Center for Grazinglands and Ranch Management

Strategic Plan 2023 - 2027

Strengthening Stewardship through Science

Executive Summary

Texas A&M University's Center for Grazinglands and Ranch Management (CGRM) aims to safeguard the ecologic and economic resiliency of grazingland resources and ranching operations with a vision to serve as a national and international leader in producer-directed, applied grazingland and ranch management research, outreach, and industry engagement. CGRM will develop and support interdisciplinary collaborations across the Texas A&M University System and pioneer an integrated systems approach to address critical needs identified by the ranching community. CGRM's research and outreach efforts will target five focus areas consisting of ranch profitability, grazingland management, animal health and wellness, education and outreach, and industry and policy engagement. To address the identified challenges within each focus area, CGRM will actively engage producers in research projects, conduct in-depth case studies, build producer networks, provide impactful experiential learning opportunities, foster industry partnerships, and serve as an integrative source of information for producers, consultants, and private industry to access information on science-based stewardship strategies. CGRM will operate through an on-going stakeholder engagement process receiving guidance from the Livestock and Ranching Steering Committee and internal Center Advisory Board to achieve our overarching goals of enhancing operational resilience, strengthening enterprise sustainability, and fostering the future of the industry.

Table of Contents

Introduction

In the United States, there are 655 million acres of grazinglands (Bigelow and Borchers, 2017) and around 730,000 ranching operations (USDA NASS, 2017). Texas is home to the largest amount of privately owned grazingland and is the number one beef producing state in the country. The ranching industry faces increasingly complex ecologic, economic, and social challenges impacting their ability to maintain or enhance the health and resiliency of grazinglands and ranching operations. Over 50% of grazinglands in Texas are affected by reduced plant productivity, reduced forage quality, and an increase in invasive species (USDA NRCS). Additionally, 30% or more of Texas grazinglands are impacted by soil organic matter depletion and soil erosion (USDA NRCS).

Sustainability of grazingland resources is critically important to ensure the production of ecosystem services, such as food, fiber, water, carbon sequestration, and biodiversity, upon which society depends. Similarly, the economic viability of ranching operations is crucial for fostering the wide-spread implementation of stewardship-focused management practices. However, implementing stewardship strategies that are ecologically sound and economically viable requires an ongoing effort from producers to adjust management practices based on current conditions and fluctuating markets, advance their knowledge and learn from successful peers. Additionally, applied producer-directed research is greatly needed to provide practical, usable solutions that inform the effective implementation of stewardship practices.

Texas A&M Agrilife Research and Extension continues to be responsible for providing solutions for and service to landowners in Texas. However, CGRM has been revitalized to enhance the coordination and integration of research and extension activities as they relate to grazinglands and ranch management to better serve the needs of the ranching community. Specifically, CGRM will develop and support interdisciplinary collaborations across the Texas A&M University System and pioneer an integrated systems approach to enhance the regeneration of grazingland resources and profitability of ranch enterprises. Throughout these efforts, CGRM will actively engage with producers in research projects, provide impactful experiential learning opportunities, foster industry partnerships, and serve as an integrative source of information for producers, consultants, and private industry to access information on science-based stewardship strategies. Outcomes from CGRM activities will address critical needs identified by ranchers across Texas.

Mission: To safeguard the ecologic and economic resiliency of grazingland resources and ranching operations in Texas, and beyond.

Vision: To serve as a national and international leader in producer-directed, applied grazingland and ranch management research, outreach, and industry engagement.

Overarching Goals:

Enhance Operational Resiliency:

- We will co-develop innovative, science-based solutions for the ranching industry through active producer engagement in interdisciplinary, systems-level participatory research that leverages both producer local knowledge and science to deliver impactful, usable, and practical outcomes while providing high-impact experiential learning opportunities prioritized to enhance the resiliency of grazingland resources and ranch operations.

Strengthen Enterprise Sustainability:

- We will cultivate active peer networks with interested producers coupled with integrated multidisciplinary technical assistance focused on enhancing the regeneration of grazingland resources and the economic viability of land, livestock, and wildlife enterprises. Ultimately, helping producers position themselves to consider diversification strategies and take advantage of emerging industry sustainability opportunities and markets.

