

Economic and Social Implications of Managing Wildlife on Private Land in Montana

Abstract

A study was conducted in Montana to evaluate the potential for wildlife and public recreation on private lands. This is to be used to formulate public policy that benefits wildlife and fishery resources. Data were obtained through a mail survey in 1986 of 526 members of the Montana Stockgrowers Association. Ninety percent of the respondents felt they should be reimbursed for providing recreational activities on private land. Eight percent were presently charging access fees on their land. Fifty-seven percent of the landowners charging access fees had invested in habitat improvement practices. Only 8% of landowners who did not lease to sportsmen were aware of improvement projects being done for the benefit of wildlife habitat. Results indicate: 1) an increase in number of private landowners implementing recreation enterprises on their land, 2) landowners who charge access fees tend to invest more in habitat and management practices, and 3) a need for agencies to further develop management strategies that provide landowners with economic incentives to improve wildlife habitat. Results of this survey should improve communication between landowners, sportsmen, and wildlife biologists.

Introduction

Wildlife populations are threatened by an increasing human population that converts rural land to urban uses, removes fencerows, transforms small farms to large corporations and applies intensive agricultural practices on wetlands and steep hills (Poelker and Buss 1972, Gottschalk 1977, and Pineo 1985). Although the importance of habitat quality and quantity is recognized (Alexander and Kellert 1984), managing habitat for the benefit of wildlife is mostly without economic incentive. Two-thirds of the nation's wildlife and fisheries habitat is on private lands (USDA Extension Service 1986). More than 60 percent of all hunting, fishing, trapping and other related wildlife activities take place on these lands. In Montana, 75 percent of the grazable woodland and range is privately owned (Montana Department of Natural Resources and Conservation 1977).

Owners of private land can obtain assistance in clarifying and achieving their objectives for managing wildlife resources and improving habitat from the Cooperative Extension Service (USDA Extension Service 1986). Land management agencies encourage voluntary conservation

practices, and provide financial incentives and technical assistance for improving habitat (Alexander and Kellert 1984). Despite these programs, management of wildlife populations is not an important economic consideration on most private land. Some landowners recognize that big game animals compete with livestock for forage, trample forage and wet soils, and damage crops and fences. Others deny hunter access to private lands because they perceive the potential for intentional and unintentional vandalism (to roads, fences, and other facilities), spread of noxious weeds, and fear their susceptibility to liability claims.

Property rights in wildlife differ from those defined for domestic animals such as dogs, cattle, and sheep (Kramer 1982). Wild animals are those animals wild by nature, which, because of habit, mode of life, or natural instinct, are incapable of being completely domesticated. With the exception of animals located on lands within the National Park System, the United States usually does not assert ownership in game animals within the various states (Kramer 1982). However, the courts have supported the need for states to regulate the protection, conservation, and the taking of game animals within their borders. Thus, while game animals are not subject to any type of public ownership, they remain under state and federal governmental regulation and control. Generally, there is no property right in wild animals until they have been reduced to lawful possession. Accordingly, to obtain private

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ownership in game animals, one must have them within his actual possession, custody, or control, and this he may do by hunting, taming, domesticating, or confining them in compliance with state and federal law (Kramer 1982).

Property right in a game animal is not determined by its habitat. A landowner does not own the game animals which inhabit his land. However, they do own the exclusive right to hunt them, subject to the right of the state to prohibit or regulate such hunting. Because of this exclusive right of landowners, a state cannot authorize one to enter another's premises for the purpose of hunting without first obtaining the landowner's permission, nor does the possession of a hunting license allow a hunter to enter private property without the landowner's permission. However, a landowner may convey hunting rights to another by the granting or leasing of his property for such purposes (Kramer 1982).

Income has been generated from wildlife on federal lands through the packers, outfitters, and guides and on private lands through both non-consumptive use and hunting rights. The practice of charging access fees for hunting is common in Texas, where hunters paid private landowners \$200,000,000 in 1983. It is less common in states like Montana where federal land management agencies control much of the land (Thomas 1984).

