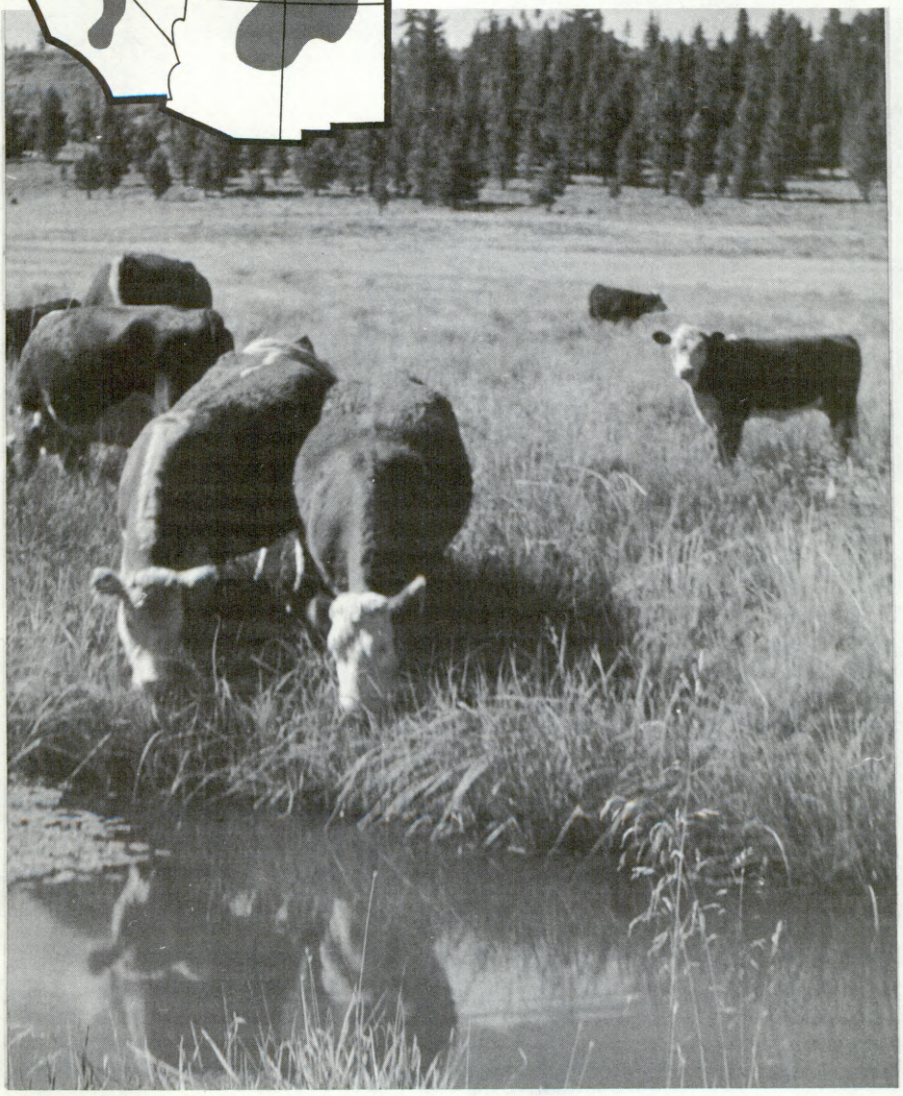
Improving CATTLE DISTRIBUTION on Western Mountain Rangelands



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IMPROVING CATTLE DISTRIBUTION ON WESTERN MOUNTAIN RANGELANDS

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Many ranchers are losing valuable forage from uneven cattle distribution. Left to natural habits, cattle graze the easy acres while forage is underused on less accessible range. Unless these habits can be overcome, forage yield from high-producing areas will continue to diminish while usable forage on the less accessible range is wasted.

Distribution problems are aggravated for a cattleman who depends on mountain range of intermingled forest, brush, and grassland. This range can be properly stocked as a whole, yet be severely overutilized in some places and unused in others.

