9-12th Lesson Guide: Mutton

Vocabulary:

- Mutton
- Lamb
- Weaving
- Wool
- Loom
- Gratitude
- Generations
- Harmony
- Mesas
- Polled

See the attached vocabulary sheet in Educators Guide.

Engage:

- Allow a class period to read the story about Navajo Churro Sheep.
- The story of the Navajo Churro Sheep not only portrays history, but the resilience of the Diné and the sheep. Write one paragraph explaining how these stories teach practical agricultural knowledge about sheep husbandry, wool production, and sustainable resource management. Be specific about what agricultural practices the stories reinforce, such as respectful animal care, selective breeding for specific wool qualities, seasonal shearing cycles, and maintaining balance with the land. Consider how the warning that "the First Sheep will leave if not treated with respect and gratitude" reinforces sustainable livestock management practices.

Explore and Explain:

- Begin this lesson with a visual comparison activity: Display images of three different sheep breed side by side without labels: Navajo-Churro, commenting on the lean body, long-legged, bare faced and legs, with multi-colors, Suffolk or Hampshire, showing stocky body, black face, muscular build, and Merino, noting the compactness of the body. Prompt students: "These are all domestic sheep, but they look very different. What do you notice? What environments might each be adapted for?" Allow 2-3 minutes for pair-share discussion, then gather observations on the board. Transition statement: "Today we're going to explore how one specific breed—the Navajo-Churro—developed unique characteristics that allowed it to thrive in one of North America's harshest environments: the high desert of the Southwest."
- Activity 1: **Compare and Contrast Sheep Characteristics Venn Diagram**
  Use the attached Venn diagram to help students learn important characteristics of the Navajo Churro Sheep. If time allows, help students to further understand how the characteristics of the Navajo-Churro sheep helped them survive the environment of the Southwest, by demonstrating a 'Deep Thinking Model' on two to three characteristics of the Churro sheep.
  Example:

BARE LEGS:
Direct benefit: Heat dissipation (no wool insulation on legs)
↓

Secondary benefit: Burrs and thorny plants don't catch in wool
↓
Ecological advantage: Can browse wider variety of desert plants
↓
Survival outcome: Access to more food sources in sparse environment

Key Concepts to Ensure Students Understand:

Adaptation	Environmental Challenge	How It Helps
Long, thin legs	Rocky, uneven terrain; scattered resources	Navigate obstacles; cover distance efficiently; less body mass to support in harsh conditions
Narrow body	Limited food availability; need for agility	Requires fewer calories; can move through tight spaces between rocks and shrubs
Bare face/legs/belly	High temperatures; thorny desert plants	Heat dissipation; prevents burrs catching in wool; allows access to more browse options
Light bone structure	Sparse vegetation; need for mobility	Less weight to carry; requires less food; more agile on slopes
Strong flocking instinct	Predators; harsh conditions	Group protection; shared vigilance; collective knowledge of water/forage locations

- Activity 2: **Wool Science**
  This activity will help students to understand fiber structure of wool. In this activity, students explore wool structure at multiple scales—from whole fleece to individual fibers—using hands-on observation and guided analysis to understand how the Navajo-Churro sheep's dual-coated fleece is both an adaptation to desert life and a valuable resource for humans. Through tactile examination, magnified observation, and a lanolin demonstration, students compare Navajo-Churro wool to other breeds, identifying key differences in fiber type, texture, and oil content. Through guided discussion, they analyze how specific traits of Navajo-Churro wool—such as low lanolin content, dual-coat structure, and fiber length—support survival in arid desert conditions. Students also explore how these same traits benefit humans, particularly the Diné people who have selectively bred these sheep for over 400 years. By completing a T-chart and reflecting on mutual benefits, students gain insight into the co-evolution of human and animal relationships in traditional desert ecosystems.

Example of what students may identify in their T-chart:

	GOOD FOR SHEEP IN DESERT	GOOD FOR HUMANS IN DESERT
Low lanolin	Less energy to make	Less water needed for washing wool
Long staple length	Less tangling	Easier to hand-spin with drop spindle
Natural color variety	Genetic diversity	Can create complex designs without dyes (saves water and resources)

Guide students to complete math calculations on the final part of the Activity 2 worksheet to realize how much water is saved when churro sheep wool is cleaned versus wool of other sheep.

Elaborate

- Activity 3: **Limiting Factors and Carrying Capacity**
  Discuss key ideas such as food, water, space, and weather as limiting factors. Encourage students to think critically by asking them to provide real-world examples and to explain whether each factor is biotic or abiotic. As students complete the questions, circulate to support understanding and clarify misconceptions. When discussing carrying capacity, use the bear and fish example to illustrate how resource availability sets population limits, and reinforce the concept with the rabbit population case study. Conclude the lesson by reviewing the graph activity, helping students label each stage of population change.
- Start by showing students a short YouTube video for review on Navajo Sheep and Livestock Reduction Program (Start: 1:30, End: 13:15)
- Using the knowledge gained on carrying capacity, students will now be prepared to complete Activity 4: **Sustainable Grazing and Range Management.** Briefly discuss with students the historical case study of the 1933 BIA assessment, prompting them to critically evaluate the disparity between estimated and actual livestock numbers and the unequal enforcement of livestock reductions. Support students in calculating carrying capacity under normal and drought conditions and encourage critical thinking about long-term land management. Highlight the role of sheep breed differences and traditional Diné practices in sustainable grazing. Conclude with modern rotational grazing strategies to connect past and present solutions.

Evaluate

- Activity 5: **Critical Thinking Analysis Essay (1-2 pages)**
  Prompt: "**How do the biological characteristics of the Navajo-Churro sheep and traditional Diné management practices demonstrate principles of sustainable agriculture that remain relevant to modern environmental challenges?"**
  Your essay must include a clear thesis, evidence-based analysis incorporating at least three topics from the unit (such as specific physical adaptations, traditional livestock

management practices, carrying capacity concepts, historical livestock reduction programs, wool characteristics, or human-animal relationships), critical thinking that connects historical practices to modern sustainability challenges, and a conclusion that synthesizes your main points. Use correct scientific terminology and include at least three specific references to course materials.
Students may use an Essay Outline Worksheet to help prompt writing.