Foster the Future of the Industry:

- We will foster the future of our industry by connecting young ranchers with mentorship from experienced stewards, undergraduate students with ranch internship opportunities, and graduate students with research fellowships to equip the future generation with the knowledge and skills necessary to address the increasingly complex challenges facing the ranching industry.

People and Partners:
CGRM is housed within the Department of Rangeland, Wildlife, and Fisheries Management (RWFM) but facilitates and supports collaborative, interdisciplinary efforts across multiple departments and institutions within the Texas A&M University System. CGRM is led by a director who works under the guidance of the Director of Texas A&M Agrilife Research and the RWFM Department Head and is supported by Program Managers for research and outreach. The Livestock and Ranching Steering Committee, consisting of 19 highly regarded and experienced ranchers across Texas, provide insight and guidance on CGRM research and outreach priority areas to effectively address the complex challenges facing the ranching community.

CGRM has also initiated an internal Center Advisory Board (CAB) that is comprised of membership from Texas A&M System stakeholders from Agriculture and Life Science departments, King Ranch Institute for Ranch Management, Caesar Kleberg Wildlife Research Institute, and other system entities. Ultimately, the Livestock and Ranching Committee defines "what" CGRM prioritizes, and the CAB provides internal guidance on "how" we implement our strategies with a TAMU system-wide focus. Finally, CGRM will establish a working group of faculty members across Texas A&M University System departments and institutions to serve as CGRM Fellows. CGRM Fellows will define the team of faculty and partners that help to facilitate CGRM's participatory research and education goals.

Identifying Challenges and Opportunities

In 2017, the Texas A&M Agrilife administration created the Livestock and Ranching Steering Committee of Texas for the purpose of identifying rancher needs for improving the sustainability and resiliency of ranching operations. The Steering Committee conducted five regional listening sessions across Texas with representative ranchers from each region. The regions included South Texas and the Gulf Coast, East Texas, Central Texas and the Rolling Plains, Panhandle, and West Texas. The needs identified in regional meetings were synthesized to describe statewide needs of the ranching community (Texas A&M Agrilife, 2019).

Widespread needs that arose across the regional meetings included a better understanding of *production efficiency* and impacts on *social-ecological system dynamics*, more effective *communication* of information to producers, in-person and online *educational resources* on effective management practices and increased *public education* of livestock production systems. Specifically, these needs focused around five priority areas: ranch profitability, forage management, animal issues, information, and water. The focus areas and challenges identified in this statewide producer-facing effort were adapted to serve as the foundational drivers for CGRM's research, outreach, and industry engagement activities.

Focus Area 1: Ranch Profitability

Challenge 1. **Limited availability of ranch scale economic assessments.**
There is a lack of ranch level economic assessments quantifying the profitability associated with management strategies and their causal impacts at the ranch operating unit level. Economic assessments are generally conducted at smaller scales to measure the profitability associated with one management practice or enterprise. However, these assessments do not account for additional ranch enterprises that producers may be engaged in such as hunting operations or agrotourism. For economic assessments to be practical and useful for ranchers, they should encompass assessments of all ranch land, livestock, and wildlife enterprises and generate collective indicators of ranch level profitability.

Our Approach:
To address this challenge, we will conduct in-depth case studies of successful ranching operations using SPA analysis and rancher interviews to comprehensively evaluate operational profitability. Additionally, ranchers across the state continually expressed interest in learning from successful ranching operations and a willingness to share success stories with others. Therefore, in addition to case studies, we will also facilitate the development of producer networks and foster an informal learning environment for producers to gather, share experiences, provide on-going peer support, and encourage continued peer-to-peer learning.

Focus Area 1: Ranch Profitability

Challenge 2. **Limited data on the economics of grazingland management practices.**
There is currently limited information on the profitability associated with grazingland management practices. Of particular interest in Texas are the economic implications of grazing and brush management strategies. Few grazing management studies conduct evaluations of profitability associated with grazing practices. Furthermore, many of the assessments are modeled predictions rather than on-ranch assessments. Similarly, economic assessments of effective brush control practices are limited. Increasing the implementation of ecologically sound, and economically viable stewardship practices requires a greater number of on-ranch economic assessments of alternative management strategies and the development and dissemination of practical, usable, and accessible information for producers.

