

BOOK REVIEWS

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Surviving Climate Change: The Struggle to Avert Global Catastrophe

EDITED BY DAVID CROMWELL AND MARTIN LEVENE

xi + 292 pp., 16 figs., 4 tables, 21.5 × 13.5 × 1.5 cm, ISBN 978 0 7453 2567 5 paperback, GB£ 15.99/US\$ 25.95, London, UK & Ann Arbor, MI, USA: Pluto Press, in association with Crisis Forum, 2007

This collection, co-published by the University of Southampton 'independent initiative' (founded by the two editors), combines dire warnings about the probable consequences of climate change with constructive advice about how to avert, even survive it. All the contributors work for British institutions and, excepting the long general position paper by South African-born Aubrey Meyer and two assessments of the Bush Administration's poor response to the 2003 'Pentagon Report' (on the implications of climate change for USA national security), the book is unabashedly written with current British policy, media reports and audiences in mind.

I will 'cut to the chase' about the most important thesis proffered by the volume as a whole. The possibility of billions of tonnes of methane being expelled into the atmosphere by the unfreezing of the world's largest peat bog (in Siberia), of the Gulf Stream collapsing, and of humanity not being able to reduce its greenhouse gas emissions sufficiently and in time, presages so 'bleak' a future scenario for our planet that it 'would be little short of apocalyptic' (Levene & Cromwell's Introduction, pp. 1, 6). Because of unprecedented food shortages, political tensions between rich and poor nations, and between neighbouring states, will abound, one chapter in the book (by Steve Wright) being exclusively devoted to 'preparing for mass refugee flows'.

To compound the enormous problem, social sectors working to solve it are not coordinated, government policy-makers, business, the universities, non-governmental organizations (NGOs), the media all doing what they believe is helpful, but without conforming to any well defined strategic (or 'umbrella') planning, and often 'missing the point' (p. 137). This is clearly the case with the British situation, as the editors convincingly show in their introductory statement, and as contributors reinforce through usefully more focused chapters (James Humphreys on politicians; Melanie Jarman and David Ballard on corporations; Jonathan Ward on academics; John Theobald and Marianne McKiggan on mass media; and George Marshall on NGOs). When it comes to intellectual life, it is patent that tertiary educational bodies have not prepared either their teachers or those they send out into the working world for interdisciplinary study, or for any readiness to switch from routine specialization to the pooling of resources in solution-making forums. In more general social terms, the make-up of democratic (would-be non-totalitarian) societies like Britain is such that key collective actors in the current situation of anxiety are free to respond to it on their own ways, and (more worryingly) on their own terms (with politicians forever affected by vote-catching, business with profits, media with cajoling our senses, and so on). The editors are dead right in their urge to reverse the pattern of centrifugal responses to a centripetal one.

The major paper by Meyer, co-founder of the Global Commons Institute in London, naturally backs his organization's 'contraction and convergence' (C&C) approach, which he sees as having been taken up by the United Nations Framework Convention on Climate Change. The C&C model is basically that of contracting human-made greenhouse gas omissions by international negotiation, but with a 'global treaty' that achieves fairness and 'equal rights' in 'the global carbon budget', named 'the process of convergence' (p. 32). Calculations for equitability in this case are not easy, since it is still being worked out as to precisely how much of the looming crisis is human-caused, but the typically striking differences between rich and poor country emissions calls for 'a war on the error' (of misguided industrial standards), more than any 'war on terror' (p. 48, cf. pp. 36–47).

Meyer's insistence on points of justice reveals that the solution to Climate Change is not just about the science and the 'mechanics' of correcting biospheric balance *qua natura solitaria*; it is also about relationships and ethical issues between human beings in varied environmental contexts. The book is important for appealing to worthy values. The problems can only be tackled by appeals for us to behave truly nobly under the circumstances, with sacrifices bringing 'healing, tolerance and basic loving kindness,' to state them most positively (the editors, p. 21), or to 'avoid murdering' Mother Earth (*ibid.*, the editors referring to the macrohistorian Toynbee 1976), to sum them up as a jolting negation. Or else, the least we might expect from would-be survivors might be self-interest, hopefully most of it 'enlightened', as Jim Scott opines in a chapter on this relevant matter of principle. The fact that one of the editors (Levene) is a Reader in Comparative History has obviously helped to create an important interface in this book, protagonists for good science and well-considered social ethics being called into an ongoing, demanding conversation.

Appendix 1 contains a valuable layperson's glossary of terms used in the global politics of climate change, and Appendix 2 a list of relevant (unfortunately almost exclusively British-based) organizations like the Crisis Forum.

Reference

Toynbee, A.J. (1976) *Mankind and Mother Earth*. New York, USA: Oxford University Press: 596 pp.

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Advanced Distance Sampling. Estimating Abundance of Biological Populations

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J. L. LAAKE, D. L. BORCHERS AND L. THOMAS

xvii + 416 pp., 23.5 × 15.5 × 2.5 cm, ISBN 978 0 19 922587 3 paperback, GB£ 24.95, Oxford, UK: Oxford University Press, 2007

Distance sampling has become the method of choice for shipboard surveys of cetaceans and aerial surveys of large herbivores, thanks largely to this dedicated team of authors. This book surveys developments to 2004.