Improving distribution enlarges the area of properly grazed range. More forage is taken from unused and lightly used range, and grazing pressure is reduced on habitually overused range.

Benefits to the rancher from better distribution are more complete utilization of available forage and faster recovery of depleted range. Heavier cattle, more calves, and more effective use of salt, water, and supplemental feed can result.

PRACTICES TO IMPROVE CATTLE DISTRIBUTION

1. Fence to limit use to the best season and to control grazing between range types.
2. Develop water supplies on ungrazed acres to reduce grazing pressure near existing water.
3. Add salt grounds to lightly grazed areas at locations that will encourage greater use.
4. Construct trails or driftways to improve access to isolated tracts and to speed distribution after rangeland disturbances.
5. Redistribute cattle through rangeriding, moving them from heavily grazed range to lightly grazed or ungrazed range.
6. Manage native forage through burning, fertilizing, water spreading, logging, or use of chemical foliar sprays. These practices may be locally important in improving distribution but will not be covered here.

Practices are given not in order of importance but in the sequence they should be considered in approaching a distribution problem.

Seldom will the manager try to remedy uneven distribution with a single measure. More uniform use of range can be achieved by coordinating several practices that complement each other. Because of wide differences in vegetation, terrain, and management from range to range, distribution measures must be tailored to needs.

FENCING FOR UNIFORM DISTRIBUTION

Fences have many uses in range and ranch management. For distribution they serve to (1) control seasonal drift on mountain range, (2) regulate use among forage types or protect choice grazing areas for special later use, and (3) separate pastures for special utilization or management.

Because plants develop more slowly at high elevations, cattle habitually drift upward seeking more succulent forage. Zone fences should be used to hold them on lower range until higher range is ready for grazing (fig. 1).

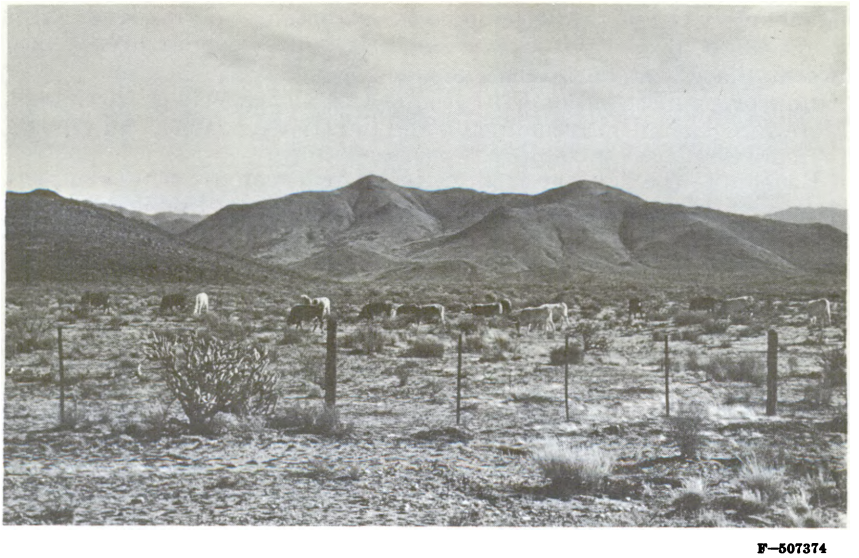

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Figure 1.—Zone fences hold cattle to insure proper seasonal use of the range. These cattle have been gathered from winter lowlands and are now grazing foothill range.

Fencing is often used to separate high-value forage types, such as meadows, from low-producing range. Cattle are held on the less preferred types, and the high-value forage is reserved for the best season of grazing.

Cattle distribute themselves better when large ranges are divided into several rotational pastures with cross fencing. Stocking each unit with more cattle for shorter seasons makes greater use of less palatable, but often equally nutritious, forage.