Our Approach:
In addition to in-depth case studies and peer networks, we will pursue competitive research grants through state and federal agencies, non-profit organizations and other funding sources to conduct meaningful ranch-scale economic analyses of grazingland management practices coupled with their associated ecologic outcomes. We will engage ranchers throughout the research process to identify opportunities to produce useful and practical outcomes. Research findings will be published in peer-reviewed journal articles and disseminated through CGRM's social media platforms and peer groups in accessible formats.

Challenge 3. **Limited information on the diversification economic strategies.**
There is limited information on effective strategies to diversify ranch revenue streams. Diversifying ranching operations is important for maintaining the long-term sustainability of operations. Diversification of enterprises may include multi-species grazing, recreation, agritourism, or ecosystem service market participation. Understanding operations that have successfully diversified will be critical to addressing this challenge.

Our Approach:
We will conduct in-depth case studies which will aid in identifying ranch level profitability measures that are associated with increased diversification. Disseminating case study findings and facilitating field days on successful operations that have successfully diversified will allow producers to learn effective strategies to implement on their own operations. Additionally, peer groups and focus groups will provide ranchers with opportunities to discuss successes and failures with others and develop creative solutions to overcome challenges.

Focus Area 2: Grazingland Management

Challenge 1. **Limited information on the effectiveness of management strategies that economically promote ecosystem services.**
Healthy ecosystems and profitable ranching operations require functional water, nutrient and energy cycles, and diverse communities both above- and belowground. Therefore, the production of ecosystem services is critical to the sustainability of ranching operations. Additionally, the development of ecosystem service markets provides an opportunity for ranchers to increase revenue streams. However, research on the impact of alternative management approaches and strategies on ecosystem service production remains inconclusive. To maintain or enhance the sustainability of ranching operations or take advantage of future market opportunities, it is important for ranchers to be informed as to how practices such as grazing management, brush management, etc., impact the production of ecosystem services such as carbon sequestration, water quality and quantity, and biodiversity.

Our Approach:
Participatory research projects will be conducted with active producer engagement to co-develop usable protocols for monitoring ecosystem services and link management actions with the quantification of ecosystem service outcomes. Rancher participation in the research process will allow researchers to learn about practical and effective management strategies from ranchers and allow ranchers to learn from their peers. Research outcomes will provide ranchers with information on effective management strategies for enhancing the provision of ecosystem services and effective monitoring protocols to assess ecological outcomes on their operations.

Focus Area 2: Grazingland Management

Challenge 2. **Limited data on the valuation of ecosystem services on grazinglands.**
There is limited available data on the economic value of ecosystem services such as water quality and quantity, soil carbon sequestration, soil health and forage production. Assigning a monetary value to the ecosystem services provided by grazinglands is critical for ranchers to better understand the importance of maintaining or enhancing the production of ecosystem services in the future. There are additionally drivers that are contextual to individual ranches that will play considerable roles in defining valuations. Moreover, ecosystem service valuation is essential for informing policy decisions that impact ranching operations. Finally, markets for ecosystem services are developing. Thus, assessing the value of services provided by grazingland ecosystems will help inform ranchers as they contemplate participating in potential ecosystem market opportunities.

Our Approach:
Ecosystem service valuations will be conducted as part of on-going research efforts with grant funding secured through state and federal agencies. We will partner with ecologists, hydrologists, soil scientists, and ecological economists across the Texas A&M University System and collaborating external universities to thoroughly evaluate the production of ecosystem services on operating ranches and assess their monetary value to the ranching enterprise. Research findings will be published in peer-reviewed journal articles and disseminated through CGRM's social media platforms and peer groups in accessible formats.

Challenge 3. **Limited understanding of grazingland soil health.**
Managing for functioning ecosystem processes requires building healthy and productive soil ecosystems. Enhancing soil health contributes to increased forage and livestock production, responsiveness to environmental challenges, which leads to greater ranch resiliency. Management approaches can be implemented to maximize soil cover, biodiversity, and the presence of living plant roots while minimizing soil disturbance to sequester atmospheric carbon, enhance forage production, increase biodiversity, and ultimately enhance profitability. Managing for soil health requires an understanding of soil health principles, the impact of soil health on forage production, and likewise the connectivity of grazing management's impacts on soil health metrics. For the past several decades soil heath research has focused on croplands with limited focus on the 655 million acres of grazinglands in the United States.

