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Social, Cultural, and Economic Aspects of Livestock Ranching on the Santa Fe and Carson National Forests

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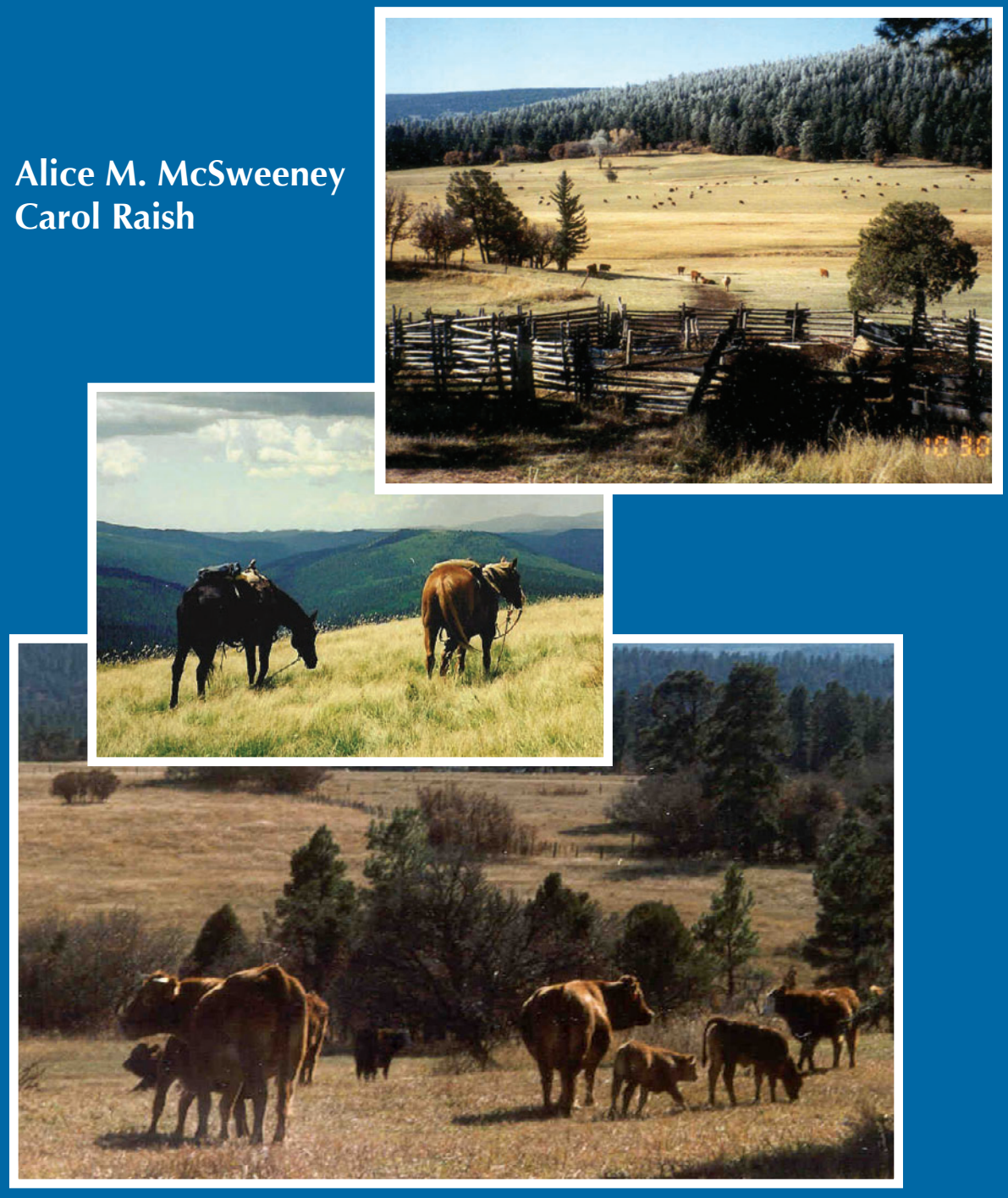

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Abstract

We examined the cultural, social, and economic aspects of livestock operations of ranchers who have Federal grazing permits (called permittees) on the Santa Fe and Carson National Forests of northern New Mexico. This study was an expansion of the 2003 pilot study and was designed to provide much-needed information concerning the culture and economic practices of the northern New Mexico region for USDA employees, policy makers, social science researchers, and the general public. The research focused on both the economic and noneconomic contributions of livestock ownership to local families and communities, and we explored ways in which ranching maintains traditional values and connects families to ancestral lands and heritage. Sense of place, attachment to land, and the value of preserving open space were common themes throughout the interviews. The importance of land and animals as means of maintaining culture and way of life figured repeatedly in permittee responses, as did the subjects of responsibility and respect for land, animals, family, and community. This report will assist agency land managers in the effective administration of forest lands by promoting greater cultural understanding of the local ranching community. It will also serve as an educational tool for the public, as many visitors and residents of New Mexico are unfamiliar with the primarily Hispanic culture and traditions of the region. Due to the history of land ownership in the region, many ranching operations rely on public lands for livestock grazing. Recognizing the importance of these small livestock operations to area communities and families is crucial to comprehending and resolving disputes over public land and resource use.

Keywords: northern New Mexico, permittees, ranching, livestock, ancestral lands, land grants, values, tradition, heritage, culture, knowledge, sense of place, *querencia*

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Dedication

To the ranching families who generously shared their stories with us...

Cover photos: Corral on the road to Gallina, New Mexico; limousin cattle near Coyote, New Mexico; grazing land on Hamilton Mesa, Santa Fe National Forest, New Mexico. Alice M. McSweeney.

Acknowledgments

We express our sincere appreciation to the ranchers we had the pleasure of meeting during this project. Their willingness to take time from busy schedules to share knowledge, reminiscences, and concerns with us made this study possible.

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Contents

Introduction

The ranching tradition in northern New Mexico and southern Colorado (fig. 1) is deeply rooted in history, with the responsibility to care for land and livestock enmeshed in family values. Livestock ownership and ranch life are powerful forces that bind communities and families. Continuing this way of life on ancestral lands preserves the culture and heritage of the past for future generations. Due to the history of land ownership in the region, many ranching operations rely on public lands for livestock grazing. A substantial number of these lands were formerly granted to or used by local communities and the ancestors of current permittees (livestock owners who graze their animals on Forest Service-managed land for a fee under permit) when the area was under Spanish, and later Mexican, control. Regulations and management decisions concerning these lands significantly affect the operation of ranching throughout the area. The sustainability of these fragile ranch economies depends on the availability of both water and productive land.

Today, controversy continues over the role of Federal lands and land management agencies in the western United States, where considerable amounts of land are now under Federal control. The State of New Mexico is no exception. In the state's six north-central counties

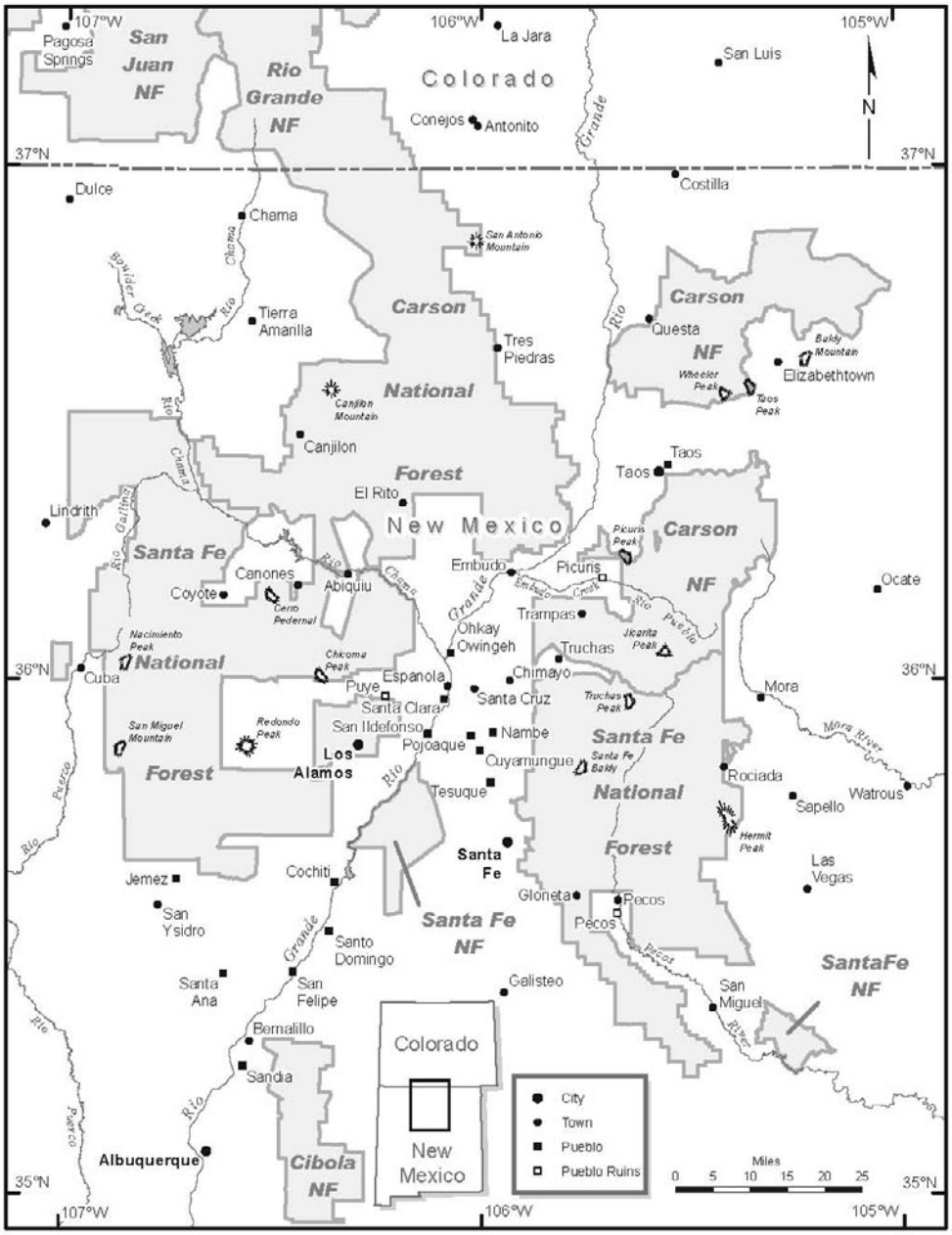

Figure 1—North-central New Mexico and the San Luis Valley, southern Colorado. Prepared by Pete A. Martinez, adapted from de Buys (1985).

(Mora, Rio Arriba, Sandoval, San Miguel, Santa Fe, and Taos), the general focus area of this study, approximately 34 percent of the land is Federally controlled. Together, the U.S. Department of the Interior Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service (FS) manage 52 percent of the land in Rio Arriba County and 53 percent in Taos County (Eastman and others 2000).

Many of the local ranchers said they concur with the sentiment expressed by Wendell Berry (1990: 157): "We don't trust our 'public servants' because we know they don't respect us. They don't respect us, as we understand, because they don't know us; they don't know our stories." We addressed this problem by exploring contemporary land management, valuation, and use issues within their cultural context among ranchers with Federal grazing permits (permittees) on National Forest lands in northern New Mexico.

Understanding the importance of livestock operations to area families and communities is crucial to comprehending and resolving disputes over public land and resource use. In this study, we examined the social, cultural, and economic aspects and contributions of the generally small livestock operations on the Santa Fe (SFNF) and Carson (CNF) National Forests of northern New Mexico. For purposes of this discussion, cattle ranches with fewer than 100 head (or ca. 135 Animal Units Yearlong—AUY) are classified as small. Those ranches with 40 head (ca. 54 AUY) or fewer are considered extra-small. The number of Animal Units (AUs) is about 1.35 times the number of mature cows on a cow/calf ranch. An AUY is the amount of forage consumed by one AU in one year (Torell and others 1998).

This study focused on gathering information on both the economic and non-economic contributions of livestock ownership to local families and communities. In addition, it explores the extent to which the use of public land for grazing and other purposes allows communities to maintain social cohesion and traditional culture. Local attitudes toward land management agencies and policies are examined. Some comparisons are also made to previously collected information from the general area and to results from our pilot study (Raish and McSweeney 2003).

Information from the pilot study was used to develop the research design and data collection methods used in the present study, which include livestock operations and grazing permittees from the remaining four ranger districts on the SFNF and two additional districts on the CNF. The 2003 work collected data from the Española Ranger District (of the SFNF) and the Canjilon Ranger District (of the CNF) (Raish and McSweeney 2003). The current data collection encompasses the Coyote, Cuba, Jemez, and Pecos/Las Vegas Districts of the SFNF and the Camino Real and Tres Piedras Districts of the CNF.

In order to understand the problems and issues of livestock grazing on public lands in New Mexico, it is necessary to explore the historical background of land valuation, use, and ownership in the area. Since contemporary problems and controversies often have their roots in the past, this orientation clarifies the role of historical practices and events in shaping current practices, issues, and disputes.

Historical Background

Many of the small livestock operations in northern New Mexico and the San Luis Valley of southern Colorado are owned by Hispanic families, regional residents since well before United States conquest in 1848. The Spanish term "Hispano" is also used in this study to refer to the people of northern New Mexico. The terms "Hispanic" and "Hispano" refer to residents of the southwestern United States who are descended from Spaniards who settled in the region prior to U.S. annexation. Some southern Colorado and a few northern New Mexico ranches are owned by Anglo families. In regional parlance, the term "Anglo" refers to any non-Hispanic of European descent. A number of permittees on the Tres Piedras Ranger District of the CNF in New Mexico have their home ranches in southern Colorado. We recognize this residence pattern and also the fact that the San Luis Valley of southern Colorado, the headwaters area of the Rio Grande, is a part of the northern Hispanic ranching tradition. However, for ease and simplicity of expression in this report, we will generally refer to the study area as "northern New Mexico."

Spanish and Mexican Periods

The Spanish introduced the first European domesticated plants and animals into the New World. When the Spaniard Juan de Oñate colonized the area in 1598, he brought European plants and animals, including cattle, sheep, goats, and horses, into the region that now comprises northern New Mexico (Baxter 1987; Hammond and Rey 1953[1]). In addition to their domesticates, the Spanish introduced new technologies and subsistence strategies into the existing Native American agricultural system. The settlers intensified indigenous farming practices, which had focused mainly on extensive

floodwater farming using water control and soil retention techniques, to more intensive irrigation agriculture from major watercourses (Earls 1985; Wozniak 1995).

During the 1600s, Pueblo Indian populations in the region declined because of warfare, introduced diseases, and famine caused by a series of severe droughts and destruction of food stores by raids from nomadic Indian groups. As the Puebloan population declined, the tribute and labor requirements of the colonists became increasingly onerous. These conditions, along with forced relocations and missionization, led to the Pueblo Revolt of 1680. During this rebellion, the vast majority of the Spanish were forced out of the Upper Rio Grande valley for 12 years. The settlers returned between 1692 and 1696 when Diego de Vargas initiated and completed the Spanish re-conquest of New Mexico (Simmons 1979). The regional ranching tradition began with Spanish colonization but did not become fully developed until after the re-conquest (Earls 1985; Simmons 1979; Wozniak 1995).

Hispano populations rose throughout the 1700s to approximately 25,000 by the later part of the century. Even so, the significant population declines of the Puebloan groups left a sufficient amount of land for both groups to farm and ranch along the main waterways and their tributaries (Simmons 1979). At that point, the economic, political, and religious systems of New Mexico were very different from the pre-revolt systems. The new generation of Spanish colonists were accomplished agriculturalists and stock raisers who generally worked their own land and maintained relatively peaceful relations with the Pueblo Indian groups as both used the land in similar ways (Simmons 1979). The descendants of these Spanish and Puebloan peoples are the Hispanic villagers and farmers of northern New Mexico today.

During the Spanish Colonial (1598 to 1821) and Mexican (1821 to 1848) periods, land ownership and use were confirmed by land grants from the Spanish Crown or Mexican government. Although there were various types of land grants, community grants, in which groups of settlers used portions of the grant in common, are of particular interest because they are a major land ownership issue in the area today (Eastman and others 1971; Harper and others 1943). Within community grants, settlers received individually owned building sites and agricultural plots of irrigated land, which were often quite small, averaging from 5 to 10 acres (Van Ness 1987). They tended to grow even smaller as they were divided for purposes of inheritance. The farmers also used the village grazing lands, timberlands, and community pastures as common lands (Eastman and others 1971). Because kinsmen often worked their fields cooperatively and herded their animals together, they were able to subsist on the small-sized, scattered agricultural plots.

Throughout the Colonial period, a subsistence, agropastoral economy based in small, scattered villages existed along the Rio Grande and its tributaries. Raids from nomadic Apache, Navajo, Ute, and Comanche limited range expansion and travel for commerce and trade (Clark 1987; Van Ness 1987). Thus, the villagers' main goal was production for local subsistence, not competition in a commercial market. The community of Cañones (Kutsche and Van Ness 1981; Van Ness 1987) provides a good example of ranching and farming in the Hispanic villages. Both animal and plant production formed parts of a mixed farming system, with sheep and goats most frequently used as food. Livestock were used for plowing, threshing, transporting produce, and fertilizing fields. The community stock were individually owned but cooperatively grazed. They were moved into the higher-elevation pastures during the spring and summer and returned to the village after the harvest to graze and manure the stubble fields.

Livestock numbers were not great for the first two centuries after the conquest. In these early years, sheep were more numerous than cattle, in part due to sale and loss of the latter to nomadic Indian groups (Gonzales 1969). In the early 1800s, the number of sheep increased as the Spanish population expanded eastward onto the plains across the Sandia and Manzano Mountains and westward from the Rio Grande Valley. This movement coincided with the growing trade in wool and sheep during the Mexican period (Eastman and others 2000).

Although concentrations of sheep and cattle near villages produced some areas of overuse during Spanish Colonial times (Baxter 1987; Scurlock 1995), herds were generally small in proportion to the land base (Rothman 1989). Thus, relatively small populations of subsistence farmers and their animals successfully used the resources of the region during the long period of Spanish control (Raish 2000).

Areas of over-utilization increased during the Mexican period as commercial sheep production increased (Scurlock 1995). However, the majority of operations remained small and subsistence oriented during this period. As an example, Rothman (1989) indicated that, throughout the 1800s, local Hispanic and Pueblo residents of the nearby valleys used the Pajarito Plateau west of Santa Fe as common property, bringing their small herds there for summer grazing. Residents also harvested from the abundant timber resources for

personal use and small-scale business ventures and planted some summer crops. The small size and non-commercial nature of these operations ensured that sufficient grass and forest resources remained for all who needed them.

American Period

Both patterns of land ownership and use changed substantially after U.S. conquest of the region during the Mexican-American War of 1846 through 1848. Under the Treaty of Guadalupe Hidalgo, the United States agreed to recognize the property rights of the resident Hispano population. To obtain valid land titles according to U.S. law, however, land grantees had to petition for title confirmation, at first through the Surveyor General to the Congress and after 1891, to the Court of Private Land Claims (Griswold del Castillo 1990). To accomplish this, claimants often had to hire an attorney, file their claim, and locate required supporting documents. As Eastman stated (1991:103), "...landholders were turned into claimants who had to incur a substantial expense to have their property respected." Since money was scarce in the subsistence economy of the region, many landholders signed over portions of their land to pay legal fees. Thus, even successful claimants lost substantial amounts of land because legal fees often accounted for one-third to one-half of the land involved (Eastman 1991). In addition, many land claims were rejected; approximately 24 percent of the acres claimed in New Mexico were confirmed compared to about 73 percent in California (Ebright 1987, discussed in Raish 2000).

The Surveyor General and the Court of Private Land Claims refused to confirm grants for various reasons. Boundaries were sometimes vague; original titles may have been lost; and communal ownership of pasture and woodlands ran counter to Nineteenth Century American concepts of private ownership (Eastman and others 1971). Often, the Court confirmed house lands and irrigated farmland but did not confirm community pastures and woodlands, also part of the grant, which had always provided the Hispano villagers with their main grazing and fuel wood resources. Lands from unconfirmed claims became part of the public domain.

Ebright (1987), Griswold del Castillo (1990), and Eastman (1991) argued that, in many cases, the U.S. Government did not honor the intent of the Treaty and related documents that land grants in the ceded territories should be recognized. The Government adopted an approach that some consider legalistic and restrictive toward land claims in New Mexico (Griswold del Castillo 1990). Although fraudulent claims were rightfully rejected, many potentially legitimate claims were also rejected, often on the basis of incomplete or inconsistent documentation. Many of these rejected claims were from residents who had occupied their land for generations (Eastman 1991). Villagers also lost considerable amounts of confirmed land because they could not pay property taxes under the American system of monetary tax payments. Unscrupulous land speculation by both Anglos and Hispanos, which was often upheld by the courts, also resulted in land loss (de Buys 1985, discussed in Raish 2000).

Land grant loss remains an issue of bitter controversy, with initiatives presented regularly to Congress recommending further study of the problem (Raish and McSweeney 2008). In a 1998 report, Meyer reviewed how the intent of the Treaty of Guadalupe Hidalgo (to protect the property and rights of the former Mexican citizens) was never implemented. He cited Michael J. Rock's statement that "it will take Congressional action to overthrow the precedents established by…court decisions and to fulfill the obligations of the United States under the Treaty of Guadalupe Hidalgo" (Meyer 1998: 85).

Meyer (1998) stated that land and water are not only part of the physical landscape but are also part of the cultural landscape. Loss of access to these resources threatens the livelihood of many Hispanos, attacking the social fabric of rural Hispano communities. He concluded that the time is right to reconsider the property guarantees of the Treaty in light of the loss of community lands, and suggested a town-by-town study of New Mexico's common lands with parameters set by a proposed Hispanic Land Claims Commission.

After various legislative proposals to address the topic of property guarantees in the Treaty, Congress did commission a study, but not the one Meyer recommended. The General Accounting Office, currently known as the Government Accountability Office (GAO), presented its report in June 2004. In brief, the Report stated "there does not appear to be a specific legal basis for relief, because the Treaty was implemented in compliance with all applicable U.S. legal requirements" (GAO Report 2004:12). However, possible Congressional actions are identified in the Report: (1) no action, (2) acknowledgement of hardships imposed, (3) re-examination of claims, (4) transfer of lands, or (5) financial payments (GAO Report 2004).

The land grant heirs and activists we interviewed (Raish and McSweeney 2008) were not pleased with the findings of the Report. Comments ranged from "a whitewash" to "a slap in the face" (Ebright 2004). Also,

not surprisingly, those interviewed by the GAO for the Report preferred the last two options if Congress were to take any action (GAO Report 2004). In response to the options proposed in the 2004 GAO Report, the New Mexico Land Grant Forum, the Mexicano Land Education and Conservation Trust, and officials of various land grants requested that Congress establish a $2.7 billion trust fund that would compensate land grants for loss of lands and resulting economic hardships. Interest from the trust would be used by land grants for land recovery, community and economic development, and educational and cultural programs. The New Mexico Land Grant Council (formed in 2007) has expanded the trust proposal to cover issues such as land restitution, adjudications, and recognition. Regarding land restitution, the Council has requested such concessions to land grants as (1) payment in lieu of taxes if their former common lands are now owned by any Federal agency; (2) first priority to former common lands disposed of in the future; (3) stewardship, access, and right to use natural resources on former common lands now under Federal management; and (4) first priority to lease rights on Federal lands that are former common lands. Regarding adjudication and recognitions, the Council has requested that Congress act on any unadjudicated or unjustly rejected land grants identified in the GAO Report. The Land Grant Council is still working for resolution of these issues (New Mexico Land Grant Council 2007). However, in 2011, a Memorandum of Understanding was signed between Forest Service Region 3 and the New Mexico Land Grant Council to serve as a framework for better cooperation (Melonas, personal communication).

Today, much of the former grant land in northern New Mexico is managed by Federal agencies, primarily the Forest Service. Many of these lands came into Federal control after being degraded in one form or another by large commercial ranching or timbering operations (generally owned by non-local corporate interests) that occurred after alienation from the original Hispano owners (Eastman and others 1971; Rothman 1989; Wildeman and Brock 2000). When the commercial operations were no longer profitable, the land was often sold to the Government. Meyer (1998) discussed how the Federal Government proved to be the biggest beneficiary of decisions reached by the Court of Private Land Claims.

Because of these Government purchases, the CNF and SFNF include all, or portions of, various former land grants that were mainly used as community range and woodland by local villages (de Buys 1985; Eastman and others 1971; Gonzales 1969). Twenty-two percent of these forests consist of confirmed Spanish and Mexican land grants with additional land coming from claimed but unconfirmed grants (de Buys 1985; Hurst 1972). Many local ranchers have grazing permits on the two Forests, but since the ranchers are often descendants of former grantees, many resent Government restrictions and payment to use land they consider part of their ancestral heritage.

The Forest Service began to address problems of land condition in the early part of the Twentieth Century. Beginning in the 1920s and accelerating from the 1940s through the 1960s, livestock ranching on the two Forests changed significantly as the economy changed and the Forest Service introduced range improvement programs, many of which were thought by local stock raisers to be harsh and poorly explained (de Buys 1985; Raish and McSweeney 2003). The number of grazing permits and the number of animals permitted continuously declined. On the CNF and SFNF, 2200 individuals held grazing permits in 1940, which was reduced to fewer than 1000 by 1970 (de Buys 1985).

With fewer animals permitted to graze on the two Forests, small-scale subsistence ranches suffered increasing limitations on herd sizes over the years. One community experienced herd reductions of 60 percent, while the ranchers of another lost permits for 1000 cattle in a period of a few years (de Buys 1985). Free-use permits, issued for animals such as milk cows and draft horses, were drastically reduced over a period of time and finally phased out between 1970 and 1980. Also during this time, there were massive declines in the numbers of sheep and goats under permit. By 1980, there were no goats on either Forest and no sheep on the Santa Fe (de Buys 1985; Van Ness 1987). For example, domestic sheep were permitted to graze the Pecos high country until 1953. After that time, the permittee was directed to convert to raising cattle (Varela, personal communication).

These significant changes came about both as a result of Forest Service direction and changing economic conditions, as the region shifted from a subsistence-based to a cash-based economy. Land losses and herd size cutbacks undoubtedly pushed many people into the cash-based economy of wage work (West 1982). Over the years, a notable trend toward permit consolidation led to fewer permittees with larger herds. Although there were definite issues of rangeland health, the livelihoods of many villagers were affected by reductions in permittee numbers, sheep permit reductions, loss of free-use permits, and restrictions on goats. This sentiment was reflected in statements from the residents of Cañones who said that Forest Service administration

favored large-scale ranching and was often not compatible with the subsistence needs of local communities (Kutsche and Van Ness 1981).

Discontent over Federal grazing policies, lost grant lands, and general economic decline in the region led to protest movements in the 1960s. The most well-known of the protest groups, the "Alianza Federal de Mercedes" (later called the "Alianza Federal de los Pueblos Libres" or simply the "Alianza"), was led by Reies López Tijerina. A series of incidents involving the group included an attempt at a so-called citizen's arrest at the courthouse in Tierra Amarilla that led to violence. There was also a takeover of the Echo Amphitheater campground that brought national attention and news coverage. Two of the main goals were to bring the problem of land grant loss to national attention and to address grievances concerning grazing management on the National Forests (deBuys 1985).

The violence of these protests caused the Forest Service to re-examine its policies in northern New Mexico, producing "The People of Northern New Mexico and the National Forests," commonly known as the "Hassell Report" (Hassell 1968). The report contained 99 recommended measures, 26 related to grazing, to improve economic and environmental conditions in the area. Some measures were implemented, and some progress was made. In addition, the Forest Service developed a special policy for managing the Forests of northern New Mexico.

The Southwestern Policy on Managing National Forest Lands in the Northern Part of New Mexico, or the Northern New Mexico Policy, was oriented to stress the importance of valuing the Hispanic and Indian cultures of the Southwest (Hurst 1972). Policy implementation, which was periodically reviewed, was based on the recommendations of the Hassell Report (1968). After the last review in 1981, the agency decided that a separate policy statement was no longer needed and that further implementation would be through regional and forest mission statements and plans (Hassell 1981). Difficulties with implementing recommendations of the policy were discussed by Raish (1997).

Problems remain in the area and many of the situations discussed in the Hassell Report (1968) have not improved. Severe poverty, disappearance of traditional life ways, and environmental degradation are still major concerns that require attention and effort. We have found that some Forest Service employees, particularly those new to the region, are unaware of the Hassell Report (1968) and the conditions that led to its development. However, recent efforts have been made to develop cultural awareness training programs, and several employees with whom we spoke discussed their commitment to ensuring that those who are new to the northern Forests receive specialized training (Raish and McSweeney 2008).

Despite these efforts, many training needs were described by both permittees and Forest Service employees who stated that the Forest Service should recognize the need of northern New Mexicans for traditional resources, such as grazing lands and firewood. As one employee commented, "We must have people here who are very connected to the land and understand northern New Mexico needs, lifestyle, culture, and traditions" (Raish and McSweeney 2008: 1054). We found that local agency employees often said they view greater participation by local communities in Forest Service decision making in a positive light. They argue for promoting local people in place and for longer tenure in leadership positions to build communication and trust between communities and the Forest Service. Some employees said they feel such changes in Forest Service culture are occurring, while others do not. Notwithstanding these improvements, misunderstandings persist between the agency and the permittees, and the potential for conflict remains.

Methods

Study Sites

This study was designed to provide much-needed information to regional agency employees, policy makers, social science researchers, and the general public concerning the culture and economic practices of the traditional ranching community. It follows the pilot study, "Economic, Social, and Cultural Aspects of Livestock Ranching on the Española and Canjilon Ranger Districts of the Santa Fe and Carson National Forests: A Pilot Study" (Raish and McSweeney 2003) that will be referred to throughout this report as "the pilot study" without citation. Two ranger districts were chosen for the pilot study—Española on the SFNF and Canjilon on the CNF. The Española Ranger District was selected first for the pilot study because it is a good example of livestock operations in northern New Mexico and, in particular, on the SFNF. After discussions with range staff, the study was broadened to include the Canjilon Ranger District of the CNF to give representation to that Forest also. These two Forests, located in north-central New Mexico, are home to a preponderance of Hispanic grazing permittees whose

families ranched in the area well before establishment of the National Forests in the early 1900s.

This research broadens the scope of the pilot study to include a wider representation of grazing permittees from the northern Forests. It follows the pilot with an emphasis on the SFNF. We invited all permittees from the remaining four districts of the Forest to participate in the project: Coyote, Cuba, Jemez, and Pecos/Las Vegas. The SFNF emphasis, as well as time, distance, and financial resources, dictated the inclusion of only two additional CNF districts to deepen the study: Camino Real and Tres Piedras. Thus, the pilot and this larger study encompass all districts of the SFNF and half of the CNF districts. Tres Piedras was selected as a comparison to the SFNF districts because the permittees include a variety of ranchers from southern Colorado with larger herds and larger private land holdings, in contrast to the generally smaller holdings of the majority of the permittees on the other districts.

Santa Fe and Carson National Forests

The incidences of multiple-permittee allotments on the SFNF and CNF, as well as permittee membership in organized grazing associations and generally small herd sizes, reflect the region's Hispanic history of community grazing (Raish 1999) and show continuing communal range use in northern New Mexico. For example, approximately 75 percent of interviewees are members of a grazing association (question 16; table 29; Appendix C) with relatively small numbers of animals per permittee. Fifteen percent of those interviewed have 10 or fewer cows; while 67 percent have 50 or fewer (question 29; table 55; Appendix C). This pattern is consistent with the northern New Mexico region, as small and extra-small cattle operations comprise 87 percent of the ranches in Rio Arriba County and 96 percent in Taos County (Eastman and others 2000).

Tables 1 and 2 present the occurrence of multiple-permittee allotments on the Forests, listing the grazing allotments by district with acreage and numbers of permittees. There are 64 active grazing allotments on the Coyote, Cuba, Jemez, and Pecos/Las Vegas Ranger Districts of the Santa Fe, ranging in size from 1372 acres to 94,352 acres. The Camino Real and Tres Piedras Districts of the Carson have 29 active grazing allotments that range from 409 acres to 43,621 acres. Numbers of permittees per allotment range from 1 to 18 on the two Forests.

On the Santa Fe, 26 (40.6 percent) allotments have 1 permittee and 38 (59.4 percent) have more than 1. Of the 38, 11 (17.2 percent) have 8 or more permittees. Numbers of permittees per allotment vary substantially among the four examined SFNF districts. Coyote had the lowest number of single-permittee allotments (2 or 18.2 percent) and the highest number with 8 or more permittees (8 or 72.7 percent). Both Cuba and Jemez had a higher rate of single-permittee allotments (9 or 47.3 percent and 5 or 50 percent, respectively). Cuba had no allotments with more than 8 permittees, and Jemez had 1 (10 percent). Pecos/Las Vegas had 10 (41.6 percent) allotments with 1 permittee and 2 (8.3 percent) with 8 or more. Excluding Coyote district, 50 percent to slightly under 60 percent of allotments had more than 1 permittee.

The selected districts from the Carson had a total of 8 (27.6 percent) allotments with 1 permittee, 21 (72.4 percent) with more than 1, and 9 (31 percent) with 8 or more. Camino Real had 3 (25 percent) single-permittee allotments and 5 (41.6 percent) with 8 or more. Tres Piedras had 5 (29.4 percent) allotments with 1 permittee and 4 (23.5 percent) with 8 or more permittees. Allotments with more than 1 permittee range from 70 percent to 75 percent.

Data Collection

Development of the Questionnaire

Following the methods of the pilot study and prior work in the region (Eastman and others 1971, 1979; Gray 1974), we collected data using a personally administered, written questionnaire (OMB 05960171) coupled with an in-depth interview (Appendix B). We referenced the pilot study assessing the research questions that guided this study as well as the methods and techniques that were used to collect the desired information (though no data from the pilot study were included in this analysis). Results from the pilot study formed the basis for evaluating and refining the research design by helping us develop new topics and questions and delete those that were inappropriate.

We met with Forest Service range personnel from both the Santa Fe and Carson National Forests and with officers of the Northern New Mexico Stockmen's Association and the New Mexico Cattle Growers Association concerning questionnaire development and administration. We consulted with locally knowledgeable permittees from both forests and with Doctors Clyde Eastman (Ret.) and John Fowler of Agricultural Economics, New Mexico State University. We also met with representatives from the New Mexico Cooperative Extension Service: Gerald Chacon, Edmund Gomez, and Ursula Rossauer. The

draft questionnaire for the pilot study (OMB 0596-0144, Ret.), which forms the basis of this study, was reviewed by Forest Service range personnel from the two Forests and the Southwestern Regional Office in Albuquerque.

Consultation with expert researchers in the field, as well as published information on prior research and information-gathering strategies, were used to assess content and face validity of the questionnaire questions (Babbie 1990, 1995; Eastman and Gray 1987; Eastman and others 1971; Eastman and others 1979; Fowler and others 1994; Liefer 1970). Eastman and Fowler reviewed a draft of the pilot questionnaire and suggested revisions, which were made. With their permission, relevant questions from prior surveys undertaken in their research were incorporated into the present questionnaire. Dr. Don Case, Forest Range, Wildlife, Fish, Soil, Air, and Water Staff Officer (retired) on the Carson National Forest, who holds a Ph.D. in Rural Sociology, also reviewed the questionnaire. In addition, other Forest Service range personnel examined and commented on the instrument.[1]

Many of the questions in the present questionnaire were used in prior studies and proved useful and reliable (Babbie 1990, 1995; Eastman and others 1971, 1979; Fowler and others 1994; Liefer 1970). The pilot study was used to assess the clarity and internal consistency of the questionnaire questions, as well as their relevance and complexity (Babbie 1990, 1995).

The survey questions were grouped to elicit the following categories of information:

a. Information on the permittee and his/her family.

b. Information on the livestock operation.

c. Contribution of the livestock operation to the household economy.

d. Contribution of the livestock operation to maintaining the cultural and traditional values of the family.

e. Contribution of the livestock operation to the family's participation in the social network of the community.

The questionnaire consisted of 46 questions divided into four sections, plus 11 open-ended discussion topics. Two sections requested demographic information and descriptive information on livestock operations. Questions on age, education, employment, primary language spoken in the household, years of residence in the area, and the participation of children/grandchildren in the ranch operation provided demographic data. Questions concerning the number of years the permittee and his/her family have owned livestock and have had Forest Service or Bureau of Land Management grazing permits provided information on livestock operations. Other questions focused on who influenced the rancher to enter the business, reasons for cattle and sheep breed selection, and the number and types of animals owned. Local forage plants and vegetation changes over time were discussed. The section also dealt with costs in terms of both money and time.

In a third section, we reviewed the benefits of owning livestock with questions focused on the economic contribution of the livestock to family income. In addition, use of the animals and their by-products for household consumption and exchange with relatives and neighbors was addressed. General family goals and goals for the ranch operation were also covered in these questions. The questions dealing with family goals asked respondents to prioritize statements concerning increasing family income, increasing the quality of life, maintaining traditional lifestyles and values, and gaining personal satisfaction from livestock ownership. Another question asked respondents to prioritize family goals for the livestock operation, such as making more money from the operation, increasing the family's quality of life related to ranching, avoiding being forced out of ranching, and improving the livestock operation by purchasing more land, better equipment, and more animals. The remaining questions emphasized cultural and social contributions of livestock ownership, including community activities and classes related to owning livestock, the social and business activities that result from livestock ownership, and whether a permittee grazes his/her cattle with the herds owned by relatives or neighbors or both.

The final portion of the questionnaire contained discussion/interview topics that prompted respondents to describe their views on a variety of topics, including feelings about land and livestock, teaching children about their heritage, working with the Forest Service, and preparing Forest Service employees to work in northern New Mexico. The ranchers were asked to share their knowledge concerning working with land and livestock and describe their responsibility and

[1] Other Forest Service range personnel examined and commented on the instrument: David Stewart, Director, Rangeland Management, Southwestern Region; Jerry Elson, Range and Wildlife Staff Officer (Ret.), Santa Fe National Forest; David Manzanares, Range and Watershed Staff, Española Ranger District, Santa Fe National Forest (currently with the Natural Resources Conservation Service); and Cipriano Maez, Range Technician (Ret.), Canjilon Ranger District, Carson National Forest.

relationship to the land. A question on land ownership elicited views on selling land for non-agricultural uses or to non-locals.

The 11 discussion, or personal interview, topics in the final section constituted an informal, semi-structured, more ethnographically oriented portion of the study (Carroll and others 2009; Spradley 1979). The topics were designed to allow respondents to present their own views, feelings, and problems. Respondents could provide other information if they wished, focus on only one or two questions, or skip a question or parts of a question. None of the responses to these questions was examined using statistical techniques; responses were not used in a formal attitude survey or assessment. These questions were intended to give a personalized picture of the ranchers and their varying views and concerns, serving as a vital complement to the more quantitatively oriented portions of the questionnaire.

Questionnaire Administration

Because all permittees from the selected districts on the two Forests were offered the opportunity to participate in the larger study, no sampling design was implemented. Participation in the project was completely voluntary. The questionnaire administration and interviewing process was carried out during winter and spring of 2004, 2005, and 2006 prior to the busier summer/fall ranching season. Because of scheduling issues, some permittees from Tres Piedras, who live in southern Colorado, were interviewed in summer, 2005. Before administering the questionnaire, Raish and McSweeney gave presentations on the pilot study publication and discussed the larger ranching project to be offered on the Santa Fe and Carson National Forests to groups of permittees at their Annual Allotment Meetings during February, March, and April of 2004 and 2005. In 2004, presentations were made at 25 meetings. In 2005, 19 presentations were made. We answered questions on the project and provided copies of the pilot study publication so that the ranchers could have an understanding of our work and make an informed decision concerning their participation in the project. These sessions were designed to build rapport and increase participation in the study. From discussions with the permittees, it appeared the published pilot study boosted confidence in our work and lent credibility to the current study. We had a total participation rate of 67 percent (238 out of 356 permittees) from the six districts in this study.

Before beginning data collection, McSweeney and Raish mailed each permittee a cover letter (Appendix A) in English and Spanish explaining the project along with a copy of the questionnaire (Appendix B) so that prospective participants would have an opportunity to review it. We also included a copy of the pilot study as background information. Nearly half (49.8 percent) of the interviewees affirmed that they read the report (final interview question; table 118; Appendix C). The review questionnaire is in English, but our letter states that the questionnaire is available in Spanish. Each permittee was called to determine if he/she wished to participate in the project. We scheduled interviews by district; the time and place of each interview was scheduled for the convenience of the permittee. We chose to personally administer the questionnaire in order to maximize response rate and clarify any questions respondents might find confusing. Prior discussions with community members and Forest Service staff, as well as experience with conducting the pilot study, indicated that response to a mailed questionnaire would probably be extremely low.

In order to ensure that questionnaire administration and question clarification were conducted in a similar manner, McSweeney and Raish administered the questionnaire and conducted the interviews together during the first months of interviewing in winter/spring 2004. We used this strategy to minimize possible problems caused by different interviewers interpreting or asking questions in different ways, which might lead to bias in responses. Remaining interviews were conducted either by Raish or McSweeney. The entire questionnaire and interview process generally lasted from 1.5 to 2.5 hours. The questionnaire was filled out by the interviewer and detailed notes were taken; interviews were also taped when approved by the participant.

The following discussion of ranch life is based on the information we received from those that participated in the study and does not represent the views of any other permittees. It should be noted, however, that almost 69 percent (68.8 percent) of the permittees from the four targeted districts of the Santa Fe participated in the study, and about 66 percent (65.6 percent) of the permittees from the two Carson districts took part in the project (table 3). Non-respondents included persons who declined to participate for the following reasons: conflicting ranch responsibilities, second job schedules, family commitments and emergencies, or lack of interest in the project. A few did not have working telephone numbers, and we were unable to reach some after several attempts during varying times of day and on varying days, including week days and weekends. We did not limit our scheduling calls to work day hours, but generally made our calls in the evening

when potential respondents were more likely to be at home. Our attendance at grazing association meetings and discussions with district range staff indicated no pattern of differences between those who participated in our project and those who did not.

Data Entry and Analysis

All of the interview notes from the discussion topics taken by both authors were reviewed in detail by McSweeney, with relevant portions transcribed and entered into the computer. Selected quotations most representative of the topics were recorded for later use in the text (Carroll and others 2009). No names were entered with the interview data or questionnaire responses to preserve the anonymity of the respondents. We strove to include clarifications and additional information provided by the ranchers during questionnaire administration. McSweeney coded all responses and entered them into the database. Although only one researcher coded all responses and performed all data entry, variability and errors can occur as the data recording process proceeds. Thus, Raish recoded 7 questionnaires from a grab sample and McSweeney recoded 12 (2 from each district, with 1 from early interviews and 1 from later interviews on that district) for a total of 19 or 8 percent (7.98 percent). The recoding identified 7 of the 128 variables, derived from the 46 questions, with coding problems on one or more of the sampled questionnaires. These problem variables were re-examined on all questionnaires. In addition, all data entries were proofed for typographical errors and other data entry mistakes of this nature. Complex questions that are difficult to interpret (e.g., descriptions of the ways in which animals are lost throughout the year), but do not represent coding errors, are discussed under the appropriate topic.

The 46 questions cover attitudes and values as well as direct descriptive and demographic information. Responses derived from the interview topics provide a background for issues and concerns, presenting the kind of personal, although anonymous, information that lends credence, reality, and a human face to the more "numbers-oriented" data gathered from the questionnaire. The 46 questions and the discussion topics are identified by their numbers as they appear throughout this report.

The demographic data, information on livestock operations, and descriptions of the economic, social, and cultural contributions of livestock operations derived from this study are summarized using basic descriptive statistics. These include percentages of occurrence for the discrete variables (rounded to the nearest whole number within the text), with frequencies and measures of central tendency and dispersion presented for the continuous variables. Data tables containing this information are located in Appendix C. Comparisons between selected responses from this study and those from earlier studies are made to assess possible changes in the role of livestock operations over time.

Prior Research

A considerable body of work provided a valuable framework for assessing and understanding the cultural, social, and economic role of livestock operations in the communities of the north. Our pilot study is part of that framework. Both McSweeney (1995) and Atencio (2001) have interviewed ranchers concerning their views and attitudes about the ranching way of life and its role in maintaining traditional culture and heritage. Anthropological community studies (e.g., Kutsche and Van Ness 1981), land grant studies (e.g., Briggs and Van Ness 1987), and specific studies of livestock operations (e.g., Eastman and Gray 1987; Fowler and others 1994) have also been undertaken.

Since the 1970s, there has been increasing research on land grants and land grant problems in New Mexico. The aforementioned works describe land grant history, examine the role of community grant lands in village subsistence practices, and explore the economic effects of land grant loss. A summary discussion of land grant studies ordered by legal, historical, anthropological, or political orientation is given in Briggs and Van Ness (1987). Raish and McSweeney (2008) recently undertook a specific study of land grants and the Forest Service. These types of studies provide the necessary background for understanding public land use disputes, given that much of the Federal land is former grant land.

Various works (discussed in Eastman and others 2000) describe contemporary community organization, traditional culture, farming, and stock raising in north central New Mexico, including the ways in which communities have responded to changing Government and patterns of land ownership (Gonzales 1969; Knowlton 1961, 1967; Kutsche 1983; Sanchez 1940; Swadesh 1974; Van Ness 1976, 1987). Leonard and Loomis (1941) on El Cerrito and Kutsche and Van Ness (1981) on Cañones are excellent community-specific studies. Forrest (1989) examined the effects of Depression Era and New Deal programs on the Hispanic villages of the area. Part II of Weigle's 1975 reprint of the 1935 Tewa

Basin Study consists of an extensive bibliography of studies on Hispanic New Mexico (Weigle 1975).

The Tewa Basin Study "...was among the first and most ambitious of government efforts to explore socio-cultural and environmental variables," providing "an indispensable foundation for any discussion of social change and rural culture in northern New Mexico" (Weigle 1975: viii). The study provides information on 32 Hispanic communities of the area during the mid-1930s, including information on farming and livestock raising.

In addition to these studies, specific studies of ranching operations have been conducted, primarily by economists, rural sociologists, and anthropologists from New Mexico State University. Their work examines the economic benefits of small farms and ranches, the attitudes and values of ranchers and farmers, and the economics of community grazing on both private and public lands (Eastman and Gray 1987; Eastman and others 1971, 1979; Fowler and others 1994; Gray 1974). State-wide agricultural economic research by Fowler and associates (Fowler and others 1994; Fowler and Torell 1985) also contains sections that pertain to the northern region of the state.

As Eastman and others (2000) discussed, contemporary ranching operations in northern New Mexico are generally small. Even in earlier years when people were more dependent upon agriculture, the majority of operations were small. Several descriptions of communities in the 1930s drawn from the Tewa Basin Study are good examples of this long-standing pattern (Weigle 1975). The village of Cundiyo was described as having 21 families with 175 cattle, ranging from 1 to 19 animals per family. Seventeen families owned a total of 31 horses. There were also 12 sheep and 3 goats in the village. Corn was the most important crop, but others included beans, chili, squash, and fruit. Each owner worked his own land with neighbors cleaning irrigation ditches together and helping each other during planting, harvesting, and house building. No one hired outside help (Weigle 1975, discussed in Eastman and others 2000).

During the Tewa Basin Study (Weigle 1975), the village of El Rito comprised 210 families. The average farm had 8 acres with sizes ranging from 2 to 71 acres. Main crops were beans, wheat, and alfalfa. According to the study, the farmers and ranchers had more range for livestock than other communities in the area using both private grant land and permits on the Carson National Forest. Villagers owned 607 head of cattle and 500 horses. The largest herd numbered 78 cattle and 8 horses, with the average family having 1 team of horses and 3 head of cattle. Three ranchers had a total of 3260 sheep, and one family owned 300 goats. The sheep grazed part of the year on the Forest, while the goats ranged yearlong on the private grant land (Weigle 1975, discussed in Eastman and others 2000).

The community of Truchas was divided into three scattered groupings of dwellings consisting of around 200 families. The principal crop at the time of the Tewa Basin work was wheat, along with peas, potatoes, and beans. The farmers also cultivated substantial amounts of alfalfa and owned 200 head of cattle, 200 horses, 50 sheep, and 1100 goats. One man owned a herd of 200 goats. Cattle herds ranged from 1 to 20 with an average of 3 head. Only about 60 families owned cattle. Animals grazed on private grant land (Weigle 1975, discussed in Eastman and others 2000).

In 1967, Kutsche and Van Ness conducted ethnographic research in the village of Cañones, which at that time had 30 households. The primary crops were alfalfa and pasture, along with grain and garden vegetables. As the authors stated, "Since forage is so scarce, it is economic for landowners to devote most of their irrigated land to their livestock, which requires relatively little labor, and to spend their own time earning wages elsewhere" (Kutsche and Van Ness 1981: 36, discussed in Eastman and others 2000). Cattle were grazed under permit on the national forest during the five-and-one-half-month grazing season and were on private pasture and feed during the remainder of the year. Eighteen families had no cattle, while one had 2 cows, six had between 5 and 8, four had between 10 and 20, and one had over 20. There were also 10 sheep and 1 goat in the village, and 10 families owned 27 horses. The 1967 study showed a trend away from dependence on farm produce toward full-time outside employment combined with stock raising and a kitchen garden. This trend has increased in recent years, as demonstrated by 1980 figures that showed a higher proportion of adult males commuting to work than in previous years—four to Española and two to Los Alamos (Kutsche and Van Ness 1981).

Other research, also conducted primarily in the 1970s and 1960s on small-scale cattle operations, demonstrated that although domesticated animals were important components of household economy, most of the small operators no longer depended on their crops and animals for their full support. The operators generally had outside jobs or were retired. The function of the livestock herd was not purely economic—it was used as a partial subsistence and back-up resource and as a means of saving for hard times or special expenses. The animals also added to economic security by

providing meat no matter what the market price or the condition of family finances (Eastman and Gray 1987).

Raish and McSweeney (2003) found many of the same patterns continuing in the late 1990s and into the present day (as demonstrated by this study). Livestock operations on the Española and Canjilon Ranger Districts from the pilot study are generally small; with the few large and very small operations removed, herd sizes range from 8 to 160 with an average size of 54 animals and a median of 50. Eighty-two percent of the ranches are classed as extra-small or small with 1 to 99 head (Raish and McSweeney 2003). As noted previously, the majority of ranching operations are not full-time, with about 16 percent of the respondents reporting their primary, but not necessarily only, job as rancher/farmer. Of those, 10 percent described themselves as full-time ranchers.

In addition to the economic considerations, the animals served important social and cultural functions. The small-scale producers stressed the importance of the good quality of life that ranching provided them and their families. They spoke in terms of preserving a working relationship with the land that could be passed on with pride to their children. Owning animals was very important to them as a way of reaffirming ties to their ancestral lands and heritage. In many cases, the extra buffer that the animals provided allowed the family to stay in the ancestral, rural community and continue at least a part of the traditional lifestyle (Eastman and Gray 1987).

Theoretical Framework

Sense of Place in Northern New Mexico

Both place attachment, or sense of place, and a landscape perspective can shed light on the values and actions of northern New Mexico ranchers. These concepts help to locate the ranchers' stories in a theoretical framework of larger social actions. The following discussion of sense of place is drawn from a review by Farnum and others (2005) and is relevant to our use of the topic. The construct of sense of place was detailed by Tuan in the mid-1970s (1974, 1976, 1977), but has undergone many revisions over the years. In sense of place studies, the term "place attachment" is often used to encompass place-related concepts such as place dependence, identity, rootedness, and satisfaction (Kaltenborn 1998), stressing the human emotional bonds and attachments to certain places.

Attachment to a place can encompass the role of that place in the way a person constructs and maintains self identity (Manzo 2003; Williams 2002). Place dependence indicates personal connections based on activities that occur in a specific place or that the place can provide (Gibbons and Ruddell 1995). In their review, Farnum and others (2005) stressed the multifaceted nature of sense of place, encompassing both attachment and dependence, its multiple and evolving origins, and its emphasis on both internal and external factors.

Many authors, and certainly our research in northern New Mexico, indicate that sense of place centers on specific locales and the meanings/emotions that develop through personal or collective experience of them (Farnum and others 2005). Research has shown that places that are important to people are those that people have responsibility in shaping, that provide opportunities for desired activities, or that fit into their way of life (Gustafson 2001). Other studies have shown that place attachment develops over time as people interact with a place, developing meaning, memories, and feelings, with greater attachment among those who live closer to a site (Moore and Scott 2003).

Farnum and others (2005) reviewed the idea that people who live near a specific area (often termed "locals") may be economically dependent on that land and develop social identities and group cohesiveness related to those places (Bonaiuto and others 2002). Thus, these people are more sensitive to land-use changes or access alterations, which may impact aspects of their lives such as livelihood, social relations, recreation, family traditions, and heritage. Locals can have a greater place attachment to public lands than non-locals whose economic well-being and social institutions are not dependent on the place (Beckley 2003). In a study in Norway, Kaltenborn and Williams (2002) found that those who had lived only in the local community valued social networks, local cultural history, and local mining history more strongly than outsiders or other residents who had also lived in other places.

Research on the topic has shown that local residents often feel a special, privileged sense of place (Hawkins and Backman 1998), with a desire to educate others about the local area and its meanings and values (Stewart and others 2003). This sense of ownership can cause difficulties in decision making if outsiders and land managers think that it is the "locals" who need education. In this way, conflict and tensions can arise between newcomers and long-term residents. Wasserman and others (1998) observed that long-term residents felt that newcomers and outsiders did not appreciate the value of "their" area, were changing the local way of life, and were bringing in unwanted

values. We have heard these types of comments repeatedly from the permittees we have interviewed, as detailed in following sections.

In another study with strong implications for our work, McAvoy (2002) examined the view that varying ethnic and cultural groups have different values and priorities when it comes to place attachment. In his example, Native Americans may view place in terms of ancestral, religious, and community-based customs. Their view of a special place may embody the collective experiences of the group going back generations and defining characteristics of group identity.

The same can be said for the traditional, land-based Hispanic communities of northern and central New Mexico. As Rudolfo Anaya described, "The land belonged to the community, it was cared for, it was the Mother Earth which nurtured us. It provided firewood, grass and water for grazing animals. Over the centuries the people developed a spiritual attachment to the land" (Anaya cited in Anschuetz 2002: 7.17). In these worldviews, the group, more than the individual, has the primary importance, which differs from the dominant Euro-American view with its emphasis on the individual (McAvoy 2002). An outgrowth of this type of study moves into what is referred to as "politics of place," highlighting the struggle of a people to authorize specific meanings and privileges in certain places for their group based on prior relations to the specific place (Gieryn 2000).

