. Although technical in content and presentation, I believe this work is accessible to the interested generalist.

The authors promise in the historical prelude to confine their treatment to the biology and management of the grizzly and to refer to politics only to the extent necessary to place their research in political perspective. Readers will probably have differing views as to whether or not this

promise was kept. Those of us who are familiar with the events of the early 1970's cannot escape the conclusion that the premature termination of the Craighead study and the failure to apply consistent research methodologies across the period of dump closures must surely have been a pivotal disappointment in the long and distinguished careers of these naturalist brothers and their colleagues. In spite of this, my personal view is that this book is generally even-handed and professional in its criticism of both the National Park Service and the research conducted by the Interagency Team.

This is an important book for its scientific content, and equally so for the insights it offers on the deepening social and political challenges facing our society as we address issues of biodiversity and the protection of rare species. I recommend it for all who care about bears, parks, and the changing landscape of the American West.

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