Our Approach:
We will develop participatory research projects that prioritize defining knowledge gaps and promote the understanding of grazing management strategies the investigate principles such as the timing, intensity, frequency, and duration of grazing events, the impacts of stocking rate, stock density, and rest on enterprise profitability while fortifying the health of grazingland soils. Additionally, this information will inform the development of grazing management plans allowing producers to make informed adjustments to their management over time. CGRM will develop and disseminate interactive online trainings and facilitate experiential learning opportunities through workshops and field days for producers to get hands on experience with grazing management and soil health principles.

Focus Area 3: Animal Health and Wellness

Challenge 1. **Herd health impacts on productivity.**
Ranchers across the state expressed a need for more educational resources and programs regarding animal health issues such as decreasing calf death losses, Trichomoniasis infection, cattle fever ticks in South Texas, etc. More information is needed on the management of animal diseases and more training is required for increasing awareness of herd health issues. Ranchers also expressed a need for the development of new technologies to help control and limit the spread of diseases. Finally, more education opportunities are needed to enhance understanding and awareness of strategies to reduce input costs and increase the economic efficiency of their cow herd.

Our Approach:
CGRM will partner with the Texas A&M University School of Veterinary Medicine and Biomedical Sciences and the Animal Science department to address animal health and productivity needs identified by the ranching community. Together, we will develop online trainings and organize in-person learning opportunities for interested producers. Additionally, research will focus on the development of more effective practices for controlling the spread of disease. Production efficiency of the cow herd will be addressed through in-depth case studies of successful ranching operations using SPA data and rancher interviews to comprehensively evaluate whole-ranch profitability.

Focus Area 3: Animal Health and Wellness

Challenge 2. **Opportunities for animal identification & traceability within the beef value chain.**
Animal ID and traceability options are important for the documentation of animal health throughout the production process. Technologies for animal ID are advancing however, there is a need for producers to have better information regarding animal ID databases and the benefits of record keeping for informing management decisions. Additionally, economic costs and benefits associated with animal ID technologies are important for increasing the number of ranchers who are willing to voluntarily adopt animal ID programs and ultimately enhancing traceability throughout the supply chain.

Our Approach:
CGRM will partner with Animal Science faculty across the TAMU system to provide ranchers opportunities to learn about animal ID options and the costs and benefits associated with implementing animal ID technologies. Additionally, educational resources will be provided on current traceability efforts in the industry in order for ranchers to stay well-informed on the topic.

Challenge 3. **Opportunities for enhanced beef cattle efficiency genetics on grazinglands.**
Grazinglands are inherently complex heterogeneous environments. This variability translates directly to the quality and quantity of forage available to support the cow/calf enterprises. It has long been a tenant of grazing management to match the livestock to the environment rather than the environment to the livestock. However, there is a defined need to identify metrics associated with beef cattle genetics that are productive and efficient on forage-based operations with limited supplemental inputs.

Our Approach:
CGRM will partner with TAMU Animal Science and AgriLife Research Center faculty to define protocols, processes, and identifiable metrics associated with grazingland efficiency in beef cow/calf operations across spatial environments. The CGRM team will work collaboratively with partners to develop usable science and translatable applied outcomes informing management decisions impacting beef cattle genetic selection on grazinglands.

Focus Area 4: Education and Outreach

Challenge 1. **Ease of finding informative, timely, and relevant grazingland and ranch management information.**
Information exists regarding general topics related to grazingland and ranch management. However, this information is spread across various institutions, departments, and agencies. As a result, it is difficult for producers to find and access new information regarding grazing management, brush management, soil health, animal health or other relevant topics. The limited accessibility of information reduces the speed of adoption of more effective management practices. Additionally, with the widespread popularity of social media in the ranching community, it is critical for industry information to be disseminated across multiple platforms to increase visibility.

