

# **Out Reach Activities for *C. cactorum* in Texas**

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**Texas A&M University**

**Department of Ecosystems Science and Management**

**Texas Cooperative Extension**

**College Station, Texas**

Do you really think that Jake is happy with his cattle enterprise?

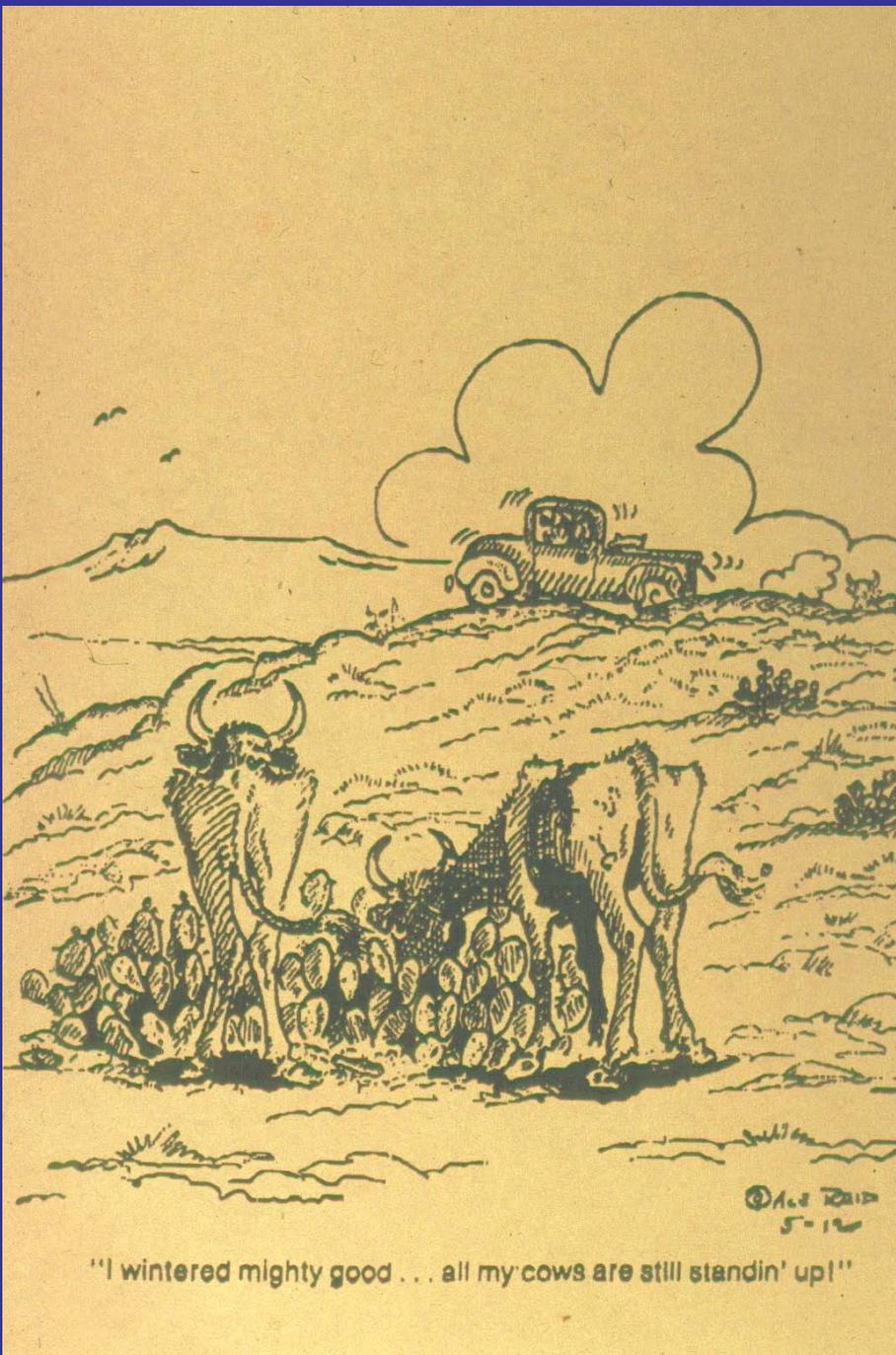
What are our expectations?

-Lifestyle, money, glory etc.

What decisions do we make and have made in the past?

Why did Jake run out of grass?

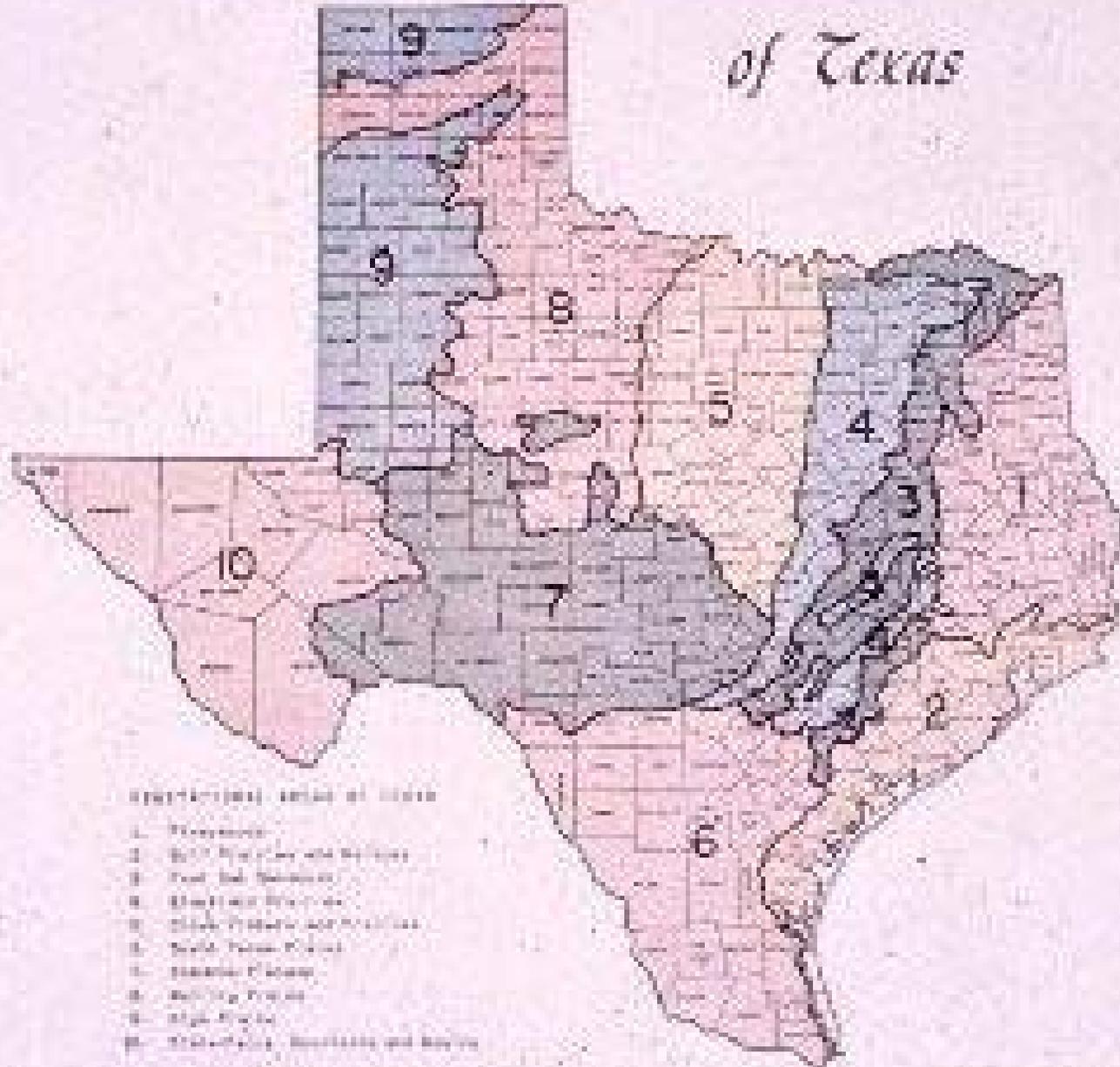
Drought, overstocking, property did not grow much grass to begin with?



