

## BOOK REVIEW

Jianguo Wu, Bruce Jones, Habin Li, and Orié Loucks (Editors) 2006: *Scaling and Uncertainty Analysis in Ecology. Methods and Applications*, Springer, Dordrecht

The terms “scale”, “scaling” and “uncertainty” are a “must” in landscape ecological studies and are thus found in nearly every (landscape) ecological publication. Numerous publications deal directly with these three topics, each using its own philosophy and terminology. The biggest merit of this book is that it brings some order into the resulting confusion, using a consistent terminology.

The first chapters, which give an overview of scale, scaling and uncertainty concepts and approaches, are well suited “appetizers”. They have just the right amount of detail for the interested reader without drowning her or him in formulae or cloudy abstract concepts.

A lot of emphasis is given to up-scaling, i.e. (1) the descriptive similarity-based up-scaling and (2) the process-based model up-scaling. Upscaling is treated more comprehensively than in comparable publications. However many readers would definitely appreciate more information on commonly used advanced methods, e.g. scale separation or moment equations. Unfortunately no information is available on how to deal with anisotropic, dynamically varying variability. Downscaling, i.e. generating detailed information from coarse sources, is briefly discussed within the framework of climate downscaling. The section on uncertainty analysis should be standard literature for ecological modelers. It is a comprehensive overview of the various uncertainties contained within ecological models. The readers can then understand better approaches to solve their own problems arising with uncertainty of models.

The case study sections provide ideas how the scaling problems are tackled in specific studies. They cover a wide range of scaling and uncertainty issues in different landscape ecological fields, ranging from biodiversity studies, carbon and nitrogen flux studies, to nutrient transport in rivers. The case studies provide, as examples, (1) a method to derive abundance from large-scale presence/absence data based on occupancy theory, (2) a combination of different up-scaling approaches in a heterogeneous landscape, and (3) avenues and problems of using remote sensing data for up-scaling.

The synthesis tries to amalgamate the case studies within the general framework elucidated in the introduction. The authors concentrate on four issues that arise from the case studies, namely (1) the characteristic scale of ecological processes, (2) the effects of observational, experimental and model scales on the results obtained, (3) up- and downscaling approaches, and (4) approaches dealing with uncertainty.

Besides the four main principles, several general rules how scaling should be done are derived, e.g. combining bottom-up and top-down approaches. The synthesis tries hard to merge the small bits and pieces of scaling described in the case studies with the broader view of the introduction. Unfortunately this mission is not completely successful and there remains a discrepancy between the clear, general descriptions in the introduction and the heterogeneous picture of scaling in the case studies. Nevertheless this book has the potential to be a valuable companion for all landscape ecologists that are interested in scaling issues, particularly for those dealing with theoretical landscape ecology and ecological modeling.

*Reviewer: Heike Lischke, Land use dynamics/Ecological process modeling, Swiss Federal Research Institute (WSL), [lischke@wsl.ch](mailto:lischke@wsl.ch)*

The IALE Bulletin is distributed six times a year to the members of the IALE. The IALE - International Association for LandscapeEcology- was founded in 1982 to promote communication between scientists, planners and interdisciplinary scientific research. IALE Executive Committee: **President:** Bob Bunce 2003-2007, ALTERRA Green World Research, Wageningen UR, Postbox 47, 6700AA Wageningen, The Netherlands, [bob.bunce@wur.nl](mailto:bob.bunce@wur.nl); **Secretary General:** Marion Potschin 2003-2007, School of Geography, University of Nottingham, Nottingham NG7 2RD, [Marion.Potschin@nottingham.ac.uk](mailto:Marion.Potschin@nottingham.ac.uk); **Treasurer:** Rob Jongman 1995-2007, ALTERRA Green World Research, Wageningen UR, Postbox 47, 6700AA Wageningen, The Netherlands, [Rob.Jongman@wur.nl](mailto:Rob.Jongman@wur.nl) or [rob.jongman@planet.nl](mailto:rob.jongman@planet.nl); **Past President:** Richard J. Hobbs 2003-2007, School of Environmental Science, Murdoch University, Murdoch, WA 6150, Australia, [rhobbs@essun1.murdoch.edu.au](mailto:rhobbs@essun1.murdoch.edu.au); **Vice Presidents:** Louis R. Iverson 2003-2007, USDA Forest Service, 359 Main Rd., Delaware, OH, 43015, USA, [liveron@fs.fed.us](mailto:liveron@fs.fed.us); Nobukazu Nakagoshi 2003-2007, Hiroshima Univ., Dept of Environmental Studies, 1-7-1 Kagamiyama, Higashi-Hiroshima 739-8521, Japan, [nobu@hiroshima-u.ac.jp](mailto:nobu@hiroshima-u.ac.jp); Maria Kozova 2005-2009, Comenius University in Bratislava, Faculty of Natural Sciences, MI. dol. B-2, 842 15 Bratislava 4, Slovakia, [kozova@fns.uniba.sk](mailto:kozova@fns.uniba.sk); Sandra Luque 2005-2009, Cemagref - Institute for Agricultural and environmental engineering research, 2, rue de la papeterie, BP 76, F-38402 St-Martin-d'Hères, cedex, France, [sandra.luque@cemagref.fr](mailto:sandra.luque@cemagref.fr); **Bulletin Editor and Deputy Secretary General:** Felix Kienast 1999-2007, Swiss Federal Institute of Forest, Snow and Landscape Research, Division of Landscape Dynamics and Management, 8903 Birmensdorf, Switzerland, [felix.kienast@wsl.ch](mailto:felix.kienast@wsl.ch); **Chairman of Council:** Jesper Brandt 1995-2007, Roskilde University, P.O. Box 260, DK 4000 Roskilde, Denmark, [brandt@ruc.dk](mailto:brandt@ruc.dk).

IALE on the Internet: IALE International: [www.landscape-ecology.org](http://www.landscape-ecology.org)