Name:_____ Period #:_____

Overgrazing PowerPoint

What is the issue?

- Overgrazing is …

  _____

  _____

- Overgrazing occurs …

  _____

  _____

- It reduces …

  _____

  _____

  - Desertification _____

    _____

Who is causing it?

- Ranchers …

  _____

  _____

  - Too many… _____

    _____

  - Overgrazing can …

    _____

    _____

Facts

- _____
- _____
- _____

What is being affected?

- _____
- _____
- _____
- _____
- _____

What is being done to help?

- _____
- _____
- _____
- _____

Overgrazing Stations

Name:_____

Station 1: Photo Analysis: *Observe the photos available to you. Analyze the images and the captions that accompany them. Answer the following questions in complete sentences.*

1. Describe the San Pedro River in 1984. What did the land look like?

2. Describe the San Pedro River in 1998. What did the land look like?

3. What happened in 1988 to change the landscape?

4. What can you conclude about the effects of livestock grazing in riparian (**Riparian:** an area on the banks of a river or stream) habitats?

5. Based on what you are able to see in these pictures, can the effects be reversed?

6. In the space below, sketch a before and after situation you've seen/experienced that shows how a species can alter the land of an area. Describe your sketch beneath it.

Before:

After:

Overgrazing Stations

Station 2: *Read the article, "Chewing up the landscape". Respond to the following questions in complete sentences.*

1. What are the effects of overgrazing in Mexico (be specific)?

2. What evidence do the scientists have to prove that these effects were caused by overgrazing?

3. What was the shift in vegetation that occurred in Sasabe?

4. According to the article, what barriers exist to stopping grazing in Mexico?

5. What, if any, connections exist between this article and yesterday's PowerPoint?

Overgrazing Stations

Name:_____

Station 3: *Naming & Training Livestock*

Background Information:

You are the proud owner of a new livestock herd! However, you are very aware of the consequences of overgrazing and want to make sure your herd does not participate in such an issue. In order to create a herd that does NOT overgraze on the land, you choose a leader for your herd and train him/her in proper grazing. It is your hope that the rest of the herd will follow its lead!

Your Task:

1. Create a name for your pet. Your name should show that it will NOT be an overgrazer! Explain how the name for your pet fits the behavior you hope to achieve:

Name:_____

2. Describe ONE trick you will have the livestock leader learn to represent and show off its name:

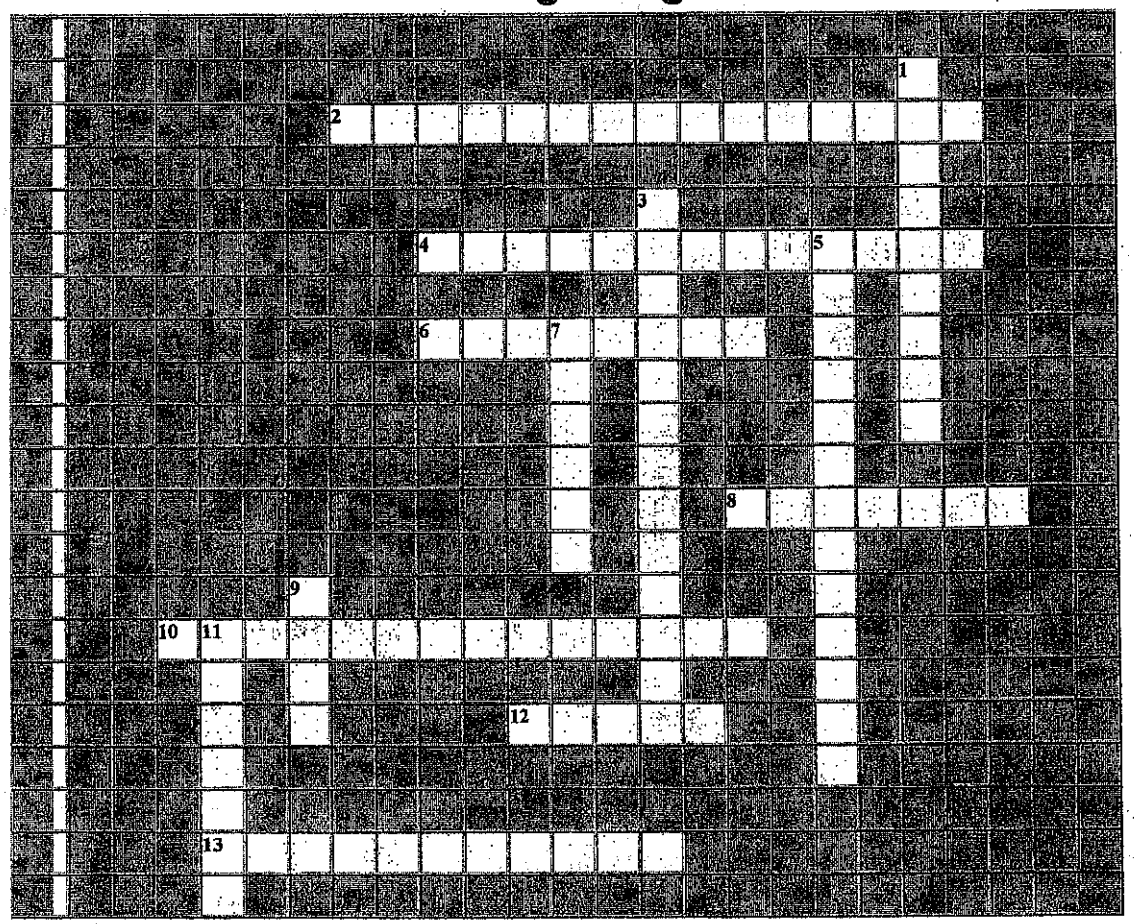
3. Create a drawing of your livestock leader showing off the trick!

4. Describe how the drawing and the trick demonstrate how to avoid overgrazing!

Overgrazing Stations

Station 4: *Complete the following crossword puzzle using your knowledge of overgrazing and the article entitled, "Livestock Grazing on Public Land"*

Overgrazing



Down

1. the predominant ecosystem in Arizona (2 words)
3. this group permits grazing on more than 67% of the 11.2 million acres they manage
5. 0.4% of the state of Arizona's total land area; but the most important wildlife habitat (2 words)
7. These animals are attracted to the desert's scarce perennial streams and springs where they find water and shade they need to survive
9. Congress's General Accounting Office completed a report saying these don't belong in the desert
11. movement of soil to a different area; can result from overgrazing

Across

2. the process of turning once fertile areas into deserts
4. a tributary of the Verde River (2 words)
6. people who raise herds of livestock (may allow them to graze too long in one area)
8. putting livestock out to feed
10. the time for plants to grow back before they should be eaten again (2 words)
12. a scarce resource for plants and animals in the desert
13. allowing animals to graze to the point of damaging the vegetation cover

For station #2 **Sunday, 31 January 1999**

Chewing up the landscape

Overgrazing is tied to border desertification

By Tim Steller ~ THE ARIZONA ***DAILY STAR***

SASABE, Ariz. - Overgrazing in Mexico is making the desert warmer and less productive along the Arizona-Sonora border, a team of Arizona State University scientists has concluded.

A 2-year-old study has convinced them that overstocking of cattle in Mexico has set off an ecological downward spiral known as desertification.

Overgrazing diminished vegetation cover, which degraded the soil. Those changes caused warmer temperatures in local regions, which in turn degraded the plants and soil even more.

``It's pretty obvious when you go into Mexico that desertification is ongoing," said ASU climatologist Robert Balling Jr.

``It's not uniform along the whole border," said Jeffrey Klopatek, leader of the study and an ASU ecology professor. ``There are some areas where it is not occurring because they have good management."

The study so far has examined sites on both sides of the southwestern Arizona border, around Sasabe and Organ Pipe Cactus National Monument.

The scientists used a variety of methods in an attempt to model the energy exchange from the sun to vegetation to the soil:

* They used satellite images of the border to find areas where the line divides degraded from healthy landscapes, then measured greenness.