Fee hunting has become an issue in Montana because landowners and sportsmen have differing opinions on legality and ramifications of such activity (Hadley and Carroll 1986). While most landowners desire compensation for providing wildlife habitat and recreational opportunities, sportsmen feel that game animals are a public resource managed through license fees paid by sportsmen's dollars (Hadley and Carroll 1986). Many do not want to pay, through a fee hunting system, for something they already support financially.

The overall objective of this study was to gain a better understanding of the characteristics of fee hunting and other recreational enterprises on private land in Montana and obtain information that will assist private landowners in evaluating multiple-use management alternatives for their land and water. Results have implications for the management of wildlife habitat and populations on private lands. They can be useful in 1) pre-

dicting the future of fee hunting, 2) evaluating current programs of landowner assistance, 3) examining the potential impact of fee hunting on wildlife, 4) improving communication and understanding between landowners, sportsmen, and wildlife biologists, and 5) providing data to aid policymakers.

Methods

In April 1986 a self-administered, mail-back questionnaire (Dillman 1978) was mailed to a random sample of 1,000 members of the Montana Stockgrowers Association. Two weeks later, a second copy of the questionnaire was sent to landowners who had not responded to the first mailing. The stockgrowers are a statewide organization of cattle producers and woolgrowers. They are a diverse group in terms of the number of livestock and the amount of land owned. While some operations consist entirely of private land, others include large acreages of federal land managed by the U.S. Forest Service and the Bureau of Land Management. The stockgrowers were logical cooperators in the study because their rangelands provide habitat for most of the wildlife species that are hunted in Montana.

The questionnaire was designed to collect information on how wildlife values are harvested and how wildlife considerations are incorporated into land management decisions. Specific issues included the popularity and extent of leasing, the characteristics of leasing operations, the number of big game animals on leased lands, whether habitat improvements are being implemented to benefit wildlife, what fees are charged, the economic potential of leasing land to sportsmen, and whether landowners should be reimbursed for providing opportunities to sportsmen. It was felt that this type of information would be useful in developing a strategy to anticipate and alleviate conflicts between landowners, sportsmen, and wildlife management agencies.

Frequency analyses were used to determine how respondents answered each question. In order to compare geographical differences in landowner response, the state was divided into five regions (Figure 1). These regions approximate the resource boundaries that the U.S. Soil Conservation Service uses. Chi-square analyses were used to determine if landowner response differed among regions or between landowners