Suggested Lesson Activities:

- Native Language Vocabulary
- Compare and Contrast Sheep Characteristics Venn Diagram
- Wool Science
- Limiting Factors and Carrying Capacity
- Sustainable Grazing and Range Management
- Critical Thinking Analysis Essay

Additional Educator Resources:

- Shaped by the Loom, Homeland Creation, Cosmology
- Navajo-Churro Sheep, The Livestock Conservancy
- Legends of America, Navajo Long Walk to Bosque Redondo
- Bosque Redondo Memorial at Fort Sumner Historic Site
- Navajo Long Walk to Bosque Redondo
- The Navajo Long Walk, Wikipedia
- The Navajo Long Walk, My Text
- Bosque Redondo, Smithsonian National Museum of the American Indian
- Long Walk of the Navajos, Ebsco
- Navajo-Churro, Grokipedia
- 'We Can't Let These Sheep Go'
- Navajo-Churro, Wikipedia
- Churro Sheep: A Rare Breed
- Navajo-Churro Sheep Association
- Anderson Essay Worksheet

The Navajo-Churro: The Return of the First Sheep

For Grades 9-12: Please feel free to modify these lessons as needed to fit the needs of your students.

Part I: The Legend of T'aa Dibé

Long ago, when the world was still new, the Diné people were learning how to live in balance with the land. During this time, the Holy People gave them a special gift: T'aa Dibé, the First Sheep. These sheep were gentle, wise, and had soft wool that helped the Diné survive cold seasons. The people cared for the sheep with respect, and the sheep stayed close to them.

But as the years passed, people began to forget the humility and gratitude that kept them connected to their sheep. Because of this, the First Sheep gathered together and left. Before disappearing, they said, "We will return when you remember how to care for us with respect."

Many generations went by. Children grew up hearing the story of T'aa Dibé and wondering if the First Sheep would ever come home again. Then one day, families noticed new sheep wandering through the desert valleys. These sheep were small and deer-like, with bright eyes and wool in many natural colors: white, brown, black, and spotted. They looked just like the sheep from the old stories.

The Diné recognized them immediately. "The First Sheep have returned," they said.

These sheep became known as Navajo-Churro sheep, and the people welcomed them with songs, prayers, and open hearts.

Part II: Spider Woman and the Universal Art of Weaving

To understand the deep significance of the Navajo-Churro sheep, one must first understand the sacred art of weaving and its connection to Spider Woman, one of the most powerful beings in Diné cosmology.

Spider Woman was particularly important in the American Southwest, and the Pueblo Indians have a wealth of stories about her. According to their traditions, the Sun and Spider Woman (the Earth Goddess) willed all aspects of the world into being. Traditionally, Spider Woman taught the Hopi how to spin and weave cotton. In many stories, old Spider Woman assists twin heroes in their adventures, makes medicine and magic, and gives advice. She is an underground spirit being of great power who is friendly to humankind. She provides corn and sometimes rain.

Spider motifs appeared on Pueblo pottery at least a thousand years ago. One pottery bowl dating to the 1300s has a spider painted on the inside and a cross-and-circle on the base of the exterior. Of special interest is the break in the painted line that encircles the spider. This seems to be a very early example of the symbolic 'pathway' frequently left in the design of textiles and baskets

in more recent times as a means for the spider to enter and leave. The Pomo and Hupa Indians of California believe that a break left in the motif is a pathway that allows Spider Grandmother to enter and inspect the finished basket, then leave. The Navajo place this spirit line in the motifs of both basketry and textiles.

There is a Diné believe that Spider Woman taught the people to weave on a loom made by her husband, Spider Man. This loom symbolized life-giving water. Its top bar was Father Sky and its bottom bar Mother Earth. The warp sticks were made of sunrays, and the healds of rock crystal and sheet lightning.

According to Diné culture bearer Barbara Teller Ornelas, Spider Woman journeyed to each of the four sacred mountains that define Dinétah, the Navajo homeland. From Blanca Peak she collected wood for her husband, Spider Man, to construct a loom. From Mount Taylor she gathered plants for making dyes. On the San Francisco Peaks she received patterns from the thunder gods, and at Hesperus Mountain she learned the prayers connected to weaving. Spider Woman then wove the first pattern of the universe and gifted her weaving knowledge to the Diné so they could integrate hózhó—beauty, balance, and harmony—into their daily lives.

Spider Woman weaves lightning, clouds, rainbows, and sunrays into her fabric. When a Navajo girl is born, a spider web is rubbed on her hand and arm so that she will become a good weaver.

When one looks at the legends that relate to Spider Woman from the Americas as a whole, one sees that although beliefs differ from tribe to tribe, a relatively coherent image of Spider Woman emerges. She is generally a premier goddess of earth and sky—a creator being and a consort of the sun. She connects the earth and sky and creates fire and food plants. She is associated by some Indian cultures with the moon, the rainbow, the four directions, weaving, or the deer. She can make magic and transform herself. She is wise, and she helps those in need.

For the Diné, Spider Woman's gift of weaving was incomplete until the Holy People provided the wool—the First Sheep—that would allow this sacred art to flourish.

Part III: The Sheep of the Holy People—Before the Spanish

Before the arrival of Europeans, wild bighorn sheep—sometimes called the sheep of the Holy People—lived in the canyons and mountains of Diné Bikéyah, the Navajo homeland. While these wild sheep could not be domesticated, the Diné hunted them respectfully for their hides, horns, and meat. Each year the bighorn sheep would shed their wool naturally by rubbing against rocks, trees, and canyon walls, and the Diné collected this wool for various uses, possibly even for weaving.

According to Diné oral tradition, they have always known the art of weaving, a sacred gift from Spider Woman. The people already possessed the knowledge and the loom—they were simply waiting for the promise to be fulfilled. The Holy People had assured them that one day, they would be given sheep of their own to care for—sheep that would stay with them, provide for them, and become part of their way of life.

Part IV: The Arrival and Integration of the Churro

The historical record shows that the ancestor of the Navajo-Churro, the Spanish Churra sheep, was prized for its remarkable hardiness, adaptability, and fertility. These sheep were brought to North America beginning in the 1540s by Spanish conquerors and colonizers. The Iberian Churra first rose to prominence in Spain's Douro Valley. When the Moors conquered the Iberian Peninsula in 711, they brought Merino sheep and a renowned weaving tradition. While Merino wool was considered finer and preferred by European nobility, the coarser-wooled Churra remained the sheep of common people—a distinction that would prove consequential for Spanish colonization efforts.

In 1496, Christopher Columbus brought Churra sheep to the Americas on his second expedition. These hardy desert sheep were seen as useful and expendable compared to the prized Merino, which remained in Spain for European trade. By the mid-1500s, Churra sheep had spread throughout New Spain's Northern Territory—what would become New Mexico and Arizona.

