Ecological Studies

Analysis and Synthesis

Volume 226

Series Editors
Martyn M. Caldwell
Logan, Utah, USA

Sandra Díaz
Cordoba, Argentina

Gerhard Heldmaier
Marburg, Germany

Robert B. Jackson
Durham, North Carolina, USA

Otto L. Lange
Würzburg, Germany

Delphis F. Levia
Newark, Delaware, USA

Harold A. Mooney
Stanford, California, USA

Ernst-Detlef Schulze
Jena, Germany

Ulrich Sommer
Kiel, Germany

More information about this series at http://www.springer.com/series/86

Evolution of biological soil crusts during thousands of millions of years of biosphere development of our planet (for detailed legend and explanations see Fig. 25.2); drawing by B. Büdel and F. Spindler

Bettina Weber • Burkhard Büdel • Jayne Belnap
Editors

Biological Soil Crusts: An Organizing Principle in Drylands

Springer

Editors
Bettina Weber
Multiphase Chemistry Department
Max Planck Institute for Chemistry
Mainz, Germany

Burkhard Büdel
Plant Ecology and Systematics
Department of Biology
University of Kaiserslautern
Kaiserslautern, Germany

Jayne Belnap
Southwest Biological Science Center
U.S. Geological Survey
Moab, Utah
USA

Additional material to this book can be downloaded from http://extras.springer.com.

ISSN 0070-8356 ISSN 2196-971X (electronic)
Ecological Studies
ISBN 978-3-319-30212-6 ISBN 978-3-319-30214-0 (eBook)
DOI 10.1007/978-3-319-30214-0

Library of Congress Control Number: 2016941282

© Springer International Publishing Switzerland (outside the USA) 2016
This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.
The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.
The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG Switzerland

Preface

During the last decades, and probably at least partly triggered by the first Ecological Studies volume on this topic (volume 150), biological soil crusts (biocrusts) have quickly gained increasing interest from many audiences, with well above 100 publications per year published during the last few years. Thus, we found that there is now a wealth of new data covering a wide range of different topics on biocrusts and showing that biocrusts can act as "an organizing principle in drylands." This observation inspired us to use this as the title of this second Ecological Studies volume. This book is divided into seven sections comprising a total of 25 different chapters.

When we selected the authors for the different chapters, we had two intentions in our mind. One was to include many scientists from as many regions of the world as possible, who also used different methodological approaches in order to get a thorough and comprehensive view on the different topics. Second, we also wanted to get a good mixture of younger and well-established researchers. With a total of 61 chapter authors and 28 of them being in the doctoral, postdoc, or associate professor stage, ~46 % of the book authors are in a nonfinal/early stage of their career.

This second book on biological soil crusts would not have been possible without the help of some people in particular, whom we would like to thank here: first of all, we would like to express our sincere thanks to Otto L. Lange, who gave us the opportunity to be editors of this book, who strongly supported us throughout the whole process of development, from the first ideas to the final editions, and who read and gave highly productive feedback to every single chapter of this book. Thank you so much! Second, we also would like to thank all the authors who contributed to the book. We are well aware of the fact that we sometimes asked for rather profound and time-consuming changes during the development of the book chapters. Despite this, all authors remained highly cooperative and motivated, a fact which cannot be taken for granted and which we deeply appreciate. Third, we would like to express our sincere thanks to Dr. Andrea Schlitzberger, who coordinated this biocrust book for Springer. She always was extremely patient and helped

us immediately upon all smaller and larger problems, and it really was a pleasure to work with her. Fourth, we want to thank our supervisors and colleagues, who allowed us to spend so much time and energy on this book and who believed that in the end, we would produce a worthwhile book that would advance this scientific field. Finally, we also would like to express our sincere thanks to our families and partners for their tolerance and support during the endeavor of this second biocrust book.

We sincerely hope this book will help many scientists, land managers, policy makers, and also the environmentally interested public, to receive an overall introduction into the fascinating world of biocrusts and that it will foster many new ideas and scientific projects. Our goal is reached if this book supports understanding of the overall role of biocrusts as an organizing principle in drylands.

Mainz, Germany — Bettina Weber
Kaiserslautern, Germany — Burkhard Büdel
Moab, UT, United States — Jayne Belnap

Contents