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NAVAJO LIVESTOCK REDUCTION

by John J. Wood

As a result of the longstanding dispute between the Hopi and Navajo over the control of the 1882 Executive Order Reservation in northeastern Arizona, livestock reduction has come once again to the Navajo. The current reduction program was mandated by Public Law 93-531, the Navajo-Hopi Land Settlement Act of 1974. The Flagstaff Administrative Office of the Bureau of Indian Affairs was charged by the Secretary of Interior with the responsibility of reducing livestock numbers and instituting a range management plan for the 1882 Executive Order Reservation exclusive of District 6 -- the former Hopi Reservation. A schedule of reduction and a management plan were prepared for this former Navajo-Hopi Joint Use Area (FJUA), and voluntary sales were initiated at White Cone in 1976. The next year two additional reduction camps were opened.

The purpose of this paper is to outline the progress of the reduction program to date, emphasizing its economic implications in the context of an understanding of the local economy in general, and the livestock sector in particular.¹ The paper concludes with some thoughts on the broader questions of development.

The Bureau of Indian Affairs contracted with Northern Arizona University for a sociocultural assessment of the livestock reduction program in September 1977. The original intent of the study was to provide current and reliable information about the human environment in the FJUA leading to the preparation of an environmental impact statement. For several reasons the statement has never been written; however, the Bureau of Indian Affairs has issued a limited edition of a monograph summarizing our findings (Wood, Vannette, and Andrews 1979).

Primary data were collected in interviews with a simple random sample of 146 Navajo heads of household or their spouses in the former Navajo-Hopi Joint Use Area. No Hopi households appeared in the sample. Interviews were taken also with Navajo Chapter Presidents, Grazing Committeemen, and Tribal Councilmen from chapters and districts that overlap the FJUA. A continuous area sample in the White Cone area was selected for temporal control and for information about livestock operations beyond the household and camp. Interviews in the random sample and continuous area, and with chapter officials took place in October and November of 1977. Tribal Councilmen were interviewed in Window Rock in January of 1978. All interviews, with the exception of those with chapter officials, were taken by bilingual Navajos.

The Livestock Reduction

A 1973 Bureau of Indian Affairs study established a stocking rate of 16,278 sheep units year long (SUYL) for the FJUA, although the potential was as high as 140,000 to 160,000 SUYL (Bureau of Indian Affairs 1973). An estimate of current holdings at 120,000 SUYL formed the basis for a five year plan of reduction to one-half of the 1973 stocking rate. One-half of this figure, 8,139 SUYL, was to be allotted to the Navajo residents. More than 124,000 SUYL had been purchased by May 1978, and the target estimate of holdings had been increased to more than 160,000 SUYL.

Reduction at the time of field research was accomplished by incentive payments on a geographically rotated schedule. Reduction was officially completed in the White Cone area. When reduction in the latter area was nearing completion, a campaign of letters and site visitations was stepped up to encourage people to sell before the voluntary period was over. Along with the reduction, a program of land restoration, water development, and cross-fencing was initiated.

Land in the FJUA was partitioned equally to the Hopi and Navajo on February 10, 1977. A moratorium on construction and improvements was formally established in 1972, and between 1972 and 1977 livestock impoundment and range-riding were important issues. The freeze was officially lifted on the Navajo side in 1977, and livestock permits were being re-issued in the White Cone area on a limited basis.

So, in the fall of 1977, when most of the data discussed here were collected, several interrelated issues were facing the residents of the area: livestock reduction, land restoration and cross-fencing, impending relocation, and a moratorium on construction. Compensation for the loss of livestock was a one-time cash payment; there were no mitigating measures.

By the end of January 1980, 160,222 SUYL had been purchased.² Calendar year 1978 marked the end of the incentive program. Since that date there have been three sales a month, rotated among the reduction camps, where inventoried livestock are purchased at the average southwest market price. Unpermitted livestock are still impounded if they are found on the open range. Owners have the option of paying a fine and reclaiming the stock, or selling them at the reduction camps.

The Bureau of Indian Affairs is encouraged by the progress of their range management project. For example, range recovery has been excellent in the White Cone area; by the fall of 1980, the Bureau is expecting that up to 13,000 SUYL will be permitted there.