Our Approach:
CGRM will develop an interactive and user-friendly website that serves as a one-stop-shop for producers to quickly access information and decision support tools related to science-based stewardship practices. We will gather useful information that has been previously developed and include current information developed by CGRM and others across the state and country. The website will also include a blog highlighting successful producers, current happenings in the industry or specific CGRM and partner activities. CGRM will be active on social media platforms such as Facebook, Twitter, Instagram, YouTube and LinkedIn. We will share updates on research projects, educational resources and events, and infographics of research findings. We will also create short video content highlighting producer perspectives and a useful "How To" series. Finally, CGRM will develop a podcast for producers to learn more about the development and implementation of management plans to increase profitability from other producers and pertinent research updates.

Focus Area 4: Education and Outreach

Challenge 2. **Limited access to rancher peer networks.**
Individual ranchers have a lifetime of knowledge and experience that is valuable for addressing challenges across the ranching community. Throughout the state-wide listening sessions, ranchers continuously expressed interest in learning from successful producers and a willingness to share information with others. However, there are currently limited opportunities for ranchers to join or create active peer groups. Facilitating the development of producer networks can foster an informal learning environment for producers to share experiences, provide on-going peer support, and encourage continued peer-to-peer learning. Increasing access to peer networks can extend the reach of information beyond one-time experiences and contribute to creative problem-solving efforts.

Our Approach:
CGRM will facilitate a team of grazingland and ranch management specialists from across the TAMU System and begin working with a small group of ranchers across the state who are interested in learning from each other and from data driven discussions from an in-depth ranch-level ecologic and economic analyses. The CGRM team will facilitate funding mechanisms through grants and extramural sources to conduct soil and vegetation monitoring and evaluate monitoring data to inform management discussions. Additionally, the team will evaluate the profitability of participating operations and recommend strategies to ensure long-term economic viability of the participating operations.

Throughout this process, producers will be provided methods to implement monitoring strategies on their own and learn how to adjust management to maintain or enhance ecologic and economic resiliency from their own data and experiences and from their peers. Finally, we will facilitate informal gatherings for all the producers involved to encourage peer learning and relationship building. The goal for this effort is to create hubs of producer groups across the state who actively gather, share experiences, and continuously learn from each other's successes and failures.

Challenge 3. **Limited ranch sustainability training opportunities.**
Beef cattle sustainability has garnered immense interest from multiple sectors throughout the beef value chain. Consequently, producers have become increasingly interested in the concept of sustainability and how it applies to their operations. Sustainability is a complex topic and there are multiple indicators and metrics that constitute the efficacy of sustainability efforts. Many of these sustainability indicators include the function of ranch water resources, air and greenhouse gases, animal health and wellness, efficiency and yield, employee safety and wellbeing, and land resources. There are limited opportunities for ranchers to learn about how these sustainability metrics and indicators can be measured within the context of their own operations and more specifically how they influence economic profitability.

Focus Area 4: Education and Outreach

Ranch management practices such as grazing management can influence many of these metrics and indicators. As such, the U.S. Roundtable for Sustainable Beef (USRSB) has prioritized grazing management planning and implementation as a mechanism to address 50% of their primary indicators. However, context is key when applying management practices and contextual differences will occur given the variability of our grazingland resources, environmental constraints, and economic feasibility. CGRM is poised to create experiential learning opportunities though multimedia methods to address the context specific complexities producers face when implementing practices based on stewardship principles.

Our Approach:
CGRM will work collaboratively with its stakeholder network of partners, such as the U.S. Roundtable for Sustainable Beef to help inform industry sustainability standards. Additionally, CGRM will develop interactive online trainings and in-person field demonstrations and workshops that address high-priority indicators as they relate to grazing operations and grazing management modules that outline basic grazing management principles, grazing plan development and implementation, and the nexus of grazing management and landscape regeneration. Through these educational opportunities, ranchers will develop a better understanding of the term sustainability and how they can meet industry sustainability standards and position themselves to participate in developing market opportunities.