Anschuetz's (2002) work with Native Americans and Hispanics is also directly relevant to our study. In one of his studies on the landscape perspective, he examined the relationship of both Native Americans and Hispanics in the Albuquerque area to special places and landscapes (Anschuetz 2002). He made some important points in his discussion of the cultural landscape concept (similar to the sense of place concept) and how the landscape approach encourages and enables consideration of the cultural-historical traditions through which people occupy and modify their community lands.

According to his discussion, culturally significant landscapes are special places that are truly integral to how people and communities sustain their cultural identity. Physical space in the environment becomes a "place" when people set down roots and acquire knowledge of its characteristics. Experience with the land, resources, communities, and individuals influences how people learn about a place and understand their relationship with the landscape (Anschuetz 2002).

When Baseball Hall of Famer Ernie Banks of the Chicago Cubs responded to the question, "Was there a point in time when you realized you'd fallen in love with baseball?", he summed up the feeling of place importance perfectly (National Public Radio 2009):

> When I first stepped into Wrigley Field in 1953…I put on the uniform, and I couldn't wait to get down and walk on the field just to see the place. I think I was the first one on the field…. This is the place I want to be…I wanted to stay there. I didn't want to leave the park. It just captured me; it just grabbed me! It said 'this is the place you need to be,' like it was talking to me, the park itself! This is your place. This is the place where you do all the things you need to do in the game. And I just fell in love with it.

Others see sense of place developing more slowly over time. As John Brinkerhoff Jackson (1994:151, 158) wrote, "Most of us…would say that a sense of place, a sense of being at home in a town or city, grows as we become accustomed to it and learn its peculiarities. It is my own belief," "that a sense of place is something that we ourselves create in the course of time. It is the result of habit or custom… we recognize that several localities have an attraction which gives us a certain indefinable sense of well-being and which we want to return to, time and again…. It is not a temporary response, for it persists and brings us back, reminding us of previous visits." "One way of defining such localities would be to say that they are cherished because they are embedded in the everyday world around us and easily accessible, but at the same time are distinct from the world…. We are refreshed and elated each time we are there…."

Anschuetz (2002) spoke of this type of place interaction and emotional ties to the land in terms of communion (Johnson 1994), stating that communion "generally characterizes the relationship between the Southwest's historic rural communities with their cultural landscapes. Given their sustained, intensive, and subsistence-based interactions with land, experiences of the region's traditional rural communities provide contexts for developing communion based on intimate historical-ecological relationship" (Anschuetz 2002:2.8; see also Levine and Merlan 1993).

"In the *acequia* [irrigation ditch] culture of the Upper Rio Grande, connections with a geographic

locale are an integral part of individual as well as collective identity. Everyone is 'from a place.' '*De dónde eres*?' ['Where are you from?']". The *acequia* of their community very likely delineates the physical boundaries of their place…" (Rivera and Glick 2002:13). According to Rivera and Glick (2002), there are about 1000 community *acequias* (irrigation ditches) in New Mexico and southern Colorado, which function as autonomous, self-governing institutions in charge of local water distribution and canal maintenance.

Sense of Place and Querencia

The idea of belonging to a place was a recurrent theme throughout our interviews with permittee ranchers. Their connection and attachment to place was present in their answers to interview questions such as length of land tenure and connection with land grants. It was especially evident in their responses to our discussion topics at the end of each interview. These commentaries abound in expressions of sense of place, apparent in descriptions of their feelings toward land and livestock, in their ways of instilling values in the children, and in their attitudes toward land ownership.

From an earlier set of interviews with northern New Mexico ranchers, McSweeney (1995) noted that while herds and land holdings varied in size, monetary return seemed to be somewhat overshadowed by the enjoyment of where and how the ranchers live and work. This sense of place transcends the delineation between private and public lands. Feeling part of a place is characteristic of those who have taken time to become familiar with and fit into their surroundings, understand the nature of the place, and learn from it.

The word "*querencia*," derived from the Spanish verb "*aquerenciarse*," means "to become fond of a place" (Spanish and English Dictionary: 476). More than a word; it is a concept that does not translate simply into English. There is something of the intangible in its use and meaning. "*Querencia, donde quieres estar*" is the place where you want to be, the place where you know how to go about the tasks of daily life, the place where you feel you belong. It is yours because you care about it; being there gives a sense of contentment and an uplifting of the spirit (McSweeney 1995).

It is the place that provides one, human or animal, with the resources needed for survival—food, water, shelter, and safety. In turn, there is a responsibility to care for such a place. *Querencia* goes beyond the boundaries of legal ownership, beyond the promise of monetary return. It implies a reciprocal, symbiotic relationship. It belongs to both the human and the animal realm, defining a special relationship that crosses the boundary between man and animal, encompassing both. Arellano (1997: 35) defined *querencia* as "that which gives us a sense of place, anchors us to the land, and makes us a unique people."

Although a specific question regarding the notion of *querencia* was not posed in this project, several ranchers used the term or referred to animal behavior patterns that fit the concept. They told us that cows have a sense of where they should be and are accustomed to staying in separate herds. They explained the importance of allowing the cows to become acclimated to an area, how the young then learn from their mothers. Animals pick places they like, "just like people." Permittees referred to this as q*uerencia*.

We asked two of the permittees who participated in the study to explain and define *querencia* as it applied to their work and experience with livestock. A rancher from the Pecos/Las Vegas district offered the following:

> Well, we work with the *Querencia* System. What is the *Querencia* System? ...Their mamas have introduced them [the calves] to the area. They know the grazing. They can get into places that you don't know existed. They can get into aspen groves. There are areas in there that are hidden, you don't know about, that you don't know, because they've been there with their mamas and their grandmothers. It's a heritage thing. And what happens is you try to keep your cows in their area. You try to keep them in a normal radius being that they don't have the physical boundaries or the fences. You go up there where you can call for your cows and they're going to come out. If not in that general area, go a few miles. People ask…, "How do you drive these cows up there?" And you don't drive them; we just follow them…. And what happens is you have other herds, and there are boundaries, and those cows don't allow those herds to go into their *querencia*. There's a territoriality; they'd clash. "Hey, what are you doing in our area?" It's something unique to this area, this management. We've been managing cows this way all our lives and our parents and grandparents and great-grandparents before us (James Atencio, Rociada, New Mexico).

The following are the thoughts of another permittee from the same district on the concept of ***querencia***, sense of place, and management of grazing animals:

> Management cannot be mechanical and superimposed on cattle…because cattle, being closer to nature than humans, know better where to graze, how to graze, how to congregate, to compare their children. They do socialize, for example, "Look, this is my baby calf!" So, obviously, they select areas where they move to during the day, at night, and different months as the season changes. They have a heightened sense of awareness of how to co-exist with the grasses, the forest, and the elements. Cattle know if they are feeling ill and know the kinds of herbs with which to treat themselves…. Animals have a brain too! They have intelligence and know better how to survive. We are not a cow! On the other hand, we have domesticated cattle to some extent and, therefore, have a responsibility to work with them…" (Antonio Medina, Cleveland, New Mexico).

In the Coyote district, we were told, "The cows have their own areas [i.e., *querencias*]… choose their areas well … [and] are used to moving according to the weather and vegetation." A permittee from the Cuba district said, "We have our own area of the allotment. The cows know the area. We have smart cows; they want to move when they need fresh grass. They won't stay where the grass is low." And in the Camino Real district, we heard that a feature of *querencia* is that it allows the animals to become accustomed to a place, to know where to find pasture and water.

Several ranchers referred to "training" the cows, a form of training that seems to stem from the rancher making use of the cow's natural behavior patterns. The rancher must learn where to place salts and to be diligent in the upkeep of waters. He shows the cows where he wants them to be and the routes to follow by repetition in his own work, his own behavior and repeated patterns. In that way, humans and cows learn to work together. Newly acquired cows can learn from those already acclimated to the place. Permittees stressed a preference toward retaining a resident herd of cattle, of keeping replacement heifers from their own herd as opposed to purchasing new ones.

Benefits to the health of the land and ease of handling livestock are suggested by many ranchers in connection with *querencia*. The cows become used to the pattern of grazing without the need for division fences. Boundaries are created through repeated patterns of foraging and are assisted by thoughtful placement of salt; the cows can anticipate the rancher's intentions. As one rancher stated, "Years back, there were no fences. The cattle went up and came back on their own; they had their *querencias*. Now there are fences and the permittees have to move the cattle." A permittee told us that new Forest Service personnel come in with ideas on rotation grazing systems that don't work in their area, as opposed to the old way where each permittee had a certain part of the allotment with cows familiar to the area.

Querencia and Rotational Grazing Systems

The subject of grazing systems emerged when permittees were asked how they might share their knowledge and experience. While many seemed comfortable with and adapted to a formal rotation system, others explained why they prefer a more open, flexible, traditional system. Their comments often arose due to problems they were experiencing from increased fencing within the allotments in conjunction with Forest Service implementation of rotation-type grazing systems (subsequently defined). A major concern with such systems stemmed from the possibility that a heavy concentration of animals would lead to over utilization of forage. Other observations suggested that frequent movement of livestock would result in increased trampling of grasses, damaged trails, angry recreationists, loss of animals, and loss of productivity. Other pitfalls attributed to rotation systems included: more fences, more gates left open, and pastures at "rest" being susceptible to trespass by unauthorized cattle and unregulated access by elk.

As discussed in Kruse and Jemison (2000), various grazing systems were defined by the New Mexico Interagency Range Committee in 1970. Summaries of two systems relevant to our study follow. "Deferred rotation" involves discontinued grazing by livestock on parts of an area to allow for plant restoration. "Rest rotation" involves discontinued grazing on portions of an area for a full year and on the other portions of the area during succeeding years. Both systems require two or more pastures and incur increased costs due to fences, maintenance, and livestock handling.

To clarify Forest Service definitions of rotational grazing, we consulted range staff from districts on the Santa Fe and Carson National Forests (Atencio; Eaton; Herrera; Lujan; Yonemoto, personal communications). While individual responses to this request provided

standard definitions, there was variation in the application of such systems from district to district. This was not surprising, as districts differ to some extent in topography, location, history, and demographics. Rotation systems were adapted according to elevation, terrain, and climate. In speaking with range staff from the various districts, we learned that deferred rotation is currently the most commonly implemented grazing system, with some rest rotation in areas where it is feasible. In range management parlance, the word "rest" indicates a full year of non-use of a certain pasture, while the word "defer" indicates a delay or suspension in the grazing schedule.

Rest rotation implies a year of non-use for one pasture within an allotment. For example, if there are three pastures in an allotment, one will not be grazed for the entire season or year while the other two are used. A rested pasture is not grazed by livestock but may still be grazed by elk, which naturally reduces the efficacy of the rest period to some extent. In addition, this particular system doesn't work well with lack of water, precipitation being a major factor in increasing forage growth during the period of rest. For these reasons, it was pointed out, permittees find rest rotation less acceptable than deferred rotation.

In deferred rotation, all pastures within an allotment are used throughout the grazing season, with one deferred at a time to allow forage species to reach a certain stage of reproduction. In an ideal system, the rancher would alternate the entry pasture each year, following sequentially with the others, and then repeat the process. This can work given uniform elevation of pastures throughout the allotment, but that is not the case on the two Forests. Due to differences in topography and elevation, only some of the pastures could serve as entry pastures. For example, grasses at higher elevations leaf out later in the growing season than those at lower elevations. The purpose of deferred rotation is to provide for plant health. Deferment of a pasture to avoid grazing during a major growth period allows the opportunity for re-growth while still grazing the pasture during the season. Timing of rotation from one pasture to the next is determined by on-the-ground range conditions.

Deferred rotation, we were told, also provides a smoother transition for the *querencia* folks. Permittees who have been accustomed to historic ways of managing their herds prefer deferment over rest, it was explained, because with the former the range is utilized at some point, whereas, when rested the range is off limits for the year. "…as long as they can use it they are fairly okay with that [the deferment] as long as we work with them on the planning" (Lujan, personal communication). To convert an allotment to a rotation system, there must be cooperation with the permittees. These systems are discussed at Annual Meetings with Forest Service personnel and are developed with the input of the permittees.

The concept of *querencia* was more familiar and acceptable to Forest personnel on some districts than on others, and the occurrence of *querencia* grazing varied widely. On some districts, *querencia* was described by range staff as "alive and well," while on others it was viewed as a thing of the past. The strength of tradition, history of an area, and type of terrain seem to have great bearing on its persistence. Range staff that were most familiar with the idea defined *querencia* grazing as putting animals in a certain place, in separate corners of an allotment or pasture. There, cows stay in their own groups, in their own *querencias*. Some allotment pastures on deferred rotation are large enough for different groups of cows to spread out into separate areas, one staffer explained. The cattle like to stay apart for the most part. We were told permittees are quick to point out that their families have grazed these mountains for hundreds of years, depending on these resources as a way of making a living, a practice handed down throughout generations (Atencio 2009b).

Ranching on the Santa Fe and Carson National Forests

Longevity of Residence and the Ranching Tradition

Our interview results demonstrate the long tenure of the study participants in the area and their depth of knowledge concerning regional land ownership and use patterns. Ninety-five percent of those with whom we spoke were born in either northern New Mexico or southern Colorado (question 1; table 1; Appendix C), and 97.4 percent of their families had been residents of the area since their grandparents' time or earlier (question 2; table 2; Appendix C). Ninety-one percent of the interviewees reported great-grandparents or even earlier relatives living in the communities of northern New Mexico, with many having ancestors in the area in the 1700s and 1600s. Some of these were actually able to report that their ancestors came in with Oñate (3.4 percent); 2.2 percent also reported Native American heritage.

Commitment to remaining in the local community is very strong among these ranchers and their families.

Many commented that they could not imagine a life without livestock; they could not imagine living in the city without animals. Several said they had passed up jobs or promotions or had gone into certain lines of work, such as teaching or local community service, to remain near their ranches and land. Yet many (91.1 percent) reported that some family member has left the community, usually for employment, education, marriage, or military service. However, of those, 49.4 percent returned home when they had the opportunity. It was important that roots, home, and family draw people back. The appeal of the small community, rural way of life, and a place to raise children near their land and heritage, away from the troubles of the city, encouraged people to return (question 3; table 3-6; Appendix C).

The tradition of ranching is also of long duration. Nearly 95 percent (94.8) of those we interviewed reported livestock ownership in their families at least from the time of their grandparents, and 72.3 percent had ancestors in the ranching business, ranging from great-grandparents back to the time of Oñate (question 24; table 47; Appendix C). Some were able to count generations of livestock ownership, and a few described it as "always" or "since the beginning." The longevity of the tradition is also demonstrated by the fact that 76.4 percent have had their Forest Service grazing permits over 50 years and/or received them from their fathers or grandfathers. Almost 52 percent (51.5) of this group had a history of grazing their animals on these lands prior to Forest Service management of the area. Just 3 percent have had their permit less than 10 years (question 26; table 50; Appendix C). Of the 59 Forest Service permittees who also have permits on Bureau of Land Management (BLM) lands, 69.5 percent have had their permits for over 50 years and/or received them from their fathers or grandfathers. Of this group, 30.5 percent had a history of grazing their animals on these lands prior to BLM management of the area (question 26a; table 51; Appendix C).

Personal and Family Portraits

Of the men and women who shared their stories, information, and concerns, 39.7 percent were 50 to 65 years old, with 37.6 percent over the age of 65. Those from 36 to 49 made up 17.3 percent of the group, while those 35 and under constituted only 4.6 percent (question 5; table 8; Appendix C). These figures demonstrate the aging population of ranchers in northern New Mexico but are somewhat deceptive in that younger family members may be waiting in the wings to carry on the family tradition. This topic is discussed in greater detail in later sections.

Northern New Mexico is historically bilingual. Of the families we interviewed, 56.7 percent use both Spanish and English in the home, 19.7 percent use Spanish as the primary language, and 21.8 percent use English as the primary language. The remainder (1.6 percent) use other combinations of languages including Jicarilla and American Sign Language (question 4; table 7; Appendix C). Many reported that Spanish was the primary or only language used within the home when they were young, but now they use both and did so when their children were growing up. The primary use of English in the public schools, as well as the prevalence of computers, television, and other media, were seen as influences.

In our discussions, the importance of a good education was stressed repeatedly by the permittees. Eighty-seven percent of the respondents have a high school education or greater (36.1 percent, high school; 28.6 percent, some college; 13.4 percent, college degree; 8.8 percent, graduate school) (question 6; table 9; Appendix C). Ninety (90.1) percent of the spouses also have a high school education or higher (41.3 percent, high school; 24.9 percent, some college; 11.7 percent, college degree; 12.2 percent, graduate school) (question 7; table 10; Appendix C).

Education was also a top priority for our interviewees with respect to their children. In fact, when responding to a question (question 46; table 117; Appendix C) concerning what gifts would benefit their children in the future, education figured heavily in their responses. Almost 43 percent (42.9) reported spending money earned from the livestock operation on college expenses for their children (question 44d; table 110; Appendix C). When asked if their children or grandchildren had continued their education after high school or hoped to do so in the future, the majority (88.8 percent) responded in the affirmative, while only 2.7 percent responded in the negative. The remainder (8.5 percent) were unsure if their children would continue their education, as the children were undecided or were too young (question 12; table 21; Appendix C). Respondents then discussed the educational interests of their children. The most prevalent categories were: agriculture, business management, education, engineering, medical/health care, and skilled trades/technical/clerical (question 12a-d; tables 22-25; Appendix C).

The Ranching Career

Respondents said they view their ranching careers as an integral part of their lives, and many consider it their primary occupation. Often, working another job is more of a necessity than a choice. There is a tendency among some agricultural economists to classify small ranching operations by value-laden terms such as "hobbyist" (e.g., Gentner and Tanaka 2002). However, one respondent said, "It's not a hobby. How can it be a hobby when a cow kicks you in the ribs? It's hard work!" Implying that these ranches are merely hobbies is offensive to many, for whom small-scale ranching is part of a long-standing tradition that maintains communities and cultural heritage. Using the classification "hobbyist" indicates ignorance of the broader social, cultural, and economic values of small-scale ranching (Barlett 1986; Eastman and others 2000).

Barlett (1986) reviewed the prevalence and historic importance of part-time farming worldwide. She is one of the first researchers to suggest that choosing part-time farming is a rational economic decision that incorporates benefits that may not be exclusively economic. In aggregate, these benefits make a substantial contribution to national well-being (Eastman and others 2000). According to the 2007 census of agriculture (www.agcensus.usda.gov), small farms are defined as those with $250,000 or less in annual sales. These farms account for 91 percent of all farms in the United States. More specific to our work, are farms with less than $10,000 in annual sales, which account for 60 percent of all U.S. farms. According to the census, operators of farms in this category typically work off of the farm (71 percent). As our work with the permittees has shown, using the terms "hobbyist" or "lifestyle farmer" in reference to these farmers/ranchers is both inaccurate and misleading. It does not encompass the role and importance of ranching in their lives or their contributions to their communities.

We asked the ranchers we interviewed if they consider themselves to be a full-time or a part-time rancher (question 8; table 11; Appendix C). This question was designed to gather information on how the rancher views himself/herself and his or her work, and was not necessarily defined in terms of hours worked or money earned. Forty-nine percent of the participants said they consider themselves full-time, while 40.1 percent consider themselves part-time ranchers. Many of our interviewees said they see themselves as ranching full time although they may indeed have another outside job. Interestingly, 10.5 percent expressed the challenge of full-time/part-time ranching by responding that they have two full-time jobs. "It depends on how you look at it; it's two jobs," said one respondent. For example, we were told it's like working two and a half jobs. It's a full-time way of life, part-time economically. The other job is part-time. One rancher said he works in Santa Fe but still has to come back to feed and irrigate—"Everything I do, I do full-time or I won't make a success of it."

Question 9 (table 12; Appendix C) asked if a person was employed outside the ranch or had been employed outside the ranch (for example, prior to retirement). Almost 14 percent (13.9) are full-time ranchers with no outside job. However, 83.2 percent of the permittees responded that they have, or at one time had, outside employment, with 2.9 percent indicating that they were self-employed at another non-ranch job. Of those with outside employment, 50.7 percent are retired from the non-ranch work, and 49.3 percent are still employed. Many of the respondents told us they only work outside the ranch as a way to supplement their incomes in order to remain in the ranching business and look forward to retirement when they can devote all of their time to the ranch and livestock. Retaining their livestock operations for their families and future generations is a common goal.

In a related question we asked, "Would you farm or ranch full-time if you could afford to do so?" (question 11; table 20; Appendix C). Almost 90 percent (88.9) of those interviewed responded in the affirmative. This view was summed up by one who quickly said, "In a heartbeat!" Of the remainder, 1.5 percent answered "probably," and 2 percent responded "yes, if there were enough money to support the family." Those who responded negatively included 4.5 percent who said "no" and 3 percent who responded "no" because they also enjoy the other career.

Of those reporting outside jobs, some work in the local community while others commute to larger urban areas. The most commonly reported categories of employment were: skilled trade/technical/clerical (33 percent), professional/scientific/managerial (12.3 percent), heavy equipment operator or mechanic/truck driver (12.3 percent), Forest Service/other Government agency (11.3 percent), business owner/manager (8.9 percent), teacher/counselor/principal/school superintendent (8.9 percent), and doctor/veterinarian (1 percent) (question 9a; table 13; Appendix C). Some have made conscious employment choices in order to remain in the local community by working in the educational system, for Government agencies,

or owning local businesses. Since finding employment in rural areas can be difficult, this choice often means sacrificing career opportunities and advancement. The ranchers reported working 40 or more hours per week off of the ranch in 86.9 percent of the cases. Those working less than 40 hours per week off of the ranch comprised 6.5 percent. Those with seasonal work or variable hours comprised 6.5 percent (question 9b; table 14; Appendix C). Of those with jobs, 50.7 percent are retired from the non-ranch employment and 48.3 percent are still employed (question 9c; table 15; Appendix C).

Question 10 (table 16; Appendix C) asked if the rancher's spouse was employed outside the ranch or had been employed outside the ranch (for example, prior to retirement). In 73.9 percent of the cases, spouses have, or at one time had, off-ranch employment; 26.1 percent do not work away from home. Of those with outside jobs, 34.4 percent are retired from the non-ranch employment and 65.6 percent are still employed. Of those having outside jobs, the most commonly reported categories of employment were: clerical/technical (26.8 percent), teacher/counselor/principal (20.3 percent), restaurant/cook (9.8 percent), health care professional (8.5 percent), professional/scientific/managerial (7.2 percent), daycare provider/homecare provider (5.2 percent), and nurse/doctor (5.2 percent). The spouses work 40 or more hours per week off the ranch in 74.8 percent of the cases. Those working less than 40 hours per week off of the ranch comprised 19.9 percent. Those with seasonal work or variable hours made up 5.3 percent (question 10; tables 17-19; Appendix C).

Overall, 60.5 percent of the ranchers who participated in this study reported receiving less than one-third of their income from the ranch operation, while only 10.3 percent reported that they are fully supported by the ranch (question 42; table 105; Appendix C). These figures confirm what studies from the 1960s and 1970s also showed—the majority of small ranching operations in the north do not fully support the family (Eastman and Gray 1987; Kutsche and Van Ness 1981). The majority of the ranchers and their spouses also work outside the home or are retired from outside jobs. Information collected by Fowler and associates in the early 1990s (Fowler and others 1994) showed that, statewide, 75 percent of extra-small and small ranches had people employed off the ranch bringing in 44 percent of family income. Thus, the trend toward off-ranch employment is statewide as well as in the north-central area.

Ranching and the Family

We began our discussions of the role of ranch life in the family by talking with the permittees about who influenced them to go into ranching (question 21; table 44; Appendix C). The greatest influence came from fathers and grandfathers for a total of 57.3 percent, while 11.8 percent referred to parents and grandparents as their inspiration. A selection of their comments included: "Grandpa's iron fist…you eat here you work;" "You can't make a living playing;" "He was teaching us to be men;" "My dad, he loved his ranch and cows;" "My dad was my best friend." A permittee from the Cuba district described his grandpa predicting that he would be the one to keep the ranch going. One remembered his grandfather as an old-time cowboy. Another from southern Colorado said his grandfather was his idol—"I liked his lifestyle." He worked with sheep and cattle and did everything on horseback. His dad was the same way. Yet another named his dad, saying, "He was a great influence; we always worked together." In paying tribute to their father and uncles, two brothers said "we automatically took the reins after they were gone."

Extended family, which includes brothers, uncles, aunts, cousins, and fathers-in-law, figured in the responses of 8.3 percent. One rancher told us that she was raised on a ranch by her uncles. Another said, "My aunt was a good cattlewoman…a good judge of cattle… [I] didn't learn enough from her." Around 17 percent (17.2) credited being "brought up with it" or "born into it" for bringing them into the ranch business. As one respondent said, "I was born a rancher. I like animals. I like horses." Another said, "It was a family thing; everybody pitched in, closeness, a gathering." Various other influences, such as neighbors and friends, an agriculture teacher, education in animal science and veterinary school, and previous employers, rounded out the total. One respondent cited his horse as an influence, saying, "There is no better thing for your brain than to get on a horse and ride. You can think and know what's going on around you."

Common responses to "At what age did you first begin working with livestock?" (question 22; table 45; Appendix C) were: "As soon as I could ride a horse, we had no choice," "as soon as I could walk or sit on a horse," and "when I first walked." Remembering back, a rancher described going to the sheep camp riding behind the saddle or on a pack saddle by age 2.5. One remembers using buckets to get on his horse when he was only 5. However, by age 8 he had a "real job"

making 25 cents per head per month to take care of cattle in the village. "As soon as they trust you to feed the hens and rabbits," you could work with the animals, he said. Another recalls caring for the chickens, ducks, cats, and dogs. Others responded with such milestones as being old enough to lift a fork of hay and feed the animals: horses, cows, pigs, chickens, and goats. "We started pretty young, as soon as [we] could carry a bucket of water," one rancher said. Another rancher said at 8 years old he fed the horses grain and helped feed the bulls; at age 9 he rode to round up the cows. By age 6, 69.6 percent of respondents were working with the family's animals, 92.4 percent by age 10.

A quarter of those we interviewed (24.5 percent) owned livestock by the time they were 6; 49 percent owned livestock by age 10, and 80 percent (80.3) were livestock owners by age 18 (question 23; table 46; Appendix C). About 20 percent (19.7) obtained their animals as adults. For example, one said he was responsible for animals by age 6 but did not purchase his cattle until he was 30.

"The ownership of animals is passed down early to new generations, with the parent often setting aside a calf or two for children, naming them in that fashion, 'this calf belongs to Alberto Jr. and is not for sale.' Pride in that ownership followed. Normally, offspring from that animal would also belong to 'Alberto Jr.' as a start-up herd, or for the 'savings account' to buy the first car, go to college, etc." (Rivera, personal communication). Some children are presented with a calf or lamb when they are born. Some have memories of very early ownership; for instance, being given a horse at the age of 2. Others considered animals their own when they were able to care for them, often barnyard animals such as chickens, rabbits, and pigs. One spoke of his first horse at age 4, and another spoke of his first goat at 5.

These animals evoke important childhood memories. A participant explained that he started with a horse of his own; he could have a cow when he understood the responsibilities of owning and caring for animals. A rancher, whose father had died when the boy was only 6, said that he had to help his mother with the work. She told him, "When you find those cows, they're yours." Some children were given or earned animals annually to build up a herd. Sometimes, they were given animals that needed extra care—orphaned lambs or a horse that was blind in one eye. Another remembered owning his own horse by age 12, a big old horse named Duchess; "I loved that horse!" he said.

We asked if children, grandchildren, nieces or nephews participate in ranching (question 13 and 14; tables 26 and 27; Appendix C). Responses referenced both young children and grown children. A classic response described a 21-month-old boy who cleans the corral with his toy backhoe, owns a real horse named Freckles, and has ridden in both round-ups. Animals, especially the horses, are a big draw for the children. Youngsters begin learning to help by riding the tractor, assisting with haying, moving cows to the allotment, feeding the horses, and working on other tasks. One dad said his 22-month-old loves to feed animals and gather eggs. Another respondent described a 3-year-old who loves riding the tractor with his grandpa and visiting the "rancho." One rancher said his grandchildren love to help with the branding, round-up time in the mountains, and, of course, horseback riding.

Several ranchers mentioned that their grown children often come back to visit and help out on the ranch. Parents value the times when their children and grandchildren can return home to help and spend time visiting as a family. Ninety-three (93.1) percent of the permittees with children or other young relatives stated that the children participate in ranching, while 67.2 percent of those with grandchildren say the children participate in ranching. In some cases, children (.4 percent) or grandchildren (22.6 percent) are too young to participate.

Question 15 (table 28; Appendix C) asked, "Do any of your children plan to continue the ranch operation?" Sixty (60.1) percent responded with an unqualified "yes" that children, grandchildren, or other young relatives would continue ranching. An additional 23.2 percent responded "probably," "possibly," or "hopefully." "Yes, they sure like it," one rancher said. A rancher cannot operate without the family. A couple said they will set up a trust to ensure continuation of the ranch by their children. A young grandson wants to be a rancher, but grandpa says be a veterinarian. One says his grandson wants to continue the ranch. Since the age of 9, the grandson has been buying his own cows and goats, already has his own brand, and is involved in Future Farmers of America (FFA). In addition, several respondents mentioned the possibility of nephews continuing the family tradition. Some know their children want to move back and hope they will be able to do so.

An interviewee said that his son is thinking of buying cattle again. One man said that when his sons retire from military service, they want to come back to the ranch. Another commented that the children have ranching on both sides of the family, so they probably will continue the lifestyle; however, he noted that it's hard to know what the children will do because of the influence of peers. Continuing in that vein, another rancher said that it's hard to know because kids are completely different now. About 17 percent (16.7) said they feel that

no young relatives will continue working on the ranch, do not think they will, or do not know if they will. A permittee said that it's hard to leave a good job and take a salary reduction. Other ranchers responded that their children would like to go into ranching, but the costs are too high, saying that ranching is a lot of work, with minimal monetary return. One respondent summed it up by saying, "I don't bring it up. The ranch is so small; the world has changed so much. I don't push it, but back them up in whatever they do. Later, if they want it, I'll help them. They always have to work, though."

Teaching the Children: Lessons on Tradition and Heritage

During our interviews, we asked, "Have you used your land and livestock to teach your children about traditional values and their heritage?" (discussion topic 2; Appendix D). "Absolutely, our whole goal is to maintain tradition and values that our grandparents have passed on to us. The work that is done on our land is a family affair (fencing, branding, moving cattle, etc.), is all done together," said a rancher. It "is a continuing tradition that we pass on, so young ones can share in the inheritance," said another.

"I took the children out with me and talked about the land and the animals."

In general, interviewees verified that they taught their children and grandchildren about heritage and values through ranch work and a close association with the land and livestock. The few who do not have children said they shared their time and knowledge with nephews, nieces, or the children of neighbors. Several sought to help less privileged children by introducing them to ranch experiences.

"You pass down the way of raising your family, father to son, not just land and animals."

Repeatedly, the words "respect" and "responsibility" were used in reference to teaching a child. Respect for the land, animals, family (especially elders), neighbors, and one's self is stressed as a necessary part of developmental learning. Likewise, responsibility to care for the land, animals, family, and community is a major component of a ranch child's home education. They were not allowed to trash the land.

"Teach them to respect the livestock and care for the animals, even a cat or dog," we heard from a rancher. "You can't shirk responsibility," explained another, "you feed before you eat; that carries over to community." A rancher said that children are taught to understand and care for animals as well as for the community. He said, "They must learn how to deal with plain old work and all the values that go with it." "You teach a lot of respect for land, people, and animals and to have responsibility…. They see the birth of a calf and watch the butchering (death) of calves. Because of this animal's life, you have meat," said another. "Children must learn the consequences of what they do…you are in control of some animal's life," a respondent told us.

"Take them along; explain how things are done…."

When asked how they teach their children, a recurring response revolved around the close association of parent and child working together. "I had them with me all the time;" it is a time of togetherness; and "they work beside us" were common responses. Children must be taught to work, ranchers said, by example and by explanation of how and why things are done in the daily rounds of chores on a ranch. Children may be given responsibility to do work on their own, but only after time spent learning the methods and reasons for what is being done from parents and grandparents. The children received instruction on how to work and the value of doing a job right. According to respondents, there is a difference between taking a job just to get paid and doing a job for the satisfaction of a job well done.

"When you have family closeness, it's something special."

"Family ties were always important factors in that a ranch is hard work but a wonderful setting to keep a family together," said one rancher. There is a bonding effect for the family brought together by the livestock. Respondents said they spent time with the children and tried to show them that people ranch for the desire to be on the land. Children learned by "watching what we did," by going out in the middle of the night to check on the calves, said a rancher. "This country grows on you…. The kids like the values and friendships of this community." It is important for children to get involved in the community. They must learn the importance of working with their neighbors, sharing, and all getting along. Land and livestock are assets that build community.

"Livestock have a lot to teach us."

Children can learn a lot from animals, we were told by respondents. "You can see the gentleness of who they are, how loving: for example, a mother cow cleaning her calf," said one rancher. Another said he taught his children to feed and care for animals, to be kind to the animals. Growing up on a ranch or farm, children learned to appreciate where milk and eggs came from, not having to go to a store. Animals have a personality; they become what you make them, a rancher explained.

"They help me with branding and feeding, see on their own how animals are dependent on people," said an interviewee. Animals should be treated properly; if a person is nice and patient with them, the animals will be patient in return. Seeing animals being born is a good education for the children. "They know the circle of life; see animals born, some die. They raise orphan lambs with a bottle. They know what it's like to see something they love pass away." They need to experience the branding, roping, the riding, etc., in harmony with the cattle work, in harmony with the land. It's important for kids to know these things and to feel it. You can tell them, but they have to feel it. Tell them how to do things and the reasons for doing them. Bring them in as soon as you can; even a three-year-old is not too young to begin to learn.

"Ranching is educational; it helps throughout life."

Many compared the benefits of practical learning with the advantages of a more formal scholastic education. Contrasting these two approaches to learning, they explained to us that, while book learning is important and necessary to a child's future, on-the-ground field work is just as important if one is to continue in the ranching business. They said they want their children to have both forms of education, to have the opportunity to attend college, and to have a variety of experiences. At the same time, there is the hope that the younger generation will return to the home ranch to share that learning and to reinforce and regenerate life in their rural communities. When his son was small, a rancher told us, he carried him on the saddle. He said he feels that children can learn a lot in school, but it is different for them to be out on open land, observing wildlife, or seeing a calf being born.

Close association with the land and animals assists in this very practical form of education. Time spent tending cattle or sheep on the grazing allotment provides an opportunity to become intimately acquainted with nature and can pique the interest and curiosity of a child as well as an adult. If they sit out there and look at birds and trees, they grow up with different values in life. "They do appreciate the earth, and I think they are very grateful. It makes for a very well-rounded child from what I have seen," said one respondent. Children appreciate the beauty of the wilderness, being out there. It's a different life. "Every time I go up there with my children, I tell them we are very fortunate to live where we do. It's a very healthy life to be up there. Kids learn."

"The most important value that exists is the love of the land and stewardship of our beautiful ranch and all nature."

Children benefit from time spent together and learn family values. They see the struggles and learn the values and discipline. In cold or snow, they are taught to ride anyway. They are taught values and self respect by ranching, tending their own livestock, and helping others. They must have respect for others while doing business. Children need to learn the importance of work and responsibility for animals and jobs that need to be done. They don't have time to get in trouble when they are out doing chores and working with the family. "While my children were growing up, they were all involved as a family in farming, ranching, milking cows, lambing sheep, calving, branding, shearing, irrigating, and operating machinery. They had to make business decisions when I was gone and they were left to operate the farm," said one rancher.

"Working with land and the animals is who you are as a person."

These answers not only reflected a rancher's way of teaching the young but also how he was taught in his own formative years by parent, grandparent, or some other adult mentor. The influence and lessons of the participants' predecessors reach out from the past as these families strive to work together on the land. Stories of the past, family history, and heritage are used to illustrate ranch ways and family values. They represent a way of reinforcing who one is, one's identity as a rancher. Children are encouraged to take pride in their work, in their heritage, and in who they are as members of the ranching community.

"I feel for each generation," a rancher said. Listening to his father, he said he realizes there are things he and his own children can never experience. "Today's culture works against you," he said. These thoughts were expressed in the following statements by various respondents: "They need to know what the past generations had to do to work the land and animals;" "If you involve them in taking care of the animals and owning the land, some will see the benefit of keeping it;" "If you make it attractive to them, they will stick to it;" "Tell them that 'no more land is being made,' so take care of it, and if you can, buy more;" "See what happens to land when the developer comes in;" " Try to teach them the importance of the land, to inculcate the idea that land is not the same as money; it is part of the family;" "Sometimes you don't know that you are teaching. Maybe years down

the road they come back and ask a question such as, 'why is the land gone from the family?'"

We asked the ranchers what they would consider valuable gifts to bequeath to children that would benefit them in the future (question 46; table 117; Appendix C).

"A legacy of tradition"… land never to be sold but passed on through the generations.

When asking this question, we explained that participants could specify tangible or intangible gifts. Many suggested combinations from both categories. Most frequent offerings were land (33. 5 percent), livestock (15.3 percent), education (31.4 percent), and a work ethic (15.3 percent). Values (family, moral, and religious) (22.9 percent) and respect and responsibility (15.3 percent) were frequently mentioned. Tradition and culture (9.7 percent) once again made an appearance as important considerations. Other suggestions included common sense and the sharing of knowledge from parent to child. Many considered continuation of their way of life (quality and enjoyment) as a benefit in the future. References to gifts of money or financial security were rare (1.7 percent). There were comments that "money doesn't buy everything," while recognizing a need for "the monetary ability to succeed." On the lighter side, one did respond with "the Baca Location," (formerly a large private ranch, now the Valles Caldera National Preserve).

Not only were land and livestock designated as gifts of choice; they were to be coupled with the gifts of knowledge and understanding: the knowledge of how a ranch works and understanding the benefits of working one's own ranch and working with animals. It is not enough merely to own such treasures; the recipient must learn to care for them and appreciate their value. A life of ranching and farming experience, lessons in the role humans play in animal's lives and vice versa, seeing animals born and prosper—these are gifts the ranchers said they deem valuable. As one rancher expressed it, he would want to leave his children with the benefit of his experience.

However, "Teach them to work!" was a frequent response. It emphasized the fact that knowing what to do with land and animals does not come automatically with the gift. How to run a ranch business and work with the animals are lessons that must be taught. Hard work was often listed along with other benefits to children. The value of work was stressed; what you put into life is what you get out of it. Learn how to do quality work and to experience the satisfaction of a job well done.

The opportunity for an education was mentioned by a third of the ranchers as beneficial to their children's future. The importance of education in the eyes of the ranchers can be reinforced by their responses to our earlier question, "Have your children continued their education or hope to do so in the future?" Although a formal education was rarely available to many of those we interviewed, many have worked diligently to provide their children with a college education. While many recognize the value of a formal education, they also stress the importance of a practical education in the business of ranching and animal husbandry, "the importance of living in harmony with the land," as one rancher referred to it.

Many of the responses fit into the category of values. It would be difficult to separate the proposed gifts, as they tend to be interwoven one with another. To help and share experiences as a family, to have faith in God, and an appreciation for the beautiful area where they live are examples of the ranchers' values. Discipline, love, and time were added to the list of gifts. More personal expressions of these gifts included "tell [the children] how important they are… show them how to fish."

Responsibility toward the animals and the value of life was considered important. Children would be admonished to care for the land, the animals, and themselves. Respect humans and animals; respect others, especially the elders. Spend time with older people. Respect the value of the land. Have love for the land and care of the animals.

Personal qualities were also suggested as beneficial gifts, including character, honesty, self respect (pride), and good citizenship. Leadership skills, independence, the ability to problem-solve, and the ability to think things through and make decisions were also mentioned. Ranchers said they advised youth to "stand up for what you believe," to have an appreciation for life, and to know what it's like to work and wait for something. "Life is a journey," said one rancher; "find a path through life" and "take time to enjoy it!"

Ranchers also spoke of "a legacy of tradition." Tradition, care of the land and *acequias* (irrigation ditches), knowledge of the way of life and culture, and ability to survive—all of these are part of a valued heritage. Uphold the tradition of the family and experience and enjoy the outdoors, ranching, and wildlife of this area. To many we interviewed, the family ranch represents a legacy for the future, the land never to be sold but passed on through the generations.

Family Goals and Values

When asked to prioritize family goals and values, 48.1 percent of the participants ranked continuing the way of life and maintaining the traditional values of their parents and grandparents as most important. Having a better quality of life and spending more time with the family was ranked number one by 41.8 percent of the group. These two choices comprise 89.9 percent of the total. Gaining personal satisfaction from managing a successful ranch business was selected as most important by 7.2 percent of those interviewed. In contrast, having more income and being able to buy more material goods was ranked as most important by only 3 percent (question 45a-d; table 116; Appendix C).

Ranching and the Community

When a community loses its memory, its members no longer know one another. How can they know one another if they have forgotten or have never learned one another's stories? If they do not know one another's stories, how can they know whether or not to trust one another? People who do not trust one another do not help one another. And this is our predicament now (Wendell Berry 1990: 157).

Community and Family Cohesion

Livestock ownership and ranching are powerful forces that bind communities and families. Almost 72 percent (71.8) of those we interviewed said they currently work their animals together, sharing responsibilities with their relatives, or did so in the past (question 19; table 42; Appendix C). The majority of the permittees (86.5 percent) work their animals together with neighbors or with other community members. Of those, 21.8 percent specified that they work primarily with other members of their grazing association. About 7 percent (7.1) answered that they help out if needed (question 20; table 43; Appendix C).

Ranchers discussed their involvement in community activities related to owning livestock in questions 16 to 18. Grazing association membership is very common in northern New Mexico, with 77.6 percent of our study participants indicating membership at some point in an association (question 16; table 29; Appendix C). Of this group, 2.1 percent are no longer members. Of those in grazing associations, 61.2 percent attend between one and five meetings, and 32.8 percent attend six or more meetings in a year (question 16a; table 30; Appendix C). Meetings include formal association meetings, Forest Service allotment meetings, and informal meetings on the allotment. Several of the ranchers are association presidents who described their responsibilities in that role. An association president checks out needed repairs, monitors grasses, pays association bills, coordinates with the Forest Service (which takes a considerable amount of time), and spends a lot of days on the allotment.

Several also mentioned involvement in other state and local ranching associations such as Northern New Mexico Stockman's Association and the New Mexico Cattle Growers' Association. Availability of agriculture-related classes or seminars varies from one area to another (question 17; table 31; Appendix C). Nearly 39 percent (38.7) responded that classes are available in their area, 6.7 percent said that occasionally classes are available, 2.1 percent indicated that classes used to be available, and 5.5 percent said none was available in the immediate area. Forty-seven percent were unaware of any agriculture-related classes or said none was available. Where classes or seminars have been presented in a nearby area, 69.6 percent have been able to attend at one time or another and 27 percent have not (question 17a: table 32; Appendix C). A few respondents mentioned the problem of time constraints, and one actually teaches the classes.

As we learned from the interviewees, many livestock-related community events draw people together and foster community cohesion (question 18; tables 33-41; Appendix C). Respondents indicated all activities in which they or family members participated, including: livestock auctions (82.7 percent); brandings (77.7 percent); rodeos (77.7 percent, of whom 2.1 percent also compete); fairs (76.1 percent); *acequia* association (57.2 percent, of whom 9.7 percent are officers); bull sales (53.4 percent); 4-H events (24.8 percent, of whom 2.5 percent are also leaders); and national, state, and local associations (18.1 percent). Other organizations and events are: sheriff's posse, horseshows, team roping, fiestas, Future Farmers of America/Future Homemakers of America, roundups/cattle drives, sheep sales, stock shows, and *matanzas* (occasions when families and neighbors gather to share in the butchering and processing of the meat).

In addition to community activities, the livestock themselves play an important role in family and community interactions. In many cases (61.5 percent), children and grandchildren receive animals for 4-H projects or to start herds (question 38; table 99; Appendix C). Many ranchers reported giving live animals, meat, or by-products to friends and neighbors (question 40; table 102; Appendix C). Sixty-five percent responded

in the affirmative, giving animals or products regularly, occasionally, or having done so in the past. A few (3.5 percent) mentioned trading or bartering these products for goods or services, a practice more common in the past. In our pilot study interviews, several respondents commented that they do not barter, preferring to sell animals and keep things on a cash basis. Around half (45.3 percent) reported donating animals for charitable purposes, such as church or school raffles or to assist a family in need (question 40a; table 103; Appendix C).

The animals provide a variety of resources to the families who raise them. Eighty-six percent of interviewees reported butchering between one and six animals (steers, heifers, calves, lambs, goats, and pigs, most commonly) for the use of the family and extended family (question 37; table 97; Appendix C). The numbers of animals butchered are generally proportional to the size of the family and number of households in the extended family. For example, answers ranged from 7 to 21 animals to be shared among 6 to 10 households. Often, these numbers consisted predominately of lambs. Those who do not butcher make up 7.6 percent of the group. The reasons for not butchering include small family size, children that are grown and moved away, and one who said he doesn't kill his own animals. Some only butcher if they have an open heifer (not pregnant) or a severely injured animal (question 37a: table 98; Appendix C).

Use of animal by-products, such as hides, wool, milk, or manure, seems to have declined in recent years (question 39; table 100: Appendix C). There were comments that respondents "used all of the above when growing up" and "way back, we used everything." The most commonly used by-product is manure (mentioned in 79 percent of the cases), followed by milk (25.4 percent), hides (14.7 percent), and wool (8.4 percent). Manure is used to fertilize gardens and fields if it is free of noxious weeds. There are several reasons for the decline in the use of other by-products. In the past, it was more common for families to have a milk cow and make butter, cheese, and cream, as several respondents told us. They commented that now there is no time for milking and maintaining a milk cow. Others said they had a milk cow when their children were young but do not have one now. Hides are still used by these ranchers in the manufacture of saddles, chaps, pack equipment, and drums. However, tanning and leather work are time consuming processes that require considerable skill. There are fewer sheep on the ranches in this study, and, as will be discussed in following sections, demand for wool is declining nationwide (question 39a: table 101; Appendix C).

The Business of Ranching

Goals of the Livestock Operation

When asked to prioritize goals for their livestock operations (question 41; table 104; Appendix C), the majority (61.4 percent) of those we interviewed ranked first "To maintain the family's quality of life that results from owning livestock (spending time outdoors, working together, keeping the children busy and out of trouble, etc.)." "To avoid being forced out of livestock ownership (the family has had livestock for generations)" ranked second (18.5 percent). "To improve the livestock operation by purchasing more land, better equipment, and more animals" ranked third. Consistent with our pilot study and earlier research (Eastman and Gray 1987; Eastman and others 2000), the last priority was "To make more money above costs each year from the livestock operation in order to increase the family's overall income and material goods."

Eastman and others (2000) described the value placed on the quality of life that ranching provides to livestock owners and their families. Eastman and Gray (1987) discussed that small-scale livestock producers have a hierarchy of goals that differ noticeably from those of large, commercial producers. These studies found quality of life was the highest-ranking goal with income being the last choice. Eastman and Gray (1987) described the benefits of small-scale cattle ownership as providing a sense of security, gaining personal satisfaction from work, and upholding family tradition. Our study confirms these values.

Ranch Finances

Virtually all of those we spoke with consider the ranch an investment, a form of savings, and a tradition. We asked respondents to select their preferred means of saving or investing money from the choices listed in question 43 (table 106; Appendix C). Eighty-four (84.4) percent of those interviewed said they wish to save or invest money by buying land in the area, improving the ranch, or doing both. Of that figure, 56.3 percent would buy more land in the area, while 19.7 percent would buy more livestock or improve the stock operation in other ways such as investing in range improvements. An additional 8.4 percent would do both. The least popular option, putting money into a savings or investment program, garnered 11.8 percent, although an additional 2.5 percent would put money into savings or investments in

combination with buying land or livestock. An additional choice was purchasing water rights to keep them in agricultural use. Another chose "hanging on to and maintaining what we have" and buying land to keep a neighbor from selling to an outsider. The effects of selling land and water rights are discussed in greater detail in following sections.

Eastman and others (2000:543) discussed use of extra-small and small ranches as both an investment and a form of savings in the following way:

> "While the ranch may produce little or even a negative operating income, the assets have a high value which is expected to increase. Most northern ranchers own their homes, land, and cattle, and these constitute a significant investment and form of savings, which often has very high value. Managed properly, operating losses often provide income tax write-offs against other income. Thus, small operators stand to benefit from a reduced tax burden while their assets increase in value."

Although livestock are not the primary means of support for the majority of families with whom we spoke, the animals do make a substantial contribution to household economy. Respondents selected all the ways in which they used money from the livestock operation. Buying more livestock and upgrading the livestock operation was indicated by 73.9 percent of respondents. Other uses of those earnings included: basic living expenses (69.3 percent); household improvements (52.4 percent); family emergencies (47.9 percent); children's college education (42.9 percent); special expenditures such as a trip (20.2 percent); and investments such as stocks, bonds, and savings accounts (20.6 percent).

Other more specifically stated uses of earnings were paying land and livestock taxes (21.4 percent); purchase and repair of equipment and facilities (8.3 percent); grazing permits (5 percent); and purchase of hay, feed, and pasture rental (5 percent). Respondents also listed expenses such as insurance and payment of loans and mortgages (question 44; tables 107-115; Appendix C).

We asked the ranchers to show how much time, labor, and money they invest in their Federal grazing allotment (Forest Service or BLM) in addition to the grazing fee during a typical year (question 31). Time was represented by days of personal labor of the permittee and helpers. Time and money invested were recorded in terms of improvements to the allotment such as fences, waters, trail repair, etc.; wages for hired herders; veterinary expenses; shoeing horses; fuel; salts; and supplements. Major one-time expenses are discussed separately. This discussion is not an account of yearly ranch expenses, but a listing of the permittee's contribution with respect to time and money involved throughout the allotted grazing season, exceptions being overlap in veterinary and shoeing expenses, which run throughout the year.

Time and Labor

"Daylight to dark to run a decent operation!"

Participants contributed many pertinent comments in the process of providing the numbers requested, some of which follow. Number one is to understand who the stewards of the land are, the ones who really work the land. People think it's an easy ride, free grazing. They don't see how much money, time, and work go into maintaining the land. No people are more interested in the sustainability of land than those who use it because they depend upon it. Permittees don't establish the stocking rate; the Forest Service does; we don't take up whatever we want [in number of cows]. People don't know the risk involved and the amount of investment, time and financial, the amount of commitment and perseverance it takes.

"Whatever it takes!"

The first part of this question (question 31a; table 86; Appendix C) asked the rancher to calculate the number of working days that he or she and various helpers spent on the allotment. These figures ranged from 3 to 1460, with a trimmed mean of 135 days (with removal of the five highest and lowest outliers) and a median of 92. Figures that are high in proportion to the number of animals may represent retired individuals who are now ranching full-time and are able to devote as much time as they wish to the animals.

A view of time spent working on the allotments is shown in the following sampling of comments. "A farmer or rancher doesn't have hours; he has days!" One rancher told us that gathering the cattle takes about 12 days for all of the family, six men plus the three women who go along to help and to cook. On the winter allotment some family member is up there 10 times per week for 30 weeks, a permittee told us. In summer, the ranchers have a rider, but the permittee is out there about 15 days of summer. It's a family deal, checking the cattle, gathering wood, picnicking, and camping by the cows. Several mentioned that their wives go with them to the allotments to help with the

cattle and the meals. A rancher remembered that when he was a little boy, he used to go by horse and wagon to Valle Grande (currently the Valles Caldera National Preserve). He spent summers there in a tent with his mother and the other children.

Allotment Expenses

The second part of this question (question 31b; table 87; Appendix C) asked the ranchers to calculate the amount of money they invest on their Federal grazing allotments, excluding the cost of the grazing fee. Improvements made on allotments become the property of the Federal government. For the most part, monetary amounts reflect the size of the individual herd. These amounts also vary between allotments and districts. One of the major difficulties for the ranchers who participated in this study was separating allotment-related expenses from their year-round ranch costs. Over 30 percent (30.7 percent) of the respondents listed various expenses but no total figure or no dollar figure. Of those who were able to provide dollar figures, amounts ranged from less than $1000 to slightly over $65,000. Over half (61.9 percent) reported $5000 or less in expenditures. The majority spent $10,000 or less (76.4 percent) in expenses associated with their allotments. Those spending between $10,000 and $25,000 comprised 18.2 percent of the group, while 5.4 percent spent $25,000 or more.

Another reason for differences in amounts invested on allotments stems from variations in the way in which the Forest Service handles improvements. On some allotments, the Forest Service provides materials and the permittee provides labor; on others, the permittee provides both. We heard many contradictory comments regarding Forest Service assistance and participation. Some said the Forest Service personnel work well with them and put in time and effort; many others commented that the Forest Service used to furnish materials and work with them but no longer do so. We asked respondents to indicate the improvements for which they are responsible. These include fences, corrals, waters, trail repair, wages for hired herders (required on some allotments), veterinary expenses, shoeing horses, fuel, salts, and supplements.

Fences, Waters, and Trail Repair

Fence repair and construction were the biggest problems reported by the permittees. Elk, snow, and falling trees damage fences on Forest Service allotments; however, repairs are the responsibility of the rancher. Steep terrain on some allotments exacerbates the problem. Many said they feel the Forest Service requires construction of unneeded interior fences. Other fence damage is caused by hunters, wood haulers, and recreationists. People from cabins next to the allotment and people with four-wheelers leave gates open, allowing cows to get out and resulting in complaints to the Forest Service. “My cows love to play golf!” commented one rancher whose allotment is near a popular golf course.

Because of the ever-present need for water, permittees expend considerable time and effort developing and maintaining waters such as springs, dirt ponds, tanks, *canoas* [troughs], drinkers, wells, pumps, and pipelines. “It’s not peaches and cream!” It costs more if water must be hauled to the livestock.

Many trail their cattle and sheep to the allotment on horseback. Trail repair requires more labor than monetary outlay. On several districts, Forest Service trails are often not cleared of deadfall early enough in the grazing season; so, permittees must clear them to bring the cattle in. Drinkers for livestock and wildlife are heavy and must be packed in and assembled. One rancher always takes horses to pack in salt and minerals, or whatever is needed, and to pack out trash left by recreationists. There is “a lot of [trash]…even pots and pans,” he said.