"I wintered mighty good . . . all my cows are still standin' up!"

# Vegetational Areas

*of Texas*



# Prickly Pear Facts/Beliefs in Texas

1. Prickly pear (*Opuntia* spp.) occurs on about 28% (25.5 million acres) of the rangeland in Texas.
2. Prickly pear causes severe economic losses to sheep and goat producers.
3. The small spines (glochids) of prickly pear cause bacterial infection in the mouths and gastrointestinal tracts and the hard seeds can cause rumen impaction.
4. Dense stands of prickly pear also interfere with the handling and movement of livestock.
5. Prickly pear is recognized as an emergency livestock feed during drought and as food and cover for several species of wildlife.

# Prickly Pear Facts/Beliefs in Texas

**The abundance of prickly pear on a given range site or region and the periodic fluctuations in its abundance are a function of weather, soils, grazing, insects, fire, and interactions among these factors.**

**Prickly pear infestations were controlled for many decades by hand grubbing and stacking and later by aerially applied sprays of a 1:1 mixture of 2,4,5-T and picloram during spring or early summer.**

**Is a prickly pear density increase always due to the abusive grazing of livestock??**







Pricklypear pad rooting-  
early lack of knowledge

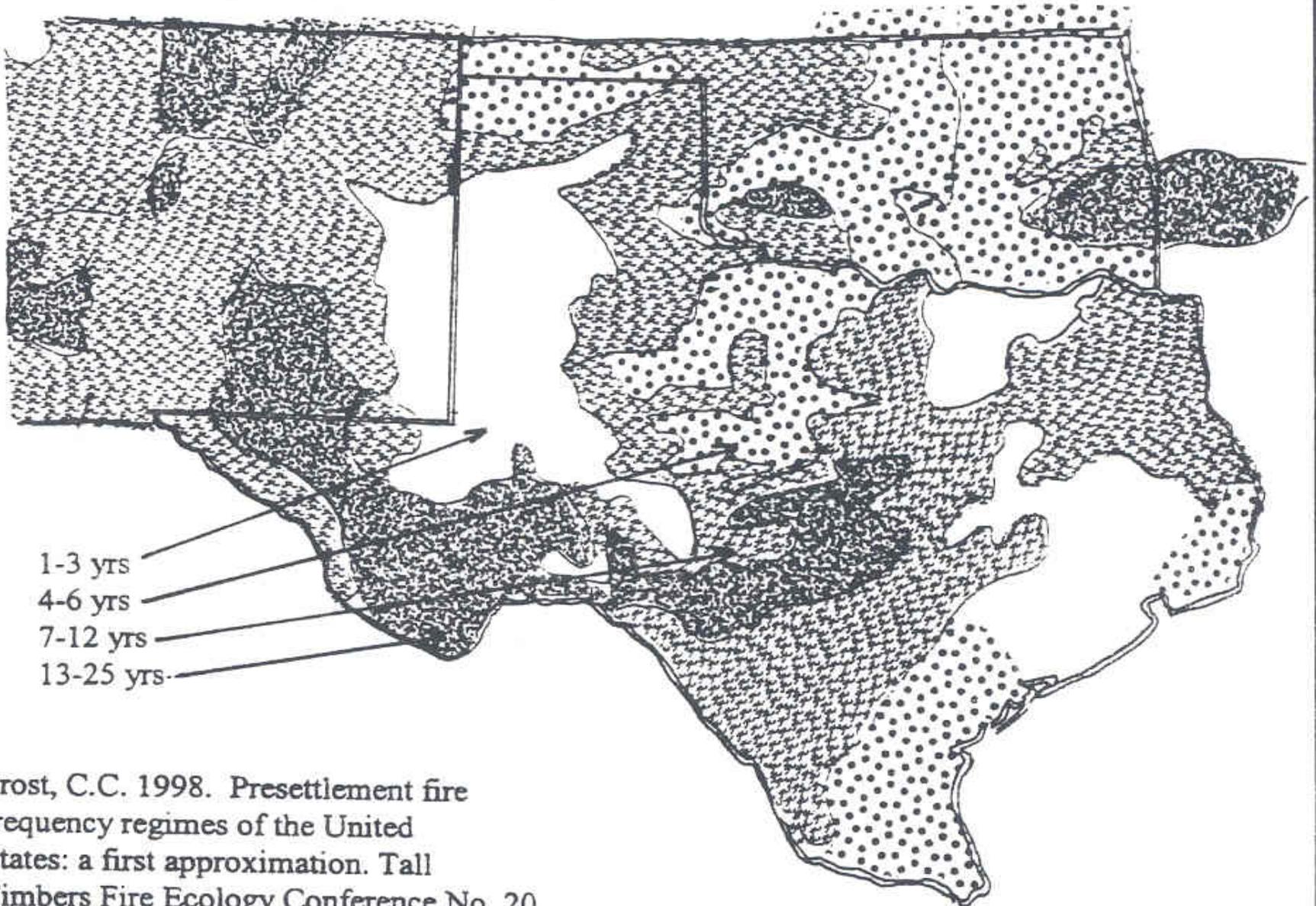
**Prickly pear is characteristic throughout most of the South Texas area. Prickly pear commonly makes up 80% of the year long diet of the native javelina.**



# General Infestation of Prickly Pear



## Fire Frequency Prior to European Settlement



Frost, C.C. 1998. Presettlement fire frequency regimes of the United States: a first approximation. Tall Timbers Fire Ecology Conference No. 20

Day of burn



# One Day After Prescribed Burn



# OPUNTIA SPECIES IN TEXAS

A total of 19-25 species of *Opuntia* are reported in the Texas flora depending on whose taxonomic resource you use.\*

These include:

- |                 |                 |
|-----------------|-----------------|
| O. arenaria     | O. macrorhiza   |
| O. atrispina    | O. phaecantha   |
| O. aureispina   | O. polyacantha  |
| O. edwardsii    | O. pusilla      |
| O. emoryi       | O. rufida       |
| O. ficus-indica | O. santa-rita   |
| O. fragilis     | O. schottii     |
| O. humifusa     | O. spinosibacca |
| O. Imbricata    | O. stricta      |
| O. kleiniae     | O. strigil      |
| O. leptocaulis  | O. subarmata    |
| O. lindheimer   | O. tunicata     |
| O. macrocentra  |                 |

