

## PROJECT REPORT

**Project Title:** Validation of Restoration Practices on Rangeland Health At The Ranch Scale

**Geographic Area of Project:** Rio Grande Plains: Coastal Prairie; and Transitional Counties. Results may be applied statewide in lower rainfall areas.

**Name of Principal Investigator:** C. Wayne Hanselka, Asso. Dept. Head/Ext. Program Leader; Professor and Extension Range Specialist

**Co-Investigators:** David McKown, Extension Associate  
Steve Livingston, Extension Agronomist  
Rogelio Mercado, Jim Wells, County Extension Agent-Ag

**University Department:** Department of Rangeland Ecology and Management  
Soil and Crop Sciences

**Mailing Address:** 10345 Agnes St., Corpus Christi, Texas 78406-1412

**Telephone:** 361-265-9203    **Fax:** 361-265-9434    **E-mail:** [c-hanselka@tamu.edu](mailto:c-hanselka@tamu.edu)

**Amount of Funding:** \$9,000.00

Rangeland health is defined and measured in terms of three criteria; degree of soil stability and watershed function; integrity of nutrient cycles and energy flows; and presence of functioning recovery mechanisms. Heavy grazing for several hundred years, combined with cessation of fire and frequent droughts has disrupted ecological processes and negatively impacted health on most Texas rangelands. Lack of organic matter, loss of fertility, erosion, and compaction all contribute to decreased water infiltration and increased runoff, resulting in lowered vegetation diversity, surface coverage, increases in brush, lowered productivity, etc. Unchecked, the downward spiral of resource deterioration will continue. Increasing soil stability and water infiltration rate in the soil surface will initiate the repair and maintenance of damaged processes that in turn, enhances plant production and protects the soil surface with plant litter or living vegetation.

There is a need for validating vegetation and soil renovation/restoration practices designed to increase grass production and more favorably utilize rainfall. Information is available on various practices at the small, individual plant scale but does not include data from pasture or ranch scales in a Total Resource Management context.

## **Project Objectives**

Objectives were to: 1) Install and monitor rangeland management practices designed to enhance rangeland health at the total ranch scale; 2) Collect data on the response of soil, vegetation, and animals to these practices; and 3) extend that information through a variety of methods to interested clientele.

## **Study Area**

Los Indios Ranch is located 5 miles West of Alice in Jim Wells County. The 512 acre property is owned by the Texas Agricultural Experiment Station and managed by Texas Cooperative Extension and the Dept. of Rangeland Ecology and Management, TAMU. It is typical Rio Grande Plain rangeland supporting south Texas mixed brush and huisache plant communities.

It is presently subdivided into two 250 acre pastures with a windmill, trap, and working pens in the Center. Little or no soil and vegetation management has been done within recent years. There are no cattle currently on the property although it was heavily grazed until October of 2002. Drought, heavy livestock, and neglect has allowed rangeland health to deteriorate.

After receiving no rain from March 1 until July 5, the ranch has received nearly 20 inches of ppt. to date in 2003.

## **Progress and Plans**

This is a multi-year project and allocated funds were used to initiate the project. Progress to date and plans are:

1. Fencing Senderos - Senderos were cleaned with a bulldozer to divide the property into two more pastures. Additionally, fenceline/fire guards were bladed inside the perimeter fence completely around the property.
2. Electric fencing was purchased to subdivide the current two 250 acre pastures into four 125 acre pastures. This will give better control of livestock grazing. The fence will be constructed in November, 2003.
3. Intensive Grazing. Fifty head of cows will be placed on the property in March, 2004. They will be grazed in one herd and rotated through the 4 pastures dependent upon grass growth and production.
4. Brush Management. In addition to the bladed Senderos, several brush management practices have been and will be installed. Cut stump and basal individual plant treatments huisache plots were installed in August. This was in cooperation with Microflo Co. Two 25 acre strips will be

aerially sprayed with Grazon P+D at 2 rates, respectively on October 23, 2003. Also, an additional set of similar treatments using Cimarron Max will be installed the same time. This is in cooperation with DuPont Plant Protection Corp and Dow AgroSciences.

5. Soil Renovation and Seeding. Denuded areas shed ppt. in the form of runoff. These areas on Los Indios will be ripped and seeded using a mix of Plains bristlegrass, Green Sprangletop and sideoats grama. The seed has been purchased. Spring drought and heavy early fall rains have forestalled installation. Plans are to install these practices in mid-to-late October, 2003, and in the spring of 2004.
6. Monitoring. Two monitoring locations will be installed in each pasture to measure vegetation and soil change due to environmental and management inputs. This monitoring effort will be a part of a larger Extension monitoring project funded by Renewable Resource Education Act monies. Arrangements have been made with Dr. Larry Zibilske, ARS, Weslaco, to monitor soil indicators in his laboratory.
7. Extension. A field day has been scheduled for the Spring of 2004 for Jim Wells, Duval/Jim Hogg, and Brooks counties. A CEA Training Workshop has been scheduled for April, 2004. The materials developed as a result of the monitoring study will be deliverables. Mass media will be used as appropriate.