

Contents

<i>List of contributors</i>	<i>page</i> vii
<i>Preface</i>	xiii
<i>Acknowledgements</i>	xv

PART I Introduction

1 Developing new perspectives from advances in soil biodiversity research	3
<i>Diana H. Wall, Alastair H. Fitter and Eldor A. Paul</i>	

PART II The soil environment

2 The habitat of soil microbes	31
<i>Iain M. Young and Karl Ritz</i>	
3 Twenty years of molecular analysis of bacterial communities in soils and what have we learned about function?	44
<i>A. G. O'Donnell, S. R. Colvan, E. Malosso and S. Supaphol</i>	
4 Carbon as a substrate for soil organisms	57
<i>D. W. Hopkins and E. G. Gregorich</i>	

PART III Patterns and drivers of soil biodiversity

5 The use of model <i>Pseudomonas fluorescens</i> populations to study the causes and consequences of microbial diversity	83
<i>Paul B. Rainey, Michael Brockhurst, Angus Buckling, David J. Hodgson and Rees Kassen</i>	
6 Patterns and determinants of soil biological diversity	100
<i>Richard D. Bardgett, Gregor W. Yeates and Jonathan M. Anderson</i>	
7 How plant communities influence decomposer communities	119
<i>David A. Wardle</i>	
8 The balance between productivity and food web structure in soil ecosystems	139
<i>Peter C. de Ruiter, Anje-Margriet Neutel and John Moore</i>	

vi CONTENTS

9 Rhizosphere carbon flow: a driver of soil microbial diversity? <i>D. B. Standing, J. I. Rangel Castro, J. I. Prosser, A. Meharg and K. Killham</i>	154
PART IV Consequences of soil biodiversity	
10 Microbial community composition and soil nitrogen cycling: is there really a connection? <i>Joshua P. Schimel, Jennifer Bennett and Noah Fierer</i>	171
11 Biodiversity of saprotrophic fungi in relation to their function: do fungi obey the rules? <i>Clare H. Robinson, E. Janie Pryce Miller and Lewis J. Deacon</i>	189
12 Is diversity of mycorrhizal fungi important for ecosystem functioning? <i>J. R. Leake, D. Johnson, D. P. Donnelly, L. Boddy and D. J. Read</i>	216
13 Trophic structure and functional redundancy in soil communities <i>Heikki Setälä, Matty P. Berg and T. Hefin Jones</i>	236
14 Plant-soil feedback and soil biodiversity affect the composition of plant communities <i>Wim H. van der Putten</i>	250
15 Response of the soil bacterial community to perturbation <i>Alan J. McCarthy, Neil D. Gray, Thomas P. Curtis and Ian M. Head</i>	273
PART V Applications of soil biodiversity	
16 Soil biodiversity in rapidly changing tropical landscapes: scaling down and scaling up <i>Ken E. Giller, David Bignell, Patrick Lavelle, Mike Swift, Edmundo Barrios, Fatima Moreira, Meine van Noordwijk, Isabelle Barrios, Nancy Karanja and Jeroen Huisng</i>	295
17 Restoration ecology and the role of soil biodiversity <i>J. A. Harris, P. Grogan and R. J. Hobbs</i>	319
18 Soil biodiversity: stress and change in grasslands under restoration succession <i>Lijbert Brussaard, Ron G. M. de Goede, Lia Hemerik and Bart C. Verschoor</i>	343
19 Soil biodiversity, nature conservation and sustainability <i>Michael B. Usher</i>	363
PART VI Conclusion	
20 Underview: origins and consequences of below-ground biodiversity <i>Karl Ritz</i>	381
Index	402