There is scholarly debate about exactly when Diné families first acquired these sheep. The Navajo Sheep Project suggests Diné families traded for or captured sheep as early as 1540 near the modern Mexican border when they were brought north with the Coronado Expedition, while The Livestock Conservancy and Hubbell Trading Post assert that Churra sheep came to Diné communities in 1598 with the Oñate Expedition to the Ohkay Owingeh area near modern-day Española. Either way, by 1600, the Diné had fully embraced pastoral life with these sheep.

When the people saw these Spanish sheep—small and agile, climbing rocky hills with ease, finding food in dry grasslands, with wool in many natural colors—they recognized them as the fulfillment of the Holy People's promise. The Churro became the Navajo-Churro (the transition from "Churra" to "Churro" remains a linguistic mystery), and for the next several centuries, these sheep became inseparable from Diné identity and survival. Spider Woman's loom finally had the wool it needed to create beauty in the world.

Part V: A Thriving Partnership

After the introduction of domesticated sheep, weaving, wool working, and textile production became intrinsic to Diné culture. For hundreds of years, Navajo-Churro wool, meat, and milk were the pillars of economic and societal stability for the Diné.

The sheep proved perfectly adapted to the high desert environment. Their slender bodies with long, fine-boned legs allowed them to navigate through shrubs, rocky terrain, and woodlands. Their wool-less legs, bellies, and faces helped them stay cool and prevented burrs from catching in their fleece. Some rams developed four or more horns—a rare polycerate trait that became one of the breed's hallmarks.

The Navajo-Churro's wool was extraordinary and perfectly suited for Spider Woman's gift. It consisted of a double coat: a fine to medium inner fiber protected by a long outer coat. The breed produced less lanolin than other sheep, meaning the fleece required little to no water for washing—a crucial adaptation in a landscape where water is precious. The wool grew in longer,

less tightly curled tresses, making it ideal for hand-spinning with traditional drop spindles, just as Spider Woman had taught.

Through selective breeding over generations, the Diné developed sheep in a wide variety of colors—white, cream, tan, brown, grey, black, and red, with some spotted—which allowed weavers to create intricate designs in textiles without using dyes. The textiles produced from Navajo-Churro wool became renowned worldwide for their quality, durability, and beauty. Weavers remembered to leave the spirit line—a deliberate break in the pattern—allowing Spider Woman to enter, inspect their work, and leave, maintaining the sacred connection between the weaver, the wool, and the Holy Being who made it all possible.

At their height in the early 1800s, there were millions of Navajo-Churro sheep across the Four Corners region, with some Diné families caring for flocks numbering in the thousands. The sheep provided everything: meat for sustenance and ceremonies, milk for nourishment, and wool for weaving the blankets, rugs, and clothing that sustained life and generated economic independence. Women, as the primary weavers and flock managers, held significant economic and cultural power in Diné society.

Part VI: The Long Walk—Hwéeldi, the Place of Suffering

But the story of the Navajo-Churro becomes a narrative of attempted cultural genocide and extraordinary survival.

By the 1860s, as American settlers pushed westward, conflicts intensified between the U.S. government and the sovereign Diné Nation. Early relations had been relatively peaceful, but tensions escalated after the killing of respected Navajo leader Narbona in 1849. By the 1850s, the U.S. government had established forts in Navajo territory—Fort Defiance, Arizona, and Fort Wingate in northeast New Mexico.

In September 1862, Brigadier General James H. Carleton was ordered to take command of the New Mexico Military Department. On July 20, 1863, Carleton ordered Colonel Christopher "Kit" Carson to proceed to Navajo territory and receive the Navajo surrender. When no Diné appeared, Carson implemented a scorched-earth campaign.

Carson's forces waged systematic warfare: leveling homes, burning crops, and slaughtering livestock—including thousands of Navajo-Churro sheep—to starve the Diné into submission. The goal was clear: force removal from ancestral lands to open them to white settlers and miners. This was not just an attack on the people but on their entire way of life, their economy, their spirituality, and their connection to Spider Woman's gift.

Some Diné families refused to surrender. They fled deep into canyons—particularly Canyon de Chelly—taking small flocks of sheep with them, hiding in places soldiers could not reach, protecting their sacred animals with their lives, waiting for the day their people would return home.

But by early 1864, thousands of Diné began surrendering. Between August 1864 and late 1866, more than 53 different forced marches occurred. In total, approximately 10,000 Navajo and 500 Mescalero Apache were forced to walk between 250 and 450 miles to an internment camp at Bosque Redondo near Fort Sumner in eastern New Mexico.

The march itself was brutal. The Diné did not know where they were going, how far they would travel, or how long the journey would take. They were not prepared. Those who could not keep up were left behind. Navajo oral tradition recounts atrocities whereby the elderly, infirm, or pregnant women who could not maintain the pace were shot by soldiers. Women and children were abducted by slave traders along the route. Between 300 and 500 people died during the forced marches alone.

Those who survived the march with their remaining sheep found conditions at Hwéeldi—what the Diné called the "Place of Suffering"—to be horrific. By November 1864, approximately 8,570 people were imprisoned at Bosque Redondo. Of the nearly 7,000 sheep that survived the journey, the flock had dwindled to a mere 940 by the time the Diné were allowed to return home in 1868.

The Pecos River water was brackish and caused severe intestinal problems. Disease ran rampant. Food rationing was meager and consisted of completely unfamiliar provisions—coffee beans, white flour, and rank beef. The lack of wood for heating and cooking during bitterly cold winters led to widespread illness and high infant mortality. Army worms destroyed corn crops repeatedly, and flooding washed out irrigation systems.

The Diné and Mescalero Apache were prevented from practicing ceremonies, singing songs, or praying in their own language. This meant women could not sing the weaving songs Spider Woman had taught them. Additionally, Comanche and Kiowa groups, whose traditional lands the prisoners now occupied, conducted frequent raids, stealing livestock and taking women and children captive.

Yet even in these desperate conditions, wool remained essential for survival. As U.S. Army Captain McCabe noted in an official report, "One industrious female can finish a blanket in three weeks, which will wear for ten years, [and] is perfectly water-proof." The Diné women continued Spider Woman's work, weaving blankets to survive the freezing winters even as starvation forced families to butcher their precious breeding stock. The act of weaving became an act of resistance—a way to maintain identity, dignity, and connection to the Holy People in a place designed to break them.

Between 1864 and 1868, an estimated 1,500 to 3,500 Diné died at Bosque Redondo from starvation, disease, and exposure. The experiment—intended to be the first Indian reservation west of Indian Territory—was an abject failure.