\*TAES MP-1655, Checklist of the Vascular Plants of Texas (1990)

# Educational Outreach Prior to the First Detection

- Tactic to be used with the Texas public would follow that used in the mid-1980's prior to the first detection of Africanized honey bee in 1988 in south Texas
- Inform the public of the potential for an invasion by *Cactoblastis* from the east
- Give the public our best shot on the outcome of an invasion and it's effect on Texas natural resources and industries

# Educational Outreach – How Did It Begin??

- Thanks to Laura Tyler, working at Colorado State University, who got my interest started in the potential invasion in 2004
- Laura came to Texas in 2004/2005 and made presentations and contacts with the Cactus Society and the Independent Cattleman's Association where support was received
- Laura made a presentation to the 1<sup>st</sup> Invasive Plant Conference in Austin in November, 2005
- The first Texas brochure was created in this period

# Educational Outreach – How Did It Begin??

- In January of 2006, I began a series of presentations across the state, especially to Texas Master Naturalist and Texas Master Gardener training classes
- I always challenged these eager individuals to take what training speakers told them and write it up for the local newspaper
- I made a presentation to the Research Committee of the Texas and Southwestern Cattle Raisers Association in March of 2006 and they calmly stated “how can we support you?”

# S & MORE

## LETTERS TO THE EDITOR A Public Forum

### Prickly Pear

Dear Editor,  
I read the ridiculous article in last weeks paper, on page 10, TEXAS A&M PROFESSOR WARNS OF DANGERS TO WILDLIFE.

The last half of the article tells of a "dangerous" cactus moth that "threatens" to destroy our prickly pear. Isn't this something we've been trying to do for years with expensive and dangerous chemicals that certainly do nothing to help our environment.

I have to question Dr. Rector's statements:

1. "The potential effects on the Texas rangelands would be overwhelming." I guess that is true, but not in the way he meant it.

2. "Ranchers burn the spines off so cattle can eat the pads". Dr. Rector should get his head out of his books and talk to ranchers. Very little pear has been fed during the last 40 years, because it is no longer cost effective and because cattle continue to eat pear raw after burning has been discontinued. This results in "pear mouthed" cows. They look pitiful and thin with their lips raw and their tongues hanging out, full of thorns.

3. "Deer eat the tunas". They do, but this has to be a micro minute portion of their diet, even where prickly pear is available.

My Dad told of a time in the early 1900's when most of the prickly pear on James River died of some kind of "worm". It may, or may not have been the same thing, but as far as I know it was never investigated.

A few years ago I contacted the Texas A&M Extension Service to tell them about this. I also told

them about seeing large areas of dead cedar, apparently caused by some disease. I never received a good explanation as to why they were not investigating either of these phenomena but have some suspicions as to why they didn't.

I am an Aggie and proud of it. So was my Father, my two sons and a grandson.

But I do know that the large chemical companies give LOTS of money to Texas A&M. Maybe there is some sort of correlation here.

I am writing this to alert ranchers who live among these prickly pear, with or without "book learning". They are the ones who have been fighting this pest for years, but they must speak up before the college professors and Institutions of "higher" learning kill this opportunity to rid ourselves of prickly pear. If concerned, ranchers should write A&M, ranch and hunting magazines etc.

I have little fear that they will become extinct. If this threat exists, I will gladly save a small plot at James River.

Gene Zesch

### Goldthwaite 1

Dear Editor,

For the curious, I would like to offer a little more background on Goldthwaite's City Manager Bobby Rountree that didn't quite fit into my recent City Corner. Rountree is a professional with considerable experience. He served the City of Baytown (population 66,430) from 1972 until his retirement in 1998 in various capacities, including that of City Manager during his last 9 years. His achievements won a resolution of commendation from the

State Legislature viewable at: <http://www.capitol.state.tx.us/tlo/76R/billtext/HR00071E.HTM>. (I ran across this on the internet while researching Goldthwaite, Mills County and Mr. Rountree prior to our trip.)

In the Legislature's Resolution, it was noted Rountree would be "volunteering his experience and insight into city governance." I really appreciate the generosity demonstrated by Rountree and Mayor McMahan as they treated us to a meal and then shared their time and insights as they escorted our Mason delegation on a tour of Goldthwaite and its infrastructure. Hopefully, opportunities will arise in the future where I can tap into the wisdom Bobby has gained from over 30 years in municipal service.

Respectfully,  
Michael Leamons

### Goldthwaite 2

Letter To The Editor

The Mayor's Call  
To Mason Citizens

After the city council meeting of Monday, February 13, 2006, Mayor Hinckley wrote the following in the Mason newspaper under Local Happenings, City Corner "Rest of the Story" he wrote to "clarify" the city administrators presentation of the visit made by "himself," council member Pat Reardon and our city administrator to Goldthwaite at the quote "suggestion of LCRA."

Furthermore, our mayor wrote, quote "living in community means we must see what is best for the whole without squashing any single individual." end quote. If you were at this meeting you know what he was addressing. If you weren't there you needed to be and must be henceforth. Our mayor ended his article with a quote "These cows and horses

# Mason County News

## Wednesday February 22, 2006

Dear editor,

I read the ridiculous article in last weeks paper, on page 10, TEXAS A&M PROFESSOR WARNS OF DANGER TO WILDLIFE.

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Gene Zesch



Spines are singed off pricklypear to allow cattle access to the pads. Photos, this page, by Wayne Hanselka.

## Pricklypear: Friend and Foe

By C. Wayne Hanselka and Barron S. Rector,  
Extension range specialists, Texas Cooperative Extension

**T**he economic importance of wildlife and wildlife habitat to Texas ranchers has shifted many formerly undesirable plants into the desirable column. Pricklypear is one example of that.

Pricklypear belongs to the genus *Opuntia* in the Cactaceae family and consists of jointed, flattened stems, called pads.

These highly modified stems are not leaves; the true pricklypear leaves are tiny, and appear only briefly at each cluster of spines when a new pad emerges.

There are about 25 species of pricklypear cacti and chollas, with another 15 named varieties.

The three most common and widespread pricklypears in Texas are Engelmann's (*Opuntia phaeacantha* var. *discata*); Texas (*O. lindheimeri*); and Plains (*O. polyacantha*). These three species occupy 25 to 35 million acres, in varying densities, in all parts of the state except Northeast Texas.

Texas pricklypear is more common in southern Texas where it typically grows from two to five feet tall. Engelmann and Plains pricklypear are normally less than one foot tall and are found in western and northwestern Texas.

Other species of cacti are worth mentioning.

Tasajillo (*Opuntia leptocaulis*), with pencil size cylindrical stems, is abundant in much of Texas. Also called turkey pear or jumping pear, it is a nuisance for livestock and people, but provides small tunas for wildlife.

