The typical Southwestern grassland ranges of 35 years ago (left) was predominately grass with scattered invading shrubs here and there. The same view today (right) shows wind-blown sand forming dunes around the bases of established mesquite plants.

Vegetation Changes Continuously on ARIZONA RANGES

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Vegetation changes on Arizona rangelands, similar to those shown in the above photographs, are continually going on. Unfortunately, these changes are not favorable to our range livestock industry. Some invading shrubs, such as mesquite, do furnish a limited amount of forage, and the mesquite bean crop has provided the carry-over feed during dry years on a number of ranches.

The fact remains, however, that if these vegetational changes had not come about and native forage grasses were still the dominant vegitation, the available feed on ranges during these dry years would far outweigh that provided by the trees and shrubs.

Many ranges that now support a light to heavy mesquite stand at one time grew dense stands of grasses. These areas are still capable of supporting dense grass and will do so if the vegetation is changed by man back to its previous condition and maintained in this productive state by sound range management.

Early Reports Were Exuberant

Historical literature is filled with glowing descriptions of the lush grasslands that once dominated the Southwest. Sentences such as ". . . millions of cattle could be pastured here throughout the year" are frequently found in the reports of early explorations into the Southwest. Areas that 100 years ago were described as ". . . hundreds and hundreds of thousands of acres containing the greatest abundance of the finest grass in the world . . ." are today relatively worthless as grazing land because they have nothing but mesquite and other desert shrubs instead of the dense perennial grasses that were dominant.

Studies by the University of Arizona's Department of Agronomy and Range Management during recent years on two widely separated areas in the Southwest's desert grassland have shown a 20 to 28 percent decrease in desirable forage production and as much as 107 percent increase in undesirable shrubs *during the last 40 years alone!*

The White Man Did It

What has brought about this change in vegetation? Why have the grasslands become infested with shrubs? The reasons are many, but the underlying cause is *man*. Before the white man settled the Southwest and introduced his grazing herds, nature maintained the vegetation balance. There were no large concentrations of livestock to harvest each year's grass crop. Grasslands were dense, well established, and offered severe competition to invading shrubs.

Indications are that lightning-caused fires periodically swept these grassland areas with their three or four years of accumulated growth. The fires killed trees and shrubs that had managed to gain a foothold in the grassland while the grasses, not seriously damaged by the fire, quickly recovered.

White men brought livestock into the desert grassland in excessive numbers. Cattle and sheep grazed off the fuel that once fed wild fires, and man did nothing to stop the invasion by shrubs which now easily encroached upon these denuded areas.

A Water Shortage, Too

More water was now needed to recharge the soil moisture in the shrub-infested areas, as shrubs use more water than grass. Drought periods came and grasses were killed by the combined effects of heavy grazing, drought, and the competition for available moisture by shrubs. The shrubs, whose roots are deeper, could reach soil moisture that was unavailable to the grasses as well as compete with the grasses for the limited amount of surface moisture. Furthermore, the shrubs were not subjected to damage by grazing as were the grass plants.

Worst of all, man paid no attention to the shrub invasion he had brought on by disrupting nature's balance until it was too late to combat easily, then he adopted a "What's the use?" attitude and still did nothing to halt the vegetation change.

Grass Needs Management

Under our climatic conditions and grazing pressures in the Southwest, shrubs will continue to encroach upon and eventually dominate many of our grasslands *unless* man takes steps to stop them. We must manage our ranges for grass as well as for beef production, because beef *is* grass.

On pure grassland areas we must grub seedlings as they become established, to keep these areas free of shrubs. On areas that are already infested we must combat further shrub thickening by killing the younger trees and shrubs while they are still small and easily attacked. At the same time, we should wage a systematic eradication program against the larger species, using oil, herbicides, chopping, or bulldozing. A shrub control program should be one of the regular, sustaining ranch chores.

Livestock can stay alive browsing shrubs and eating mesquite beans and cottonseed meal, but they will produce a lot more beef economically if they are on a grass diet. However, the grasses must have a fighting chance, and it is up to the ranch operator to give them this chance by actively combating the vegetation change that is taking place.