

Great Lakes Deer Group
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A DEER RANGE MANAGEMENT PROGRAM

By

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The subject of deer range management has been considered for many years by many deer workers. Various facets of the subject have been explored in some detail, others have remained on the drawing board for one reason or another. The fact remains that the need for an action program of range management is acute. This is especially true over the northern range of the white-tailed deer, where the tendency to concentrate or "yard" during the winter months is most pronounced. It has been generally accepted that the problems created by this grouping of deer on their winter range has been the one most important factor limiting the numbers of deer present on the total range. This, of course, is further complicated by a general under harvest of the species traditionally found in most of the major deer states. Populations over the carrying capacity of the range have become the rule rather than the exception. This has resulted in a generally reduced ability of the range to support deer.

Wisconsin is probably typical of the several states represented in this group. Although the factors involved in deer range problems may be different, the sum total is roughly the same. I would like to use Wisconsin's conditions to illustrate this subject as the information needed is at hand. As stated before, this can probably be applied to other states, at least to some degree.

Wisconsin Deer Range

The gross area of Wisconsin is approximately thirty-five million acres. It is estimated that about sixteen million acres are forested deer range, of which about ten per cent, or one million six hundred thousand acres are winter range.

Approximately 4,500,000 acres of forest land are in public ownership. This represents nearly 30% of the total deer range. There are about 475,000 acres of winter range in public ownership. It is fortunate that most of the public ownership lies in the northern part of the state where the range problems are most acute. Over 80% of the northern winter range is either in public ownership or in large blocks of private ownership which has a potential cooperative management value.

A second category of winter deer range, arbitrarily called "secondary winter deer range," has a value to deer. This is the strip of range immediately adjacent to the yards themselves that is used rather extensively by deer during a great share of the winter. Observations have set this class of range at a one-half mile peripheral strip. An average of about 20% of the total range falls in this category or an additional 950,000 acres of public lands. This gives a total of 1,425,000 acres of public lands classed as either primary or secondary winter range.

There are an estimated 750 deer yards in the northern counties in Wisconsin. Approximately 90% or 675 yards are presently in either poor or medium condition, based on 1956 winter deer range surveys.

Previous Attempts to Solve Range Problems

Several attempts have been made through the years in Wisconsin to solve deer range problems. They are:

1. Artificial feeding:

Artificial feeding of deer in winter yards was started in Wisconsin in 1935. In 1943 the legislature enacted a law increasing the license fee by 50 cents. The law provided that these funds be earmarked for deer feeding and deer yard acquisition. A total of 27,000 acres of deer yards has been purchased at a cost of \$270,000. A total of \$650,000 has been spent for artificial feeding since 1935.

The results of this type of "management" are widely known. Artificial feeding offers no solution to the winter food problems of deer. It is merely a stop-gap measure that causes further range deterioration if continued for a period of years.

2. Liberal season regulations:

The traditional deer season in Wisconsin is a buck season. Several attempts have been made to reduce the browsing pressure on the deer range through liberal deer seasons in which all deer are legal game. These seasons occurred in 1943, 1949, 1950, and 1951. An estimated total of 585,000 deer were killed during the four seasons. About 456,000 of these were killed during the latter three successive seasons.

Only limited benefits resulted from the liberal harvests. The most noteworthy were in the central counties near the centers of population. Good reductions were realized and range recovery was spectacular. Generally, however, the reductions in the most critical range areas in the north were negligible. At present, only five years after reductions in the central counties, the failure of a mast crop can mean trouble for the herd. The northern range, of course, had very little recovery during these years.

3. Experimental range management:

The deer herd was probably at its lowest point in 1952, following the last liberal season. At this time monies were allocated for experimental range improvement work on the assumption that, with help, the range could recover at a faster rate than the deer herd. This group observed some of the results of the work at the Wisconsin meeting during the winter of 1954. It was soon obvious that range management measures could not be successful unless the herd is reduced and held in check until browse species have had a reasonable start toward healthy growth.

During this three year period, management techniques were worked

out which will undoubtedly be successful if attempted under favorable conditions.

Policies Relating to Deer Herd and Range Management

In 1952 the Wisconsin Conservation Commission adopted a policy of deer management which states, in part:

"It is the policy of the Commission to encourage and promote every proven game management practice which will assure a larger surplus of deer in all good range throughout the state. This means that within budgetary limits and consistent with the multiple-use principle for management of public lands, every effort will be made to coordinate the harvesting of mature, low value, or off-site timber so it will subsequently improve the range for deer and especially to manage the winter deer yards and adjacent territory so as to increase their carrying capacity. In this respect, we favor the maintenance of more winter deer yarding areas to assure such planned management. We continue to embrace within this policy a program of deer herd reduction where agricultural damage by deer is involved, both to reduce such losses sustained by landowners and to reduce claims for payment of damages."