Engelmann pricklypear has the largest pad — eight to 16 inches long. It has white spines and grows to six feet or more and is scattered throughout the Edwards Plateau and Trans Pecos.

When its spines are burned away it is much more palatable to cattle than Lindheimer pricklypear.

Blind pricklypear (*Opuntia rufida*), a Big Bend species, has no spines, only clusters of fine needles (glochids), which rub off easily and are thought to blind cattle.

Dog cactus (*Opuntia schottii*) is a prostrate cholla, not a pricklypear, that restricts the grazing of shortgrass where it grows on hillsides along the Pecos and Rio Grande rivers.

It is often difficult to identify species of pricklypear because of the way the plant reproduces. Each pad, if broken away, can form a new plant that is genetically identical to the original plant. Given enough time, an especially strong, adapted prickly-

pear can spread over an area when its pads become scattered and each plant will look like its parent.

The exception occurs when a new plant encounters a very different environment. For example, although genetically identical, cacti growing in dense shade may look different from cacti growing in full sunlight or another type of soil.

Pricklypear also spreads from seed. Pricklypear fruits, or tunas, are eaten by cattle, sheep, goats, deer, javelina, humans, turkeys and a wide assortment of other animals that process the pulp and pass the seeds through their digestive systems.

Young plants grown from seeds may have genetic material from two parents and may be a little different from either parent. Small variations such as longer spines, different spine color, smaller pads or resistance to drought make some seedlings more adapted and successful than others.

A well-adapted plant may look different from either parent and when it spreads by vegetative reproduction, a unique population may come to dominate an area.

#### **Beneficial or detrimental?**

Pricklypear has been praised, defended, planted, cursed, condemned and controlled. The extent of a pricklypear problem depends on where it is and the management objectives of the landowner or manager.

A survey of attitudes and perceptions toward pricklypear in Texas a few years ago indicated only 16 percent of landowners attempted to control the plant, mainly because pricklypear stands were relatively light and the cost of treatment high.

In the survey, South Texas producers generally believed pricklypear was beneficial for livestock and wildlife, while peo-



Once the spines are singed off, cattle will readily eat the unprotected pads.  
Photo by Wayne Hanselka.



Up to 33 percent of a white-tailed deer's diet in South Texas may be pricklypear.  
Photo by Alfonso Ortega.

ple in other regions saw little or no value in pricklypear.

Some pricklypear are used as food by humans. More than 1.5 million pounds of pricklypear tunas are imported from Mexico each year.

These are largely from *O. ficus-indica*, *O. amyelaea* or *O. megacantha*. Tunas are large, sweet fruits which can be eaten raw, prepared as jelly or candied.

The young, tender pricklypear pads, called nopalitos, are eaten in salads and omelets or as a garnish. Large amounts of nopalitos are imported into the United States annually.

Many wildlife species use pricklypear for food, water and cover. In South Texas, more than 21 percent of the annual diet of white-tailed deer is cactus. In summer months this may in-



Pricklypear is a component of rangeland vegetation on more than 25 million acres in Texas. Photos, this page, by Wayne Hanselka.



Pricklypear can be controlled with a variety of methods. These two photos show the effects of picloram and chopping pear, and of fluoroxypr plus picloram.



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*Each pad, if broken away,  
can form a new plant ...*

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crease to 33 percent.

Only one to three percent of the diet of white-tailed deer in the Edwards Plateau region is pricklypear.

Pricklypear pads and tunas are the bulk of the javelina (peccary) diet. The plant also provides important food and cover for the bobwhite quail and seeds are high in quality, productivity and palatability as a quail food.

However, pricklypear doesn't provide much shade and has moderate value as headquarters or nesting cover. Pear patches are excellent for travel cover and allow quail to escape from predators. Many other birds and mammals use pricklypear as either food or cover.

Pricklypear is a major rangeland vegetation component where sheep and goats are traditionally raised. It can cause severe economic loss to sheep and goat producers when desirable forage is not available.

Cattle are less affected by pricklypear spines and glochids.

Feeding of pricklypear has several disadvantages. Cattle and sheep may become "pear eaters" and continue to eat pricklypear with spines after burning has stopped.

This often results in external and internal injuries that may prove costly since these animals may remain in poor condition throughout the year. Prior to the screwworm eradication program, death losses were high from these injuries.

Livestock may also tear off pads and scatter them over the pasture, helping spread the plant.

Large, dense pear flats restrict cattle access to forage within the clumps, interfere with the movement and working of livestock and compete with desirable forage plants for water and soil nutrients.

#### **Forage value as emergency feed**

Pricklypear cactus has been used as an emergency forage for cattle in Texas and northern Mexico for more than 150 years. Even today, many managers depend on pricklypear during drought. However, the nutrient content of pricklypear is often not enough to maintain any animal other than a non-lactating, early-bred beef cow.

Pricklypear is very high in moisture content and low in dry matter; hence, very large amounts of pricklypear (100 to 200 pounds) are necessary to satisfy minimal daily nutrient requirements.

Pricklypear is high in dietary calcium and magnesium. It has low levels of crude protein and digestible protein.

It is high in fiber and ash and has high levels of magnesium, potassium and sodium salts.

Its phosphorous content is too low to meet the needs of most livestock. Its high calcium levels aggravate the phosphorous shortage.

Because of this nutritional profile and its high fiber and high water content, cattle fed pricklypear can experience digestive upset.

Its water content contributes to scours and an increased rate of passage.

Its indigestible fiber can cause fiber balls or pear balls in the gut of cattle.

Scours can be reduced, and the rate of passage slowed, by increasing dry matter intake with cottonseed hulls, hay or forage. Increase the crude protein in the diet to reduce fiber balls.

Cattle fed pricklypear should receive a mineral supplement of six percent calcium and 12 percent phosphorus. When pricklypear feeding is discontinued, return cattle to a 12 percent calcium and 12 percent phosphorus mineral.

Pricklypear also appears to be high in vitamin A, which is often in short supply in the dry forages on drought-prone rangelands. Because vitamin A is stored in the liver for up to three months, it is not needed on a daily basis. It can be replenished quickly with high quality green forages, vitamin A injections, or, more gradually, with adequate consumption of pricklypear.

Pricklypear is moderately high in energy levels, expressed as total digestible nutrients (TDN), digestible nutrients (DE) or net energy (NE). These energy levels vary, depending on the source of plant material.

Because energy is often a limited nutrient on rangeland and has a significant effect on reproduction, pricklypear — with its

moderately high energy level — could be considered as a reserve forage or emergency feed, although a lightly unbalanced one.

### **Feeding and managing pricklypear**

During periods of nutritional stress brought on by severe weather or lack of rainfall, many ranchers depend upon pricklypear cactus and woody browse plants to supply roughage, energy and some protein.

However, pricklypear is just part of a total drought management program. It should be a supplement and not fed as the entire diet of beef cattle.

In any feeding program, adjust stock numbers to fit the changing carrying capacities of pastures so range grasses are not overgrazed. Feed supplements to balance specific dietary needs of each class of livestock. Move livestock, when possible, to pastures where they can better use the available browse, dry grass, mesquite beans and pricklypear.