In 1979 the U.S. District Court ruled that Navajos on the Hopi side awaiting relocation could be re-issued livestock permits for up to one-half of the 1973 carrying capacity. The Bureau of Indian Affairs has been issuing permits for up to 10 SUYL per person to families awaiting relocation, for nutritional needs. Through December 1979, 66 permits for 1,415 SUYL were issued to Navajos living on the Hopi side of the partition. On the Navajo side, as of the same date, 157 permits for 3,780 SUYL were issued.³ Fencing has proceeded apace. In 1977 cross-fences were built for range management purposes only. Now the Bureau is asking families and family groups to locate the areas they want isolated. Finally, there are some 300 head of cattle being held for 40 families on the Navajo Tribal Ranch at Chambers, Arizona.

The many impacts of these actions have had serious psychological as well as economic effects on the people of the area, based on their own evaluations and our conclusions (Wood et al. 1979). A recent study, conducted in the fall of 1979, shows that there has been little change, as far as people's perceptions go, since our study two years earlier (Schoepfle et al. 1979).

The livestock reduction program has been successful in the short-term, from a range management perspective. But from a human point of view, it has been a tragedy, due chiefly to legislative short-sightedness and lack of understanding of the role of livestock in the Navajo local economy.

Local Economy

Recent reports at the tribal or land management district level show that Navajo per capita income is significantly lower than the United States at large. This deprivation is largely the result of the poor state of economic development on the Reservation. For example, a study published in 1975 (Wistisen, Parsons, and Larsen) estimates that about 90 percent of every dollar of household income leaves the Reservation in the first round of spending.

When the economy is viewed from the minimal units of production and consumption, the households, one of the typical responses to these economic problems has been to make use of many sources of income and to pool resources so that the risk is spread over several alternatives and several people. A recent analysis of this multiplicity and variety in the FJUA had isolated eight patterns of allocation of productive resources among 10 income sources (Wood 1980). The necessity for pooling resources and "helping out" leads to and is reinforced by a strong ethic of generosity, particularly among relatives. Cash is usually in short supply, and outflows for consumer goods, mostly for food and transportation, strain most household budgets.

Of those permanent household members in the sample who were 16 years of age or older, 23.7 percent were employed at the time of interview. Approximately twice as many males as females were employed. The proportion of persons in this age category who were employed had apparently increased since the 1970 census; however, employment levels for the FJUA in 1977 were still not as high as they were for the Navajo Reservation as a whole in 1970 (29 percent) (U.S. Bureau of the Census 1973). Sixty households, or about 40 percent, had no one employed.

A slight majority was employed in private enterprise, frequently in railroad work. A little over two-thirds of the persons had jobs out of the FJUA, and almost 40 percent of the jobs were off-Reservation.

The median household income for the period, January through October or November 1977, was \$5,860 in round figures. Median monthly income for the same period was \$575. Income figures are inflated because of sales in the livestock reduction program, which accounted for 18.1 percent of the total aggregate income for the sample.

Some form of unearned income, including social security, retirement, and scholarships, was received in 71.2 percent of the households. But in terms of cash contribution, unearned sources contributed a little less than 15 percent of the total aggregate income. Most households (67 percent) also received surplus commodities, and a little less than one-half of the households farmed in 1977.

Income from livestock contributed 29 percent of the aggregate in 1977. This figure, too, is inflated by sales in the reduction program. Evidence from several sources suggests a comparable figure, at least 25 percent, for the pre-reduction period. However, in the pre-reduction period, most (perhaps as high as 44 percent) livestock income came from home consumption (Wood et al. 1979:98-100).

Livestock Economy

Although almost all households owned livestock--over 90 percent prior to reduction--most herds were small, and inequality in livestock wealth was marked:

". . . 50 percent of the households owned only 10 percent of the sheep and goats, seven percent of the horses, and less than one percent of the cattle" (Wood et al. 1979:78-79). Median livestock numbers were estimated at 34 sheep and goats, one cow, and three horses, respectively.

Navajo livestock owners are not, for the most part, engaged in commercial ventures (Aberle 1969, 1978, Wood et al. 1979). Livestock are practically the only form of capital asset open for investment by rural Navajos, but livestock are not typically held until their market value exceeds their productive value, like conventional disposable assets (cf. Doran, Low and Kemp 1979:42); most production is for consumption and non-market exchange.

When livestock production is primarily for consumption, wealth may be accumulated without the usual market conversion (Barth 1964, Ingold 1978). This is because the assets are self-reproductive. Since livestock are a source of wealth as well as food, consumption and sales are kept to a minimum because both liquidate assets (Doran et al. 1979, Ingold 1978). Thus, Navajo animal husbandry is analogous to investment in a "savings account". Many persons interviewed in the FJUA explained their holdings in this way.