Salts and Supplements

Salt and supplements can be considerable expenses for the ranchers. They use salting for cattle distribution—moving them to prevent overgrazing. Salt and mineral blocks are provided for nutrition and used as a tool to keep cows from high pressure or restricted areas, especially in the vicinity of streams and springs. One respondent commented that salt doesn’t last because the elk eat most of it.

Shoeing

“Horses are high-maintenance animals.” Horses that are used frequently or on rough terrain must be shod. Frequency and cost of shoeing varies according to number of horses and whether the work is done by a farrier or the rancher. In the latter case, this expense has been calculated by hours of work and materials.

Wages for Hired Herder/Rider

Some allotments require a hired herder who stays with the cattle throughout the entire grazing season. Many remote allotments without cross fencing require the supervision of a herder. This person spends the summer on the allotment with the cows caring for their health and herding them from location to location as needed. Permittees on these allotments also spend time at the cow camp so they are able to check

their cows personally. "My cows are my livelihood; and I'll watch them!" said one rancher. The large sheep operations tend to have hired herders for protection and proper distribution of the sheep.

Veterinary Expenses

"[It's] not just the vet," this also includes the cost of medicines and vaccines administered by the rancher. The veterinarian is called for severe injuries or illness, but the rancher must do much of the doctoring himself. Cows, we were told, will get sick in the first 10 days after transport, so the permittee must go to the allotment every other day to check on them. Vaccination, dehorning, and castration are usually done by the rancher and helpers as is the doctoring of livestock on the allotment and assisting with calving and lambing. These medical expenses can be formidable, especially when accidents and illnesses occur.

Fuel

As we learned, livestock operations spend large amounts of money on fuel. Gasoline is needed for trucks to transport animals to and from the allotments, travel to and from the allotment to check on the livestock, and/or for operating water pumps and hauling water to allotments that do not have water available. Even though many with whom we spoke work their livestock on horseback on the allotment, they still must trailer the horses to the allotment area because of long distances from home.

Major One-Time Expenses

The third part of question 31 asked for an account of any major, one-time expenses on the allotment in recent years. These one-time costs ranged from $150 to $50,000. Considering the diversity in herd sizes owned by the various permittees, the amount of expense incurred is relative to the extent of the individual ranch. Major expenses are related to the development, maintenance, and replacement of critical water resources and infrastructure such as fences and corrals. It is often necessary to hire extra help for such projects, which adds to the cost. In addition, there can be loss of income in the form of wages if the permittee is obliged to take time out from off-ranch employment to complete a project.

Another type of major expense was attributed to alterations in management of livestock or numbers of animals. Permittees spoke of expenses in extra transportation and feeding of livestock caused by requirements to move them off allotments and onto home range or leased pasture during times of severe drought (most notably in the summer of 2002). This often meant the purchase of hay or loss of production on their hay fields during summer months. Investment in new permits and animals was also mentioned, and the loss of animals to fire while pastured on remote allotments qualifies as a most unfortunate example of a major one-time expense.

Livestock and the Ranch

Seasonal Ranch Schedule

We asked our participants to briefly describe their work schedule throughout the year to give us an idea of the time and effort that goes into ranching (question 27; Appendix D). They responded in a variety of ways: by season (often beginning with the season of the interview); by months or groups of months; by events such as calving, branding, and transport of livestock; or by a general statement of activities throughout the year, the latter providing some excellent pictures of ranch life. There were several descriptions of ranching while working an "outside" or second job. Family time was often included in the responses. A compilation of ranch activities and daily chores are listed here by season, in addition to a selection of narratives that paint a picture of ranch work throughout the year.

"Ranching is year-round work."

Beginning in spring, there are fences to repair and *acequias* to be cleaned. Early spring calving occurs primarily between February and April, followed by branding. Heading into summer, there is irrigation to be done, animals to be moved to the Forest, cleaning of waters, and maintenance of allotment fences. During summer, livestock are moved throughout the allotment and at home, there is cutting, baling, and bringing in the hay. As fall approaches, permittees gather the livestock, hoping for a good crop, and prepare for sale. A rancher told us that he prefers to sell his animals to someone he knows personally; he "babies them." The family keeps the cows at the ranch in winter, feeding, breaking ice, and watering evenings after work and on weekends. "Working with animals, it's sun-up to sundown," he said.

One rancher reminded us that what happens on a ranch throughout the four seasons is not only agricultural, but cultural, social, human, and spiritual as well. The following is his description of a year in the life of a ranch:

> "Spring time, of course, is a time for rebirth,
> a time to spring forth. And with that comes

ditch cleaning, grazing permits, tagging, branding, castrating, moving the cattle out of the fields to the spring pasture lands. Then comes planting, sowing, irrigation. It is a time of thanksgiving. Winter is a time of reflection, and spring is a time of thanksgiving. …

"Summer is a time of herbs from the garden…. So, then it's the time to take the cattle out of the pasture lands up to the high elevations to the national forests to the grazing allotments and to do the fencing, to clean out the springs, to check the vegetation, to rotate the cattle, to visit with the forest rangers and to kind of collaborate, collaborative relationships with Forest Service and ranchers. The summer is the time for harvesting your greens for canning, freezing, and drying.

"And then in the fall is the time of maturity and a time of more harvesting of hay…. It's time to thrash your wheat, to thrash your beans…September, it's time to bring the cows down to the lower elevation, back to the pasture lands…. I have goats, I have horses, pigs, and chickens. Those are year-round. Fall is a magical time because there's fruit, fruit picking, wine making…and then canning, processing, and preservation.

"In winter time, you repair your farm equipment and get ready for spring use. You put hay away for winter; the livestock feeding is a daily chore. You also spend a lot more time inside. You tend more to special interests and hobbies. You do more socializing, visitation, my sense of family and community…. You live high on the hog if you still planned and grow most of your own food as we do, so you enjoy your choke cherry jellies, you enjoy your home-made wine, you enjoy your wheat, your… garden, products from your dairy…. Winter time is the time to rest, and it's also a time for healing, and it's a time for death, a time for cleansing. Rest, healing, and cleansing; everything that is weak and sick will die, and it returns to the earth. Then the winds; the spring winds will come to air out and refresh things…." (Antonio Medina, Cleveland, New Mexico)

The following responses were given by numerous respondents and are included to illustrate the yearly work schedule:

"Ranching is not a job. It is a way of life. You work 24-7 in one way or another."

"It's every day; it's a life, an occupation," stated a rancher… "sometimes fixing fences, if not chasing cows, working on the yard or house or equipment…". "You are concerned every day with the operation, priorities. It's part of the ranching occupation…a constant thing you have to be doing to keep your operation running at its best." When everything goes right, you work from sun until dark, all day. "It's 2:00 pm, and no dinner. When it goes wrong, you may work in the wee hours of the night, or you're five miles from home and can't come back in the dark, or have trouble with a pickup. You watch the animals to see how they are doing and go with that." You must watch closely the cows with nursing calves in winter. You "appreciate these warm, dry days so the cattle don't have to fight the elements…. You count your blessings!"

> A rancher told us that "it's impossible to schedule anything. You just have to go with the flow and handle what comes up. I thought I was going to go and cut down logging slash and instead I had to repair the corral that the cows broke down…. A good amount of our time is spent on fence maintenance and keeping the cows where they're supposed to be… (the horses too) a couple of days every year tracking them down and getting them back and then finding the hole in the fence they got out of, thanks to the elk, usually…. The brand new fence shows the elk damage very clearly…. Or going home after work and feeding the cows at 2:00 o'clock in the morning, 'cause I go home and eat supper and fall asleep on the couch and wake up at 2:00 in the morning and go feed, and it's dark and cold. Because I have to work and I'm the one in the family that's the most familiar with calving…[the cows] pretty much have to do it on their own."

"There's no 'off season;' it's ongoing!"

"Ranching is a two-step dance; two steps forward, two steps backward," we were told. There's "no set schedule, you work with the seasons." Working with animals, it's sun-up to sun-down. Ranchers keep the

cows at the ranch in winter, in the mountains in summer, water and feed and break ice in the evening. Calving may occur early (in January or February), in which case ranchers must bring the new-born calves into the house to dry them.

When irrigating, a permittee told us, his day can begin at 4:00 a.m. and go until all hours of the night, three to four days a week, 12- to 14-hour days. The number of hay crops depends on the weather and on Forest Service delays, he explained. In other words, if the cows are still in the hay fields, because of delays in taking them to the allotment, the permittee cannot irrigate to start the hay crop, which means there won't be time for a third or fourth cutting of alfalfa.

"In winter, [you] get up at 5:00 a.m. to break ice, feed hay, and give molasses," explained the son and grandson of an elderly permittee. In spring, you check cows three to four times per day so the heifers calve okay, mend old fences torn up by elk, mend corrals and water lines, chase neighbor cows out, or help rancher neighbors. "So you get up with the sun and stay out after the sun goes down, finishing up, practically every day, seven days a week…helping the neighbors, helping each other. So the day off or the hour off you've got for a rancher is when you go to church on Sunday… that's where you gather with the rest at the end of Mass and you talk...about the cows with the other ranchers." "It's too bad my Dad can't talk, because he's the one that's full of history…. It's so sad…he'd have the horses in the trailer and say, 'Hurry up, you're running late!'" said the son of the permittee.

"I have a day job so I can keep this job because I love it so much."

There were many permittee ranchers who hold down other full-time jobs along with keeping up with ranch work. One family told us that they picked their careers as teachers in order to stay in ranching. That way they have the summers and evenings to ranch. Several elaborated on the complication of having a second job.

When working the "outside job," a rancher explained that his wife helped out, especially with the sheep and lambing. The kids help as well. After work, he checked the cows; on weekends, who worked depended on what was happening. There might be lambs to castrate or cows to work or farming to do. He said he was up at 5:00 or 6:00 a.m. to do chores before leaving at 7:00 a.m. for work at the outside job. Lambing is usually in May, but "it depends on how you chance it," he said. In other words, if you start breeding and lambing early to get bigger, better lambs, then there are birthing risks with early lambs due to weather. Rain isn't bad, but cold (e.g., 4 ^{o}F below zero or lower), snow, and wind in open country are detrimental. Lambs born at night can freeze. Long wool covers ewes, but also makes it difficult for lambs to get milk.

Another rancher told us that he was a "weekend cowboy" in the years he worked construction. It cost him more to work than to ranch, causing him to lose money on the ranching. For example, he had to hire people to help with ranch work, such as hay production, so he retired to work the ranch full time. "Ranching is like a full time job; you have to be there every day, Christmas and Thanksgiving. Animals don't know holidays or boundaries; they just look for grass. You break ice, or feed, or provide water. A rancher can't afford to get sick."

In another interview, a rancher said he had recently retired. It was difficult for him to imagine how he worked a job 50 hours each week and handled the ranch at the same time because now 80 percent of his time is devoted to ranching. Before work, he had to get up and feed and chop ice at 5:00 a.m. and again when he got home in the dark. When the kids were at home, they helped a lot. He had to coordinate work on weekends, and still raised a family, but couldn't have afforded to without his United Parcel Service job. "Income from the cattle is not so great, but gives [some] income, and [our] own beef, and a way of life." A rancher laughed heartily when asked to describe his ranch work schedule.

> "We have been trying to meet for two years! Does that give you an idea? When I was working, it was very difficult because I used to work 40 hours a week and I did it on a weekend basis…. I've always felt like I had two full-time jobs…. I've been very fortunate that I was able to have a job where I could retire at the age I did. And now I've been gone for three months and I keep on wondering, how did I manage? I'm going to give you a day by day. You get up at 4:00 a.m.; you feed in the mornings, calves, whatever you have. You always have livestock in the corral…. While I was working, you'd go to work, 10 hours away (8 hours at work, 2 hours traveling back and forth), and come back. You always had to feed your animals at home, plus you have your hay, your regular hay to cut, bale, irrigate. It never ends…. And I'm still on

that schedule. You don't have dinner before 9:00 p.m." (Joe Romero, Velarde, New Mexico)

"…always something to do!"

"During the winter-time, that's a daily chore to feed them 'cause we don't have winter wheat where we can keep them. We have to raise our own, or buy our own [hay]. Summer-time, we have them out there in the Forest Service permit, from May on, or from the end of May." "Do you go out there on horseback?" we asked. "In prior years we used to do that, but now-a-days, we give a ride to the horse in a trailer.... It's not like it used to be before. I used to ride from here and ride all day long and come back by 10:00 in the evening. It's not that way anymore. What I used to do in a day, now I do it in about two or three hours. Everything's fast paced these times, and you have to adjust to that, I guess. I wish it would be the other way around. I liked better the other way around; it was more peaceful, more slow-paced, more time to enjoy things. Now-a-days, you're just running down the road in a truck, and you don't see anything…."

Hay Production

Hay production (question 32; table 88; Appendix C) was mentioned by the ranchers in their discussions of seasonal work. Most of those we interviewed (79 percent) grow supplemental hay for their livestock or, in some cases, for sale. A few (2.9 percent) grew hay in the past but no longer do so. Of the 18.1 percent who do not grow their own hay, 12.6 percent purchase hay. Of those who grow their own hay, the most commonly produced plants are: alfalfa (*Medicago sativa*), 77.7 percent; timothy (*Phleum pratense*), 40.4 percent; smooth brome (*Bromus inermis*), 25.5 percent; orchardgrass (*Dactylis glomerata*), 25.5 percent; oats (*Avena* spp.), 20.7 percent; and clovers (*Trifolium* spp.), 15.9 percent. Some produce straight alfalfa; however, most produce mixtures of the above-listed plants (question 32a; table 90; Appendix C).

Range Plants and Animals

Plants and animals are major elements that define a ranch. Without cattle and sheep, grasses, and other range forage, there would be no ranch or ranchers. Therefore, the many complicated and varied responses to questions such as choice of animal breeds and knowledge of forage plants merit a fair amount of scrutiny.

Extremely important topics for agriculturalists are animal breeds and the reasons for their selection. During the interviews, we asked each permittee what breed(s) of cattle or sheep he or she raises and why that particular breed was selected (question 28; tables 52-54; Appendix C). Permittees were allowed to provide as many reasons for selection as were relevant to each operation.

Cattle Breeds

Generally, a rancher is looking for a breed, or combination of breeds, of cattle (or sheep) that best suit his particular needs, abilities, and the environment in which the animals are to live, thrive, and be productive. The ideal herd is made up of animals that possess a good temperament, handling ease, disease resistance, calving ease, maternal qualities, growth potential, an ability to adapt to the land and climate, and the potential to provide a product that sells well at market. Decisions are not governed by chance or indiscriminant whim; care and thought go into these choices along with a considerable amount of innovative experimentation and study on the part of the individual rancher.

Selection of a Breed

Most breed selection of cattle began in the late 1700s, mainly in the British Isles. Similar to current practices, selection of animals was based on traits that farmers considered best for their area. The most desirable animals were kept as breeding stock, while those of lesser quality were culled from the herd, thereby increasing gene frequency of the desired traits. Over time, the number of animals with similar traits increased, and outside stock was rarely introduced into the herds (Gillespie 1983). Points to be considered when selecting a breed include: all breeds have strong and weak traits, no one breed is best for all traits; and every breed has a wide range of genetic variation. However, selection of the best animals as breeding stock and the use of good breeding practices are more important than the particular breed selected. The selected breed should produce well in the area where it will be raised. Market demand for a breed should be determined, and foundation breeding stock should be available at a reasonable cost (Gillespie 1983). Ranchers' responses throughout the interviews coincided well with these points.

It is edifying to consider a brief history of the introduction of cattle to North America, as the sequence and timing of such occurrences have influenced the ranchers' choice of breeds. Initially, breeds of longhorned cattle were brought to the new world by the Spanish (ca. 1500s); after which, several British

breeds, notably the Hereford, Black Angus, and Shorthorn, were introduced (ca.1700s and 1800s) to become dominant in beef production in the United States. The Brahman was brought to the United States in the early 1900s. The more "exotic" Continental breeds were not imported until much later, ca. 1960s and 1970s (Gillespie 1983). This sequence helps explain the timing of changes made to breed choices discussed with the ranchers.

It was common throughout the interviews to hear that a father or grandfather had raised Herefords, while subsequent generations introduced the newer Continental breeds into their herds. This could not have been done prior to import of these "exotic" breeds into the United States and should not reflect poorly on earlier choices. Many are now breeding cattle for specific traits and results such as size and market preference, but when there were fewer choices this was a non-issue.

The Hereford and Black Angus

The interviews were heavily interlaced with comments about two predominant British breeds—the Hereford and the Black Angus. Both are early introductions to the United States, the Hereford from England in 1817 and the Black Angus from Scotland in 1873 (Gillespie 1983). The Black Angus was listed in 73.6 percent and the Hereford in 63.4 percent of the responses as being bred either singly or in combination with other breeds. The next most prevalent breeds were the Limousin, Salers, and Charolais (42.1, 16.2, and 12.8 percent, respectively), all introduced into the United States in the 1960s. In spite of a myriad new breeds and combinations thereof, the Black Angus and Hereford retain a strong influence on the northern New Mexico ranches and continue to dominate the picture on grazing allotments of the two National Forests. The Black Angus is also the most prevalent breed of cattle across the state according to County Extension specialists with whom we consulted (Allison, personal communication; Chacon, personal communication).

A cross between the Black Angus and Hereford produces a calf with a black body and white face, commonly referred to as a "Black Baldy," a crossbred prevalent (16.2 percent) in the area. As one permittee explained, Black Angus crossed with Hereford produces smaller calves (easier on the cow at birth) that gain weight quickly, are good milk producers, have good dispositions, suit the market preference, and disperse well on pasture. Another said that he had experimented with many breeds and, through study and trial and error, determined that Black Baldies are best. "They are easy to handle, but high tempered if harassed," he said. Black Baldies do better at sale than straight Herefords and also at high altitudes where Brisket disease is a problem, we were told.

"…To increase profit"

A rancher can only purchase what he can afford and what breeds are available. For instance, a certain breed of bull might be just what is needed to improve the herd but may be too expensive or unattainable at the time for purchase. It is unusual for the permittees to have a registered herd (livestock having pedigrees verified and filed by authorized associations of breeders [American Collegiate Encyclopedic Dictionary 1952]); however, a few of those interviewed have chosen to do so. For example, one rancher, who has a registered Black Angus herd, told us that they require less feed and are smaller at birth, but grow fast and sell well, and are therefore more profitable. Another family has a herd of registered Hereford and said they consider the Hereford a more docile breed, and the bulls are polled (hornless).

Reasons for choice of breeds were divided into nine general categories, which were derived from the permittees' responses (question 28c; table 54; Appendix C). There was usually more than one reason for selection (therefore, percentages do not total 100 percent). The categories and scores follow: marketability (47.7 percent), growth characteristics (36.2 percent), adaptability/ hardiness and efficiency (31.7 percent), preference and tradition (28.4 percent), disposition (24.8 percent), birthing ease (22.9 percent), disease resistance (18.3 percent), maternal characteristics (15.6 percent), and hybrid vigor (8.7 percent).

Marketability: "Black is beautiful!"

There were many comments among interviewees to the effect that the market dictates their breed choices and that buyer preferences are subject to change. These preferences may be influenced by such criteria as health campaigns, a demand for lean meat (no fat and no marbling), or a good advertizing strategy. However, the ranchers continue to stress the importance of producing meat of good taste and quality. There are differences of opinion regarding market influence. Some said that the smaller-boned Hereford produces more pounds of meat for pounds of animal. Others said they believe that the Black Angus brings a higher price at market. It is interesting to note that Black Angus is often identified in the grocery store, which can sway the shopper's choice in purchase of

beef, a good example of marketing strategy. Most frequently, however, we heard that black cattle sell best and that crossbreds do very well at market.

Maternal Characteristics, Birthing Ease, and Growth Potential

It is difficult to separate the categories of birthing ease, maternal abilities, and growth potential. Calves that are small at birth cause less difficulty for the mother cow, especially first-time heifers, and generate less work for the rancher, less likelihood of pulling calves, and less need for intense observation. Many of those interviewed stressed the importance of good mother cows possessing such traits as a good disposition and mothering ability. The cow must be able to provide enough milk to nurture the calf. The calf must have the genetic potential for growth. Fast growth for good weight gain at weaning and sale equates to efficiency of gain. Polled breeds are also a benefit, causing fewer problems at birth and saving the work of dehorning. The importance of a good bull must also be given consideration. We frequently heard the choice of using Black Angus bulls because they produce smaller calves at birth, resulting in calving ease, fewer losses of cow and calf, less work and stress for the rancher, and, ultimately, increased profit.

Adaptable, Hardy, and Efficient: "They know the country!"

Cattle must be suited to the area if they are to thrive. A rancher must consider the terrain, climate, and elevation of the country. Many allotments are at high elevations (8000 ft to above 10,000 ft). Some breeds are not fit for the environment, we were told. They must be able to exist on rough terrain, on mountain slopes, and find feed in difficult circumstances. Ranchers spoke of the importance of cattle with an ability to survive, that are able to "scrounge around" for food. Ranchers said they want "thrifty animals" that are resourceful and "will get out and graze."

Interviewees stressed the importance of keeping a resident herd and retaining replacement heifers that were born into the herd, as the animals have a better chance of success when adapted to and familiar with their environment. A rancher who has crossbred cows and crossbred bulls said the aim is to breed for hardiness. "You need cattle that can withstand the elements and high elevations," he said. He has learned from experience and has kept the same herd for years. Another explained that he only purchases the bulls; all replacement heifers come from his herd. "They know the country!" he said.

Tradition and preference: There's "nothing better than a Hereford cow."

"Tradition" may be translated as lessons passed down through the family, usually from a father, grandfather, or father-in-law. If a rancher says that he or she likes a certain breed, there are generally good reasons for that preference. For example, a rancher said that he likes the look and temperament of the Polled Hereford, "a very old breed, mellow and easy to handle." Another stated that at auction, she buys a "pretty cow" if she "likes the look." These comments most likely refer to the animal's conformation and condition. Yet another said that he has a crossbred herd but would prefer Hereford if he could afford them; they were always in the family, so he knows them better.

A rancher told us that he prefers a Black Baldy cow because she is smaller, more docile, a more efficient producer, and not inclined to jump a 5-ft fence. In comparison, he observed, Limousin, Gelbvieh, and Charolais are big cattle that make for big production costs and low quality meat. The animal eats in proportion to its body weight. Another said, Hereford breed back well (have a better conception rate), take less feed, and he just likes them. Another rancher has Blonde d' Aquitaine; he likes their looks and added that quality and breeding make an efficient animal.

Disposition

Different breeds have their own personalities. Animal disposition and behavior are important considerations in choice of breeds. These small ranches are personal, family-run operations, requiring a close relationship between animals and people. Ranchers stress the importance of gentle, smart cattle that are easy to handle. Handling ease depends on characteristics of the breed and how they are handled, we were told. Such phrases as "when you learn to work with them," "it's how you treat them," and "it depends on how you handle the cows" were often expressed.

Disease Resistance

Disease resistance is a major factor in choice of breed. For example, the white-faced Hereford is prone to pinkeye, which is not a problem in the darker breeds of cattle. This was often mentioned as a reason for crossing the Hereford with other breeds. Pinkeye is a disease carried by insects. The condition affects an animal's eyes and can spread throughout the herd if not treated in time. In the milder form, the eyeball develops a pink color and the cornea becomes slightly clouded. In the acute form, the eyes tear, the cornea becomes increasingly cloudy, cancerous ulcers may develop, and

blindness may result. White-faced cattle or cattle with white around the eyes are most susceptible. Pinkeye is most common during periods of maximum sunlight (Gillespie 1983).

Brisket disease is another common concern, given the high elevations on many allotments. Brisket disease is a heart condition of cattle that occurs at high altitudes. It may be caused by the enlargement of the heart in cattle that cannot adapt to high elevation; diet may also be a factor. Some disease can be bred out of a herd through natural selection. Blackleg, a disease caused by bacteria, is most serious when bacteria lodge in deep wounds. Calves can be vaccinated against Blackleg when young and then again at weaning, as prevention is more effective and less costly than treatment (Gillespie 1983).

One rancher told us that he learned from his father-in-law to avoid disease by using replacement heifers or purchasing directly from a rancher, not from a sale barn. Many with whom we spoke stressed the importance of the resident, non-integrated herd as a means of avoiding the spread of disease.

Hybrid Vigor

There seems to be general agreement among those interviewed, with the exception of the few who have purebred or single breed herds, that crossbreds sell better, do better, are hardy, and disease resistant. They believe these characteristics result from hybrid vigor. A rancher justified his crossbred herd choices as follows: Salers are tough and adapt to any place like the mountains; Black Angus for the name, buyer's preference; Hereford are small boned and pound for pound produce the most meat. Crossbreds were described as good milkers and good breeders that do well in the mountains.

An Unusual Case Caused by the Vivash Fire of 2000

When a pair of brothers were asked what breeds they prefer, there was a brief silence followed by an explanation that they did not have a choice due to losses from the Vivash Fire, northeast of Pecos, New Mexico. They lost their original herd of 52 head of cows and bulls in the fire. They had a Beef Master bull crossed with Black Angus and Charolais cows. They now have a Black Angus bull, the only one available to purchase. Another permittee family also answered that they did not choose their bull, a Black Angus, but had lost their herd in the same fire. Another permittee told of losing 10 pairs of mama cows and calves in the same fire. A fourth said he was with the cattle when he and his son saw the smoke and were able to move the herd to safety on foot. There was no time to go back for the horses. They later discovered that baby calves had been inadvertently left behind to perish in the fire.

Sheep Operations in the Study

Despite the long history of the nation's sheep industry, dating back to the second voyage of Columbus in 1493, numbers of sheep and lambs in the United States have decreased steadily since the mid-1940s. This decline can be attributed to a combination of forces, including globalization of the textile industry, growing competition from other meat and fiber industries in the United States, and import competition from large lamb and wool producers, notably Australia and New Zealand. In addition, many issues and events have contributed since the end of World War II, including: a negative experience with Government issued mutton during the war, the repeal of the National Wool Act of 1954, foreign wool production subsidies, changes in consumer preferences, losses from predator kills, changes in regulations and permits for grazing on public lands, and endangered species regulations (National Research Council 2008). Wool production has declined more rapidly than lamb production. Once considered the mainstay of the U.S. sheep industry, wool currently accounts for only 10 to 30 percent of sheep production income on range systems and less than 5 percent on farm flock systems. Contributing to this decline are competition from an increasing number of natural and synthetic fibers and the loss of the National Wool Act (encouraging production of wool, an essential and strategic commodity for manufacture of blankets, uniforms, and sleeping bags for the U.S. military during war time) and other legislation that provided price support to the U.S. wool industry (National Research Council 2008).

Sheep are the Heritage of the Grandfathers

Many ranchers switched from raising sheep to cattle due to Forest Service direction. One rancher remembered that the Forest Service had recommended that his father get rid of the sheep and goats. For others, a shift in employment circumstances, from full-time ranching to the necessity of taking a second off-ranch job, brought about the decision. Cattle require less intensive herding and care than sheep; thus, they are easier to manage for people with full-time, off-ranch jobs. When working the outside job, a rancher explained that his wife helped out, especially with the sheep and lambing.

We asked Dave Stewart, Director of Rangeland Management for Forest Service Region 3, to discuss the decline of sheep operations on the Forests we

studied. According to him, the vegetative composition on the allotments of northern New Mexico is more suited to cattle grazing than sheep production. This is due to lack of a forb community, essential in the diet of sheep. It is an ecological situation. In the Pecos Wilderness area of the Santa Fe National Forest, the priority is to manage for Rocky Mountain bighorn sheep, which were reintroduced to the area in the 1960s. There also is cooperation with the New Mexico Game and Fish Department to avoid disease-related contact between domestic sheep and bighorn sheep (Stewart, personal communication). Grazing of domestic sheep in the Pecos high-country ended with the 1953 season (Varela, personal communication).

While there are no longer sheep permits on the Santa Fe National Forest, there is a viable sheep industry on the west side of the Carson, mostly in the Tres Piedras district. From a social and natural resource perspective, the level of sheep and lamb grazing in that area appears to have stabilized to a sustainable level and is not in conflict with any natural resource values, Stewart stated. There are some dual-use permits for cattle and sheep on the Carson, giving permittees the opportunity to shift from cattle to sheep, providing a more economically sustainable situation for ranchers on that district (Stewart, personal communication).

Study participants provided examples of declines in numbers of sheep. One rancher said his permit was for 720 head, but was cut to 550 because of drought. Another told us that she had 750 Rambouillet sheep permitted seven years prior to the interview, but none permitted currently. Yet another rancher listed 2000 Rambouillet ewes in the past, but now only 57. There is also a declining market for the wool, we were told. A rancher said, "You can hardly give the wool away. Now that the subsidies ran out, nobody wants it. It's not worth your time." Wool is not selling anymore, we were told, due to competition from England. However, there is a large demand for quality lamb, particularly from the post-World War II generation, but not enough is being produced to meet this demand.

With fewer sheep today, there are more problems with noxious weeds; some believe the forests were in better shape with goats and sheep to keep the weeds eaten down (Melendrez, personal communication). Disadvantages to raising sheep include predation by dogs and other animals, susceptibility to parasites, and a low resistance to disease and injury (Gillespie 1983).

Selection of a Breed

Breed selection of sheep is similar, in some aspects, to selection of cattle. Personal preference, how well the breed is adapted to the area, the market for the product, the availability of breeding stock, and the prospect of multiple births are all considerations. Sheep are most commonly classified by type of wool. The fine wool breeds (e.g., Merino, Rambouillet, and New Mexico-bred Debouillet) were developed from the Spanish Merino, which produce fine wool with heavy oil content and are primarily used for wool production. Merinos have a strong flocking instinct and the ability to do well on poor-quality rangeland. Flocking, or banding, refers to the tendency of sheep to stay together in a group called a "flock" or "band." The medium wool breeds (e.g., Cheviot, Hampshire, Dorset, and Suffolk), many of which originated in England, were bred primarily for meat production. Their fleece is medium in fiber quality and length, and wool is a secondary product. The long wool breeds (e.g., Cotswold and Lincoln) were developed in England and are larger with long, course-fiber wool. The crossbred wool breeds (e.g., Columbia) were developed, primarily in the United States, by crossing long wool with fine wool breeds to improve carcass quality and length of wool fiber. These breeds have better banding or flocking instinct than the long wool or medium wool breeds and are well adapted to the western range (Gillespie 1983).

The Merinos evolved in an arid area of Spain and had to be herded because of the vast area of rangeland. In comparison, the more independent Suffolk that evolved in small, verdant pastures of England did not require herding. This explains the flocking instinct of the former in contrast to the latter (Melendrez, personal communication). Of the breeds specified by participants in this study, Rambouillet and Merino represent fine wool breeds, Dorset and Suffolk represent medium wool breeds, and Columbia represents the crossbred wool breeds. The Churro, also represented, was brought in by New Mexico's early Spanish settlers. Descended from the common sheep of southern Spain, this breed possesses the hardiness and stamina necessary for survival in a harsh environment and a long staple fleece suited to hand spinning and weaving (Baxter 1987).

Thirty-five ranchers who participated in this study listed sheep among their livestock. Of those, 46 percent of sheep were unspecified breeds, mostly occurring in small numbers incidental to their cattle operations. Eleven breeds or combinations thereof were listed by the 19 ranchers with larger flocks. Of this group, Rambouillet and Suffolk were the most popular breeds, listed in 57.9 percent of the responses either singly or in combination with other breeds. The next most prevalent was the Columbian (21 percent), followed by the

Merino, Churro, and Dorset (10.5, 10.5, and 5.3 percent, respectively).

Ranchers gave several reasons for their choice in breeds of sheep (question 28b; tables 53 and 54; Appendix C). The Merino and the Rambouillet were chosen for their high-quality wool as well as the meat. Ranchers specified the Suffolk ("Blackface") as the best meat breed and for its gentle disposition and the Columbia for size of offspring (heavier lambs), good meat, and larger breed. A rancher with a crossbred flock said he felt there was a history of better weights by crossbreeding. He said that the Columbia have a clean face, the Suffolk stay away from flukes (a parasite), and white-faced sheep band together. For some families, sheep represent a sense of tradition and are raised because a father or grandfather herded sheep. Others maintain sheep simply because they like them. Others purchase a few lambs to butcher for family consumption or for a 4-H project for children. Some amount of trading of sheep and wool was mentioned.

Herd Sizes

As reviewed in our pilot study, the majority of ranches throughout New Mexico are extra small and small cow-calf operations with from 1 to 99 head. As is the case in our project area, northern New Mexico has considerably fewer medium-to-large ranches and more extra-small and small ranches than the state as a whole. Other major types of ranches include yearling-stocker operations and sheep operations. Cow-calf operations consist of a base cow herd, their calves, generally some yearling heifers and steers, replacement heifers, and the bulls needed to support the herd (Fowler 2000; Torell and others 1998).

Cattle Herds

The herd sizes of the participants in our study ranged from 1 to 620 mother cows, with size determined by economics, available land, and grazing permits (question 29; table 55; Appendix C). The average herd size was 70 animals with a median of 30. Fifteen percent of the permittees have herd sizes ranging from 1 to 10 animals, 22.6 percent ranging from 11 to 20, 29.1 percent ranging from 21 to 50, 15.4 percent ranging from 51 to 99, 14.9 percent ranging from 100 to 400, and 3 percent with over 400 animals. Thus, 17.9 percent of the cattle operations that we studied have 100+ animals, placing them in the category of medium-to-large ranches. Two of these are considered large sized ranches with 520 and 620 head, respectively. As tables 4 and 5 show, there was a somewhat greater number of large and medium sized ranches on the Carson than on the Santa Fe. This is reflective of the greater number of larger ranches that have permits on the Tres Piedras district. These ranchers are primarily located in the border area of southern Colorado and northern New Mexico in an area of more extensive grassland habitat. These areas are also home to the four medium and large sheep operations.

These figures represent numbers of adult cows only. Numbers of bulls owned range from 1 to 30. Of those that own bulls, the majority of ranchers reported one to five animals (73.5 percent). Five percent have association-owned or leased bulls. Heifers (as herd replacements) are maintained by 59.7 percent of the permittees, with animal numbers ranging from 1 to 103, dependent on herd size. A few (10.5 percent) ranchers listed steers as part of their herd, generally to be sold in the fall. We also asked the respondents to list the number of calves; however, due to confusion over our wording on the question, some responded with numbers of calves currently on the ground (present in the herd), while others reported calving rate or conception rate (question 29; tables 56-59; Appendix C).

Sheep Flocks

Once the prevalent livestock of northern New Mexico, sheep were outnumbered by cattle in the last half of the Twentieth Century due, in part, to Government influence, increased threat of predation, and lack of time for their more intensive management. Only four of the permittees who participated in this study have large flocks of sheep ranging from 300 to 2000 head of ewes. Their home ranches are located in southern Colorado, with permits on the Carson National Forest in New Mexico. Those who listed small numbers of sheep tend to keep them close to home on private land.

Sheep numbers in our study range from 2 to 2000. The large majority (87.4 percent) of interviewees have no sheep. Of the 30 ranchers who own sheep, most (80 percent) have between 2 and 23 ewes; two people (6.7 percent) have flocks of 57 and 60. The four larger operations (13.3 percent) have 300, 380, 550, and 2000 ewes, respectively. (question 29; table 60; Appendix C). These figures represent numbers of adult females only. Number of rams owned or leased ranged from 1 to 40 (question 29; table 61; Appendix C). Of those ranchers owning or leasing rams, the majority (63.2 percent) reported one or two animals. Two people (10.5 percent) lease rams, and a few (15.8 percent) own 10 to 15 rams, with the largest

operation owning 40. We also asked respondents to list the number of lambs; the majority (77.8 percent) reported 2 to 20, but two ranchers (7.4 percent) have 50 and 58 lambs (question 29; table 62; Appendix C). The four larger operations (14.8 percent) have 180, 300, 464, and 3400 lambs. Ewes frequently produce twins; therefore, these numbers were expected to be higher in most cases. Apparently, predation is a factor in the lower reported numbers.

Horse Herds, the Remuda

A number of permittees we interviewed still own and use horses to work their livestock and as a form of family recreation (89.9 percent). Many said they take pride in their horses reflecting the long Hispanic tradition of horsemanship and horse culture. A few respondents breed registered Quarter Horses as an important aspect of their ranch life. Two have horses for guide and outfitting businesses. Of the 214 stockmen who own horses, equine numbers ranged from 1 to 100 (question 29; table 63; Appendix C). The majority (90.2 percent) of respondents own 1 to 8 horses, 8.9 percent have 9 to 20, and 2 (0.93 percent) own 50 and 100 head. Very few horses were reported lost on public land; three owners (1.4 percent) reported losses of one animal each, while one (0.5 percent) reported a loss of two horses. On private land, however, seven ranchers (3.3 percent) reported losses of between one and five horses each.

Herd Size Reductions

During our discussions of herd sizes, a substantial number (46.2 percent) of interviewees reported larger herd sizes prior to the droughts of the early to mid-2000s and consequent agency-mandated reductions in numbers of animals and time on the allotments (question 29a; table 64; Appendix C). Interviewees described these as painful losses because once sold, it is extremely difficult and much more expensive to rebuild the herd when conditions improve.

Animal Losses

As we learned from our participants, yearly losses of livestock represent both emotional and economic hardships. “The loss of one cow is a big thing. One cow represents a big investment.” Whatever the reasons for loss, animal deaths have a serious impact upon the success and economic viability of the extra-small and small ranches of the area. Although losses can vary tremendously from year to year, we asked permittees to report numbers of animals lost, along with the cause of loss, during a typical year (question 30; tables 65-72; Appendix C). However, we recognize, as did participants, that there is no such thing as a “typical year.” Although it may appear from the following discussion that some animals “never die,” this simply represents that fact that none has died in the “typical year.”

Cattle Losses

Almost forty percent (37.8) of informants reported no cows lost on public land, and 63.9 percent reported no losses on private land. About 56 percent (56.2) of the ranchers reported losses of one to five cows on public land, and 34.8 percent reported one to five cows lost on private land. Ranchers (7.5 percent) reported losses of one to seven yearling heifers and steers on public land, with 3.8 percent reporting losses on private lands. Calves are more frequently lost on both public and private land due to their greater susceptibility to predators and illnesses. Seventy percent (70.1) of ranchers reported losses of calves on public land ranging from 1 to 50, with 1 to 5 being most common (57.7 percent). On private land, 48.5 percent reported losses of from 1 to 24, calves with 1 to 5 being most common (40.8 percent). Of the 225 ranchers owning bulls, 18 (8 percent) reported the loss of 1 bull on public land and 6 (2.7) reported the loss of 1 bull on private land.

Sheep Losses

Of those respondents owning sheep, 89.7 percent reported no losses of ewes on public land, and 72.4 percent lost no ewes on private land. It should be noted that many who own small numbers of sheep maintain them on the home ranch, not on public land. Three ranchers (10.2 percent) reported losing 10, 20, and 100 ewes, respectively, on their public land allotments. Around 23.9 percent lost between 5 and 15 ewes on private land, with the owner of the largest herd (3.4 percent) losing 100 head. There were no ram losses for public land primarily because rams are generally maintained on the private land. Two ranchers (11.2 percent) reported losses of 1 and 5 rams, respectively, on private land. About 89 percent (88.5) reported no losses of lambs on public land, and 73.1 percent lost no lambs on private land. Two ranchers (7.7 percent) reported losses of 30 lambs each on public land, while one (3.8 percent), again the largest owner, reported 170 lambs lost on the allotment. On private land, 22.8 percent reported losses of from 1 to 20 lambs with one (3.8 percent) reporting 170 lost.

Causes of Animal Losses

Causes of these losses include the death of mother or infant from complications at birth, weather-related deaths, predation by wild animals, disease, injuries, poisoning from toxic plants, lightning, or old age. Other reasons for loss are rustling, malicious killings, accidental shooting by hunters, and predation by packs of domestic dogs. For example, 31 ranchers identified from 1 to 25 animals killed by dogs (question 30; table 85; Appendix C). While wild animals such as coyote, cougar, and bear represent a hazard on more remote allotments on forest land, the domestic dog poses a greater threat on pastures located close to the home ranch or on allotments located adjacent to more populated, urban interface areas. Although the financial loss may be the same, respondents said it seems easier to accept an animal's death from natural causes or accident than to find one shot presumably for target practice (question 30; tables 65-84; Appendix C).

In our discussion of animal loss, we asked respondents to list all applicable reasons for the death of their animals (tables 6 and 7). Thus, the percentages listed for this question (question 30) reflect multiple responses and do not equal 100 percent. Our research shows that on public land (the allotments), the most common causes for loss of young animals, such as calves and lambs, include theft (42.9 percent), predation (33.3 percent), disease (29.2 percent), death at birth (13.1 percent), accidents (10.1 percent). The most common causes for loss of mature animals, such as cows and ewes, include diseases and old age (46.9 percent), lightning (19.1), theft (18.5 percent), toxic plants (13 percent), predation (11.7 percent), and vandalism (9.9 percent). A very large category for both age classes consists of unknown causes; animals found dead, or never found (33.3 percent for young animals and 27.4 percent for mature animals).

On private land, the most common causes for loss of young animals, such as calves and lambs, include death at birth (39.5 percent), predation (38.8 percent), disease (34.5 percent), and weather-related death (16 percent). The most common causes for loss of mature animals, such as cows and ewes, include diseases and old age (71.6 percent), accidents (16.8 percent), predation (11.6 percent), vandalism (8.4 percent), toxic plants (8.4 percent), lightning (6.3 percent), and theft (6.3 percent).

A larger number of the permittees in our study reported problems with theft or vandalism on their allotments than on their ranches, which are better supervised. Theft, a major cause of animal loss on forest allotments, is even worse in areas with greater access to roads. Vandalism is also a serious problem on the allotments. In reference to this, ranchers have described coyotes as a "normal" problem and are far more disturbed by the activities of the "two-legged coyotes." Predation by wild animals or domestic dogs is also a source of animal loss. Calves and lambs are subject to a higher predation rate than the mature animals.

Toxic Plants

Poisonous plants were mentioned as a cause of animal losses. All plants have some secondary compounds that can be toxic when consumed in sufficient quantities. However, a few that accumulate toxins at high levels are palatable to livestock, resulting in a high risk of poisoning (James and others 2005). The following plants were most frequently mentioned by the ranchers in this study as causes of animal losses.

Locoweed (*Astragalus* and *Oxytropis* spp.) constitutes the most widespread poisonous plant problem on western U.S. rangelands, with species occurring in every major plant community. Locoweed damages the nervous system and compromises reproduction. The major toxin is the indolizidine alkaloid swainsonine (James and others 2005). Locoism is caused by the consumption of certain locoweeds by cattle, horses, and sheep on western rangelands. There are at least 372 *Astragalus* spp. in the United States, most of which are toxic to some degree. These perennial plants are found primarily on rangeland where year-round grazing is conducted. Following rains, they are often the dominant forage available (Cheeke and Shull 1985).

Principle signs of intoxication are those of nervous system impairment, including dullness, depression, excitement when disturbed, lost sense of direction and herding instinct in sheep, habituation to the plants, or an apparent craving for them. Affected animals will seek out locoweed. Abortion is common in cows and ewes on locoweed infested range. Affected horses become listless, unaware of their surroundings, wild and unmanageable when excited, and, in the early stages of locoism, are dangerous to ride. Consumption of the plant may result in mortality. In cattle and sheep, death may occur after an intake of about 300 percent of the animal's body weight of locoweed. Horses are most susceptible to the toxin, a lethal dose being about 30 percent of body weight. Death of poisoned animals may also occur from mishap such as tumbling over a cliff or embankment (Cheeke and Shull 1985).

Larkspur (*Delphinium* spp.) is a toxic plant that grows at high elevations on many allotments and is

a serious problem. Avoiding it is a matter of timing. Larkspur is at its worst from late spring until around mid June. Therefore, it helps to delay taking the cattle to those areas where larkspur occurs until after the plants have bloomed. Larkspur is a climax species that increases with improving range conditions and is quite palatable to cattle. Calves are often poisoned on mountain allotments because they tend to remain in groves of trees, where larkspur is growing. A "babysitting" cow is often left to tend the calves while most of the herd is out grazing in meadows. Because of their small size, calves can easily ingest a lethal dose. The toxin in Larkspurs is an alkaloid compound that results in death from respiratory paralysis. Sheep are less susceptible than cattle, as it takes approximately four times as much larkspur to kill sheep than cattle (Cheeke and Shull 1985).

Leafy Spurge (*Euphorbia esula L.*), another plant that was listed by the ranchers, is a perennial native to Eurasia. It is also a serious problem in North America where it infests almost 2.5 million acres. It has been reported to cause severe irritation of the mouth and digestive tract in cattle and may result in death of the animal. Leafy spurge is extremely difficult to control due to its extensive root system and encapsulated seeds that may be viable in the soil for up to eight years (Whitson and others 2006).

Pingue (*Hymenoxys richardsonii*) is a common rangeland plant of the Compositeae family that contains sesquiterpine lactones. These toxicants are highly irritating to the nose, eyes, and gastrointestinal tract, causing vomiting and resulting in death from inhalation pneumonia or permanent lung damage accompanied by chronic coughing. Sheep and goats are the main livestock species affected, as cattle and horses rarely consume toxic quantities of this unpalatable plant (Cheeke and Shull 1985).

Snakeweed (*Gutierrezia sarothrae*), a perennial resinous shrub, is found on desert ranges of the Southwest. The toxin is believed to be a saponin compound. Symptoms include listlessness, loss of appetite and weight loss, a rough hair coat, and gastroenteritis. It causes abortion in cattle (Cheeke and Shull 1985).

Consumption of ponderosa pine (*Pinus ponderosa*) needles can cause abortion in cattle, which has been suspected by ranchers for many years. Although the active principle remains unidentified, diterpene resin acids have been implicated. Pine needle abortion remains a common problem in western ranges. Affected cows also have increased incidence of retained placenta and impaired breeding performance (Cheeke and Shull 1985).

Allotment Grasses

In question 33 (table 90; Appendix C), we asked participants what grasses or other forage plants are consumed by the livestock on the rangeland allotments. This information demonstrates another aspect of the knowledge, interest, and awareness of the ranchers concerning their lands and their forest allotments. While 23.5 percent said they were not sure of specific plant names, 1.7 percent stated they could consult references or another family member, and 1.3 percent remarked that they know the grasses by sight, not by name. The majority (73.5 percent), however, provided detailed combinations of forage plants on their allotments. This information is listed in detail by district, along with added comments from the respective Forest Service range personnel, in Appendix E.

Land, Vegetation, and Wildlife Changes

Observations of the Permittees

When asked in question 35 (table 95; Appendix C) if they had noticed any land, vegetation, or wildlife changes on their allotments or in the general area during their lifetime, the study participants introduced numerous topics that we categorized as: (1) drought or decreases in precipitation, (2) fire suppression and need for fire, (3) tree and brush encroachment, (4) recreational damage, (5) increasing human populations, (6) changes in wildlife populations, (7) declining water supply, (8) invasive plant encroachment, and (9) erosion. Their observations fell most heavily in the following categories: changes in wildlife populations (more elk, less deer and other wildlife), 49.8 percent; tree and/or brush encroachment (decline in meadows and open areas), 46.7 percent; drought (less rain and/or snow and springs have dried up), 39.6 percent; and invasive plant (exotic and native) encroachment, insects, and diseases, 20.4 percent. The choice of "need for fire (past fire suppression a source of problems)" received only 6.7 percent of the observations. However, "absence of fire" weighed heavily in the ranchers' discussions regarding tree encroachment and invasive plant proliferation. Their comments reflect the keen observations and knowledge common to those who live close to the land.

"We don't see many deer, mostly elk…"

Participants made the following observations concerning changes in wildlife populations, with a

substantial number focusing on the growing populations of elk. It was noted that there were more turkeys, rabbits, and young deer, and fewer coyotes. The beaver seem to be gone. "We don't see many deer, mostly elk, and very few bears or turkey," said one rancher. Deer have declined in the whole area. According to many, there are complaints about cattle overgrazing meadows, but elk are there year-round. The number of elk in the 1960s and 70s used to be small, but has grown tremendously. Several respondents discussed that elk cause problems such as fence destruction. As one rancher put it, "It looks like someone is chasing the elk back and forth across the fences." Participants also mentioned that elk consume the re-growth of grass and keep it short. One informant mentioned that the Pecos high-country used to be full of grass; now with the elk, all open land is grazed down to the ground. "We had deer and antelope, but those small animals did little damage compared to elk."

"Meadows are smaller because we don't have those burns."

Ranchers have observed fewer open areas due to tree encroachment and fire suppression. "Meadows are smaller because we don't have those burns," a rancher told us. There were fewer trees in the past because they had sheep and goats that kept everything clear. There has been a "dramatic decrease in meadows, [an] unhealthy forest, greatly decreased biodiversity, choked up conditions, and loss of water due to poor forest management," according to another. The whole forest is overgrown; "you used to be able to ride a horse through with no problem." "I'm seeing our meadows being taken over by trees." There is a fear that there will be more trees and less grass in the future. Tree encroachment has resulted from lack of fire and the absence of logging. Folks "on the outside looking in" do not want to see any trees cut. In the past, logging opened up areas, allowing for increased growth of grasses.

In discussions of drought and invasive species one rancher said, "In years past, we got a lot of snow and rain, [that] since have slackened." Others mentioned an increase in invasive weeds due to drought. Cheat grass (*Bromus tectorum*) and snakeweed have become rampant; they have been introduced through human activity. Non-native weeds come in from other states by means of hay and seed. Ornamentals have been brought in and have gotten loose. Ranchers listed as problems plants such as Canadian thistle (*Circium arvense*), bullhead thistle (*Circium vulgare*), jimsonweed (*Datura stramonium*), Russian thistle/tumbleweed (*Salsola iberica*), sweet-clover, a plant that resembles alfalfa (*Melilotus* spp.), burdock (*Arctium minus*), bindweed (*Convolvulus arvensis*), and stinging nettles (*Urtica dioica L.*). Some also mentioned that since the 1970s, there has been a spread of larkspur and other noxious weeds; in these cases, the area must be fenced off to protect the cattle.

Observations of the Older Generation

In Question 36 (table 96; Appendix C), we asked participants in the study to describe any land, vegetation, or wildlife changes related to them by older members of the family or community. These responses fell into similar categories as those described previously with the addition of (1) changes in land use and management and (2) declining agricultural production. Observations attributed to the older generations fell most heavily in the following categories: (1) changes in land use and management (more animals, sheep, or goats in the past) 46.3 percent, (2) drought (less rain and/or snow, springs have dried up, drought in past) 27.1 percent, (3) tree and/or brush encroachment (decline in meadows and open areas) 24.3 percent, (4) changes in wildlife populations (more elk, less deer and other wildlife) 21.5 percent. Again, "need for fire" received only 7.3 percent in the frequencies; however, the topic of fire suppression emerges in the discussions of tree encroachment. This is especially evident in recollections of burns set by the stockmen at the end of each grazing season.

"God provides lightning for a purpose."

The closing in of meadows due to lack of natural fire was a common observation. Concern was expressed over Forest Service suppression of natural fire. There were comments that God provides lightning for a purpose. Many told us that, in years past, stockmen burned forest meadows at the end of the grazing season. In the days of their grandfathers and great-grandfathers, the last sheepherder to leave the mountains before winter would set fire to the pasture. Then, early snows would serve to quench these fires, preventing them from spreading. In this way, stockmen could keep the meadows open as a means of maintaining forest clearings, thereby ensuring adequate grazing for the following year. The Forest Service ultimately stopped this method of forage management, according to the reports of those with whom we spoke.

The project participants related comments from the older generation regarding changes in land use and management and the decline in agricultural production. The mother of one respondent remembers better quality grass on the range. "People need to take care of this place like they used to," she said. Nowadays, there

is less fuel-wood cutting and less logging. "There used to be more logging. Every little valley would have a sawmill," said one rancher. They also spoke of changes in the ways Forest Service personnel worked on the land. For instance, it was more common in the past for rangers to check forest allotments on horseback.

They used "Mother Nature and common sense!"

There were more cattle and more permittees in times past. One permittee said, "It was better in those times—more freedom!" Respondents said animals moved more freely to *querencia* areas; the system worked better; fire was used at end of the season. An uncle talked about no fences, no broken range. When cattle were allowed to spread out, it was easier to round them up in their own groups. Certain permittees grazed livestock in their own *querencias* year-round, but now they have to graze in bunches, which does not work as well; and still there are the elk.

Another said that there used to be more domestic animals in the forest, sheep for instance, but the stockmen would not overdo it. If there were no feed, why would they send the animals up there? They used "Mother Nature and common sense," the rancher said.

Some members of the older generation mentioned that when they had sheep on the range, the land was kept cleaner, with less encroachment of shrubs, trees, and weeds. There were many fond recollections of the sheep that were prevalent in the region. As described to us, there used to be many sheep allotments. They would lamb on the range and shear them and would haul the wool down in wagons. They also had burros that were turned loose. Kids would round them up and ride them all winter. One older man can remember that as a kid, he would go up with his dad and two brothers to the mountains. He recalled that the aspen leaves had to be "as big as a silver dollar" before his father would take the cattle onto the allotment.

According to recollections of the older generation, there seems to be a slow increase in the amount of noxious weeds and a take-over by plants unsuitable for grazing. Compared to now, ranchers said there was ample forage in the past. Fathers and grandparents talked about open range and that grant land was taken away. They used to have sheep in New Mexico and later began to raise cattle. The grass was so high; you could hardly see the sheep in the 1960s, they said.

"What happened to meadows and open spaces?"

"Tree growth chokes grass… [limits available sunlight and] takes moisture from other vegetation." Absence of fire was also mentioned as a cause of overgrowth and encroachment. A participant said his father talked about fewer trees and evidence of fires in old aspen stands. There used to be roads where arroyos are now; there used to be trails that are now no longer useable due to overgrowth. Another remembered his father saying that pine trees were more spread out and that game animals had been abundant; now the forest is so thick, the animals are crowded out. The forest is less healthy, and there is mistletoe. There used to be Cottonwoods (*Populus* spp.), but now they are gone and replaced by brush.

