

# Preface

The Lake Tana Basin, the catchment area of Ethiopia's largest freshwater lake, is the source of the Blue Nile River, the main tributary of the world's longest transboundary river. This rich social-ecological system is home to more than three million people and diverse ecological resources. Water, fish, and forest resources, agricultural and other products are used in the region and beyond. Human activities in the basin affect the characteristics of local ecosystem resources, and, in turn, affect the quality and sediment load of the water that flows downstream from the basin. Within the basin, a growing population puts pressure on agricultural land and other resources and generates a flow of people from rural to urban areas. In addition to food, urban growth increases demand for construction resources like eucalyptus poles and energy resources such as charcoal from rural lands. People, animals, and goods flow into the city from the rural surroundings and back out again daily. The links between urban and rural areas, upstream and downstream ecosystems, and socioeconomic and ecological system components in the region are complex and dynamic, making it difficult to see how changes in one part feed through the system to change other components and, therefore, to develop policies for sustainable management.

This book is the result of conversations among the three editors in late 2013 about these dynamic connections and policy challenges. Krys Stave, a system dynamicist studying social-ecological systems, had recently arrived at Bahir Dar University as a Fulbright Scholar. Goraw Goshu, a water quality and environmental expert, had been setting the course for the recently established Blue Nile Water Institute as its Director. Shimelis Aynalem, who was teaching and conducting research on the region's birds, fauna, and wetlands, had recently published a book on the Birds of Lake Tana. Krys talked about her difficulties finding published research about the region and her conversations with researchers in the region about their work and concerns. Goraw described the regional conferences the BNWI had held to identify issues, the research being conducted by Institute scientists, and the repository of M.Sc. and Ph.D. theses, conference papers, manuscripts, research reports, and policy briefs the Institute was building. One of the Institute's projects was to organize these resources into a digital library, but until that happened, access

to the information was very limited. Shimelis related stories from his field work about unique and little known features of the Lake Tana ecosystem. It became clear that, while there was a lot of good work being done locally, it was getting little recognition from policy makers at all levels and from other researchers outside the region. In addition, local researchers felt their work and concerns were not being fully considered by decision-makers and decision-makers felt researchers were not giving them the information they needed to answer specific applied questions. There was a need for greater integration across disciplines and between policy-makers and researchers.

The book project was thus created to make the work of local researchers visible to other researchers and decision-makers at all levels and promote regional integration. It has four objectives: compile the work of researchers in the region about its socioeconomic and ecological conditions, make local research available in an easily accessible format to external researchers and others wanting to learn about the region, assess the state of knowledge and identify research needs, and develop a systems framework to integrate what is known and provide a platform for further collaborative work.

We recruited local researchers, decision-makers, and practitioners mainly from Bahir Dar University and resource management organizations in the region to contribute chapters about their areas of expertise. We asked that each chapter provide an overview of the chapter topic, a detailed baseline characterization of what is known, a summary of research that has been done on the topic to date, and a discussion of research questions and issues for further study. A total of 49 authors contributed to the 35 chapters. The book, organized in five Parts, describes basic characteristics of the Lake Tana basin, their dynamic interactions, sustainability issues, and a systems framework for collaborative and integrative management. The first Part sets the stage, with an introduction to the region's challenges, a theoretical systems perspective to organize the details to follow, and a historical overview. The next three parts contain the heart of the book, covering ecosystem characteristics, social system characteristics, and management institutions and innovations. The final part synthesizes the work and looks forward. It includes a systems map developed as the basis for further cross-disciplinary collaboration and concludes with a summary of research needs and potential projects. The book is not comprehensive. For example, it does not touch on public health. Rather, we sought to provide a foundation and framework for addressing the question of how to sustainably manage resources in the face of social and ecological pressures. The key theme that ties the chapters together is this: human and environmental system components are linked in diverse and reciprocal ways, and the linkages govern the way the system responds to disturbances. Understanding these connections and dynamics is critical for managing the system for sustainability.

The book has two main audiences: policy-makers, national and international researchers, development practitioners, non-governmental organizations, and others seeking basic scientific knowledge and an integrated understanding of change in this particular region, and those facing similar challenges in other places. For the first, this book compiles baseline characteristics and trends in an easily accessible

form and builds a base for collaborative problem-solving. For the second, it is an example and framework for understanding and communicating the science in this complex system in a way that supports policy-making.

An edited volume like this is the collective work of many people. First and foremost, it would not exist without the efforts of the exceptional chapter authors. We thank them for their contributions, timely responses to reviews, and patience while we assembled the work as a whole. In addition to the people who contributed chapters, a number of others offered encouragement, material and administrative support, and excellent suggestions. Dr. Baylie Damtie, President of Bahir Dar University, was instrumental in championing the book and urging researchers to participate in the project. The Office of the Vice President for Research and Community Services of Bahir Dar University, the Blue Nile Water Institute and the College of Agriculture and Environmental Sciences provided the environment for researchers to participate in the book. We thank them for their invaluable support.

To ensure the quality of the work, a number of people reviewed chapters and provided general comments on the topics and direction of the book. They include: Jonathan Patz (Global Health Institute, University of Wisconsin, Madison, Wisconsin, USA), Zeleke Mekuriaw (International Livestock Research Institute, Bahir Dar, Ethiopia), Ian Francis (ESRO Aberdeen and Royal Society of the Protection of Birds, UK), David Cabot (Environmental Consultancy Services, Carrigskeewaun, Carrowniskey, Westport, Co. Mayo, Ireland), Koos Vijverberg (Netherlands Institute of Ecology, Wageningen, the Netherlands) and Masresha Fetene (Addis Ababa University, Addis Ababa, Ethiopia). Their willingness to read and suggest improvements made the book better.

Krys Stave was supported by the Core Fulbright U.S. Scholar Program for her time in Ethiopia. She is immensely grateful to the program for the opportunity to learn from and collaborate with her many wonderful colleagues at Bahir Dar. The U.S. Embassy generously provided the grant that made the system mapping workshop described in Chap. 34 possible. She thanks her contacts at the Public Affairs Section of the U.S. Embassy in Addis Ababa, including Yohannes Birhanu, Tahra Vose and Learned Dees for facilitating her work with Bahir Dar University and Gedion Mamo for helping with the funding for the workshop. Thank you also to Tizezew Shimekach for her research assistance and friendship throughout the project.

Finally we thank our families. This has been an absorbing project that has taken time we otherwise would have been able to spend with them. Thank you Simon Wade, Dejen Gidey Stave, Tedros Gidey Stave, Banchi Amlak Worku, HaileAmlak Goraw, Hana Mariam Goraw, Dawit Goraw, Markos Goraw, Mazashwork Abebe, Marshet Shimelis, Samuel Shimelis, Haile-Gabriel Shimelis, and Hana Shimelis. Your love and support make our lives better every day.

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Social and Ecological System Dynamics  
Characteristics, Trends, and Integration in the Lake  
Tana Basin, Ethiopia  
Stave, K.; Yemer, G.G.; Aynalem, S. (Eds.)  
2017, XVII, 652 p. 95 illus., 73 illus. in color., Hardcover  
ISBN: 978-3-319-45753-6