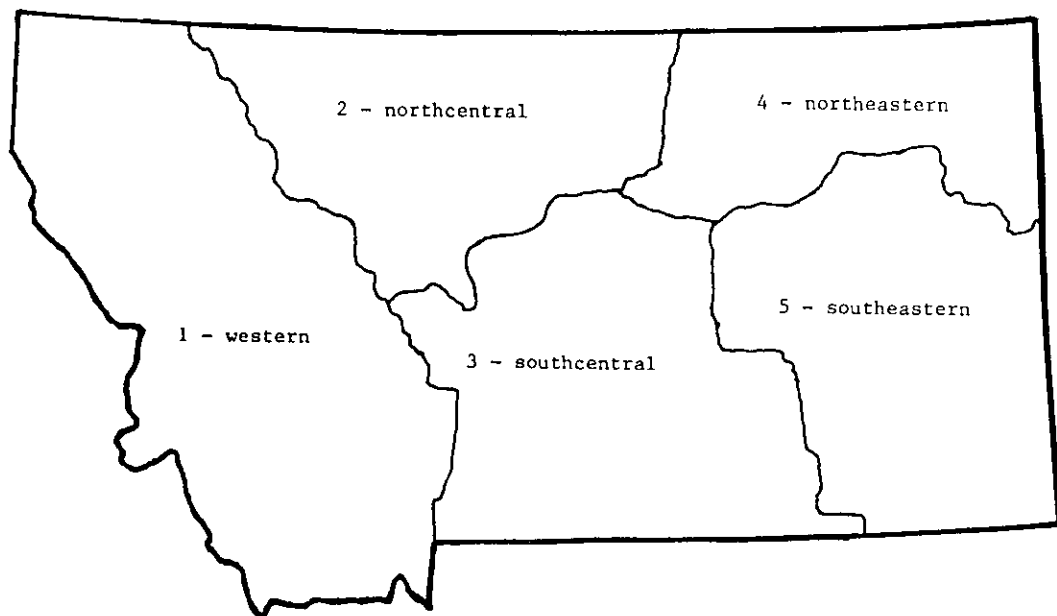


Figure 1. Map of Montana showing five geographic regions used in the 1985 landowner-sportsmen survey (1-western; 2-northcentral; 3-southcentral; 4-northeastern and 5-southeastern).

who do and do not lease land to sportsmen. The probability level was set at 5% (0.05) for all tests. A study of nonrespondents was not undertaken and no evaluation of nonresponse bias is offered.

Results and Discussion

Characteristics of Landowner Sportsmen Leases

A total of 555 questionnaires was returned (55 percent response rate). Twenty-nine questionnaires were omitted from the analysis because the respondent either reported no knowledge of access fees being charged or felt that their operation was atypical because of its location on an Indian Reservation.

Eight percent of the respondents leased land to sportsmen, but the percentage differed among the five regions ($P < .05$). The percentage of respondent lessors ranged from 14 percent in the southcentral to 2 percent in the northeastern region (Table 1).

Regional differences in numbers of landowners leasing land to sportsmen can be explained by pattern of land ownership and physical land characteristics. Leasing was uncommon in the western region where 33 percent of the total

land was privately owned, but it was more common in the southcentral and southeastern regions where 66-76 percent of the land was privately owned (Table 1). In addition, most of the private land was located in relatively large units that made it possible for owners to charge access (only 5-14 percent of the private land was intermingled with public lands). Because of the small amount of public land in the latter regions, recreationists may be more willing to pay access fees for the use of private land.

The small amount of leasing activity in the northcentral region may be influenced by land use patterns. Cropland makes up 45 percent of the total acreage in this region, while the statewide average is 35 percent. As a result, there is probably less big game habitat; and consequently, big game hunters may be less interested in leasing private land.

The percentage of respondents leasing to sportsmen increased from 5 percent in 1975 to 8 percent in 1985. However, the percentage of lessors leasing more than one-half of their land increased from 15 percent in 1975 to 69 percent in 1985 (Figure 2). This suggests that lessors increased their leasing activity during the ten year period.

TABLE 1. Number of respondents and land area (and percent of total within region) by ownership class per geographic region, landowner sportsmen survey, 1986.

Region	Number of Respondents	Percent of Respondents Leasing Land to Sportsmen	Area of Land (hectares)			
			Private	Checkered*	Public	Total
Western	156	7	3,339,008 (30.3%)	67,419 (18.5%)	5,637,085 (51.2%)	11,028,970 (100%)
Northcentral	83	4	4,430,405 (70%)	489,247 (8%)	1,382,019 (22%)	6,324,670 (100%)
Southcentral	183	14	4,911,289 (60.6%)	807,049 (13.3%)	211,380 (26.1%)	8,103,941 (100%)
Northeastern	53	2	2,107,526 (45%)	867,682 (18.9%)	1,693,548 (36.1%)	4,679,210 (100%)
Southeastern	51	6	4,700,118 (62.6%)	2,028,076 (27.6%)	731,780 (9.8%)	7,508,063 (100%)
Total	526	33	19,488,346	4,869,473	9,655,812	37,644,854

*Alternating tracts of land are under private and government ownership.