Though fencing for intensive management increases cropping efficiency while lowering the cost of herding and handling cattle, it is not a substitute for rangeriding.

FENCING LOCATION

As fences are costly, the first question might be: Where is the shortest fenceline that does not create ungrazable areas? New fence nearly always interferes with former distribution patterns; yet careful attention to location can minimize the problem.

Since cattle graze and travel by contouring, fencing along natural relief provides best distribution. Fences should be located along divides, ridges, and breaks. Where possible they should avoid crossing drainages. Application of these principles results in use of the best terrain for building and maintenance and in the easiest travel routes for trailing cattle along fences.

It is always important to study the natural movement of cattle along proposed division fencelines. If the grazing pattern is watched a season before fence construction, areas where cattle normally congregate can be avoided and grazing can be increased in unused areas. To avoid concentration near water, fences should not be built closer than the distance cattle normally graze from it. However, scarcity of stock water on some ranges may require partitioning with the fence to furnish water in both units.

When water is abundant, cattle can be forced to graze selected sections by fencing them from water where grazing is not wanted. This provides limited seasonal deferment or rotation with a minimum of interior fencing. It will work only if cattle are familiar with alternate water supplies.

FENCING SHORTCUTS

Fences represent the largest capital outlay for developing mountain range; therefore, cheaper, more direct methods of fencing buy more control per dollar invested. Sometimes "drift" fences can be built between natural barriers such as rimrock, steep breaks, or heavy timber, thereby reducing overall fence cost.

The suspension fence is new and economical in construction, with greater distance between posts, and has been widely accepted for controlling cattle distribution. Stays, usually of twisted wire, are free of the ground and permit the fence to recoil when an animal contacts it. These fences are reputed to be superior to more rigid conventional fences in holding breachy cattle. Mechanical devices for building suspension fences are also gaining popularity (fig. 2).

Two key practices for reducing maintenance cost and lengthening the useful life of a fence are (1) decreasing the interval between posts or jacks as the pitch of slope increases and (2) anchoring the fence at all points of change in slope or direction.

Interior fencing with only three strands of wire is cheaper, easier to maintain, and about as effective in controlling range cattle distribution as the customary four-wire stock fence.

On some National Forest ranges, local damage by snow, big game, high water, or fallen trees can be excessive. Here sections of "letdown" fence, which permit wire and stays to be laid away from posts, are often employed. Repair is eliminated but the advantage must offset added labor for picking-up and laying-down operations.

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Figure 2.—Mechanical fence-building machines reduce labor costs and can be employed on rough terrain and rocky ground. A contract builder in central Oregon quotes an average labor investment of 68 man-hours per mile with a similar machine. Labor for a conventional fence ranges from 100 to 200 man-hours per mile.

Steel wire stays are light in weight, easily installed, and now relatively cheap. They are often used in some areas to cut maintenance costs because they present little resistance to wind or snow. They are also useful in making emergency repairs on ordinary fence and patching up weak sections.

PROVIDING WATER TO IMPROVE DISTRIBUTION

Stock water is the center of grazing activity. Therefore, improving water supplies can open new grazing areas or extend the period of use about temporary water. Ways to improve range use with water are (1) finding and developing potential water, (2) conserving present water supplies, and (3) piping or hauling water to cattle.

PROSPECTING FOR WATER

Potential stock water is often discovered through local vegetation or geology (fig. 3).

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Figure 3.—A local abundance of RockyMountain iris led the rider to discover this site. The subsequently built "dozer-pond" opens another half section of mountain range to efficient use by cattle.

Certain water-loving plants reveal good sites for developing surface water. Indicators that are universal in the mountainous West include Nebraska sedge (*Carex nebraskensis*), RockyMountain iris (*Iris missouriensis*), certain willows (*Salix* spp.), and poplars (*Populus* spp.). Other plants, such as Baltic or wire rush (*Juncus balticus*), seepwillow baccharis (*Baccharis glutinosa*), and California falsehellebore (*Veratrum californicum*), may inhabit sites of potential seasonal water.

