



Extreme Measures: The Ecological Energetics of Birds and Mammals

By Brian K. McNab



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Along with reproduction, balancing energy expenditure with the limits of resource acquisition is essential for both a species and a population to survive. But energy is a limited resource, as we know well, so birds and mammals—the most energy-intensive fauna on the planet—must reduce energy expenditures to maintain this balance, some taking small steps, and others extreme measures.

Here Brian K. McNab draws on his over sixty years in the field to provide a comprehensive account of the energetics of birds and mammals, one fully integrated with their natural history. McNab begins with an overview of thermal rates—much of our own energy is spent maintaining our 98.6°F temperature—and explains how the basal rate of metabolism drives energy use, especially in extreme environments. He then explores those variables that interact with the basal rate of metabolism, like body size and scale and environments, highlighting their influence on behavior, distribution, and even reproductive output. Successive chapters take up energy and population dynamics and evolution. A critical central theme that runs through the book is how the energetic needs of birds and mammals come up against rapid environmental change and how this is hastening the pace of extinction.



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Editorial Review

Review

"Brian K. McNab draws on this more than sixty years in the field to provide a comprehensive account of the energetics of birds and mammals, one fully integrated with their natural history. . . . A critical central theme that runs through the book is how the energetic needs of birds and mammals come up against rapid environmental change and how this is hastening the pace of extinction."

(*Guardian*)

"[McNab] combines a deep understanding of energetics and metabolism with an equally deep knowledge of the natural history and evolution of the animals he is discussing. . . . [F]or those interested in how and why metabolic rates vary, this book is a goldmine."

(Pat Monaghan *IBIS*)

"McNab's interesting, readable book will give students and ecologists fresh insights into species' energetic responses to environmental change. Recommended."

(R. L. Smith, West Virginia University *Choice*)

"This is a fascinating book and one that obviously represents a grand synthesis of a lifetime of data collection by the author. More than ever this type of synthesis is needed if conservation efforts are to move forward."

(Terrie M. Williams, University of California, Santa Cruz)

"Brian K. McNab is a special physiological ecologist. I know of no one who combines his breadth and creativity with firsthand knowledge of natural history, his mastery of fundamental concepts with appreciation for the details of biological diversity. *Extreme Measures* presents us with McNab's unique take on ecological energetics and comparative physiology. He draws on a lifetime spent studying an enormous variety of mammals and birds in diverse environments throughout the world. This is an impressive synthesis by one of the most important comparative biologists of our time."

(James H. Brown, University of New Mexico)

"*Extreme Measures* is a fascinating synthesis of the ecological energetics of birds and mammals written by an author whose contribution to this field is impressive. The approach is comparative, highlighting both general patterns and adaptations to life in 'extreme' ecological circumstances. McNab examines current evolutionary interpretations of the observed physiological variation by taking into account a vast array of ecological and behavioral factors. An outstanding book with a personal point of view, which will certainly inspire much future research."

(Michel Genoud, University of Lausanne)

About the Author

Brian K. McNab is professor emeritus in the Department of Biology at the University of Florida. He is the author of *The Physiological Ecology of Vertebrates: A View from Energetics*.

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