There are several ways to feed pricklypear, depending on the availability of labor, the supply of cactus and the cost of fuel.

Singe the spines of pricklypear with a pear burner and let livestock eat what they desire. Or chop and windrow the pear before singeing the spines off the pads and feed it in troughs. Non-singed pricklypear also can be cut and stockpiled for several weeks before chopping.

Manage cattle carefully when feeding pricklypear. Keep them in small, fenced pricklypear pastures and reduce their movements to conserve energy and restrict overgrazing of stressed pastures.

Burn pricklypear every day. Burning every other day encourages cattle to gorge themselves, which causes scouring. If cattle are not fenced, then they have to go where the pricklypear is singed. Control cattle movements through well-distributed pear burning.

Pricklypear can be burned by an individual carrying a pear burner and moving from plant to plant. Or, a propane tank in the back of a pickup can be equipped with a long hose. One person moves the hose and one burns the plants. A third method is to pull a tank with several burners behind a farm tractor or some other special equipment.

A five-gallon pear burner will hold about four gallons of propane. This is enough to provide one day's feed for about 14 cows in dense pricklypear.

A gallon of propane will burn enough to feed three to five cows, depending on the weather and size of the animals.

In warm, dry weather an experienced person can burn enough pear for 200 cows or more in a day. Burning the same amount of cactus on a cold, wet day will take more time and propane.

Burn more pricklypear daily than the herd will consume before the next feeding. This keeps the supply ahead of their needs. Check old burn sites to see if the cattle are wasting too much cactus. If so, less pear can be burned the next time. If too much of the stump is being eaten by cattle and wildlife, burn more pear.

When cold, wet weather is forecast, fill the cattle and burn extra pear to sustain them in case daily burning must be stopped for a short period. Increase protein and energy supplements before extremely cold weather.

Don't allow all the grass to be consumed during dry periods, making pricklypear a primary source of nutrition instead of a supplement. Have a destocking policy ready to implement to complement the supplemental feeding program during drought.

Managers can help meet the cattle nutritional requirements by feeding a supplement of two-thirds (41 percent) cottonseed meal and one-third (three pounds per cow) salt along with burned pricklypear.

Cottonseed meal's high pro-

tein and phosphorous content complements pricklypear's highly digestible carbohydrates (energy), vitamins and water.

Another complementary supplement is a non-protein nitrogen source such as broiler litter.

### **Pricklypear management**

Where there is little pricklypear, some producers may want to grow it, within reasonable limits, in selected areas or traps.

Mechanical methods such as railing or discing will scatter pads and encourage rooting. Some producers have planted pricklypear in rows in small holding traps to facilitate singeing the spines and to control the amount fed to livestock.

Some have also experimented with fertilizer regimes to encourage optimum production and boost nutrient quality.

On the other hand, there may be too much pricklypear in the pasture. During prolonged droughts, pricklypear can increase 25 to 33 percent per year.

The method to control pricklypear will depend on the size and density of the plants, the availability of labor, the other vegetation on the range and the financial resources.

Pricklypear on rangeland can be controlled with prescribed burning, aerial or ground broadcast spraying, hand grubbing, mechanical chaining, railing, root plowing or individual plant treatments with herbicides using backpack or wheeled sprayers. Depending on the situation, combinations of these methods can be effective.

Soils should be moist when the herbicide is applied. Aerial or ground broadcast applications of two pints of picloram (Tordon 22K<sup>®</sup>) per acre or four pints per acre of fluoroxypr plus picloram per acre (Surmount<sup>™</sup>) in the fall months usually gives high levels of control of pricklypear. In some areas, applications of lighter rates of picloram may yield similar results.

Weather conditions after treatment, or differences in pear populations, can cause pricklypear to have variable responses to herbicide applications.

A very effective treatment in many regions of Texas (except the Rio Grande Plain) is prescribed burning in winter followed by aerial application of one half to one pint of picloram per acre in April or May.

Burning under very hot conditions, or with abundant fine fuel loads, may provide sufficient control to meet management objectives in some situations. However, it is often difficult to accumulate adequate fuel to accomplish this.

Burning alone usually kills the pads, but doesn't kill the roots, so most of the clumps will resprout and regrow to original size in three to five years. Burning one to three years after spraying with picloram also has been effective.

Mechanical chaining or root plowing usually is done to control an associated species such as mesquite or cedar, but may aggravate a pricklypear problem. However, good control was obtained when mechanical treatment was followed by picloram sprays or a dry, cold winter.

Individual plant treatment using Brush Buster technology has become popular where there are fewer than 400 clumps per acre. Spraying with one percent picloram or fluoroxypr and picloram in water is very effective.

Cattle sprayers, backpack sprayers and sprayers on all-terrain vehicles and other conveyances can be used.

Pricklypear does not have to be sprayed on both sides of all the pads until they drip for the plant to be killed. Adding a dye to the spray helps mark plants that have been sprayed. Bits of flagging tape or paper can also be used to mark treated areas.

### **Benefit or detriment?**

Land managers in South

Texas look more kindly on pricklypear than those in the Edwards Plateau and Rolling Plains. Those who raise cattle and manage deer may tolerate or even encourage pricklypear, while those who raise sheep and goats may consider it a problem.

It can be an effective emergency feed supplement for beef cattle, but it is low in protein and phosphorous yet high in energy, vitamin A, fiber and ash.

Pricklypear can reduce the cost of emergency feeding during droughts and severe winters. However, some livestock suffer damage from pricklypear spines and tend to keep eating it, to their detriment, after the feeding period is past.

In dense colonies, pricklypear suppresses more desirable forage and inhibits the movement of livestock and ranch workers. However, many kinds of wildlife use pricklypear for food and cover.

Each individual who manages rangeland must decide whether pricklypear's good points counterbalance its bad ones. ■



These orange caterpillars of the cactus moth have black spots forming bands. This is the destructive stage of the insect. In 1925, cactus moths were introduced to control weedy non-native pricklypear in Australia. Ten years later, the insect had destroyed 50 percent of the non-native cactus on 25 million acres. This insect could have a devastating effect on Texas rangeland and wildlife habitat.

## Watch for the Cactus Moth

*A destructive moth may reach Texas by 2007, bringing environmental damage to western rangelands, destroying an important emergency forage source and hampering wildlife habitat.*

by Laura Tyler, research associate, Colorado State University

**T**he invasive cactus moth (*Cactoblastis cactorum*) is expected to arrive in Texas by 2007. The caterpillars of this moth could cause serious environmental damage because they eat only cactus. They prefer cactus from the genus *Opuntia*, including the well-known pricklypear – the state plant of Texas.

Originally from South America, the cactus moth was discovered to have made it into Florida in 1989.

This invasion may be welcome by ranchers who are weary of pricklypear on their rangeland. However, extensive destruction of pricklypear cactus throughout Texas will cause ecological imbalances.

Some ranchers value pricklypear as an emer-

gency forage for cattle during drought. The caterpillar of the cactus moth could eliminate that emergency supply. Loss of pricklypear will also negatively affect wildlife, birds, insects and other plants. These imbalances could eventually increase soil erosion and decrease water quality.

