

PREFACE

Grassland birds, as a group, are undergoing substantial population declines across North American prairies. The causes for the declines are numerous, but include loss of natural ecological drivers, conversion of native prairies for agricultural use, habitat fragmentation, energy exploration and development, natural fire suppression, unmanaged grazing, invasive vegetation, infrastructure associated with anthropogenic activities, and periodic droughts. Ultimately, these factors all contribute to the overarching threat—the loss of quality habitable space. Environmental changes may be especially detrimental to the prairie or “pinnated” grouse, the Sharp-tailed Grouse (*Tympanuchus phasianellus*), the Greater Prairie-Chicken (*T. cupido*), and, the subject of this volume, the Lesser Prairie-Chicken (*T. pallidicinctus*).

Lesser Prairie-Chickens were once widely distributed across the Southern Great Plains of Colorado, Kansas, New Mexico, Oklahoma, and Texas. The birds are mysterious, elusive, and worthy of considerable awe and respect considering the harsh environments in which they persist. Their spring mating rituals are spectacular, serving to define the subtle splendor and magnificence of the prairies that the birds inhabit. Lesser Prairie-Chickens have experienced substantial declines, both in terms of numbers of birds and the extent of area that the populations still occupy. Fully understanding the population trends is challenging because the species appears

to have a boom-and-bust reproductive strategy; several years of poor reproductive success may be offset by one or two years of good productivity. Regardless, current evidence indicates that the species has experienced a persistent and distribution-wide population decline, especially since the Dust Bowl of the 1930s dramatically impacted the core range of Lesser Prairie-Chickens. Many grassland birds are migratory, but Lesser Prairie-Chickens are resident game birds that require large areas of prairie to complete their life histories and sustain their populations. Prairie chickens occupy prairie habitats year-round, which provides conservation opportunities and risks, in that management must take into account all aspects of the species life history in one area. Habitat management must address habitats needed for the display areas used for lekking behavior, high-quality nesting and brood-rearing areas, and sites that facilitate nonbreeding survival. Active management can be applied to address issues with grazing but may be difficult or impossible to implement for mitigating the effects of drought or climate change. Other factors focusing attention on Lesser Prairie-Chickens include that the species has been managed as an upland game bird, and wildlife agencies have sought to maintain populations that can sustain recreational harvesting. Indeed, much of the early research on prairie grouse was originally directed at game management issues. More recently, conservation concerns have also had a financial component

from bird watchers with interests in natural history. Opportunities for the general public to view lekking behaviors of Lesser Prairie-Chickens from blinds or as part of spring festivals have provided economic benefits to rural communities and private landowners. Lesser Prairie-Chickens have gained a high profile as a "poster" species for recreational harvesting, nature tourism, and grassland conservation. Persistent population declines and resulting conservation concerns for the species led to a 1995 petition for the protection of Lesser Prairie-Chickens at the federal level under the Endangered Species Act. After a substantial review, the U.S. Fish and Wildlife Service issued a ruling providing Lesser Prairie-Chickens with federal protection as a threatened species in May 2014. However, the listing rule was vacated by judicial decision in September 2015, creating considerable regulatory uncertainty at the time of this volume.

The concept for this book stemmed from conversations regarding the research and management of Lesser Prairie-Chickens. We recognized that (1) a substantial amount of contemporary research had focused on Lesser Prairie-Chickens; (2) emerging issues, such as wind energy and climate change, were recognized as possible threats to the species; and (3) the species had been petitioned for federal protection. We concluded that there was a need to synthesize and compile the historic and contemporary state of knowledge on Lesser Prairie-Chickens into a single source. We developed an outline of contemporary and relevant topics to address in this volume and then approached potential authors for those chapters. Fortunately, we were not alone in our vision, and the concept of this volume was received with enthusiasm by a number of researchers and managers that we asked to serve as authors or referees. We thank the following individuals for taking time from their busy schedules to author the 18 chapters contributed to this volume of the series *Studies in Avian Biology*. The chapter authors are as follows: Matthew R. Bain, Anne M. Bartuszevige, Grant M. Beauprez, Adam C. Behney, Philip K. Borsdorf, David K. Dahlgren, Alex Daniels, Randy W. DeYoung, R. Dwayne Elmore, Aron A. Flanders, Edward O. Garton, Cody P. Griffin, Blake A. Grisham, Alixandra J. Godar, Christian A. Hagen, Sean C. Kyle, Lena L. Larsson, Duane

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In addition to authorship by leading researchers and managers working with Lesser Prairie-Chickens, the volume has also benefited from careful and diligent reviews by a host of external referees, whom we thank for their assistance in improving the manuscripts. We thank Roger Applegate, Anne Bartuszevige, Grant Beauprez, Leonard Brennen, Scott Carleton, Andy Chappell, David Dahlgren, Manual DeLeon, Dwayne Elmore, Pamela Ferro, Aron Flanders, Sam Fuhlendorf, Seth Gallagher, Andrew Gregory, Blake Grisham, Christian Hagen, Chris Hise, Torre Hovick, Jeff Johnson, Chuck Kowaleski, Greg Kramos, Duane Lucia, Stephanie Manes, Patricia McDaniel, Gene Miller, Clay Nichols, Chris O'Meilia, Howard Parmen, Michael Patton, Reid Plumb, Jeffrey Prendergast, Christine Pruett, Nicole Quintana, Jim Ray, Jonathan Reitz, Mindy Rice, Terry Riley, Beth Ross, Brett Sandercock, Heather Whitlaw, Virginia Winder, and Don Wolfe.

Each chapter underwent external peer reviews by a minimum of two referees, and the final manuscript was edited by two volume editors, David Haukos and Clint Boal, with the assistance of Tracy Estabrook Boal serving as the initial volume copy editor. It was not feasible to obtain peer reviews solely from scientists who were not involved in this volume, but we made every effort to ensure that there were no conflicts of interest at any stage of the review process. The volume editors were authors on some chapters; in these cases, the manuscripts also underwent additional reviews by Kevin Whalen and Janine Powell of the U.S. Geological Survey. Once the final versions were submitted and found acceptable by us, we forwarded the revised manuscripts, along with original drafts, reviewer comments, and author responses, to the series editor Brett Sandercock. Sandercock reviewed all the manuscripts and made final editorial decisions regarding acceptance. We graciously thank him for his encouragement and guidance during the preparation of this book. We also acknowledge and thank Jonathan Lautenbach for providing the cover photo.

We hope this volume of *Studies in Avian Biology* serves as an overview and synthesis of the state of current knowledge on the ecology of Lesser Prairie-Chickens, and the challenges that natural resource managers continue to face in their conservation efforts. We also hope that the work serves as a stimulus for new research and management efforts toward this remarkable species of grassland bird that has survived for millennia but is now facing anthropogenic-driven

challenges it was never equipped to deal with. Lesser Prairie-Chickens need our help, and the science in this volume will serve as a useful starting point for future research, management, and conservation.

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