* They reviewed historical weather data from both states, dating back to 1969 on the Sonoran side and to the 1890s on the Arizona side.

* They set up paired weather stations, near each other but on opposite sides of the border, to measure temperature and moisture.

* They measured plant coverage on both sides of the border.

* They sampled soil and measured levels of organic matter and moisture.

The distinction in degradation was particularly noticeable in the Sasabe area, about 80 miles southwest of Tucson, Klopatek said.

``The thing that surprised us is that in Sasabe the vegetation type shows a major shift," Klopatek said. The cycle of degradation ``created a shift from a grassland to a Sonoran thornscrub" where mesquite and shrubs are dominant.

While that vegetation type dominates the Mexican side, the vegetation remains grassy on the U.S. side, where Buenos Aires National Wildlife Refuge manages most of the land.

Overgrazing Stations

At Sasabe, the temperatures were dramatically warmer just 50 yards across the line. During one month of testing, August 1997, the mean temperature at Sonoran sites near Sasabe was 15.3 degrees warmer than in sites just across the line in Arizona.

A temperature increase also was clear in historical records, but neither climate change nor long-term land degradation were noticeable to one Sasabe, Sonora, rancher. The 61-year-old rancher said the main changes he notices are seasonal, with occasional moist periods and more frequent times of drought.

The temperature difference was also dramatic at Organ Pipe-area sites, just a little less so - 10.6 degrees during the same month.

Because of the hyper-arid environment at Organ Pipe, about 120 miles southwest of Tucson, fewer plants are adapted to the area, Klopatek said. So instead of changing vegetation types, the plant coverage simply diminished.

Sasabe and Organ Pipe show particularly strong differences between the Arizonan and Sonoran sides - in no small part because those areas are largely federally protected on the U.S. side.

But researchers say they've seen similar differences along the border at the Tohono O'odham Indian Reservation, an area they plan to study more fully this summer. Ultimately, Klopatek said, ``we'd like to see how much of this change has occurred across the whole region."

Balling says the team expects to find more of the same.

``It's pretty obvious from satellite images that most of northern Sonora is grazed more heavily than most of southern Arizona," he said.

The strongest effect will likely be continued depletion of the soil on the Mexican side, Klopatek said.

Stopping that downward spiral is particularly difficult because the researchers and the policy-makers are on opposite sides of the border. One member of the team is affiliated with a Sonoran research institute, but the researchers know their ability to affect Mexican land-use practices is limited.

``It's beyond us to go ahead and tell a landowner on the Mexican side that he can't graze his cow there when the cow is his main source of income or protein," Klopatek said. ``But I think that it would behoove everyone if some (improved) land management practices could be implemented."

Overgrazing Stations

For Station 4:

Livestock Grazing on Desert Public Lands

By Jeff Burgess © 1994

Did you know the federal agencies in charge of our public lands permit livestock grazing in the desert?

In Arizona, for instance, where the predominant ecosystem is hot desert, more than 87% percent of the 14.2 million acres managed by the Bureau of Land Management (BLM) are grazed by livestock while the Forest Service permits grazing on more than 67% of the 11.2 million acres they manage. (Arizona's Tonto, Prescott and Coronado National Forests include millions of acres of hot desert.)

Do you wonder how so much public land can be grazed when so many places have been designated as wilderness regions, areas of critical environmental concern and scenic river corridors?

The problem is, these special designations do not prohibit continued livestock grazing.

But just because it isn't prohibited doesn't mean it's an appropriate use. Cattle are attracted to the desert's scarce perennial streams and springs where they find the water and shade they need to survive. The natural tendency of these large ungulates to congregate in these riparian areas, unfortunately, results in the degradation of these precious and unique resources.

Arizona's perennial riparian areas, for example, comprise only 0.4% of the state's total land area but they are the state's most important wildlife habitat. It's been estimated that over 60% of the region's vertebrates rely on them for survival. And riparian areas, of course, are important for other reasons such as healthy watersheds and human recreation. The problem is, these and other benefits are being lost because many of our publicly owned desert riparian areas are little more than cattle wallows.