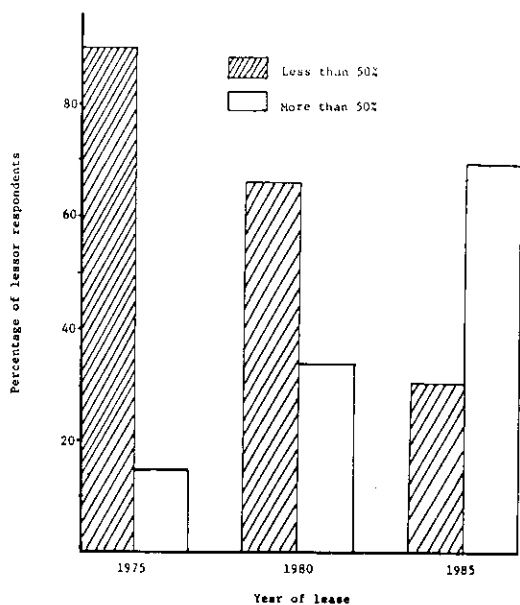


Figure 2. Percentage of lessor respondents' land that was leased to sportsmen.

Elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), whitetail deer (*Odocoileus virginianus*), and antelope (*Antilocapra americana*) were reported on the private land being leased to

sportsmen. Although most landowners did not report the occurrence of all four species, most did report the presence of two or three. Herd sizes ranged from 150 whitetail deer to 225 mule deer (Table 2).

Grazing animals are specialized to some degree in their dietary needs or their feeding niches. They differ in the structure and physiology of their gastro-intestinal systems, in the micro-organisms which inhabit those systems, and in their abilities to break down or tolerate the protective chemical compounds which plants synthesize (Wagner 1976). Thus, each animal species feeds on only a portion of the total vegetation available to it. Cattle are known as grazers, but will take some browse. Deer are stereotyped as browsers, but also eat substantial amounts of forbs in summer and some grass during spring. Elk are among the most broad-spectrum feeders, but tend to be grazers on Montana's ranges. Although competition takes place only where the resource is used to the point of being in short supply, and the grazing animals are affected as a result, estimated forage consumption was computed as a function of number of animals, numbers of months spent on private land and animal weight (Table 2). Thus, 155 antelope for 8.5 months and 160 elk for 6 months would annually consume 264 and 576 animal unit months

TABLE 2. Estimated big game populations on ranches where landowners charge access fees.

Kind	Number of Ranches	Estimated Average Number of Animals ^a	Estimated Average Number of Months on Ranch ^b	AU ^c	AUMs ^d
Elk	30	160	6.0	.6	576
Mule Deer	34	225	9.1	.2	410
Whitetail Deer	30	150	8.9	.2	267
Antelope	31	155	8.5	.2	264

^aAverage number of animals estimated by the survey respondents.

^bAverage number of months that the big game animals spend on the private land estimated by the survey respondents.

^cAU or animal unit is considered to be one mature (1000 lb.) cow or the equivalent based upon average daily forage consumption of 26 lbs. dry matter per day.

^dAUM or animal unit month is the amount of feed or forage required by an animal unit for one month.

(AUMs), respectively. When elk and mule deer occurred on the same land, an average of 986 AUMs were consumed. This is the equivalent of forage needed to run 82 cows for one full year.

Most of the respondents leasing land to sportsmen reported that the total fee for providing elk hunting opportunities ranged from \$1,000 to \$2,000. Two landowners reported that they charge less than \$100. Higher fees were associated with opportunities that lasted at least six days and included the use of a cabin and horses.

Fees charged for providing deer and antelope hunting opportunities ranged from \$10 to \$2,000. The lower fee was for a one-day hunt, while the higher fee bought a week-long opportunity that included the use of a cabin and horses.

Several landowners leased land to outfitters. The annual price for leases varied from \$.75 to \$1.00 per acre. Others reported that they received 10 percent of the outfitter's gross income. In either case, it was the outfitter's responsibility to regulate all hunting activities.