Focus Area 5: Industry and Policy Engagement

Challenge 1. **Limited research on ecosystem service market development.**
Markets for ecosystem services are becoming increasingly relevant to the ranching community. Corporate entities are interested in these markets as an opportunity to offset the ecological impact of their business operations. Currently, there are markets being developed for soil carbon sequestration, which producers increasingly interested in. There are also efforts underway to develop markets for water quality and quantity, and potentially integrate credits for the production of multiple stacked ecosystem services. Ultimately, these markets may serve to increase producer revenue streams. However, research into the effectiveness of ecosystem service markets is limited. Specifically, research is needed to quantify the measurement, reporting, and verification of ecosystem services, the tools available to effectively make such assessments, and the potential impacts and liabilities producers face when participating.

Our Approach:
CGRM will partner with stakeholders to conduct research projects to advance the quantification of ecosystem services and more importantly ecosystem function that could potentially contribute to the development of effective ecosystem service payment systems. The information learned from these research outcomes will provide producers greater insight, aiding in their decision to participate with such markets. Additionally, CGRM will provide workshops and field days for producers to learn more about how these market opportunities are right for their operation.

Focus Area 5: Industry and Policy Engagement

Challenge 2. **Limited producer participation in policy decisions.**
Considerable policy decisions are made at the local, regional, and national levels by industry and governments that have the potential to impact producers' freedom to operate. Many of these policy decisions are made within a top-down framework and have limited participation from the stewards that manage our private working lands. From federal regulation to industries driven by urban consumer preferences, land stewards are often the parties left to realize the intended or unintended consequences of such policy decisions.

Our Approach:
CGRM will partner with producer facing organizations such as Texas and Southwestern Cattle Raisers Association to ensure that land stewards have a voice in policy decisions at local, regional, and national scales. CGRM will become a member of the U.S. Roundtable for Sustainable Beef to provide key research insights but importantly, serve to ensure the producers voice is heard throughout the ongoing refinement of sustainability indicators. Additionally, much of the research conducted by CGRM will focus on the relationship between management decision making by producers and the co-production of effective management strategies that define economic and ecologic outcomes. Such research will likely be utilized to inform policy decisions in the future. This process provides a participatory framework that ensures producers are part of the science rather than simply a recipient of the science.

Challenge 3. **Potential impacts of federal policy on ranchers.**
Ranchers have identified a need for an increased understanding of federal policies such as the Clean Water Act and their impact on ranching operations. Additionally, since the majority of the U.S. population lives in urban areas far removed from agricultural landscapes, it is critical for the urban public to understand both how ranchers contribute to environmental stewardship and the impacts of federal policies on their operations.

Our Approach:
CGRM will partner with the agricultural economics specialists at the Texas A&M University Agriculture and Food Policy Center to assess policy impacts on the ranching community. In addition, CGRM research outcomes shared on social media platforms will target the urban public to increase their understanding of science-based stewardship and ranchers' role in enhancing the resiliency of agroecological systems.

Operational Strategy

The operational strategy describes how we will address each of the challenges identified within the five focus areas, and how we will assess progress towards achieving our goals.

Resources:
The Livestock and Ranching Steering Committee will serve as CGRM's external advisory board to guide the Center's focus and ensure that our work continues to effectively address the needs of the ranching community. Additionally, the internal CAB will consist of faculty with expertise relevant to each of the five focus areas and will guide research and outreach procedures to ensure that CGRM's research and outreach efforts effectively address the rancher identified needs. Finally, CGRM will leverage relationships with NGOs and private sector partners to expand the impact of research and outreach activities. Together with the external livestock and ranching committee and internal working group, CGRM will continuously evaluate progress in each of the focus areas and addressing each of the challenges identified.

Engagement Strategy:

Stakeholder Engagement
Our annual operating plan outlines our stakeholder engagement process, which informs research and outreach activities. Our stakeholder engagement process consists of quarterly meetings with the Livestock and Ranching Steering Committee – two virtually and two in-person – to review progress on achieving the Center's goals and objectives, evaluate outcomes, and discuss priorities for the upcoming quarter (Figure 1). The quarterly meetings will serve as an opportunity to address gaps in the focus areas or identified challenges, discuss developing opportunities in the industry or needs of the ranching community, and strategize solutions for overcoming any barriers identified in the previous quarter. The strategic plan will be revisited each year, updated based on outcomes from quarterly meetings, and reviewed by the Livestock and Ranching Steering Committee.