Prospecting for well sites often takes into account slope position, fault lines, rock layering, and outcrops. If depth to the water strata is fairly uniform over the range, then locating wells in the best ungrazed forage supply should be considered. Information on geology and on water tables that will help to locate and develop wells is available at the U.S. Geological Survey, Ground Water Division offices.

CONSERVING WATER

In impounding stock water to conserve it, the first step is to design the storage reservoir for maximum depth. This reduces later leakage and evaporation losses. Information on the most suitable designs for water storage facilities is available through local Soil Conservation Service technicians.

Leaks in earthen structures can be retarded by application of bentonite clay. In sandy soils plastic liners or asphalt sealers may be necessary. In arid mountains of the Southwest, both plastic sheeting and asphalt oils are used to seal earthen catchment basins that intercept and concentrate seasonal rainfall.

Control of evaporation losses in open-water storage has been demonstrated with hexadecanol. This harmless and inexpensive compound can prevent up to half of the loss when properly applied to the water surface. Storage loss through silt buildup may be avoided by fencing the upstream waterway and sometimes by seeding parts of it. Overflow water from troughs can often be saved by installing float valves that automatically control water level.

PIPING AND HAULING WATER

Recent developments in plastic pipe and in equipment for laying it underground have opened the way to grazing new range (fig. 4).

COURTESY OF SOIL CONSERVATION SERVICE

Figure 4.—Plastic pipe and machinery to lay it have allowed cattle to graze thousands of acres of previously unused western range. Here, tractor-drawn equipment trenches, lays, and buries plastic pipe at normal walking speed.

Caution is needed when plastic pipe is used; cheap grades may contain toxic compounds, burrowing rodents can damage lines, and burying must be done at temperatures that allow for pipe contraction.

Water hauling may seem the last alternative for improving distribution, yet it can be profitable where forage might otherwise be wasted

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Figure 5.—When water is hauled to improve cattle distribution, storage tanks and troughs should be portable, hold at least a week's supply, and be easily accessible to cattle and haul truck.

(fig. 5). During drought years, the practice is often essential if full use is to be made of the range. The feasibility of hauling water to cattle on native range can be judged from the cost per head per month.

WATERING NEEDS AND AVAILABLE RANGE

Cattle normally drink every day, and water is the center of grazing activity. The distance they travel from water to graze is the limit of usable range. Distribution practices are aimed at extending this distance or the grazing radius, which then enlarges the area of available forage in geometric progression. For example, doubling the grazing radius by improving distribution enlarges the area of available forage four times.

Terrain drastically influences natural cattle distribution about stock water. A study on northern Rocky Mountain summer range showed that the extent of grazing declined on steeper slopes:

Slope (percent)	*Extent of grazing upslope (miles)*
10	0.75
30	.4
60	.1

Daily water requirements and cow-months of available grazing determine the amount of water a development should supply. Ten gallons a day is the customary allowance per cow, but actual needs can vary from 5 or less every other day for yearlings in cool weather to nearly 20 gallons for cows with calves grazing dry forage in hot summer. Better use can be made of poorly watered ranges by grazing them during the cooler seasons when cattle require less water.

Proper spacing of water developments can be predicted from the way cattle graze the terrain around existing water sources. For example, if cattle make light use of the better forage plants up to one-half mile from water, then water developments a mile apart or about one per section would give ideal distribution. Closer spacing provides better utilization in normal years but may not justify the added expense (fig. 6).

COURTESY OF BUREAU OF LAND MANAGEMENT

Figure 6.—A costly water development pays off faster when good riding and salting practices extend cattle distribution over the largest possible area of surrounding range.