The history of the Navajo livestock economy from the time livestock were introduced to the Navajo confinement at Ft. Sumner, through the subsequent expansion of land, livestock, and people and the first livestock reduction of the 1930s and 1940s, up to the present day has been documented well in a recent paper by Aberle (1978). Navajo economic history parallels in many ways the experience of pastoralists in the colonial and post-colonial eras elsewhere.

Among the Navajo today, livestock are used for food, exchange, trade, income, for credit, security, transportation, and as a means of survival for the unskilled and uneducated. People help out in ceremonies with sheep to butcher, and give gifts of livestock to singers (medicine men) for their services. Livestock are used to teach responsibility and a way of viewing the world. Livestock activities require the help of others, so they come to symbolize the values of cooperation and generosity. Hence, livestock are a vital part of the social and cultural fabric as well as economic goods.

If livestock are of such importance, why do the Navajo and other pastoralists overstock their range to the point of environmental degradation and losses in production? A common answer to this question invokes the myth that pastoralists are irrational and too emotionally attached to their animals to market them (Livingstone 1977). In reality, the problem today is that the carrying capacity of the land does not usually set the upper limit to the expansion of herds. The reasons why this is so are complex and intertwined.

The only clear economy of scale in traditional pastoralism is: the larger the grazing area, the ". . . lower the risk that at any time grazing will be unavailable anywhere within the. . . boundaries" (Livingstone 1979:368). Pastoralists, then, have tended to expand their area, and their numbers -- both livestock and human (cf. Aberle 1978). At the same time, grazing rights are typically held in common, while livestock continue to be individually owned. Competition with other groups and the availability of forage and water defined the scale in the past. Today most of the world's pastoralists cannot expand their range further, and in many instances their range has been drastically reduced.

Confinement of communal range coupled with individual ownership of livestock is an important contributing factor to overstocking (Jahnke and Ruthenberg 1976, Baker 1976, Adams 1976, and Livingstone 1977). In reference to East Africa, Jahnke and Ruthenberg put it this way:

The carrying capacity does not, however, constitute a binding limit for the individual pastoralist since land is common property. As a rational man he will tend to maximize his share from the common land in favor of his private herd. This, however, means that as long as there is such a discrepancy between the responsibility for the grazing and that for the cattle there is an inbuilt mechanism for overstocking with consequent destruction of the environment (1976:122-123).

Land is not privately owned today on the Navajo Reservation, although livestock are held individually (Wood et al. 1979:67, 76-79). There are customary use areas, with livestock permits -- first issued as a range management measure in the 1930s and 1940s -- acting as informal de facto title. Total permitted livestock by household in the FJUA was about one-quarter of the estimate of stock held before reduction in our sample (Wood et al. 1979:84), and the land, according to a 1973 Bureau of Indian Affairs survey, was seriously overgrazed. Even taking into account that about 45 percent of the persons interviewed said that their livestock were grazing on someone else's permit, the discrepancy between livestock permitted and livestock held was probably considerable. Customary use rights together with individual ownership must contribute to over-use, if only by keeping stock on the land so that use rights can be perpetuated (cf. Aberle 1978:65).

But there is another, perhaps more important, reason why herd sizes are not bound by the carrying capacity of the land: Where animal husbandry is primarily a subsistence enterprise, and there are few or no alternative investment or income opportunities, it is perfectly rational to optimize the stock to population ratio rather than the stock to land ratio (cf. Livingstone 1979). In other words, it is reasonable to attempt to increase the size of one's breeding herd to feed an increasing population; especially if there are few or no alternatives. Among the Navajo in the FJUA, sheep and goats are most commonly butchered for food; cattle and horses are only rarely eaten. The estimated median number of sheep and goats held prior to reduction is 6.6, or nearly 7, per person. The yield to consumption suggested by this figure would be quite low, at least for a large portion of the population. Since there are practically no investment opportunities for people in the FJUA, and few income alternatives, it is not surprising that they are interested in increasing their herds.

Livestock are a store of wealth; they confer security, prestige, and status, and this, too, helps to explain pastoral husbandry techniques leading to an increase in numbers (Doran et al. 1979). There were many comments by persons interviewed in the FJUA that directly or indirectly indicate that security and prestige are important reasons for having stock. Because of the pivotal role of livestock in rural Navajo culture in the past as well as today, there are also many other social reasons for increasing livestock; for example, their role in reciprocal exchange. The economist Livingstone, in his review of the question of pastoral economic rationality (1977), agrees that these are rational motives for increasing numbers, but he thinks that they do not explain overstocking because the same motives could be met with better quality animals. However, in view of the two reasons for over-use cited above, and in the absence of extensive market conversion, quality seems mostly beside the point. Livestock production for consumption is a matter of numbers.