Additionally, CGRM will meet regularly with the internal CAB to discuss research progress, project proposals, and applicable funding sources. Lastly, the CGRM team will compose annual impact reports outlining research projects and outreach activities completed the previous year. Reports will include evaluations of what went well, what can be improved upon in the future, and plans for research and outreach activities in the upcoming year.

Operational Strategy

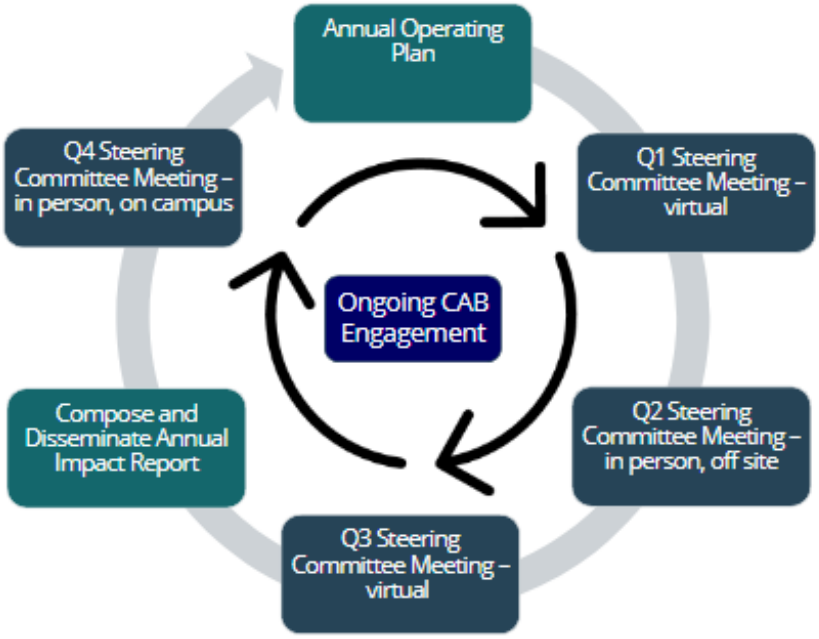

Figure 1. CGRM stakeholder engagement process. CGRM staff will meet quarterly with the Livestock and Ranching Steering Committee. Annual impact reports will be composed and disseminated prior to the Q4 meeting to allow for discussion on progress and priorities for the following year. There will be ongoing engagement with the CAB to discuss research and outreach activities throughout the year.

Producer Engagement

Based on a participatory research and outreach model, we will develop peer networks to support focal areas of the strategic plan. Facilitating the development of producer networks can foster an informal learning environment for producers to share experiences, provide on-going peer support, and encourage continued peer-to-peer learning (Kueper et al. 2013). Peer learning coupled with applied science will enable the co-production of knowledge and drive research outcomes surrounding each of the focal area challenges (Figure 2). Producer-identified solutions will contribute to ongoing learning efforts within peer networks and will be disseminated to the public through social media channels, newsletters, and CGRM's website. Peer groups and public engagement will be used to continuously identify knowledge gaps within the focal areas to direct future research.

Figure 2. Participatory Research and Outreach. Peer group engagement will drive research outcomes, which will feed back into continued peer learning. Producer-identified solutions will be disseminated to the public. Knowledge gaps identified through peer groups and public engagement will drive future research.

Funding:
Currently CGRM operating costs are being supplemented through seed funding from Texas AgriLife Research, grants and agreements. Our goal is to develop sustained funding sources to cover operational costs such as salaries, travel, vehicles, and equipment. Sustained funding will be realized through endowments, private donations, and fundraising activities, etc. Potential fundraising activities may include an annual conference for Texas ranchers that consists of speakers, vendors, workshops, and ranch tours. CGRM will continue to target state, federal, NGO, and private sector calls for research proposals that address focus areas and challenges outlined in the strategic plan to conduct our research projects.