This insect is astonishingly destructive. Even though it has natural enemies in its native South America, it still causes major problems to cactus plantations and wild cactus plants in that area.

To illustrate its voracious appetite, the cactus moth was intentionally released in Australia in 1925 to destroy weedy non-native cactus. Within 10 years,

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*... cactus moth ... is expected to arrive in Texas by 2007.*

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the caterpillars of the cactus moth had destroyed 90 percent of cactus plants covering 25 million acres in Australia.

Because of this destructive history, we can expect serious environmental problems when the moth arrives in Texas.

Wildlife could be directly and indirectly affected because pricklypear serves as a source of food, water and cover. Deer, javelina, bear and many smaller mammals eat the pads and fruits of pricklypear cactus. Wildlife rely on cactus pads for their high water content, especially during drought.

Pricklypear plants often serve as a nursery of cover for valuable forage grasses. They provide shelter for grass seedlings during high temperatures and inhibit foraging by grazing and browsing animals, allowing seedlings to become established.

The cactus plants provide habitat for insects, birds and some small animals. Cactus plants provide nesting cover for bobwhite quail in areas of short grass.



Cactus moths in the caterpillar stage, or larvae, burrow into pricklypear pads and eat the contents, exuding a brown goo.



Before the cactus moth's arrival.



After the caterpillar's infestation.



The adult cactus moth resembles native moths. It is not destructive to pricklypear at this stage of maturity.

### Damaging stage

The caterpillar stage, or larvae, of the cactus moth is the destructive stage. The moth itself is not damaging to pricklypear.

The moth stage, adult, is nocturnal, resembles many native moths and is difficult to identify.

The caterpillars can be seen during the daytime. They are orange with black spots that form bands.

The moth lays its eggs on cactus spines. The eggs form a chain that closely resembles the spine itself. The eggs hatch within three to five weeks.

When the caterpillars are very small they form a single hole in the cactus pad where they all enter the pad. Once inside, the caterpillars feed voraciously for one to two months.

As they consume the nutritious and juicy insides of the cactus pad, they excrete a brown "goo" that can be seen on the outside of the pad.

Once the caterpillars are fully developed they leave the cactus plant and spin their cocoons in the nearby leaf litter or other protected spots. Then the moths emerge and the cycle continues.

In all other countries where the moth exists it produces two generations per year. Evidence indicates the cactus moth is producing three generations per year in the United States. This has scientists very concerned.

### What is being done?

The cactus moth was officially identified on Dauphin Island, Ala., in summer 2004. At its rate of spread, without any mitigations, *C. cactorum* could reach Texas by next year. The USDA Animal and Plant Health Inspection Service (APHIS) has been working with the USDA Agricultural Research Service (ARS) and the U.S. Department of the Interior's U.S. Geological Survey (USGS) to prevent the westward spread of the cactus moth.

In 2005, researchers conducted a sterile insect technique (SIT)

validation study on barrier islands at Florida and Alabama to determine whether the cactus moth's western movement could be halted.

SIT is believed to be the most promising control method. Mass-reared sterile moths are released to limit the reproductive capability of healthy females. This method is effective without using chemicals, which could harm other insects, animals or plants.

APHIS has partnered with the state departments of agriculture in the southern United States to survey nurseries and homeowner properties for cacti infested by the cactus moth.

These surveys will monitor pricklypear populations on lands managed by U.S. Fish and Wildlife Service (USFWS), National Park Service, Bureau of Land Management (BLM), Forest Service and Department of Defense (DOD), the Nature Conservancy and master gardeners under USDA's Cooperative State Research, Education and Extension Service (CSREES).

The information from these surveys will help to track the progress of the insect. Interstate transport of the moth through nursery plants is a major concern since cactus plants are so popular throughout the southwestern United States.

### What can you do?

Be aware of this destructive insect and look for the caterpillars wherever there are cactus plants, especially pricklypear.

If you think you might have cactus moth caterpillars in your area please contact Dr. Barron Rector, Extension range specialist, Texas Cooperative Extension, b-rector@tamu.edu.

For more information on this potential invader, visit these web sites.

- [www.invasivespecies.gov](http://www.invasivespecies.gov)
- [www.invasivespeciesinfo.gov/docs/nisc/cactusmothstakeholder.doc](http://www.invasivespeciesinfo.gov/docs/nisc/cactusmothstakeholder.doc)
- [www.aphis.usda.gov/ppq/ep/emerging\\_pests/cactoblastis/](http://www.aphis.usda.gov/ppq/ep/emerging_pests/cactoblastis/) ■

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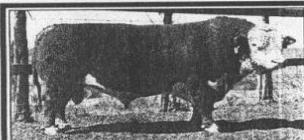


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## Letters to TSCRA

**EDITOR'S NOTE:** Letters published in this column do not necessarily express the views of the publisher. The Cattleman makes room for various views and comments to foster communication and debate. Whether you agree or disagree, we encourage you to write.

### INVOLVING OUR YOUNG PEOPLE

Just want to write and say thank you for the opportunity to be involved in the organization.

It's a good organization with a good mission and good members. Oftentimes, young people don't feel too welcome at deals like that [served as *School for Successful Ranching moderator*] with so many influential people.

It's a testament to TSCRA and the cattle industry that not only are young people welcome, but they are asked to be a part.

Wesley M. Welch  
Weatherford, Texas

### LAW ENFORCEMENT

I want to express my appreciation on behalf of First State Bank of Uvalde for the work your organization does for this community.

More specifically, I would like to compliment Mr. Robin Clark who helped our bank recover a gooseneck trailer which served as collateral for one of our loans. This was done in a quick and professional manner and would not have been possible without Mr. Clark's assistance.

We feel lucky to have a representative of your organization in our community.

Todd D. Redfearn,  
Vice President  
First State Bank of Uvalde

I would like to commend one of your officers, Ben Eggleston, for his assistance to our agency during the recent manhunt for two escapees from Oklahoma.

Ben immediately responded to assist our agency and stayed up all night with us in an attempt

to locate the two fugitives.

We appreciate Ben's willingness to assist our agency in all matters of law enforcement; I know that he is merely a phone call away, no matter what we need.

Gary S. Henderson,  
Sheriff, Hemphill County

### BEEF QUALITY TRAINING

I was so impressed with your "Texas Beef Quality" session given on May 2 in Columbus, Texas, that I had to write and thank you!

Of the many cattle raisers sessions I have attended, this was the most valuable. The emphasis on safety and prevention of health problems would rate an A+.

I know we plan to improve some of our beef handling practices after attending this session.

Mrs. John Baker,  
Fayetteville, Texas

### PRICKLYPEAR, CACTUS MOTH

Mr. Hanselka and Mr. Rector [*"Pricklypear: Friend and Foe," April 2006*] do not seem to be very well informed on the benefits of pricklypear. None of their claims of benefits would be true in Young, Throckmorton and Baylor Counties, where I ranch.

Ms. Laura Tyler [*"Watch for the Cactus Moth," April 2006*] does not appear to understand our problem with pricklypear. I can see no benefits for the rancher from this very invasive plant.