Part VII: The Treaty and the Promise

In May 1868, the Taylor Peace Commission arrived at Bosque Redondo expecting to offer the Navajo land in Indian Territory (now Oklahoma). Ironically, General William Tecumseh

Sherman—architect of his own scorched-earth policy in Georgia during the Civil War—became convinced that the Navajos should be allowed to return home instead.

On June 1, 1868, the Treaty of Bosque Redondo was signed between the United States and Navajo leaders including Barboncito and Manuelito. The treaty established a reservation in the Navajo homeland (initially 3.5 million acres, later expanded to today's 15 million acres), required compulsory education for children, and promised provisions including seeds and agricultural implements. Crucially, it promised that each Navajo man, woman, and child would receive two sheep.

The sheep did not arrive until 1869. When they did, Barboncito, who had been elected head chief during treaty negotiations, spoke words that would echo through generations: "Take care of the sheep that have been given you as you care for your own children. Never kill them for food. If you are hungry, go out after the wild animals and the wild plants. Or go without food, for you have done that before. These few sheep must grow into flocks so that we, the People, can be as we once were."

The people listened. They cared for their sheep with the respect and gratitude the First Sheep had asked for in the ancient stories. Slowly, painstakingly, over sixty years, the flocks recovered. By the early 1930s, there were once again millions of Navajo-Churro sheep in Diné Bikéyah, and families raised flocks numbering in the thousands. Women resumed their roles as weavers and flock managers, and with them came economic and cultural power.

Part VIII: The Second Long Walk—Livestock Reduction and the Attack on Women's Power

Then came what the Diné call "The Second Long Walk"—and significantly, it was an attack not just on the sheep, but on the economic and cultural power of Diné women.

In 1933, under Commissioner John Collier's Indian New Deal policies, the Bureau of Indian Affairs initiated a livestock reduction program on the Navajo Reservation to address perceived overgrazing, exacerbated by Dust Bowl-era droughts and visible soil erosion. Grokipedia BIA assessments estimated the reservation's carrying capacity at approximately 500,000 "sheep units," far below the pre-reduction livestock population exceeding one million sheep and goats combined.

The program began with voluntary sales in 1933, purchasing over 86,500 sheep using federal funds. But it escalated to compulsory measures by the mid-1930s, including on-site slaughter of animals to enforce quotas. It went against fundamental Diné values to kill sheep without sacred purpose—sheep were killed only for ceremonies, to feed the community, or in times of dire need. Most herders adamantly refused to participate.

By 1935, the program became mandatory. While the Livestock Reduction Act was meant to affect all herders and ranchers, Diné communities were disproportionately targeted compared with white ranchers. Navajo-Churro flocks plummeted from roughly one million sheep to fewer than four hundred within a single year.

The economic and cultural devastation was catastrophic—and it specifically targeted women. In traditional Diné society, women owned the sheep and controlled the products of weaving. The destruction of the flocks stripped women of their economic independence and cultural authority. It severed their connection to Spider Woman's gift and their role as the preservers of one of the most important cultural practices in Diné life.

The reservation's sheep population, which had exceeded one million, declined to under 450,000 by 1946. A tiny fraction of those remaining were Navajo-Churro. Families who had spent sixty years rebuilding their flocks after the Long Walk watched in horror as government officials slaughtered their sacred sheep. Elders who witnessed these violent killings still speak of this era. The trauma was so profound that the Diné refer to this period as "The Second Long Walk."

As Nina Toledo would later reflect: "Navajo-Churro Sheep [became] endangered and nearly extinct and caused a huge cultural shift. Economic and cultural power was taken from the hands of the Navajo women."

Ironically, despite removing as many animals as officials had planned, conservationists "failed to stem the process of desertification" on Navajo land, where "grazing and periodic drought brought a spiraling decline in the ability of the soils to produce their historical forage," resulting in "a chronically degraded range." This came at enormous cost to Navajo wealth and sovereignty.

Part IX: Near Extinction and the Fight for Survival

By the 1970s, The Livestock Conservancy estimated that fewer than 450 Churros remained. The breed faced extinction. Spider Woman's gift seemed about to disappear forever. But once again, the sheep survived because some Diné families—especially women who remembered the old ways—refused to give them up. Hidden in remote canyons and isolated villages, protected by determined shepherds, small flocks of Navajo-Churro endured.

In the 1970s, Dr. Lyle McNeal, a professor at Utah State University (later California Polytechnic State University), discovered a small flock of these sheep in California. Having read about Navajo-Churro but never seen them in person, he recognized their rarity and launched the Navajo Sheep Project to breed and protect them.

When Dr. McNeal brought sheep to the Navajo Nation, the response was overwhelming: "When I'd deliver sheep every year...it's the grandmothers—and the mothers sometimes—but the grandmothers [were] so excited to see these. Sometimes they would come up to them when I was getting gas at a trading post or something and they'd say, 'These are the real sheep!'" Diné elders—particularly the women who had preserved weaving knowledge through the darkest times—who saw the sheep told Dr. McNeal of their deep historical and cultural significance, making his mission even more urgent.

In 1986, the Navajo-Churro Sheep Association (N-CSA) was established to preserve and promote the breed through registration based on phenotypic standards developed from historic records and elder descriptions, with the first flockbook published in 1989. Since then, multiple organizations—many led and funded by Diné individuals—have worked to restore the breed.

Part X: The Sheep Today—Conservation and Cultural Continuity

Today, the Navajo-Churro remains listed as "critical" on The Livestock Conservancy's conservation priority list, but the situation has dramatically improved. Current estimates suggest there are between 6,000 and 8,000 registered Navajo-Churro sheep in the United States as of 2022, with thousands more unregistered. While this is far from the millions that once existed, it represents a remarkable recovery from near extinction.

The N-CSA lists breeders throughout the Southwest, but also in states as far-flung as Wisconsin, Washington, and Indiana, introducing the breed to younger generations of farmers, hand-spinners, weavers, and fiber artists.

The sheep have returned to historic sites that tell their story. More than fifty Navajo-Churro sheep live at Los Luceros Historic Site and Bosque Redondo Memorial at Fort Sumner Historic Site as part of ongoing breed revitalization efforts. Both sites organize regular vaccinations, veterinary care, and annual shearing.

Beginning in the late 2010s, when the flock at Bosque Redondo grew larger than staff could easily maintain, they began donating two or three sheep annually to Diné families who apply. Since 2017, more than 180 sheep have been donated, helping rebuild family flocks and restore connections—particularly for women seeking to reclaim their roles as weavers and keepers of Spider Woman's gift.