One elder said the land was going to change and always talked with his children about it. The older man felt that before the Forest Service, the land was all open, and then began to change with Forest Service rules (for example, prohibition of tree cutting). Another father said there was no sagebrush when he was first there. Trees are not as healthy now; more are diseased and the needle and bark texture are different. He said on trees, there are different types of critter's webs that were not there when he was a kid. Another rancher related that her grandfather talked of trees taking over meadows, but she did not understand what he was trying to tell her then. While yet another respondent mentioned that old trees were widely scattered when he first came here. "What happened to meadows and open spaces?" his dad wonders. "It's hard to recognize areas." His dad used to say that you could point a horse in any direction in the old days; now you can hardly walk through the same area due to deadfall and tree encroachment. Elders commented on recent overprotection of forests from fire, thinning, and logging.

"…Drought has ever been a problem. It's a natural thing."

Drought was another common topic of conversation, with the prevailing view that there have always been wet and dry years. The older generation spoke of worse droughts at the turn of the Twentieth Century, in 1927, and in the 1950s. They talked about drought and how they had to adjust herd sizes and sell some of the livestock. Older members of the community discussed that drought has always been here, but now there are people studying it, trying to justify their jobs. "Fresh out of school and ignore years of expertise. Drought has ever been a problem. It's a natural thing," said one of the ranchers. The older ones have observed a lack of severe winters in recent years. In the past, mountain snow packs were greater. Snow was up to a horse's belly and deeper, and ranchers had to break a trail through the snow to move the livestock off the allotments.

"…We need the smaller animals back."

Finally, there were discussions of changes in wildlife populations over the years. There were a lot of wild horses, turkey, and deer in the old days; one does not see that many deer anymore. One permittee's father remembered las Prisas when beavers were there with no roads on the allotment. His father showed him the old beaver dams, berms, and bumps. Another told us that his father used to see a lot of jackrabbits; now you do not see them anymore—the same with bobcats and some mountain lions. "We used to see so many deer, now many elk. We need the smaller animals back," said the rancher.

Others continued the discussion, recalling the prevalence of wild horses, turkey, and deer. They said that elk were not there at that time and mentioned problems that are attributed to the elk. Many observed that elk are damaging their private alfalfa fields and fences. They lie in the fields, bed down, and urinate on the hay. They do a lot of damage in spring and summer.

Informants stated that every year, the Forest Service says the New Mexico Department of Game and Fish is trying to lower the numbers of elk, but that does not seem to be the case; ranchers said they aren't seeing the numbers going down.

Federal Land and Allotment Management

As we discussed changes to land, vegetation, and wildlife with our interviewees, we asked them to also describe their experiences working with the Government (FS or BLM) on these lands (discussion topic 4), suggest improvements for Forest Service land and allotment management (question 34), and make recommendations for preparing Forest Service personnel to work in northern New Mexico (discussion topic 5).

Working with Federal Agencies

When we asked the ranchers in the current study to discuss their views on working with the Federal Government, topics from our conversations with permittees in the pilot study resurfaced (discussion topic 4). Many with whom we spoke said they believe they have good or improving relations with Forest Service personnel. One rancher commented that relations have improved some, adding that when he was young, the agency was a dictatorship. Others stated that Forest Service employees are cooperative, pleasant to work with, and helpful. Several said they have good discussions with Forest Service staff that conduct themselves in a professional manner and have been out to inspect the allotments and ride with the ranchers. The Forest Service is seen as having its hands tied in many situations, with pressure from outsiders and special-interest groups. A couple of permittees indicated good, cooperative relations with local employees but problems with the "higher ups." Around 50 people, a little over 20 percent of respondents, described no problems with the Forest Service.

The majority, however, provided suggestions to improve problems they are having with the agency or discussed frustrations that seem to have no immediate solution. During these discussions, it became clear that good working relationships are often dependent upon personal and professional qualities of the rangers, range conservationists, and permittees. Both "good and bad" rangers and other staff were mentioned. Preferred agency personnel are those who have experience with livestock and the "common sense" not to slavishly follow the book. Rangers who only value formal education and ignore the value of the ranchers' lifetimes of experience are viewed negatively by the ranchers and with suspicion. According to the permittees, a much more productive working relationship derives from mutual respect and learning. One rancher reported that he has learned from the Forest Service employees and they have learned from him, combining the benefits of formal education and years of experience on the land.

"This is how it will be done!"

One permittee said that the Forest Service needs to give more credit to locals and respect their knowledge. Another stated, "Ask us, we have lived it; give us a chance; we know the land."

Respecting on-the-ground knowledge includes valuing the special knowledge of place that people whose families have lived in the area for generations possess. Common comments we heard sum up the notion that the Forest Service should get more local people involved—in range management, in sharing their knowledge, and in working for the Forest Service at higher levels. An interviewee told us that rangers come in and say "This is how it will be done" instead of asking ranchers how they have been doing the work. Ranchers feel that agency personnel err because many do not know the local customs and culture, and the backgrounds and education of many higher level staff do not seem to fit the area or the job. Permittees feel there is too much direction coming

from these upper-level personnel who are not familiar with conditions on the ground. "It seems that rangers are transferred just when they figure things out," said a rancher.

"To Forest Service staff, it's a job; to the ranchers, it's their life."

Constant transfer and reassignment of Forest Service personnel elicited complaints from many with whom we spoke in both the pilot study and this study. In fact, even those with positive opinions of the agency voiced this complaint. As one person discussed, some Forest Service employees are good, some are bad, but most are there for the job. Permittees are there generation after generation. The rancher is not going anywhere; the agency employee will move on. "It takes a long time to break in new folks," a rancher said. The permittees said they respect agency staff that may come from elsewhere but stay long enough to get to know people and make the effort to participate in the local community. A few also mentioned the serious problem that new employees may not honor the commitments made by their predecessors to the ranchers.

Another issue of real concern to the ranchers we interviewed is the diminishing amount of time that Forest Service personnel are able to spend in the field examining the condition of the range, riding with the permittees, and/or checking on trespass cattle. According to comments we received, popular opinion is that Forest Service employees are too hung up on paperwork and are never out on the land. One man described that staff used to meet permittees in the field, but now they hardly get out of the office. Telling people in the field what to do from behind a desk and a computer is a big complaint from the ranchers. One man told us that the Forest Service never sees the people on the ground. He said, "We know if springs are drying up, if grass is shorter. We know what's going on." He continued that he might not see a Forest Service person in the field for a month, while he is there five days a week.

"[They] want us off, won't push us off, want to harass us off."

One critic suggested that the quote given above should be the Forest Service motto. Others said they also believe that the Forest Service is trying to get the permittees out. A respondent commented that ranchers have to do things now that they never had to do before. One said that when he complained about a boundary fence problem, the Forest Service threatened him with "action" on his permit.

Some of those with whom we spoke said they feel strongly that too much attention is paid to environmental groups, while much less is focused on the concerns of local rural communities. "Agency people need to be out on the range, not pushing paper and dotting 'i's for the environmentalists." This attitude is summed up by the view that the Forest Service pays more attention to the Forest Guardians, a Southwestern environmental group, or to one individual complaint than to the 30 families who are worrying how they will make it this year. Permittees also are of the opinion that there have been many changes in forest and range management to keep the environmentalists happy. If the environmentalists make a complaint, everything comes to a halt. Views on environmentalists and environmentalism are discussed in greater detail in a following section (discussion topic 7).

There are respondents who feel that the Forest Service does not act responsibly, especially when it comes to honoring commitments to permittees. A few comments along this line of thought are given below. The agency promises too much and does nothing, ignoring complaints from the ranchers (for example, concerning trespass cattle or competition from elk) to avoid becoming involved or getting into trouble. There are a few who made stronger comments, calling the Forest Service "a bunch of crooks" who are only concerned about making their paycheck. The comment was made that the Forest Service does not pay attention to the permittees. Ranchers cannot make the Forest Service understand what is needed, one said. According to another comment, trees are encroaching into meadows, but the trees cannot be cut because of spotted owl habitat, although no owls have been seen in the area by respondents. The trees were overgrown and burned; now, there are no trees for any owls, a rancher said. Permittees complained that Government-mandated delays on when they can take animals into the allotments cause problems, especially in areas where there is competition from large numbers of elk.

"There's a lot of knowledge out there."

Our interviews have shown that the permittee ranchers of northern New Mexico seek greater participation in the Forest Service decision-making process and the opportunity to use and share their knowledge. They desire to be valued equally with some user groups and above others (e.g., outsiders and environmentalists) on the basis of their heritage of long tenure on the land and prior ownership under Spanish and Mexican land grants. The majority of men and

women we interviewed during our studies said they do not view Forest Service employees as "crooks," but as partners with whom they desire a cooperative, respectful relationship. Their comments demonstrated that they have a storehouse of knowledge from generations spent on the land to share with agency professionals. They seek respect for their knowledge and the opportunity to share it.

Recommended Allotment Improvements

The question, "What are the top three improvements you wish to see on your Federal grazing allotment?" elicited a variety of responses, with some very strong common threads (question 34; tables 91-93; Appendix C). To analyze responses to this question, we made three separate lists comprised of all the first, second, and third choices. Not surprisingly, in an arid area, maintaining, improving, and developing waters was the top choice on both the first and second improvement lists, and was one of the second/third choices on the third list. Maintaining and improving fences (especially boundary fences) was the second choice on lists one and two and the first choice on list three. Conducting prescribed burns and thinning ranked third on the first and second lists, but did not make the top three on the third list. Three improvements tied for second/third places with the same ranking on list three: maintaining, improving, and developing waters; improving Forest Service law enforcement; and reducing the elk population. The importance of waters, fencing, and thinning/burning is corroborated by identical positions on both the first and second choice lists.

Permittees also commented on recommended improvements that individual permittees cannot accomplish on their own. Many would like to make allotment improvements but feel they are prevented from doing so by Government rules and regulations. One described the need to thin out trees so the meadows aren't choked but said he feels his hands are tied. He commented that the old-timers always had an axe, cleaned trails, and removed encroaching trees. We heard a considerable number of recommendations that the Forest Service thin trees on the allotments and on the forest, in general, to control tree encroachment and outbreaks of disease. Other suggestions included restricting recreational all-terrain vehicle (ATV) use and closing unused logging roads to stem erosion and environmental damage because cars and ATVs are much more damaging than cattle, in the ranchers' view. There were also a number of comments that the Forest Service should work together with the New Mexico Department of Game and Fish to control elk populations, which are a problem in some allotments.

We then asked, "If the desired improvements are not being implemented by the agency, why not?" Respondents were allowed to provide up to five reasons (question 34a; table 94; Appendix C). The top four suggested reasons are the following: (1) lack of agency funding (51.7 percent); (2) the Forest Service does not take responsibility for decisions and improvements, is not willing to help, is uncooperative, staff remains in the office versus out in the field, "ask and ask" but nothing happens (45.4 percent); (3) elk and people tear up improvements, people cut fences and leave gates open (26.4 percent); and (4) problems with clearances to conduct work, red tape, and communications (24.1 percent). Additional comments were: not enough staff, insufficient law enforcement, and a lack of time (16.7 percent); outside influences from environmental groups objecting to projects (12.1 percent), and interagency conflict primarily between the Forest Service and the New Mexico Department of Game and Fish (7.5 percent).

This information indicates that the ranchers who participated in our study understand that there are insufficient monies for the agency to undertake all the desired improvements and that there are pressures from outside groups, clearances, and red tape that can and do impede progress on desired projects. However, the permittee views on Forest Service inaction also provide insight into major problems of trust and respect between the permittees and the agency and its staff. Comments concerning the unwillingness and uncooperativeness of Forest Service employees indicate a level of dissatisfaction with the agency that merits strong consideration. In an effort to gather information to assist managers in improving relations between the ranchers and the agency staff, we asked the participants in our study what qualities they would like to see in land managers working in the area that might remediate some of their concerns.

Recommendations for Working in Northern New Mexico

Working with Government agencies on former land grant lands or on lands that were formerly unfenced and open for local use is a source of resentment and frustration for a number of the grazing permittees. Perceived behaviors, attitudes, and inexperience on the part of agency employees are apparently at the root of many of these frustrations. As we conducted

our pilot study, we heard various suggestions for improving training for Forest Service personnel working in northern New Mexico that might ease the situation. Thus, we included a specific question on the topic (discussion topic 5) for this study.

Several common themes emerged during our discussions. In fact, those we interviewed had a set of very similar recommendations across the two National Forests. These recommendations reflect the genuine concern and frustration many feel when working with the agency. According to the permittees, working relationships with district rangers and range conservationists could be much improved with the addition of university programs focusing on rangeland field internships and on improving understanding of Hispanic culture and the rural way of life, in general. The ranchers also repeatedly stressed the importance of rangers and staff participating in the many, varied aspects of rural community life.

"Come spend a summer with me."

The number one suggestion was to develop programs that would allow university range students to spend time living and working with a ranch family on the land. Recommended time periods varied from a summer, to six months, to a year—but all were definitely more than a few field trips. There were many invitations to "come spend a summer with me" and get a taste of what it is really like. The son of one permittee suggested that trainees should spend a week with his dad in the mountains to learn about the area and the way people live. "They want to do the work by the book, and that does not go in a country like this," he said. He continued by saying that the ranchers live a simple life but still have what they need and can do it by themselves; they don't need to depend on the Government; and the way they handle their cattle in the Forest is better than the Forest Service way because local ranchers know the country. That is good for the Forest Service and the permittees.

Interviewee suggestions included: "an apprenticeship with permittees for the summer, working on projects, such as fences and cattle guards…live in the community and help." Range students could work with both the Forest Service and with ranchers on allotments…being in the field, hands-on, working with the public. "Before [Forest Service employees] tell you how to do it, they should have two to three years of on-the-ground experience…get their hands dirty; a lot of people need that." Forest Service employees "need hands-on experience. Let them breathe the same air you're breathing. They're learning a lot from books, but it must be applied." There was also a suggestion for universities to have ranchers come in and give a six-week seminar for the range students. For the ranchers we interviewed, a college education is just a starting place. "It's good to go to school, but nothing beats experience," one said.

"Get to know the community…"

Many of the ranchers feel that rural agricultural values, traditions, and ways of life are not well understood by outsiders. Increasingly, agency personnel are considered to be outsiders by the northern New Mexico communities, as the days of range conservationists with local rural backgrounds give way to professionally trained outsiders. This view was summed up by one of the permittees from the Jemez district: "There should be more involvement with the ranching community! Work with the communities; do not force them." Many ranchers said they feel that newer people do not understand livestock or rural communities. They recommended sending students and new Forest Service employees out to mingle with the people and ride with the ranchers, especially with the long-time ranchers.

The interviewees also made the following suggestions. Become part of the community; live in the community; learn what is going on. Get out there and interact more with the people. Spend time with the permittees on the allotments. Students attending college need to know how the people interact, how people in the community work together, like a team… how they value and protect the animals… know how important this lifestyle is. Go to livestock auctions where people meet; talk to people; introduce yourself; and find out the interests of the older people. New employees should go out and live in the community for a summer as a student and not as an employee of the Forest Service. Learn how to understand the people—how and why they do things. Consider where to live for involvement with the community, to understand their ways and culture. Get involved and listen to what the people have to say…so there will be no fear or resentment. When you want to make a difference, go about it in a slow way.

"Talk with the older people…"

"Talk with the older people in the area and use their years of experience that time has given them; [do] not take everything from a book that doesn't always apply to this particular area," said one rancher. Forest Service people need to talk with "old-timers" and see how ranches have been run before the Forest

Service mandates changes. Again and again, we heard the importance of listening to the elders in order to learn from the experience and wisdom that they have gained over the years. "Look around, ask questions of older people. Send students out with somebody who knows the cattle business," said a respondent.

"Local people have a way of seeing the grass versus measuring it."

Additional views and concerns focus on how newcomers to the agency could learn to work better with local people. Many told us that newcomers should learn from Forest Service employees who are already there working and from the ranchers on the allotments who have been there for years. According to interviewees, to help the communities, the agency should be more sensitive to the needs of ranchers, for example by bringing in more assistance programs for drought conditions. An often-repeated complaint was that the Forest Service does not hear what the people are saying. The Forest Service does not listen. By implication, the Forest Service needs to participate more in community life, listening to what people are saying and paying attention to their needs and concerns, responding with positive actions.

We heard that Forest Service Range Conservationists and other staff should work to understand the livestock business. Interviewees said they think that agency personnel should consider how local people are paying their bills. Grazing "systems" need to be flexible in northern New Mexico; drought is a way of life. Forest Service people need to understand how decisions the agency makes affect communities economically. Smaller ranching operations are prevalent in the region; these people need to be considered. A permittee told of going to a meeting where someone said that if small ranching operations were gone, it wouldn't make a difference. According to him, people who say that are only looking at the number of calves sold, not at what would happen to the people. Permittees feel that Forest Service personnel need to understand the importance of small cattle herds. Five cows can be important to a family. Sometimes agency personnel seem to think they know everything from school. "They could listen to us to learn from local ranchers." "We could learn from each other and share knowledge." Understand "that working together makes it easier for everyone, both the Government and the permittee…."

"Learn our culture, our way of life."

In addition to knowledge of agriculture and ranching in general, interviewees recommended university courses in Hispanic culture and history and in the Spanish language. However, one rancher commented: "I would say, as far as possible that they'd be persons or staff who come from a background experience of working the land and livestock... Then it wouldn't matter so much if they spoke Spanish or not, if they knew the culture…" There is indeed the strong sentiment that many outside the region do not understand the importance of Hispanic culture and heritage to the northern communities and families. Issues such as land grant loss retain their primacy as community concerns, especially as they affect land available for pasture and other resources like fuel wood. Understanding the importance of livestock and ranching to maintenance of Hispanic cultural heritage is critical.

The following comments present the concerns of the permittees that Hispanic culture and tradition be respected and that loss of resources from the land grants be mitigated or at least considered. "Educate employees [on] multi-cultural issues, socio-economic aspects, and traditional uses of public domain land historically used by ancestors." Prepare them for Spanish heritage and tradition. There is a lot of literature they could read to help them learn to understand and interact with the people in the community. They should read the Northern New Mexico Policy (Hurst 1972) and some information on land grants. Force is not the way to handle land grant issues. Have plenty of patience in dealing with the people here. Try to be more cordial, not so forthright, and be less forceful. Northern New Mexico is very unique, a different way of life. The agency and the permittees need to work together in every situation. Don't apply rules from outside. As one rancher added, agency employees should be prepared to know about the culture wherever they are going, not just northern New Mexico.

"Learn from local experience; listen to local people."

Some permittees said they feel that rangers and range conservationists in the past understood livestock better and were more supportive of the ranching culture. People remembered that in the old days, they could use wood and grazing without charge. These were their rights before the Forest Service was established, back when there were the *Mercedes* (land grants). The local people said they believe they should

still have those rights. Many said they feel that people who work for the Forest Service don't realize the history. Another rancher added that Rio Arriba and Taos Counties, partial locations of the SFNF and CNF, have relatively small percentages of private land, which mostly has resulted from earlier land grant losses. The percentage of Federal and Indian land in Rio Arriba County is 69 percent and is 56 percent in Taos County (Eastman and others 2000). Thus, there is a tremendous impact on small private land holdings if the Forest Service holds back on allowing animals to go into the allotments for even one or two weeks. The permittees are maintaining the animals on their private agricultural lands in winter that need to "get going" (for planting) in the spring. Agricultural land is so expensive that ranchers cannot buy it; so this is not a viable option.

To assist in addressing this issue of cultural and historical understanding and sensitivity, the Northern New Mexico Stockmen's Association (NNMSA) has met with the Forest Service staffs at both the Regional Office and at the Supervisor's Offices of both the Santa Fe and Carson National Forests. The Stockmen's Association has also met with the Bureau of Land Management (BLM) and is making progress in talks with the agencies. The NNMSA wishes to encourage local high school students to prepare themselves to pursue Government jobs in resource management as they become available. NNMSA also wishes to encourage the agencies to provide cultural sensibility training to outsiders who come into the area to work. NNMSA has requested the NM Extension Service to undertake this task, as there is a prepared curriculum for this type of training.

Many we spoke with encourage the agency to hire local people who know the custom and culture, the land, and the animals. People who understand and are willing to listen to the concerns of their neighbors are ideal candidates to work in the area. Some ranchers even expressed that only locals should be hired. Most, however, would like to work with Forest Service staff that are experienced with livestock and ranching in the area and are sensitive to the cultural traditions and concerns of the smaller ranch owners. Of equal importance is the commonly heard desire that once the Forest Service has trained, experienced people in place that they be allowed to stay and work in the area and be rewarded for their loyalty to their chosen place of work. The perceived Forest Service pattern of requiring employees to move to gain promotions hinders their developing solid and effective working relationships with the local ranchers.

The Environment and Environmentalists

Views of the Permittees

"I thought I was an environmentalist until environmentalists came along and told me I wasn't."

The permittees said they are deeply troubled by relations between the Forest Service and environmental groups and the effect this relationship may have on the future of ranching in the area. The environmental movement and environmentalists were also presented by ranchers as major concerns when we asked them about threats to their livestock operations during the pilot study. These concerns remain and were discussed in detail during interviews for the current study (discussion topic 7). Most we spoke with said they consider themselves to be environmentalists and resent criticism and pressure from "outsiders" whom they feel do not understand the local people, the rural way of life, livestock, or where food comes from. Although various interviewees said they believe that environmental groups do "some good [and] some bad," interviewees are also of the opinion that these groups have too much money, too much power, and too much influence on the Forest Service. One of the most commonly heard comments focused on the importance of balance in life and nature and on the view that many of the environmentalists who cause problems are radicals or extremists.

"They are trying to touch the land; I live the land."

A picture of those extreme environmentalists emerges from comments made during the interviews. The perceived extremists are characterized as people (mainly outsiders) with money, power, "book learning," a lack of common sense, and little experience on the land with too much time on their hands. Interviewees told us that environmentalists come in wanting to change the way permittees ranch, conduct their lives, and access forest resources. Environmentalists want livestock off the land and are seen as trying to take away the life of the ranchers. In response to our question, "what thoughts come to mind when you hear the words environment or environmentalist…?" one permittee responded "…I'm not going to be able to put my cows on the Forest." Another explained that he had nothing in common with the environmental movement, "They are trying to touch the land; I live the land."

"Farmers and ranchers are the best environmentalists."

One rancher discussed environmentalists in the following way: Some of their concerns are justified, but the environmentalists should be realistic; they "portray an idealistic environment rather than a working environment with respect to lifestyles." He continued that environmentalists want to preserve one species at the cost of doing away with the culture and lifestyle of the people. On the other hand, there are old-time ranchers who want to run their fully authorized numbers, even if the land cannot handle it in certain years. He noted that some kind of "medium" has to be reached on both sides.

"We, as permittees, are environmentally concerned, but not like the extreme environmentalists who want it like pre-European times…" "Agriculturalists are the first and best environmentalists. Too much of the current environmental movement is concentrating on preservation. Leave it just the way we think it might have once been, rather than for the use and benefit of mankind." Another said that environmentalists go too far; they don't have facts, just their agenda. "I feel that I have the same goals as true environmentalists but am in opposition to radical environmentalists with hidden agendas." In summing up, a permittee stated that he had an environmentalist attitude to begin with, adding "we wouldn't have what we have now without it," but reiterating his opposition to extremists and radical environmentalists.

"Our land is our pride. We won't do anything to jeopardize it."

Many of the permittees stated that although they may have views in common with the environmentalists concerning protecting the land, ranchers are the biggest protectors of the land; they have proven themselves for decades and centuries. Those we spoke with said they feel that many people may complain about farmers and ranchers but are not out there doing anything to improve the land. There is a prominent feeling that people in the livestock business are the best environmentalists there are because it is their livelihood and their way of life; they do not want to destroy the land. According to them, ranchers and farmers love the land and want to take care of it. On the same theme, a permittee told us "we don't want to beat up the land and abuse it…[the forest] was here before I came and will be here when I'm gone." Ranchers are not going to do something to the land that will hinder their production. They want it in as good condition, if not better, for their children, respondents said.

"Environmentalists don't have an understanding of what happens here."

The permittees commented that the environmentalists have money and time; they don't ask questions of the people from here; they don't see the people of the land. To one rancher, environmentalists represent bureaucracy and lawsuits filed without really knowing local people and the local economy. The frivolous lawsuits hurt families and kill communities. According to another rancher, environmentalists are trying to eliminate people's culture, heritage, and way of life.

Studies on plots show we need to "mow the lawn" or it becomes overgrown.

The majority of ranchers we spoke with stressed the importance of responsible use of the land both for the people and the environment. Of great concern to them is the waste of resources that many perceive environmentalists espouse. One discussed this in the following way: Timber and grazing land are crops. When ripe, they should be harvested. We need to make lumber out of it rather than let it rot and blow down. Areas need to be grazed to keep the grass clean and growing. Cattle are "weed-eaters"; cows clean the forest. The interviewees said they often support timber harvest, thinning, and burning, after useful wood has been removed. "Don't burn something up that can be used by the local communities" was a common theme; a lot of dry wood could be used by the people, said one rancher.

"Now I think environmentalists and ranchers can learn from each other."

A number of permittees suggested that ranchers, environmentalists, and the Forest Service get together and discuss issues in an attempt to develop cooperation and solutions for common problems. As one permittee said, "at one time when you mentioned environmentalists, we went ballistic, but now I think environmentalists and ranchers can learn from each other. You always have something in common, a happy medium, neither right nor wrong." A few said they feel that ranchers have a role to educate environmentalists concerning the ways in which agriculture and ranching support and improve the land. "We see more urban environmentalists on the land. We need to share our concern and educate them on the need to make a healthy environment," said one interviewee. If we sit down with environmentalists, we can talk and educate them. An interviewee discussed educating the environmentalists in terms of a need for hands-on

experience, getting out in the forest and seeing how it should be managed. He continued that the heads of environmental organizations should get out on the land to see what it takes for ranchers to raise cattle and get meat to the store; environmentalists need to work with the ranchers, not dictate to them.

"We need to understand each other, to come to some agreement."

Others who commented on this topic focused on mutual learning and the idea of give and take. A barricade to this shared learning, however, is a lack of communication and understanding between people, and solutions must be found. Environmentalists hear bad stories; ranchers hear bad stories. They need to sit down together. Many environmentalists have only heard of or seen clear cutting and corporate ranching as opposed to the ranches of the people in northern New Mexico who care for this land; locals have balance and understand that balance, one rancher said. Another said "environmentalists have a job to do just like us. We need to understand each other, to come to some agreement." A rancher summed it up by saying, "We do have things in common. The world is changing; we need each other to keep the forests alive. Extremists on both sides are harmful when it comes to something as delicate as the forest."

"We are the eyes and ears of the forest…"

After the ranchers discussed their views on environmentalists and the environmental movement, they described the many actions they take on their allotments and on their private land that benefit the land, vegetation, and wildlife habitat (discussion topic 8). It should be noted that permittee actions vary according to environmental and physiographic conditions, as well as to precipitation regimes of the locale. Forest Service management decisions also vary from district to district, affecting the management choices of the ranchers. Examples of these variations are requirements for use of rotational grazing systems, extent of fencing (boundary alone versus cross fencing), and need for a range rider as herder.

Interviewees mentioned strong feelings concerning abuses they see daily on their Forest allotments, especially trash dumping and damage resulting from unregulated use. In general, the ranchers said they favor proactive land management treatments such as brush and erosion control, thinning, and prescribed burning after useable wood has been removed. They have serious concerns over unrestricted recreation and irresponsible ATV use, which they said they feel harms the land. The ways in which the ranchers improve the lands of their allotments are the focus of the following discussion.

A large number of respondents mentioned the importance of the monitoring work they do on their allotments, not only in terms of monitoring range condition and keeping the forest clean of litter and trash, but also in terms of being an active and observant presence in the Forest by reporting people and activities that may be prohibited or illegal, such as unauthorized taking of wildlife and off-road vehicle use. They refer to themselves as the "eyes and ears" of the Forest, especially valuable in times of declining Forest Service staff and insufficient funding for law enforcement.

When asked how they work to benefit the ecosystem, the participants discussed a wide variety of beneficial efforts with a focus on the following: rotating the animals, removing animals during periods of drought, keeping animals out of riparian areas, providing waters, and maintaining water developments. The benefits these practices have for wildlife are an important source of pride for the ranchers.

"We only want the land to do what it can; don't overgraze."

Moving the cattle, rotating them from pasture to pasture, and not allowing overgrazing in pastures were discussed by almost 49 percent (116 or 48.7 percent) of the permittees as means they use to maintain the health of the land. Although there are differences of opinion concerning techniques, most agree on the importance of some form of animal movement. Some comments on the topic were: Move cattle to prevent overgrazing or move them to better water. Don't allow grounds to be overused; move and rotate the cows to prevent overgrazing. "Make a yearly schedule to rotate grazing cows…."

"How do we care for what we've got? We have hearts."

One permittee said it is very important "not to overgraze in any way, to withhold cattle in dry times." Another added that improved waters, improved laydown fencing, and rotational grazing are beneficial for the forage. And another permittee stated that he uses fences and cross fences and, in times of drought, runs no cattle on the allotment. A permittee recommended the importance of herding the animals where there are no fences and of keeping cattle away from high pressure areas so as not to overgraze. One said that he follows the Forest Service rules and cuts down

on animals and time in the allotment if the grass is not up to par to preserve the vegetation for the domestic animals and the wildlife. As a rancher cautioned, "if you overgraze land it will mess it up for the future. You need to move stock around."

The following description demonstrates the care that many ranchers in our study take.

> "We are constantly rotating, leaving a single area in rest for the entire year, doing spring and water improvements every year, using trick tanks up high to move stock and watering areas away from the spring head. We use range baskets [an exclosure monitoring device] to monitor grass growth and use by elk, deer, and livestock. We monitor use by elk before permitted livestock go on. During the season when grass inside the basket is 50 percent taller than outside, we know we need to move the livestock. That saves grass for wintering wildlife. The wildlife also uses the salt that is put out."

To sum up the discussion, a permittee said "there is nothing like having a pretty place to go. It makes us feel good when people [tourists] notice how well we care for the range…just by looking at it and seeing the cows and good land."

"It was the permittees who suggested using rotation."

Some permittees pointed out that rotational grazing systems and herding are not just Forest Service ideas but have been practiced in the region for generations, although agency staff and ranchers may define rotation somewhat differently. One told us that it was the permittees who suggested using rotation to the Forest Service, stating that he was instrumental in forming the grazing association for the allotment and thinking about long-term effects. On the other hand, another said he feels that the water systems and rotation system are benefits, but thinks ranchers move the cattle too much and too often in order to satisfy the agency paperwork. "The cows are pushed too much; you can see it in the calf crop," he commented. He noted that BLM staff was more flexible with regulations and that the calf crop was always better on BLM land.

Fencing, especially fencing mandated by the Forest Service, can also be a source of complaint for the ranchers because some feel that animals are forced into areas that are too small or that may not be their desired home territories (*querencias*). These ranchers said they feel that spreading cattle out is better than bunching them up in one compartment for a short period of time. Some said they believe that the practice of intense grazing in a small area for a short period can lead to overgrazing, especially if elk have already been grazing there. In discussions of today's fenced pastures, we heard that it would be better for the land if the cattle could just move on their own as they did years ago. Many support the notion of *querencia*, that cows know their preferred grazing areas and when it is time to move to a new area. As a permittee said, "We have smart cows; they want to move when they need fresh grass. They won't stay where the grass is low." Our study shows that many ranchers support the old ways of following the instincts of the animals as opposed to imposing agency-mandated fencing and grazing systems.

"Wildlife and cows belong there more than we do; they don't need tents or campers."

Taking care of the wild animals is strongly linked to caring for the domesticated ones, according to the respondents in our study. As one rancher said, deer, elk, rabbits, and coyotes all benefit from the waters; "it's beautiful to see them." A rancher discussed how he fences out water sources and keeps cows out of riparian areas so they are not trampled. He also said he puts in tanks and that the wildlife share everything that is done. A permittee commented, "Everything we do for the cows is also for the wild animals. If our cows have water, the wildlife have water, if salt, the wildlife have salt." "If we had been abusing the land, we wouldn't have the wildlife we have now," said another rancher.

Additional comments reflecting the wildlife/salt/water improvement connection included:

Permittees are not the only ones who benefit from the water tanks. If you have water, you have less destruction. Added waters distribute the wildlife as well as domestic animals, and the vegetation will begin to grow more. The same holds true regarding erosion, if there were enough water in all the allotments, there would be less travel back and forth by cattle and elk making trails. When we move the cattle, the wildlife comes in after. We don't bother the wildlife. We clean the streams and springs and make sure no fires are started. The waters help whatever is there from cows to rats to coyotes to deer; it's all part of it.

"The elk are up there having a party."

Despite the generally positive feelings expressed by the participants toward wildlife, the growing numbers

of elk in the area are a problem for many ranchers on both allotments and private land. "We move the cows around so they don't overgraze. But there's no way to move the elk off," said a rancher. Frustration with the situation was expressed by the following comments: elk are a problem; they destroy water systems and create wallows on the allotments. The New Mexico Department of Game and Fish need to cull cow elk and manage the elk. There are too many elk, herds of 100 at a time. Cows are on public land for five months; elk are there year-round and on private land, which must be fenced to keep them out. The 400 square miles (of the allotment) have about 400 cows for 3 months and 20,000 elk for 12 months. Elk are overgrazing the land before the cows get out there.

There are also complaints about New Mexico Department of Game and Fish management of the elk. One rancher said that he has made many sacrifices over the years to improve his allotment and has reduced cattle numbers during the drought to preserve the productivity of the land, but "Game and Fish" has allowed the number of elk to increase. He continued that he is losing interest in improving the allotment because it goes to the elk. Another said there is a "big-time" elk problem on the allotment, adding that permittees fight with "Game and Fish," but only permit numbers are cut, elk numbers are not. A permittee described an over-abundance of elk but said there is nothing you can do but complain to the Forest Service to take complaints to the Wildlife Division ("Game and Fish").

In many cases, the actions of the permittees and their animals make positive contributions to both Federal and private land, from developing waters and maintaining fences, to using the animals as means of removing old vegetation and promoting the growth of new grasses. "Cattle are the brooms of the forest; they eat old grass and make room for new grasses," said a rancher. As another said, the life cycle of grasses is definitely aided through livestock grazing, which is different from wildlife grazing; they go hand in hand. Grazing also keeps the meadows open, cuts down on tree encroachment, and fertilizes the land. Several ranchers described how cattle keep dry plants from accumulating and becoming fuel for fires. The sense of pride the northern New Mexico ranchers feel is apparent in their discussions of land stewardship, range and animal management, and special efforts they undertake to benefit wildlife species. Their work on the forest is a valued part of their heritage and a reflection of their knowledge of the land and the wild and domesticated animals it supports.

Responsibility to the Land

Connection to Land Implies Commitment

"I see our relation and responsibility to the land as being one and the same. I am one and the same; I am the land. So my responsibility and relationship is the same as I would treat myself."

In much the same vein as the previous section, ranchers we interviewed stressed their feelings of relationship and responsibility to both private land and Federal land (discussion topic 6). "My relationship is totally intertwined," wrote one. "…my family was here before Forest Service was. Though I am not wealthy in terms of dollars, I see the ranch as of great wealth that should stay in the family forever. Father instilled [the] concept in us that ranch [and] permits are never to be sold." Another explained that without a relationship to the land, without roots, culture, or traditional values, one cannot thrive here. "I've become part of it when out there," stated another. Land is sacred to the rancher, we heard, and all of it should be cared for.

By this point in the interview process, participants had provided extensive descriptions of their relationships to the land (discussion topics 1-3). Consequently, their answers to this question tended to emphasize responsibility. Responses indicated that land should be respected, cared for, and preserved for the future. Ranchers referred to stewardship, mentioning situations to guard against such as erosion, overgrazing, tree encroachment, and wildfires. Many stressed the need to care for water sources. They spoke of using the land productively but also extolled the aesthetic values of the land. There was concern over misuse and abuse of lands, especially from irresponsible, recreational ATV traffic, trashing, and littering.

"The responsibility is a never-ending deal."

"My responsibility is to maintain a working relationship with the land, to improve it when at all possible," said an interviewee. For example, make sure the cattle are not overgrazing; if overgrazing, you are defeating yourself. Being responsible calls for taking care of the land, making necessary improvements, and passing on knowledge to one's offspring. "Anybody that uses that land has a responsibility to care for it," a rancher stated. "The land and people's connection to the land are what makes New Mexico special."

"Our responsibility is to be good stewards of the land, water, and forage resources of the private and public land," wrote one participant. Being a good steward,

we were told, involves looking at land management in ways to improve land over time and involves knowing what species of grasses are there, what the livestock will eat, and how and when to rotate them. It will not do anybody any good if public land is abused. A rancher said, "I try to be a good steward of the land, try not to overgraze or anything. I make my living on the land, so I'm concerned about it."

"We have a responsibility to maintain our land, not abuse it."

Erosion control, care of waters, fence maintenance, and sensible grazing practices are areas the permittees consider their responsibilities, as are the reporting of trespass or misconduct to the agency or a lost or deceased animal to its owner. Picking up trash, after themselves and others, was frequently mentioned. Ranchers' comments about keeping the land "clean" have a variety of meanings from a concern over tree and noxious weed encroachment and a need for thinning to a concern over land being trashed with litter and garbage. One rancher said he feels responsible to keep the land clear, raise something worthwhile, not let it go to weeds (e.g., Siberian Elms), improve water and irrigation practices, and know what grasses do best on the soil. Other comments referred to keeping waters clean for animals and humans and avoidance of harmful practices that might have a great impact in years to come.

"You can't overgraze it and expect your cows to be fat."

Not surprisingly, there were many comments regarding grazing management. Examples of these are as follow: If there is no grass and no rain, it is your responsibility to cut down on numbers of cows; you do not want an animal to starve. Most important is not to overgraze, not to do things in a way that will damage the land. Rotate cows to avoid overuse, give vegetation time for recovery, and be careful when moving animals not to cause erosion. "It's my responsibility to the land to know why we're moving the animals," said a rancher.

"We have a responsibility to take care of land so it will produce," said a rancher. "If you want your animals to do well, you must take care of the land. We move animals ahead of being told to do so," said another. Respondents expressed a willingness to cut numbers when needed, indicating that those with whom we spoke only want the land to do what it can. The land must be cared for to have grass next year. "We don't want it to be over-used so it is no longer a benefit to anyone."

"Respect what is yours and also what belongs to others."

Land is respected, private or public. One person wrote that ranchers "hold a deep respect for the land and nature's ability to renew itself from drought and fire. We work hard to preserve the grasses from overgrazing and to keep open areas free from encroaching scrub and cedar. Public lands should be open to public access and use, but should be monitored." Another said he has the same respect when working both public and private land, doing things the same way with an interest in both. "One has to respect the land, take care of it," a rancher told us.

"Care for the land; show it has values; it shows you are serious." Eroded and rundown land is of no use to the cattle. Ranchers say they are using the land for producing food, something many recreationists do not understand. "We are caretakers of the land. We pick up after the hikers. We take pride in it. It is not an investment to make money on; it is a life-long commitment."

"I feel better on my land."

Over 50% of the participants we interviewed responded that they feel the same about both public and private land or do not consciously distinguish between the two. Others commented that there is a difference between the two and explained that perspective from a practical standpoint. There is an obvious interpretation to the question of responsibility to land that public land belongs to the Government (hence the general public), while private land belongs to the individual. "On your own land, you feel secure; you feel more at ease," said a rancher.

The responsibility is the same, but the ability to manage it is different. "On private land, we have control," stated a rancher. "On public land, we have no control over recreation, environmentalists, or regulations. Management capacity is diminished." Another rancher told us that he feels differently about private land because it is his. He can't stop people from going on the public land, but he can stop people from coming onto his own land; therefore, he can take better care of it. To another, there is a difference because there are restrictions on public land; therefore, "you can't put your whole heart into it and do what's needed."

"Treat it as my own."

The other interpretation is more abstract; responsibility is due because land matters in spite of ownership. "To me it's our land and we must take even better care of our public land than private because of the many owners. Work with nature. Let fire burn if it's not

hurting people or animals. Fire is part of nature, part of God's design." A rancher said that he cares for public lands as though they were his own and has money invested in both. Be responsible; "if you don't have land, you have nothing."

"All of our family uses Government property as if it were our own. You won't see trash or ATV tracks or beer cans or plastic bags in trees on our land. We don't even camp." Even on private land, this family does everything on horseback. A rancher expressed the hope to always be able "to use these lands appropriately and keep inappropriate things at bay…. Why would you want to take care of private land better than your public land?" He feels it is a special privilege to be able to use the public lands. Another respondent commented that work cannot be done only on private land, coordination is necessary between both. "It's a big responsibility…. We take care of the land the same way as [we take care of] our kids. And we teach our kids to do it. It's like it's ours," was a final comment.

"I want to leave it better than when I got it."

Another aspect of responsibility, we were told, is to leave the land better than you found it. "I'm a caretaker. Hopefully I'll leave it in better shape." This was a common goal expressed by the ranchers. "I try to maintain the land and try to leave the land as natural as possible"…not adding excess structures and not trashing it. Pack it in; pack it out. Leave the public land the way you found it, or improve it; that benefits both the land and the cattle. This was described as a moral and ethical responsibility.

"When you empty a can, you put it back in your saddle bag."

Don't abuse, overgraze, litter, or trash the land. "I take my responsibility very seriously. I don't abuse or litter. I don't appreciate others doing it." Trash pollution is seen as a great problem. We were told that ranchers don't dump trash and that litter, such as broken beer bottles, endangers cattle. "Why would we want to destroy it? We must take care of it, or [we] won't have anything." Another said he treats public land as if it were his own and hates to see somebody tear it up. In his observation, ATVs, four-wheel drive vehicles, and camp fires do more damage in a weekend than cows do all summer. According to him, people are destructive, which causes many changes.

"This is my home land!"

"I feel very responsible for the mountains…. I have great love for the mountains. I spent a lot of time there as a child growing up." A rancher said he believes he is more responsible and has a better relationship to the land than any Government official. "We like it because it's ours, not because we're paid to like it, because we grew up here and made our life here and were born and raised here." Another told us, "I love the land. It has given me everything that I am. It's a lot of work, but I have a lot of good feelings toward that land."

"Preserve it for younger generations...."

We heard land referred to as "an inheritance for all of us." A rancher told us that his main responsibility is to protect land for the future so that tradition and the rural way of life may continue to flourish. "It's beautiful to see the land. We appreciate the land we have and keep it suitable for generations to come." An interviewee said, "It's not just about making money this year; it's something our kids and great grandkids could have."

Land, Livestock, and the Rural Ranching Culture

The Land and Animals

Feelings about land, livestock and their role in maintaining rural ranching traditions and culture were discussed with enthusiasm and eloquence (discussion topic 1; Appendix D). Attachment to place and affection for the animals were recurrent themes. Ranchers spoke of having a "connection with the land," "a connection to the past," and "a connection to that place." They referred to being "tied to the land and livestock." They frequently speak of the animals (a word more often used than the term livestock) as part of the family, as beings to be treated with admiration and respect.

Caring for the land and animals gives the ranchers a reason for being, work they enjoy doing, and satisfaction at the end of the day. They expressed a sense of privilege to be the ones living in that place. There is contentment, a "sense of belonging" to a place where they know how to live and who they are. It is part of their identity; way of life; history; and past, present, and future.

The role of land and animals is intertwined with tradition, culture, family, community, faith, and closeness to nature. A necessary symbiotic relationship develops between rancher, land, and animals.

The following are quotes and excerpts from the interview discussions on the role and importance of land and animals to the lives of these ranch families.

"I like to wake up in the morning and see the cows and go work on the land."

Land and livestock are an integral part of ranch life. They give a rancher meaning and purpose, providing social, spiritual, and economic instruction and a feeling of satisfaction in his daily work. As one expressed it, "Other than family, they are the most important thing we've got. We don't really own the land; we're just shepherds of it and of the animals."

Land and livestock are basic to rural life. If that disappears, the rural atmosphere would erode and disappear. "We have a tie to the land, more of a cultural thing," stated a rancher. "Most Hispanic ranchers feel the same way…[it's] sacred. Land is not a commodity that you buy and sell but pass on to the children. [It's] the same with animals. [We] keep a group of animals, buy bulls, and use our own replacement heifers, so [we] have lines of cattle that go back about forty years."

"You have to have a feeling for the land to be a rancher."

"The more you work the land, the more you get to love the land. It's true; if you don't have love for it, you won't work it." "We don't own the land, it owns us. The land will remain while humans come and go; to sustain future generations, be careful what you do today!" "Sometimes I look at myself and feel sorry for others who didn't have the river, the mountains, the feeling of being free." "The feeling of being out here is a feeling you can't really describe." Even if every material thing was taken away, you'd still have a life because of the land. "Everybody knows we have cattle; it gives a certain amount of respect…people look at you in a different way."

"You learn a lot from the animals…"

One person spoke of watching a mama cow taking care of a baby calf in the snow. "It's peaceful with the animals; they depend on you to a certain amount." "They make you more compassionate…." It is "very pleasant to be up with the animals," stated a rancher who wishes he had more time to be with them. Animals are a lot of hard work. If you don't like them, you are in the wrong business. "We all love our cattle and horses…. They come right after my family." Some say they have bonded with the animals and know them by name. "I like my cattle. I talk to my cows. They become pets because I have names for them all. They get to know you. There is a feeling of satisfaction."

"I worry about the cattle a lot. If I forgot to feed an animal, I get up in the middle of the night to feed them. They are like family." Another says he worries about the welfare of the cows; do they have enough water and food. He enjoys the livestock business. It's something not everybody gets to do, which makes it more interesting. "If you grow up with animals, then you learn to care for them; you feel you are part animal." "I'm relaxed when I'm out there with the cows." "A place without animals…is not a very pleasant place to live," commented a rancher's wife. When she goes somewhere with no animals, she feels "so lonely." In another rancher's words, "What would the place be without the animals and tradition and culture?"

"It keeps the family together."

"Traditional branding brings family and friends together. Butchering of livestock is a custom held in our household for years, plowing, planting, and harvesting crops…helped keep our family united." Ranching is the center of their lives. "All of us do farming and ranching together…as a family." There is a sense of family and camaraderie from going up to the allotment. Extended family comes back to help. That was a blessing, the time together." "It's a big part of our culture and traditions; without land and livestock our way of life would die." It is "important to keeping the communities alive because there are not many jobs in this area." It is "important for the ranch to remain in the family."

"It's a connection to the past."

"We come from a rich and glorious past. Although people no longer have big herds or hundreds of acres, they still hold a part of their heritage." A rancher explained that he thinks of himself as going back in time, maintaining values, and keeping old-fashioned ways alive. "By farming and ranching, you keep that connection." The land and livestock have been in these families for generations; it's a way of living in northern New Mexico. It brings the memories back of growing up, how things were at that time, and how things have changed. It is a tradition of what one's father and ancestors did. Ranchers said they feel they are doing something that is worthwhile.

"Besides being a way of life, culture and custom, it is part of our being…cattle are a part of our lives… *acequias* are traditional and historic…the investment is tremendous." Ranchers are trying to keep the tradition, some of which is already lost because of modern

ways. For instance, "people used to ride to care for the livestock and for pleasure; now kids want to look at TV and mess with cars." Another remembered, "We used to have dances out here; now there is not that closeness between people."

It's "a pretty heavy role, this tradition here in northern New Mexico. Around here, everybody has a few cows, small pastures, a baler to bale hay, a tractor," said a rancher. Because of limited numbers of animals, he explained, it is hard to make a living here, so most need other jobs. Looking back on the generations and what it took to get established strengthens his heritage. The rancher thinks of his father and grandfather riding the same ranges before him and the opportunity for the children to do the same. They will never get rich, he said, but they will get "that sense of belonging" of knowing "where they came from."

"Those are your pride," the land and animals.

"The tradition and culture are directly tied to the land and livestock. This lifestyle gets in your blood." "It's not a hobby; it's a tradition. It's a good life." In a rural ranching tradition, land and livestock go hand in hand. A rancher explained that he has seen the benefit of correct livestock use on public and private land and wants to preserve that. "I'm here, and I chose to stay here! I enjoyed the way I was raised on this land, this way of life," another stated. "The animals are part of it. The land and animals and way of life are all tied together." He said it is part of his identity.

"I think it's a gift from God, I really do," one rancher said. "You learn how to care for things…. There's almost a spiritual aspect to it." To another, the way of life provides him with a sense of freedom, peace of mind, a lot of space to think, and a chance to breathe fresh air. It is "a religious heritage," another said, "God put us on the ground to care for it." "It's a way of life out there, breathing the fresh air, looking at the trees and grass," a rancher explained. It became clear to us during the interviews that there is a quality of life here that needs to be seen and realized and understood by outsiders. The land is "part of an inheritance our fathers and fore-fathers worked hard to gain." It is important, a rancher said, to "pass on the tradition that was passed on to me, the values, the importance of living with the land, in harmony with the land."

"Sometimes you're tired but have to work anyway."

These ranchers do not just extol the rewards and pleasures but are realistic in describing the difficulties and downside of ranching. "Not everybody is cut out for it. It's hard to live on the amount of money a rancher makes." Many must supplement the ranch income with another job, and, if lucky, can retire back into ranching. "It's hard to work on the ranch, hard to get up so early for two jobs." A rancher said that he loves the work even when there's no money in it; he likes the peace and quiet. They ranch, not so much for the profit, but for the satisfaction and enjoyment.

"There is pressure sometimes with limited time, but the work and enjoyment is the best feeling. [You] feel good when the crop comes in, and in winter when all is done, feel you have accomplished something." "It has given us a sense of accomplishment and pride to be able to provide food for our Nation along with other hard-working, honest families." The work is hard and can get frustrating, but love for the land and animals was said to keep the ranchers going. "To me, it's a gift from Heaven…. Not everybody has the opportunity to have what we have and to enjoy the frustrating times, but you still enjoy them. It's one more obstacle that you cross; it makes you stronger."

"It's my connection to that place"

"This is a stewardship issue, a values issue. Doing this is a way to keep New Mexico rural, in condition," stated a rancher. Otherwise, land would be purchased for development and water export. Another responded, "The land we have has been in our family for five generations. These properties are more than just dirt; it is a part of our family just like a child and grandchild. The livestock we raise is to maintain our simple life and to teach each generation to love the land as our ancestors did." It is the "best way to raise a family, working together, enjoying life through work." "It's a great place to raise kids and teach them how to work and succeed."

Land Ownership and Sale

Responses to a question concerning land ownership and sale of family land (discussion topic 3) continue the discussion provided by the ranchers concerning the role of land and livestock in culture and tradition and the ways in which they are used to teach the younger generation. Answers to discussion topic 3 reinforce the values and lessons of the other topics by contrasting the benefits of land ownership with the repercussions of land loss. Land and animals, family and community, and way of life join forces to create a sense of place that becomes the definition of who one is. Loss of that place, in consequence, equates to a loss of identity.

In speaking of land, language, and memory, Arellano (1997: 32) said, "He that loses his land loses his memory, and no amount of money or technological advances will help us recover that loss…. The challenge for all of us is to find a way of rediscovering what we already have."

Consequences of Land Sale

This question, with few exceptions, was a disturbing topic for the ranchers to consider and discuss. Sale of ranch land, they believe, invariably results in an increase in land taxes and escalating land prices, bringing subdivision, development, and the loss of open space. They also feel that outsiders are attracted to the beauty of the landscape and picturesque villages, but then these newcomers require large homes that eclipse the very setting they admired and, at closer observation, may view the local people as poor in comparison to themselves. People and traffic increase, but new fences and walls inhibit the freedom the locals once had to ride or move livestock across the land. Another great concern is that drugs may enter the rural scene, affecting the morals and values of rural youth. Community life becomes fragmented. Also, the water supply, always a major issue, is stretched thin, and the *acequia* system, so important for community cohesion and continuity, is not understood. In some areas, ranchers described the added problem of commercial, production agriculture taking over where the family ranch once prevailed.

There were a few comments regarding the right of people to sell what is theirs—such remarks were usually tempered by regret. One respondent stated, "I feel very strongly that a person who owns property has the right to do what he wishes with what is his. I would feel very upset if someone said what I could not do with what is mine." However, most expressed dismay over a neighbor's decision to sell. They said they feel that land is too valuable but understand that because of age and declining health, the choice must sometimes be made to be closer to conveniences. "People make a mistake by selling, but I guess some have to sell. Little by little ranchers and farmers are coming to an end. It's hard to see it! But, now more people are moving in... with money. People that used to live here were poor... they've never seen so much money, so they sell...."

"Santa Fe happens!"

"Land ownership has been a contentious issue for many generations here...land is managed by the agency, [land that once] belonged to the community, to the land grant system... so there's still a lot of aggravation over that." Private land within the community is being sold to non-agricultural users who know nothing about farming. "All they want to do is just build their little fence around themselves and be left alone.... So what I told the community here is, we have a big job ahead of us and that's to throw down all these fences because these communities [need] to interact and work together, and we see some major changes happening. You go to a community and find out who the newcomers are. The first thing they build are these fantastic fences between them and the rest of the community. And here you want to know who your neighbor is, what makes him tick, can you help him...." Whether the fences are real or perceived, they can form barriers between neighbors.

"Money's here, money's gone, but land remains."

Many spoke of the need to hold onto land, of how no more land was being created, of the importance of land that has been in the family for generations. "The problem is we can't afford to buy land anymore if it's not in the family. The families are splitting up ranches and selling to people for houses, little getaways…and there is no way to buy more land." In the short term, the seller gets a lot of money, but not in the long term. They realize that the kids can make more money by selling off farms and working in town, but the money runs out. "It just limits what you can do with your operation.... The land values go up. Then your young kids, they see it, 'well, we can make more money by selling the land than we can by farming the land'.... That's a false hope...because money will be gone and your land will be gone along with it, but it does give kids false hope...it's sad but true, and that's what's happening right now."

"If neighbors sell land or water rights..., it weakens the agricultural base. It changes the nature of the relationship to the land, lifestyle, and value system. Then they have to find ways to survive the escalating costs." It has come to a crisis here with the high land prices, they say. Water is a major concern. According to one rancher, even one house on a piece of land begins to change it. Development changes the nature of the area completely, he says, and increases the likelihood that water will be sold and exported. In some ranching communities, lengthy legal suits have arisen with outsiders who do not understand the traditional ways of the *acequia* system. Some new neighbors want the ditch to go from a functioning system to an aesthetic one. There is the possibility of confrontation between those who use sprinklers and wells for production agriculture and those who have traditionally used river water and water rights for irrigation.

"There's that human encroachment coming."

