

Cattle & the Environment

Subject Area: Animal Science

Unit Title: Colorado Ranching & The Environment

Grade Level: 4th & 5th grade

Objectives: To help students understand the positive impact cattle and ranching have on the environment.

Colorado Content Standards to be covered:

ECONOMICS

Standard III - Students understand the results of trade, exchange, and interdependence among individuals, households, businesses, governments, and societies.

GEOGRAPHY

Standard V- Students understand the effects of interactions between human and physical systems and changes in meaning, use, distribution, and importance of resources.

Standard VI - Students apply knowledge of people, places, and environments to understand the past and present and to plan for future.

SCIENCE

Standard IV - Life Science: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.

Standard V - Students know and understand interrelationships among science, technology, and human activity and how they can affect the world.

MATHEMATICS

Standard I - Students will utilize language, symbolism, and technology to develop number sense and to communicate those mathematical ideas.

Materials:

- photocopies of the KWL handout
- photocopies of the “How Much Is a Cow Worth” handout
- calculator
- sticky notes

Anticipatory Set: Go over the “KWL” handout on the last page and brainstorm with your students having them fill in what they already know about Colorado Ranching (first column “K”), what they want to learn (middle column “W”), and after the lesson they can fill in the last column with what they learned (“L”). Then read the following statement to the students: “Cattle help our environment,” and have them write “true” or “false” on a sticky note.

Input:

What Is Cattle Ranching? Cattle Ranching can be described as, “the year-round care of cows and bulls for the

purpose to produce calves to raise and sell,” but it’s really much more. Ranchers must also be stewards of the land, caring for soils, grasses, other plants, water and wildlife habitat.

There’s also another way to describe what ranchers do for you. Range and pasture land is used by the rancher to collect sunlight. That sunlight, soil and some water grow grasses and other plants. We might like to look out and see those open spaces, but we can’t eat those plants. The rancher uses cows to harvest those grasses and turn the grass into a source of high-protein food and other by-products we can use.

Today, Colorado’s cattle industry is the state’s largest agricultural industry, and it continues as the largest segment of American agriculture. Agricultural animals have always made a major contribution to the welfare of human societies by providing food, shelter, fuel, fertilizer and many other products and services.

Cattle ranchers (and all livestock owners) work very hard to take proper care of their animals. They provide the cattle with nutritious food like hay, grain, corn, clean water, shelter and medical care. In today’s cattle industry, a successful rancher wears many hats – cowboy, herdsman, nutritionist, business person, land manager and financial manager, among others.

Today's Cattle Ranching in Colorado

Today, Colorado ranches produce, raise, care for and sell approximately 2.7 million head of cattle each year. This represents about \$3.27 billion or 58% of Colorado’s farm income. Colorado ranks 10th in the nation for overall cattle numbers. Nearly 30,700 farms and ranches cover almost half of the entire state of Colorado, or 30.7 million acres. The average beef herd size in Colorado is 74 head.

Colorado agriculture helps feed the nation, provides wildlife habitat, protects the environment and fuels the state economy. More than 105,000 jobs are provided by agricultural businesses, which produce nearly 16 billion dollars for Colorado's economy.

Ranching is almost always a family business, with 83% of ranches in the same family for more than 25 years, and 10% in the same family for more than 100 years. The majority of families make less than \$28,000 per year. Profits, if and when they exist, are put back into the business and ultimately back into the land. About 82% of ranches in Colorado are family or privately owned. Only 7% of ranches in Colorado are owned by corporations.

How do cattle help our environment?

Cattle grazing exists in harmony with range, forest and grassland ecosystems. In fact, grazing benefits ecosystems. Grasses have evolved with animals eating them, and grazing helps the plants grow strong and healthy in the same way that you help your lawn grow when you mow it. Similar to an aerator, the cow’s hooves are able to break the top crust of the soil and allow more moisture and nutrients to reach the plant’s roots. Breaking up the soil also allows plant seeds a place to germinate and start growing. Grazing cattle is a good tool for managing grasses in range, forest and grassland ecosystems.

Ranching is different than it was 100, 50, 20, even 10 years ago. Today, success in the ranching business requires the rancher to be a conservationist. Ranchers need to be good land and water managers.

Ranchers and wildlife managers share the same goal: a healthy grassland resource. Through sound management techniques, wildlife and livestock can co-exist. The key is “managed” grazing. Both livestock and wildlife, when left unmanaged, can do harm to the land.