Nina Toledo, who received sheep in 2024, shared her family's story: "My older sister was telling me she also remembers that my grandmother also had sheep. Maybe like one hundred which was a lot at that time... But according to my older sister my grandma remembers losing sheep to the sheep reduction by the government—maybe like in 1935... Navajo-Churro Sheep [became] endangered and nearly extinct and caused a huge cultural shift. Economic and cultural power was taken from the hands of the Navajo women... After my parents both passed away in 1998 the sheep slowly dwindled til there were no more sheep left. Which was sad... I would like my children and grandchildren to learn all that I have learned about the Churro sheep so I will be teaching them... My parents would be so happy that I got these sheep too."

Al Henderson, from a long line of Diné shepherds, noted: "My grandmother, mother, and aunties who were rug weavers valued Churro wool the best. The wool per sheep were of better quality and when sold to the local trader it paid a handsome price."

Part XI: Understanding the Breed—Biology and Adaptation

The Navajo-Churro is considered the first domesticated sheep breed developed in North America, the result of selective breeding by Native American and Hispanic people using pastoral practices in the semi-arid mesas, valleys, and mountain landscapes of the Colorado Plateau.

Physical Characteristics: Ewes typically weigh 40-60 kg (88-132 pounds), while rams weigh 55-85 kg (121-187 pounds). The sheep are long-lived and can remain productive for up to 15 years, though they don't reach full size until well into their second year.

The breed standard calls for a bare face, bare legs, and mostly bare belly. They have light bones, narrow bodies, and long legs—adaptations that allow them to navigate rocky terrain with agility. Their clean, wool-less legs, bellies, and faces, combined with slender bodies and long, fine-boned legs, allow them to navigate through shrubs, rocky terrain, and woodlands to evade predators.

Churros come in a remarkable variety of colors—including reds, browns, black, white, and mixes—and color may change with age. Blacks, for instance, often white out with age. The color is separated into fleece color and points color (legs and head), and sheep may have different patterns such as eye patches and hip spots.

The Distinctive Wool: The Navajo-Churro possesses a dual coat with an inner layer (80% of fleece) and an outer layer of hair fibers (10-20%) and kemp (coarse, opaque fiber, less than 5%). The fleece is highly lustrous with low lanolin content. The wool may be spun directly from the raw fleece—eliminating resource-consuming washing and carding.

The yarn is lustrous, strong, and durable, making it excellent for weaving blankets, rugs, horse implements such as saddle blankets and cinches, upholstery items, belts, vests, and other outer garments. The wool is easily felted for crafts, hats, and garments. The long-stapled pelts are highly valued for use as bedding, décor, and padding on horse saddles.

Beyond Wool: The meat is lean with distinctly low fat content and a light flavor appreciated by chefs and in traditional medicine. Navajo-Churro sheep also produce milk with a high cream percentage, making it excellent for a range of dairy and soap products.

Breeding Characteristics: The breed is highly resistant to disease and requires minimal pampering to survive and prosper. Ewes have excellent mothering instincts, lambing with little assistance, producing singles, twins, and occasional triplets. They are highly attuned and vigilant animals with strong flocking instincts that help them guard their lambs.

Desert Adaptations: Certain adaptations that made Navajo-Churro perfect for desert living were ironically the same traits the U.S. government deemed undesirable, including the breed's inability to gain fat and muscle as quickly as commercial meat breeds. However, this slower growth allows them to flourish in high desert regions because their watering and grazing needs are far less than breeds like Rambouillet or Dahl sheep introduced later.

Part XII: Contemporary Significance and the Restoration of Women's Power

For the Diné, Navajo-Churro sheep are commonly known as Dibé dits'ozí, meaning "long fleeced sheep." Traditional Diné also refer to them as T'áá Dibé, "the first sheep," reflecting how Diné philosophy, spirituality, and sheep are intertwined. The sheep symbolize the Good Life—living in harmony and balance on the land.

For centuries, the pastoral lifeway with sheep and goats provided economic self-sufficiency through fiber, milk, and meat products the Diné developed and traded with other Indigenous

nations, the Spanish, and subsequently American and Mexican traders. Conservation of the Navajo-Churro sheep is essential to the continuance of the Navajo pastoral lifeway.

Many Diné practice traditional methods of wool processing, spinning, dyeing, and weaving. The yarn and textiles made from Navajo-Churro wool are world-renowned for their quality and beauty, created either for ceremonial purposes or for the global market. Women continue to be the primary keepers of this knowledge.

Fifth-generation master weavers like Barbara Teller Ornelas and Lynda Teller Pete—sisters who wrote "Spider Woman's Children: Navajo Weavers Today" (2018) and "How to Weave a Navajo Rug and Other Lessons from Spider Woman" (2020)—work to preserve and share Diné weaving traditions. These are the first books about Diné weavers written by Diné weavers since Spanish colonial contact.

The restoration of Navajo-Churro flocks represents not just the conservation of a heritage breed, but the restoration of women's economic power and cultural authority. When women receive sheep today, they are reclaiming roles that were deliberately targeted for destruction during the livestock reductions. They are reconnecting with Spider Woman's gift and reasserting their place as the keepers of one of the most important cultural practices in Diné life.

Ongoing Challenges: A 2004 genetic study found the average inbreeding level was 1.2%, with a linear increase of 0.1% per year, suggesting minimal loss of genetic diversity. However, the relatively small effective population size (92) and the transient nature of breeders led researchers to recommend developing a cryo-preserved germplasm bank as the best long-term strategy for maintaining genetic diversity.

Additionally, the breed faces non-biological threats. Navajo-Churro sheep remain part of a living culture that continues to struggle against systemic injustice. Questions of cultural ownership and authentic expertise remain important, particularly as non-Diné individuals become involved in breed conservation. The true experts and authorities on Navajo-Churro sheep remain the Diné people themselves—especially the women who have preserved weaving knowledge and sheep husbandry practices through centuries of attempted erasure.

Conclusion: The Promise Fulfilled—Spider Woman's Gift Restored

Today, when Navajo-Churro sheep graze across the Navajo Nation, when their wool shines in the sunlight, when lambs are born each spring—the Diné remember the promise of the First Sheep and honor Spider Woman's sacred gift.

The sheep returned not simply because time passed, but because the people had relearned—sometimes through unimaginable suffering—how to care for their animals with respect, gratitude, and harmony. The sheep living today are descendants of those hidden in canyons during the Long Walk, protected by families during the livestock reductions, saved by elders—particularly grandmothers and mothers—who refused to let them disappear.