In 1948 a memorandum of understanding was entered into by the Wisconsin Conservation Department and the U. S. Forest Service which states, in part:

"It is mutually agreed that since the Forest Service is responsible for determining the proper use of the forage on the national forests in the interests of watershed protection, wildlife welfare, timber production, and other land use benefits, the department agrees to assist the Forest Service in the mutual determination of the carrying capacity of said lands in terms of game numbers.

In cases of overstocking of big game, the department will do all within the scope of its authority to balance the numbers of animals on such overstocked areas to the estimated carrying capacity of the habitat involved. When the overstocked or problem area has ceased to be a technical matter, the department and Forest Service will recognize it as such and mutually try to solve it on that basis. Whenever the need is evident for additional forage on problem areas, the regional forester will, in so far as possible, inaugurate practices designed to stimulate the growth of forage by such methods as are deemed advisable."

Subsequent directives have been issued by the director of the Conservation Department which stipulate that multiple-use principles of land management will be practiced on all state owned lands through the development of coordinated management plans by all of the resource management divisions. Agreements have been drawn for the cooperative management of county owned lands under the forest crop law which call for the same recognition of highest land use. A field which is still largely untapped is the large acreage of private industrial forest lands. Preliminary contacts with these companies indicate a generally favorable response.

From the above it can be seen that the practice of multiple-use principles of land management on all public lands is quite young in Wisconsin. The last five years have shown the greatest growth in acceptance of these principles. At present, practically all of the public lands in the state are managed under the multiple-use principle.

Management Plans

Several steps have been followed in the development of deer range management plans. They are: 1. a general appraisal of the winter deer range in the state, delineating those general zones where range problems presently exist and will probably continue to have a problem potential; 2. the definition of areas of similar types of deer range for range survey purposes and also for the preparation of specific unit management plans; and 3. the delineation of individual deer yards to pin point problems of a specific nature.

The end result will be a general management plan for the entire state, an "extensive" type plan for each management unit, and an "intensive" type plan for each deer yard.

For purposes of discussion, certain range management practices and techniques can be separated into extensive and intensive types. This is an arbitrary distinction because under actual practice, there may be considerable overlap between the two.

Extensive Range Management

As implied, extensive range management is that which can be applied over large acreages. We have proposed that at least one deer management unit (160,000 to 400,000 acres) would be involved in an extensive management plan. This is considered the "basic" plan for range development. It will usually involve those practices and techniques that are already a part of the normal management of the forest land. At this stage of planning, any deviation from the existing programs of the forest administration should be made. Following are the techniques which have direct bearing on the condition of the deer range and which would be considered under the unit plan:

1. Timber sales:

The basic tool for the management of the deer range is the timber sale. The most management can be realized for the least cost. Each public forest agency has or is in the process of completing timber management plans. The general scheme of these plans is a rotation of cutting which provides for the sale of merchantable timber from the entire forest unit every cutting cycle (usually a 10 to 15 year period).

The game manager is interested in the 30% of the forest area which comprises the primary and secondary winter deer range. He, therefore, is interested in seeing that the schedule of cutting in this area is fairly uniform rather than having years of heavy cutting followed by years of nothing. He is further interested in the harvest methods to be

employed in each forest type. For instance, the mixed conifer swamp makes up the bulk of the primary winter range. It is in this type that the coniferous cover is the important element. Cutting practices must be so designated as to prevent the over cutting of coniferous trees to the point of destroying cover. Cedar is a critical species in this type. Deer populations have precluded the growth or reproduction of this species for years and will probably continue to do so in the foreseeable future. Very conservative cutting specifications are imposed for this species to assure its perpetuation for as long a period as possible.

Balsam fir, another important component cover species of deer yards, does not fit in the same category. Fir is a prolific seeder and regenerates well in many yards. So well, in fact, that it is a problem in itself in some areas. Balsam cutting can be restricted or encouraged, depending on the local situation.

In certain yards where the cover requirements are adequate, it may be desirable to promote the establishment of palatable swamp hardwood species in limited quantities. This again would be considered in setting up the sale plan and the cutting specifications.

