

Contents

**Part I Managing the Earth’s Life Support Systems:
The Emergence of Sustainability Science and Transdisciplinarity**

**From the Unity of Nature to Sustainability Science:
Ideas and Practice** 3
Robert W. Kates

**Sustaining Sustainability: Creating a Systems Science
in a Fragmented Academy and Polarized World** 21
John D. Sterman

A Landscape Approach for Sustainability Science 59
Jianguo (Jingle) Wu

It’s OK to Talk About Sustainability 79
Alan D. Hecht

**Part II Balancing Ecology and Economy: Natural Capital
and Quality of Life**

**The Value of Natural and Social Capital in Our Current
Full World and in a Sustainable and Desirable Future** 99
Robert Costanza

**Steps Towards Sustainability and Tools for Restoring
Natural Capital: Etang de Berre (Southern France) Case Study** 111
James Aronson, Florian Claeys, Vanja Westerberg, Philippe Picon,
Guillaume Bernard, Jean-Michel Bocognano, and Rudolf de Groot

**Sustainability of Biodiversity Under Global Changes,
with Particular Reference to Biological Invasions** 139
Daniel Simberloff

Part III From Science to Policy: Managing the Commons, Social Learning, and Social Responsibility

- “Post-sustainability”: The Emergence of the Social
Sciences as the Hand-Maidens of Policy** 161
Michael R. Redclift
- The Purpose and Politics of Ecosystem-Based Management**..... 177
Judith A. Layzer
- Sustainable Coastal Margins: Challenges of Tempo
and Mode for the Policy Domain** 199
Ronald C. Baird
- Fishery and Forest Transitions to Sustainability:
A Comparative Analysis**..... 221
Bonnie J. McCay and Thomas K. Rudel

Part IV The Ecology of Cities

- Cities as Dissipative Structures: Global Change
and the Vulnerability of Urban Civilization** 247
William E. Rees
- A Mathematical Description of Urban Metabolism** 275
Christopher Kennedy
- Urbanization, Local Government, and Planning
for Sustainability** 293
Robert W. Taylor
- Climate Change, Globalization, and the Double Exposure
Challenge to Sustainability: Rolling the Dice
in Coastal New Jersey** 315
Robin Leichenko
- Sustainability Trajectories for Urban Waters** 329
Richard Burroughs

Part V Restoring and Rehabilitating Ecosystems: Return from the Precipice

- Reversing Two Centuries of Wetland Degradation:
Can Science Better Inform Policy and Practice?** 353
Michael P. Weinstein, Steven Y. Litvin, and Michael G. Frisk
- Changing Nature: Novel Ecosystems, Intervention,
and Knowing When to Step Back**..... 383
Eric Higgs

Knocking on Doors: Boundary Objects in Ecological Conservation and Restoration 399
Jac. A.A. Swart and Henny J. van der Windt

Sustainability: More About the Toolmaker than the Tools..... 415
R. Eugene Turner

Epilogue: The Challenge of Sustainability: Lessons from an Evolutionary Perspective..... 431
Simon Levin

Index..... 439