Respondents expressed fear and concern over the reality of sales increasing land values (i.e., price per acre) and, thus, leading to an increase in land taxes and the inability of locals to purchase land at the greatly increased prices. They also expressed dread of rural, agricultural, and open lands being converted to development, with the land never to be recovered. The following is an example of the effect of escalating land prices on working ranches.

> "When a ranch goes up for sale, what we're gonna' deal with here is the…insanity of real estate prices in general…25 years ago, a decent size ranch (6000-8000 acre ranch)...would go for something like just under $100 an acre.... The same place today is $600 or more an acre. The consequences of that are disastrous.... Whoever has the money to buy that is buying it to play with. It's an investment. And if you find a Rocky Mountain ranch that has some size to it... that has changed hands in the last 10 years and they've paid those prices (somewhere between $5000 and $10,000 an acre).... A strictly agricultural-based operation doesn't pay...what it's doing is putting the agricultural industry as far as a ranch around here, an actual working ranch that is actually trying to make ends meet, almost non-existent any more."

Loss of the public land grazing permit also presents a threat to ownership of the ranch. As discussed in a study of ranching conducted in the southern Rockies, "if access to forage on public lands is curtailed, the economic viability of these ranching operations may be compromised, leading to … conversion to exurban development," which could have important consequences for conservation in the region. Their findings indicate that working ranchlands provide a buffer around public lands (Talbert and others 2007: 5-7).

"Yuppies and vegetarians are moving in like gangbusters."

Ranchers expressed apprehension over the inevitability of "outsiders" moving in as ranch lands are sold. For them, past experience confirms the perception that "outsiders" often do not appreciate the community or the land into which they have moved and tend to dislike the presence of livestock. Many with whom we spoke feel that some of these newcomers may fit in, but it seems that most do not understand the rural or agricultural way of life or the culture of land-based, predominantly Hispanic residents. There is a lack of understanding of ranch ways, especially regarding the handling of animals. "Outsiders" often prove themselves to be aloof, walling out neighbors, but not adequately fencing out livestock. They tend to lack an interest in community participation and do not understand the importance of *acequias* and the responsibilities involved.

"You see that situation happening all over northern New Mexico where people move in. …and so what you're seeing is a lot of people coming in...who have a totally different concept of land ownership, and it changes things." "Most Hispanics grow up in northern New Mexico with kind of a land grant mentality, even if they do not realize it; it's this common land sort of thing." People used to walk, ride, or drive through each other's land on trails and roads that were considered more or less public. "But now you see people moving in...and they put up fences with locked gates and signs with very strong language saying, 'keep out, trespassers will be prosecuted,'...it leads to problems and animosity...means having people from outside that again have a different value system, a different idea of land ownership."

All of this leads to change: in their way of life, in community structure, in the future of agriculture, and in the future of their families. Land sale, to these ranchers, is not merely the relinquishing of a piece of real estate, for land is not generally viewed as such in these rural communities. Instead, it represents a complexity of losses in the form of tradition, culture, connection between past and future, and one's reason for being. To the ranchers, land is that place where one lives and works and raises children, a place to experience the freedom and pleasures of nature; land is home. If the land is part of who one is, the loss of that land can be devastating.

Land Grant Loss Revisited

Considering the possibility of land loss in the present puts many in mind of prior land grant losses suffered by ancestors and still remembered with considerable sadness and bitterness. Question 25 asked the permittees if their family members were part of a land grant, and if they were no longer associated with a grant, how that occurred. Almost 50 percent (49.6) reported that their families were or had been associated with a land grant (question 25; table 48; Appendix C). Of those, 44 percent had suffered some

form of loss in various ways (question 25a; table 49; Appendix C).

Land Grant Connections

Question 25 brought forth a range of stories and information concerning past land loss and the serious consequences of those losses to family fortunes and well being, both past and present. Some of these discussions are reprised in the following sections from prior work by Raish and McSweeney (2008). The majority of ranchers who could trace connections to a land grant were fairly knowledgeable concerning the circumstances leading to loss of those lands. Responses ranged from brief comments that land was taken away or sold because of financial need to more complex explanations. Many stated that these grants ended up as Forest Service (some as BLM) lands or, to a lesser degree, were transferred to various pueblos. Most frequently, the answers focused on the simple theme that the U.S. Government took the land.

This view is echoed in the words of Ebright (1987: 50) on the treatment of Hispanic people with respect to the land grant issue: "No one individual or group of individuals is to blame…. They all played a part in the chicanery of land grant adjudication, but the drama was allowed to proceed by the U.S. Government." Ebright described the Hispanic residents of rural, northern New Mexico as a people who still live close to the land. He stated that "the land grant story is not simply a fading part of New Mexico's history," but a story of generations of families and "of a passionate and continuing struggle for the land their ancestors were promised when they became citizens of the United States in 1848" (Ebright 1987: 50).

Ranchers spoke of how land was lost because the people could not afford the taxes or could not read English and were unaware that the taxes were due. One interviewee answered that his mother was from a land grant now owned by the Government. He said he suspects that the Government wanted the land and took it using unfair tactics. For example, when New Mexico became a state, a messenger told people they had to be in Santa Fe at 8:00 a.m. the following morning for a hearing on the land allocation, but they had no vehicles to get there in time. Also a notice was posted in a newspaper, but not in the town where the people lived. He said he believes such means were used to separate people from their ancestral lands.

Another also stated that his family's grant land was taken away by the U.S. Government. He told the following story:

> I own part of my Granddad's homestead, but that's not part of the land grant. It was taken away by the U.S. Government…. Of course, my Grandmother couldn't speak English at all, and my Granddad was in France during World War I in 1918, and he wasn't here to sign some paperwork or something, and then they took part of that land away and turned it into National Forest…. My grandmother…had a lot of animosity towards the U.S. Government over that. My Granddad…it didn't bother him that much. I mean it did, but he said, "Hey, that's just the way things happen in this country."… Of course there were a lot of families that were moved, relocated, and stuff was taken away from them.

The grandson, who is now a permittee, said meetings have been held regarding the land grant, and he thinks that the U.S. Government is trying to settle some of the grants. He holds on to the hope that heirs to the grant will get some settlement as others have, especially for the grazing land. "I probably will never see it, but maybe something will come about, I don't know. Maybe a percentage of it will be turned back."

One respondent told us he can trace his connections to the Trampas Land Grant back to 1751. He shared information on the grant compiled by Arguello (no date). The grant was confirmed by the U.S. Congress in 1860, but boundary resolution was delayed because of the Civil War. Multiple subsequent surveys and manipulation by corrupt lawyers of the group referred to as the Santa Fe Ring led to partition and sale of the grant. The grantees lost everything, and now that land is part of the Carson National Forest.

Another person with whom we spoke discussed the Capulin area as a place where everyone had access to land for grazing and timbering. Later, the land was bought by a private company, but people were supposed to be able to use it with no taxes as long as the company owned it. The 1930s brought drought and depression. Many people left. The company traded the land to the Forest Service, and that was the end of free use.

Many permittees told us that studying land grant issues helps them maintain their connection with the land. They said they feel that there may not be an equitable resolution of land grant questions, but they still wish that the Government would acknowledge the injustices of the past. As our research has repeatedly shown, much of the northern National Forests are

emotionally and psychologically vital to the lives of the rural people. "[Ranching] has been happening here for centuries [400 years]. History did not start here in 1846.... Land is one of the things that hold people together."

Land Grants and the Forest Service: The Contemporary View

To understand how the Forest Service views land grant issues, we spoke with a variety of agency personnel at the region, supervisor's office, and district levels who were recommended for their knowledge of land grant policy and issues. Official Forest Service policy supports the conclusions of the previously discussed 2004 GAO Report that land grant adjudications were accomplished properly. According to Forest Service lands staff, the agency has a mandate to defend U.S. title to National Forest lands and to manage them to the best of its ability. Forest Supervisors have received direction to defend U.S. title to lands; Forest Service resources are not to be used to undermine U.S. title (Raish and McSweeney 2008).

However, in our informal discussions with Forest Service staff, we found a range of views concerning land grant topics and problems, which are discussed in greater detail in Raish and McSweeney (2008). A few of these comments are presented here. One person told us that the GAO report did not address the issues permittees are concerned about, and the situation is not resolved in their eyes. He said the Forest Service will continue to do its work until things change, trying to keep the land sustainable and used in the proper way. Several employees said that they do not work directly with active land grant groups, stating that it is hard to find a clearinghouse that provides someone to contact on the different land grant boards. One staff member commented that the Forest Service should establish stronger ties to active land grant groups and make sure grant members know who to contact in the agency. This train of thought ended with, "[The Forest Service] should be doing more; we could be doing more." However, one reason for lack of communication was referred to by a Forest Service interviewee as "fear of giving the farm away." This mindset was described as a Forest Service mentality, which has made some agency people hesitant to become too involved with the land grant groups, knowing that the grantees want the land back. On the other hand, another employee questioned why the land grant groups have had to pay taxes when the pueblos do not. According to this person, the King of Spain granted lands to both pueblos and Spanish settlers in the form of land grants. When surveys turn out to be inaccurate, pueblos often have lands returned, while this is not the case for the land grant groups. He said he feels that the land grant groups have not had the support the pueblos have had.

Many Forest Service staff members we interviewed stressed the need for training Forest Service employees (especially those from outside the area) in the history, culture, and traditions of the local people, stating that many of the local Forest Service employees recognize the need that northern New Mexicans have for traditional resources. "We must have people here who are very connected [to the land] and understand northern New Mexico needs, lifestyle, culture, and tradition." Another recommendation concerned the Carson and Santa Fe National Forests working more closely together and coordinating fees because they serve many of the same people. The staffer also felt that trust building and small accomplishments are needed among the groups, saying that land grant people work well with individual Forest people and vice versa, but will probably never be "hand-in-hand" with the agency. In summation, we heard "treat people with respect and expect respect. Work in partnerships. Pass land on to children and grandchildren in a sustainable manner."

Our discussions with Forest Service personnel demonstrate that effort and concern go beyond the "official" agency position. Many local people are employed by the northern Forests and understand the concerns of friends, neighbors, and relatives. These employees said they often view greater participation by local communities in Forest Service decision-making in a positive light. They argue for promoting locals in place and for the importance of longer tenure in leadership positions to build communication and trust between communities and the agency. Some staffers said they feel such changes in agency culture are occurring, while others do not. Despite some disagreements, those we spoke with said they believe that land grant issues can only be resolved by Congress and not through the courts.

Consequences of Loss of the Ranching Way of Life

One of the more powerful and disturbing discussions we had with the participating permittees derived from our asking how they would imagine the economic, social, and environmental consequences if the ranching way of life was lost in northern New Mexico (discussion topic 10). "All of what I think is special

about northern New Mexico would change as a result," answered one rancher.

"How many days do we have to answer this one?"

Respondents often hesitated before answering this question, as we were asking people to picture an end to life as they know it. The idea was unthinkable to many and frequently elicited such reactions as "devastating" or "disastrous." Of great concern throughout the ensuing discussions were the probable effects such a scenario would have on culture, tradition, children, family, community, and the land. The consensus was that people would have to move away from home and from their rural communities because there would be no reason to remain. There were also dire predictions that such a loss might create a state of poverty and result in a dependence on Government welfare. Only a few envisioned negligible consequences in any of the three categories: economic, social, and environmental consequences.

Economic Consequences

"There would be a huge economic impact."

On the subject of economy, one rancher explained, "It's not just the rancher; it's the butcher, the meat processor, feed stores, hay, and tractors. We put food on people's tables, leather for shoes." He predicted "a trickle-down effect on others; everybody shares the money. There are a lot of pieces to the puzzle." Ranch-related businesses would lose and many businesses would close up, as ranchers and farmers spend money in the local communities (on tires, pickup insurance, fuel, feed, and trucking, etc.) and most have money in local banks.

Ranchers said they feel the local economy would suffer if the people were to leave. Ranchers have supported these communities, we were told, and kept them alive. Farms and ranches provide employment; without them there would be no need for stores, seed dealers, livestock auctions, or school teachers. "If they do away with the rancher, they will be doing away with a lot," a permittee told us. The end of the ranching life would affect more than northern New Mexico; it would affect the whole nation. "I think the consequences would be great all around."

"We couldn't make it without our ranch and cows."

It would be a definite impact to the economy, ranchers said, even though most of them do not use the ranch as full-time support and must have second jobs. There are people in the community, however, who support themselves with full-time ranching. Others have only a few cows but depend on them, as do many of the elderly—it adds to their income. If you need money quickly, we were told, you can sell a cow or some hay rather than borrowing from the bank. Sale of a few animals has helped when money was needed during times of family emergency or for a college education. "It would be a great loss, what we get from selling cattle and hay. Sure it's hard going, but it would diminish the picture of what New Mexico is about. It's what makes New Mexico special." The people in northern New Mexico have their jobs but also this supplemental income and meat for the table. "Good operations make good money; small operations supplement the family."

"We would have to go out to look for employment."

There was a general feeling among those with whom we spoke that an end to ranching would result in an exodus of residents from rural communities to seek alternate employment due to the lost income. "What jobs would there be? Logging is already gone." Respondents told us that loss of the logging industry has already resulted in losses to the economy and employment. One rancher said that another type of job might be less work but not what he enjoys. The ranching business is the work of choice, he said. "A computer job is no more important than the man over there feeding cows."

Another rancher predicted migration to the cities accompanied by more economic problems. Young people would have to move out to seek employment. It is happening now. "We could all go on welfare," one said; "that is what it would come to." Out here, there are no jobs to be had; we live off the land and animals. Locals would have to take menial jobs or move to town and become dependent on the Government, resulting in degradation and more poverty. Communities would be poorer as a result.

People would be more dependent on Government programs and subsidies. The change would be devastating to the communities of northern New Mexico. "People here may not make a great living, but it is a living." As it is, they do not have to go to the Government for food stamps. "We raise our own food and trade lumber for hay." If ranching is all a person knows and it was removed, there would need to be Government support. Now a self-sufficient provider for the community, this rancher said he would be converted to a welfare recipient.

"People don't realize how important farming is."

Land gives us something to eat, permittees stated, and small farms are important. If no one farms, we were told, there will be no food in the stores, not only in northern New Mexico but throughout the United States. Beef would be imported or raised by big industry. "We would have to pay a fortune for [feed lot cattle] and get diseases from meat that has been pumped full of steroids." Range-fed beef such as the permittees raise is rapidly becoming a desired commodity for reasons of human health, environmental protection, and humane treatment of animals. For decades, these permittees have been producing the kind of beef and lamb that is now so much in demand. Local people like to buy local beef, quality meats. The ranchers told us that purchased beef does not taste as good as the beef they raise.

"It will typically hurt people who can't afford to lose."

The loss of ranching would be devastating to all communities, socially and economically—as devastating as being wiped out by a hurricane. Money does not answer all the problems in the world. "I see the major issue in northern New Mexico as the selling of land, making money…becoming developed. [I am] worried that we will lose a lot of small and even big land owners."

Economics and social life are connected in northern New Mexico. Even for people with three, four, or five cows, it is part of the living. Ranchers said they feel that grazing their animals on the forest contributes significantly to the well-being of the area. Without it, herds would be reduced and families would move, disrupting the social and economic benefits of schools, towns, and churches. Small communities would be hurt, said one rancher, but the economic loss would not be as great as social and cultural losses.

Social Consequences

"Ranching in northern New Mexico is a way of life, if you have 8 cows or 100. It is tradition and pride passed down from generations."

This portion of the question weighed most heavily in the ranchers' responses. Although economic and environmental concerns mattered greatly to them, losses that would affect family, community, and culture appeared to be more critical. Many said they felt the greatest impact of change would be on the social aspect of life. The perceived consequences could threaten the very core of life.

"Loss of traditional values, which strengthen our culture…"

The social aspect of family and community life would deteriorate, ranchers predicted. There would be a decline in family unity and cultural values. Older generations would feel the loss; younger generations wouldn't know what they had missed. Many pictured having to move away, ranches being replaced by industry or another type of people, and culture and tradition gone with them. "It would be the end of everything… a sad day in northern New Mexico. It's a way of life."

"It would be horrible for me because I have a son and grandson coming into it," stated one rancher. "And I know it's not the most profitable place to be, but it's been a way of life all my life." The way of life would be gone…no getting up in the morning to check the animals. There would be no animals to feed, no hay to cut; they would be "like city people." It would be a loss of a heritage that has existed for many years.

"Even if [you] have one cow, kids have to do chores."

Many spoke of the work ethic that the ranching tradition can engender in children. If ranching ended, new generations would have to find other ways to learn what it was like in their parents' and grandparents' time. Now, they know work ethic because they grow up with it. Ranchers expressed concern that without the rural life, youth would have more opportunities to get into trouble. Families and culture would suffer, and boredom would set in.

Ranching is a way of life in which children help out. This life keeps the kids out of trouble, similar to sports, a rancher said; and doing the regular work of ranching keeps you fit. As a coach, he could see evidence of that fitness in farm kids and also a different attitude of respect and a tendency to stay out of trouble. There was a prediction that children might not amount to anything or learn to work before getting out in the world. With ranching, they learn to respect life in animals and the environment.

"Life for me would be gone."

Several spoke of a connection with animals—the beauty and happiness of seeing them—and the loss to themselves and to the children if ranching disappeared. One rancher said he cannot imagine this country without farming and ranching. There would be no cows and nothing to talk about. People have gatherings for brandings and during hay season; it is a big part of life. County fairs are a reason for kids to raise their animals. Rodeos, the play aspect of ranch work, came from

this lifestyle. All these activities need the animals and ranch families. Another rancher said it would be lonely for him without animals and work. "It's the beauty of living in the country. It gives a good reason to live."

"It would be a very sad place to live in."

"The older generation would suffer the most," said a respondent. They could not live without ranching. Many said they feel that in rural communities, there is more respect for elders from the younger generation than in a big town. One said that older people would end up in the ghettos and would become "a social leech." Older people keep going on a ranch, we were told, resisting "a move to the couch."

"Community life…nothing would be there."

The sense of community would be lost. Neighbors would associate less. Ranching and farming families are the community. "Communication between neighbors starts because of ranching. By talking, we learn what is new, who is sick. We would lose that and would see a lack of familiarity with neighbors. There would be nothing to get [neighbors] together," a rancher explained. People in farming and ranching are also united through the churches and the schools, another rancher said; they pull together.

Communities would become ghost towns. There would be no children for the schools, no more *matanzas*, or picnics up in the hills. As more people move in, the permittees notice, much of the social aspect is already disappearing. In the past, neighbors were better acquainted. "We had a lot more time, a lot more dinners. Now we don't have time; we've moved on already," said one permittee. "As agriculture leaves, so do the people," said another.

"The dislocation from the land would cause a drastic increase in disorientation: drug and alcohol abuse, suicide, conflicts, lack of understanding among peoples and cultures. It would cause many of us to move to already exploited urban areas." More kids would be influenced by television and drugs instead of learning how to care for an animal, grooming and feeding them.

You would see crime and drugs and disconnection from the land. Ranchers said they felt that drug problems and social issues are directly related to loss of land.

"It would tear families apart."

Family background is still embedded in the culture of the ranching environment. The social life is built around animals. To people with a few animals, they are like family. "The aspect of families getting together branding and harvesting will be gone; no more dinners from the harvest. And we will lose family values," said a rancher. "Going to mass to thank the Lord for what we have done. We lose the negative of life when all are working together," said another. The ranch keeps the unity of the family, a rancher told us; it is a family operation. When he has to go get a cow, his wife will leave her household chores and say, "I will go with you; I will help you."

"Pages in a history book."

The way of life would be relegated to pages in a history book. "This is live history that has been passed on from generation to generation." It's easier now with machines, but life and values are the same, a rancher explained. Dismay was expressed over much of the younger generation that does not want to be tied down to the ranch. They can make more money in an 8-hour a day job and get paid more often. They come and visit for a few days and then go back to the city. A rancher said that bothers him because he thinks the younger generation will start selling the land; because they do not have the interest. "The life would deteriorate even more than it is today. People lose their pride when forced off the land," said the rancher.

Environmental Consequences

"If ranching is lost, all ranches will be subdivided into little ranchettes bringing more development into [the] area…. This would be disaster to [the] environment, especially wildlife. It would make some better off, but many poorer." Environmental consequences ranchers predicted centered on fire, erosion, overgrowth, and development with consequent loss of open space. Water rights would be lost. There would be nothing but houses, towns, and cities. This type of scenario is also discussed by Talbert and others (2007) for areas currently undergoing varying degrees of development in the southern Rocky Mountains, extending from southern Wyoming into northern New Mexico.

"The environment would go down."

Ranchers said they felt there would be a great threat to the ecosystem if ranching was lost. It would no longer be the environment it is. There would be no one who owned the land to care for it. *Acequias* would close and dry up; the water would not run. Irrigating benefits other people in the community, we were told; it supplies water to the aquifer. A rancher spoke of "the beauty of the forest and ranches," saying he would rather see a beautiful ranch with cattle and horses than a shopping mall.

"More of the nature inhabitants will migrate away."

If there were no cows, there would be no ranchers to police the area. "[We] maintain the waters and keep the springs clean, a benefit to wildlife." Wildlife would not be in some areas if ranchers were not maintaining waters. Subdivisions are fragmenting the land, causing the number of wildlife to dwindle. One can "either look at a subdivision or see wildlife and a few cows."

One rancher described his prediction for the fate of the environment as follows: "If this would happen, land would be used for buildings. There would be no way of ranching or raising livestock. People are already pushing wild animals out of their natural habitat. Without the open lands of ranches, animals would have nowhere to go. We are invading their land and territory." A rancher spoke of his concern for wild animals whose habitat is shrinking. He gave an example of bears venturing into town or city and how they are captured, tranquilized, and, if lucky, relocated. What if bears could do that to humans, he asked; animals have no other choice.

"Without the eyes and ears of ranchers."

Ranchers inform the Forest Service about damage and do many improvements to the land and the Forest. There was great concern that, without grazing, land would become overgrown and more susceptible to severe fires. With fewer animals to eat the undergrowth, meadows would decrease. People do not seem to understand harvest of the forest, one rancher said. In the past, the last one off the forest with the sheep set fires to decrease tree growth and increase grass production.

"Housing would encroach."

Open spaces would be lost without ranching. You would exchange livestock for recreation, exchange a cow for a house. "I don't want to see development happen." Land will become "little pieces of paradise." Who will clean the ditches, they ask, if the children are not taught now? There would be an increase in development pressure, an increase in water use, and local people would move out; it would look like any other place in the United States.

Subdivided land would be like a city. "It would be a big loss, a Wal-Mart/Macdonald's America." There would be nothing but condos all over the place. There would be an increase in recreation areas, destroying clean water and *acequias*. Houses or businesses would replace ranches. There would be no reason to keep all that open land.

"The more people…the more houses."

Communities would dry up and lands would be sold and developed. All we would have would be development. It's already happening. There would be more people, more trash, and more vehicles. Land would turn into a park or zoo or will wind up in housing, causing an increase in taxes for everybody. It would be destroyed. If people were to sell out and then come back and see subdivisions, it would break their hearts.

"The more people…the more noise."

There are too many people. "There would be no type of control. Now there's a little bit of respect." Land goes dead with no life on it. With no cattle it would just end up with ATV trails and erosion. ATVs, Jeeps, and motorcycles cut across meadows and leave scars that do not heal. There would be more roads, more traffic, and more noise. There would be no erosion control, no brush control. The air would not be clean.

"The more people…the more problems."

Ranchers predicted that without ranching, private land would be subdivided and developed, further impacting and damaging public land. Land fragmentation from development would significantly diminish wildlife corridors. The water supply, already stretched thin, would be placed in further jeopardy by excessive demand, the threat of diversion, and the loss of water rights. A rancher summed it up by saying that he would feel sorry for the land.

Knowledge and Experience to Share

Despite fears and concerns over loss of the ranching way of life, those with whom we spoke remain proud and optimistic concerning continuation of their heritage and sharing their hard-won knowledge with both family and the public (discussion topic 9). When asked what knowledge and experience they gained from working with the land and livestock that they wished to share with others, they provided us with a wealth of valuable information showing their vast store of knowledge and deep love of the land.

However, this was a difficult question to answer on the spur-of-the-moment, and most interviewees hesitated before answering to give careful consideration to a response. As one rancher explained, "You don't know what knowledge you have; you take it for granted." But he went on to say that your knowledge and experience are priceless.

Listen to the Land and Animals

Such an array of experience and potential knowledge comes from a lifetime of work with the land and animals. Operating a ranch, whether large or small, requires knowledge and expertise in many fields: animal behavior, veterinary skills, biology, plant ecology, water (*acequias*), mechanics, construction, and human relations to name just a few. Being observant of land, animals, and nature was a recurrent theme, as were thoughts on the care and management of land and livestock. Learning from others and from the animals also ranked high in ways they had gained knowledge. Words such as values, respect, and quality continue to permeate the ranchers' responses. Again, all are interdependent: land, water, plants, animals, family, and community.

"It's hard to put it down in writing, isn't it?" asked a rancher. "…I've always said, rain cures all problems with the land… if you don't get rain, you don't have it; you get rain, you've got it all. And the cows do good when it rains; the cows don't do well when it's dry…. Our land would grow with water. Look at the land and learn from it. Look ahead and plan, cut back before it gets so bad." She said she can teach how to plant a garden, butcher, can fruits and vegetables, dig a ditch, and irrigate an open field. "I have done it all…. Being a country girl and raised with it from day one, you take it for granted; it's a thing everyone should know." Another rancher told us that one of his goals is to write short stories about his up-bringing on a small farm and ranch as a way to share his experience with others.

"We know what to do."

"Be aware of the strengths and limitations of each area. Know what practices or proven traditional uses insure productivity and profitability," wrote one rancher. "Have patience, and work one day at a time. There are going to be many ups and downs, just roll with the flow," advised another. A rancher described his knowledge as "…the overall picture: from working the land (planting and irrigating) to raising cattle, to working with Forest Service personnel, association members, livestock auction people, vendors. It all revolves around raising a herd of cattle and following the complete cycle. It touches a lot of people and businesses." Use your eyes; get into the country and constantly ask questions, was another answer. This rancher also believes that agricultural people need to be more willing "to educate the non-informed."

Responses also included comments on land management: Do not overgraze! It takes many years to grow grass but not much to destroy it. Do not introduce non-native species. Crested wheat has killed off the natives and then dies and leaves barren land. Respect the land. Keep the land and watersheds clean and they will help you in turn. Never go to the mountains unprepared. Use proper gear and tack and keep your vehicles in good shape. Respect the animals. When you start to ride into the wilderness, be sure your horse will be in shape to bring you back.

"The land speaks to you."

Ranchers stressed the importance of being observant. Much of their knowledge has been gained by being there and observing the land. Pay attention to what you are doing and consider the results; if they are not good, then change what you are doing; do not just do things out of habit. "Play it by ear." The environment tells you a lot. A rancher explained that he knows the land, sees where it rains, watches daily, and is with the cattle. He said he is there, "listening to the land, the dust, the brush, the cattle; not everybody can do it." He said he feels he is "a part of the land." "You've got to take care of the land. The land will talk to you and tell you what needs to be done…. The land speaks to you." By working with the land, you become familiar with it and know where good grazing areas are and which earthen dams are best. You learn this over time, stated another.

"The cows will teach you how to handle them."

There's a lot you can learn from the animals, the ranchers told us. Animals know things, such as when it will snow. Watch their behavior and be observant. "You learn something every day. It's a continuous learning experience. The livestock teach you things. You think they're dumb, but if you just sit back and watch them, they're smarter than people." Pay attention to the cattle; they will tell you. You learn their ways. You know where they go for water, how to track them, and more or less where they are from their habits; it saves a lot of time.

"The cows will teach you how to handle them. Mother Nature gives them a sense that they never disobey." A cow leaves her calf, gets water, and comes back; the cow can find the calf, even when the rancher cannot. This rancher described how a cow can take her baby through the river; she knows how to handle the little ones. The little calf gets right behind her and they "sail across the river." It is nice to see and learn, he told us. You take the cow up the trail, and she'll never forget the way back.

"Be patient with animals" was another often repeated recommendation. A rancher told us that he would like younger people to be more patient and think about what they are doing, to learn to handle the animals correctly. If they would slow down and watch, he said he believes they could learn what the animals want. A rancher told us that he could teach people how to handle animals with less stress. "You can work the whole herd alone,"

he said, "Take your time." "Take it easy," drive the cattle at their own pace, and do not force or tire them. Do not holler at them or run them or get them excited or stressed out. If you find a calf by itself, leave it alone so its mama can find it. "It's a lot of hard work. Be patient with animals. It's dangerous sometimes…. Learn to think like the animals."

"Feed your animals well."

"We have to be dedicated to raise healthy animals," respondents told us. "It's quality not quantity. If you sell 30 head of quality calves, you get the same amount of money as for 50 head of poorer calves." The former is better management; the latter is hurting the environment. Cattle must be cared for, stated another rancher; feed and water them and the production follows. You cannot starve them. It's the same way with Forest land; it cannot be overused and still flourish. "You have to find the good spots for the cattle, setting out salt [for distribution]. A cow can't go a mile or two to water or she will lose the weight she has gained…. It's a waste of time to raise junk; encourage people to raise better cattle."

Lessons from Experience

The following comments from the interviewees represent an accumulation of ranching experience and knowledge: Move cattle as fast as the slowest one. Do not push or crowd cattle on trails or in confinement. Give them enough air; give them time. Learn to respect animals; they can tell you when they are hungry or thirsty or sick. You can tell by looking. Animals cannot help themselves, so the owner must guide them. You are the guardian and life of your livestock. Keep a close watch on your animals, especially the young "mamas"; first-time mothers need help. All animals have a personality, all are different, just like humans, and many will protect their young better than human mothers. If you do not respect animals, they won't respect you; that is true also with humans.

"We are still learning."

"We are the first ones to see the results of overgrazing or notice it is happening and the last to be consulted," stated a permittee. He said he could pass on to others what does and does not work and is willing to share his knowledge with agency personnel and the public. Another said that if the grass is too low, move the cows. He has learned from experience and from watching the cows throughout the week. They are ready to move when the grass is getting low.

The animals will tell you the time to move. They will push through the fences if an area is short on water or vegetation.

"Everyone tells everyone the do's and don'ts."

Working together with parents and neighbors, sharing ideas and figuring things out to solve problems is a source of knowledge. One gains knowledge from other people, so talk to those people, they told us. "Listen; respect the ideas of other people. Hear them out, or you won't get their point." A permittee told us that he gained experience by listening to his dad and to others regarding what would help the land and people. When he worked with the Forest Service, he learned how to solve erosion problems. Another said that his father taught him how to use salt to move cattle. "You know cattle will be where the water is," he said. "You can tell by looking how the grass is—eaten down or too dry." "Many times I come to work with my neighbor, and something comes up, you know, a certain problem. He might have the answer, I might have the answer; so we work it out together to do the right thing at the time." "And what I know about livestock is, if you overgraze, it just ruins the land…. So it's really up to the Forest Service and the permittee to work together, to bring these things about."

A permittee expressed a wish that ranchers' knowledge be respected by the Forest Service and the public. "Listen to the old-timers," he suggested, "to the Spanish people who have been here for years, the way they raise their cattle; they can teach you things you would never think of." Another said that he has a lifetime of knowledge and experience to share. He has had the opportunity to speak at seminars on agricultural tourism and considers taking people out riding in the wilderness to be an educational opportunity for them. It gives folks a greater appreciation of life here. People think the Forest Service was here forever, which is not the case, he said. So, he tries to educate people on differences in land ownership, providing a historical perspective.

What the Public Should Know

To Tell Our Story in the Hope of Being Understood

"The erasure of a human subspecies is largely painless to us if we know little enough about it. ... We grieve only for what we know" (Aldo Leopold 1949: 48).

At the conclusion of each interview, we asked the permittees what they would want the public to know and understand about them (discussion topic 11; Appendix D). In response, ranchers described themselves as "a unique breed of people," hard-working, honest, and proud people with a lot of wisdom and dignity, people who are trying to make a living like

everyone else. They described ranching as an honest way of earning a living, but most importantly as a way of life. And while they speak of ranching as hard and often hazardous work, they emphasized the blessings and benefits and the fact that they thoroughly enjoy what they do.

"The pride we take in livestock and working the land."

Respondents tended to emphasize the hard work that defines being a rancher. "The larger community should know that it is extremely hard work. It's an operation that is very prestigious to our communities." They described themselves as steadfast, hard-working, and knowledgeable about the land and cattle, minding their own business, and not trying to hurt anyone. "We're all the same, trying to get by one day at a time." Most ranchers are struggling to make a living; "I don't think any of us are getting rich." The public doesn't realize how much work goes into ranching. "Farmers and ranchers have developed a love for the land and spend lots of hours [doing what] no one would be hired to do. They get muddy and tired."

"I do it because I like ranching."

Many spoke of the importance of enjoying the work. "Ranchers like to mess with cows, like the outdoors, the adventures…. They like nature. It gives them an opportunity to visit with neighbors and relatives, wheeling and dealing over cows, and to teach their children and grandchildren the way of life." This permittee told us that he would like people to understand that it is not easy to be a rancher, and there is not that much money at the end of the year. You have to love ranching to stay with it. "If you like what your job is, you do quality work."

"We love the land."

Respondents were concerned that people should understand their care for the land, that they are not out to destroy the land. "We are a solid, caring people who appreciate and love the land and care for it so that it is there for the future generations." There was a wish expressed "to perceive us as responsible people who love the land and the livestock." Another wrote that the public should know "that we patrol and care for the forest area and work to keep it clean and beautiful so that the open space is a pleasure to enjoy."

"We're not bad people."

"We have a stake [in the public land] more than [the public does] because if we don't maintain the land our life and business are in jeopardy." "It's not huge corporations running animals on public land; it is small ranchers. People think cows are overgrazing. We say, 'No, they're not!'… We do care for the land. If we had been destroying it, we wouldn't be here today." "Often, we hear from environmentalists what we shouldn't be doing (i.e., grazing cattle on public lands). Yet, what draws those people here is the way people have lived here." A permittee explained that ranchers pre-dated the "Forest" (Forest Service). He told us that the Forest Service was not the saving factor of maintaining this land in good condition; the people took care of it.

"That we are not abusing the land."

"We are not out to destroy the land, rather to preserve it." "Land is one of the things that holds people together." "We are working for the land…. We respect the land, and the public needs to respect it." Permittees want the public to know "that we do take care of the land. We don't misuse it like they are led to believe we do." Many are disturbed by the public's picture of ranchers as destroyers of the land. "The producer in America wears a black hat today," stated a rancher.

"That we supply some of their food."

"We are a big part of the economic picture here in the north." Ranchers said they feel the food they produce is a benefit to the public. They feel they are providing a service to consumers by producing quality, range-fed beef and lamb. It is a good, healthy way of life. Many butcher their own meat, so they know what they are eating instead of eating "processed beef that has been fed a lot of junk." "If we don't produce our own food, where will it come from?" There was a comment that people in the United States don't appreciate agriculture. "They need to stop and realize where meat comes from. The demand is great; the supply isn't."

"There is a myth about public land."

"It is not a charity act of the Government to let us graze the land." The use of public land is not a gift; great expense goes into it. There is "a perception that we're a bunch of lazy bums on welfare or subsidies," a rancher told us and added that he would like that impression to go away. "People think they know about ranching," stated another; "they think the Government is subsidizing the rancher." Many environmentalists, they feel, are quick to equate ranching with big business and big money. "We are not corporate ranchers; the majority are family based…."

Without public land, most ranchers would be out of business, as most do not own enough land to raise animals without the use of Federal land.

"That we honor and respect the land."

"We are not money hungry capitalists who ravage the land for profit, but rather concerned and involved citizens who have traditional ties to the land and who love as well as respect it." A rancher stated, "We firmly believe we are here to take care of the land, believe we are stewards of the land and believe in the ecosystem and environment. [We] want to continue to educate the youth to carry on the traditions, maintain respect and discipline, and work as a community." Another said, "God gave us land to live off, but to take care of it too, not just have it as a playground."

"We're not going to give up!"

These responses also indicate the tenacity and dedication of the rancher. "We're not going down without a fight; we're here to stay! We have a vested right here. We are like the owl. How come they are disturbing our nest? We are not in this to make money but to maintain a way of life and to keep tradition." Many ranchers keep going in spite of difficulties such as drought and low sale prices. "A few families still make a living off the land as this ranch does. You depend on nature for everything. It takes a lot of heart and discipline to work a ranch or farm." It takes a lot of determination.

"We're not the enemy!"

"We're just people like they are; just trying to earn a living, raising our kids, teaching them some morals," said a rancher. "Educate people that, just because the majority of us don't have a college education, we are not stupid." There is a lot to learn from a rancher; if he does not know the answer to a question, he will point you to someone who does. "We have a lot of respect for each other." Regarding the public, a rancher commented, "We need to respect them; they need to respect us. We can work together."

"Learn who we are."

"People want to see you as rich because you are a land owner. We are rich in some ways, but not money-wise. We are very fortunate that we live here." A rancher expressed a need for the public "to communicate with us on whatever questions they have otherwise they won't understand where ranchers are coming from. If you don't communicate with other people, you won't learn about their feelings or thoughts." Another respondent explained that, "Even though we don't have all the terms, the big words, we must care for the land. Our lives and future generations depend on that. We don't always take the right path, but don't make the decisions lightly." "I would like to share what we have and what we do and be neighbors, and think we can learn from each other," offered a rancher. "The problem is expecting conflict instead of communication."

A rancher expressed the hope of gaining the public's respect, "We wouldn't have a life if not for ranching…. We value it a lot," he said. "It might be fading away, but still there are people like me who will not let it fade away, who are not in it for the money, just plugging along." Yet another told us, "We are trying to continue a way of life that has been going on for hundreds of years. It's why the valley is the way it is." One summed it up by saying, "That we are a people with a vision, with a heart, with an understanding about nature and about life in general. That we value the land, the water, the way of life, and will not sell it for economic and material blessings."

Conclusion

"We know too that nature includes us. It is not a place into which we reach from some safe standpoint outside it. We are in it and are a part of it while we use it. If it does not thrive, we do not thrive" (Wendell Berry 1990). In similar manner, a participant in this project said, "If you are here as a shepherd of the land, you must protect it. If you don't protect the land, it won't protect or provide for you."

The ranchers who took time from their busy schedules to share their stories with us are those represented in this report. They have expressed their feelings for the land upon which they carry out the daily business of ranching and for the animals that are a major component of their lives and livelihood. Much of what we heard from permittee ranchers in this study follows closely the stories, experiences, and thoughts of those represented in the pilot study. The value placed on history and heritage, tradition, and ties to the past is revealed through the longevity of the ranching community. Their present way of life portrays a continuation of those values, with hope projected into the future through their children.

Ranchers spoke of a working relationship with the land and stressed that all land should be respected no matter the ownership. Their comments are reminiscent of Aldo Leopold's land ethic (1949: viii-ix) when he spoke of land as a community that should be loved and respected: "We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect." Respect and responsibility

were terms frequently used throughout the discussions, whether the subject was care of the land, animals, family (especially the elders), or community. Respect and responsibility toward these essentials of life were depicted as major components of a ranch child's home education.

Concern continues to dominate conversations on subjects regarding sale of private land and controversy over use of public land. There is a tie between the two; owing to regional history, loss of Federal grazing land is generally detrimental to survival of the ranch and the private land of which it is comprised. The negative effects of subdivision and population growth are cause for apprehension among respondents. There is a general aversion among the permittees to development. Preservation of the land, therefore preservation of open space, is seen as of paramount importance.

These lands have been a part of ranch family life for generations. The tendency for ranch land to be sold and subdivided rather than to continue as agricultural land is a great concern for many respondents. It takes just one ranch to sell for the process to begin in a domino effect, with one ranch sale affecting the next, with land being divided and taxes increasing, and with mounting demands on the limited water supply. Ranchers observed that as new people move in, some adapt to life in the rural communities, but many want to alter the place to suit their own notions of civilization. The contrast created with the addition of extreme affluence can transform what was once viewed as quaint to the perception of a less than desirable appearance of poverty.

However, being rich is not only how much money one has. "Though I am not wealthy in terms of dollars, I see the ranch as of great wealth that should stay in the family forever." Retaining the livestock operation for family and future generations is a goal common to the permittees. Many ranchers only work other jobs as a means of supplementing their income; some have made conscious employment choices in order to remain in the local community. In spite of difficulties, they expressed hope for the future of the ranch, the land, and the family.

The ranchers spoke of "a legacy of tradition." Land and livestock were not the only gifts of choice designated for the benefit of children. These were to be coupled with the gifts of knowledge and understanding: the knowledge of how a ranch works and understanding the benefits of working one's own land and working with animals. It is not enough merely to own such tangible gifts; the recipient must learn to care for them and appreciate their value.

Participants in the project spoke with affection of the people whose influence guided them into ranching. They reminisced over a first calf, lamb, or horse and about early childhood experiences helping parents and grandparents on the land. Family is essential to the success of a ranch and highly valued in the culture, hence the emphasis on how children are taught through instruction and example. The community is an extension of the family, as shown through the sharing of responsibilities and the nurturing of individuals.

A permittee rancher described his work as "the most enjoyable thing there is." What seemed to matter most to him was the state of being there, in that place, within those natural surroundings, working at an occupation from which he derived great personal satisfaction. Enjoyment of ranch work and satisfaction in a job well done are factors that produce excellence.

Respondents appeared concerned about how they are perceived and are disturbed by the apparent negative attitude of the public toward them and their often difficult dealings with Forest Service personnel. They expressed a sincere desire to be understood and treated with consideration, and stress the importance of communication between people. They recognize the need to communicate ideas and share knowledge with agency and public alike and were generous in sharing such information. Some of their suggestions for agency personnel included taking an active role in the local community, riding with ranchers to assess the condition of the land first-hand, and valuing experience equally with "book learning."

The desire for a chance to be heard and for their ways to be understood was evident in the willingness of these ranchers to participate in this project. The process of developing rapport and building trust during the initial phase of the project proved worthwhile. "Why show interest in our life?" asked one, "Is this my opportunity to voice my opinion, to make things better?" Another expressed gratitude for the research, commenting that "the Spanish contribution is only one part of it; it should be all over the West."

Sense of place figured strongly in respondents' stories. It is apparent in descriptions of feelings toward land and livestock, in ways of instilling values in the children, and in attitudes toward land ownership. In all of these, participants showed a strong connection and attachment to place. Caring for the land and animals gives the ranchers a reason for being, work they enjoy doing, and satisfaction at the end of the day. They express a sense of privilege to be the ones living in that place. There is contentment, a "sense of belonging" to a place where they know how to live and who they are. It is part of their identity, their way of life, their history—their past, present, and future. It is their *querencia*.

Table 1—Santa Fe National Forest active grazing allotments.

District	Allotment	NFS Acreage	# of Permittees
Coyote	Chama	39,583	6
Coyote	Coyote	19,956	12
Coyote	French Mesa	24,519	9
Coyote	Gallina River	22,262	9
Coyote	Jarosa	22,007	12
Coyote	La Presa	10,802	1
Coyote	*Los Indios*	7,617	1
Coyote	Mesa Alta	36,057	8
Coyote	Mesa Del Medio	16,708	8
Coyote	Mesa Poleo	22,486	11
Coyote	Youngsville	30,456	18
Cuba	Chiquito	11,799	1
Cuba	Cuba Mesa	7,299	1
Cuba	Gallina Mountain	11,650	4
Cuba	Gurule	8,362	1
Cuba	La Jara	14,947	2
Cuba	Laguna Seca	7,274	1
Cuba	Llaves	10,756	2
Cuba	Ojito Frio	9,789	3
Cuba	Ojitos	18,373	1
Cuba	Palomas	5,297	1
Cuba	Penas Negras	15,360	6
Cuba	Pollywog	20,130	2
Cuba	Red Top	9,716	2
Cuba	San Miguel	21,949	1
Cuba	San Pedro	21,572	3
Cuba	Senorito	21,462	3
Cuba	Simon	12,505	1
Cuba	South Ojitos	9,667	1
Cuba	Vacas	7,894	4
Jemez	Alamo	25,491	1
Jemez	Bland Canyon	8,195	1
Jemez	Cebolla San Antonio	24,997	4
Jemez	Del Norte	6,599	2
Jemez	Las Conchas	1,372	1
Jemez	Peralta	12,400	1
Jemez	Ponderosa	2,621	1
Jemez	San Diego	94,352	11
Jemez	Vallecitos	15,928	2
Jemez	V-Double Slash	35,234	2
Pecos/LV	Barbero	18,380	5
Pecos/LV	Bear Lake	41,446	15
Pecos/LV	Beaver	13,078	1
Pecos/LV	Bull Creek	13,362	3
Pecos/LV	Capulin	7,220	6
Pecos/LV	Colonias	21,425	2
Pecos/LV	Cow Creek	4,187	1

Pecos/LV	El Pueblo	26,596	3
Pecos/LV	Fisher	2,037	1
Pecos/LV	Glorieta	30,342	2
Pecos/LV	Macho	36,623	2
Pecos/LV	Rio De La Casa	16,366	4
Pecos/LV	Rosilla	9,696	9
Pecos/LV	San Geronimo	6,938	2
Pecos/LV	San Jose	11,933	1
Pecos/LV	San Luis	38,162	4
Pecos/LV	Sapello	6,304	2
Pecos/LV	Solitario	5,016	1
Pecos/LV	Springs	24,417	3
Pecos/LV	Tecolote	10,884	1
Pecos/LV	Tres Hermanos	5,909	1
Pecos/LV	Valle Grande	36,242	1
Pecos/LV	Valle Medio	14,232	1
Pecos/LV	Valle Osha	8,645	1

Source: Southwestern Region GIS Data Base, Kevin Sanchez, February 2010, District Permittee and Allotment Lists.

Table 2—Carson National Forest active grazing allotments.

District	Allotment	NFS Acreage	# of Permittees
Camino Real	Angostura	17,715	3
Camino Real	Black Lakes	12,089	9
Camino Real	Capulin	13,744	4
Camino Real	East Fernandez	2,082	2
Camino Real	Flechado	6,364	1
Camino Real	Knob	10,081	1
Camino Real	Luna-Chacon	28,550	17
Camino Real	Rio Chiquito	20,561	5
Camino Real	Rio Pueblo	23,845	8
Camino Real	Santa Barbara	34,235	15
Camino Real	Tienditas	409	1
Camino Real	Trampas	28,901	13
Tres Piedras	Apache Complex	27,097	7
Tres Piedras	Carson-Mojino	7,615	1
Tres Piedras	Cerro Azul	20,257	6
Tres Piedras	East Pinon	3,050	1
Tres Piedras	Jawbone	18,303	5
Tres Piedras	Lagunitas	26,066	7
Tres Piedras	San Antone	41,843	11
Tres Piedras	San Antone Mountain	7,478	2
Tres Piedras	Santos	8,799	1
Tres Piedras	Servilleta	10,101	1
Tres Piedras	Spring Creek	25,073	11
Tres Piedras	Sublette	10,957	4
Tres Piedras	TCLP	40,226	4
Tres Piedras	Tio Gordito	27,089	6
Tres Piedras	Tio Grande	31,984	14
Tres Piedras	Tres Orejas	5,801	1
Tres Piedras	Tusas	43,621	10

Source: Southwestern Region GIS Data Base, Kevin Sanchez, February 2010, District Permittee and Allotment Lists.

Table 3—Survey participants by district.

Santa Fe NF Districts	# of Permittees	# of Interviewees	Percent Interviewed
Coyote	85	52	61
Cuba	36	28*	78
Jemez	27	18	67
Pecos/Las Vegas	54	41	76
Total	**202**	**139**	**69**
Carson NF Districts			
Camino Real	76	54	71
Tres Piedras	78	47	60
Total	**154**	**101**	**66**

*Two interviewees listed Cuba as their second district.

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APPENDIX A

Cover Letter

Dear Sir or Madam:
With the sponsorship of Forest Service Research, we are inviting all grazing permittees on the Santa Fe and Carson National Forests to participate in a study to demonstrate the importance of livestock ownership and grazing on federally managed land. Information from the study will be used to acquaint both the Forest Service and the public with the role and significance of the ranching tradition in Northern New Mexico. Hopefully, this will result in greater respect and understanding of the local history, culture, and values. We are planning to attend your allotment meeting to discuss the project. We will need your assistance to describe the cultural, social, and economic contributions that livestock ownership makes to the families and communities of Northern New Mexico. Participation in the project is completely voluntary. All information will be confidential and anonymous. The Rocky Mountain Research Station will publish a final report from the project, and all participants will receive a draft report for comment and a copy of the final publication. We have completed a pilot study on the Española and Canjilon Districts and have published the results.
The enclosed questionnaire is designed to gather information for this study. Please look it over to see if you would be willing to participate. If so, we would like to meet with you to fill out the questionnaire during a personal interview. After completing the interview, you will have an opportunity to discuss any additional issues or problems that may concern you.
One of us will call to ask if you would agree to be part of the project. We will then set up a time and place to meet with you at your convenience (for example, your home, office, a local restaurant, the ranger station, etc.). The interview should take about 1 to 1½ hours. We hope you will decide to help us gather this valuable information. Thank you for your time.
Sincerely,

Carol Raish
Research Social Scientist

Alice M. McSweeney
Social Science Analyst

APPENDIX B

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 05960171. The time required to complete this information collection is estimated to average 90 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

QUESTIONNAIRE
LIVESTOCK OWNERSHIP AMONG USDA FOREST SERVICE
GRAZING PERMITTEES IN NORTHERN NEW MEXICO

Please help us gather information about the importance of livestock ownership by answering the following questions. All questions apply to the permittee. For the purposes of this questionnaire, livestock refers to cattle and sheep.

Family Information

1. How many years have you lived in northern New Mexico? _____

2. When did your family first come to northern New Mexico? _____

3. Have members of your family left the community? _____

Why have they left? _____

Have any returned? _____ Why? _____

4. Circle the primary language spoken in your household. (Please circle one response.)

Spanish English Both Other (specify)_____

5. Please circle your age range. 20-35 36-49 50-65 over 65

6. Please circle your highest level of completed education.

Grade School High School Some College College Degree Graduate School

7. Please circle your spouse's highest level of completed education.

Grade School High School Some College College Degree Graduate School

8. Do you consider yourself a full-time or part-time rancher? (circle one)

9. Are you (or were you) also employed outside the home or ranch? _____

If so, please give your job title or description _____

and the approximate number of hours worked per week. _____

Are you retired from this outside job? _____

10. Is (was) your spouse employed outside the home or ranch? _____

If so, please give your spouses job title or description _____

and the approximate number of hours worked per week. _____

Is your spouse retired from this job? _____

11. Would you farm or ranch full time if you could afford to do so? _____

12. Have your children continued their education or hope to do so in the future? _____

If so, what are their educational interests? _____

_____ _____

_____ _____

13. Do your children participate in ranching? _____

14. Do your grandchildren participate in ranching? _____

15. Do any of your children plan to continue the ranch operation? _____

Community Activities Related to Owning Livestock

16. Are you a member of a grazing association? _____

If so, how many grazing association meetings do you attend per year? _____

17. Are agriculture related classes or seminars available in your area? _____

If so, how many do you attend during a typical year? _____

18. What livestock related community events (brandings, rodeos, county fairs) do you attend throughout the year?

_____ _____

_____ _____

19. Do you work your livestock together sharing responsibilities with relatives (other than your children who still live at home)? _____

20. Do you work your livestock together sharing responsibilities with neighbors who are not relatives? _____

Description of Your Livestock Operation

21. What or who influenced your interest in farming and ranching?

_____

22. At what age did you first begin working with livestock? _____

23. At what age did you first own livestock? _____

24. How many previous generations of your family have raised livestock? _____

25. Is (was) your family part of a community land grant? _____

If you are no longer associated with the grant land, how did that occur? _____
_____

26. When did you or your family first acquire a grazing permit on USFS-managed land? _____

on BLM-managed land? _____

27. To give an idea of the time and effort that goes into ranching, briefly describe your work schedule throughout the year.
_____

_____

_____

_____

28. What breed(s) of cattle or sheep do you raise and why did you select those breeds?

_____

_____

_____

29. How many head of each type of livestock do you own during a typical year?

Cows _____ Ewes _____

Bulls _____ Rams _____

Yearlings _____ Lambs _____

Calves _____ Horses _____

30. How many animals are lost during a typical year, and what were the causes?

Kind of Animal	Number Lost	On Public or Private Land	Cause of Loss
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

31. To show how much time, labor, and money you invest in your federal grazing allotment (USFS or BLM) in addition to the grazing fee during a typical year, please estimate the following:

a. Days of personal labor (permittee and helpers) _____

b. Improvements to the allotment $_____

(Please indicate which in the space provided)

(1) Fences _____

(2) Water _____

(3) Trail repair _____

(4) Other (list) _____

c. Wages for hired herder $_____

d. Veterinary expenses $_____

e. Other (please specify) _____

If you have had major, one-time expenses on your federal allotment during the past five years, please list them with their cost.

_____

32. Do you grow supplemental forage (hay) for your livestock? _____

What mixture? _____

33. What grasses (or other forage plants) do the livestock consume on rangeland?

_____

34. What are the top three improvements you wish to see on your federal grazing allotment?

If these are not being implemented, why not?

_____

_____

_____

35. Have you noticed any land or vegetation changes in your lifetime? _____

If so, please explain. _____

36. Describe any land or vegetation changes related to you by older members of the community.

_____

Livestock Ownership and the Family

37. How many animals do you butcher for your family members during a typical year? _____

38. Do you give livestock to children or grandchildren (to start a herd or as a 4H project)? _____

39. Do you use any animal by-products such as hides, wool, milk, or manure? _____

If so, which do you use? _____

40. Do you give live animals, meat, or by-products to friends or neighbors? _____

Or as a donation to charity? _____

41. Please read the following statements about goals for your livestock operation, ranking them in order of importance from 1 to 4 (with 1 the most important).

_____ To make more money above costs each year from the livestock operation in order to increase the family's overall income and material goods.

_____ To maintain the family's quality of life that results from owning livestock (spending time outdoors, working together, keeping the children busy and out of trouble, etc.)

_____ To avoid being forced out of livestock ownership (the family has had livestock for generations).

_____ To improve the livestock operation by purchasing more land. better equipment, and more animals.

42. Please estimate the percentage of your total gross income, before expenses, that comes from the livestock operation during a typical year. _____%

43. If you could pick one of the following means of saving or investing money, which would you choose? (Please circle one letter).

a. Putting money into a savings or investment program?

b. Buying more land in the area?

c. Buying more livestock or improving the stock operation in other ways such as investing in range improvements.

d. Other (Please describe).

