



The Natural History of Inbreeding and Outbreeding: Theoretical and Empirical Perspectives.

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The Quarterly Review of Biology, Vol. 69, No. 3 (Sep., 1994), 400.

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The Quarterly Review of Biology
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ANNUAL REVIEW OF CELL BIOLOGY. *Volume 9: 1993.*
Edited by George E. Palade, Bruce M. Alberts, and
James A. Spudis. Annual Reviews, Palo Alto (California). \$46.00. xii + 659 p.; ill.; subject index
 and cumulative indexes (contributing authors
 and chapter titles, Volumes 5-9). ISBN: 0-8243-
 3109-5. 1993.



GENETICS & EVOLUTION

THE NATURAL HISTORY OF INBREEDING AND OUT-
 BREEDING: THEORETICAL AND EMPIRICAL PERSPEC-
 TIVES.

Edited by Nancy Wilmsen Thornhill. The University
of Chicago Press, Chicago (Illinois). \$80.00 (hard-
 cover); \$32.50 (paper). viii + 575 p.; ill.; index.
 ISBN: 0-226-79854-2 (hc); 0-226-79855-0 (pb).
 1993.

Mating patterns in plant and animal populations have manifold ecological, genetic and evolutionary consequences and, from a practical standpoint, knowledge of the effects of inbreeding on the fitness of managed populations of rare and endangered species is of considerable importance to conservation biology. Hence an edited volume devoted to the natural history of inbreeding and outbreeding is likely to be of considerable interest to biologists of all backgrounds, particularly when it encompasses both empirical and theoretical approaches and covers a broad range of taxonomic groups (e.g., flowering plants, marine invertebrates, fishes, amphibians, reptiles, spiders, birds, and various mammals). The appearance of the Thornhill volume after a long gestation period is therefore sure to generate discussion and, I suspect, controversy among the large number of researchers interested in mating systems. As a result, the work is tailor-made for graduate seminars and journal clubs where debate is the order of the day.

This book grew out of a symposium co-organized with William Shields, which was held over four years ago. It contains 18 chapters contributed by 25 experts, largely from the fields of evolution, behavioral ecology, and genetics. The authors address several key questions, including how frequently and to what extent organisms inbreed, what the fitness consequences of inbreeding and outbreeding are for particular groups, and how various patterns of mating influence dispersal, social behavior, and speciation processes. As with many edited volumes, the quality and style of individual chapters vary considerably, ranging from the presentation of original theory and empirical data, to litera-

ture reviews and, in several cases, to polemical accounts that seem largely designed to further particular research agendas. While this latter form of advocacy can work, in the present case I had the impression that a balanced and ultimately more useful volume would have resulted if it had included authors unsympathetic to several of the main views advocated (e.g., on optimal levels of inbreeding, the importance of overdominance to heterosis). In this way readers could weigh the evidence both for and against many of the positions taken by authors.

The lack of any detailed theoretical analysis on the optimal inbreeding and outbreeding hypothesis advocated by Shields, Waser, and several other authors in this volume struck me as rather odd, given its potential links to Wright's ideas on population structure and shifting balance. Unlike the burgeoning theoretical literature on the deleterious effects of inbreeding, which has helped guide a decade of empirical research on mating-system evolution, workers interested in optimal outbreeding effects have virtually no theoretical framework in which to operate, aside from the trivial prediction that at some spatial scale outbreeding depression will occur. Unfortunately, despite its title and apparent agenda, this book does little to fill this void; one is left wondering whether most theoreticians are just not interested in the idea that inbreeding may be good for you, or as seems more likely, they just don't believe it.

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ECOLOGICAL GENETICS IN MAMMALS. *Based on a symposium held in Łódź, Poland. Acta Theriologica, Volume 38, Supplement 2: 1-194, 1993.*

Edited by Günter B. Hartl and Janusz Markowski. Polish Academy of Sciences, Białowieża. \$49.00 (Institutions). 195 p.; ill.; author index. ISBN: 83-900025-9-0. 1993.

MECHANISMS OF MOLECULAR EVOLUTION. *Introduction to Molecular Paleopopulation Biology. Based on a symposium held in Mishima, Japan, 11-15 November 1991.*

Edited by Naoyuki Takahata and Andrew G. Clark. Japan Scientific Societies Press, Tokyo; Sinauer, Sunderland (Massachusetts). \$34.95. x + 250 p.; ill.; subject index. ISBN: 0-87893-825-7. 1993.

This book contains 13 papers presented during an international symposium held in Japan, and two-thirds are by Japanese authors. They treat recent contributions of DNA analysis, especially the evolution of individual molecules. Although useful to university teachers and researchers, the