While many ranchers still ride horses, they also drive pickups and use computers, the Internet, fax machines and other current technologies. The modern rancher, schooled in range science, is a grass manager. Ranchers understand how, in the arid West, damaged habitats can take from 25 to 200 years to recover. In some respects, the rancher is the caretaker of the land for America. Since the federal government cannot afford to employ enough people to manage the almost half-billion acres of federal land in the West, it partners with ranchers, using their expertise to manage the land.

Ranchers depend on healthy natural resources for their livelihood. They use environmental practices that conserve and improve natural resources. This improves the productivity of the land and makes good business sense. This is especially true as ranches are passed on from generation to generation. Cattlemen and women participate in many environmental practices. These practices include developing water systems, using rotational grazing,

Handout

K (Know)	W (Want to Learn)	L (Learned)

planting trees and many more. They know that if they are to survive and pass their ranch on to their children, they must take care of the land they depend on for survival.

Checking for Understanding: At the end of this section, choose one of the following for a quick check: ask the students to partner share and think, pair and share, do a quick 3 word write up as an exit slip, do a quick sketch or give each other a quick thumbs up or down to check for understanding. Determine the level of mastery for each student and provide individual remediation as needed.

Procedures/Activities:
How Much Is A Cow Worth?

Prep:
Photocopy the exercise below.

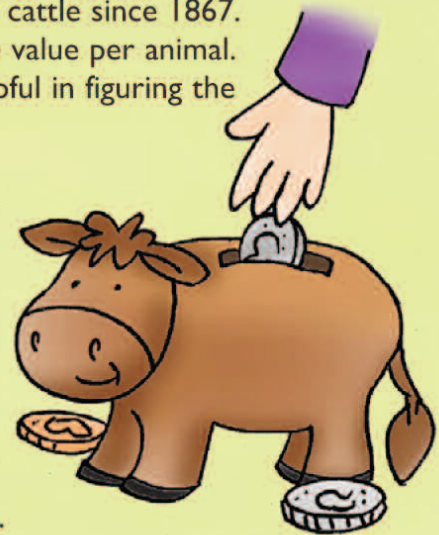
Directions:
Have the students do a quick math exercise using the handout and a calculator.

Handout

How Much is a Cow Worth?

Colorado has been keeping statistics (numbers and values) on cattle since 1867. To get the value of cattle, multiply the number of cattle by the value per animal. Round to the nearest fifty thousand. *A calculator will be helpful in figuring the answer.

YEAR	NUMBER	VALUE PER OF CATTLE	TOTAL ANIMAL VALUE
1867	147,000	\$22.10	\$3,250,000
1900	1,223,000	\$28.30	\$3,460,000
1950	1,800,000	\$125.00	_____
2001	3,150,000	\$730.00	_____



Fill in the blanks for the total value of cattle in 1950 and 2001.

Closure:

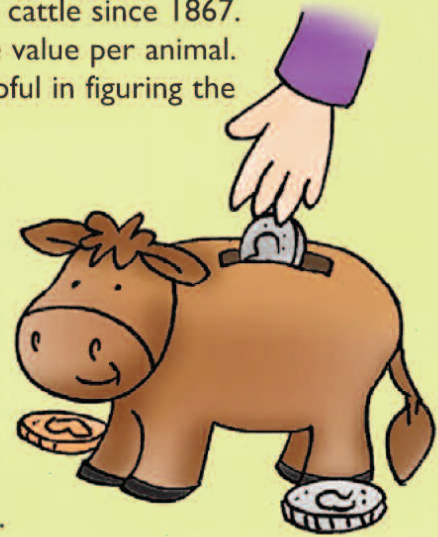
Review and clarify the key points of the lesson by filling in the “L” column on the “KWL” handout. Then repeat the statement you made ask for “true” or “false” on the sticky note again. Brainstorm and discuss any new ideas or surprises the students may have.

Handout Key

How Much is a Cow Worth?

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1867	147,000	\$22.10	\$3,250,000
1900	1,223,000	\$28.30	\$3,460,000
1950	1,800,000	\$125.00	<u>\$225,000,000</u>
2001	3,150,000	\$730.00	<u>\$2,299,500,000</u>



Fill in the blanks for the total value of cattle in 1950 and 2001.