44. In which of the following ways have you used earnings from the livestock operation?

(Please circle all appropriate letters.)

a. Basic living expenses.

b. Household improvements.

c. Family emergencies.

d. Children's college education.

e. Special expenditures such as a trip.

f. Investments such as stocks, bonds, savings account, etc.

g. Buying more livestock or upgrading the livestock operation.

h. All goes back into the livestock operation.

i. Other _____

45. Please read the following statements, ranking them in order of importance to you and your family from 1 to 4 (with 1 the most important).

_____ To have more income and be able to buy more material goods.

_____ To have a better quality of life and spend more time with my family.

_____ To continue the way of life and maintain the traditional values of my parents and grandparents.

_____ To gain personal satisfaction from managing a successful ranching business.

46. What would you like to give your children that would be a benefit to them in the future?

Discussion Topics

1. Please describe your feelings about your land and livestock and what role they play in maintaining rural ranching tradition and culture.

2. Have you used your land and livestock to teach your children about traditional values and their heritage? If so, please describe.

3. Please give your opinion concerning land ownership in your area. For example, how does it affect you and your community if neighbors sell land for non-agricultural uses?

4. Describe your experiences concerning working with the government (FS or BLM) on your allotment(s).

5. What are your recommendations for preparing FS people to work in northern New Mexico?

6. How would you describe your responsibility and relationship to the land, both private and public?

7. What thoughts come to mind when you hear the words environment and environmentalist? Do you feel that you have views in common with environmentalists and the environmental movement?

8. What actions do you take on your allotment that might benefit the ecosystem (wildlife, vegetation, etc.)?

9. What knowledge and experience do you have from working with the land and livestock that you would like to contribute to or share with others?

10. What do you think the economic, social, and environmental consequences would be if the ranching way of life were lost in northern New Mexico?

11. What would you like the public to know and understand about ranchers in northern New Mexico?

12. Have you read Economic, Social, and Cultural Aspects of Livestock Ranching on the Española and Canjilon Ranger Districts of the Santa Fe and Carson National Forests: A Pilot Study? Yes No

APPENDIX C

Table 1—Permittee length of residence (PLENRES–Question 1).

PERMITTEE LENGTH OF RESIDENCE*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
02	3	1.3	1.3
03	2	.8	.8
04	7	2.9	2.9
05	4	1.7	1.7
06	222	93.3	93.3
TOTAL	**238**	**100.0**	**100.0**

Key*

(02) 6-10 years

(03) 11-20 years

(04) Over 20 years but less than entire life

(05) Born/grew up here, moved away, and returned

(06) Entire life

Table 2—Family length of residence (FLENRES—Question 2).

FAMILY LENGTH OF RESIDENCE*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	4	1.7	1.7
02	2	.8	.9
03	15	6.3	6.4
04	36	15.1	15.4
05	12	5.0	5.1
06	2	.8	.9
07	8	3.4	3.4
08	6	2.5	2.6
09	13	5.5	5.6
10	7	2.9	3.0
11	23	9.7	9.8
12	17	7.1	7.3
13	45	18.9	19.2
14	25	10.5	10.7
15	6	2.5	2.6
16	2	.8	.9
17	6	2.5	2.6
18	2	.8	.9
19	3	1.3	1.3
Total	234	98.3	100.0
97 (Missing)	4	1.7	
TOTAL	**238**	**100.0**	

Key*

(01) Permittee came here as an adult

(02) Parents

(03) Grandparents
(04) Great-grandparents
(05) Great-great grandparents
(06) Great-great-great grandparents
(07) Ancestors came in with Oñate/1598
(08) Late 1500s/Early 1600s
(09) 1600s
(10) Late 1600s/Early 1700s
(11) 1700s
(12) Late 1700s/Early 1800s
(13) 1800s
(14) Late 1800s/Early 1900s
(15) 1900s
(16) Family/ancestors are Native American
(17) "Forever," assuming from Spain
(18) Early Spanish settlers
(19) Early Spanish settlers & Native American

Table 3—Have members of family left the community? (LEFTCOM—Question 3).

LEFT COMMUNITY*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	215	90.3	91.1
02	18	7.6	7.6
99	3	1.3	1.3
Total	236	99.2	100.0
97 (Missing)	2	.8	
Total	**238**	**100.0**	

Key*
(01) Yes
(02) No

Table 4—Why have they left? (WHYLEFT—Question 3a).

REASON FOR LEAVING*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	155	65.1	66.2
02	2	.8	.9
03	3	1.3	1.3
04	1	.4	.4
05	3	1.3	1.3
06	16	6.7	6.8
07	3	1.3	1.3
08	11	4.6	4.7
09	2	.8	.9
10	1	.4	.4
11	9	3.8	3.8
12	2	.8	.9
13	1	.4	.4
14	1	.4	.4
15	1	.4	.4
16	1	.4	.4
99	22	9.2	9.4
Total	234	98.3	100.0
97 (Missing)	4	1.7	
Total	**238**	**100.0**	

Key*

(01) Employment elsewhere

(02) Military Service

(03) Marriage

(04) Preferred to leave the area/go to the city

(05) Education

(06) Employment & college

(07) Employment & health

(08) Employment & military

(09) Employment, military, education, & marriage

(10) Military & marriage

(11) Employment & marriage

(12) Education & military

(13) Employment, military, education

(14) Education & marriage

(15) Health problems & marriage

(16) Unknown

Table 5—Have any returned? (RETCOM—Question 3b).

ANY RETURNED*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	116	48.7	49.4
02	81	34.0	34.5
03	8	3.4	3.4
04	7	2.9	3.0
99	23	9.7	9.8
Total	235	98.7	100.0
97 (Missing)	3	1.3	
Total	**238**	**100.0**	

Key*

(01) Yes

(02) No

(03) Maybe, plan to, come & go, want to

(04) Not yet

Table 6—Why have they returned? (WHYRET—Question 3c).

WHY RETURNED*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	9	3.8	3.9
02	15	6.3	6.5
03	1	.4	.4
04	14	5.9	6.0
05	52	21.8	22.4
06	16	6.7	6.9
07	10	4.2	4.3
99	115	48.3	49.6
Total	232	97.5	100.0
97 (Missing)	6	2.5	
Total	**238**	**100.0**	

Key*

(01) Retired

(02) Returned to help with/run the ranch

(03) Returned to rear their family in a rural area

(04) Preferred to live in a rural area/slower pace

(05) Roots are here; this is home, to be close to family

(06) Retirement & heritage

(07) Found employment, back to roots

Table 7—Primary language spoken in household (LANG—Question 4).

PRIMARY LANGUAGE*	NUMBER OF HOUSEHOLDS	PERCENT	VALID PERCENT
01	47	19.7	19.7
02	52	21.8	21.8
03	135	56.7	56.7
04	1	.4	.4
05	1	.4	.4
06	2	.8	.8
Total	**238**	**100.0**	**100.0**

Key*

(01) Spanish

(02) English

(03) Both

(04) Other/Combination of languages

(05) Spanish, English, & Jicarilla

(06) Sign language and English

Table 8—Age range of permittee (AGE—Question 5).

AGE RANGE OF PERMITTEE*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	11	4.6	4.6
02	41	17.2	17.3
03	94	39.5	39.7
04	89	37.4	37.6
05	2	.8	.8
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*

(01) ≤20-35

(02) 36-49

(03) 50-65

(04) Over 65

(05) Multiple: group or dual interview

Table 9—Permittee's highest level of education (PERMED—Question 6).

PERMITTEE'S HIGHEST LEVEL OF EDUCATION*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	31	13.0	13.0
02	86	36.1	36.1
03	67	28.2	28.2
04	1	.4	.4
05	32	13.4	13.4
06	21	8.8	8.8
Total	**238**	**100.0**	**100.0**

Key*
(01) Grade School
(02) High School
(03) Some College
(04) Associate Degree
(05) College Degree
(06) Graduate School

Table 10—Spouse's highest level of education (SPOUSED—Question 7).

SPOUSE'S HIGHEST LEVEL OF EDUCATION*	NUMBER OF SPOUSES	PERCENT	VALID PERCENT
01	21	8.8	8.9
02	88	37.0	37.1
03	53	22.2	22.3
05	25	10.5	10.5
06	26	10.9	10.9
99	24	10.1	10.1
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*
(01) Grade School
(02) High School
(03) Some College
(04) Associate Degree
(05) College Degree
(06) Graduate School

Table 11—Do you consider yourself full-time or part-time rancher? (FLLRANCH—Question 8).

FULL/PART-TIME RANCHER*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	99	41.6	41.8
02	95	39.9	40.1
03	17	7.1	7.2
04	1	.4	.4
05	25	10.5	10.5
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*

(01) Full-time

(02) Part-time

(03) Now full-time, retired from an outside job

(04) Retired from ranching

(05) Full-time (has two full-time jobs, the ranch & 2nd job)

Table 12—Permittee employed outside home or ranch (PERMJOB—Question 9).

PERMITTEE OUTSIDE JOB*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	198	83.2	83.2
02	33	13.9	13.9
04	7	2.9	2.9
Total	**238**	**100.0**	

Key*

(01) Yes

(02) No

(04) Self employed

Table 13—Permittee's job description (PJOBDES—Question 9a).

PERMITTEE'S JOB DESCRIPTION*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	25	10.5	12.3
02	18	7.6	8.8
03	1	.4	.5
04	18	7.6	8.8
05	67	28.2	32.8
06	25	10.5	12.3
08	2	.8	1.0
09	5	2.1	2.5
10	8	3.4	3.9
11	1	.4	.5
12	4	1.7	2.0
13	1	.4	.5
14	24	10.1	11.8
16	3	1.3	1.5
17	2	.8	1.0
Total	204	85.7	100.0
97 (Missing)	1	.4	
99 (N/A)	33	13.9	
Total	**238**	**100.0**	

Key*

(01) Professional/Scientific/Managerial

(02) Education System/Teacher/Principal, etc./School Superintendent/School Administrator

(03) Health Care Professional

(04) Business Owner/Manager

(05) Skilled Trade/Technical/Clerical

(06) Heavy Equipment Operator/Truck Driver/Van Driver/School bus

(07) Artist/Artisan

(08) Agricultural

(09) Law Enforcement/Fire Depart./Security Officer, etc./Security Access. Specialist

(10) Laborer/Maintenance/Cleaning

(11) Veterinarian

(12) Military

(13) Doctor/Dentist/Nurse (RN)

(14) FS/ BLM/NPS/USDA Dept. Rural Devel

(15) Group interview: Multiple jobs

(16) Accountant/Banking

(17) Postal Service

(99) No off ranch job

Table 14—Approximate number of hours worked per week (PWORKHRS—Question 9b).

TOTAL HRS. WORKED PER WEEK OFF RANCH*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	4	1.7	2.0
02	9	3.8	4.5
03	97	40.8	48.7
04	74	31.1	37.2
05	6	2.5	3.0
06	7	2.9	3.5
07	2	.8	1.0
Total	199	83.6	100.0
97 (Missing)	6	2.5	
99 (N/A)	33	13.9	
Total	**238**	**100.0**	

Key*

(01) Less than 20 hours

(02) 20 hours or more but less than 40 hours

(03) Full time, 40 hours per week

(04) More than 40 hours per week

(05) Seasonal work

(06) Hours vary

(07) Multiple: group or dual interview

Table 15—Retired from outside job (PERMRET—Question 9c).

RETIRED FROM OTHER JOB*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	103	43.3	50.7
02	98	41.2	48.3
03	2	.8	1.0
Total	203	85.3	100.0
97 (Missing)	2	.8	
99 (N/A)	33	13.9	
Total	**238**	**100.0**	

Key*

(01) Yes

(02) No

(03) Group interview: some yes, some no

Table 16—Spouse employed outside home or ranch (SPJOB—Question 10).

SPOUSE JOB OUTSIDE*	NUMBER OF SPOUSES	PERCENT	VALID PERCENT
01	153	64.7	73.0
02	55	23.1	26.1
03	2	.8	.9
Total	211	88.7	100.0
97 (Missing)	1	.4	
99 (N/A)	26	10.9	
Total	**238**	**100.0**	

Key*
(01) Yes
(02) No
(03) Multiple: group or dual interview

Table 17—Spouse's job description (SPJOBDES—Question 10a).

SPOUSE JOB DESCRIPTION*	NUMBER OF SPOUSES	PERCENT	VALID PERCENT
01	11	4.6	5.3
02	31	13.0	14.9
03	14	5.9	6.7
04	5	2.1	2.4
05	41	17.2	19.7
06	3	1.3	1.4
08	8	3.4	3.8
09	2	.8	1.0
10	5	2.1	2.4
11	15	6.3	7.2
13	55	23.1	26.4
14	8	3.4	3.8
15	2	.8	1.0
16	7	2.9	3.4
18	1	.4	.5
Total	208	87.4	100.0
97 (Missing)	3	1.3	
99 (N/A)	27	11.3	
Total	**238**	**100.0**	

Key*(01) Professional/Scientific/Managerial
(02) Education System/Teacher/Coach
(03) Health Care Professional/Counselor
(04) Business Owner/Manager, Assists with family business
(05) Skilled Trade/Technical/Clerical
(06) Heavy Equipment Operator/Truck driver/School bus
(07) Artist/Artisan
(08) Daycare Provider/Home Care Provider
(09) Law Enforcement/ Fire Dept./Security Officer/Security Specialist
(10) Housekeeping/Maintenance

(11) Restaurant Worker/Cook
(12) Veterinarian
(13) Does not/has never worked outside the home
(14) Doctor/Dentist/Nurse (RN)
(15) University student (with work)
(16) Government: Federal, State, County
(17) Group interview: Multiple jobs
(18) Postal Service

Table 18—Approximate number of hours worked per week (SPWORKHRS—Question 10b).

SPOUSE WORK HOURS*	NUMBER OF SPOUSES	PERCENT	VALID PERCENT
01	8	3.4	35.3
02	22	9.2	14.6
03	91	38.2	60.3
04	22	9.2	14.6
05	2	.8	1.3
06	6	2.5	4.0
Total	151	63.4	100.0
97 (Missing)	5	2.1	
99 (N/A)	82	34.5	
Total	**238**	**100.0**	

Key*
(01) Less than 20 hours
(02) 20 hours or more but less than 40 hours
(03) Full time, 40 hours per week
(04) More than 40 hours per week
(05) Seasonal work
(06) Hours vary
(07) Does not/has never worked outside the home

Table 19—Spouse retired from off-ranch job (SPRET—Question 10c).

SPOUSE RETIRED*	NUMBER OF SPOUSES	PERCENT	VALID PERCENT
01	52	21.8	34.4
02	99	41.6	65.6
Total	151	63.4	100.0
97 (Missing)	2	.8	
99 (N/A)	85	35.7	
Total	**238**	**100.0**	

Key*
(01) Yes
(02) No
(03) Does not/has never worked outside the home
(04) Outside job is related to agriculture

Table 20—Would farm or ranch full-time if affordable (RANCHWISH—Question 11).

RANCH FULL-TIME*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	177	74.4	88.9
02	9	3.8	4.5
03	4	1.7	2.0
04	6	2.5	3.0
05	3	1.3	1.5
Total	199	83.6	100.0
97 (Missing)	2	.8	
99 (N/A)	37	15.5	
Total	**238**	**100.0**	

Key*

(01) Yes

(02) No

(03) Yes, if the money were there—could support self and family

(04) No: because they enjoy the other career as well

(05) Probably

(99) Full-time rancher

Table 21—Have children/grandchildren continued education or hope to do so (CHILDED—Question 12).

CHILDRENS' EDUCATION*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	198	83.2	88.8
02	6	2.5	2.7
03	18	7.6	8.1
04	1	.4	.4
Total	223	93.7	100.0
97 (Missing)	5	2.1	
99 (N/A)	10	4.2	
Total	**238**	**100.0**	

Key*

(01) Yes

(02) No

(03) Too young

(04) Unknown/Don't know yet

Table 22—Educational interests of first child (EDINTSA—Question 12a).

EDUCATION FIRST CHILD*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	24	10.1	12.2
02	1	.4	.5
03	29	12.2	14.7
04	7	2.9	3.6
05	31	13.0	15.7
06	1	.4	.5
07	6	2.5	3.0
08	10	4.2	45.1
09	2	.8	1.0
10	13	5.5	6.6
11	7	2.9	3.6
12	25	10.5	12.7
13	5	2.1	2.5
14	3	1.3	1.5
15	10	4.2	5.1
18	4	1.7	2.0
19	9	3.8	4.6
20	2	.8	1.0
21	2	.8	1.0
22	4	1.7	2.0
23	1	.4	.5
26	1	.4	.5
Total	197	82.8	100.0
97 (Missing)	11	4.6	
99 (N/A)	30	12.6	
Total	**238**	**100.0**	

Key*

(01) Agriculture/Ranching/Wildlife Science

(02) Artist/Artisan/Music

(03) Business Management/ Economics/Accounting

(04) Computer Science

(05) Education/Teacher

(06) Heavy Equipment Operator/Truck Driver

(07) Health Care Professional

(08) Law

(09) Law Enforcement/Criminal Justice

(10) Medical Fields (Doctor, Nurse, Dentist, Pharmacist)

(11) Sciences (physical, biological)

(12) Skilled Trade/Technical/Clerical

(13) Veterinarian

(14) Wants to attend college

(15) Military

(16) Communications

(17) Real Estate

(18) Still in College or Graduate school/Graduated

(19) Engineering/Mathematician/Architecture

(20) Chef/ Food Service/Restaurant
(21) Social/ Political Sciences
(22) FS/BLM/NPS
(23) State government/County gov't/City gov't
(24) Home Economist
(25) Banking
(26) Librarian
(27) Human Resources
(28) Psychology
(29) Journalism

Table 23—Educational interests of second child (EDINTSB—Question 12b).

EDUCATION SECOND CHILD*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	13	5.5	8.2
02	4	1.7	2.5
03	14	5.9	8.8
04	9	3.8	5.7
05	12	5.0	7.5
06	1	.4	.6
07	4	1.7	2.5
08	4	1.7	2.5
09	4	1.7	2.5
10	13	5.5	8.2
11	7	2.9	4.4
12	31	13.0	19.5
13	5	2.1	3.1
14	1	.4	.6
15	6	2.5	3.8
17	1	.4	.6
18	4	1.7	2.5
19	14	5.9	8.8
20	2	.8	1.3
21	2	.8	1.3
22	1	.4	.6
23	2	.8	1.3
24	2	.8	1.3
27	1	.4	.6
28	1	.4	.6
29	1	.4	.6
Total	159	66.8	100.0
97 (Missing)	18	7.6	
99 (N/A)	61	25.6	
Total	**238**	**100.0**	

Key*
(01) Agriculture/Ranching/Wildlife Science Second Child Edn

(02) Artist/Artisan/Music
(03) Business Management
(04) Computer Science
(05) Education/Teacher
(06) Heavy Equipment Operator/Truck Driver
(07) Health Care Professional
(08) Law
(09) Law Enforcement/Criminal Justice
(10) Medical Fields (Doctor, Nurse, Dentist, Pharmacist)
(11) Sciences (physical, biological)
(12) Skilled Trade/Technical/Clerical
(13) Veterinarian
(14) Wants to attend college
(15) Military
(16) Communications
(17) Real Estate
(18) Still in College or Graduate school/Graduated
(19) Engineering/Mathematician/Architecture
(20) Chef/Food Service/Restaurant
(21) Social/Political Sciences
(22) FS/BLM/NPS
(23) State government County gov't/City gov't
(24) Home Economist
(25) Accounting/Banking
(26) Librarian
(27) Human Resources
(28) Psychology
(29) Journalism
(30) History
(31) Languages

Table 24—Educational interests of third child (EDINTSC—Question 12c).

EDUCATION THIRD CHILD*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	4	1.7	4.2
02	2	.8	2.1
03	9	3.8	9.5
04	4	1.7	4.2
05	8	3.4	8.4
06	1	.4	1.1
07	5	2.1	5.3
08	2	.8	2.1
09	2	.8	2.1
10	9	3.8	9.5
11	5	2.1	5.3
12	16	6.7	16.8
13	2	.8	2.1
17	1	.4	1.1
18	7	2.9	7.4
19	10	4.2	10.5
20	1	.4	1.1
21	2	.8	2.1
22	1	.4	1.1
23	3	1.3	3.2
30	1	.4	1.1
Total	95	39.9	100.0
97 (Missing)	18	7.6	
99 (N/A)	125	52.5	
Total	**238**	**100.0**	

Key*

(01) Agriculture/Ranching /Wildlife Science — Third Child Edn

(02) Artist/Artisan/Music

(03) Business Management

(04) Computer Science

(05) Education/Teacher

(06) Heavy Equipment Operator/Truck Driver

(07) Health Care Professional

(08) Law

(09) Law Enforcement/Criminal Justice

(10) Medical Fields (Doctor, Nurse, Dentist, Pharmacist)

(11) Sciences (physical, biological)

(12) Skilled Trade/Technical/Clerical

(13) Veterinarian

(14) Wants to attend college

(15) Military

(16) Communications

(17) Real Estate

(18) Still in College or Graduate school/Graduated

(19) Engineering/Mathematician/ Architecture

(20) Chef/Food Service/Restaurant
(21) Social/Political Sciences
(22) FS/BLM/NPS
(23) State government/County gov't/City gov't
(24) Home Economist
(25) Accounting/Banking
(26) Librarian
(27) Human Resources
(28) Psychology
(29) Journalism
(30) History
(31) Languages

Table 25—Educational interests of fourth child (EDINTSD—Question 12d).

EDUCATION FOURTH CHILD*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	1	.4	2.2
03	6	2.5	13.0
05	5	2.1	10.9
06	1	.4	2.2
07	2	.8	4.3
08	1	.4	2.2
10	2	.8	4.3
11	1	.4	2.2
12	7	2.9	15.2
15	1	.4	2.2
16	1	.4	2.2
17	1	.4	2.2
18	3	1.3	6.5
19	3	1.3	6.5
20	2	.8	4.3
22	2	.8	4.3
23	2	.8	4.3
25	2	.8	4.3
31	3	1.3	6.5
Total	46	19.3	100.0
97 (Missing)	13	94.5	
99 (N/A)	179	5.5	
Total	**238**	**100.0**	

Key*
(01) Agriculture/Ranching/Wildlife Science
(02) Artist/Artisan/Music
(03) Business Management
(04) Computer Science
(05) Education/Teacher
(06) Heavy Equipment Operator/Truck Driver

Fourth Child Edn

(07) Health Care Professional
(08) Law
(09) Law Enforcement/Criminal Justice
(10) Medical Fields (Doctor, Nurse, Dentist, Pharmacist)
(11) Sciences (physical, biological)
(12) Skilled Trade/Technical/Clerical
(13) Veterinarian
(14) Wants to attend college
(15) Military
(16) Communications
(17) Real Estate
(18) Still in College or Graduate school/Graduated
(19) Engineering/Mathematician/Architecture
(20) Chef/Food Service/Restaurant
(21) Social/Political Sciences
(22) FS/ BLM/NPS
(23) State government/County gov't/City gov't
(24) Home Economist
(25) Accounting/Banking
(26) Librarian
(27) Human Resources
(28) Psychology
(29) Journalism
(29) Journalism
(30) History
(31) Languages

Table 26—Do your children participate in ranching? (CHLDRNCH —Question 13).

CHILD PARTICIPATES*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	211	88.7	90.9
02	15	6.3	6.5
03	5	2.1	2.2
04	1	.4	.4
Total	232	97.5	100.0
99 (N/A)	6	2.5	
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) No
(03) Nephews/Nieces participate
(04) Too young to participate

Table 27—Do grandchildren participate in ranching? (GRCHRNCH—Question 14).

GRANDCHILD PARTICIPATES*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	119	50.0	67.2
02	18	7.6	10.2
04	40	16.8	22.6
Total	177	74.4	100.0
97 (Missing)	1	.4	
99 (N/A)	60	25.2	
Total	**238**	**100.0**	

Key*

(01) Yes

(02) No

(03) Great nephews/Great nieces participate

(04) Too young to participate

Table 28—Do children plan to continue the ranch operation? (CONTRNCH—Question 15).

CONTINUE RANCH OP'N*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	133	55.9	57.1
02	10	4.2	4.3
03	31	13.0	13.3
04	23	9.7	9.9
05	1	.4	.4
06	6	2.5	2.6
07	15	6.3	6.4
08	14	5.9	6.0
Total	233	97.9	100.0
97 (Missing)	1	.4	
99 (N/A)	4	1.7	
Total	**238**	**100.0**	

Key*

(01) Yes

(02) No

(03) Possibly, Maybe, Probably

(04) Hope So, hopefully

(05) Grandchildren will continue the ranch

(06) Nephews, nieces, other close relatives will/may continue the ranch

(07) Doesn't know

(08) Doesn't think so

Table 29—Are you a member of a grazing association? (GRASSOC—Question 16).

MEMBER GR ASSOC'N*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	179	75.2	75.5
02	53	22.3	22.4
03	5	2.1	2.1
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*

(01) Yes

(02) No

(03) Used to be, but no longer

Table 30—If a member, how many meetings attended per year? (ASSOCMTS—Question 16a).

MEETINGS ATTENDED*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	6	2.5	3.3
02	55	23.1	30.1
03	57	23.9	31.1
04	40	16.8	21.9
05	20	8.4	10.9
06	3	1.3	1.6
07	2	.8	1.1
Total	183	76.9	100.0
97 (Missing)	2	.8	
99 (N/A)	53	22.3	
Total	**238**	**100.0**	

Key*

(01) None

(02) 1-2

(03) 3-5

(04) 6-10

(05) More than 10

(06) Many meetings, involved in many state and local ranching associations although may have a single permit allotment and no association

(07) No # specified/"all," "many," etc.

Table 31—Are agriculture-related classes or seminars available in the area? (AGCLASS—Question 17).

AG SEMINARS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	92	38.7	38.7
02	81	34.0	34.0
03	31	13.0	13.0
04	16	6.7	6.7
05	5	2.1	2.1
06	13	5.5	5.5
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) No
(03) Unknown
(04) Minimal available, Occasional
(05) Used to be
(06) Not in immediate area

Table 32—If so, how many do you attend per year? (ATCLASS—Question 17a).

SEMINARS ATTENDED*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	33	13.9	27.0
02	40	16.8	32.8
03	15	6.3	12.3
04	5	2.1	4.1
07	5	2.1	4.1
08	16	6.7	13.1
09	4	1.7	3.3
10	1	.4	.8
11	3	1.3	2.5
Total	122	51.3	100.0
97 (Missing)	2	.8	
99 (N/A)	114	47.9	
Total	**238**	**100.0**	

Key*
(01) None
(02) 1-2
(03) 3-5
(04) 6-10
(05) More than 10
(06) Semester or more of classes
(07) When possible
(08) A few or vague re: number/Occasional
(09) Used to attend
(10) Teaches the classes
(11) Time restraints

What livestock related community events do you/did you attend? (Table 33-41, Questions 18a-18i)

Table 33—Brandings attended(BRANDS—Question 18a).

BRANDINGS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	63	26.5	26.6
02	121	50.8	51.1
03	53	22.3	22.4
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*

(01) Yes, with the family

(02) Yes, with family and other community members

(03) No

Table 34—Fairs attended (FAIRS—Question 18b).

FAIRS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	102	42.9	42.9
02	61	25.6	25.6
04	57	23.9	23.9
05	18	7.6	7.6
Total	**238**	**100.0**	**100.0**

Key*

(01) County Fairs

(02) All types of fairs

(03) Attend and compete at fairs (any family members)

(04) No

(05) State Fair

Table 35—Rodeos attended (RODEOS—Question 18c).

RODEOS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	10	4.2	4.2
02	170	71.4	71.4
03	5	2.1	2.1
04	53	22.3	22.3
Total	**238**	**100.0**	**100.0**

Key*

(01) Local Rodeos

(02) All types of rodeos

(03) Attend and compete in rodeos (any family members)

(04) No

Table 36—Four-H/ FFA attended as a child or children attend (FOURH—Question 18d).

FOUR-H FFA*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	53	22.3	22.3
02	6	2.5	2.5
03	178	74.8	74.8
04	1	.4	.4
Total	**238**	**100.0**	**100.0**

Key*

(01) Yes

(02) Yes, a leader

(03) No

Table 37—Bull sales attended (BULLSALE—Question 18e).

BULL SALES*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	127	53.4	53.4
02	111	46.6	46.6
Total	**238**	**100.0**	**100.0**

Key*

(01) Yes

(02) No

Table 38—Livestock auctions attended (LVSTKAUC—Question 18f).

LIVESTOCK AUCTIONS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	196	82.4	82.7
02	41	17.2	17.3
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*
(01) Yes
(02) No

Table 39—Acequia association meetings (ACEQUIA—Question 18g).

ACEQUIA MEETINGS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	113	47.5	47.5
02	23	9.7	9.7
03	102	42.9	42.9
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) Yes, am/have been an officer
(03) No

Table 40—Ranch related state or national associations, land grant meetings (STNTMTS—Question 18h).

STATE/NATIONAL ASSOCIATIONS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	29	12.2	12.2
02	14	5.9	5.9
03	195	81.9	81.9
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) Yes, am/have been an officer
(03) No

Table 41—Other organizations or events (OTHER—Question 18i).

OTHER EVENTS OR ORGANIZATIONS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	163	68.5	68.5
02	5	2.1	2.1
03	10	4.2	4.2
04	9	3.8	3.8
05	3	1.3	1.3
06	15	6.3	6.3
07	6	2.5	2.5
08	2	.8	.8
09	2	.8	.8
10	5	2.1	2.1
11	7	2.9	2.9
12	1	.4	.4
13	1	.4	.4
14	1	.4	.4
15	2	.8	.8
16	1	.4	.4
17	4	1.7	1.7
19	1	.4	.4
Total	**238**	**100.0**	**100.0**

Key*

(01) No

(02) Sheriff's Posse

(03) Horse Shows/Sales/races/horse associations

(04) Ropings/Team roping

(05) Fiestas

(06) FFA/FHA

(07) Roundups/Cattle drives

(08) Sheep Sales

(09) Ag' Expositions/Ag' Fest

(10) Matanzas

(11) Stock Shows

(12) Fiestas, FFA

(13) Field days

(14) Fiestas, farm equipment auctions

(15) Farm auctions

(16) NM Mounted Patrol

(17) Pioneer/Frontier Days/local festivals

(18) County Fair Board

(19) Quivira Conference

Table 42—Do you share livestock work and responsibilities with relatives? (RUNRELS—Question 19).

WORK WITH RELATIVES*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	155	65.1	65.1
02	67	28.2	28.2
03	14	5.9	5.9
04	2	.8	.8
Total	**238**	**100.0**	**100.0**

Key*

(01) Yes

(02) No

(03) No, but relatives often help out

(04) Used to

Table 43—Do you share livestock work and responsibilities with neighbors? (RUNEIGHS—Question 20).

WORK WITH NEIGHBORS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	137	57.6	57.6
02	52	21.8	21.8
03	17	7.1	7.1
04	32	13.4	13.4
Total	**238**	**100.0**	**100.0**

Key*

(01) Yes

(02) Yes, especially with other association (allotment) members

(03) Yes, help out if needed

(04) No

Table 44—Who influenced your interest in farming and ranching? (RNCINFL—Question 21).

WHOSE INFLUENCE*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	91	38.2	38.4
02	1	.4	.4
03	20	8.4	8.4
04	29	12.2	12.2
05	15	6.3	6.3
07	3	1.3	1.3
08	3	1.3	1.3
10	1	.4	.4
12	3	1.3	1.3
13	25	10.5	10.5
14	15	6.3	6.3
15	3	1.3	1.3
16	4	1.7	1.7
17	5	2.1	2.1
18	1	.4	.4
19	1	.4	.4
20	1	.4	.4
21	1	.4	.4
22	1	.4	.4
23	4	1.7	1.7
24	1	.4	.4
25	1	.4	.4
26	3	1.3	1.3
27	1	.4	.4
28	1	.4	.4
29	1	.4	.4
30	1	.4	.4
31	1	.4	.4
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*

(01) Father

(02) Mother

(03) Parents

(04) Father and Grandfather

(05) Grandfather

(06) Grandmother

(07) Grandparents

(08) Uncle(s)

(09) Aunt(s)

(10) Other relatives (brothers, cousins)

(11) Teachers

(12) No one—decided on my own

(13) Brought up with it

(14) Family business, everyone ranched

(15) Neighbor, Friend
(16) Father & whole family
(17) Grandfather, Father, Uncle
(18) Father & Father-in-law
(19) The “Life Style”
(20) For money/profit
(21) Parents & Uncle
(22) Husband
(23) Parents & Grandparents
(24) Previous employers & family
(25) Grandfather & Uncles
(26) Father & Uncles
(27) Father injured so had to take over
(28) Father and money
(29) Husband & Father-in-law
(30) His horse
(31) Father, Uncles, Ag’ Teacher

Table 45—At what age did you first begin to work with livestock? (AGEWRKL—Question 22).

FIRST WORKED LIVESTOCK*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	10	4.2	4.2
02	44	18.5	18.6
03	111	46.6	46.8
04	54	22.7	22.8
05	9	3.8	3.8
06	2	.8	.8
07	2	.8	.8
08	5	2.1	2.1
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*
(01) As far back as I can remember (no age given)
(02) 0-3
(03) 4-6
(04) 7-10
(05) 11-14
(06) 15-18
(07) Young Adult
(08) Adult
(09) Older Adult (i.e., Retirement activity)

Table 46—At what age did you first own livestock? (AGEOWNL—Question 23).

FIRST OWNED LIVESTOCK*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	3	1.3	1.3
02	12	5.0	5.2
03	42	17.6	18.0
04	57	23.9	24.5
05	41	17.2	17.6
06	32	13.4	13.7
07	29	12.2	12.4
08	17	7.1	7.3
Total	233	97.9	100.0
97 (Missing)	5	2.1	
Total	**238**	**100.0**	

Key*

01) As far back as I can remember (no age given)

(02) 0-3

(03) 4-6

(04) 7-10

(05) 11-14

(06) 15-18

(07) Young Adult

(08) Adult

(09) Older Adult (i.e., Retirement activity)

Table 47—How many previous generations of family have owned livestock? (FAMOWNL—Question 24).

LS OF PREVIOUS GENERATIONS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	2	.8	.9
02	10	4.2	4.3
03	53	22.3	22.6
04	89	37.4	37.9
05	31	13.0	13.2
06	28	11.8	11.9
07	2	.8	.9
08	1	.4	.4
09	8	3.4	3.4
10	7	2.9	3.0
11	1	.4	.4
12	3	1.3	1.3
Total	235	98.7	100.0
97 (Missing)	2	.8	
99	1	.4	
Total	3	1.3	
Total	**238**	**100.0**	

Key*

(01) I am the first to have livestock

(02) One, my parents had livestock

(03) Two, my grandparents had livestock

(04) Three, my great-grandparents had livestock

(05) Four, my great-great grandparents had livestock

(06) Five or more, my great-great-great grandparents had livestock

(07) No generational count, family has had livestock since the 1800s

(08) No generational count, family has had livestock since the 1700s

(09) No generational count, has had livestock since Oñate's time, the Reconquest, 1600s

(10) No generational count, family has "always" had livestock since "the beginning"

(11) Since Grandfather was placed there (Native Americans)

(12) Twelve generations

Table 48—Is (was) your family part of a community land grant? (LAGRANT—Question 25).

LAND GRANT*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	118	49.6	49.6
02	67	28.2	28.2
03	25	10.5	10.5
05	14	5.9	5.9
07	14	5.9	5.9
Total	**238**	**100.0**	**100.0**

Key*

(01) Yes

(02) No

(03) Unknown

(04) Family is in a grant but is inactive or uses the grant lands for purposes other than grazing such as fuel wood gathering or gathering of vigas

(05) Post US Conquest purchase

(06) Thinks so, but not sure

(07) Homestead land

Table 49—If no longer associated with the grant land, how did that occur? (GRNTLOSS—Question 25a).

HOW GRANT WAS LOST*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	13	5.5	5.5
02	10	4.2	4.3
03	6	2.5	2.6
04	6	2.5	2.6
05	10	4.2	4.3
06	27	11.3	11.5
07	20	8.4	8.5
08	8	3.4	3.4
09	2	.8	.9
10	1	.4	.4
98	13	5.5	5.5
99	119	50.0	50.6
Total	235	98.7	100.0
97 (Missing)	3	1.3	
Total	**238**	**100.0**	

Key*

(01) Family sold their portion of grant/ no longer involved

(02) Grant lost after US conquest because of inability to pay taxes

(03) Grant lost after US conquest because of inability to obtain deed because of lack of written records

(04) Grant lost after US conquest because of language and communication barriers

(05) Grant lost after US conquest because of unscrupulous land dealings (e.g., “Santa Fe Ring”)

(06) Grant lost after US conquest to the Government/Forest Service (became public land)

(07) Grant lost after US conquest because of unknown or unspecified reasons
(08) Much lost, partitioned, sold some/some now FS or NPS
(09) Lost to US Government and Indians
(10) Land lost to taxes, not sure if land grant or homestead
(11) Land lost to taxes, not grant land
(12) Family looking into it/permittee not certain

Table 50—When did your family first acquire a permit on FS land? (PERMFS—Question 26).

FS PERMIT*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
03	122	51.3	51.5
04	12	5.0	5.1
05	14	5.9	5.9
06	7	2.9	3.0
07	13	5.5	5.5
08	11	4.6	4.6
09	5	2.1	2.1
10	20	8.4	8.4
11	5	2.1	2.1
12	7	2.9	3.0
13	12	5.0	5.1
14	9	3.8	3.8
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*
(01) None (NOTE: All respondents to this survey should have a Forest Service permit.)
(02) Sublease on Forest Service land
(03) Since permits began in the area/Pre-Forest Service
(04) Father (or other relative of that generation) had the permit and passed it down
(05) Grandfather (or other relative of that generation) had the permit and passed it down
(06) Less than 10 years
(07) 10-20 years
(08) 21-30 years
(09) 31-40 years
(10) 41-50 years
(11) 51-60 years
(12) 61-70 years
(13) 71-80 years or more
(14) Father or grandfather had a permit and lost or sold it. Current permittee got another

Table 51—When did your family first acquire a permit on BLM land? (PERMBLM—Question 26a).

BLM PERMIT*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	173	72.7	74.6
02	1	.4	.4
03	18	7.6	7.8
04	5	2.1	2.2
05	2	.8	.9
06	3	1.3	1.3
07	4	1.7	1.7
08	3	1.3	1.3
10	7	2.9	3.0
11	12	5.0	5.2
12	2	.8	.9
13	2	.8	.9
Total	232	97.5	100.0
97 (Missing)	6	2.5	
Total	**238**	**100.0**	

Key*

(01) None/ Not any more

(02) Sublease on BLM land

(03) Since permits began in the area/Pre-BLM

(04) Father had the permit and passed it down

(05) Grandfather had the permit and passed it down.

(06) Less than 10 years

(07) 10-20 years

(08) 21-30 years

(09) 31-40 years

(10) 41-50 years

(11) 51-60 years

(12) 61-70 years

(13) 71-80 years

(14) Father or grandfather had a permit and lost or sold it. Current permittee got another

What breeds of cattle or sheep do you raise and why did you select those breeds? (Questions 28a-28c)

Table 52—What breed(s) of cattle do you raise? (CTLBREED—Question 28a).

CATTLE BREEDS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
02	8	3.4	3.4
03	1	.4	.4
06	2	.8	.9
09	2	.8	.9
10	9	3.8	3.8
11	10	4.2	4.3
14	2	.8	.9
17	2	.8	.9
18	9	3.8	3.8
19	38	16.0	16.2
20	1	.4	.4
21	1	.4	.4
22	2	.8	.9
23	5	2.1	2.1
24	1	.4	.4
25	24	10.1	10.2
26	6	2.5	2.6
27	6	2.5	2.6
28	1	.4	.4
29	1	.4	.4
31	1	.4	.4
32	1	.4	.4
33	4	1.7	1.7
34	1	.4	.4
35	1	.4	.4
37	1	.4	.4
39	2	.8	.9
40	2	.8	.9
41	4	1.7	1.7
42	1	.4	.4
43	2	.8	.9
44	2	.8	.9
45	1	.4	.4
46	1	.4	.4
47	2	.8	.9
48	2	.8	.9
49	2	.8	.9
50	3	1.3	1.3
51	1	.4	.4
52	2	.8	.9
53	1	.4	.4
54	1	.4	.4
55	1	.4	.4
56	2	.8	.9
57	2	.8	.9
58	1	.4	.4
59	1	.4	.4
60	2	.8	.9
61	1	.4	.4
62	2	.8	.9
63	1	.4	.4

64	1	.4	.4
65	4	1.7	1.7
66	1	.4	.4
67	1	.4	.4
68	1	.4	.4
69	1	.4	.4
70	1	.4	.4
71	2	.8	.9
72	1	.4	.4
73	2	.8	.9
74	1	.4	.4
75	1	.4	.4
76	1	.4	.4
77	1	.4	.4
78	1	.4	.4
79	1	.4	.4
80	1	.4	.4
81	1	.4	.4
82	1	.4	.4
83	5	2.1	2.1
84	1	.4	.4
85	1	.4	.4
86	1	.4	.4
88	1	.4	.4
89	1	.4	.4
90	1	.4	.4
91	2	.8	.9
92	2	.8	.9
93	1	.4	.4
94	1	.4	.4
95	1	.4	.4
96	1	.4	.4
100	1	.4	.4
101	1	.4	.4
102	1	.4	.4
103	1	.4	.4
104	1	.4	.4
105	1	.4	.4
106	1	.4	.4
107	1	.4	.4
108	1	.4	.4
109	1	.4	.4
Total	235	98.7	100.0
Missing 99	3	1.3	
Total	**238**	**100.0**	

Key*

(1) Beefmaster

(2) Black Angus

(3) Blonde d'Aquitaine ("Blondies")

(4) Brahmann

(5) Brangus

(6) Charolais

(7) Galloway

(9) Gelbvieh

(10) Hereford ("White Face")

(11) Limousin
(12) Longhorn
(13) Red Angus
(14) Salers
(15) Santa Gertrudis
(16) Shorthorn
(17) Black Angus and Gelbvieh
(18) Black Angus and Limousin
(19) Black Angus x Hereford (“Black Baldy”)
(20) Black Angus, Limousin, and Gelbvieh
(21) Charolais and Black Angus
(21) Hereford and Brown Swiss
(22) Hereford and Salers
(23) Hereford, Black Angus, and Charolais
(24) Hereford, Black Angus, and Gelbvieh
(25) Hereford, Black Angus, and Limousin
(26) Hereford, Black Angus, and Salers
(27) Hereford, Black Angus, Limousin, and Salers
(28) Hereford, Black Angus, Santa Gertrudis, Limousin, Blonde d’Aquitaine
(29) Hereford, Charolais, Red Angus, Black Angus, and Limousin
(30) Hereford, Limousin, and Beefmaster
(31) Hereford, Limousin, Longhorn, Gelbvieh, Black Angus, Shorthorn
(32) Hereford, Longhorn, Beefmaster, Gelbvieh, Red Angus, Black Angus
(33) Hereford, Red Angus, and Black Angus
(34) Hereford, Simmental, Gelbvieh, and Black Angus
(35) Limousin, Salers, and Beefmaster
(36) Longhorn and Gelbvieh
(37) Red Brangus, Black Angus, and Limousin
(38) Simmental and Black Angus
(39) Hereford and Brangus
(40) Unknown Breed(s) or unspecified (e.g., “mixed breeds” or “crossbred”)
(41) Hereford and Limousin
(42) Charolais, Limousin, Salers, Angus
(43) Hereford and Mixed (crossbreds)
(44) Black Angus and Crossbreds
(45) Black Angus, Red Angus, Charolais, Longhorn
(46) Black Angus, Hereford, and Blond d’Aquitaine
(47) Hereford, Brangus, Limousin
(48) Hereford, Black Angus, Charolais, Limousin
(49) Hereford, Angus, Brangus (Black & Red)
(50) Hereford, Black Angus, Gelbvieh, and Limousin
(51) Hereford, Black/Red Angus, and Salers
(52) Angus and Beefmaster
(53) Hereford, Angus, and Shorthorn
(54) Hereford, Black Angus, Charolais, Limousin, Salers
(55) Hereford, Angus, Charolais, Shorthorn
(56) Black Angus and Salers
(57) Black Angus and Blonde d’Aquitaine
(58) Hereford, Red Angus, and Simmental
(59) Hereford, Black Angus, Red Angus, Beefmaster, Brangus, Limousin,

Santa Gertrudis, and Shorthorn
(60) Black Angus, Charolais, and Limousin
(61) Brangus and Charolais
(62) Black Angus, Limousin, and Salers
(63) Hereford, Black Angus, Maine-Anjou, and Salers
(64) Blonde d' Aquitaine, Gelbvieh, Limousin, and Tarentaise
(65) Limousin and Salers
(66) Angus Plus and Herefords
(67) Angus, Charolais, and Santa Gertrudis
(68) Mixed breeds: Jersey, Salers, Black Angus, Charolais, Hereford
(69) Simmental cross
(70) Angus and Brangus
(71) Limousin and Brown Swiss
(72) Black Angus, Red Angus, and Gelbvieh
(73) Hereford x Black Angus (Black Baldies) and Santa Gertrudis
(74) Hereford, Angus, Brangus, Gelbvieh, Simmental
(75) Hereford, Angus, Brangus, Gelbvieh
(76) Hereford x Angus, Longhorn, Maine-Anjou, Chianina
(77) Santa Gertrudis and Beefmaster
(78) Hereford, Limousin, Romagnola
(79) Charolais, Limousin, Salers
(80) Limousin & Gelbvieh
(81) Angus, Brahman, Hereford, Limousin, Shorthorn (Galloway)
(82) Angus, Brahman, Hereford, Holstein, Saler, Simmental; Jersey & Limousin (bulls)
(83) Hereford, Angus, Beefmaster
(84) Longhorn, Gelbvieh, Corriente (Roping Stock)
(85) Angus, Beefmaster, Simmental, Maine-Anjou, Hereford, Charolais, Brown Swiss
(86) Hereford, Charolais, Limousin
(87) Hereford & Holstein (Pintas)
(88) Hereford, Black Angus, Charolais, and Brahman
(89) Hereford, Black Angus, Simmental, Limousin
(90) Hereford, Black Angus, Simmental, Limousin, Salers
(91) Black Angus, Red Angus, Limousin
(92) Red Angus and Limousin
(93) Black Angus, Red Angus, Hereford, Limousin
(94) Black Angus, Limousin, Brangus
(95) Black Baldy, Charolais, Hereford, Beefmaster, Limousin, Salers, Santa Gertrudis
(96) Beefmaster, Black Angus, Charolais, Salers
(100) Black Angus (bull) and Santa Gertrudis
(101) Brangus and Salers
(102) Black Angus, Limousin, Holstein (bull)
(103) Angus, Galloway, Hereford, Salers
(104) Simmental and Limousin
(105) Black Angus, Limousin, Gelbvieh, Charolais
(106) Black Angus, Hereford, Limousin, Charolais, Brangus
(107) Black Angus, Shorthorn
(108) Black Angus, Charolais, Hereford, Limousin, Santa Gertrudis
(109) Angus, Charolais, Brangus, Galloway, Salers

Table 53—What breed(s) of sheep do you raise? (SHPBREED—Question 28b).

SHEEP BREEDS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
03	1	.4	2.9
04	3	1.3	8.6
05	5	2.1	14.3
06	1	.4	2.9
07	1	.4	2.9
08	16	6.7	45.7
09	1	.4	2.9
10	1	.4	2.9
11	3	1.3	8.6
12	1	.4	2.9
13	1	.4	2.9
14	1	.4	2.9
Total	35	14.7	100.0
97 (Missing)	203	85.3	
Total	**238**	**100.0**	

Key*

(01) Cheviot

(02) Churro

(03) Columbian

(04) Rambouillet

(05) Suffolk

(06) Columbian and Suffolk

(07) Rambouillet, Columbian, Suffolk

(08) Unknown which breeds/Breed not specified

(09) Rambouillet, Churro, and Dorset

(10) Rambouillet and Columbian

(11) Rambouillet and Suffolk

(12) Merino

(13) Rambouillet, Suffolk, and Merino

(14) Rambouillet and Churro

Table 54—Why did you choose those breeds? (WHYBREED—Question 28c).

REASONS FOR CHOICE*	NUMBER OF RESPONSES+	PERCENT OF RESPONSES	PERCENT OF CASES
01	62	12.1	28.4
02	19	3.7	8.7
03	69	13.5	31.7
04	104	20.4	47.7
05	40	7.8	18.3
06	54	10.6	24.8
07	34	6.7	15.6
08	50	9.8	22.9
09	79	15.5	36.2
Total	**511**	**100.0**	

(20 missing cases plus 218 valid cases represent the 238 permittees)

Key*

(01) Preference/Liked them/Tradition Breed Selection

(02) Hybrid (crossbred) vigor

(03) Adaptable/Hardy/ Efficient animals/Self-maintain

(04) Marketability (prices, meat quality, buyer preference)

(05) Disease resistance

(06) Disposition/Easy to handle

(07) Maternal characteristics

(08) Birthing ease/Low birth weight

(09) Growth characteristics (gain weight rapidly)

+ “Number of responses” indicates the number of times each reason was chosen. Permittees could provide as many reasons for breed selection as were relevant to each operation

How many head of each type of livestock do you own during a typical year? (Question 29, Tables 55-63)

Table 55—Number of cows (COWS—Question29).

NUMBER OF COWS	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	1	.4	.4
02	1	.4	.4
04	3	1.3	1.3
05	4	1.7	1.7
06	2	.8	.9
07	4	1.7	1.7
08	7	2.9	3.0
09	3	1.3	1.3
10	10	4.2	4.3
11	4	1.7	1.7
12	4	1.7	1.7
13	1	.4	.4
14	5	2.1	2.1
15	12	5.0	5.1
16	1	.4	.4
17	2	.8	.9
18	8	3.4	3.4
19	1	.4	.4
20	15	6.3	6.4
21	3	1.3	1.3
22	2	.8	.9
23	1	.4	.4
24	3	1.3	1.3
25	7	2.9	3.0
26	2	.8	.9
27	3	1.3	1.3
28	1	.4	.4
30	15	6.3	6.4
32	3	1.3	1.3
33	1	.4	.4
34	1	.4	.4
35	1	.4	.4
36	1	.4	.4
37	1	.4	.4
38	2	.8	.9
39	3	1.3	1.3
40	5	2.1	2.1
41	2	.8	.9
42	1	.4	.4
45	1	.4	.4
46	2	.8	.9
50	7	2.9	3.0
52	1	.4	.4
53	2	.8	.9
55	3	1.3	1.3
56	2	.8	.9
58	1	.4	.4
60	3	1.3	1.3
61	1	.4	.4
62	1	.4	.4
65	1	.4	.4

70	3	1.3	1.3
72	1	.4	.4
80	2	.8	.9
84	1	.4	.4
85	1	.4	.4
86	2	.8	.9
88	2	.8	.9
90	5	2.1	2.1
94	1	.4	.4
95	2	.8	.9
99	1	.4	.4
100	7	2.9	3.0
103	1	.4	.4
110	1	.4	.4
115	1	.4	.4
120	1	.4	.4
125	1	.4	.4
140	2	.8	.9
148	1	.4	.4
160	1	.4	.4
170	1	.4	.4
178	1	.4	.4
200	2	.8	.9
201	1	.4	.4
240	2	.8	.9
247	1	.4	.4
250	2	.8	.9
253	1	.4	.4
275	1	.4	.4
300	1	.4	.4
309	2	.8	.9
350	1	.4	.4
375	1	.4	.4
400	2	.8	.9
412	1	.4	.4
413	1	.4	.4
450	1	.4	.4
485	2	.8	.9
520	1	.4	.4
620	1	.4	.4
Total	234	98.3	100.0
00 (No cows)	4	1.7	
Total	**238**	**100.0**	

Table 56—Number of bulls (BULLS—Question29).

NUMBER OF BULLS	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	77	32.4	34.5
02	52	21.8	23.3
03	23	9.7	10.3
04	11	4.6	4.9
05	12	5.0	5.4
06	4	1.7	1.8
07	1	.4	.4
08	7	2.9	3.1
09	1	.4	.4
10	5	2.1	2.2
12	1	.4	.4
15	2	.8	.9
16	2	.8	.9
17	2	.8	.9
19	1	.4	.4
20	2	.8	.9
22	2	.8	.9
23	1	.4	.4
25	2	.8	.9
30	3	1.3	1.3
999	12	5.0	5.4
Total	223	93.7	100.0
00 (No bulls)	15	6.3	
Total	**238**	**100.0**	

Table 57—Number of heifers (YEARHF—Question 29).

NUMBER OF HEIFERS	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	4	1.7	2.8
02	21	8.8	14.8
03	17	7.1	12.0
04	12	5.0	8.5
05	17	7.1	12.0
06	3	1.3	2.1
07	2	.8	1.4
08	9	3.8	6.3
09	1	.4	.7
10	14	5.9	9.9
12	1	.4	.7
14	3	1.3	2.1
15	3	1.3	2.1
16	6	2.5	4.2
17	1	.4	.7
19	1	.4	.7
20	1	.4	.7
21	6	2.5	4.2
25	1	.4	.7
30	3	1.3	2.1
32	2	.8	1.4
35	1	.4	.7
58	1	.4	.7
40	1	.4	.7
45	1	.4	.7
50	1	.4	.7
60	2	.8	1.4
65	1	.4	.7
70	1	.4	.7
75	1	.4	.7
76	1	.4	.7
80	1	.4	.7
103	1	.4	.7
Total	142	59.7	100.0
00 (No heifers)	96	40.3	
Total	**238**	**100.0**	

Table 58—Number of steers (YEARST—Question 29).