When a young Diné weaver sits at a loom today, she sits at the same symbolic structure Spider Woman created—Father Sky above, Mother Earth below, with sunrays for warp sticks and lightning for healds. When she cards and spins Navajo-Churro wool, she uses techniques passed down through countless generations of women. When she leaves a spirit line in her weaving, she honors Spider Woman and invites her to inspect the work. When she creates textiles from the wool of sheep her family has raised, she participates in a relationship that connects earth and sky, past and present, the Holy People and the Diné.

The story of the Navajo-Churro demonstrates the interconnectedness of cultural practices, spiritual beliefs, gender roles, and ecological relationships. Spider Woman's gift of weaving could only be fully realized with the arrival of the sheep. The sheep could only thrive under the care of people who understood their sacred significance. The weaving tradition could only survive when women maintained their roles as keepers of both the sheep and the knowledge. And all of it—the sheep, the weaving, the women's power, the cultural identity—was deliberately targeted for destruction by policies designed to break the Diné people.

Yet all of it survived.

As the Navajo-Churro Sheep Association states: "No other sheep population in the history of the world has survived so much selective pressure with such dignity and spirit." The same could be said of the Diné people themselves, and particularly of the women who preserved Spider Woman's gift through impossible circumstances.

The story of the Navajo-Churro is ultimately a story about the resilience of Indigenous peoples, the power of cultural memory, the sacred relationships between humans and the natural world, and the strength of women as culture keepers. It demonstrates how traditional ecological knowledge, spiritual practices, and community determination can preserve both biological diversity and cultural heritage against forces designed to destroy them.

When we understand the full context of this story—from Spider Woman's journey to the four sacred mountains, to the arrival of the Spanish sheep, through the horrors of the Long Walk and livestock reductions, to today's restoration efforts—we see that it encompasses themes relevant across human cultures: the relationship between gender and cultural practice, the use of food and resource control as tools of colonization, the deliberate targeting of women's economic power as a strategy of cultural destruction, and the extraordinary resilience required to preserve identity in the face of systematic erasure.

The Navajo-Churro sheep exist today not by accident, but because of conscious choices made by individuals—mostly women—across generations who understood that these animals represented far more than wool or meat. They represented connection to the Holy People, to ancestral knowledge, to economic independence, to cultural identity, and to Spider Woman herself.

Every time a grandmother teaches a granddaughter to card wool, every time a family shears their flock in spring, every time a weaver sits at her loom and creates beauty from the wool of sheep raised with respect—Spider Woman is honored, the First Sheep are remembered, and the promise is renewed.

The sheep have returned, just as they said they would, to a people who never forgot how to welcome them with open hearts. And with them has returned not just a breed of livestock, but a way of life, a source of cultural power, and a living connection to the sacred gift Spider Woman gave long ago when the world was still new.

Critical Thinking Questions for Students:

1. **Cultural Continuity**: How do the beliefs about Spider Woman among different Indigenous cultures across the Americas suggest ancient connections or universal human understandings about creation, women's work, and the sacred nature of craft?
2. **Colonization Strategies**: Why do you think the U.S. government specifically targeted livestock during both the Long Walk and the Livestock Reduction programs? What does this tell us about the relationship between food sovereignty, economic independence, and cultural survival?
3. **Gender and Power**: How did the destruction of Navajo-Churro flocks specifically impact women's roles and power in Diné society? Why might colonizers target women's economic power as a strategy of cultural control?
4. **Ecological Knowledge**: The Navajo-Churro's traits that made them "undesirable" to the U.S. government (slow growth, less fat, lower water needs) are the same traits that made them perfectly adapted to the desert environment. What does this reveal about different value systems and approaches to animal husbandry?
5. **Biological Conservation**: With only 6,000-8,000 registered sheep today, the Navajo-Churro remains on the "critical" conservation list. What are the challenges of maintaining genetic diversity in a small population? Why might cultural conservation be as important as genetic conservation for this breed?
6. **Resistance and Resilience**: Identify the different forms of resistance in this story—from families hiding sheep in canyons during the Long Walk, to women continuing to weave at Bosque Redondo, to grandmothers preserving knowledge through the livestock reductions. What do these acts tell us about how cultures survive oppression?
7. **Contemporary Relevance**: How does understanding this history help us think about current issues related to Indigenous sovereignty, food security, cultural preservation, and the rights of Indigenous peoples to maintain traditional practices?
8. **Intersectionality**: How does this story illustrate the intersection of multiple identities and systems of oppression—including colonization, environmental control, economic exploitation, and the targeting of women's power?

For Further Exploration:

- **Research the role of women in Diné society** and how livestock reduction specifically targeted their economic and cultural power
- **Investigate the broader context of U.S. Indian policy** in the 19th and 20th centuries, including forced assimilation, boarding schools, and resource extraction
- **Examine how other Indigenous nations** have worked to preserve heritage livestock breeds and traditional practices

- **Explore the science of genetic conservation** in small livestock populations and the role of organizations like The Livestock Conservancy
- **Study the economic and cultural impact** of heritage breed restoration programs and how they contribute to food sovereignty
- **Analyze the symbolism of weaving and Spider Woman** across different Indigenous cultures and what this reveals about shared human understanding of creation and craft
- **Consider contemporary Indigenous activism** around land rights, cultural preservation, and the protection of traditional knowledge
- **Investigate the environmental history** of the Colorado Plateau and debates about grazing, land management, and desertification

Teacher's Note:

This story provides opportunities to discuss difficult historical topics including forced relocation, cultural genocide, and the systematic targeting of Indigenous women's power. Handle these topics with appropriate sensitivity while ensuring students understand the historical reality and ongoing impacts of these policies. Center Indigenous voices and perspectives, particularly those of Diné people, when discussing these topics.

The story also provides opportunities to discuss the interconnection of ecological knowledge, spiritual practices, gender roles, and cultural identity—demonstrating how Indigenous peoples maintain sophisticated, holistic understandings of their relationships with the natural world.

Finally, emphasize that this is not just a historical story—Navajo-Churro sheep are being raised today, traditional weaving continues, and Diné people are actively working to restore what was nearly destroyed. This is a story of ongoing cultural resilience and revival, not just historical tragedy.

TEACHER EXAMPLE

Indigenous Languages Vocabulary Sheet (9-12)

Directions:

- In Column 1, rewrite the word in English. In Column 2, rewrite the word in your own Native language (if available). If it's not available, you may use the Native language of a neighbor, friend, or community member.

