The Science of Strategic Conservation

Billions have been spent on land conservation, but too little attention has been paid to how cost-effective these investments have been. With budgets increasingly constrained, conservationists must learn new strategies and tools to fully harness their funds to protect critical resources. Messer and Allen are pioneers in making conservation priorities more strategic, cost-effective, scientific, and transparent. This book introduces powerful tools available for project selection, using real-life examples and a practical, step-by-step approach. Readers can readily apply these tools to their own work, accomplishing more with less by combining the benefits of structured decision-making and mathematical programming and understanding of market forces and human behavior. The authors highlight tools from conservation science, mathematics, land use planning, and behavioral economics, showing how they can be orchestrated to help protect key environmental resources. This is an invaluable volume for all students, professionals, and stakeholders associated with conservation programs.

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Protecting More with Less

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Kent dedicates this book to his parents, Don and Bonnie; to his daughters, Madeline and Eleanor, and to his wife, Kate, with whom he joyously walks with through all of the seasons of their lives.

Will dedicates this book to his family, William IV, Jackson, and Tiffany, who endure his suboptimality in the pursuit of strategic conservation.

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Online resource can be downloaded from
www.cambridge.org/messerallen

Foreword

Land. Here in the United States, we are blessed with an abundance of it. Forests, farms, ranches, wetlands, grasslands, deserts. Lakefront, riverfront, oceanfront. In the latter part of the nineteenth century, we began for the first time to think about the future of our magnificent legacy of land. So many acres of forest had been clear cut, so many acres of grassland plowed under. Cities rippling out into the surrounding countryside. For the first time, we could see the impact, feel the loss caused by the growth of our nation.

Fortunately, leaders stepped forward, especially Theodore Roosevelt, to identify and set aside for all time some of our most impressive natural assets. Roosevelt himself placed more than 230 million acres in public protection through establishing 150 national forests, 51 federal bird reserves, 4 national game preserves, 5 national parks, and 18 national monuments by enabling the 1906 American Antiquities Act. Our first national park, Yellowstone, was created in 1872, and since then, we have set aside hundreds of millions of acres into national and state parks, refuges, forests, and game lands and hundreds of thousands of acres into county and city parks and greenways.

Along with these protected acres, we now have an environmental movement that is strong and vibrant, with more than 10,000 organizations and more than 50,000 pieces of legislation and regulation on the federal, state, and local books. And yet, as our nation continues to grow, heading from 350 million people today to more than 600 million by the end of this century, open space is again under threat. Each year, we lose nearly 3 million acres of open space across the country to development. Cities are expanding – Atlanta is the fastest growing human settlement in history – and new energy development is sprawling across open space at an unprecedented rate.

If we are not careful, our children and grandchildren will not have the same access to open space that we have had. Nature will be like some foreign country that you get to visit only once in a while, rather than something that is nearby and accessible.

But protecting land in the future will be more complicated than it was in 1872 when Yellowstone National Park was created. Back then, you just drew lines on a map and passed legislation. Today, you need to integrate open space into housing, commercial development, energy and transportation infrastructure, and urban redevelopment. This is more complicated, and more expensive. The risk of doing things poorly, inefficiently, is high. The risk that you protect the wrong land, in the wrong way, so that neither conservation nor economic development is well served, can be paralyzing. The way we did things in the past now seems outdated, insufficient. There will never be enough money or political will to just buy up every acre. We need to be able to make decisions about species, recreation, water quality, climate change, and economic growth that we can be sure are the right decisions at the right time. What we need are new tools, new relationships, even a new language, that balance environmental and economic objectives, that include, rather than exclude, people from the end result.

This is a new way of thinking for the environmental movement. We have a half-century of success using the old ways, but going forward in the old ways will limit our ability to achieve conservation goals. In this book, Kent Messer and Will Allen, describe a new way of thinking. They explain how decision-making in the twenty-first century can balance environmental and economic objectives. They use real-life examples to show how we can identify and invest in the best possible solutions, how we can get more from each dollar we spend, and how we can engage communities in the critical decision-making process. They have analyzed the limitations of the conservation movement and come up with new ways of responding to conservation challenges, including the severe limitation on the amount

of money available for conservation. They use the emerging field of behavioral science to show us how to protect more with less.

This book is a road map, a textbook, for how we should approach conservation in the future. I am proud of the authors for their groundbreaking work and pleased that we at The Conservation Fund now have the tools we need to conserve the very best of what remains of America's magnificent land legacy.

Larry Selzer
The Conservation Fund

Acknowledgments

One of the fundamental challenges that we faced in writing a book like this is how much do we discuss the conservation examples and research projects that we are most familiar with and how much do we discuss the important work that is being done by others that contributes to our understanding of the science of strategic conservation. We cannot say whether we were able to strike the right balance or not as we certainly worry that we over cited our own work and missed important contributions of others, but certainly this challenge was at the forefront of our minds during the writing process.

We want to acknowledge that the vast majority of the projects and research highlighted in this book were collaborations with some of the leading thinkers on these topics in the world. Undoubtedly, working with them influenced our thinking and we are deeply appreciative of the contributions of our colleagues. In addition to those already highlighted in the book, we acknowledge the following colleagues: Katie Allen, Ole Amundsen, Michael Arnold, Kendra Briechle, Andrew Birch, Caitlin Burke, Margarita Carey, Forest Clark, Frank Conkling, Jon Conrad, Joshua Duke, Steve Dundas, Jesse Elam, Rich Erdmann, Paul Ferraro, Whitney Flanagan, Jacob Fooks, Rick Hall, Leigh Ann Hammerbacher, Kris Hoellen, Peggy Horner, Zhivko Illeieff, Cindy Ivey, Tom Jacobs, Harry Kaiser, Peg Kohring, Hawkins Partners, Dan Hellerstein, Nate Higgins, Rob Johnston, Maik Kecinski, Dagny Leonard, Dick Ludington, Lori Lynch, Tom Magnuson, Gil Masters, Robin Murphy, Patrick Noonan, Len Ortolano, David Proper, Andrea Repinsky, Lesley Rigney, Mikki Sager, Bill Schulze, Michal Schwartz, Ann Simonelli, Justin Storck, Jordan Suter, Jazmin Varela, Christian Vossler, Steve Wallander, Shang Wu, Louise Yeung, and

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