NUMBER OF STEERS	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	1	.4	.4
02	3	1.3	12.0
03	2	.8	8.0
04	2	.8	8.0
05	4	1.7	16.0
06	1	.4	4.0
07	1	.4	4.0
08	1	.4	4.0
12	1	.4	4.0
14	1	.4	4.0
17	1	.4	4.0
25	1	.4	4.0
75	1	.4	4.0
76	1	.4	4.0
100	4	1.7	16.0
Total	25	10.5	100.0
00 (No steers)	213	89.5	
Total	**238**	**100.0**	

Table 59—Number of calves (CALVES—Question 29)

NUMBER OF CALVES	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	3	1.3	1.3
02	1	.4	.4
03	1	.4	.4
04	6	2.5	2.5
05	9	3.8	3.8
06	8	3.4	3.4
07	4	1.7	1.7
08	6	2.5	2.5
09	6	2.5	2.5
10	9	3.8	3.8
11	2	.8	.8
12	11	4.6	4.6
13	3	1.3	1.3
14	7	2.9	2.9
15	9	3.8	3.8
16	3	1.3	1.3
17	6	2.5	2.5
18	10	4.2	4.2
19	1	.4	.4
21	10	4.2	4.2
22	6	2.5	2.5
23	1	.4	.4
24	2	.8	.8
25	4	1.7	1.7
27	3	1.3	1.3
28	2	.8	.8
30	5	2.1	2.1
31	1	.4	.4
32	3	1.3	1.3
33	1	.4	.4
35	1	.4	.4
37	1	.4	.4
38	4	1.7	1.7
39	1	.4	.4
40	2	.8	.8
42	2	.8	.8
43	1	.4	.4
44	2	.8	.8
45	4	1.7	1.7
46	1	.4	.4
48	1	.4	.4
49	1	.4	.4
50	2	.8	.9
52	1	.4	.4
54	1	.4	.4
56	4	1.7	1.7
58	2	.8	.9
60	4	1.7	1.7
65	1	.4	.4
70	3	1.3	1.3
74	1	.4	.4

75	1	.4	.4
80	4	1.7	1.7
81	1	.4	.4
85	2	.8	.9
86	1	.4	.4
87	1	.4	.4
90	3	1.3	1.3
94	1	.4	.4
95	1	.4	.4
98	1	.4	.4
100	5	2.1	2.2
114	1	.4	.4
119	1	.4	.4
135	1	.4	.4
146	1	.4	.4
150	3	1.3	1.3
155	1	.4	.4
160	2	.8	.9
170	1	.4	.4
190	1	.4	.4
198	1	.4	.4
200	1	.4	.4
240	2	.8	.9
250	2	.8	.9
300	1	.4	.4
325	1	.4	.4
390	1	.4	.4
400	2	.8	.9
420	1	.4	.4
442	1	.4	.4
461	2	.8	.9
550	1	.4	.4
Total	232	97.5	100.0
00 (No calves)	6	2.5	
Total	**238**	**100.0**	

Table 60—Number of ewes (EWES—Question 29).

NUMBER OF EWES	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
02	4	1.7	13.3
03	2	.8	6.7
04	4	1.7	13.3
05	2	.8	6.7
06	1	.4	3.3
08	1	.4	3.3
09	1	.4	3.3
10	2	.8	6.7
15	2	.8	6.7
17	1	.4	3.3
20	3	1.3	10.0
23	1	.4	3.3
57	1	.4	3.3
60	1	.4	3.3
300	1	.4	3.3
380	1	.4	3.3
550	1	.4	3.3
2000	1	.4	3.3
Total	30	12.6	100.0
00 (No ewes)	208	87.4	
Total	**238**	**100.0**	

Table 61—Number of rams (RAMS—Question 29).

NUMBER OF RAMS	NUMBER OF PERMIITTEES	PERCENT	VALID PERCENT
01	9	3.8	47.4
02	3	1.3	15.8
03	1	.4	5.3
10	1	.4	5.3
12	1	.4	5.3
15	1	.4	5.3
40	1	.4	5.3
999	2	.8	10.5
Total	19	8.0	100.0
00 (No rams)	219	92.0	
Total	**238**	**100.0**	**100.0**

Table 62—Number of lambs (LAMBS—Question 29).

NUMBER OF LAMBS	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
02	4	1.7	14.8
03	1	.4	3.7
04	3	1.3	11.1
05	2	.8	7.4
06	2	.8	7.4
08	1	.4	3.7
11	2	.8	7.4
12	1	.4	3.7
15	2	.8	7.4
19	1	.4	3.7
20	2	.8	7.4
50	1	.4	3.7
58	1	.4	3.7
180	1	.4	3.7
300	1	.4	3.7
465	1	.4	3.7
3400	1	.4	3.7
Total	27	11.3	100.0
00 (No lambs)	211	88.7	
Total	**238**	**100.0**	

Table 63—Number of horses (HORSES—Question 29).

NUMBER OF HORSES	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	23	9.7	10.7
02	47	19.7	22.0
03	33	13.9	15.4
04	29	12.2	13.6
05	18	7.6	8.4
06	18	7.6	8.4
07	12	5.0	5.6
08	13	5.5	6.1
09	3	1.3	1.4
10	4	1.7	1.9
11	2	.8	.9
12	1	.4	.5
13	3	1.3	1.4
18	3	1.3	1.4
20	3	1.3	1.4
50	1	.4	.5
100	1	.4	.5
Total	214	89.9	100.0
00 (No horses)	24	10.1	
Total	**238**	**100.0**	**100.0**

Table 64—Number of pre-drought livestock (PDLVSTK—Question29a)

PRE DROUGHT LIVESTOCK	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
10	1	.4	.9
12	1	.4	.9
13	1	.4	.9
14	1	.4	.9
18	1	.4	.9
20	1	.4	.9
23	1	.4	.9
25	5	2.1	4.5
26	1	.4	.9
28	1	.4	.9
30	5	2.1	4.5
32	1	.4	.9
34	1	.4	.9
35	2	.8	1.8
37	1	.4	.9
39	1	.4	.9
40	1	.4	.9
42	1	.4	.9
43	1	.4	.9
45	2	.8	1.8
50	5	2.1	4.5
55	2	.8	1.8
60	1	.4	.9
65	2	.8	1.8
68	2	.8	1.8
70	3	1.3	2.7
72	1	.4	.9
75	3	1.3	2.7
78	1	.4	.9
80	2	.8	1.8
85	2	.8	1.8
88	1	.4	.9
92	1	.4	.9
94	1	.4	.9
95	1	.4	.9
97	9	3.8	8.2
100	2	.8	1.8
104	1	.4	.9
106	1	.4	.9
110	1	.4	.9
116	1	.4	.9
120	2	.8	1.8
125	1	.4	.9
130	4	1.7	3.6
131	1	.4	.9
135	1	.4	.9
142	1	.4	.9
148	1	.4	.9
150	1	.4	.9
165	1	.4	.9
179	1	.4	.9

175	2	.8	1.8
195	1	.4	.9
198	1	.4	.9
200	2	.8	1.8
220	1	.4	.9
230	1	.4	.9
235	1	.4	.9
250	1	.4	.9
400	1	.4	.9
450	1	.4	.9
500	3	1.3	2.7
550	1	.4	.9
600	2	.8	1.8
720	1	.4	.9
850	1	.4	.9
1000	1	.4	.9
1350	1	.4	.9
2110	1	.4	.9
Total	110	46.2	100.0
00 (Missing)	128	53.8	
Total	**238**	**100.0**	

How many animals are lost during a typical year on public Land or private land and what were the causes? (Question 30)

Table 65—Number of cows lost during a typical year on public land (CWLOSTPB—Question 30).

COWS LOST ON PUBLIC	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	88	37.0	37.8
01	69	29.0	29.6
02	27	11.3	11.6
03	21	8.8	9.0
04	5	2.1	2.1
05	9	3.8	3.9
06	4	1.7	1.7
07	2	.8	.9
08	4	1.7	1.7
10	2	.8	.9
20	2	.8	.9
Total	233	97.9	100.0
97 (Missing)	1	.4	
99 (No cows)	4	1.7	
Total	**238**	**100.0**	

Table 66—Number of cows lost during a typical year on private land (CWLOSTPV—Question 30).

COWS LOST ON PRIVATE	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	149	62.6	63.9
01	45	18.9	19.3
02	20	8.4	8.6
03	8	3.4	3.4
04	6	2.5	2.6
05	2	.8	.9
06	1	.4	.4
10	1	.4	.4
20	1	.4	.4
Total	233	97.9	100.0
97 (Missing)	1	.4	
99 (No cows)	4	1.7	
Total	**238**	**100.0**	

Table 67—Number of bulls lost during a typical year on public land (BLLOSTPB—Question 30).

BULLS LOST ON PUBLIC	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	207	87.0	92.0
01	18	7.6	8.0
Total	225	94.5	100.0
99 (No bulls)	13	5.5	
Total	**238**	**100.0**	

Table 68—Number of bulls lost during a typical year on private land (BLLOSTPV—Question 30).

BULLS LOST ON PRIVATE	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	219	92.0	07.3
01	6	2.5	2.7
Total	225	94.5	100.0
99 (No bulls)	13	5.5	
Total	**238**	**100.0**	

Table 69—Number of yearlings lost during a typical year on public land (YRLOSTPB—Question 30).

YEARLINGS LOST ON PUBLIC	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	146	61.3	92.4
01	7	2.9	4.4
02	3	1.3	1.9
05	1	.4	.6
07	1	.4	.6
Total	158	66.4	100.0
99 (No yearlings)	80	33.6	
Total	**238**	**100.0**	

Table 70—Number of yearlings lost during a typical year on private land (YRLOSTPV—Question 30).

YEARLINGS LOST ON PRIVATE	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	152	63.0	96.2
01	6	2.5	3.8
Total	158	66.4	100.0
99 (No yearlings)	80	33.6	
Total	**238**	**100.0**	

Table 71—Number of calves lost during a typical year on public land (CFLOSTPB—Question 30).

CALVES LOST ON PUBLIC	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	69	29.0	29.9
01	39	16.4	16.9
02	38	16.0	16.5
03	32	13.4	13.9
04	10	4.2	4.3
05	14	5.9	6.1
06	7	2.9	3.0
08	1	.4	.4
09	3	1.3	1.3
10	8	3.4	3.5
12	1	.4	.4
15	3	1.3	1.3
16	1	.4	.4
20	4	1.7	1.7
50	1	.4	.4
Total	231	97.1	100.0
97 (Missing)	3	1.3	
99 (No calves)	4	1.7	
Total	**238**	**100.0**	

Table 72—Number of calves lost during a typical year on private land (CFLOSTPV—Question 30).

CALVES LOST ON PRIVATE	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	119	50.0	51,5
01	34	14.3	14.7
02	38	16.0	16.5
03	10	4.2	4.3
04	8	3.4	3.5
05	7	2.9	3.0
06	3	1.3	1.3
07	4	1.7	1.7
09	1	.4	.4
10	1	.4	.4
12	1	.4	.4
16	1	.4	.4
20	3	1.3	1.3
24	1	.4	.4
Total	231	97.1	100.0
97 (Missing)	3	1.3	
99 (No calves)	4	1.7	
Total	**238**	**100.0**	

Table 73—Number of ewes lost during a typical year on public land (EWLOSTPB—Question 30).

EWES LOST ON PUBLIC	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	26	10.9	89.7
10	1	.4	3.4
20	1	.4	3.4
100	1	.4	3.4
Total	29	12.2	100.0
99 (No ewes)	209	87.8	
Total	**238**	**100.0**	

Table 74—Number of ewes lost during a typical year on private land (EWLOSTPV—Question 30).

EWES LOST ON PRIVATE	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	21	8.8	72.4
03	1	.4	3.4
04	1	.4	3.4
07	1	.4	3.4
09	1	.4	3.4
11	1	.4	3.4
15	2	.8	6.9
100	1	.4	3.4
Total	29	12.2	100.0
99 (No ewes)	209	87.8	
Total	**238**	**100.0**	

Table 75—Number of rams lost during a typical year on public land (RMLOSTPB—Question 30).

RAMS LOST ON PUBLIC	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	18	7.6	100.0
99 (No rams)	220	92.4	
Total	**238**	**100.0**	

Table 76—Number of rams lost during a typical year on private land (RMLOSTPV—Question 30).

RAMS LOST ON PRIVATE	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	16	6.7	88.9
01	1	.4	5.6
05	1	.4	5.6
Total	18	7.6	100.0
99 (No rams)	220	92.4	
Total	**238**	**100.0**	

Table 77—Number of lambs lost during a typical year on public land (LMLOSTPB—Question 30).

LAMBS LOST ON PUBLIC	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	23	9.7	88.5
30	2	.8	7.7
170	1	.4	3.8
Total	26	10.9	100.0
99 (No lambs)	212	89.1	
Total	**238**	**100.0**	

Table 78—Number of lambs lost during a typical year on private land (LMLOSTPV—Question 30).

LAMBS LOST ON PRIVATE	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	19	8.0	73.1
01	1	.4	3.8
03	1	.4	3.8
06	1	.4	3.8
10	1	.4	3.8
16	1	.4	3.8
20	1	.4	3.8
170	1	.4	3.8
Total	26	10.9	100.0
99 (No lambs)	212	89.1	
Total	**238**	**100.0**	

Table 79—Number of horses lost during a typical year on public land (HSLOSTPB—Question 30).

HORSES LOST ON PUBLIC	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	209	87.8	98.1
01	3	1.3	1.4
02	1	.4	.5
Total	213	89.5	100.0
99 (No horses)	25	10.5	
Total	**238**	**100.0**	

Table 80—Number of horses lost during a typical year on private land (HSLOSTPV—Question 30).

HORSES LOST ON PRIVATE	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (None lost)	206	86.6	96.7
01	3	1.3	1.4
02	2	.8	.9
03	1	.4	.5
05	1	.4	.5
Total	213	89.5	100.0
99 (No horses)	25	10.5	
Total	**238**	**100.0**	

Table 81—Causes for loss of mature animals on public land (LOSMATPB—Question 30).

CAUSE OF LOSS ON PUBLIC LAND*	NUMBER OF RESPONSES+	PERCENT OF RESPONSES	PERCENT OF CASES
01	30	11.2	18.5
02	16	6.0	9.9
03	19	7.1	11.7
04	76	28.5	46.9
05	11	4.1	6.8
06	31	11.6	19.1
07	9	3.4	5.6
08	21	7.9	13.0
09	54	20.2	33.3
Total	**267**	**100.0**	

(76 missing cases plus 162 valid cases represent the 238 permittees)

Key*

(01) Theft (Poaching)

(02) Vandalism, Mutilation, or Shot (not specified by whom)

(03) Predation (Dogs, Coyotes, Mountain Lions, etc.)

(04) Diseases/Old age/Natural causes/Birthing

(05) Accidents (broken leg, bogs, drowning)

(06) Lightning strikes

(07) Shot by Hunters

(08) Toxic Plants

(09) Unknown/Never found/Found dead

+ "Number of responses" indicates the number of times each reason for loss was chosen. Permittees could provide as many reasons for loss as were relevant to each operation

Table 82—Causes for loss of young animals on public land (LOSMATPB—Question 30).

CAUSE OF LOSS ON PUBLIC LAND*	NUMBER OF RESPONSES+	PERCENT OF RESPONSES	PERCENT OF CASES
01	72	24.9	42.9
02	56	19.4	33.3
03	49	17.0	29.2
04	17	5.9	10.1
05	12	4.2	7.1
06	5	1.7	3.0
07	22	7.6	13.1
08	10	3.5	6.0
09	46	15.9	27.4
Total	**289**	**100.0**	**172.0**

(70 missing cases plus 168 valid cases represent the 238 permittees)

Key*

(01) Theft (Poaching), Vandalism (e.g., hit by car, shot)

(02) Predation (Dogs, Coyotes, Mountain Lions, etc.)

(03) Diseases/natural causes

(04) Accidents, Lightning Strikes

(05) Shot by Hunters

(06) Toxic Plants

(07) Died at birth/calving complications

(08) Died of cold/bad weather

(09) Unknown/Never found/Found dead

+ “Number of responses” indicates the number of times each reason for loss was chosen. Permittees could provide as many reasons for loss as were relevant to each operation

Table 83—Causes for loss of mature animals on private land (LOSMATPV—Question 30).

CAUSE OF LOSS ON PRIVATE LAND*	NUMBER OF RESPONSES+	PERCENT OF RESPONSES	PERCENT OF CASES
01	6	4.4	6.3
02	8	5.9	8.4
03	11	8.1	11.6
04	6	50.0	71.6
05	16	11.8	16.8
06	6	4.4	6.3
07	2	1.5	2.1
08	8	5.9	8.4
09	11	8.1	11.6
Total	**136**	**100.0**	**143.2**

(143 missing cases plus 95 valid cases represent the 238 permittees)

Key*

(01) Theft (Poaching)

(02) Vandalism, Mutilation, or Shot (not specified by whom)

(03) Predation (Dogs, Coyotes, Mountain Lions, etc.)

(04) Diseases/Old age/Natural causes/Birthing

(05) Accidents (broken leg, bogs, drowning)

(06) Lightning strikes

(07) Shot by Hunters

(08) Toxic Plants

(09) Unknown/Never found/Found dead

+ “Number of responses” indicates the number of times each reason for loss was chosen. Permittees could provide as many reasons for loss as were relevant to each operation.

Table 84—Causes for loss of young animals on private land (LOSMATPV—Question 30).

CAUSE OF LOSS ON PRIVATE LAND*	NUMBER OF RESPONSES+	PERCENT OF RESPONSES	PERCENT OF CASES
01	10	5.6	8.4
02	39	21.8	32.8
03	41	22.9	34.5
04	5	2.8	4.2
05	2	1.1	1.7
06	3	1.7	2.5
07	47	26.3	39.5
08	19	10.6	16.0
09	13	7.3	10.9
Total	**179**	**100.0**	**150.4**

(119 missing cases plus 119 valid cases represent the 238 permittees)

Key*

(01) Theft (Poaching), Vandalism (hit by car, shot, etc.)

(02) Predation (Dogs, Coyotes, Mountain Lions, etc.)

(03) Diseases/natural causes

(04) Accidents, Lightning Strikes

(05) Shot by Hunters

(06) Toxic Plants

(07) Died at birth/calving complications

(08) Died of cold

(09) Unknown/Never found/Found dead

+ "Number of responses" indicates the number of times each reason for loss was chosen. Permittees could provide as many reasons for loss as were relevant to each operation.

Table 85—Number of animals lost to dogs (DOGLOSS—Question 30).

NUMBER OF ANIMALS LOST TO DOGS	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00 (Dog loss not discussed)	207	87.0	87.0
01	10	4.2	4.2
02	7	2.9	2.9
03	4	1.7	1.7
04	2	.8	.8
05	2	.8	.8
06	1	.4	.4
07	1	.4	.4
11	1	.4	.4
15	1	.4	.4
20	1	.4	.4
25	1	.4	.4
Total	**238**	**100.0**	**100.0**

Table 86—Time and labor invested in the federal grazing allotment (DAYLABOR—Question 31a)

TIME AND LABOR ALLOTMENT	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
03*	1	.4	.4
10	2	.8	.9
11	1	.4	.4
14	2	.8	.9
15	2	.8	.9
18	2	.8	.9
20	2	.8	.9
21	1	.4	.4
22	2	.8	.9
23	1	.4	.4
24	3	1.3	1.3
25	1	.4	.4
27	1	.4	.4
28	1	.4	.4
29	1	.4	.4
30	7	2.9	3.0
31	1	.4	.4
34	1	.4	.4
35	1	.4	.4
40	9	3.8	3.9
42	4	1.7	1.7
44	6	2.5	2.6
45	4	1.7	1.7
46	1	.4	.4
48	4	1.7	1.7
50	2	.8	.9
51	1	.4	.4
53	1	.4	.4
56	3	1.3	1.3
57	2	.8	.9
58	1	.4	.4
60	9	3.8	3.9
62	3	1.3	1.3
64	4	1.7	1.7
66	1	.4	.4
68	2	.8	.9
70	3	1.3	1.3
71	1	.4	.4
72	3	1.3	1.3
73	1	.4	.4
78	1	.4	.4
80	8	3.4	3.4
81	1	.4	.4
83	1	.4	.4
84	3	1.3	1.3
90	3	1.3	1.3
92	2	.8	.9
94	1	.4	.4
96	2	.8	.9
100	1	.4	.4
104	2	.8	.9

107	1	.4	.4
108	4	1.7	1.7
112	1	.4	.4
113	1	.4	.4
114	1	.4	.4
120	13	5.5	5.6
129	1	.4	.4
130	1	.4	.4
132	1	.4	.4
135	1	.4	.4
150	4	1.7	1.7
154	2	.8	.9
155	1	.4	.4
156	1	.4	.4
158	1	.4	.4
160	1	.4	.4
166	1	.4	.4
168	1	.4	.4
172	1	.4	.4
174	1	.4	.4
176	1	.4	.4
180	3	1.3	1.3
192	2	.8	.9
198	1	.4	.4
200	4	1.7	1.7
208	4	1.7	1.7
210	2	.8	.9
216	1	.4	.4
219	2	.8	.9
220	2	.8	.9
224	1	.4	.4
225	2	.8	.9
239	1	.4	.4
240	3	1.3	1.3
243	1	.4	.4
250	2	.8	.9
264	1	.4	.4
270	1	.4	.4
280	2	.8	.9
288	1	.4	.4
300	3	1.3	1.3
312	1	.4	.4
315	1	.4	.4
352	2	.8	.9
360	2	.8	.9
365	1	.4	.4
384	1	.4	.4
390	1	.4	.4
400	1	.4	.4
412	1	.4	.4
416	1	.4	.4
445	1	.4	.4
480	1	.4	.4
520	1	.4	.4

528	1	.4	.4
547	1	.4	.4
550	1	.4	.4
552	1	.4	.4
576	2	.8	.9
730	1	.4	.4
796	1	.4	.4
816	1	.4	.4
826	1	.4	.4
890	2	.8	.9
900	1	.4	.4
1220	1	.4	.4
1460	1	.4	.4
Total	232	97.5	100.0
97 (Missing)	5	2.1	
99+ (Hired range rider)	1	.4	
Total	**238**	**100.0**	

*Questionnaire returned by mail, possible miscommunication.
+Hired range rider attributed with majority of the labor for this allotment.

Table 87—Financial costs associated with the grazing allotment (ANNCOST—Question 31b).

COSTS ON ALLOTMENT*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	25	10.5	15.2
02	77	32.4	46.7
03	24	10.1	14.5
04	12	5.0	7.3
05	12	5.0	7.3
06	6	2.5	3.6
07	4	1.7	2.4
08	3	1.3	1.8
09	2	.8	1.2
Total	165	69.3	100.0
11	67	28.2	
12	6	2.5	
Total	**238**	**100.0**	**100.0**

Key*
(1) Less than $1000
(2) $1000-$5000
(3) $5001-$10,000
(4) $10,001-$15,000
(5) $15,001-$20,000
(6) $20,001-$25,000
(7) $25,001-$30,000
(8) $30,001-$50,000
(9) $50,001-$100,000
(10) More than $100,000
(11) Listed various expenses, but no total figure
(12) No figures given

Table 88—Do you grow supplemental hay for the livestock? (GROHAY—Question 32).

GROWS HAY*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	188	79.0	79.0
02	13	5.5	5.5
04	7	2.9	2.9
05	30	12.6	12.6
Total	**238**	**100.0**	**100.0**

Key*

(01) Yes

(02) No

(04) Used to grow hay, not anymore

(05) No, must purchase hay ($700.00-$5,000.00 per year)

Table 89—If so, what mixture of hay is grown? (HAYMIX—Question 32a)

HAY MIXTURE*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	13	5.5	6.9
02	1	.4	.5
11	4	1.7	2.1
14	2	.8	1.1
16	8	3.4	4.2
17	2	.8	1.1
19	2	.8	1.1
20	6	2.5	3.2
21	1	.4	.5
22	31	13.0	16.4
23	7	2.9	3.7
24	6	2.5	3.2
25	12	5.0	6.3
27	1	.4	.5
29	2	.8	1.1
30	9	3.8	4.8
31	1	.4	.5
32	1	.4	.5
33	2	.8	1.1
34	3	1.3	1.6
36	2	.8	1.1
37	1	.4	.5
38	5	2.1	2.6
39	1	.4	.5
40	2	.8	1.1
41	2	.8	1.1
42	2	.8	1.1
43	1	.4	.5
44	6	2.5	3.2
45	1	.4	.5
46	1	.4	.5
47	1	.4	.5
48	1	.4	.5
49	1	.4	.5
50	2	.8	1.1
51	1	.4	.5
52	2	.8	1.1
53	1	.4	.5
54	7	2.9	3.7
55	5	2.1	2.6
56	2	.8	1.1
57	1	.4	.5
58	2	.8	1.1
59	1	.4	.5
60	2	.8	1.1
61	1	.4	.5
62	1	.4	.5
63	2	.8	1.1
65	1	.4	.5
66	1	.4	.5
67	1	.4	.5

68	1	.4	.5
69	1	.4	.5
70	1	.4	.5
71	1	.4	.5
72	2	.8	1.1
73	2	.8	1.1
74	2	.8	1.1
75	1	.4	.5
76	1	.4	.5
77	1	.4	.5
78	1	.4	.5
79	1	.4	.5
Total	189	79.4	100.0
97 (Missing)	2	.8	
99	47	19.7	
Total	**238**	**100.0**	

Key*
(01) Alfalfa
(02) Brome
(03) Brome (smooth)
(04) Clover
(05) Clover (strawberry)
(06) Cool season wheat mix
(07) Crested wheatgrass
(08) Fescue
(09) Fescue (Tall)
(10) Grass
(11) Grass (Native)
(12) Grass (Late Native)
(13) K-31 (Seven-way seed)
(14) Oats (Oatgrass)
(15) Orchard
(16) Timothy
(17) Vega hay/meadow hay
(18) Wheatgrass
(19) Winter wheat/as hay or as pasture for grazing
(20) Alfalfa and Brome
(21) Alfalfa and Brome (smooth)
(22) Alfalfa and grasses
(23) Alfalfa and Oats
(24) Alfalfa and Orchardgrass
(25) Alfalfa and Timothy
(26) Alfalfa and Wheatgrass
(27) Alfalfa, Brome, Crested wheatgrass
(28) Alfalfa, Brome, Crested wheatgrass, Oats
(29) Alfalfa, Brome, Oats
(30) Alfalfa, Brome, Orchardgrass
(31) Alfalfa, Brome, Clover, Cool season wheat mix, Fescue, Timothy, Vega
(32) Alfalfa, Brome, Fescue, Native grasses, Timothy, Vega
(33) Alfalfa, Brome, Oats, Orchardgrass, Timothy
(34) Alfalfa, Brome, Oats, Timothy
(35) Alfalfa, Tall fescue, Orchardgrass, Timothy
(36) Alfalfa, Orchardgrass, K-31
(37) Alfalfa, Timothy, Wheatgrass
(38) Clover and Timothy
(39) Clover (strawberry), Native grasses, Timothy
(40) Alfalfa, Clover, Orchardgrass, Tall fescue
(41) Alfalfa, Clover, Orchardgrass, Timothy
(42) Alfalfa, Oats, Timothy

(43) Alfalfa, Brome, Clover, Orchardgrass, Timothy
(44) Alfalfa, Brome, Orchardgrass, Timothy
(45) Alfalfa, Permanent pasture, "K-31"
(46) Winter rye
(47) Alfalfa, Oats, Winter rye
(48) Alfalfa, Tall fescue, Orchard, Winter wheat
(49) Timothy and Red Top
(50) Oats, Alfalfa, and native [grasses]
(51) Alfalfa, Oats, and native grasses, Alsike clover
(52) Alfalfa, Oats, Winter wheat
(53) Alfalfa, Brome, Oats, Orchard, Wheatgrass
(54) Alfalfa, Orchard, Timothy
(55) Alfalfa, Brome or Timothy
(56) Alfalfa, Oats, Winter wheat, Timothy
(57) Triticale mix (oats, wheat, & rye)
(58) Alfalfa & permanent pasture
(59) Timothy, Red top, Alsike clover
(60) Alfalfa, Brome, Timothy, Clover
(61) Alfalfa, Oats, Winter wheat, Timothy, Rye
(62) Alfalfa, Oats, Brome, Timothy, Intermediate wheatgrass, Clovers (alsike, red, white)
(63) Orchard & Timothy
(64) Alfalfa, Timothy, Vega
(65) Alfalfa, Brome, Orchard, Strawberry clover
(66) Alfalfa, Fescue, "Water grass"
(67)Orchard, Oats
(68) Alfalfa, Oats, Orchard
(69) Alfalfa, Timothy, Red clover
(70) Alfalfa. Clover, Oats
(71) Oats, Sugar cane
(72) Alfalfa, Timothy, Alsike clover
(73) Alfalfa, Timothy, Clover
(74) Brome, Orchard, Timothy
(75) Alfalfa, Orchard, Timothy, Winter wheat, Oats
(76) Alfalfa, Brome, Meadow (Vega)
(77) Alfalfa, Meadow grass, Oats
(78) Alfalfa, Timothy, Alsike clover, Brome
(79) Alfalfa, Timothy, Clover, Oats

Table 90—What grasses (or other forage plants) do the livestock consume on rangeland? (ALLOTGR—Question 33)

FORAGE ON ALLOTMENT*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	55	23.1	23.5
02	5	2.1	2.1
03	13	5.5	5.6
04	1	.4	.4
05	1	.4	.4
06	1	.4	.4
07	1	.4	.4
08	2	.8	.9
09	1	.4	.4
10	1	.4	.4
11	1	.4	.4
12	1	.4	.4
13	2	.8	.9
14	1	.4	.4
15	1	.4	.4
16	1	.4	.4
17	1	.4	.4
18	1	.4	.4
19	1	.4	.4
20	1	.4	.4
21	1	.4	.4
22	1	.4	.4
23	1	.4	.4
24	5	2.1	2.1
25	1	.4	.4
26	1	.4	.4
27	4	1.7	1.7
28	1	.4	.4
29	3	1.3	1.3
30	1	.4	.4
31	1	.4	.4
32	1	.4	.4
33	1	.4	.4
34	1	.4	.4
35	1	.4	.4
36	1	.4	.4
37	1	.4	.4
38	1	.4	.4
39	1	.4	.4
40	1	.4	.4
41	2	.8	.9
42	1	.4	.4
43	2	.8	.9
44	2	.8	.9
45	1	.4	.4
46	3	1.3	1.3
47	1	.4	.4
48	1	.4	.4
49	1	.4	.4
50	1	.4	.4

51	1	.4	.4
52	1	.4	.4
53	1	.4	.4
54	2	.8	.9
55	1	.4	.4
56	1	.4	.4
57	1	.4	.4
58	1	.4	.4
59	1	.4	.4
60	1	.4	.4
61	1	.4	.4
62	1	.4	.4
63	1	.4	.4
64	1	.4	.4
65	1	.4	.4
66	1	.4	.4
67	1	.4	.4
68	1	.4	.4
69	2	.8	.9
70	2	.8	.9
71	3	1.3	1.3
72	1	.4	.4
73	1	.4	.4
74	2	.8	.9
75	1	.4	.4
76	2	.8	.9
77	1	.4	.4
78	1	.4	.4
79	1	.4	.4
80	1	.4	.4
81	1	.4	.4
82	1	.4	.4
83	1	.4	.4
84	1	.4	.4
85	1	.4	.4
86	1	.4	.4
88	1	.4	.4
89	1	.4	.4
90	2	.8	.9
91	1	.4	.4
92	1	.4	.4
93	1	.4	.4
94	1	.4	.4
95	1	.4	.4
96	1	.4	.4
100	1	.4	.4
101	1	.4	.4
102	1	.4	.4
103	1	.4	.4
104	1	.4	.4
105	1	.4	.4
106	1	.4	.4
107	1	.4	.4
108	1	.4	.4

109	1	.4	.4
110	1	.4	.4
111	1	.4	.4
112	1	.4	.4
113	1	.4	.4
114	1	.4	.4
115	1	.4	.4
116	1	.4	.4
117	1	.4	.4
118	1	.4	.4
119	1	.4	.4
120	1	.4	.4
121	1	.4	.4
122	1	.4	.4
123	1	.4	.4
124	1	.4	.4
125	1	.4	.4
126	1	.4	.4
127	1	.4	.4
128	1	.4	.4
129	1	.4	.4
130	1	.4	.4
131	1	.4	.4
132	1	.4	.4
133	1	.4	.4
134	1	.4	.4
135	1	.4	.4
136	1	.4	.4
137	2	.8	.9
138	1	.4	.4
139	1	.4	.4
140	1	.4	.4
141	1	.4	.4
142	1	.4	.4
143	1	.4	.4
Total	234	98.3	100.0
97 (Missing)	4	1.7	
Total	**238**	**100.0**	

Key*
(01) **Unknown, not Sure**
(02) Grama grass
(03) Native grasses, wild grasses, mixed grasses
(04) Alfalfa, Bluegrass, Bunchgrasses, Clover, Fescue, Mountain muhly
(05) Alfalfa, Orchard, "Turkey track" (Andropogon), Gamble Oak
(06) Blue grama, Brome, Timothy
(07) Blue grama, Brome (Smooth), Crested wheatgrass, Pubescen, Sacaton, Timothy
(08) Blue grama, Bluestem, natural grasses
(09) Blue grama, Kentucky bluegrass, Oak leaves, Western wheatgrass
(10) Blue grama, Wheatgrass
(11) Blue grama, Wheatgrass, Winter Fat
(12) Blue grama, Chico, Four-Wing Saltbush, Sand Bluestem, Needle-and-thread, Stipa, Western wheatgrass, Winter Fat
(13) Bluegrass (native, non-native), Brome
(14) Bluegrass, Clover, Fescue
(15) Bluegrass, Clover, Fescue, Timothy
(16) Bluegrass, Fescue, Oatgrass, Timothy

(17) Bluegrass (native), Grama, Four-wing saltbush, Rabbitbrush, Sage Chamisa), Wheatgrass
(18) Bluestem, Grama
(19) Brome, Clover, Fescue, Large-blade "watergrass"
(20) Mountain brome, Crested wheatgrass, Fescue, Grama, Little bluestem, Sacaton, Sideoats grama
(21) Brome, Fescue
(22) Brome, "Watergrass," Wild Grasses
(23) Browse, Clover, Fescue, Indian ricegrass, Mountain muhly, Timothy, Western wheatgrass, Orchard
(24) Crested wheatgrass/ and Native grasses/ and others
(25) Grama, Palo Duro, Scrub oak
(26) "Watergrass," Grama, Thistle, Native grasses, Mullen
(27) **Can consult a list or references/a family member knows**
(28) Bluegrass, Natives, Four-wing saltbush
(29) Blue grama, Fescue, Other natives
(30) Timothy, Orchard, Native grasses, "K-31," Galleta, Grama, Buffalograss, Snakeweed, Tumbleweed
(31) Timothy, Sagebrush
(32) Aspen, Oak, Bluegrass, Tall fescue, Orchard, Timothy
(33) Brome, Orchard, Timothy
(34) Bluegrass, "Watergrass"
(35) Winter: Blue grama, Indian ricegrass, Little bluestem, Sand dropseed, Tabosa, Western wheatgrass, Crested wheatgrass (FS planted)
Summer: Brome, Arizona fescue, Orchard, Western wheatgrass
(36) Brome, Clover, Timothy
(37) Clover, Sideoats grama
(38) Grama grass, Crested wheatgrass, Sagebrush
(39) Clover, Grama
(40) Native grasses and introduced species
(41) Bluegrass
(42) Oak leaves, Blue grama
(43) Weeds (Snakeweed)
(44) Kentucky bluegrass, Grama (Blue)
(45) Kentucky bluegrass , Fescue, Orchard, Brome, Grama, Mountain muhly
(46) **Knows grasses and plants by sight, not by name**
(47) Bluegrass (Kentucky), Fescues (Arizona & others), Crested wheatgrass, Western wheatgrass
(48) FS: Native Bluegrass, Brome, Buffalograss, Mountain muhly, Orchardgrass, Scrub oak, and Tall wheatgrass
BLM: Blue grama, Buffalograss, Cheatgrass brome, Fescue, Galleta, Sand grama, Western wheatgrass, and others
(49) BLM: White sage, Weeds, Mushrooms (sheep eat them) …FS: Grasses (?)
(50) Mountain brome, Fescue, Western wheatgrass, Grama, Little bluestem, Sacaton, Sideoats grama
(51) Alfalfa, Clover, Mountain fescue, Timothy
(52) Native gramas, Buffalograss, Sagebrush, "Watergrass"
(53) "Bunchgrass," Bluegrass, Winter wheat
(54) Crested wheatgrass, Fescue
(55) Gramas (blue, black, sideoats), Bluegrass (Kentucky), Indian ricegrass, Alkali sacaton, Crested wheatgrass, Western wheatgrass, Alfalfa (dry land)
(56) Mountain muhly and Crested wheatgrass
(57) Grama grasses, Fescues, Wheatgrass, Kentucky bluegrass, Sedge, "Bunchgrass"
(58) Blue grama, Rabbit Brush when snows
(59) Brome, "River grass," Crested wheat, "Terromote"
(60) Russian rye, Crested wheat, Orchard, Sweet clover
(61) Bluegrass (Kentucky), Bluestem, Crested wheat, Western wheat
(62) Brome grass, Russian rye, Crested wheat, Orchard, and natives
(63) Bluegrass, Grama, Red clover, weeds, and other grasses
(64) Grama (Blue & Sideoats), Alkali sacaton, Bluestem, Galleta, Sand dropseed, Timothy, Western wheat, Winter fat ("white sage"), Chico brush, Thistle, Hogweed, Four-O'clocks
(65) [BLM] Black grama, Blue grama, Sand dropseed [FS] Crested wheat, Needle & Thread, and Natives
(66) Blue grama, Kentucky bluegrass, Arizona fescue, Timothy, Western wheatgrass, "Mule grass and another riparian grass."
(67) Blue grama and Crested wheat
(68) Blue grama, Crested wheat, Sacaton, Thistles
(69) Blue grama, Bluestem, Bunchgrass, Crested wheat, Galleta, Ring muhly, Indian ricegrass, Needle & thread, Western wheat

(70) Brome and others
(71) Timothy
(72) Clover (yellow & white), Fescues, Wheatgrass (slender & tall), crested wheat
(73) Blue grama, Crested wheat, Western wheat, "junk grass"
(74) Arizona fescue, Orchard
(75) Brome, Crested wheat, Western wheat
(76) Bromes, fescue, grama (black, brown), Orchard, Crested wheat, Western wheat
(77) Brome, Sacaton, Crested wheat
(78) Brome, Orchard, others seeded by USFS
(79) Orchard, Timothy, Natives
(80) Canary grass, fox tail, Red top, Timothy, Fescues (sheep & Az), June grass, Blue grama, Alsike clover, Kentucky bluegrass, Sedges, Rushes, Dandelions, and more!
(81) Brome, Grama (blue), Kentucky bluegrass, Arizona fescue, Crested/ Western wheat
(82) Brome, Clover, Timothy, Native
(83) Buffalo grass, AZ fescue, Ken. Bluegrass, Mutton grass, Crested wheat, Western wheat, Carex (sedge), Dandelion…[larkspur, leafy spurge, loco weed]
(84) Kentucky bluegrass, Mountain muhly, Fescues
(85) Mountain bluegrass, Western wheat, Galleta, Cuchilla (FS)
Western wheatgrass, Alkali sacaton, Galleta, Mat muhly, Chamisa, Vine mesquite (BLM)
(86) June grass, Timothy, others
(87) Bluegrass, Brome, Orchard, Sand dropseed, Rye grass, Crested wheat
(88) Blue grama, AZ fescue, Mountain muhly, Crested wheat, western wheat, Carex
(89) Brome, Grama, Orchard, Western wheat
(90) Brome, Grama, Fescue
(91) Grama, Rye, Wheatgrass White Sage
(92) Smooth brome, Crested wheat, Grama
(93) Indian ricegrass, Cheatgrass brome, Nodding brome, AZ fescue, Thurber fescue, Western wheat grass (natives): Smooth brome, Kentucky bluegrass, Orchard grass, Crested wheat grass (non-natives)
(94) Bluegrass, Brome, Fescue, Mountain muhly, Orchard, "Swamp grass"
(95) Red clover, Timothy
(96) Bluegrass, Crested wheat
(100) Timothy, Wheatgrass, Crested wheat
(101) Wheatgrass
(102) Blue grama, Crested wheat, Bunch grass
(103) Blue grama, Fescue, Timothy
(104) Brome, Buffalo grass, Kentucky bluegrass, Grama, Sideoats, Orchard grass
(105) Fescue & Aspen leaves
(106) Grama grass, Bluegrass
(107) Fescue & other grasses
(108) Grama & Western wheat
(109) Blue grama, Bluegrass, Orchard
(110) Bluegrass, Grama, Alfalfa, Wheatgrass
(111) Brome, Bluegrass, Orchard, Western wheat
(112) Blue grama, Sideoats grama, Oak
(113) Blue grama, Buffalo grass, Love grass, Wheat grass
(114) Blue grama, Western wheat
(115) Kentucky bluegrass, Fescues, Rye, (high elevation natives)
(116) Blue grama, seasonal grasses
(117) Kentucky bluegrass, Sedges
(118) Grama, Alfalfa, Oats (wild), Sweet peas
(119) Russian Rye, Western wheat, Fescue
(120) Grama, White sage, Bunch grass
(121) Clover, Orchard, Timothy, "Swamp grasses
(122) Timothy, Red top, Kentucky bluegrass, Fescues, Clovers, Sedges, Rushes (Water grass), Forbs
(123) Brome, Clovers, Fescue, Orchard, Timothy
(124) Arizona Fescue, Kentucky bluegrass, Wheatgrass
(125) Brome, Crested wheat, Gramas
(126) Bluegrass, AZ Fescue, Mountain muhly, "Timber Oatgrass" (Danthonia parrii), Western wheatgrass
(127) Crested wheat, Western wheat
(128) Brome, Fescue, Crested wheat
(129) Alsike clover, Brome, Arizona fescue, Thurber fescue
(130) Orchard

(131) Squirrel tail, Bluestem, Winter wheat, Blue grama, Green clover, Bunch grass
(132) Bunch grass and Clover
(133) Patito (small fern in Aspen groves), Manzanita, Palo de Rosario, Bunch grasses
(134) Dropseed, Sideoats, Kentucky Bluegrass, Clover, Fescues
(135) Bluestem, Bromes, Clover, Fescues, Rushes, and Sedges (natives); Alfalfa, Smooth brome, Orchard, Timothy (non-natives)
(136) Blue grama, Indian rice.
(137) Blue grama
(138) Wheat grass
(139) Kentucky bluegrass
(140) Bluestem
(141) Bluestem & wild pea.
(142) Bluegrass, Bunchgrass, Sedge
(143) Grama, Fescue, Wheatgrass, Native bluegrass

List the top three improvements needed on the federal grazing allotment; if not being implemented, why not?

Table 91—Improvements needed on federal allotment. (IMPROVS1—Question 34).

IMPROVEMENT NUMBER 1*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	3	1.3	1.3
03	31	13.0	13.2
04	1	.4	.4
05	35	14.7	14.9
06	89	37.4	37.9
07	9	3.8	3.8
08	3	1.3	1.3
09	9	3.8	3.8
10	5	2.1	2.1
11	6	2.5	2.6
12	3	1.3	1.3
13	4	1.7	1.7
14	7	2.9	3.0
14	7	2.9	3.0
18	5	2.1	2.1
19	1	.4	.4
20	2	.8	.9
21	2	.8	.9
24	1	.4	.4
25	6	2.5	2.6
32	1	.4	.4
35	1	.4	.4
39	1	.4	.4
41	1	.4	.4
43	1	.4	.4
46	1	.4	.4
Total	235	98.7	100.0
97 (Missing)	1	.4	
99	2	.8	
Total	**238**	**100.0**	

Key*

(01) None needed, none listed, good progress is being made on concerns

(02) Allow fuel wood gathering and green tree harvest

(03) Conduct prescribed burning and/or thinning

(04) Close some roads to limit unauthorized access (i.e., ATVs, etc.)

(05) Maintain, improve, and/or build fences

(06) Maintain, improve, and/or develop waters

(07) Maintain, improve, and/or develop roads/permittee access

(08) Maintain, improve, and/or clean trails

(09) Plant more grass/seed allotment/reseeding

(10) Provide FS assistance to permittees with building and maintaining improvements (including corrals, wind mills)

(11) Provide better FS law enforcement/Control of 4wheelers, fence cutting, etc.

(12) Provide better FS management in general, better care of forest, rotation of cattle
(13) Provide/assist permittees with providing more gates and cattle guards
(14) Reduce/control elk population/or other wildlife
(15) Remove brush
(16) Remove cross/internal fences
(17) Remove poisonous/noxious weeds
(18) Boundary fencing between public and private land
(19) Educate the public who don't understand care of the land
(20) Fill holes when live tree permits are sold
(21) FS be more sensitive to local lifestyle
(22) Clean up after thinning
(23) Logging needed
(24) Earlier entry into allotment
(25) Increase livestock numbers (permits)/increase area or time on allotments/Don't decide on cuts too early
(26) Need a full-time herder
(27) Longer-term FS personnel
(28) Erosion control, dam arroyos to hold water
(29) System for buying out permits to reduce livestock numbers
(30) Need predator control
(31) More choice for permittees, use their ideas
(32) Better communication with permittees (cattlemen)
(33) Open up dirt tanks, build dirt tanks
(34) Need FS & BLM employees who understand and have experience with livestock
(35) Close roads to limit traffic access (ATV's, hunters, etc.)
(36) Change fencing, remove fences to have less pastures
(37) Remove dead timber/fire hazard
(38) Need FS to control trespass (livestock)
(39) More cooperation from the public
(40) Need pasture for horses
(41) FS Range staff should spend a summer herding cattle on an allotment
(42) Better law enforcement during hunting season
(43) Decrease Wilderness areas

Table 92—Improvements needed on federal allotment. (IMPROVS2—Question 34).

IMPROVEMENT NUMBER 2*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	2	.8	.9
02	1	.4	.5
03	30	12.6	13.9
04	2	.8	.9
05	33	13.9	15.3
06	49	20.6	22.7
07	3	1.3	1.4
08	5	2.1	2.3
09	8	3.4	3.7
10	7	2.9	3.2
11	11	4.6	5.1
12	4	1.7	1.9
13	10	4.2	4.6
14	7	2.9	3.2
15	8	3.4	3.7
16	1	.4	.5
17	4	1.7	1.9
18	3	1.3	1.4
19	2	.8	.9
21	3	1.3	1.4
23	1	.4	.5
25	5	2.1	2.3
29	1	.4	.5
30	1	.4	.5
31	4	1.7	1.9
32	2	.8	.9
33	2	.8	.9
34	1	.4	.5
35	2	.8	.9
36	2	.8	.9
37	1	.4	.5
40	1	.4	.5
Total	216	90.8	100.0
97 (Missing)	1	.4	
99	21	8.8	
Total	**238**	**100.0**	

Key*

(01) None needed, none listed, good progress is being made on concerns

(02) Allow fuel wood gathering and green tree harvest

(03) Conduct prescribed burning and/or thinning

(04) Close some roads to limit unauthorized access (i.e., ATVs, etc.)

(05) Maintain, improve, and/or build fences

(06) Maintain, improve, and/or develop waters

(07) Maintain, improve, and/or develop roads/permittee access

(08) Maintain, improve, and/or clean trails

(09) Plant more grass/seed allotment

(10) Provide FS assistance to permittees with building and maintaining improvements (including corrals, wind mills)
(11) Provide better FS law enforcement/Control of 4wheelers, fence cutting, etc.
(12) Provide better FS management in general, better care of forest, rotation of cattle
(13) Provide/assist permittees with providing more gates and cattle guards
(14) Reduce/control elk population
(15) Remove brush
(16) Remove cross/internal fences
(17) Remove poisonous/noxious weeds
(18) Boundary fencing between public and private land
(19) Educate the public who don't understand care of the land
(20) Fill holes when live tree permits are sold
(21) FS be more sensitive to local lifestyle
(22) Clean up after thinning
(23) Logging needed
(24) Earlier entry into allotment
(25) Increase livestock numbers (permits)/increase area or time on allotments/Don't decide on cuts too early
(26) Need a full-time herder
(27) Longer-term FS personnel
(28) Erosion control, dam arroyos to hold water
(29) System for buying out permits to reduce livestock numbers
(30) Need predator control
(31) More choice for permittees, use their ideas
(32) Better communication with permittees (cattlemen)
(33) Open up dirt tanks
(34) Need FS & BLM employees who understand and have experience with livestock
(35) Close roads to limit traffic access (ATV's, hunters, etc.)
(36) Change fencing, remove fences to have less pastures
(37) Remove dead timber/fire hazard
(38) Need FS to control trespass (livestock)
(39) More cooperation from the public
(40) Need pasture for horses
(41) FS Range staff should spend a summer herding cattle on an allotment
(42) Better law enforcement during hunting season
(43) Decrease Wilderness areas

Table 93—Improvements needed on federal allotment. (IMPROVS3—Question 34).

IMPROVEMENT NUMBER 3*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	2	.8	1.1
03	10	4.2	5.7
04	1	.4	.6
05	24	10.1	13.7
06	22	9.2	12.6
07	9	3.8	5.1
08	3	1.3	1.7
09	7	2.9	4.0
10	12	5.0	6.9
11	23	9.7	13.1
12	6	2.5	3.4
13	4	1.7	2.3
14	22	9.2	12.6
15	5	2.1	2.9
17	1	.4	.6
18	3	1.3	1.7
22	3	1.3	1.7
23	4	1.7	2.3
25	2	.8	1.1
26	1	.4	.6
27	1	.4	.6
28	4	1.7	2.3
31	1	.4	.6
33	1	.4	.6
34	1	.4	.6
35	1	.4	.6
36	1	.4	.6
42	1	.4	.6
Total	175	73.5	100.0
97 (Missing)	4	1.7	
99	59	24.8	
Total	**238**	**100.0**	

Key*

(01) None needed, none listed, good progress is being made on concerns

(02) Allow fuel wood gathering and green tree harvest

(03) Conduct prescribed burning and/or thinning

(04) Close some roads to limit unauthorized access (i.e., ATVs, etc.)

(05) Maintain, improve, and/or build fences

(06) Maintain, improve, and/or develop waters

(07) Maintain, improve, and/or develop roads/permittee access

(08) Maintain, improve, and/or clean trails

(09) Plant more grass/seed allotment

(10) Provide FS assistance to permittees with building and maintaining improvements (including corrals, wind mills)

(11) Provide better FS law enforcement/Control of 4wheelers, fence cutting, etc.

(12) Provide better FS management in general, better care of forest, rotation of cattle

(13) Provide/assist permittees with providing more gates and cattle guards

(14) Reduce/control elk population
(15) Remove brush
(16) Remove cross/internal fences
(17) Remove poisonous/noxious weeds
(18) Boundary fencing between public and private land
(19) Educate the public who don't understand care of the land
(20) Fill holes when live tree permits are sold
(21) FS be more sensitive to local lifestyle
(22) Clean up after thinning
(23) Logging needed
(24) Earlier entry into allotment
(25) Increase livestock numbers (permits)/increase area or time on allotments/Don't decide on cuts too early
(26) Need a full-time herder
(27) Longer-term FS personnel
(28) Erosion control, dam arroyos to hold water
(29) System for buying out permits to reduce livestock numbers
(30) Need predator control
(31) More choice for permittees, use their ideas
(32) Better communication with permittees (cattlemen)
(33) Open up dirt tanks
(34) Need FS & BLM employees who understand and have experience with livestock
(35) Close roads to limit traffic access (ATV's, hunters, etc.)
(36) Change fencing, remove fences to have less pastures
(37) Remove dead timber/fire hazard
(38) Need FS to control trespass (livestock)
(39) More cooperation from the public
(40) Need pasture for horses
(41) FS Range staff should spend a summer herding cattle on an allotment
(42) Better law enforcement during hunting season
(43) Decrease Wilderness areas

Table 94—Reasons for absence of implementation of improvements (WHYNOIMP—Question 34a).

WHY NO IMPROVEMENTS*	NUMBER OF RESPONSES+	PERCENT OF RESPONSES	PERCENT OF CASES
01	90	27.9	51.7
02	29	9.0	16.7
03	42	13.0	24.1
04	21	6.5	12.1
05	13	4.0	7.5
06	6	1.9	3.4
07	73	22.6	42.0
08	3	.9	1.7
09	46	14.2	26.4
Total	**323**	**100.0**	

Key*

(01) Lack of funding

(02) Insufficient staff/Law enforcement/Lack of time

(03) Problems with clearances/red tape/communication

(04) Outside influences from environmental groups

(05) Interagency conflict (e.g., Game and Fish)

(06) FS officials unwilling to take responsibility for decisions

(07) FS says not responsible for improvements, won't help, not cooperative, ask and ask and nothing happens; staff stays in office vs. out in field

(08) People moving in so close FS can't conduct improvement activities (burns, thinning, projects, etc)

(09) Elk, people, etc. tear up improvements, cut fences, leave gates open

+ "Number of responses" indicates the number of times each reason for lack of implementation was chosen. Permittees could provide as many reasons as relevant.

Table 95—Land or vegetation changes observed by the permittee (VEGCHGP—Question 35).

OBSERVATIONS OF PERMITTEES*	NUMBER OF RESPONSES+	PERCENT OF RESPONSES	PERCENT OF CASES
01	89	20.3	39.6
02	15	3.4	6.7
03	105	24.0	46.7
04	17	3.9	7.6
05	18	4.1	8.0
06	112	25.6	49.8
07	19	4.3	8.4
08	46	10.5	20.4
09	17	3.9	7.6
Total	**438**	**100.0**	

Key*

(01) Drought has caused changes: less rain and/or snow

(02) Need for fire (past fire suppression a source of problems)

(03) Tree and/or brush encroachment, grassy open areas & meadows are declining

(04) Recreationists, four-wheelers, unauthorized access, etc. destroying the land

(05) Increasing human population (people, dogs, traffic, water use)

(06) Changes in wildlife populations (e.g., More elk/less deer & other wildlife)

(07) Declining water availability for people and animals

(08) "Invasive" plant species (exotic & native) encroachment, insect infestation, diseases

(09) Erosion

+ "Number of responses" indicates the number of times each environmental change was noted. Permittees could provide as many changes as relevant.

Table 96—Land or vegetation changes related by older members of community (VEGCHOMC—Question 36).

