March 1976

DEER AND REFORESTATION IN THE PACIFIC NORTHWEST

Glenn L. Crouch
USDA Forest Service

DEER AND REFORESTATION IN THE PACIFIC NORTHWEST

GLENN L. CROUCH, Pacific Northwest Forest and Range Experiment Station, USDA Forest Service, Olympia, Washington 98502

ABSTRACT: Deer and reforestation interact mainly during regeneration after wildfire or logging. In interior forests, browsing by mule deer often damages conifer seedlings planted on winter or transitional ranges. In the Douglas-fir region, numbers of black-tailed deer increase dramatically after forests are logged or burned, in response to improved forage supplies. Here, browsing on planted stock in clearcuts lowers forest productivity by reducing growth rates and occasionally contributes to plantation failures. Browsing damage can be controlled by fences or cages, but costs are prohibitive. Amelioration of damage by black-tailed deer could be achieved through long-range planning for concurrent deer and timber harvests, with hunting pressure directed to areas where logging promotes more deer. Thus, more deer can be made available to hunters and browsing damage to reforestation lessened. Such programs would require complete cooperation among resource managers and an intensive, well-planned effort to sell them to both customers and critics.

INTRODUCTION

I have been studying deer (Odocoileus hemionus ssp.) and reforestation in the Pacific Northwest for about 15 years and this is the third, and probably the last, opportunity to summarize my thoughts on the subject (Crouch 1969b, 1974). Except for the work of a few researchers, the supply of new findings to report is low, since research on the topic has declined steadily in recent years. Although I cannot provide much new information on deer and reforestation, I will use the opportunity to discuss the merits of managing deer and forests concurrently, which is the most desirable goal in the wise use of both resources.

But first, why does the topic deer and reforestation command a place on this program? Obviously, the subject must be associated with vertebrate pests, and although I do not consider deer as pests, their browsing on young forest trees certainly is pestiferous.

Actually, in most geographic locations and environmental circumstances, deer reside and reforestation takes place on the same sites with little interference of one with the other. Elsewhere, deer and reforestation conf1ict--when either interferes with management objectives of the other.

Although this discussion will dwell mainly on the pestiferous side of deer, I must emphasize that the favorable characteristics of these animals are much better known and far more important.

DEER IN THE PACIFIC NORTHWEST

Deer occupy virtually all forest land in the Pacific Northwest; but occupancy may be seasonal, transitional, or year-round. Deer are abundant on sites with favorable habitat conditions and scarce elsewhere. Numbers of deer may be high at one time of year as on lower elevation winter ranges and low at other times when deer disperse to summer habitats. Areas with high year-round deer densities can also be found where both summer and winter habitat requirements are present.

Mule deer (0. h. hemionus) occupy the interior forests, and the black-tailed subspecies (0. h. columbianus) populate the Douglas-fir region that includes the west slopes of the Oregon and Washington Cascade Range plus the coastal mountains of these States and California.

Mule Deer in Interior Forests

Mule deer are usually migratory, summering on high-elevation ranges and wintering many miles away at lower levels (Longhurst et al. 1952, Zalunardo 1965). Although these deer feed on natural conifer seedlings, their unfavorable interactions with reforestation usually stem from browsing damage in plantations that lie along migration routes or on winter ranges. The extent of damage depends on many factors including numbers of deer, fall and spring weather as it influences the speed of migration, and amounts and duration of winter snow cover.

Most interior conifer species are subject to browsing, but damage to ponderosa pine (Pinus ponderosa) is of greatest concern. Browsing impacts can be severe, especially where environmental conditions are marginal for survival of planted seedlings. On such sites, frequently on lower elevation winter ranges, deer can determine the success or failure of plantations.

Damage to trees on summer ranges has been minimal thus far, probably because (l) intensive logging there is relatively recent and reforestation is just getting underway, and (2) deer are usually widely dispersed at this season.

Measures to alleviate damage by mule deer include chemical repellents, fences, and cages which are techniques commonly used against deer. Protection can usually be attained by proper application of controls, but effectiveness depends on the time and effort expended.

In some localities, damage has been avoided by not planting trees on winter ranges. Such areas are often poor sites for tree growth and difficult to reforest even without deer interference. Moreover, they are vital to deer and should be managed for deer, not trees.

Black-tailed Deer in the Douglas-fir Region

Deer and forestry interact most intimately in the highly productive forests of the Douglas-fir region. Effects of forest management on black-tailed deer, and deer on the regeneration phase of forest management, have been described by many writers (Cowan 1945, Mitchell 1950, Brown 1961, Taber 1973).