Rural Navajo livestock owners are involved in production for the market, but market exchange does not appear to have as much influence on capital formation as production for consumption. Livestock operations intersect with the market in several ways: lamb, kid, and calf crops may act as collateral for credit at trading posts; livestock are sold to individual buyers and at auctions; and wool is marketed. There are some data that suggest that if the local rural Navajo livestock economy is analyzed in market terms, involvement in animal husbandry is still, on the average, a reasonable activity.

A detailed study of livestock management and returns to labor in seven Navajo camps at Shonto in 1975 and 1976 (Russell 1979) shows an average net profit (including income in kind) of \$0.68 per camp man-hour, with a range of \$0.39 to \$1.30, for sheep and goats. Returns for cattle were more than twice as large.

An agricultural economic study of livestock operators in the FJUA in 1975 estimated the net return to the factors of production to be negative \$2.80 for sheep and goat operations with less than 150 breeding animals and no cattle (Stubblefield and Campbell 1975), which is the typical kind of operation in the FJUA (Wood et al. 1979). But in that same year, it would have cost an average of \$16.25 to buy an animal on the market (Stubblefield and Campbell 1975) and, based on 1972 market prices, it would have cost about \$21.00 to \$27.00 for a comparable amount of mutton (Natwig 1972).

There are problems with some of the assumptions in the Stubblefield and Campbell study, such as the amount used to estimate corral depreciation and the apparent neglect of consumption (income in kind) in calculating the value of net production. Nevertheless, if we assume that the value or benefit of an average sheep or goat is \$16.25, the 1975 market value, and assume with Stubblefield and Campbell that the cost to raise a breeding animal is \$12.22, and that these benefits and costs and discount rate are constant over the four year productive lifetime of the animals, the benefit-cost ratio is greater than 1, 1.3 to be exact.⁴ If we make the same assumptions and discount the difference between the benefits and costs at zero percent over the productive lifetime, the net present worth of an average sheep or goat was \$16.00 in 1975, not very much different from the then current market value (a discount rate of zero percent seems appropriate for an estimate of an essentially negligible opportunity cost of capital).

Impacts of Livestock Reduction

For an observer with even a modest appreciation of the varied roles of livestock in the local Navajo economy, the potential for disruption and suffering in a program of destocking is obvious. It should be all the more obvious because the effects of compulsory livestock reduction on the Navajo in the 1930s and 1940s are well-documented (Aberle 1966, 1978).

Like the earlier program, the present one is externally controlled and intensive (Aberle 1978); a reduction of 160,222 SUYL to date. Unlike the earlier one, the present program affects only a fraction of the Navajo population, between 11,000 and 12,000 persons in 1976. However, the effects are compounded by the land dispute and its proposed resolution. The enabling legislation gives those responsible for carrying out the reduction only the resources and authority to reduce the stock, fence and monument the boundaries, and restore the range, and provides no mitigation resources; and in addition, there is the uncertainty of relocation for many of the

people affected which intensifies their plight.

The Bureau of Indian Affairs has attempted to carry out the law as humanely as possible. For instance, the rotational scheme of reduction, restoration, and re-permitting area by area has proceeded as quickly as possible. Nevertheless, the hardships have been numerous and the impacts far-reaching.

Persons in the household survey indicated four principal impacts of the stock reduction program: 1) economic hardship (37.7 percent of the mentions); 2) starvation and inadequate diet (19.8 percent); 3) loss of their way of life and traditional values (18.2 percent); and 4) loneliness and depression (15 percent). Tribal officials interviewed reiterated these perceptions.

The majority of the people in the sample (79.9 percent) disapproved of the fencing program, most frequently citing restriction and confinement of people and livestock as their reasons. Scepticism characterized the perceptions of the people and their representatives concerning the benefits of land restoration. Several people in the household survey (27.9 percent of the responses) expressed concern for what they perceived as deleterious effects of land restoration, such as injury to medicinal plants and the environment. Most tribal officials expressed concern about the overall planning process.

The general sequence of interlocking events leading up to this state of affairs can be reconstructed confidently because reduction had been going on in some areas for 17 to 18 months and was in varying stages of completion in other areas at the time of our fieldwork (Wood et al. 1979:226-230). Also, a continuous area sample of household and camp interviews was taken in the area where reduction began, and several questions about livelihood before reduction were asked.