Developing stock water in formerly ungrazed range is normally profitable. However, it may be uneconomical in range producing less than 50 pounds of forage per acre or requiring over 20 acres per cow-month. Cattle on scanty or deteriorated range may eventually be forced to fill their forage needs too far from water to maintain satisfactory condition.

SALTING FOR BETTER DISTRIBUTION

Salt can improve distribution by drawing cattle onto range not ordinarily grazed. For top performance, cattle require little salt over that in the forage, yet their appetite for salt compels them to use it. Salt can be capitalized on by placing it in areas not otherwise grazed. Thus it should not be placed in preferred meadows or flats or closer than one-fourth mile from water.

Some ranchers are reluctant to place salt to improve distribution because they believe it reduces weight gains. Actually, cattle use salt as part of their regular grazing routine and do not go directly from salt to water. Forest Service researchers in northern California

showed range cattle averaged more than 7 hours of traveling and grazing from salt to water that was three-fourths of a mile away; direct trailing took only 20 minutes. During part of the summer, cattle grazing this timbered range used salt every day; at some periods, every other day. Three days was the longest period without salting.

Just where salt grounds should be placed or what the interval between them should be depends on water location and terrain. As a rule, two salt grounds for each water development are the fewest to begin with in improving cattle distribution. As the distance between watering places increases or the terrain becomes more broken and brushy, the number of salt grounds should increase. On heavily timbered or steep canyon terrain, high-density salting is needed, and many places throughout the grazing area should be tried to find the best locations.

Method of grazing and season of use also influence salt-ground spacing. For example, more salt grounds are needed for proper distribution when many cattle are grazed briefly than when fewer head are grazed over a long season. Forage conditions during green-season grazing increase a cow's appetite for salt which must be supplied by more grounds and larger amounts.

After the general location of a salt ground is selected, the exact site should be chosen for "cow appeal." This calls for good access, level rock-free ground, and shade where possible. These features make salt grounds more attractive and help hold cattle in the desired grazing areas.

Amounts of salt placed in a grazing area should be based on the carrying capacity of the range. To illustrate, if 25 head properly graze the surrounding range during a 2-month season and the average cow consumes 2 pounds of block salt per month, 100 pounds of salt are needed. A common failing is to resalt areas whenever the supply is gone without checking to see that ample forage remains.

SALTING TO ENCOURAGE OR DEFER FORAGE USE

Timely salting can encourage or delay grazing on selected areas within open range units. Where zone fencing on mountain range is not feasible, salting first along lower elevations helps hold cattle there for proper use. High range should not be salted until it is ready for grazing. On the other hand, salt can be withheld from around perennial water until forage near temporary water has been grazed. This makes use of forage that might otherwise be lost. Temporary or "drop" salting can also make better local use of quick-maturing annuals like cheatgrass or other spotty crops useful as early forage.

Salt can be used to attract cattle to less preferred forage. For example, on ponderosa pine ranges in the Pacific Northwest, salt should be placed first in the timber type, attracting cattle there when grazing is not untimely and forage quality still high. This provides limited deferment until the preferred open grasslands are better able to withstand grazing (fig. 7).

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Figure 7.—Salting increased overall grazing from 20 to about 30 percent in timbered forage of the Starkey Experimental Forest and Range in eastern Oregon. Securing the salt block to a stump by means of a spike through a central hole facilitates salt use and handling.

SALTING TO SPEED DISTRIBUTION

Cattle are often without salt while being gathered and trailed to mountain range. They settle better if salt is there when they first seek it.

A good salt ground pattern will seldom need changing. However, changes are usually called for by a new feature like fence or water. Although cattle will eventually find a new salt ground, distribution can be speeded by introducing them to it.

Denuded areas may develop around new salt. This is a sign that the location is unsuitable or that not enough salt grounds serve the area. If the zone of excessive use continues to grow, a schedule of alternating semipermanent salt grounds may remedy the condition.

Minor shifts in salt location may become necessary to restore vegetation or mend erosion on the immediate site. This is easily done by fully salting the nearby new ground and leaving only a few weeks' supply on the one to be abandoned.