Black-tailed deer can be migratory or not, depending on elevations of their summer ranges. Those animals summering at higher elevations must also retreat to lower areas in winter like mule deer. On the other hand, many black-tailed deer residing in the Coast Ranges or at lower elevations in the Cascade Range and Siskiyou Mountains may occupy the same small areas year-round (Dasmann 1953, Miller 1970). Among migratory black-tails, conflicts with reforestation usually occur on winter ranges because these nearly always include clearcuts planted with Douglas-fir (Pseudotsuga menziesii). But the greatest impacts from black-tailed deer take place where animals are year-round residents. On such sites, plantations may be browsed in winter, summer, or during both seasons (Crouch 1968, 1969a, 1969b). Adverse effects of browsing on individual seedlings are usually less severe in the Douglas-fir region than in interior forests because conditions for seedling survival and growth are generally more favorable. However, far more seedlings are planted and damaged in the coastal forests, and values in lost timber are therefore much greater.

BLACK-TAILED DEER AND REFORESTATION

Deer and forestry researchers and managers agree that black-tailed deer respond predictably to changes in forest cover (Lawrence 1969, Resler 1972). Numbers of animals tend to increase as closed-canopy forests are burned or logged and to decline as forests regenerate and mature. Such increases in numbers of deer are deemed favorable and in the public interest.

It is certain that presettlement wildfires periodically produced ideal deer habitat in most areas of the Douglas-fir region. Large numbers of deer, resulting from these conflagration and also from early-day logging, did not interfere with reforestation because no forest management programs existed. Likewise, natural reforestation after fires or logging did not interfere with deer because deer management was also nonexistent and without management no interference or conflicts could occur.

Present conditions are far more complicated. Today, forest land ownership is both private and public; and public responsibilities are divided among various State and Federal agencies. Deer ownership is not tied to land but assigned to State management departments independent of private and Federal organizations. Each owner or management group may have different but overlapping goals and customers. Thus, the deer and forest resources are no longer free to interact in the natural manner in which they evolved.

If logging increases deer numbers, then from a public viewpoint, logging should be beneficial to deer because more deer are made available for hunting, photographing, viewing, or any other purpose for which deer are wanted. But more deer also cause problems because deer feed on agricultural crops, landscape shrubbery, home gardens, and young forest trees,

and feeding rates are related to numbers of animals (Biehn 1951, Hines 1973, Crouch 1974). Browsing by deer can retard and, in some cases, prevent establishment of new stands of trees after logging (California Pest Control Action Council 1964, Browning and Lauppe 1964, Crouch 1974).

Timber management is now geared to tightly regulated schedules where trees are harvested, planted, thinned, fertilized, and harvested again within relatively short time periods called rotations. Adherence to such schedules is essential to meet requirements of sustained-yield forestry; and delays can lead to reductions in amounts of harvestable timber and thereby impose monetary losses on forest land owners. Where deer substantially interfere with reforestation, rotations must be lengthened or costly protective practices used to prevent interference.

RECONCILING DEER AND REFORESTATION

I once heard a highly respected forester make a statement to the effect that foresters create their deer problems and therefore foresters should solve these problems. This is a logical statement and, given unlimited dollars, could probably be accomplished through caging and fencing. However, such methods are expensive; their widespread use would add appreciably to the cost of wood products.

Foresters need help, and fortunately there is another way to ameliorate deer damage and at the same time practice good deer management. This is to harvest timber and deer on the same areas at the same time, thereby using the additional deer made available by logging and holding animal numbers to reasonable levels. When reforestation is accomplished and deer numbers decline, deer harvest pressure can be shifted to other areas in earlier stages of the harvest-reforestation cycle. Such programs would provide hunters with more animals and also help alleviate reforestation problems caused by excessive numbers of deer.

Throughout the Douglas-fir region, intensive logging produces thousands of acres of new deer habitat each year, and reforestation on many of these acres is subjected to damaging browsing. There is no biological reason why this situation cannot be managed to the advantage of both resources. This is a rational approach but seldom practiced today, even though more intensive procedures including deer removal programs were common in the 1950's and 1960's (Agrons 1965, Ives 1969, Mace 1974). Concurrent harvesting of timber and deer is unpopular, not because of impracticality but because it lacks public understanding and acceptance.

Realistic deer harvests might be achieved in several ways, including special or extended seasons, either-sex hunts, and multiple-bag limits. Unfortunately, each of these requires a degree of public acceptance that may not be attainable at present. This is unfortunate because restrictions on realistic deer management on forest lands in the Douglas-fir region are costing millions of dollars in timber losses and are also depriving hunters of vast numbers of deer. But despite current restrictions, much can be done. Deer and forest managers can work more closely in matching long-range timber sale and deer management plans, especially on public lands. Programs for deer management should be planned at least 10 years ahead to coincide with timber sale planning and should be updated as necessary. Deer harvest programs should be designed for areas where logging will provide new habitat, and hunters should be apprised of the need to shift their effort periodically as a regular part of deer management procedures.