Income earned in 1985 by charging fees to sportsmen usually made up less than 5 percent of the lessor's total annual income. However, 8 percent of the lessors reported that leases to sportsmen accounted for more than 15 percent of their total earnings (Figure 3).

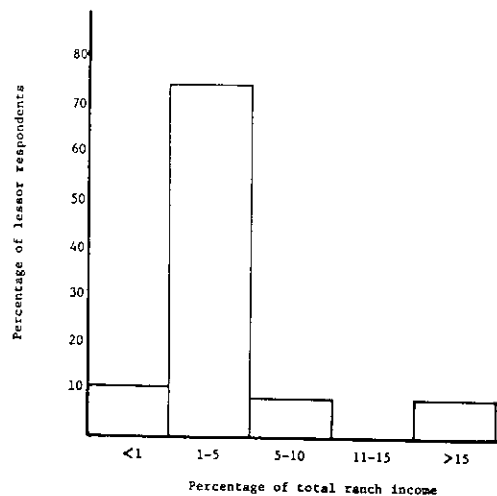


Figure 3. Income earned from leasing to sportsmen as percentage of total gross income for 1985.

Most of the leases between landowners and sportsmen involved single hunters (35%) or outfitters (33%). Cooperation with outfitters was significantly higher ($P < .05$) in southcentral Montana (41%) than in the other regions (23%). Hunting groups or clubs accounted for 25 percent of the leases. The remainder were with fishermen, birdwatchers, and others.

The vast majority of the hunting leases (83%) was granted by individual landowners. The percentage of leases in southcentral Montana involving cooperative agreements among a group of landowners (11%) was significantly higher ($P < .05$) than the percentage reported for the other regions (5%).

The terms of landowner-sportsmen leases have not been well defined in the past. Forty-five percent of the respondents reported that their leases were always informal and 34 percent used both written and informal lease agreements. Only 21 percent regularly used written agreements. Although the apparent reluctance of landowners to use formal lease agreements minimizes the involvement of attorneys, it may be detrimental to the landowner's long-term interests. An educational effort providing a number of model leases, with an analysis of the impact that they might have, may be appropriate.

Sixty-one percent of the leases were for a specific hunting season, while 22 percent were for one complete year. Twelve percent of the

leases were in effect until a specified number of animals were harvested. Only 5 percent of the leases covered more than one year. The predominance of short-term leases between landowners and sportsmen may be a reflection of an immature industry.

Eighty-seven percent of the landowners leasing land to sportsmen reported that they had liability insurance. The coverage include personal insurance (44%), outfitters insurance (41%) or both (15%). A higher percentage of the 13 percent that did not have liability insurance lived in the northcentral, northeastern and western regions.

Landowner Attitudes Regarding Sportsmen Leases

Elk and mule deer were rated by landowners as the two species with the greatest potential for economic return. While landowners in the western and southcentral regions rated elk as the potentially most valuable species, respondents in the southeastern and northeastern areas, where elk populations are very small and localized, gave elk a low rating. Thus, on a statewide basis, mule deer reportedly have the highest economic potential (Table 3).

TABLE 3. Perceived economic potential of wildlife by landowners who charge access fees.

Kind	PERCENT OF RESPONDENTS*		
	Very Important	Fairly Important	Unimportant
Elk	74	7	19
Mule Deer	97	0	3
Whitetail Deer	78	13	9
Antelope	58	31	11
Gallinaceous birds	25	68	7
Waterfowl	33	36	31
Fish	19	71	10

*Adjusted for missing values.

Thirty-three, 25 and 19 percent of the respondents gave waterfowl, gallinaceous birds and fish (*Pisces spp.*), respectively, a very high rating for economic potential (Table 3). Although this indicates that many of the respondents were cognizant of income potential of nonbig game

species, the demand for, and ability of, private lands to supply opportunities to fish from blue ribbon trout streams and hunt waterfowl on prime wetlands in Montana has not been evaluated.

