

## Three lemming puzzles

Ilkka Hanski

**The Biology of Lemmings.** Edited by Nils Christian Stenseth and Rolf Anker Ims. Academic Press: 1994. Pp. 683. £40, \$99.95.

WHEN the 23-year-old Charles Elton passed through the Norwegian town of Tromsø on his way back from an Arctic expedition in 1923, he spent much of his remaining money on a book by Robert Collett on Norwegian mammals. Elton

(D. Wilson and D. Reeder, *Mammal Species of the World*, 2nd edn, Smithsonian Institution Press, 1993). To their credit, however, they present an informative discussion on the genetic diversity in the problematic genus *Dicrostonyx*.

Of the three lemming puzzles, that of population dynamics receives most attention. So much has happened recently in the study of lemming dynamics and in rodent dynamics generally that the general framework provided here has become out of date. The current excitement about nonlinear rodent dynamics and the new approaches to modelling and data analysis are barely touched on in these pages.

Definite high points in this volume

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REASONS

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**The Norwegian lemming, which, contrary to popular belief, is the only lemming species that migrates.**

understood enough of the Norwegian text to be struck by the regularity in the year-to-year fluctuations of the numbers of lemmings. Since then, ecologists have been puzzled by the 'lemming cycle' and, following the lead of many illustrious naturalists and laymen, by the proverbial lemming migrations. The third lemming puzzle is extraordinary sex ratios in some lemming species.

The three puzzles have now been brought together in a book edited by Nils Stenseth and Rolf Ims. With contributions from 30 or so authors, it is undoubtedly the most thorough treatment of lemmings since Elton's *Voles, Mice and Lemmings* (1942), lacking only a thorough coverage of the Russian literature. Like many other symposium volumes, *The Biology of Lemmings* will appeal to the expert for its rich mixture of miscellaneous information, but it may occasionally frustrate the more general reader for the same reason. Long introductions to each of the six sections go some way in presenting a summary and synthesis, although they also give the impression of having exhausted the editors. It is unfortunate that the volume took seven years to mature. In the meantime, things have changed, including the number of lemming species recognized. G. Jarrell and K. Fredga arrive at ten species, but many more are now listed

include an historical overview of the beliefs, knowledge and research on lemmings (Stenseth and Ims), a thorough description of lemming movements in northern Fennoscandia (H. Henttonen and A. Kaikusalo) and new results on the ecology and genetics of skewed sex ratios in the wood lemming (Fredga and co-workers). Of the three lemming puzzles, that of sex ratios seems nearest to being solved. Earlier ideas about inbreeding in spatially structured populations are not supported; instead the evidence points to large fitness differences among the three types of females.

The myth of lemming migrations seems to be a myth for every species except the colourful Norwegian lemming in parts of Fennoscandia. (Why the Norwegian lemming is so colourful is a small wonder in itself.) Here the Arctic migrations present a unique spectacle, though only at roughly 30-year intervals. During a mass migration, millions of lemmings move at a speed of 5 km per hour, covering distances up to 200 km. For those who don't believe without seeing, let it be known that the next mass migration is due around the turn of the century. □

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### New in paperback

**The Dictionary of Cell Biology** edited by J. M. Lackie and J. A. T. Dow (2nd edn). Academic, £15. First published in 1990, this revised edition has more than 1,000 new entries, bringing the total to over 5,000. For a review see *Nature* **343**, 225 (1990).

**Beast and Man: The Roots of Human Nature** by Mary Midgley (revised edn). One of the first critical examinations of sociobiology, written from the perspective of a moral philosopher. Routledge, £12.99.

**The Theory of Gambling and Statistical Logic** by Richard A. Epstein (revised edn). First published in 1977, this classic work covers the full range of games. Witty and informative reading for anyone planning to teach a course in probability or manage a casino properly. Academic, £23.

**Life in the Universe: Scientific American — A Special Issue.** The 10 chapters and the epilogue of this book originally appeared as articles and the closing essay in the October 1994 issue of *Scientific American*. Contributors include Steven Weinberg, Leslie E. Orgel, Stephen Jay Gould, Carl Sagan, William H. Calvin, Marvin Minsky and Antonio R. Damasio. W. H. Freeman, £14.95.

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**In Search of the Edge of Time: Black Holes, White Holes, Wormholes** by John Gribbin. More thought-provocation from one of Britain's most prolific science popularizers. Penguin, £6.99.

**Seven Ideas that Shook the Universe** by Nathan Spielberg and Bryon D. Anderson (2nd edn). A popular romp through Copernican astronomy, Newtonian mechanics, energy, entropy and probability, relativity, quantum theory, and conservation principles and symmetry. Wiley, £17.95.

**Photodissociation Dynamics** by Reinhard Schinke. "Schinke has amply fulfilled his declared aim of providing an overview of the field for graduate students in molecular physics and for experimentalists who are not familiar with the quantum theory of photochemistry", said Richard N. Dixon in *Nature* **366**, 120 (1993).