The Cactus Moth would be the greatest thing for the Texas rancher since the eradication of the screwworm. It would be criminal to try to stop the spread of this insect. We should be aiding the invasion of the Cactus Moth, rather than attempting to stop it.

Sherrell Smith  
Graham, Texas

### COVER PHOTO

Your cover picture on April's issue is very intriguing. Sure would like to see the next frame.

Mort Mertz  
San Angelo, Texas

# Prickly Pear Cactus Moth

Mr. Hanselka and Mr. Rector [*“Pricklypear: Friend and Foe,”* April 2006] do not seem to be very well informed on the benefits of prickly pear. None of their claims of benefits would be true in Young, Throckmorton and Baylor Counties, where I ranch.

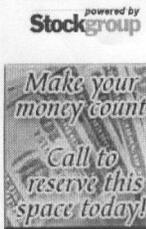
Ms. Laura Tyler [*“Watch for the Cactus Moth,”* April 2006] does not appear to understand our problem with pricklypear. I can see no benefits for the rancher from this very invasive plant.

The cactus moth would be the greatest thing for the Texas Rancher since the eradication of the screw worm. It would be criminal to try to stop the spread of this insect. We should be aiding the invasion of the cactus moth, rather than attempting to stop it.

Sherrell Smith  
Graham, Texas



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Online Poll

-- stage that is so destructive.

In its moth (adult) stage, the invader resembles many native moths and is difficult to identify. It is nocturnal and may look like any other moth flying around the front porch light.

In its caterpillar stage, however, it can be seen during the daytime and is characterized as being orange with black spots that form bands.

A cactus moth lays its eggs on cactus spines, and these eggs form a chain that closely resembles the spine itself. The eggs hatch within three to five weeks.

When the caterpillars are very small, they form a single hole in the jointed flattened cactus stems called pads where they all enter. Once inside the pads, the caterpillars feed voraciously for one to two months.

As they consume nutrients and juicy insides of the cactus pad, they excrete what Laura Tyler, research associate at Colorado State University, calls a brown "goo" that can be seen on the outside of the pad.

Once the caterpillars are fully developed, they leave the cactus plant and spin their cocoons in the nearby leaf litter or other protected spots. Then the moths emerge and the cycle repeats itself.

"In other countries where the moth exists, it produces two generations per year," said Ms. Tyler in an April 2006 article appearing in *The Cattleman Magazine*. "Evidence indicates the cactus moth is producing three generations per year in the United States. This has scientists very concerned."

What may account for its rapid migration in the U.S. could have something to do with the fact that the cactus moth has no natural enemies here.

"This insect is astonishingly destructive," said Ms. Tyler. "Even though it has natural enemies in its native South America, it still causes major damage to cactus plantations and wild cactus plants in that area."

To illustrate its voracious appetite, the cactus moth was intentionally released in Australia in 1925 to destroy weedy non-native cactus. Within 10 years, the caterpillars of the cactus moth had destroyed 90 percent of cactus plants covering 25 million acres in Australia.

"Because of this destructive history, we can expect serious environmental problems when the moth arrives in Texas," Ms. Tyler said.

Pricklypear fruits (tunas) are eaten by cattle, sheep, goats, deer, javelina, humans, turkeys and a wide assortment of other animals, explained Dr. Barron S. Rector and C. Wayne Hanselka, Texas Cooperative Extension range specialists in another article appearing in the April 2006 issue of *The Cattleman Magazine*.

"Pricklypear has been praised, defended, planted, cursed, condemned and controlled," their article said. "The extent of a pricklypear problem depends on where it is and the management objectives of the landowner or manager."

They noted that a survey of attitudes and perceptions toward the pricklypear in Texas a few years ago indicated only 16 percent of landowners attempted to control the plant, mainly because pricklypear stands were relatively light and the cost of treatment high.

In the survey, South Texas producers generally believed pricklypear was beneficial for livestock and wildlife, while people in other regions saw little or no value in the approximately 35 species of the cactus that grow naturally in this state.

Among humans, more than 1.5 million pounds of pricklypear tunas are imported from Mexico each year to be eaten as jelly or candied. The young, tender pricklypear pads (nopalitos) are eaten in salads and omelets or as a garnish.

As far as wildlife go, in South Texas more than 21 percent of the annual diet of white-tailed deer is cactus, while during the summer months this may increase to 33 percent, wrote Rector and Hanselka.

(This compares to only one to three percent of the diet of white-tailed deer in the Edwards Plateau region that includes Gillespie County.)

Meanwhile, pricklypear pads and tunas are the bulk of the javelina diet, while the plant also provides important food and cover for the bobwhite quail.

However, pricklypear is less loved among sheep, goat and cattle raisers, primarily because of the external and internal injuries that often occur when the cactus is eaten.

During extreme drought conditions, ranchers sometimes resort to burning off the spines from pricklypear pads to provide food for livestock.

However, feeding of pricklypear has several disadvantages," explained Rector and Hanselka, because cattle and sheep may become "pear eaters" and continue to eat pricklypear with spines on their pads after burning has stopped.

Livestock may also tear off pads and scatter them over the pasture, helping spread the plant. In addition, large, dense pear flats restrict cattle access to forage within the clumps, interfere with movement and working of livestock and compete with desirable forage plants for water and soil nutrients.

Even so, because the cactus moth is being greeted with general apprehension for being an instrument that upsets the natural balance of life in the U.S., efforts are underway to curtail and even roll back its progress.

In 2005, researchers conducted a sterile insect technique (SIT) validation study in Florida and Alabama to determine whether the cactus moth's western movement could be halted.

"SIT is believed to be the most promising control method," said Ms. Tyler. "Mass-reared sterile moths are released to limit the reproductive capability of healthy females. This method is effective without using chemicals, which could harm other insects, animals or plants."

Meanwhile, what can those living in Gillespie County and other parts of Texas do?

"Be aware of this destructive insect and look for caterpillars wherever there are cactus plants, especially pricklypear," wrote Ms. Tyler.

Those who think they may have cactus moth caterpillars in their area are asked to contact Texas Cooperative Extension Range Specialist Dr. Rector at [b-rector@tamu.edu](mailto:b-rector@tamu.edu).

Despite how unfavorably many in Texas may feel about the cactus, Dr. Rector last week offered a word of caution from his office in College Station.

"There are a hundred reasons by we need to maintain the pricklypear," he said, adding "it's a plant that has a very important role to play in Texas agriculture."

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# Fredericksburg Standard

## Friday, February 9, 2007

A Prickly Problem

Feb 07, 2007-15:3:02 CST

A residents of Gillespie County and the chances are that few imagine there being no pricklypear cactus in this part of the world.

But, unless a little moth that is migrating its way across the country towards Texas can be stopped, there may come a day when the states official plant is in short supply

# Fredericksburg Standard Feb 9, 2007

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Meanwhile, what can those living in Gillespie County and other parts of Texas do?

“Be aware of this destructive insect and look for caterpillars wherever there are cactus plants, especially prickly pear.” wrote Ms. Tyler

Those who think they may have cactus moth caterpillars in their area are asked to contact Texas Cooperative Extension Range Specialist Dr. Barron Rector [brector@tamu.edu](mailto:brector@tamu.edu).

