

# Conservation Ranching in the Edwards Plateau Region of Texas

The ranch operations of **JOE M. VANDER STUCKEN** and **GEORGE BROCKMAN** of Sonora, Texas as related by **EDWARD B. KENG**, Work Unit Conservationist, SCS, Sonora, Texas

One of the outstanding examples of conservation range management in the Edwards Plateau area of Texas is the Joe M. Vander Stucken ranch, 24 miles southeast of Sonora. Vander Stucken and, more recently, his cousin George Brockman have worked diligently for more than 16 years in developing and applying range improvement practices—with phenomenal success.

## Description of the Area

The 27-section Vander Stucken ranch is located in the heart of the Edwards Plateau ranching area of Texas. The dark clay soils are primarily very shallow (less than 10 inches) to shallow (10-20 inches), with deep soils (over 20 inches) in the narrow valleys. Topography is undulating to rolling with occasional nearly level divides. Average annual rainfall is approximately 22 inches, with 75 percent of the rainfall occurring during the frost-free period from April to October, inclusive.

Original vegetation of the area was evidently a live oak savannah, with islands of shin oak occurring on rocky outcrops, and a few cedars growing in rough breaks. Other brushy species formed an understory around the large live oak trees.

Grass vegetation was characterized by a thick stand of sideoats grama, feathery bluestems, Texas wintergrass, Texas cupgrass, vine-mesquite, and other good grasses. Subdominants included curly mesquite, green sprangletop, fall witchgrass, hairy grama, and slim tridens. Palatable perennial forbs were common.

*Pioneers in the application of range improvement practices in the Edwards Plateau of central Texas, Joe M. Vander Stucken and his cousin George Brockman have shown the benefits of conservation ranching in this area of combination livestock grazing. Vander Stucken, son of a pioneer merchant of Sonora, has been ranching for the past 33 years. Brockman, an animal husbandry major at Texas A. & M. College, started a herd of registered Polled Herefords with Vander Stucken and has leased a portion of the ranch since 1954.*

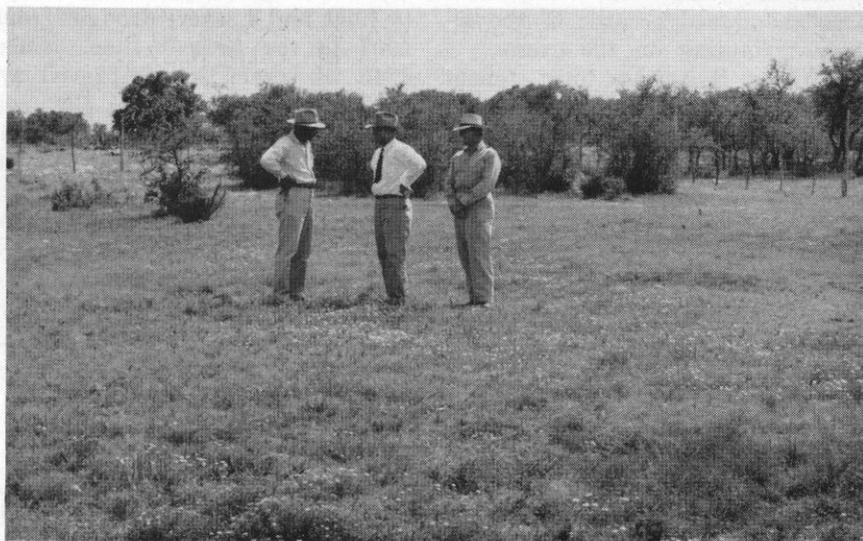
## Range Problems of the Area

The Vander Stucken ranch has problems common to most ranches in the Edwards Plateau, including decline to poor and fair range condition, heavy increase of live oak and cedar brush, and invasion of poisonous bitterweed. Stocking rates during the period 1890-1918 characteristically varied from 80 to 125 animal units per section, year-long. The choice grasses and forbs

were seriously weakened by grazing pressure and plant death losses were heavy during the severe drought of 1917-18. Grazing rates were generally reduced to 60-80 animal units per section from 1919 to 1933, but the choice grasses could not recover. Live oak, cedar, bitterweed (*Actinea odorata*), curly-mesquite and invading annuals increased rapidly and comprised the principal species of the area. Another severe drought in 1933-34 further depleted the area, causing Vander Stucken and other far-seeing ranchmen to start looking for ways to overcome the problem.