Our targets are to build $5 million in sustained funding by 2026, $7.5 million by 2028, and $10 million by 2030 (Figure 3). The center will receive 4% of the endowed funds every year. Achieving our funding target in 2026 will give us an annual operating budget of $200,000, which will cover existing overhead costs to remain operational. In 2028, the additional $100,000 in the operating budget would allow CGRM to maintain two graduate students each year. Achieving a funding target of $10 million in 2030 would allow the Center to hire research and outreach support staff and allow for an increased travel budget.

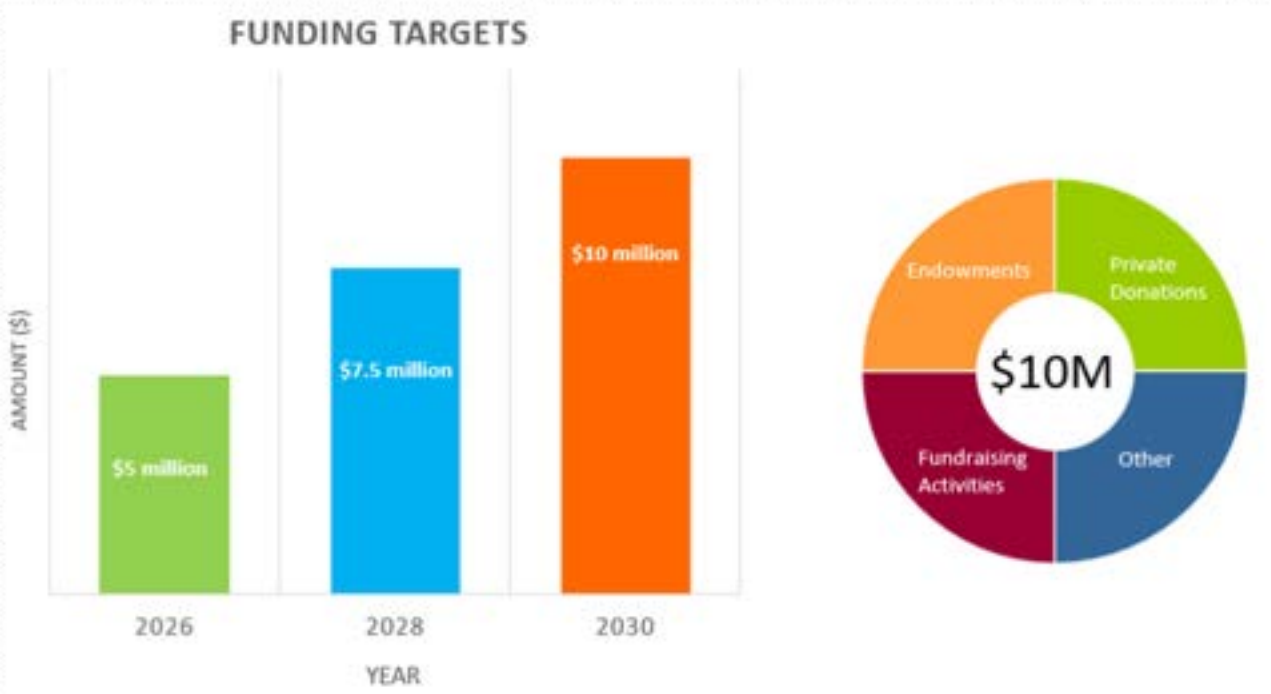

Figure 3. CGRM funding targets and sources. CGRM has set funding targets of $5 million, $7.5 million, and $10 million for 2026, 2028, and 2030 respectively. Funding will be sourced from endowments, private donations, fundraising and other activities.

References

Bigelow, D. P., & Borchers, A. (2017). Major uses of land in the United States, 2012. EIB-178. USDA, Economic Research Service. August.

Kueper, A.M., Sagor, E.S., & Becker, D.R. (2013). Learning from landowners: Examining the role of peer exchange in private landowner outreach through landowner networks. *Society & Natural Resources*, 26(8), 912-930.

Texas A&M Agrilife. (2019). Priority statewide needs for increasing sustainability and resiliency of ranching operations in Texas.

USDA Natural Resources Conservation Service. Conservation effects assessment project (CEAP). https://ceap-nrcs.opendata.arcgis.com/

USDA National Agricultural Statistics Service. 2017 Census of Agriculture. Complete data is available at www.nass.usda.gov/AgCensus.