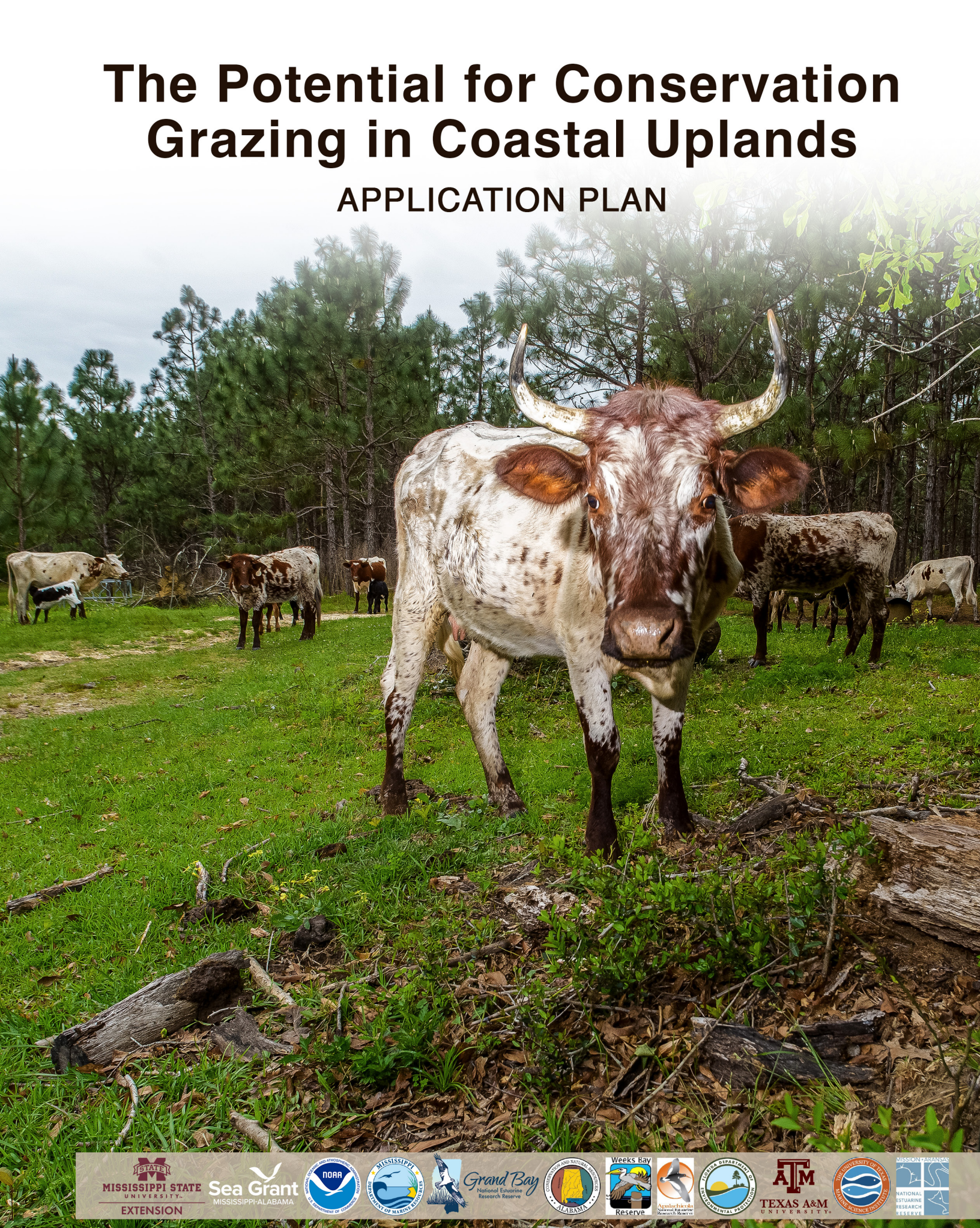
The Potential for Conservation Grazing in Coastal Uplands

APPLICATION PLAN



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Authors

Eric Sparks
Mississippi State University and Mississippi-Alabama Sea Grant Consortium, 1815 Popp's Ferry Rd., Biloxi, MS 39532. E-mail: eric.sparks@msstate.edu

Jonathan Pitchford
Grand Bay National Estuarine Research Reserve and Mississippi Department of Marine Resources, 6005 Bayou Heron Rd., Moss Point, MS 39562. E-mail: jonathan.pitchford@dmr.ms.gov

Katie Swanson
Mission-Aransas National Estuarine Research Reserve and University of Texas Marine Science Institute, 750 Channel View Dr., Port Aransas, TX 78373. E-mail: katie.swanson@utexas.edu

Megan Lamb
Apalachicola National Estuarine Research Reserve and Florida Department of Environmental Protections,108 Island Dr., Eastpoint, FL 32328. E-mail: megan.lamb@dep.state.fl.us