## Poisonous Bitterweed

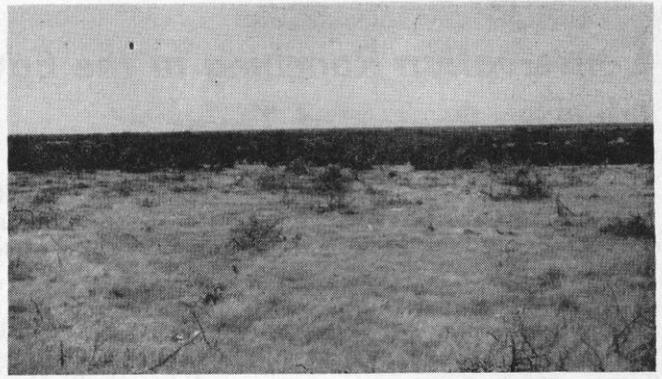
The first heavy sheep losses from bitterweed on the Vander Stucken ranch occurred during the period 1920-1925. The poisonous nature of the plant was not definitely known until about 1925, and death losses were first attributed to stomach worms. Vander Stucken pioneered many unique ways to combat bitterweed losses. He noted that bitterweed grew most abundantly in the southeast corners of large pastures, where prevailing south-east winds cause sheep to concentrate and denude the vegetation. He cut live oak brush and piled it into long piles across these southeast corners, leaving narrow openings which made it difficult for



Keng, Vander Stucken and Brockman in a deer-proof enclosure fenced to follow plant succession on the bitterweed area in the valley site in the foreground.



Brockman's registered Polled Hereford cattle are thriving on good grass, present right up to the watering troughs. Heavy spring calves on mothers that had supplemental feed only 40 days during breeding.



On-and-off grazing with goats at 100 animal units per section for three years following bulldozing of live oak has killed the sprouts and allowed grass improvement.

sheep to enter the areas. He changed fences to throw southeast corners into the north side of other pastures.

He found that by deferring small pastures during the summer the grass would increase rapidly and choke out much of the bitterweed. Large numbers of sheep were thrown into these small pastures following the first fall rain which germinated bitterweed. The sheep would pull up millions of bitterweed seedlings without eating enough of the plant to cause sickness or death. He tried "hiding" cottonseed cake in tall grass, scattering the cake with a small shovel from a pickup truck. The sheep would spend hours searching for cake and bitterweed losses were practically eliminated, but the idea was abandoned because of the severe trampling on the grass.

Vander Stucken built fences around bitterweed infested spots to completely exclude grazing. He later found by experimenting that a thin cover of cut live oak brush on solid bitterweed spots would exclude enough grazing to allow grass to recover and crowd bitterweed out.

#### **Vander Stucken Becomes Conservationist**

Vander Stucken's experience with bitterweed developed a keen interest in range conservation. He developed an Extension Service-Soil Conservation Service cooperative agreement on his ranch in

1939, and later helped organize the Edwards Plateau Soil Conservation District in 1948. His ranch became District Agreement No. 1, and he served as chairman of the district board of supervisors from 1948 to 1953.

Twenty years' experience with bitterweed led Vander Stucken to conclude that grass was the only effective means of control, once the plant had become widely established. Consequently, his conservation plan included construction of additional crossfences to facilitate rotated and deferred grazing of livestock. Livestock numbers reduced to approximately 40 animal units per section, consisting of cattle, sheep and goats. The results have been very gratifying, despite below-average rainfall from 1940 to 1950, and a severe drought from 1951 to the present time. Since 1940 the ranch has improved an average of one condition class, or from poor and fair condition (0 to 50 percent good grasses), to fair and good condition (25 to 75 percent good grasses). Bitterweed has been effectively controlled by vegetation and livestock management and as a problem is now considered by Vander Stucken to be second in importance to live oak brush infestation.

#### **Control of Live Oak**

Recognizing that a tremendous increase had occurred in live oak brush from 1900 to 1940 Vander Stucken became very interested in

developing a satisfactory means of live oak control. No economically practical, effective method of control was known for the area. It was known that a heavy concentration of goats would kill small live oak sprouts in a few years, but this forced use almost always resulted in poor goats and completely denuded pastures.

In consultation with SCS technicians Vander Stucken decided to try a system of on-and-off use with goats on two small pastures. A 272-acre trap was bulldozed in December, 1945 to knock the trees down, and a 495-acre pasture was chained in April, 1946. Since live oak is a terrific root sprouter in this area it was only a few weeks until a heavy stand of sprouts appeared. The pastures were rested until sprouts were 8-10 inches high, then grazed with three to five goats per acre. The goats and sprouts were watched carefully, and when the leaves were grazed from the sprouts the goats were scattered into other pastures. The grass was rested until new oak sprouts and leaves were produced, then goats were again put in to remove the leaves. This procedure was continued during the growing season for three years before the sprouts were completely killed. Vander Stucken kept careful grazing records and found that during the three-year period the pastures carried the equivalent of 100 animal units of goats per section each year on a yearlong basis. Pastures, of

course, were grazed on-and-off with goats only during the frost-free period and were completely rested during the winter and until new leaves appeared in the spring.

The intensive management system worked splendidly and the cover and quality of grass vegetation increased substantially during the three year period. An initial increase in purple threeawn the first year was soon suppressed by an increase in curlymesquite, side-oats grama, silver bluestem, and Texas wintergrass.

Vander Stucken has since extended this system of live oak control to about eight sections of the ranch. His procedure is to chain only two or three pastures of approximately 640 acres each, at one time, control sprouts on these, and then start on two or three new pastures. He avoids chaining large acreages because of the difficulty of concentrating enough goats to get effective control of sprouts—and having a place to scatter the goats when the sprout-control pastures need rest.