The Introduction by Buckland and Anderson includes a brief statement of the history and merits of distance sampling. In their enthusiasm, they resort to a dubious characterization of mark–recapture estimates of abundance, which we are told (p. 2) ‘commonly require more than 20 parameters’! Chapter 2 (Borchers and Burnham) is a lucid overview of models to appear later. Chapter 3 (F. F. C. Marques and Buckland) summarizes methods for using covariates to improve models of detection probability, especially when stratum-specific estimates are needed (see Marques *et al.* 2007 for a more accessible treatment).

Explicit modelling of density is avoided in the general distance framework, which relies on rigorous sampling design to obtain an unbiased estimate of density in each stratum and overall. Chapter 4 on spatial distance sampling models (Hedley, Buckland and Borchers) diverges from the general framework to develop methods for fitting a density surface to line transect data. An illuminating example concerns decreasing density of minke whales with distance from the coast of Antarctica.

Perhaps the most useful chapter has little to do with distance sampling. In Chapter 5, Thomas, Burnham and Buckland provide an overview of temporal inference (population trend analysis) and associated power analyses. The data are any periodic estimates of abundance. Distance models could include time as a covariate of density, as with space (Chapter 4), but such models are missing. The contours of required sample size for detecting trend in Fig. 5.6 are inaccurate; readers should rely on the equations or their own simulations. Sensible advice is offered on the design and maintenance of long-term studies.

Chapter 6 (Laake and Borchers) has the innocuous title ‘Methods for incomplete detection at distance zero’. The authors dissect the problem energetically, leading to ‘a maze of possible methods’, most of which use multiple observers and ‘mark–recapture–distance–sampling’ (MRDS). At over 80 pages, this chapter dominates the book, but the topic is important and the coverage excellent. MRDS raises the secondary problem of correlated detection between observers, but the method of ‘point independence’ developed by these authors provides some relief.

In Chapter 7, Strindberg, Buckland and Thomas address the placement of sampling effort within the survey region. They stress the advantages of automated design algorithms using geographic information systems. Perhaps more importantly, they explain the issues (edge effects, overlapping plots, uneven coverage and probability sampling) that should be understood to use the algorithms effectively. Adaptive sampling (Chapter 8, Pollard and Buckland) provides modest gains in precision when objects are distributed very patchily. The development of adaptive methods for distance sampling is welcome, but uptake is likely to be limited.

Trapping webs and related passive distance sampling methods (Chapter 9, Lukacs, Franklin and Anderson) remain controversial, and the treatment here lacks the authority of other chapters. The ‘no movement’ assumption of distance sampling is mis-stated as ‘no directional movement’. Passive methods integrate over time, during which animals move; detection models that allow for movement would seem to be necessary for unbiased estimation.

Chapter 10 (Fewster and Buckland) revisits the logic of distance sampling and advocates a thoughtful and structured approach to simulation studies of estimator performance.

The ‘further topics’ in a final chapter (Burnham, Buckland, Laake, Borchers, Marques, Bishop and Thomas) span a wide range (sampling in three dimensions, full likelihood, random line length, search process models, combining mark–recapture and

removal methods with distance sampling, point transect sampling of cues, migration counts, measurement errors, animal sign and goodness-of-fit tests). Curiously, the main selling point of distance methods, robustness to heterogeneous detection given rather weak assumptions, is saved for the very end.

In general, this is a compilation of strong research that will be mined for its many technical insights. The chapters on trend and spatial sampling are of broad relevance to field ecologists. Errors are few. Themes are tossed back and forth between authors. The standard and robust approach to spatial variation in density (design-based estimation) seems to be under challenge from model-based approaches that can increase precision (Chapters 4, 7 and 10); it will be interesting to see which prevails.

Reference

Marques, T.A., Thomas, L., Fancy, S.G., Buckland, S.T. (2007) Improving estimates of bird density using multiple-covariate distance sampling. *Auk* **124**: 1229–1243.

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The Kyoto Protocol and Beyond. Legal and Policy Challenges of Climate Change

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 hardback, GB£ 45.00, The Hague, the Netherlands: Asser Press, 2007

This book aims to discuss the current and future design of the international climate regime especially from the legal and regulatory perspective. As a result of two conferences, the collection contains 16 chapters dividing the whole into three thematic parts. The first considers the implementation of the Kyoto protocol flexible mechanisms, the second focuses on case studies on individual states or regions, and the last discusses future prospects and the post-2012 phase in particular. Despite the promise of its title, the book is mainly about environmental law and much less about policy or governance.

In my judgement, the topic of the book is interesting, but for several obvious reasons the collection is heterogeneous, even to a critical extent. The writers are researchers, consultants and officials. The length of the individual articles varies between two and 24 pages and the internal architecture varies a lot between individual papers. The introduction given to climate change policy is short and rather general in nature. Further, and most critically, there is no concluding section.

With respect to technical affairs, a useful list of abbreviations is given. Indeed, the text is full of shortened forms of climate policy jargon, and thus a glossary briefly describing the terms included would have been useful.

Among the most profound pieces are those written by Joyeeta Gupta and Leonardo Massai. Based on the extensive expertise in climate change regimes, Gupta discusses the negotiating challenges facing developing countries and especially the role of China and