Eric Brunden
Weeks Bay National Estuarine Research Reserve and Alabama Department of Conservation and Natural Resources, 11300 US-98., Fairhope, AL 36532. E-mail: eric.brunden@dcnr.alabama.gov

Jacob Goff
Grand Bay National Estuarine Research Reserve and Mississippi Department of Marine Resources, 6005 Bayou Heron Rd., Moss Point, MS 39562. E-mail: jacob.goff@dmr.ms.gov

Stacy Hines
Texas A&M AgriLife Extension, 10345 Hwy 44, Corpus Christi, TX 78406. Email: stacy.hines@ag.tamu.edu

Timothy Schauwecker
Mississippi State University, Box 9725, Mississippi State, MS 39762. Email: tschauwecker@lalc.msstate.edu

Margo Posten
Grand Bay National Estuarine Research Reserve and Mississippi Department of Marine Resources, 6005 Bayou Heron Rd., Moss Point, MS 39562. Email: margo.posten@dmr.ms.gov

Joan Garland
Mission-Aransas National Estuarine Research Reserve and University of Texas Marine Science Institute, 750 Channel View Dr., Port Aransas, TX 78373. Email: joan.garland@utexas.edu

Kristie Gill
Mississippi State University, 1815 Popp's Ferry Rd., Biloxi, MS 39532. E-mail: klg424@msstate.edu

Keith Chenier
Mississippi State University, 1815 Popp's Ferry Rd., Biloxi, MS 39532. E-mail: kac980@msstate.edu

Amanda Free
Mississippi State University, 1815 Popp's Ferry Rd., Biloxi, MS 39532. E-mail: amf654@msstate.edu

Sarah Harrison
Mississippi State University, 1815 Popp's Ferry Rd., Biloxi, MS 39532. E-mail: sah288@msstate.edu

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1 INTRODUCTION

Management of coastal uplands is becoming increasingly more difficult with the rapid expansion of coastal development compounded with climate change. Natural resource managers continually struggle with restoring and maintaining these habitats due to heavy front-end costs, prolonged maintenance, and habitat-specific needs (Fleischner 1994; Gibble et al. 2020). Major activities essential to the restoration of unmanaged coastal uplands include the clearing of thick woody underbrush and the removal of invasive species. Applications of prescribed fire, herbicide, mulching, and other mechanical treatments are commonly used for coastal uplands restoration. Yet, each of these habitat management techniques is associated with different levels of cost-effectiveness, intrusiveness, ecological damage, logistical constraints, and limitations (Daines 2006; Franklin et al. 2018) that can be influenced by climate change (e.g., more uncertainty around when to burn, expanded ranges of plants and animals, etc.). A potential alternative or complementary habitat management technique is conservation grazing, commonly known as targeted grazing, in which livestock is selectively chosen to graze upon underbrush, invasive species, and/or other vegetation to enhance biodiversity of natural areas. When implemented effectively, livestock grazing is one of the most cost-effective methods for habitat management because of the potential economic return from livestock gains, although these practices require substantial knowledge of both animal husbandry, ecological health, and logistical considerations (e.g., containment, movement, grazing frequency, etc.; Daines 2006; Greiman 1988).

Across the US Gulf Coast, goats and other livestock are known to effectively clear dense areas of underbrush and consume invasive species. However, most research available on using livestock for habitat management has been conducted in areas with different environmental conditions and plant community assemblages than the coastal upland habitats of the Gulf of Mexico (GoM), which include pine savannas and flatwoods, prairies, lowlands, and woodlands. The lack of research-based information specific to this region on grazing and environmental and logistical concerns within these ecosystems limits the ability to apply grazing practices for land management along the Gulf Coast. Even within the northern GoM region, there are significant differences in habitat types, productivity, and habitat management goals that could impact the implementation or benefit of livestock grazing for land management. Therefore, research is needed across the variety of GoM coastal upland ecosystems to determine the best practices for successful implementation of conservation grazing (e.g., grazing frequency/duration, livestock species/density, etc.) and the potential benefits. With the appropriate research and continuous collaboration between livestock producers, hobby farmers, natural resource managers, and researchers, conservation grazing has the potential to be a less intrusive and more financially viable habitat management solution that could be incorporated broadly into coastal upland management across the US Gulf Coast. Additionally, having the option to graze in areas that are difficult to manage with other techniques could give land managers another tool that is less restricted by development, weather, and other environmental factors.

Photo: Eric Sparks/MSU Extension

2 GOAL AND OBJECTIVES

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The overarching goal of this plan is to use research-based evidence in addition to local ecological knowledge and traditional management practices to determine when, where, and how to best implement conservation grazing practices into land management programs throughout the US Gulf Coast and transfer that information to natural resource managers through a grazing guidebook. To achieve this goal, the project will pursue three primary objectives and will involve an iterative engagement process with the project team, natural resource managers, livestock producers, hobby farmers, and researchers across Texas, Mississippi, Alabama, and the panhandle of Florida to ensure usability and applicability of the guidebook.