**Conservation Grazing Lease**

In 1954 Vander Stucken leased 15 sections of the ranch to his cousin, George Brockman. A new type of grazing lease was developed which was designed to provide for conservative range use, flexibility, and a fair return to both owner and operator. No maximum or minimum stocking rates were set, and the lease rate consists of a monthly charge for grazing various classes and ages of livestock. The rate is based on market prices of livestock and livestock products, and may be changed to fit current conditions. The following table lists the grazing charge per head per month for livestock:

Cattle: Cows, yearlings, bulls	\$2.50
Calves, from Oct. 1 to Dec. 31	1.50
Sheep: Ewes, yearlings, lambs	.35
Lambs, from Oct. 1 to Dec. 31	.20
Goats: Nannies, yearlings and older, bucks	.25
Kids, from Oct. 1 to Dec. 31	.15

As animal units per section are increased the owner receives more grazing income. It is to Brockman's (lessee) advantage to keep stocking moderate to reduce feed bills and get good production from livestock. Government incentive payments from applying deferred grazing are "plowed back" to help pay for range improvements such as: brush control, construction of crossfences and other needed practices. Vander Stucken, Brockman, and two other ranchmen who lease part of the ranch are well pleased with the leasing arrangement during the two years it has operated. During the past two very dry years Vander Stucken received an average lease of 87¢ per acre. Ordinary lease rates vary from 75¢ to \$2.00 per acre where no limit is placed on stocking rate.

**Conservation Is Paying Off**

Brockman is a real conservationist and is continuing to operate the 15 sections he leases in practically the same manner as Vander Stucken operated. The moderate use and range improvement obtained from 1940 to 1950 continues to pay good dividends. The current drought started in 1951 with 6.69 inches of rainfall; 9.25 inches in 1952; and 8.82 inches in 1953. In 1954 Brockman received 15.16 inches and 15.12 inches in 1955—five straight years that average only 50 percent of normal.

Despite the severe drought Brockman has been able to carry 30-32 animal units per section during the growing season, increasing to 45 animal units during the winter—with good livestock production and practically no supplemental feed. His feed and salt bill was only \$1,500 for 1954 and dropped to \$350 in 1955. Most of the 1955 feed was fed to lambs carried through the winter, with cows receiving feed only 40 days during breeding.

His 550 ewes raised 125 percent lamb crop in 1955, and a 100 percent lamb crop in 1956. The 1954 lambs were wintered, sheared 8 pounds of wool and sold in April,

1955 weighing 87 pounds per head. The 1955 lambs were carried through a rainless winter, sheared 7.5 pounds and averaged 77 pounds when sold. Brockman's entire sheep flock averaged 10 pounds of wool in 1955, and 9 pounds per head in 1956. The 1956 wool clip graded 73.6 percent staple; 16.1 percent French combing; 5.7 percent clothing; and 1.6 percent tags.

A 95 percent calf crop was obtained during the two years, and the 1955 spring calves were sold on September 5, 1955 weighing 568 pounds. The 1954 calves were wintered and sold as yearlings in July 1955 at 795 pounds per head—with no supplemental feed.

The goats have had high production, too. In 1955 the 700 nannies raised an 84 percent kid crop—unusually high for pasture kidding. The grown goats averaged six pounds per shearing, or 12 pounds of mohair per year. The kids sheared 1.6 pounds for the first shearing in the fall, and 6.33 pounds per head the following spring.

**Wildlife Habitat is Preserved**

White-tailed deer are abundant on the Vander Stucken ranch, and hunting leases form a small but important source of income. Vander Stucken and Brockman noted that deer would feed readily in the sprout-controlled pastures at night, and would seek cover in adjoining brushy pastures during the day. In order to maintain good distribution of deer Brockman now leaves strips or islands of live oak brush in each pasture that is chained. A small percentage of standing brush scattered over the pasture seems to provide ample cover for deer. Oak thickets in which wild turkeys roost will also be left standing in an attempt to restore drought-depleted numbers. Many bob-white quail have been released by Vander Stucken and the quail population is increasing—both from the planted birds and from an almost depleted native stand.

Both Vander Stucken and Brock-

man are vitally interested in all phases of a coordinated soil, water, plant and wildlife conservation program. Range pitting and seeding have been successfully applied on a small scale to old fields and drought-denuded areas. Spineless pricklypear was planted to provide supplemental feed, but insects soon killed the stand. Oak and mesquite brush was sprayed with 2,4-D but results were negative. Vander Stucken tried burning a small acreage, following deferment, in an effort to kill pricklypear and

brush in one simple operation, but results were very disappointing. Pasture terraces were tried in the 1930's, but failed to give practical benefits.

Vander Stucken, through keen interest and continued effort, has found that there is no substitute for good grass in combatting problems on the ranch. Application of the basic, fundamental practices of range management—proper use with mixed classes of livestock, deferred grazing, seasonal use, and brush control—has resulted in

substantial range improvement and increased economic returns. Cross-fencing and water distribution have contributed to better management of livestock.

Proper forage use has been the key to the success of Vander Stucken's conservation program. Moderate grazing to permit forage growth and creation of a grass reserve has accompanied the application of each conservation practice. Without proper forage use the conservation program would have failed.