If salt remains when forage is moderately used, removing it tends to discourage further grazing. Some riders speed cattle gathering by picking up salt from remote parts several weeks before roundup.

A brief salt plan, describing the location of grounds, dates to salt, and amounts, serves as a record for improving cattle distribution. This plan and maps, showing forage areas, fences, water, salt, and trails, form a valuable tool for the manager and save time in orienting new riders.

SUPPLEMENTAL FEEDING TO IMPROVE DISTRIBUTION

More and more ranchers furnish supplemental protein or phosphorus to cattle during the dry season. These concentrates, usually in meal form, are mixed with salt to regulate intake and are fed free-choice on the range. Portable feed stations are well suited for offering supplements. They should be located to keep cattle grazing selected parts of the range. When general principles for locating salt grounds are followed, the feed station encourages more uniform grazing of dry forage. Although cattle will need more water, moderate trailing distance causes no hardship.

A test of where to locate these self-feeding stations comes from the Jornada Experimental Range in New Mexico. Utilization was compared between pastures with stations away from water and pastures with stations at water. In pastures with out-feeding only, the closest stations were one-half mile from water. Both types of pasture furnished acceptable cattle weights; however, out-feeding alone reduced the overgrazed area by half, the light or unused area by about one-third, and nearly doubled the zone of proper grazing over ranges where feeding was also at water.

IMPROVING ACCESS FOR BETTER DISTRIBUTION

The manager should check range units for areas not grazed because of inaccessibility. Isolated tracts can often be opened by building trails. Since cattle travel the easiest route in search of forage, trails in steep terrain should combine the most direct route with the lowest possible grade. Switchbacks should be avoided.

Where canyon slopes exceed 50 percent, cattle rarely venture more than one-fourth mile from water unless access is provided. In steep-walled canyons, trails from water can extend distribution to formerly ungrazed ridges or benches for up to a mile if routes are not adverse.

On forested mountain range, wider cattle distribution can be encouraged by clearing driftways through thickets or logging debris. In British Columbia, ranchers cut through thick, jungled timber to provide driftways between mountain meadows. Although cattle will eventually form trails through logging slash, clearing out old trails, especially around salt and water, gives faster redistribution.

Roads and rivers also hinder cattle dispersion (fig. 8). New roads may improve cattle access to some areas but hinder access to others. Roads grading up mountainsides or along streams in V-shaped canyons interfere with natural cattle movement and often are barriers between water and forage. Distribution can be partly restored by building trails across sheer banks and fill slopes near originally traveled routes.

RIDING THE RANGE FOR BALANCED DISTRIBUTION

Adequate fences, water, salt, and access seldom produce proper use of all the suitable range without the aid of a rider. Cattle untended on mountainous range settle in one area and graze there indefinitely.

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Figure 8.—Improved stock trails and bridges were common in remote canyon ranges of the Snake River before 1900. Here, cattle cross the Imnaha River to make better use of this tri-State winter range.

This continued use leads to abuse of the forage and can lower cattle condition.

The rider should be concerned with the welfare of both the range and the cattle. By gathering cattle from normally overgrazed parts of a range and establishing them on lightly or ungrazed parts, he improves range condition and the cattle make better gains.

The rider must recognize signs of correct forage use in order to know when cattle should be moved. As a general rule, cattle should not graze more than half the yield of the principal forage plant. Where this "take-half, leave-half" guide to proper use is followed, the range will be maintained. Principal plants and methods for estimating their utilization vary from region to region. Guides for determining proper use are available at local Forest Service, Soil Conservation Service, and State Extension Service offices and at State Agricultural Experiment Stations.

The number of cattle one rider can handle depends on the terrain, vegetation type, its productivity, and how well the range is developed. In round numbers, however, a rider who knows the range and cattle can keep 500 head well distributed over 50 square miles of mountain summer range; perhaps twice the cattle over half as much productive foothill pasture; and fewer cattle over twice as much scanty brush or chaparral range (fig. 9).