OBSERVATIONS OF OLDER GENERATION*	NUMBER OF RESPONSES+	PERCENT OF RESPONSES	PERCENT OF CASES
01	48	17.8	27.1
02	13	4.8	7.3
03	43	15.9	24.3
04	9	3.3	5.1
05	11	4.1	6.2
06	38	14.1	21.5
07	17	6.3	9.6
08	82	30.4	46.3
09	9	3.3	5.1
Total	**270**	**100.0**	

Key*

(01) Drought has caused changes: less rain and/or snow; also droughts of past decades

(02) Need for fire (past fire suppression a source of problems)

(03) Tree and/or brush encroachment, grassy open areas & meadows are declining

(04) Recreationists, four-wheelers, unauthorized access, etc. destroying the land

(05) Increasing human population (people, dogs, traffic, water use)

(06) Changes in wildlife populations (e.g., more elk/less deer & other wildlife)

(07) Declining water availability for people and animals

(08) Changes in land use and management: Used to be more permittees, more animals, sheep, or goats. Animals moved more freely to "querencia" areas; the system worked better; fire used at end of season. People maintained the land better in the past. Rangers checked allotments/forest on horseback. Now less fuel wood cutting, less logging.

(09) Declining agricultural production

+ "Number of responses" indicates the number of times each environmental change was noted. Permittees could provide as many changes as relevant.

Table 97—Number of animals butchered for the family per year (FMUSE—Question 37).

ANIMALS FOR FAMILY FOOD	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
00	18	7.6	7.6
01	65	27.3	27.5
02	72	30.3	30.5
03	27	11.3	11.4
04	15	6.3	6.4
05	11	4.6	4.7
06	13	5.5	5.5
07	4	1.7	1.7
08	4	1.7	1.7
10	3	1.3	1.3
12	2	.8	.8
17	1	.4	.4
21	1	.4	.4
Total	236	99.2	100.0
97 (Missing)	2	.8	
Total	**238**	**100.0**	

Table 98—Comments on butchering animals (FMUSECOM—Question 37a).

FAMILY USE COMMENTS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	4	1.7	2.5
04	10	4.2	6.3
05	3	1.3	1.9
06	34	14.3	21.5
08	3	1.3	1.9
11	6	2.5	3.8
12	21	8.8	13.3
13	1	.4	.6
14	26	10.9	16.5
15	4	1.7	2.5
16	1	.4	.6
17	3	1.3	1.9
18	4	1.7	2.5
19	5	2.1	3.2
20	1	.4	.6
21	6	2.5	3.8
22	1	.4	.6
23	3	1.3	1.9
24	3	1.3	1.9
25	2	.8	1.3
26	1	.4	.6
27	1	.4	.6
28	1	.4	.6
29	2	.8	1.3
30	1	.4	.6
31	1	.4	.6
32	3	1.3	1.9
33	1	.4	.6
34	1	.4	.6
35	1	.4	.6
36	1	.4	.6
37	1	.4	.6
38	1	.4	.6
39	1	.4	.6
Total	158	66.4	100.0
(N/A) 99	89	33.6	
Total	**238**	**100.0**	

Key*

(01) Butcher cows and calves

(02) Butcher cows, calves and sheep

(03) Butcher cows, calves, sheep, lambs, and pigs

(04) Butcher yearlings/ heifer

(05) Butcher lambs, and sheep (or just lambs)

(06) Butcher calves

(07) Butcher calves and pigs

(08) Butcher calves and lambs

(11) Butcher yearlings and lambs
(12) Butcher steers
(13) Butchers calves and yearlings
(14) Butchers for extended family (parents, siblings, etc.)
(15) Butcher cow or yearlings
(16) Don't butcher any; family too small
(17) Butchered some in past, no longer do so
(18) Butcher steers, lambs, and pigs
(19) Sell their animals, then buy one; buys meat
(20) Trade as well as family use
(21) Steer and pig(s)
(22) Cow, pig, goat
(23) One, every two or three years
(24) Less now that children are gone
(25) Depends on the year ("only if one breaks a leg")
(26) Butchers "open" heifers
(27) Lamb, but more in past
(28) Calf, lambs, pig
(29) Butchered in past, but now a problem to get meat processed
(30) Butchers own calves, also buys pigs and sheep to butcher
(31) Butchers one or two unless money is tight, then has to sell them
(32) Butchers a cow(s)
(33) Butchered enough for extended family; now hardly any because own too few
(34) For personal use and for owners of ranch
(35) Goats & lambs/used to butcher a calf when children lived at home
(36) Sheep (lambs) and steer
(37) Won't kill his own animals
(38) Just sell, don't butcher
(39) Butcher purchased beef and elk

Table 99—Do you give livestock to children or grandchildren? (CHLVSTK—Question 38).

LIVESTOCK TO CHILDREN*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	142	59.7	61.5
02	78	32.8	33.8
04	10	4.2	4.3
05	1	.4	.4
Total	231	97.1	100.0
97 (Missing)	2	.8	
99 (N/A)	5	2.1	
Total	**238**	**100.0**	

Key*
(01) Yes
(02) No
(03) Give livestock to other young family members or to other young people
(04) Not yet, too young, will do so in future
(05) Not yet, but his father did so to keep them motivated

Table 100—Use of animal by-products (BYPROD—Question 39).

USE OF ANIMAL BYPRODUCTS*	NUMBER OF PERMITTEES	PERCENT	VALID PECENT
01	42	17.6	17.6
03	1	.4	.4
04	1	.4	.4
05	121	50.8	50.8
06	1	.4	.4
08	22	9.2	9.2
09	1	.4	.4
10	6	2.5	2.5
11	24	10.1	10.1
12	5	2.1	2.1
13	3	1.3	1.3
14	3	1.3	1.3
15	4	1.7	1.7
16	4	1.7	1.7
Total	**238**	**100.0**	**100.0**

Key*
(01) None
(02) Hides
(03) Wool
(04) Milk
(05) Manure
(06) Hides and wool
(07) Hides and milk
(08) Hides and manure
(09) Wool and milk
(10) Wool and manure
(11) Milk and manure
(12) Hides, wool, milk, and manure
(13) Hides, wool, and manure
(14) Wool, milk, manure
(15) Hides, milk, manure
(16) In past years

Table 101—Comments on use of animal by-products (BYPRODCOM—Question 39a)

BYPRODUCT COMMENTS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	1	.4	.5
02	2	.8	1.1
03	2	.8	1.1
04	1	.4	.5
05	1	.4	.5
07	2	.8	1.1
09	4	1.7	2.1
10	2	.8	1.1
11	2	.8	1.1
13	2	.8	1.1
14	2	.8	1.
15	1	.4	1.5
16	96	40.3	50.5
17	4	1.7	2.1
18	1	.4	.5
19	1	.4	.5
20	2	.8	1.1
21	7	2.9	3.7
22	1	.4	.5
23	1	.4	.5
24	3	1.3	1.6
25	1	.4	.5
26	1	.4	.5
27	1	.4	.5
28	1	.4	.5
29	1	.4	.5
30	11	4.6	5.8
31	1	.4	.5
32	1	.4	.5
33	1	.4	.5
34	3	1.3	1.6
35	1	.4	.5
36	4	1.7	2.1
37	2	.8	1.1
38	1	.4	.5
39	1	.4	.5
40	1	.4	.5
41	8	3.4	4.2
42	1	.4	.5
43	1	.4	.5
44	1	.4	.5
45	1	.4	.5
46	1	.4	.5
47	3	1.3	1.3
48	1	.4	.5
49	1	.4	.5
50	1	.4	.5
51	1	.4	.5
Total	190	79.8	100.0
97 (Missing)	3	1.3	
99 (N/A)	45	18.9	

Total	238	100.0	

Key*

(01) Have a milk cow(s) and milk regularly. Make butter and cheese for home use, for gifts, and for sale.

(02) Milk all year.

(03) Milk occasionally.

(04) Milk for personal use and sometimes sell wool.

(05) Used to have a milk cow, but don't have one now. There is no time to milk and/or couldn't use it all up, live in town now, etc. (not since brother died).

(07) When young the family had a milk cow and used byproducts.

(08) Used to have goats and make cheese. Parents made cheese and butter.

(09) Sell wool.

(10) Sell hides.

(11) Use hides for drum making.

(12) Sell wool, used to have a milk cow when children growing up, not now.

(13) Used to have a milk cow a long time ago when children were small.

(14) Sell wool and hides.

(15) Would like to have a milk cow (no time).

(16) Spread manure on fields/gardens/ pasture as fertilizer/to build up soil/as compost.

(17) Used to milk cows and sell wool from sheep.

(18) Used to have a garden and used manure.

(19) Used to do more tanning and used rawhide for pack-horse equipment.

(20) Can't get anyone to tan hides any more.

(21) Sold wool when had sheep.

(22) "Way back, used everything."

(23) Used all of above when growing up…had sheep.

(24) Used to use manure for fields.

(25) Less use now than when had milk cow and milk goat.

(26) Wool for weaving.

(27) If manure is free of noxious weeds, can use on fields.

(28) Hides for making panniers, used to sell wool.

(29) Sold hides and wool and made butter and cream from cow's milk.

(30) Used to have milk cows/used to milk a cow.

(31) Trades by-products.

(32) Buys wool from Navajo for over-seas market.

(33) Use hides for chaps, manure for fertilizer, fresh eggs from chickens.

(34) Uses all by-products.

(35) Clean out corrals, neighbors use the manure.

(36) Hides for saddle work, rawhide, leather work.

(37) Milk from the goats.

(38) By-products used by other family members.

(39) Use hides, sometimes milk and manure.

(40) Used milk for children and pincos, made cheese, sold wool and pelts.

(41) Used to milk and make cheese and cream.

(42) Made goat cheese and Cow cheese to sell

(43) Sold cheese and butter

(44) Eggs from chickens

(45) Should use the hides

(46) Uses hides for drums, used to use wool for blankets

(47) Milks cow, uses manure on fields

(48) Animal's graze crop residue

(49) Will use byproducts in future

(50) Make cheese and cream, wool to brother

(51) Used to milk goats.

Table 102—Do you give live animals, meat, or by-products to friends or neighbors? (GIFTANS—Question 40).

MEAT TO FRIENDS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	133	55.9	57.6
02	81	34.0	35.1
03	7	2.9	3.0
04	2	.8	.9
06	8	3.4	3.5
Total	231	97.1	100.0
97 (Missing)	7	2.9	
Total	**238**	**100.0**	

Key*
(01) Yes
(02) No
(03) Occasionally
(04) Used to, but no longer
(05) Would give to friends if asked
(06) Trade animals/meat/by-products for work or services

Table 103—or as a donation to charity? (DONANS—Question 40a).

CHARITY DONATIONS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	97	40.8	45.3
02	109	45.8	50.9
03	2	.8	.9
04	3	1.3	1.4
05	2	.8	.9
06	1	.4	.5
Total	214	89.9	100.0
97 (Missing)	24	10.1	
Total	**238**	**100.0**	

Key*
(01) Yes
(02) No
(03) Occasionally
(04) Used to, but no longer
(05) Would donate to a charity if asked
(06) Will do so when can afford to

Table 104a—Order of goals for livestock operation: Priority order for increasing overall income and material goods (PROFIT—Question 41).

MAKING MONEY*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	21	8.8	9.0
02	51	21.4	21.9
03	52	21.8	22.3
04	109	45.8	46.8
Total	233	97.9	100.0
97 (Missing)	4	1.7	
98 (No response)	1	.4	
Total	**238**	**100.0**	

Key*
(01) First
(02) Second
(03) Third
(04) Fourth

Table 104b—Order of goals for livestock operation: Priority order for maintaining family's quality of life resulting from owning livestock (FAMLIFE—Question 41).

QUALITY OF LIFE*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	143	60.1	61.4
02	53	22.3	22.7
03	26	10.9	11.2
04	11	4.6	4.7
Total	233	97.9	100.0
97 (Missing)	4	1.7	
98 (No response)	1	.4	
Total	**238**	**100.0**	

Key*
(01) First
(02) Second
(03) Third
(04) Fourth

Table 104c—Order of goals for livestock operation: Priority order for avoiding being forced out of livestock ownership (FORCEOUT—Question 41).

AVOID LOSS OF BUSINESS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	43	18.1	18.5
02	79	33.2	33.9
03	59	24.8	25.3
04	52	21.8	22.3
Total	233	97.9	100.0
97 (Missing)	4	1.7	
98 (No response)	1	.4	
Total	**238**	**100.0**	

Key*
(01) First
(02) Second
(03) Third
(04) Fourth

Table 104d—Order of goals for livestock operation: Priority order for improving the livestock operation by obtaining more land, better equipment, and more animals (IMPROVOP—Question 40).

IMPROVE LIVESTOCK OP'N*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	26	10.9	11.2
02	51	21.4	21.9
03	96	40.3	41.2
04	60	25.2	25.8
Total	233	97.9	100.0
97 (Missing)	4	1.7	
98 (No response)	1	.4	
Total	**238**	**100.0**	

Key*
(01) First
(02) Second
(03) Third
(04) Fourth

Table 105—Estimated percentage of gross income derived from livestock operation (INCPER—Question 42).

PERCENT of GROSS INCOME*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
02	16	6.7	6.9
03	63	26.5	27.0
04	31	13.0	13.3
05	31	13.0	13.3
06	12	5.0	5.2
07	24	10.1	10.3
08	6	2.5	2.6
09	4	1.7	1.7
10	9	3.8	3.9
11	7	2.9	3.0
12	24	10.1	10.3
16	1	.4	.4
18	3	1.3	1.3
19	1	.4	.4
20	1	.4	.4
Total	233	97.9	100.0
97 (Missing)	4	1.7	
98 (No response)	1	.4	
Total	**238**	**100.0**	

Key*

(01) None

(02) Less than 5%

(03) 5%-10%

(04) 11%-20%

(05) 21%-30%

(06) 31%-40%

(07) 41%-50%

(08) 51%-60%

(09) 61%-70%

(10) 71%-80%

(11) 81%-90%

(12) 91%-100%

(13) Don't make much money; most/all goes back into the livestock operation

(14) Don't make money on the livestock operation but save money on meat/ enjoy eating good meat

(15) Don't really make money on the livestock operation; it is an investment, a form of savings, and a tradition

(16) Gave a $ figure that cannot be connected to a %

(17) Don't make much money off it cause of loan and goes back into operation

(18) Unknown/can't figure

(19) Depends on the year, price of livestock

(20) If suddenly need money, the cows are there; can saddle a horse if have no money

Table 106—Permittee's chosen means of saving or investing money (SAVINGS—Question 43).

METHOD OF INVESTING*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	28	11.8	11.8
02	134	56.3	56.3
03	46	19.3	19.3
04	1	.4	.4
06	20	8.4	8.4
06	2	.8	.8
09	4	1.7	1.7
12	1	.4	.4
13	1	.4	.4
14	1	.4	.4
Total	**238**	**100.0**	**100.0**

Key*

(01) a. Putting money into a savings or other investment program

(02) b. Buying land in the area

(03) c. Buying more livestock or improving the stock operation in other ways, such as investing in range improvements, equipment to make life easier.

NOTE: The category "d. Other (Please describe.)" had the following responses:

(04) Investing money in a personal business

(05) Means of savings depends on the amount available

(06) b and c

(07) a, b, and c

(08) a and c

(09) a and b

(10) Discussion of problems with all the means of savings

(11) Means of savings depends upon age

(12) Hanging on to and maintaining what we have; buy land to keep neighbor from selling to "outside"

(13) Purchase water rights

(14) Purchase tractors and equipment

In which ways have earnings from the livestock operation been used? (Questions 44a-44i)

Table 107—Money from livestock operations spent on basic living expenses (LIVEXPS—Question 44a).

LIVING EXPENSES*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	165	69.3	69.3
02	73	30.7	30.7
Total	**238**	**100.0**	**100.0**

Key*

(01) Yes

(02) No

Table 108—Money from livestock operation spent on household improvements (HSEIMPS—Question 44b).

HOUSE IMPROVEMENTS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	129	54.2	54.2
02	109	45.8	45.8
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) No

Table 109—Money from livestock operations spent on emergencies (EMERGENS—Question 44c).

EMERGENCIES*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	114	47.9	47.9
02	124	52.1	52.1
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) No

Table 110—Money from livestock operations spent on college expenses (COLLEGE—Question 44d).

COLLEGE EXPENSES*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
	102	42.9	42.9
	136	57.1	57.1
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) No

Table 111—Money from livestock operations spent on special expenditures (SPEXPS—Question 44e).

TRAVEL*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	48	20.2	20.2
02	190	79.8	79.8
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) No

Table 112—Money from livestock operations spent on stocks, bonds, etc. (INVETS—Question 44f).

INVESTMENTS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	49	20.6	20.6
02	189	79.4	79.4
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) No

Table 113—Money from livestock operations spent on purchase of livestock (MORLVST—Question 44g).

PURCHASE LIVESTOCK*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	176	73.9	73.9
02	62	26.1	26.1
Total	**238**	**100.0**	**100.0**

Key*
(01) Yes
(02) No

Table 114—Money from livestock operations is reinvested in the operation (ALLVST—Question 44h).

REINVEST MOST IN OPERATION*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	160	67.2	67.2
02	78	32.8	32.8
Total			

Key*
(01) Yes
(02) No

Table 115—Other expenses such as land & livestock taxes, purchase of land, paying loans, etc. (OTHREXPS—Question 44i).

OTHER EXPENSES*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	1	.4	.4
02	164	68.9	68.9
03	6	2.5	2.5
04	1	.4	.4
05	24	10.1	10.1
06	3	1.3	1.3
07	4	1.7	1.7
08	11	4.6	4.6
09	1	.4	.4
10	1	.4	.4
11	1	.4	.4
12	1	.4	.4
13	1	.4	.4
14	1	.4	.4
15	5	2.1	2.1
16	1	.4	.4
17	3	1.3	1.3
18	1	.4	.4
19	1	.4	.4
20	1	.4	.4
21	1	.4	.4
22	2	.8	.8
23	2	.8	.8
24	1	.4	.4
Total	**238**	**100.0**	**100.0**

Key*

(01) Yes, but none listed/or for non-agri' uses

(02) No

(03) Purchase of vehicles and heavy equipment

(04) Paying off loans

(05) Paying land taxes

(06) Buying land

(07) Land taxes, farm equipment, feed for animals, permits, insurance

(08) Land and livestock taxes

(09) Improvements on the national forest

(10) Buying land, land and livestock taxes, permits, improvements

(11) Land payments, land and livestock taxes, FS permits

(12) Insurance, taxes, equipment

(13) Paying house mortgage

(14) Land & livestock taxes and facility repairs

(15) Land and livestock taxes, permits, equipment, vet" expenses

(16) Ranch equipment (machinery) and hay

(17) Land taxes and hay & feed

(18) Hay and good bulls

(19) Land, equipment, pasture rent

(20) Improvements such as fences and ditches
(21) Permits, hay, new barn
(22) All of above
(23) Medical expenses
(24) Hay

Goals for the family, ranked in order of importance (Question 45)

Table 116a—To have more income and be able to buy more material goods (INCOME—Question 45).

MATERIAL GOODS*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	7	2.9	3.0
02	8	3.4	3.4
03	46	19.3	19.3
04	176	73.9	74.3
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*
(01) First
(02) Second
(03) Third
(04) Fourth

Table 116b—To have a better quality of life and spend more time with family (QUALITY—Question 45).

TIME WITH FAMILY*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	99	41.6	41.8
02	77	32.4	32.5
03	53	22.3	22.4
04	8	3.4	3.4
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*
(01) First
(02) Second
(03) Third
(04) Fourth

Table 116c—To continue the way of life and maintain traditional values (TRADVAL—Question 45).

TRADITIONAL VALUES*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	114	47.9	48.1
02	92	38.7	38.8
03	23	9.7	9.7
04	8	3.4	3.4
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total	**238**	**100.0**	

Key*
(01) First
(02) Second
(03) Third
(04) Fourth

Table 116d—To gain personal satisfaction from a successful ranching operation (PERSAT—Question 45).

SATISFACTION FROM WORK*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	17	7.1	7.2
02	60	25.2	25.3
03	115	48.3	48.5
04	45	18.9	19.0
Total	237	99.6	100.0
97 (Missing)	1	.4	
Total			

Key*
(01) First
(02) Second
(03) Third
(04) Fourth

Table 117—What would you like to give your children (grandchildren, etc.) that would be a benefit to them in the future? (CHLDGIFT—Question 46)

BENEFITS TO CHILDREN*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
03	3	1.3	1.3
04	11	4.6	4.7
05	29	12.2	12.3
07	1	.4	.4
08	15	6.3	6.4
09	1	.4	.4
11	1	.4	.4
12	12	5.0	5.1
13	2	.8	.8
14	5	2.1	2.1
15	1	.4	.4
16	5	2.1	2.1
17	2	.8	.8
18	1	.4	.4
19	4	1.7	1.7
20	2	.8	.8
21	3	1.3	1.3
22	4	1.7	1.7
23	1	.4	.4
24	3	1.3	1.3
25	1	.4	.4
26	1	.4	.4
27	3	1.3	1.3
28	3	1.3	1.3
28	4	1.7	1.7
30	5	2.1	2.1
31	1	.4	.4
32	1	.4	.4
33	1	.4	.4
34	3	1.3	1.3
35	1	.4	.4
36	3	1.3	1.3
37	1	.4	.4
38	16	6.7	6.8
39	1	.4	.4
40	3	1.3	1.3
41	1	.4	.4
42	2	.8	.8
43	1	.4	.4
44	1	.4	.4
45	1	.4	.4
46	1	.4	.4
47	1	.4	.4
48	1	.4	.4
49	2	.8	.8
50	1	.4	.4
51	1	.4	.4
52	1	.4	.4
53	1	.4	.4
54	1	.4	.4

55	1	.4	.4
56	1	.4	.4
57	1	.4	.4
58	1	.4	.4
59	1	.4	.4
60	1	.4	.4
61	3	1.3	1.3
62	1	.4	.4
63	1	.4	.4
64	1	.4	.4
65	1	.4	.4
66	1	.4	.4
67	1	.4	.4
68	1	.4	.4
69	1	.4	.4
70	1	.4	.4
71	1	.4	.4
72	1	.4	.4
73	2	.8	.8
74	2	.8	.8
75	2	.8	.8
76	1	.4	.4
77	1	.4	.4
78	1	.4	.4
79	1	.4	.4
80	1	.4	.4
81	1	.4	.4
82	1	.4	.4
83	1	.4	.4
84	2	.8	.8
85	1	.4	.4
86	1	.4	.4
87	1	.4	.4
88	1	.4	.4
89	1	.4	.4
90	3	1.3	1.3
91	1	.4	.4
92	1	.4	.4
93	1	.4	.4
94	1	.4	.4
95	1	.4	.4
96	1	.4	.4
100	1	.4	.4
101	1	.4	.4
102	1	.4	.4
103	1	.4	.4
104	1	.4	.4
105	1	.4	.4
106	2	.8	.8
107	1	.4	.4
108	2	.8	.8
110	1	.4	.4
111	1	.4	.4
112	1	.4	.4

Total	236	99.2	100.0
97 (Missing)	2	.8	
Total	**238**	**100.0**	

Key*
(01) Moral/Ethical Values
(02) Religious Values
(03) Family Values
(04) Work Ethic ("Teach them to work!")
(05) Good Education
(06) Respect for land and livestock
(07) Respect for other people
(08) Land
(09) Livestock
(10) Financial resources
(11) Respect for land and livestock and satisfaction of a job well done
(12) Education and land (a place to live)
(13) Education and responsibility
(14) Family values and land
(15) Traditional values and continued care of the cattle
(16) Heritage, way of life, and traditional values
(17) Responsibility
(18) Land and love of animals
(19) Land & livestock (or permits) and continue the ranching tradition
(20) Education and to be a good citizen/not on drugs
(21) Keep the land and animals and benefit from them, be able to continue ranch
(22) Knowledge of ranching (land & animals), how to manage a ranch
(23) A love for ranching
(24) Education and continue ranching & care of animals
(25) Benefits of working own ranch (vs. making money) and working with animals
(26) Independence, Ability to problem-solve, Good stewards of land, Way of life
(27) Education and hard work
(28) Education and respect for others (especially for elders)
(29) Land and knowledge of how it works (how to care for it)/ the value of land and acequias/ a legacy for the future/never sell the land, pass it on through the generations.
(30) Education and family values
(31) Land, livestock, discipline, love
(32) A "farm or place to live better than we have now."
(33) Education and an appreciation for the beautiful area where they live.
(34) Education, land, and livestock.
(35) Love for the land and care of the animals.
(36) The ranch and value of the land in northern NM (don't sell the ranch).
(37) Lessons in the role humans play in animal's lives and vice versa.
(38) The cattle operation (land & livestock), the ranch
(39) Better direction in life and Leadership skills.
(40) A life of ranching and farming experience.
(41) Family values, respect for humans and animals, education.
(42) Education, respect for others and the land, learning how to work (quality).
(43) Education and a better life (jobs).
(44) Land, animals, money, and strong family & religious values.
(45) Character
(46) Teach how to survive and care for land, values, respect, help neighbors.
(47) Religion, good values, be responsible.
(48) Education in custom & culture, moral values, share what you have.
(49) Responsibility, value & care of land, value of money, respect, hard work, tradition.
(50) Understanding of the reality of life.
(51) Respect for elders/spend time with them.
(52) Education and animals.
(53) Education, Value the ranch, Religion.
(54) Parenting, Religion, Culture, Family, Education.
(55) Education, self respect (pride), monetary ability to succeed.
(56) Value of ranching, the NM way of life, seeing animals born and prosper.

(57) Moral ethic (Sunday School) and work ethic.
(58) Roots, morals, & faith.
(59) Honesty, hard work, respect for others, stand up for what you believe.
(60) The benefit of his experience.
(61) Land & help with money
(62) Religious values, work ethic (how to work), Good citizen
(63) Put God first, education, family values, respect for others
(64) Land and to experience ranch life
(65) Knowledge of what we have, the experience of having livestock, culture & tradition
(66) Quality of life
(67) A wide variety of experiences
(68) Love for God, family, and land: To help and share experiences as a family.
(69) Respect & knowledge on raising animals.
(70) Ranching way of life, how to work, responsibility, good citizen, self sufficient.
(71) Education & religious values.
(72) Love, respect, and values of life.
(73) Life is a journey…must take time to enjoy it! Find a path through life.
(74) Integrity, honesty, how to work, responsibility.
(75) Land, values, & traditions…to continue the ranch and not sell it.
(76) Honesty, responsibility, money doesn't buy everything.
(77) Tradition, care of the land, knowledge of the way of life & culture, ability to survive.
(78) Education, teach family values and land & money management.
(79) A legacy of tradition.
(80) Depends on the child.
(81) Ranchland, livestock, equipment, tradition, and hard work.
(82) Grazing allotments.
(83) Family, Honesty, Faith.
(84) How to work, Responsibility, Pass ranch on to the children.
(85) "The Baca Location" and common sense.
(86) Tradition, values, the importance of living in harmony with the land.
(87) Responsibility toward the animals and the value of life.
(88) Keep up tradition of the family, experience and enjoy the outdoors, ranching, and wildlife of this area.
(89) Principles, life experience, and ability to think things through and make decisions.
(90) Land, cattle, and family values.
(91) Land, tradition, teach the way of life.
(92) Heritage.
(93) Land, livestock, and the family business (fence co.), his mother's watch!
(94) Learn how to work and what's important in life.
(95) The grazing (cattle) permits.
(96) Traditional values and quality of life.
(100) Only one will inherit so not to split the ranch, tell them how important they are to him, show them how to fish.
(101) Family values and the way of life.
(102) Appreciation for life, know what it's like to work and wait for something.
(103) Faith in God (or won't survive) and respect for each other.
(104) Respect for other people; teach them how to work.
(105) The value of work; what you put into life is what you get out of it.
(106) Work ethic (teach them how to work), joy of life, education
(107) Traditional values
(108) Respect the value of the land; care for the land, the animals, and themselves.
(109) Education, a trust fund, love, and security
(110) Respect, experience & knowledge in working with the cattle and fencing (see #69).
(111) "The back of your hand."
(112) Ranching lessons and common sense.

Table 118—Has permittee had an opportunity to read the Pilot Study? (REPORT—Topic Question 12).

HAVE READ REPORT?*	NUMBER OF PERMITTEES	PERCENT	VALID PERCENT
01	112	47.1	49.8
02	83	34.9	36.9
03	30	12.6	13.3
Total	225	94.5	100.0
97 (Missing)	12	5.0	
99 (N/A)	1	.4	
Total	**238**	**100.0**	

Key*
(01) Yes
(02) No
(03) Parts of it

APPENDIX D

Ranch Chores by Season

To give an idea of the time and effort that goes into ranching, briefly describe your work schedule throughout the year. (Question 27)

Winter

Feed daily
  Feed cows when starts to snow/ horses will look for grass under the snow
  Feed after work and on weekends
  When have other job, must feed at 4 a.m. and finish 9 p.m.
Check sheep every fourth day/doctor sheep
Haul hay and feed (cake)
Feed round bales on weekend
Salt (and mineral supplements)
Break ice
Check/haul water
Pump water
Care for livestock
Transport to pasture
Rental of winter pasture
General maintenance
Ditch repairs
Fence repairs
Repair farm equipment
Family time/activities
Eat own food
Supervise beef processing
Distribute packaged beef
Forest Service meetings
Some cows are kept at the "house"
  Put cows in corral pre-calving
Calving begins
  Some calves are brought into the house
  Must dry the new-born calves
Doctor animals
Vaccinate cows
Keep an eye out for rough weather at high elevations (8500 ft)

Spring

- Feeding
- Lambing
  - Check for dogs and coyotes at night
  - Dock tails
- Calving begins or continues
  - Calving "a time to wait" [49.]
- Vaccinating (first set)
- De-worming
- Branding
- Castrating
- Dehorning
- Ear tagging (for identification on allotment)/re-tag cows for with Forest Service tags
- Spray for ticks and lice
- Transporting/move livestock to pasture
- Fence repair/maintenance
- Fertility test bulls
- Purchase bulls
- Keep replacement heifers
- Purchase heifers
- Breed heifers
- Breed cows
- Feed and check first-time heifers daily
- Check cows daily while calving
- Horse breeding
- *Acequia*/ditch cleaning (when snow melts)
  - Replace head gates (*desaguas*)
- Irrigate (hay fields for alfalfa)
- Burn fields
- Farming
  - Plow, till, harrow fields
  - Plant/ sow seed
  - Crop rotation
- Cleaning corrals
- Lumber/ haul wood
- Work cattle
- Sort cows to go to allotment
- Move cattle to the "high country"
  - To allotments (Forest Service or BLM)
- Attend meetings

Note: When bulls are shared, calving occurs throughout the year.

Summer

- Put up "let-down" fences
- Take livestock to mountains/summer range/high elevation/allotments
  - Depends on weather
  - Sheep to Forest/check once a week
- Cows to BLM/check every other day
- Check cows on pasture/ on allotment (tags)
  - Check own cows even when have a hired rider
  - Help other permittees
  - Camp in mountains
- Check progress of calves
- Check cows after work (via horseback)
- Keep an eye out for vandalism
- Check waters/maintenance of waters/cleaning waters
- Clean out springs
- Check vegetation
- Fence repairs on allotments
- Rotate livestock (cattle)/ routing cattle
- Doctor sick cattle/ medications
- Salt placement on allotments
- Late calving
- Irrigating
- Hay (cut, rake, bale, and store in barn)
  - First cutting of alfalfa in June
  - Second cutting at end of August before freeze
  - Cut grass hay three to four times, alfalfa three times
  - Sell some hay
- Cut hay on shares/"custom cutting" of alfalfa
- Plant fields
- Plant garden (primarily for home use)
- Raise produce: apples, apricots, peaches, alfalfa, and oats
- Harvest garden/grain
- Clean acequias
- Fencing
- Farm repairs/maintenance
- Haul wood
- Road maintenance
- Attend rodeos
- Attend meetings
- Meet with ranger
- Train forest restoration crew (locals)

Note: It takes 10 hours per day to irrigate, plant, harvest, bale hay, and check cattle one to two times per week (more if sick).

Fall

Repair fences on private land (before return of cows)
Round up cattle
Gather cattle
Bring cattle home to ranch
Trailer sheep home in September
Some late-born calves to be dealt with
Wean calves
Weigh calves
Castrate
Pregnancy test cows
Cull open cows (to sell)
Feed animals to condition for sale
Fatten calves to sell
Find best market for calves and produce
Sell what necessary for income
  Sell some cows/take to market
  Sell calves (late fall)
  Sell lambs (1st of November)
Deliver to auction/ take to sale barn/contract calves
Sort and ship
Cows to mowed field/wheat pasture
Butcher steers for family needs
Process meat
Harvest garden
Harvest hay
Harvest crops (September)
Make wine
Preserve vegetables and fruit
Lay down fencing in high country
Clean equipment
Feed and care for animals carried over (cows, bulls, and horses)
Be sure to have enough feed for cattle
Purchase feed/hay
Rent winter pasture (of alfalfa and winter wheat)
Provide water
Ship cows to winter pasture

Note: Sale of cattle is usually in late fall, but depends on the market and how much feed and pasture are left from summer. Prefer to sell before the weather gets bad. Sell after 1st November for "best market."

APPENDIX E

Forage Plants by Ranger District

In most cases, respondents (permittees and range staff) provided us with either the common or scientific name of plants. With few exceptions, both names are listed on the tables.

Forage Plants on Camino Real Ranger District

Permittee Plant List:

Common name grasses:	**Scientific name***	**Season:**
Bluegrass	*Poa* spp.	cool
Kentucky bluegrass	*Poa pratensis*	cool
Bluestem	*Schizachyrium* spp.	warm
Bromes	*Bromus* spp.	cool
Smooth brome	*Bromus inermis*	cool
Buffalograss	*Buchloe dactyloides*	warm
Crested wheatgrass	*Agropyron cristatum*	cool
Fescues	*Festuca* spp.	cool
Arizona fescue	*Festuca arizonica*	cool
Gramas	*Bouteloua* spp.	warm
Black grama	*Bouteloua eriopoda*	warm
Blue grama	*Bouteloua gracilis*	warm
Sideoats grama	*Bouteloua curtipendula*	warm
Needle & Thread	*Hesperostipa comata*	cool
Oats (wild)	*Danthonia* spp.	cool
Orchardgrass	*Dactylis glomerata*	cool
Redtop	*Agrostis gigantea*	cool
Russian Rye	*Psathrostachys juncea*	cool
Sand dropseed	*Sporobolus cryptandrus*	warm
Wheatgrass	*Elymus* spp.	cool
Other plants:		
Alfalfa	*Medicago sativa*	
Clover	*Trifolium* spp.	
Red clover	*Trifolium pratense*	
Forbs		
Introduced species		
Mullien	*Verbascum thapsus*	
Native grasses		
Non-natives		
Others seeded by USFS		
Rushes (Watergrass)	*Juncus* spp.	
Sagebrush	*Artemesia* spp.	
Sedges	*Carex* spp.	
Swamp grasses	(may refer to *Juncus*)	
Sweetclover	*Melilotus officinalis*	
Sweetpeas	*Lathyrus* ssp.	
Thistle	*Cirsium* spp.	

Watergrass	*Juncus* or *Carex* spp.	
Wild grasses		

***Allred 2005; Ivy 2004; Stubendeick and others 1986.**

Melvin Herrera (2010) **Range Staff—Camino Real Ranger District**

Plant notes:
Range readiness affects them…coming out of the home place and onto the forest.
Warm season grasses are at lower elevations.
Cool season grasses are the limiting factor.

At higher eleations:	8,500 ft and above	
Parry's oatgrass	*Danthonia parrii*	cool
Timber oatgrass	*Danthonia intermedia*	cool
Nodding brome	*Bromus anomalus*	cool
Junegrass	*Koeleria macrantha*	cool
Mountain muhly	*Muhlenbergia montana*	warm
Pine dropseed	*Blepharoneuron tricholepis*	warm
Arizona fescue	*Festuca arizionica*	cool
Sheep fescue	*Festuca saximontana (ovina)*	cool
Elk sedge	*Carex geyeri*	
Bunch grass		
At lower elevations:	7,000 ft	
Western wheatgrass	*Elymus smithii*	cool
Squirreltail (pre-awn development)	*Elymus longifolius*	cool
Blue grama	*Bouteloua gracilis*	warm
Threeawn (mid to lower elevations)	*Aristida* spp.	warm
Crested wheatgrass (introduced)	*Agropyron cristatum*	cool
Orchardgrass (introduced)	*Dactylis glomerata (excellent forage)*	cool
Timothy (introduced)	*Phleum pratense*	cool
Bluegrass	*Poa* spp.	cool
Clover	*Trifolium*	
Noxious plants:		
Snakeweed	*Gutierrezia sarothrae*	
Pingue (at lower elevations)	*Hymenoxys richardsonii*	
Locoweed (at mid-elevations)	*Astragalus* or *Oxytropis* spp.	
Larkspur (at high elevations)	*Delphinium occidentale*	
Oak (oak poisonous to livestock if depended on too early and leafs out and freezes)	*Quercus gambelii*	

***Allred 2005; Ivy 2004; Stubendeick and others 1986.**

Forage Plants on Coyote Ranger District

Permittee Plant List

Common name grasses:	**Scientific name***	**Season:**
Bluegrass	*Poa* spp.	cool
Kentucky bluegrass	*Poa pratense*	cool
Brome	*Bromus* spp.	cool
Crested wheatgrass	*Agropyron cristatum*	cool
Fescues	*Festuca* spp.	cool
Arizona fescue	*Festuca arizonica*	cool
Gramas	*Bouteloua* spp.	warm
Blue grama	*Bouteloua gracilis*	warm
Black grama	*Bouteloua eriopoda*	warm
Sideoats	*Bouteloua curtipendula*	warm
Junegrass	*Koeleria macrantha*	cool
Mountain muhly	*Muhlenbergia montana*	warm
Orchardgrass	*Dactylis glomerata*	cool
Timothy	*Phleum pratense*	cool
Wheatgrass	*Elymus* spp.	cool
Slender wheatgrass	*Elymus trachycaulus*	cool
Tall wheatgrass	*Elymus elongatus*	cool
Western wheatgrass	*Elymus smithii*	cool

Other plants:	
Alfalfa	*Medicago sativa*
Bunch grass	
Clover (yellow, white, red)	*Trifolium* spp.
Manzanita	*Arctostaphylos pungens*
Native grasses	
Palo de Rosario	
Patito (small fern under Aspen)	
Rabbitbrush (when snows)	*Chrysothamnus* spp.
Watergrass (Sedge or Rush)	*Carex* or *Juncus* spp.
Weeds	
Wild grasses	

***Allred 2005; Ivy 2004; Stubendeick and others 1986**

Lawrence Atencio (2010) **Range Staff—Coyote Ranger District**

Plant notes:

(Grasses vary in key areas, a mix of warm and cool season grasses)

Bluegrass	*Poa* spp.	cool
Kentucky bluegrass (perennial)	*Poa pratense*	cool
Native bluegrass	*Poa agassizensis*	cool

(a shorter plant, inflorescence opens earlier than non-native)

Lower elevations: (drainage area)

Arizona fescue	*Festuca arizonica*	cool
Western wheatgrass	*Elymus smithii*	cool

Bottlebrush	*Elymus elimoides*	cool
Blue grama	*Bouteloua gracilis*	warm
Galleta	*Pleuraphis jamesii*	warm
Lovegrass (a good stablizer)	*Eragrostis* spp.	warm
Sagebrush	*Artemesia* spp.	
High elevations:		
Mountain muhly	*Muhlenbergia montana*	warm
Sheep fescue	*Festuca (ovina) saximontana*	cool
Junegrass	*Koeleria macrantha*	cool
Sedges ("watergrass")	*Carex* spp.	
Forbs	(increasers at heavy use sites)	
Introduced grasses:		
Smooth brome	*Bromus inermis*	cool
Orchardgrass	*Dactylis glomerata*	cool
Crested wheatgrass	*Agropyron cristatum*	cool

***Allred 2005; Ivy 2004; Stubendeick and others 1986**

Permittee Plant List

Common name grasses:	**Scientific name***	**Season:**
Bluegrass	*Poa* spp.	cool
Kentucky bluegrass	*Poa pratensis*	cool
Mountain bluegrass	*Poa* spp.	cool
Native bluegrass	*Poa* spp.	cool
Bluestem	*Schizachyrium* spp.	warm
Little bluestem	*Schizachyrium scoparium*	warm
Sand bluestem	*Bothriochloa* or *Schizachyrium* spp.	warm
Bromes	*Bromus* spp.	cool
Cheatgrass brome	*Bromus tectorum*	cool
Mountain brome	*Bromus carinatus*	cool
Nodding brome	*Bromus anomalus*	cool
Smooth brome	*Bromus inermis*	cool
Crested wheatgrass	*Agropyron cristatum*	cool
Fescues	*Festuca* spp.	cool
Arizona fescue	*Festuca arizonica*	cool
Thurber fescue	*Festuca thurberi*	cool
Galleta	*Pleuraphis jamesii*	warm
Grama	*Bouteloua* spp.	warm
Black grama	*Bouteloua eriopoda*	warm
Blue grama	*Bouteloua gracilis*	warm
Sideoats grama	*Bouteloua curtipendula*	warm
Indian ricegrass	*Oryzopsis hymenoides*	cool
Mat muhly	*Muhlenbergia richarsonis*	warm
Needle & Thread	*Hesperostipa comata*	cool
Orchardgrass	*Dactylis glomerata*	cool
Ryegrass	*Lolium perenne*	cool

Sacaton	*Sporobolus airoides* or *S. wrightii*	warm
Alkali sacaton	*Sporobolus airoides*	warm
Sand dropseed	*Sporobolus cryptandrus*	warm
Stipa	*Stipa* spp.	cool
Timothy	*Phleum pratense*	cool
Vine mesquite	*Panicum obtusum*	warm
Wheatgrass	*Elymus* spp.	cool
Western wheatgrass	*Elymus smithii*	cool

Other grasses:

Alfalfa (dry land)	*Medicago sativa*
Chamisa (Rabbitbrush)	*Chrysothamnus* spp.
Chico brush	(may refer to *Sarcobatus vermiculatus*)
Cuchilla	(no translation available)
Four O'Clocks	*Mirabilis* spp.
Four-wing Saltbush	*Atriplex canescens*
Hogweed	*Porulaca oleracea*
Junk grass	
Native grasses	
Oak leaves	*Quercus gambelii*
Pubescen (Pubescent wheatgrass?)	(may refer to Elymus hispidus barbulatus)
River grass (Sedge or Rush?)	*Carex* or *Juncus* spp.
Sagebrush (Chamiso)	*Artemesia* spp.
Snakeweed	*Gutierrezia sarothrae*
Terromote	(see below)
Thistles	*Cirsium* spp.
Weeds	
Winterfat ("White sage")	*Ceretoides lanata*

***Allred 2005; Ivy 2004; Stubendeick and others 1986**

Jim Eaton (2010) **Range Staff—Cuba Ranger District**

Plant notes:

North end:	(elevation 7000-8500 ft)	
High desert: Piñon/Juniper, sagebrush, grassland		
Crested wheatgrass	*Agropyron cristatum*	cool
Western wheatgrass	*Elymus smithii*	cool
Blue grama	*Bouteloua gracilis*	warm
Sand dropseed	*Sporobolus cryptandrus*	warm
Mountain muhly	*Muhlenbergia montana*	warm
Junegrass	*Koeleria* macrantha	cool
Pine dropseed	*Blepharoneuron tricholepis*	warm
Arizona fescue	*Festuca arizonica*	cool
Smooth brome	*Bromus inermis*	cool
Dry land Sedge	*Carex* spp.	
South end:	(elevation 8000-10,500 ft)	
High mountain meadows with riparian corridors		
Thurber fescue	*Festuca thurberi*	cool
Arizona fescue	*Festuca arizonica*	cool

Timber oatgrass	*Danthonia parryi*	cool
Kentucky bluegrass	*Poa pratense*	cool
Mutton grass	*Poa fendleriana*	cool
Riparian corridor:		
Rushes	*Juncus* spp.	
Sedges	*Carex* spp.	
Redtop	*Agrostis gigantea*	cool
Western wheatgrass	*Elymus smithii*	cool
Bromes	*Bromus* spp.	cool

Interpretations of permittee plant names:
"Alkali sacaton" may refer to Sand dropseed
"Terremote" may refer to Blue grama ("mat on dirt")
Chamisa = Rabbitbrush
Chamiso = Sagebrush

***Allred 2005; Ivy 2004; Stubendeick and others 1986**

Permittee Plant List

Common name grasses:	**Scientific name***	**Season:**
Bluegrass	*Poa* spp.	cool
Native bluegrass	*Poa* spp.	cool
Kentucky bluegrass	*Poa pratensis*	cool
Brome	*Bromus* spp.	cool
Cheatgrass brome	*Bromus tectorum*	cool
Buffalograss	*Buchloe dactyloides*	warm
Crested wheatgrass	*Agropyron cristatum*	cool
Fescues	*Festuca* spp.	cool
Mountain fescue	*Festuca saximontana*	cool
Tall fescue	*Festuca arundinacea*	cool
Galleta	*Pleuraphis jamesii*	warm
Gramas	*Bouteloua* spp.	warm
Blue grama	*Bouteloua gracilis*	warm
Mountain muhly	*Muhlenbergia montana*	warm
Orchardgrass	*Dactylis glomerata*	cool
Sand "grama" (sand dropseed)	*Sporobolus cryptandrus*	warm
Timothy	*Phleum pratense*	cool
Tall wheatgrass	*Elymus elongatus*	cool
Western wheatgrass	*Elymus smithii*	cool
Other plants:		
Alfalfa (planted after a fire)	*Medicago sativa*	
Aspen	*Populus tremuloides*	
Clover	*Trifolium* spp.	
Four-wing saltbush	*Atriplex canescens*	
"K-31" (seeded mixture)		

Oak	*Quercus gambelii*
Scrub oak	*Quercus gambelii*
Snakeweed	*Gutierrezia sarothrae*
Tumbleweed (Russian thistle)	*Salsola iberica*

***Allred 2005; Ivy 2004; Stubendeick and others 1986**

Jim Eaton (2010) **Range Staff—Jemez Ranger District**

Plant notes:
Jemez district allotments are similar to south end of Cuba district allotments

Thurber fescue	*Festuca thurberi*	cool
Timber oatgrass	*Danthonia intermedia*	cool
Mountain muhly	*Muhlenbergia montana*	warm

High mesas are drier:

Western wheatgrass	*Elymus smithii*	cool
Blue grama	*Bouteloua gracilis*	warm
Mountain muhly	*Muhlenloergia montana*	warm

***Allred 2005; Ivy 2004; Stubendeick and others 1986**

Forage Plants on Pecos/Las Vegas Ranger District

Permittee Plant List

Common name grasses:	**Scientific name***	**Season:**
Bluegrass	*Poa* spp.	cool
Kentucky bluegrass	*Poa pratensis*	cool
Native bluegrass	*Poa* spp.	cool
Bluestem	*Schizachyrium spp.*	warm
Bromes	*Bromus* spp.	cool
Buffalo grass	*Buchloe dactyloides*	warm
Dropseed	*Sporobolus* spp.	warm
Fescues	*Festuca* spp.	cool
Arizona fescue	*Festuca arizonica*	cool
Grama	*Bouteloua* spp.	warm
Blue grama	*Bouteloua gracilis*	warm
Sideoats grama	*Bouteloua curtipendula*	warm
Indian ricegrass	*Oryzopsis hymenoides*	warm
Lovegrass	*Eragrostis* spp	warm
Mountain muhly	*Muhlenbergia montana*	warm
Oatgrass	*Danthonia* spp.	cool
Timber oatgrass	*Danthonia intermedia*	cool
Orchardgrass	*Dactylis glomerata*	cool
Ryegrass	*Lolium* spp.	cool
Timothy	*Pleum pratense*	warm
Turkey track (Big bluestem)	*Andropogon gerardii*	warm

Wheatgrass	*Elymus* spp.	cool
Western wheatgrass	*Elymus smithii*	cool

Other plants:

Alfalfa (dry land)	*Medicago sativa*	
Bindweed (chokes other plants)	*Convolvulus arvensis*	
Browse		
Bunchgrass		
Gamble oak	*Quercus gambelii*	
Oak leaves	*Quercus gambelii*	
Scrub oak	*Quercus gambelii*	
High elevation natives		
Large flat mushrooms (cows like)		
Large-blade "watergrass"		
Native grasses		
Natural grasses		
Palo Duro	(may refer to Junipers)	
Swamp grass (Rush or Sedge)	*Juncus* or *Carex* spp.	
Thistle (invasive)	*Cirsium* spp.	
Watergrass (Rush or Sedge)	*Juncus* or *Carex* spp.	
Wild grasses		
Winterfat	*Ceretoides lanata*	

***Allred 2005; Ivy 2004; Stubendeick and others 1986**

Mike Lujan (2010) **Range Staff—Pecos/Las Vegas Ranger District**

Plant notes:
Elevation/ecotone delineations, beginning with key species and adding others

High country:	9000-10,000 ft	
Thurber fescue	*Festuca thurberi*	cool
Poas	(many different species)	cool
Kentucky bluegrass	*Poa pratensis*	cool
Elk sedge	*Carex geyeri*	
Timber oatgrass (often in aspen stands)	*Danthonia intermedia*	cool
Transition zone:	7000-8000 ft	
Ponderosa pine forest:	*Pinus ponderosa*	
Pine dropseed	*Blepharoneuron tricholepis*	warm
Mountain muhly	*Muhlenbergia montana*	warm
Blue grama (some)	*Bouteloua gracilis*	warm

Introduced along old logging roads or where inhabited by people:

Timothy	*Phleum pratense*	cool
Smooth brome	*Bromus inermis*	cool
Orchardgrass	*Dactylis glomerata*	cool

Lower elevations:		
Blue grama	*Bouteloua gracilis*	warm
Western wheatgrass	*Elymus smithii*	cool
Intermediate wheatgrass	*Elymus hispidus*	cool
Sand dropseed	*Sporbolus cryptandrus*	warm
Galleta	*Pleuraphis jamesii*	warm
Vine mesquite	*Panicum obtusum*	warm
Indian ricegrass	*Oryzopsis hymenoides*	cool
Big bluestem (Turkey-track)	*Andropogon gerardii*	warm

***Allred 2005; Ivy 2004; Stubendeick and others 1986**

Forage Plants on Tres Piedras Ranger District

Permittee Plant List

Common name grasses:	**Scientific name***	**Season:**
Bluegrass	*Poa* spp.	cool
Kentucky bluegrass	*Poa pratensis*	cool
Mutton grass	*Poa fendleriana*	cool
Native bluegrass	*Poa* spp.	cool
Bluestem	*Schizachyrium* spp.	warm
Little bluestem	*Schizachyrium scoparium*	warm
Bromes	*Bromus* spp.	cool
Mountain brome	*Bromus carinatus*	cool
Buffalograss	*Buchloe dactyloides*	warm
Canarygrass	*Phalaris arundinacea*	cool
Crested wheatgrass	*Agropyron cristatum*	cool
(Seedlings planted in last five years at 8000 ft)		
Fescues	*Festuca* spp.	cool
Arizona fescue	*Festuca arizonica*	cool
Sheep fescue	*Festuca saximontana*	cool
Thurber fescue	*Festuca thurberi*	cool
Foxtail	*Aloecurus aequalis*	cool
Galleta	*Pleuraphis jamesii*	warm
Gramas	*Bouteloua* spp.	warm
Blue grama	*Bouteloua gracilis*	warm
Sideoats grama	*Bouteloua curtipendula*	warm
Indian ricegrass	*oryzopsis hymenoides*	cool
Junegrass	*Koeleria macrantha*	cool
Mountain muhly	*Muhlenbergia montana*	warm
Ring muhly	*Muhlenbergia torreyi*	warm
Needle & Thread	*Hesperostipa comata*	cool
Orchardgrass	*Dactylis glomerata*	cool
Red top	*Agrostis gigantea*	cool
Russian (wild)rye	*Psathyrostachys juncea*	cool
Rye	*Lolium* spp.	cool
Sacaton	*Sporobolus airoides*	warm
Sand dropseed	*Sporobolus cryptandrus*	warm

Squirreltail	*Elymus longifolius*	cool
Timothy	*Phleum pratense*	cool
Tobosa	*Pleuraphis mutica*	warm
Wheatgrass	*Elymus* spp.	cool
Western wheatgrass	*Elymus smithii*	cool

Other plants:

Alsike clover	*Trifolium hybridum*
Aspen leaves	*Populus tremuloides*
Bunch grasses	
Clover (green)	*Trifolium* spp.
Dandelion	*Taraxacum officionale*
Mulegrass	(possibly a Muhlenbergia)
Mushrooms (sheep eat them)	
Native grasses	
Riparian grass	
Rushes	*Juncus* spp.
Sagebrush	*Artemesia* spp.
Sedges	*Carex* spp.
Weeds	
Winterfat (White sage)	*Ceretoides lanata*
Wild pea	*Lathyrus* spp.
Winter wheat	*Triticum aestivum*

Noxious plants:

Larkspur	*Delphinium occidentale*
Leafy spurge	*Euphorbia esula*
Locoweed	*Astragalus* or *Oxytropis* spp.

***Allred 2005; Ivy 2004; Stubendeick and others 1986; Whitson and others 2006**

Wayne Yonemoto (2010) **Range Staff—Tres Piedras Ranger District**

Plant notes:

Higher elevations:	8000-10,300 ft	
Arizona fescue	*Festuca arizonica*	cool
Thurber's fescue	*Festuca thurberi*	cool
Kentucky bluegrass	*Poa pratensis*	cool
Muttongrass	*Poa fendleriana*	cool
Junegrass	*Koeleria macrantha*	cool
Crested wheatgrass	*Agropyron cristatum*	cool
Mountain brome	*Bromus carinatus*	cool
Sheep fescue	*Festuca* (*ovina*) *saximontana*	cool
Columbia needlegrass	*Stipa columbiana*	cool
Alpine timothy	*Phleum alpinum*	cool
Tufted hairgrass	*Deschampsia ceaspitosa*	cool
Timber oatgrass	*Danthonia intermedia*	cool

Lower elevations:	7000 ft	
Western wheatgrass	*Elymus smithii*	cool
Blue grama	*Bouteloua gracilis*	warm
Galleta	*Pleuraphis jamesii*	warm
Little bluestem	*Schizachyrium scoparium*	warm
Ring muhly	*Muhlenbergia torryi*	warm
Threeawn	*Aristida longesita*	warm
Squirreltail	*Elymus longifolius*	cool
Pussy toes	*Antennaria* spp.	
Dandelion	*Taraxacum officionale*	
Yarrow	*Achillea millefolium*	
Grey Horsebrush	*Tetradymia canescens*	

***Allred 2005; Ivy 2004; Stubendeick and others 1986; Whitson and others 2006**

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