The peripheral areas of secondary winter range is where the timber sale can be the most beneficial in providing browse. For the most part, we are dealing with hardwood species which are fast growing and lend themselves to management better than the slower growing swamp conifers. Forest management on a sustained yield calls for conversion to or perpetuation of an all age stand. The theoretical application of this type of management to the needs of the deer is good. In essence, we are providing a continuing source of new browse over the entire rotation period of the stand. Certain practical considerations in cutting methods may be desirable, depending on the local situation. Group selection may have advantages over straight selection, etc.

It has been observed in many peripheral stands that the preservation of small isolated patches of coniferous cover extends the use of this range considerably longer into the winter months than if it is a hardwood monotype. Deer use this cover during periods when weather conditions are not too severe. The value of these can be emphasized as the forester is marking the stand for cutting. The management plan should indicate those stands which contain such small patches which are to be left.

Certain criticisms have been raised over the use of timber sales as a measure for providing immediately available browse during the winter months. Sale specifications in and near deer yards should call for delimiting cutting dates to the critical winter period with the express provision that they continue until a certain date to assure that cutting is not stopped too early. Some have indicated that this is the same as artificial feeding. It is my contention, however, that under a planned system of timber harvest, providing tops from cutting is just another means of raising the carrying capacity of the winter range. It will attract deer out of the swamps and relieve the browsing pressure on the foods within the swamp yard. It will also serve to relieve the total browse pressure on the reproduction on the peripheries of the yards. Well planned

sales will certainly result in an increased capacity of a unit of deer range to support deer.

2. Timber stand improvement:

Certain silvicultural practices for improving stands of timber are coming into more use each year. All are designed to improve either the present growing stock or the reproduction. Special consideration to increasing the regeneration should be made in and adjacent to deer yards. Emphasis should also be placed on winter cutting for the reasons outlined under timber sales above.

Some forest agencies may be able to more easily justify stand improvement practices if deer range improvement is also considered. Certainly a pro rata share of costs can result in cheaper benefits to each.

3. Slash disposal:

Some states have slash disposal laws that are enforced to reduce fire hazards, etc. This normally means an extra operation for the logger. In Wisconsin no specific height of slash is called for. Rather, distribution along trails or roads is controlled. This method of enforcement, or the other of requiring disposal to a certain height, offers potential browse for the deer. This again is an operation which can be done during late winter to make those tops, which are normally out of reach, available to the deer.

4. Access construction:

Adequate access is important for a successful timber management program. Since the timber sale is the basic tool of deer range improvement, the wildlife manager is interested in access. He also has the problem of getting the deer hunter into the most inaccessible spots, so his is a double barreled interest. Direct participation in the management program by actual construction of the roads has been accomplished in several areas in Wisconsin. This is especially true in the smaller forest management units where sales tend to be smaller and less frequent. Regardless of who foots the bill, adequate access is important. Another successful practice that has been tried rather widely is the establishment of "parking lots" along travelled forest roads at the junction with each logging road or trail. We have found that hunting pressure will increase in better than direct proportion where these facilities are provided and maintained in a reasonable state of repair. Anything that gets the hunter into the remote areas and keeps him there is a part of management.

5. Coniferous planting:

Although the major portion of the potential planting sites has been planted, a certain amount of coniferous planting continues each year. This is an invaluable tool for the maintenance and extension of coniferous cover on the winter deer range.

Management plans should definitely include those areas in which more coniferous cover is needed. In some cases topographic and site factors may preclude planting entirely. In others, the cost may have to be prorated between the forester and game manager. The potential use of this technique has not been fully explored in Wisconsin. It will be an important factor, however, in the long range improvement program.

Conversely, the forester may be ready to plant some openings that would be more useful if left open or converted to hardwood browse production. The classification of all openings in the management plan to their highest potential use will assure the coordination of all forest plantings on the winter range.

Intensive Range Management

Intensive management can normally be considered a supplement to the extensive type described above. This work would generally not be done as a normal part of the timber management programs. It consists of practices that would be specifically designed to improve the range for deer, although there would accrue certain secondary benefits to the timber management program. This type of work will also be more costly; consequently, the planning must be in detail and the work so placed as to realize maximum benefits. Following are some of the practices that would be considered intensive management:

1. Forest thinnings:

Forest thinnings as an intensive technique differ from the timber stand improvement practices described above. They would normally be carried on in stands without high merchantable value. No saleable products would result except in certain cases where a chemical wood or hardwood pulp market exists. In Wisconsin we have large acreages of young (20-30 years old) even aged hardwood stands, densely stocked and producing no deer browse. Cultural thinnings in these stands produce terrific amounts of browse from the tops for immediate consumption. Future benefits are realized from the sprout and seedling reproduction which follows cutting. Silvicultural benefits are determined by the intensity of the cutting.