The first objective, following initial research, will be to create a Basecamp site that will serve as the hub for communications and document sharing throughout the research project. Next, a virtual project kickoff meeting will be held for the entire project team to discuss the project plan, review project goal and objectives, and develop recruitment materials and surveys for local natural resource managers, livestock producers, hobby farmers, and researchers external to the project team.

For the second objective, each Coastal Training Program Coordinator from the Mission-Aransas, Grand Bay, and Weeks Bay National Estuarine Research Reserves (NERRs) will develop and organize a workshop focused on discussing and refining the needs and considerations for conservation grazing practices in their respective state, based on research plan results. The project team will also engage with the natural resource managers associated with the Apalachicola Regional Stewardship Alliance. The Stewardship and Research Coordinators from each NERR as well as other members of the project team will attend each workshop and work with the Coastal Training Program Coordinators to provide content, facilitate breakout groups, evaluate the workshop, and synthesize information. A report for each workshop containing data, key findings, identified questions and considerations, and evaluations will be developed and discussed with the entire project team via a virtual meeting. These workshops will be performed sequentially across the states with at least one month between, so that they can be adaptively designed and managed to maximize benefit and information gathering.

Our final objective, after the completion of all workshops and reports from each state, will be to identify key considerations for the formulation of a grazing guidebook and potential future grazing Extension publications and outreach. Once the first guidebook draft is complete, the draft document including both the research results, as well as the identified methodologies and best management practices, will be sent out to the end-users from each state for review. If more discussion or conversations are needed with individual end-users, the project team will schedule calls and/or formal meetings. Once all comments or suggestions have been reviewed and/or incorporated into the document, the project team will recirculate it to the end-users and schedule a webinar to discuss any final suggested modifications to the document. The project team will then finalize the document and submit it for graphic design and publication as a Sea Grant publication system.

This iterative process will lead to the creation of an end-user driven and publicly accessible guidebook that contains considerations, research results, funding opportunities as it pertains to conservation methodologies for addressing them, and poten- tial grazing. This guidebook will be disseminated throughout the networks involved with this project to be used for future research focused on answering the questions of if, when, where, and how to implement conservation grazing into land management programs throughout the US Gulf Coast.

3 A DESCRIPTION OF THE FINDINGS AND PRODUCTS TO BE TRANSFERRED AND APPLIED

The products to be transferred and applied to our main goal, the grazing guidebook, are the results of the conservation grazing field studies conducted across the US Gulf Coast. There are several logistical considerations and informational gaps that need to be addressed and tested before most coastal land managers will consider conservation grazing as a viable coastal upland habitat management strategy. Along with research results, expert groups have been identified to assist in the organization and formulation of the guidebook to ensure usability and relevance across varied stakeholders. The three groups with the most to contribute to discussions surrounding conservation grazing are natural resource managers, livestock producers/hobby farmers, and researchers; however, these groups rarely interact with each other. Given the expertise from these groups as it relates to logistical considerations and research needs associated with conservation grazing, their feedback should be incorporated into a comprehensive final product that satisfies both the animal husbandry and natural resource needs.

While most of the logistical and research needs related to conservation grazing in coastal uplands are unknown, there are several key needs that have been expressed through both formal and informal interactions with natural resource managers, livestock producers, hobby farmers, and researchers alike. Some of the logistical considerations include appropriate fencing; acquiring, feeding, and watering livestock; and monitoringactivities before, during, and after grazer introduction. Some environmental concerns include the possibility of introducing feral livestock, overgrazing, and disturbance to native fauna. However, most of these logistical considerations and environmental-concerns could be mitigated or eliminated through developing a list of best management practices and using research to address important questions about the effectiveness and potential limitations of conservation grazing.

Photo: Keith Chenier/MSU Extension

4 A DESCRIPTION OF THE ACTIVITIES NECESSARY TO TRANSFER AND APPLY THE FINDINGS AND PRODUCTS

Photo: Kevin Hudson/MSU Extension

The process of transferring and applying findings and products will be facilitated through semi-annual project team meetings, semi-annual resource user group (RUG) meetings with other resource users (e.g., natural resource managers, private landowners, etc.), and informal communications with all user-groups between meetings. The RUG will consist of some of the same end-users participating in the focus group activities previously described and will also have representation from broader groups that could benefit from a grazing guidebook. At the meetings, the latest research findings will be discussed followed by discussions of the structure, format, and timeline of informational transfer products (i.e., grazing guidebook) and assessments of the co-production process (discussion and anonymous surveys). The format of the developed Extension/outreach products and potential modifications to the research plan will be driven by discussions during these meetings and will be adaptive to natural resource manager needs. The overall goal of these meetings is to to ensure findings and products can be immediately applied to address natural resource management needs. Once all products are created, they will be freely available and housed on the Mississippi State University Extension website. Additionally, they will be circulated through email networks.

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