On a positive note, it's been proven that desert riparian areas are resilient. If cattle are restricted from them they can eventually recover. But most ranchers resist this measure because they realize that, if they lose access to riparian areas, the size of their herds will have to be reduced, perhaps to the point where it becomes unprofitable to continue operating. This is especially true of desert ranches, which are already marginal operations.

Some federal officials, like any good bureaucrats, are trying to find a way out of this dilemma by spending more tax dollars. They claim the implementation of more intensive livestock management will allow riparian areas to be rehabilitated without reducing cattle numbers.

It usually involves building miles of annoying fence to keep the cows out of riparian bottomlands and the construction of replacement water sources on the uplands so the animals can be rotated among several different upland pastures.

This approach has a multitude of problems. To begin with, it's usually difficult to fence off a bottomland in rough country. And even if you can do it, every time a flood comes down a canyon a section of fence is taken out and the cows quickly find their way through the opening.

Then there's the problem of making adequate water available for the cattle on the uplands. When it's possible, it may involve noisy gasoline powered water pumps along the stream and ugly pipelines across the landscape. Or it could mean converting natural springs and the small riparian areas around them in to cattle troughs or muddy tanks.

Overgrazing Stations

Furthermore, these upland stock ponds often support populations of introduced fish and frogs that can get washed down in to streams during floods, where they can devastate native populations. Also, redistributing a cattle herd on the uplands can allow them to degrade areas that have historically received little grazing pressure due to a lack of water.

All of this is bad enough, but it's made even worse by the fact that these management schemes are expensive. The cost of fence is about $3,000 to $5,000 per mile and water "improvements" frequently cost more. Then there's the expense of maintaining the fences and watering devices, not to mention the manpower and planning expenses incurred by the agencies.

With ranchers currently paying less than $2 per head per month to graze their animals, it's easy to see how the public usually picks up the tab for these projects.

For example, Arizona's Tonto National Forest recently proposed an intensive livestock management system for the 79,000 acre Dos S unit of the Sunflower grazing allotment. The Tonto's Mesa Ranger District wants to protect the unit's important desert riparian resources along Sycamore Creek, a tributary of the Verde River, by building 20 miles of fence and other livestock management devices in order to exclude cattle from the creek for at least 10 years.

While this should allow the creek to recover from years of degradation from overgrazing, it will also increase grazing impacts on the area's desert uplands and take at least six years and cost the taxpayers about $261,000 to implement. The grazing permittee is currently paying only about $891 per month in fees to graze his 450 cows on the unit.

I think most people would consider this a poor investment. The Dos S unit is just one unit of one allotment and there are about 100 grazing allotments on the Tonto, most still lacking livestock management plans that adequately protect riparian areas. There are more than 1,000 grazing allotments in Arizona. It would take an enormous public expenditure to significantly improve livestock management in Arizona, let alone the rest of the desert West.

In 1991, Congress's General Accounting Office (GAO) completed a report (RCED-92-12) that analyzed the BLM's permitting of livestock grazing in the desert. The GAO concluded that,

"the lands we visited provided enough evidence of the high environmental risk and low economic benefit associated with livestock grazing in America's hot deserts for us to conclude that the program ascurrently conducted merits reconsideration."
In other words: **Cows don't belong in the desert.**

As you may suspect, the multiple use doctrine under which our public lands are managed requires the agencies to determine the suitability of land uses, including grazing, and allow only those that are in the interests of the general public. But these regulations are usually ignored when it comes to livestock grazing.

Conservationists have recently started trying to get federal land managers to follow the law and make grazing suitability determinations but there's been little success. Grazing activists have also been pressuring the Clinton administration to include explicit instructions in the forthcoming public rangeland regulatory reforms for federal officials to comply with their legal obligation to complete grazing suitability determinations. But Interior Secretary Babbitt has so far refused to add this component to the reform package he's pushing.

A campaign needs to be organized to legislate the equitable phase out of livestock grazing in areas, like our deserts, where properly managing cattle is prohibitively costly to the U.S. taxpayer.