Experimental work has shown that, to be most productive of future browse, thinnings must be heavier than those in which timber production is the sole consideration. This is justifiable on the primary and secondary winter range under a multiple-use management program.

It has been estimated in Wisconsin that approximately 15% of the secondary range is composed of this timber type and age class. Costs for the work have ranged from \$10.00 to \$20.00 per acre depending on the degree of cut and the accessibility of the stand. It is estimated that browse produced by this technique will be available to deer for at least a seven to ten year period. Browsing, of course, would lengthen this period by keeping it trimmed and in reach of the deer.

2. Browse cuttings:

Browse cuttings are differentiated from forest thinnings by the degree of cut. They are clear cuttings made solely for the purpose of producing deer browse. They are especially effective in the more palatable browse species which have little commercial value and sprout well. Mountain maple, red maple, and cherry are good examples. Experience has shown that browse cuttings close to the edge of the deer yard are most beneficial. The pattern of cutting should be such that an extensive dense tangle of sprouting is not produced. Deer seldom utilize the browse in the center of dense patches. Long narrow strips are best from the standpoint of utilization.

3. Disking:

Disking has proven to be a cheap effective method of producing new seedlings and sprouting, especially in understocked stands or openings. Many openings are so heavily sodded as to preclude the establishment of reproduction even though a seed source is present. The reversion to sod has probably been hastened in many areas by heavy deer browsing. Once established, this ground cover is quite resistant to successional change. A heavy disk is one of the best tools with which to disturb a sodded soil and prepare a seed bed.

Requisites to successful disking are either a good seed source or the presence of species, such as aspen, cherry, or willow, that are good sprouters.

Disking is also a valuable method of producing or extending coniferous cover, especially in thin stands of balsam fir.

The rule of thumb that we have used is disking within a distance of twice the height of the seed source in open areas. In thinly stocked stands, a coverage of 30% of the total area will prevent the establishment of too dense a stand of reproduction.

Costs for this work average between \$3.50 and \$5.00 per acre, depending on the location, type of soil, existing cover, etc.

4. Herbicides:

The use of herbicides for the production of deer browse in Wisconsin has been limited. Considerable work has been done in Minnesota and Michigan with various herbicides for the purpose of encouraging sprouting. It is a proven technique. This technique undoubtedly has special value in large monotypes where aerial application can be used. Observations in areas where plantation release work has been accomplished through aerial spraying show excellent results in deer browse production.

Harvest

No program for deer range management can ignore the harvest of the deer herd. As stated before, surplus animals over and above the carrying capacity of the range can obliterate attempts at range improvement. It

is especially important when a long range program designed to ultimately increase the carrying capacity is proposed.

It is presently planned to use a unit system of harvest in Wisconsin which will remove surplus animals when and where needed. The eventual success of the range management program will depend on the success of the harvest.

Basic to the success of a harvest program is the development of survey methods by which the carrying capacity of the range and surplus deer can be stated in actual deer numbers. Present plans call for the extensive use of the pellet group count method for estimating animal numbers in conjunction with further development and application of the browse survey discussed last year. These surveys along with the deer registration system (in present use to determine the success of the harvest) should yield adequate information for a successful management program.

Economics

Many factors, both tangible and intangible, are involved in any discussion of the economics of deer range management. It is extremely difficult to determine the actual cost of a program as described herein. Many are indirect costs. Even the direct costs are hard to determine. Much of the cost of planning, for instance, will not show up in increased numbers of deer 50 years hence. The deer may be there, but the actual cost of getting them there will be indeterminable.

We have estimated that the fiscal cost for such a program in Wisconsin will approach \$300,000 a year for at least a five year period. After that time, the annual cost will decline to about half that figure. This is a staggering sum to a cost conscious public. However, this is an effort covering some 475,000 acres of primary winter deer range. We can assume that work on this range will affect an area of some 4,750,000 acres. On this basis, the annual cost over 30% of our total deer range is about \$.06 per acre. This is certainly a reasonable figure for such a management program.

In conclusion, let me state that the above outlined program is by no means the final answer. It is one approach that has been partially tried and proven. Changes will undoubtedly be made in even the most promising aspects. Flexibility in any management program involving wildlife is desirable. Without flexibility, progress cannot be made. If the above material has given you some new ideas or at least stimulated some thinking on new approaches, I will consider our efforts worthwhile.