Besides distributing cattle, a rider is responsible for salting, dispersing bulls for adequate service, repairing fences and water facilities, and, in general, looking out for cattle's welfare.

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Figure 9.—The rangerider's biggest job is moving cattle to keep them distributed regardless of prevailing conditions. To help him in this task, the rider maintains a string of sturdy horses and may depend heavily on dogs for gathering and trailing cattle in brushy country.

Good rangeriding can repay its cost in more calves, added pounds of beef, reduced death loss, and less straying. In addition, riding to improve distribution increases forage yield.

HERDING HINTS FROM GRAZING HABITS

Distribution should begin when cattle are first turned onto the range. Ideally, they should be gathered, trailed, and released in small bunches at selected areas throughout the new range. This may not be practical where herds are trailed long distances; however, in no case should the cattle be turned out through the boundary gate and left to seek their forage. With the help of drovers, extra riding at turn-on time will simplify the regular rider's job for the entire grazing season.

Several herds are sometimes pastured on the same mountain range. This combines cattle of different foraging ability and sometimes different classes of stock. To improve distribution, herds should be grouped according to their kind and placed on areas of the range that best suit them. For instance, cows with calves do best on gentle terrain, while yearlings and beef cattle forage well on the rougher range. Cattle that are wintered or calved on the range will adjust better to less accessible parts than cattle quartered in lots or small pastures. The way cattle ordinarily are handled is dictated by the type of range they are accustomed to.

Several weeks may pass before cattle top the choice, more accessible range. Old cows often return directly to familiar grazing territories whereas new cattle usually continue inhabiting choice areas. As mod-

erate use is reached on various parts of the range, the rider should begin moving cattle into other areas that are unused or only lightly grazed. His success in establishing them in new territory depends on how well he uses their habits to his advantage.

Cattle from the same herd frequently form into family-type groups. It is important that these groups be moved together into new areas. If they become separated, they are apt to return to former territories.

The best time to find, gather, or move these groups depends on their daily routine. Cattle always graze actively during the 3 or 4 hours after sunup and again before sundown. Though they are most scattered during these hours, they will be in their grazing territories. During midday, their activities center about watering, alternate grazing and resting, and salting. The rider can best gather them near water or salt during midday and trail them to new areas in the cool of late afternoon. Evening and early morning hours are the best times for checking where relocated cattle are grazing or for riding for a count of numbers in brushy or forested range.

To acquaint gathered cattle with the new grazing area, the rider should move them to its nearest water, then on out to the salt ground. Holding them there to graze while calves "mother-up" helps settle them. This procedure may need repeating for several days until the correct number of cattle are using the new territory. Once cattle have accepted an area to graze, they will often return to it on their own in following years.

As grazing pressure increases, so does uniformity of forage utilization. Therefore, the rider should be cautious to avoid "uniform overuse". Overstocked areas may seem evenly grazed whereas lightly grazed areas appear spotty. In especially favorable years, a spotty pattern of light and seemingly heavy grazing may be common throughout the range.

SUMMARY

Improving distribution, for grazing idle land and restoring forage on depleted land, is an effective way to increase total range production. At the close of grazing, the manager and rider should inspect the range and decide upon the ways for improving cattle distribution.

- **Fencing controls cattle drift, season of use, and intensity of grazing.**
- **Developing water opens up new range, and conserving water extends the useful season.**
- **Adjusting the number or location of salt grounds expands the usable areas away from water.**
- **Improving access introduces grazing in remote areas and speeds distribution.**
- **Riding balances overall grazing use.**

Since ranges vary greatly, selection of inexpensive yet effective distribution measures must depend on local conditions. The most accessible and productive range should normally receive first consideration, after which attention can be directed to improving utilization of less accessible range.

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