Vocabulary Word	English Rewrite	Native: Navajo Language Rewrite
Mutton		dibé
Lamb		
Weaving		
Wool		
Loom		
Gratitude		
Generations		
Harmony		
Mesas		
Polled		

STUDENT WORKSHEET

Name: _____ **Date: _____**

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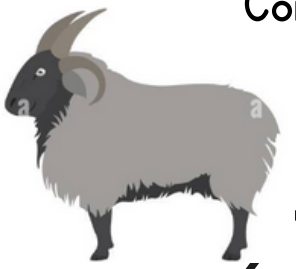
Harmony		
Mesas		
Polled		

Name: _____ Date: _____

COMPARE & CONTRAST

Compare your Navajo-Churro Sheep with another breed of your choosing:



Breed:
Navajo-Churro

Breed:
_____

Activity 2: Wool Science Worksheet: Exploring Navajo-Churro Wool

Name: _____ **Date:** _____

Part A: Understanding Fiber Structure

1. Feel and Observe the Wool

Use your senses and tools to explore the wool samples.

Observation Category	Navajo-Churro Wool	Comparison Breed Wool	What Does This Tell Us?
Texture (soft, rough?)			
Fiber Length (cm)			
Crimp (waves per inch)			
Luster (shiny or dull?)			
Lanolin Content	Low (3–5%)		Less water is needed to wash
Fiber Types Visible?	Dual coat		

Questions:

- What surprised you about the wool? _____
- Did you notice more than one type of fiber? _____

2. Lanolin Demonstration-Watch your teacher dip two wool samples in water.
What did you notice?

- Commercial wool: _____
- Navajo-Churro wool: _____

Why is low lanolin helpful in the desert?

Part B: Wool and Desert Adaptation

Let's think like scientists! Answer these questions with your group or class.

1. Why might desert sheep have less lanolin in their wool?

2. What does the outer coat do? What about the inner coat?

3. Why might looser, longer wool be better in the desert?

4. Why do you think the sheep have bare bellies and legs?

Humans and Sheep: A Helpful Partnership. Fill in the T-chart below with your ideas:

Good for Sheep in the Desert	Good for Humans in the Desert

What do we call a relationship where both sides benefit?

☐ Competition ☐ Mutualism ☐ Predation Answer: _____

Part C: Water Conservation Calculations

Directions: Use the information below to solve the water-saving challenge. Show your work!

With this scenario, solve the questions below:

- A family owns 100 Navajo-Churro Sheep.
- Each sheep produces 5 pounds of wool per year.
- Commercial wool takes 5 gallons of water per pound to wash.
- Navajo-Churro wool takes 1 gallon of water per pound (or can be spun unwashed).

1. How many total pounds of wool do the 100 sheep produce in a year?
   Answer: _____ pounds

2. How many gallons of water would it take to wash that much commercial wool?
   Answer: _____ gallons

3. How many gallons of water would it take to wash the same amount of Churro wool?
   Answer: _____ gallons

4. How many gallons of water are saved by using Churro wool instead of commercial wool?
   Answer: _____ gallons saved

5. If one person uses about 90 gallons of water per day (average), how many days of water use does this savings represent?
   Answer: _____ days of water for one person

6. Challenge Questions: If water costs $0.01 per gallon:

   a. How much money is saved by using Churro wool for one year?
   Answer: $_____

   b. How much money is saved over 10 years?
   Answer: $_____

   c. How much money is saved over 400 years of Diné sheep herding?
   Answer: $_____

Name: _____ Date: _____

Limiting Factors and Carrying Capacity Worksheet

Directions: Read each section and complete the subsequent questions.

Limiting Factors

When living conditions in an area are good, the population will generally grow. But eventually some environmental factors will cause the population to stop growing. A limiting factor is an environmental factor that causes a population to decrease.
Some limiting factors for populations are **food and water, space, and weather conditions**.

1. Every population has _____.

2. What is a limiting factor?

_____

3. List the types of limiting factors below
(use the limiting factors to label the headings of the following sections):

Limiting factors:
A.
B.
C.

4. Are the limiting factors abiotic or biotic factors? Explain why.

_____

_____

A._____

Organisms require food and water to survive. Since there isn't always an endless amount of food and water, they are limiting factors. Suppose a bear must eat 10 fish a day to survive. The river nearby provides about 100 fish a day without harming the fish population. Five bears could easily live in this area because they would only need 50 fish in total. But if there were 15 bears they would not all survive because there would not be enough food. No matter how much shelter and water there was, the population would not get larger than 10 bears for any extended period.

1. How can food and water limit population growth?

_____

_____

2. Is food a limiting factor for plants? Why or Why not?

_____

_____

B._____

Space is another limiting factor for populations. Seagulls, for example, come to nest on rocky shores. But the nesting shores get very crowded. If a pair does not find room to nest, they will not be able to add any offspring to the seagull population. So nesting space on the shore is a limiting factor for seagulls. If there were more nesting space, more seagulls would be able to nest, and the population would increase.

Space is also a limiting factor for plants. The amount of space in which a plant grows determines whether the plant can get the sunlight, water, and soil nutrients it needs. For example, many small plants sprout each year in a forest. But as they grow, the roots of those that are too close together run out of space and some of the plants will die. Branches from other trees may block the sunlight the small plants need. Some of the small plants might die, limiting the size of that plant population.

1. Space can be a limiting factor because animals may not be able to _____ to have offspring, and so the population would decrease.

2. Is space a limiting factor for plant populations? *Name two ways:*

a._____

b._____

C. _____

Weather conditions such as temperature and the amount of rainfall can also limit population growth. A cold front that comes in late spring can kill the offspring of many species of organisms, including plants, birds and mammals. A hurricane or flood can wash away nests and burrows.
Such unusual events can have long-lasting effects on population size.

1. What is one weather condition that can limit the growth of a population?

_____

2. How might a sudden cold front limit population growth of newborn offspring?

_____

Review:

Limiting factors:	How can it limit a population?
A.	
B.	
C.	

Carrying Capacity

The largest population an area can support with its resources (i.e. food, water, land) is called its carrying capacity (capacity=amount). If we refer back to the limiting factor of food and water, where the bears each need 10 fish a day to survive and the nearby river can only supply 100 fish per day, the carrying capacity of the bear's habitat would be 10 bears (any more than that would require more fish than the river could provide and the bears would starve).