Refinements of unit-management concepts can be used to channel existing hunting pressure to areas where deer are expected to be most abundant and reforestation problems are anticipated. But plans must be formulated and publicized long before problems develop.

Satisfactory management of both resources can be attained only if managers agree on objective and realistic programs to assure that timber and deer are utilized and at the same time protected from overuse. The most difficult task will be to determine use rates that are acceptable to both timber and wildlife managers and their respective clients and critics.

LITERATURE CITED

AGRONS, B.Z. 1965. Progress report--efforts to control deer depredation. Rockport Redwood Co., Westport, Calif. 11 pp. Mimeogr.

BIEHN, E.R. 1951. Crop damage by wildlife in California, with special emphasis on deer and waterfowl. Calif. Dep. Fish & Game, Game Bull. No. 5. 71 pp.

BROWN, E.R. 1961. The black-tailed deer of western Washington. Wash. Dep. Game, Biol. Bull. 13. 124 pp.

BROWNING, B.M., and E.M. Lauppe. 1964. A deer study in a redwood-Douglas-fir forest type. Calif. Fish & Game 50(3):132-147.

CALIFORNIA PEST CONTROL ACTION COUNCIL. 1964. Animal damage survey--1962. Calif. Pest Control Action Counc. Rep. 13 pp. Mimeogr.

COWAN, I.M. 1945. The ecological relationships of the food of the Columbian black-tailed deer (Odocoileus hemionus columbianus Richardson) in the coast forest region of southern Vancouver Island, British Columbia. Ecol. Monogr. 15:109-139.

CROUCH, G.L. 1968. Spring-season deer browsing of Douglas-fir on the Capitol Forest in western Washington. USDA For. Serv. Res. Note PNW-84. 8 pp. Pac. Northwest For. & Range Exp. Stn., Portland, Oreg.

_____. 1969a. Animal damage on National Forests in the Pacific Northwest Region. USDA For. Serv. Resour. Bull. PNW-28. 13 pp. Pac. Northwest For. & Range Exp. Stn., Portland, Oreg.

_____. 1969b. Deer and reforestation in the Pacific Northwest. Proc. Wildl. & Refor. Pac. Northwest Symp. 1968:63-66. Oreg. State Univ., Corvallis.

_____. 1974. Interaction of deer and forest succession on clearcuttings in the Coast Range of Oregon. Proc. Wildl. & For. Manage. Pac. Northwest Symp. 1973:133-138. Oreg. State Univ., Corvallis.

DASMANN, R.F. 1953. Factors influencing movement of non-migratory deer. Proc. West. Assoc. Game & Fish Comm. 33:112-116.

HINES, W.W. 1973. Black-tailed deer populations and Douglas-fir reforestation in the Tillamook Burn, Oregon. Oreg. State Game Comm., Res. Div., Game Res. Rep. No. 3. 59 pp.

IVES, F.F. 1969. Special hunts to control deer and elk damage. Proc. Wildl. & Refor. Pac. Northwest Symp. 1968:91-92. Oreg. State Univ., Corvallis.

LAWRENCE, W.H. 1969. The impact of intensive forest management on wildlife populations. Proc. Wildl. & Refor. Pac. Northwest Symp. 1968:72-74. Oreg. State Univ., Corvallis.

LONGHURST, W.M., A.S. Leopold, and R.F. Dasmann. 1952. A survey of California deer herds: their ranges and management problems. Calif. Dep. Fish & Game, Game Bull. 6. 136 pp.

MACE, R.U. 1974. Wildlife management practices and policies as related to forestry in Oregon. Proc. Wildl. & For. Manage. Pac. Northwest Symp. 1973:197-203. Oreg. State Univ., Corvallis.

MILLER, F.L. 1970. Distribution patterns of black-tailed deer (Odocoileus hemionus columbianus) in relation to environment. J. Mammal. 51(2):248-260.

MITCHELL, G.E. 1950. Wildlife-forest relationships in the Pacific Northwest Region. J. For. 48(l):26-3O.

RESLER, R.A. 1972. Clearcutting: Beneficial aspects for wildlife resources. J. Soil & Water Conserv. 27(6):250-254.

TABER, R.D. 1973. Effects of even-age forest management on big game. Proc. Even-aged Manage. Symp. 1972:59-74. Oreg. State Univ., Corvallis.

ZALUNARDO, R.A. 1965. The seasonal distribution of a migratory mule deer herd. J. Wildl. Manage. 29(2):345-351.