Despite how unfavorably many in Texas may feel about the cactus, Dr. Rector last week offered a word of caution from his office in College Station.

“There are a hundred reasons why we need to maintain the prickly pear,” he said, adding “it’s a plant that has a very important role to play in Texas agriculture and the natural function of the rangeland ecosystem.”

# Responses to Media Releases

- With the releases of the Nature Conservancy coming to Texas, interviews were made with the Fort Worth Star Telegram, Houston Chronicle, Dallas Morning News, San Antonio Express
- Contacts by phone: San Antonio area -23, Fort Worth – 7, Houston – 3, Dallas – 0 and all claiming to have the moth or larvae.

# WHAT'S NEXT?

- Begin sentinel survey work with volunteers from the Master Naturalist and Master Gardener programs in Texas in Southeast Texas
- Continue to investigate the sightings of landowners and report the findings on private property
- Conduct survey work on the Texas coast and even use planted prickly pear plants
- We can not stop the potential invasion but we believe that early detection is the key.
- Train Texas County Extension agents on CM

# Economic Impact

- Loss of grazing
  - \$4 million value in 14 county area in West Texas
- Loss of landscape
  - \$23.9 million industry



Texas Cooperative

**EXTENSION**

The Texas A&M University System

# Natural Control

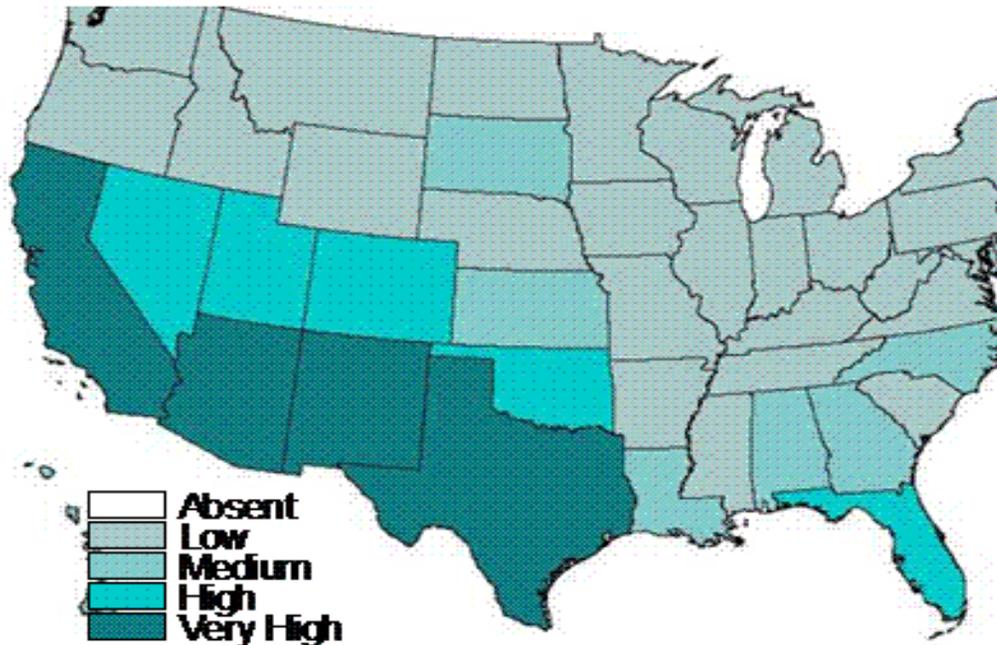
- Regulation of populations within regular upper and lower limits
  - Parasites, pathogens and predators
  - Weather and fire
  - Food
  - Interspecific competition
  - Spatial requirements

# Biological Control

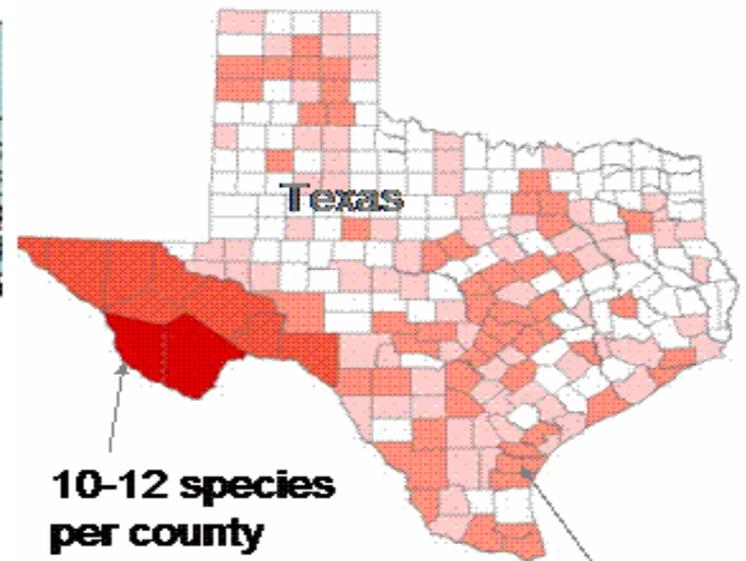
- Regulation of populations by natural enemies at a **lower** average than would otherwise occur
  - Usually implies activity by man

# Opuntia Species Distribution

- The number of species increases going westward



source: US Geological Survey/NatureServe



source: The Nature Conservancy

2-3 species  
per county

# Opuntia



- Native to southwest
- Plant and natural enemy interactions have evolved over a long period of time
  - 19 species in Texas
  - 8 species commonly used in the landscape industry

# Pathogens

- Anthracnose
  - Moist, light brown rot
  - Light pink pustules on surface
- Unknown
  - High rates in 2004 and 2005
  - All plants recovering
- Impact herbicide applications

# Arthropods and Insects

- Spider mites
  - Sucking insect
  - *Tetranychus opuntiae*
  - Greyish layer of corky epidermis



## Arthropods and insects (slide 2)

- Cactus bugs
  - Sucking mouthparts
  - Circular, chlorotic spots
  - Pads turn yellow



## Arthropods and insects (slide 3)

- **Cochineal scale**
  - Sucking mouthparts
  - Pads turn yellow
  - Eventually pads die



# Why Don't Scales Work?

- Large complex of natural enemies



Flies



Lady beetles

*Laetilia coccidivora*



Lacewings



# Cactus borers

- Most common genera
  - Olycella
    - Solitary feeder
    - Two species
    - Group feeder
  - Melitara
    - Group feeder
    - Three species
  - Cactoblastis

# *Cactoblastis cactorum*



# Economic and Ecological Impact

- Loss of food
  - \$2 million industry in Monterey Co., Ca
  - US imports \$27 million
    - Texas imports 18 tons per day
    - Potential sales of \$365 million
- Loss of biodiversity
- Loss of recreation, tourism and hunting
  - Huge impact on hunting leases in 1997

# Current Moth Control Tactics

- Development of pheromone
  - Traps at 3-4 feet above the ground
- Sterile moth releases
  - 5 sterile moths for every 1 wild type

# Be Aware of the Possibility

- Look for indications of infestation
- Contact county agent