A population usually stays near it's carrying capacity because of the limiting factors of a habitat. As a population first begins to grow, it will typically exhibit exponential growth, and it will continue growing until the population overshoots the carrying capacity. The population will then run out of resources and decline rapidly until it can recover and stabilize around the carrying capacity. Rabbit populations exhibited this behavior when they were first introduced into Australia in the mid1800s. At first, their numbers increased rapidly because they had plenty of vegetation to eat and no predators. The rabbits quickly ate the land bare, and their population crashed as they starved to death. However, over time, the vegetation recovered, and the rabbit population increased again. The population continues to increase and decrease, but less dramatically.

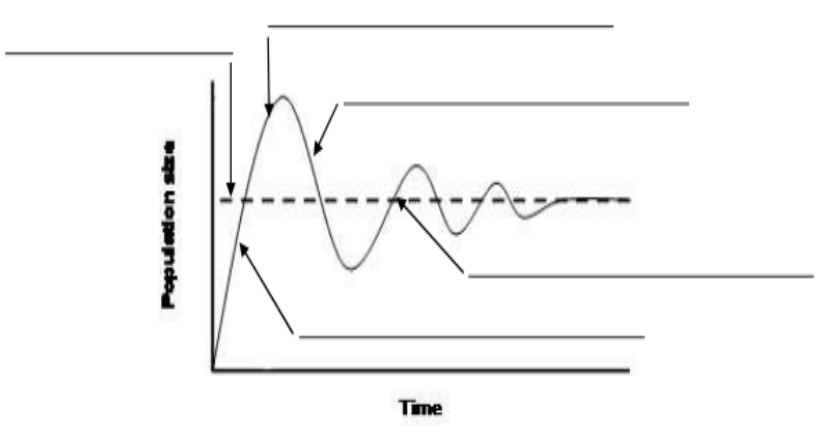
1. What is carrying capacity?

_____

2. How are limiting factors related to carrying capacity?

_____

3. Label each of the blanks on the graph with the following stages of a population responding to the carrying capacity of the ecosystem with the following terms:
1) Exponential growth;
2) Population overshoot;
3) Population decline;
4) Population recovery and stabilization; and
5) Carrying capacity
.



Name: _____ **Date:** _____

Sustainable Grazing and Range Management

Part A: Carrying Capacity-The maximum population size an environment can sustain

Carrying Capacity Formula:

Carrying capacity = (Forage production × Utilization rate) ÷ Animal consumption rate

Historical Case Study: 1933 BIA Assessment

- BIA estimated reservation carrying capacity: ~500,000 "sheep units"
- Actual livestock population: over 1 million sheep and goats
- Calculate: What percentage over carrying capacity was this?

1. _____

Watch video: Navajo Sheep Livestock Reduction Program and evaluate the table and information below:

1933 Stocking Rates (Animal Units per Acre, Weisiger (2009) and Parman (1976)):

Navajo Nation	Adjacent BLM lands (white ranchers)	Private ranches, McKinley County, NM
1 AU per 25-30 acres	1 AU per 20-25 acres	1 AU per 18-22 acres

Enforcement Actions 1933-1940:

- Navajo Nation: ~250,000 sheep forcibly reduced (documented)
- Adjacent ranches: fewer than 50 documented reduction orders
- Non-Native compliance: largely voluntary, minimal oversight

Post-Reduction Desertification (1935-1950 Soil Surveys):

- Severe erosion increased on Navajo lands despite reduction
- Adjacent lands showed similar or less improvement
- Suggests factors beyond livestock numbers (drought, breed changes, loss of traditional management)

2. If capacity was the real concern, why wasn't enforcement equal?

_____

_____

_____

Part B: Drought, Desertification, and the Dust Bowl Era

Environmental Context of the 1930s:

1930s Dust Bowl Climate Conditions

- 1930-1931 Drought begins across Great Plans and Southwest
- 1934 Most severe drought year.
- 1935-1936 Drought continues on Colorado Plateau
- 1939-1940 Drought conditions ease

Climate Data for Colorado Plateau Region (1930)

- Precipitation: 40-60% below normal annual average
- Temperature: 2-4°F above normal
- Wind erosion: Increased dramatically due to exposed soil
- Vegetation cover: Reduced by 30-50% in many areas

Natural Erosion Factors (independent of livestock):

- Wind erosion: Increased dramatically during 1930s drought across entire region
- Water erosion: Flash floods during intense storms on denuded landscapes
- Geologic factors: Colorado Plateau soils naturally susceptible to erosion (sandy, low organic matter)
- Climate: Arid environment with sparse vegetation even under ideal conditions

Erosion Severity Data (1930s-1940s):

- Soil Conservation Service surveys showed severe erosion across entire Southwest
- Both grazed and ungrazed areas experienced erosion during Dust Bowl
- Post-reduction surveys (1940s-1950s) showed continued erosion on Navajo Nation despite fewer animals

Calculate carrying capacity in <u>normal</u> conditions:

- Forage production: 1,000 lbs/acre/year
- Utilization rate: 50% (sustainable grazing takes half, leaves half)
- Sheep consumption: 1,200 lbs/year/sheep
- Carrying capacity: _____

Calculate carrying capacity in <u>drought</u> conditions:

- Forage production: 500 lbs/acre/year
- Utilization rate: 50%
- Sheep consumption: 1,200 lbs/year/year
- Carrying capacity: _____

3. How does drought affect carrying capacity?

_____

_____

4. If drought-based carrying capacity is half, would this justify permanent reduction after drought ended?

_____

_____

Part C. Comparing Sheep Breeds and Grazing Impact

Characteristic	Navajo-Churro	Rambouillet	Modern Commercial
Daily water (gallons)	0.5-1.0	1.5-2.5	2.0-3.0
Forage c onsumption (lbs/day)	3-4	4-5	4-6
Preferred vegetation	Diverse browse, forbs, sparse grass	High-quality grass	High-quality grass/grain
Hoof structure	Smaller, harder	Larger, softer	Larger, softer
Soil compaction	Lower impact	Higher impact	Higher impact

5. Would replacing Navajo-Churro with Rambouillet improve or worsen range conditions?

_____

_____

Part C: Modern Sustainable Practices and Rotational Grazing Systems

6. If 100 sheep need 50 acres of pasture space for one month, how many acres total for a 4-pasture rotation system?

_____

7. Traditional Ecological Knowledge: Diné families managed flocks numbering in thousands for centuries before the 1860s. What traditional practices might have prevented overgrazing historically? Consider: Seasonal migration patterns, sacred site protection, herd distribution

_____

_____