Overgrazing and underdevelopment in 1976 made the offer of 150 percent of the market price for livestock plus a pro-rated transportation benefit attractive to persons who needed cash to purchase consumer goods, and to those who wanted to get a good price for their culls and lambs, kid, and calf offtake. The constant reminders that their livestock would be impounded if they were found in violation of the law persuaded many people to sell as the reduction campaign was stepped up. The reminders came in the form of letters, site visitations by reduction personnel, and actual impoundment of livestock.

Sales of livestock began to reinforce the necessity for further sales, in a vicious circle. As more livestock were sold, other important uses of livestock such as home consumption, credit collateral, and wool sales declined so that more cash was needed, and the cash came from the sale of more livestock. For many people the balance was so precarious that it did not take much to trigger the process.

People who had the skills and opportunities for employment looked for work, usually away from home; the unskilled, old, and poor had to depend on welfare and relatives. Some people moved in with relatives or tried, often unsuccessfully, to move part of their herd in with their relatives.

Reciprocity in husbandry declined, and consumer goods replaced mutton at ceremonies as people had fewer stock to butcher. Reciprocal obligations became more difficult to meet, and the role of women, particularly older women, in animal husbandry was threatened. People's diet became deficient in protein and many people found themselves "hungry for mutton". The burden of reduction resulted in widespread

depression, usually expressed as loneliness and heartache. Illness, and even death, is reported to have ensued.

There is no good evidence that the situation is ameliorating in any significant way, particularly among the Navajos awaiting relocation. In fact, the study done in the fall of 1979 cited earlier indicates very little change in the perceived impacts of the program.

CONCLUSIONS

Short of returning their livestock, which is obviously what most people would prefer, mitigating measures must deal with both short- and long-term problems generated by the livestock reduction program. Short-term measures require attention to immediate needs: food, cash, and health services. Longer-term measures will have to deal with complex problems of social and cultural change that would have to include, at a minimum, some kind of development program.

There is first of all a need for integrated, evolutionary planning involving the institutions with their needs and resources and the people affected and their needs and resources in tandem, and a concept of development that is oriented toward personal well-being and not, exclusively, toward increased production and consumption.

Many development projects among pastoralists assume that improving the quality and value of stock through selective breeding, range management, feed lots, water development, disease control, and the creation of markets will induce pastoralists to substitute quality for quantity (Doran et al. 1979:44). Most such projects have not succeeded, or they have actually aggravated over-use. The first, and foremost, reason why the same development model is pursued time and again, despite numerous failures and half successes, is the lack of understanding of the livestock economy of pastoralists on the part of development planners and technicians. Smith and Martin (1972) build a similar case for comprehending the economics of non-Indian cattle ranching in Arizona.

However, there are other important reasons for pursuing large scale, capital intensive developments such as a livestock management plan. High visibility projects have greater initial political payoff and prestige for the donor and recipient governments (Baker 1976). Sometimes there is political pressure for large scale, capital intensive projects in order to increase production for export, at the expense of equity and balance (Adams and Howell 1979). A third problem common to many development projects is the lack of coordination of effort, and the lack of involvement in the planning process of the people affected.

Over-use of the range is and will continue to be a problem on the Navajo Reservation unless management plans involve participation at the local level, provisions are made for investment alternatives, organizational changes in land use are initiated, and an integrated, equitable, evolutionary, and broad spectrum plan for sealing the leaks in the economy and decreasing dependency on the federal and tribal governments is implemented. There are problems in developing the livestock or agricultural sector alone. These projects eventually become capital intensive, even if they do not start out that way, since the marginal return to labor is limited, and the condition of the poor is likely to be aggravated further as more land is expropriated to create an economy of scale when no more capital is forthcoming.

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NOTES

1. Some of the material in this paper appears in: A Sociocultural Assessment of the Livestock Reduction Program in the Navajo-Hopi Joint Use Area: A Summary, by John J. Wood. The report was submitted to the Senate Select Committee on Indian Affairs on May 7, 1979.
2. The information on the progress of the livestock reduction program since 1978 was obtained in a personal interview with Mr. Lynn Montgomery, Flagstaff Administrative Office, Bureau of Indian Affairs, on February 28, 1980.
3. Information on re-permitting was obtained by Michael J. Andrews in a personal interview with Mr. Percy Deal, Navajo-Hopi Land Dispute Commission, on March 7, 1980.
4. For the methods of calculation see Gittinger (1972:98).

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