pronghorned antelope and mule deer populations.

The goals of this plan are to increase public access, preserve and improve wildlife habitat, and develop cooperation among DOW, sportsmen, and landowners. Under the Colorado Wildlife Ranching Program, the landowners work directly with the DOW on harvest rates, long-term population goals, and flexible hunting seasons that are compatible with ranching operations.

Through this program, over 159,000 acres of private and state lands in the Mesa de Maya Wildlife Ranching Area have been opened for public use. In 1991, over 200 hunter days of public use on this area were recorded. Habitat is being maintained and improved by proper grazing management and the development of additional water sources.

Winford says, "The Colorado DOW's Wildlife Ranching Program is a good tool that allows the private landowner to make use of public hunting to the benefit of the sportsmen and landowner."

The landowners and DOW officials agree on the number of permits to be allocated for each area. The landowners then market the permits however they see fit. Some market the permits themselves, some market the permits to outfitters who in return market them to hunters, and some give them away. The public has overwhelmingly accepted this program.

The rangeland on Winford's ranch is dominated by Loamy Plains and Shaley Plains range sites. Dominant grasses are blue grama, western wheatgrass, sideoats grama, Indian ricegrass, New Mexico feather grass, alkali sacaton, and little bluestem. Forbs that are frequently found on the ranch are scarlet globemallow, purple prairie clover, vetches. Winterfat, fourwing saltbush, James Frankenia, Bigelow sagebrush, pale wolfberry, and one-seeded juniper are commonly occurring shrubs.

The landscape is dominated by the short-grass prairie and pinon juniper vegetation types. The topography is gently rolling uplands. The average precipitation is about 12 inches.

On the Waldroup Ranch, the whole Winford family—Jerry, his wife Karen, their two sons Allen and Justin, and Winford's father Lloyd—is part of the decisionmaking process. As far as long-term goals, Winford wants to be able to run more cattle, manage wildlife populations, and improve the land at the same time. He says he knew he had to run more cattle to make money, but he didn't think there was any way he could. Winford thought the land was stocked with all the cattle he could possibly run without hurting the land.

He says, "I don't want to increase my cattle numbers and sacrifice the land." Now he sees that he can increase the number of cattle and improve the productivity of the land at the same time. To Winford, this is the best of both worlds.

High Technology on the Range

John Capurro, Gary Brackley, Chris Pacheco and Liz Warner

More and more demands are being made of western rangeland in spite of its vastness and limited accessibility. Effective range management requires accurate resource data but time constraints make it difficult to collect it in a timely manner. All of these factors necessitated a new data collection system.

One solution is the SNOTEL (SNOWpack TELemetry) system operated by the USDA Soil Conservation Service. This system, operational since 1977, gathers daily sensor data from 564 remote sites including minimum, maximum and average air temperature; snow water equivalent; and daily precipitation.

These data, while useful, are insufficient to assist range managers in deciding when remote range will be ready for grazing and the possible forage production from these areas. SCS employees assembled electronic equipment capable of gathering the missing data. The additional sensors measure relative humidity, solar radiation, wind run, wind direction, fuel moisture, soil temperature and soil moisture.

A study site for the SNOTEL system was selected within the Sheldon National Wildlife Refuge in northern Washoe County, Nevada. SCS and the U.S. Fish and Wildlife Service signed a cooperative agreement authorizing installation and operation of the site.

The location was chosen for two reasons. First, manually collected data were available. Secondly, the location represented two range sites common throughout northwestern Nevada, northeastern California, southeastern Oregon and southwestern Idaho.

The daily data are transmitted to the SCS West National Technical Center in Portland, Ore. Interested individuals can call the computer and review and retrieve collected data whenever they desire.
The project goal is to determine range readiness for grazing by using remotely collected data. Range managers will be able to adjust grazing according to current data, not estimates. Range users will know in advance the approximate date and number of livestock to be grazed and can make adjustments to herd size. Wildlife managers can estimate available forage and water and adjust game management plans accordingly.

The data has been collected for one year now, but several steps remain before the procedure is practical. First, data collected at the SNOTEL site must be correlated with two adjacent study sites with 5 years of phenology and soil moisture and temperature data. Secondly, annual vegetative clipping studies must be conducted for two to three years to determine pounds per acre production and percent composition. Thirdly a procedure must be developed for estimating growth stages based on all data perimeters which can project livestock turn-out dates. Fourth, ground truth checking of projections must be conducted.

We will begin making estimates and fine tuning the procedure in the next two to three years, and have the final procedure ready within five years.