Transitory Range: a New Frontier

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Forage resources are found on forested land throughout the United States, but occur most significantly in the Southeast and Northwest. Currently in the Southeast, significant forage resources occur on 99 out of 212 million forested acres. Because of high precipitation and long growing seasons, this region has high forage production potential on 3 major forest types: longleaf-slash pine, loblolly-shortleaf pine, and pine-hardwood. The Pacific Northwest and the Northern Rockies also have large forage resources in Douglas-fir and other forest types. It is among these forested areas that lies the potential for creating transitory range.

Transitory range is defined as forested lands that are suitable for grazing for a limited time following a complete or partial forest removal. Realistically it is much more. It is a realm of undeveloped knowledge, a new frontier, which must be explored if future red meat demands are to be met. In the 1970's, energy shortages and resulting high energy costs prompted interest in finding alternatives to feeding high energy costing grains. This and the emphasis put on multiple use of resources have contributed towards the need of better utilizing transitory range. Using the forage resource available on transitory ranges is biologically and economically feasible. This article summarizes findings of transitory range research in the South to support the biological and economic compatibility of livestock and timber production on the same land.

Transitory range research can be divided into 3 general biological concerns: (1) tree canopy influences on forage, (2) cattle and wildlife interactions for available forage, and (3) cattle influences on pine regeneration. The first concern addresses canopy type, closure and removal, and their influence on forage production. The second involves whether or not livestock and wildlife interact for available forage. There may even be a complementary relationship existing between certain livestock and wildlife species. The last concern, and the most important to the forester, are the detrimental influences of cattle on pine regeneration through trampling, browsing, and defoliation.

Canopy Influences

Grazing occurs on all forest types in the South. However, scarce forage under dense hardwood canopy types and cattle browsing young hardwoods make grazing generally incompatible with hardwood plantation management (Grelen 1978). This is not to say that grazing cannot exist in hardwood forests.

Longleaf-slash pine types produce more understory forage than any other timber type, and therefore are the focus of many forest grazing studies. Tree overstory is the most influential factor determining forage yields; Wolters (1973) found understory forage production decreased 15 lb/acre for each 1 ft^2/acre increase in pine basal area on young slash and longleaf pine plantations. Available forage is generally reduced to less than one-half of an open site within 10 years after slash pine is established. However, through commercial timber thinning adequate forage production can be maintained throughout the timber rotation. On the southern pine-hardwood forest type, most clearcutting forage yields exceed pre-clearcutting yields from 6 to 20 times. This substantial forage increase can in turn be allocated to livestock and wildlife production.

Cattle grazing on transitory range in a southern pine plantation (U.S. Forest Service photo provided by Henry A. Pearson)

Livestock and Wildlife Interactions

Another focus of research investigates whether or not livestock interact with wildlife for available forage on transitory ranges. On Southwest Louisiana forested ranges, Sternitzke and Pearson (1975) found little competition to exist between livestock and wildlife populations at light to moderate grazing levels. Competition does exist where livestock

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and wildlife requirements exceed the forage supply; however, it can be avoided by controlling grazing animal numbers. Livestock grazing often benefits wildlife by stimulating browse growth or opening trails through dense brush; also, range management programs can provide water developments and supplemental feed for wildlife in times of need (Pearson 1979). In general, when animal numbers are kept in balance with available forage, little competition exists.

Livestock Influences on Seedlings

In the past foresters had no desire to mix cattle with timber production. Their concern was that cattle would damage seedling regeneration through trampling, browsing, and defoliation and, therefore, reduce timber production. Research findings thus far have shown the probability of livestock damage to tree regeneration not to be of consequence in the Southeast.

Significant mortality resulting from simulated combinations of defoliation, browsing, and trampling injuries occurred only at 6 months after planting in one study (Lewis 1980). The author hypothesized if grazing could be withheld the first year, almost no mortality would occur. In addition, the author found seedling growth rates were not greatly affected unless high intensity injuries occurred. It has also been reported that cattle rarely graze pine needles, making it unlikely that cattle grazing causes significant seedling mortality. In general in the South, cattle grazing is not detrimental to timber production if cattle are not grazed too early or too intensively on plantations.

Results of studies on transitory ranges in the West appear to be less conclusive than those taking place in the Southwest. For example, cattle trampling has been shown to cause high mortality in some Northwestern Douglas-fir plantations (Eissenstat et al. 1982).

Economic Feasibility

In order for extensive livestock production to occur on transitory ranges, it must be economically as well as biologically feasible. Some models have been developed to analyze economic feasibility.

A model was developed to estimate financial returns of combining livestock production with ongoing timber operations in the South. Several different cattle-timber ratios were processed through the model. Positive rates of return on cattle investments occurred on 84% of the cattle-timber ratios (Haney 1980). Pearson (1979) found the rate of return on cattle investments to be as high as 17% in southern forests.

It must be noted that models for estimating the economic feasibility of grazing transitory ranges are scarce. Also, existing models often do not consider the indirect benefits of forest grazing. These include cattle reducing fire hazard, being valuable collateral in negotiating loans, and utilizing off-season labor efficiently. Consequently, there is uncertainty about the exact financial reward of different cattle-timber ratios. It is understandable then that foresters are skeptical of grazing cattle on plantations. Studies indicate thus far that simultaneous cattle-timber production can be rewarding; but more research is needed to determine the cattle-timber ratio in which a maximum net return is realized.

Conclusions

Transitory ranges represent substantial forage resources when forests are thinned or removed, especially in the southeastern United States. When needed these resources can be allocated to livestock production. Research indicates: (1) understory forage increases with canopy removal; (2) livestock and wildlife do not generally compete for forage under proper grazing levels; (3) cattle do not cause significant mortality in seedling regeneration of forested stands unless grazed too early or intensively; and (4) simultaneous cattle-timber production can be profitable in the proper combinations. However, further research is essential if we are to use the potential production of transitory ranges, with proper management, to meet future red meat demands. Paul Andre (1981), editor of BEEF, referred to the work of foresters and cattlemen on forested ranges as "pioneering efforts." This quote reinforces the idea of transitory range being a new frontier to be pioneered with future research, and conquered with applied knowledge.

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