Fifty-seven percent of the lessor landowners reported that they used management practices to improve habitat on land leased to sportsmen. Forty percent of these landowners reported the use of more than one practice. The most common improvements were water developments and modification of range and forest management practices. Although some of these practices were implemented primarily to enhance livestock or timber production, with secondary benefits for wildlife, 14 percent of these landowners established food and/or cover plantings or manipulated wetlands. These improvements provided primary benefits for wildlife and suggest that many landowners recognize the value of wildlife.

Most respondents reported that landowners usually pay for habitat improvements on land that is leased to sportsmen. Others reported that the improvements were paid by sportsmen, government or cooperatively between sportsmen and landowners. Although the effect of economic incentives on landowner investment in wildlife habitat improvement cannot be directly assessed by data from the present study, the provision of economic incentives are a positive factor in Texas (Burger and Teer 1981). Inputs of resources for wildlife production are far less than inputs invested for production of livestock or other primary uses of the land. Many ranchers plan their range livestock programs to include wildlife considerations. The effects of many practices on livestock and wildlife are synergistic. One example would be the use of livestock to maintain vegetation succession in lower seral stages for the benefit of a species of wildlife.

Only 8 percent of the landowners who did not lease to sportsmen indicated that they were aware of any wildlife habitat improvement projects done on land leased to sportsmen. Educational programs that encourage sound stewardship and the implementation of wildlife habitat improvement programs are certainly justified for this group of landowners. Information regarding incentives for improving wildlife habitat should be an integral part of this educational effort.

Thirty-nine percent of the respondents reported that a certain number of hectares was

needed to develop and maintain opportunities for sportsmen, while the remaining 61 percent felt that the opportunities were not restricted by a minimum amount of land. Most of the former respondents felt that more than 2020 ha (5,000 ac) were needed for elk, 202-404 ha (500-1,000 ac) for mule deer, and less than 202 ha (500 ac) for whitetail deer, pheasant, grouse or fishing. There were no significant differences in the perception of a minimum area requirement among sample regions.

Eighty-seven percent of the respondents did not know of any legal problems between landowners and sportsmen and/or state agencies as a result of leasing land to sportsmen. Of the 13 percent who had heard of legal problems, most were related to the public's right to access along streams crossing private land. There were no significant differences in number of legal problems among regions.

Perceptions regarding the impact of leasing on outdoor opportunities differed significantly ($P < .05$) between the landowners who leased land to sportsmen and those who did not. Fifteen percent of the lessors felt that leasing would result in "many more" opportunities and 5 percent felt there would be "many less" opportunities. Corresponding figures for the nonlessors were 6 percent and 11 percent, respectively. The remaining landowners felt that opportunities for recreation would increase or decrease slightly, or not be affected by charging access fees.

Sixty percent of all respondents felt that leasing would not impact wildlife numbers. There were no significant differences in perception regarding the impact of leasing on wildlife populations between landowners who leased land to sportsmen and those who did not. However, a higher percentage of lessors (34%) than nonlessors (18%) expected overall habitat to improve with leasing.

Fifty-three percent of all respondents felt that the amount of private land being leased to sportsmen was of little importance in terms of total hunting opportunities. Thirty-five percent felt they were of some importance, while 12 percent felt they were of major importance. Regional differences were significant ($P < .05$). The percentage of respondents who felt the influence of private land was unimportant was 39 percent in southcentral and southeastern regions, and 65

percent in the western, northcentral and northeastern regions. Respondents reported that low wildlife numbers, intermingled public land, high proportion of government land in the region and limited ranch size were factors limiting the potential importance of private land on total hunting opportunities. No significant differences in reasons were found among regions.

Ninety percent of all respondents felt that landowners should be reimbursed for providing opportunities to sportsmen. This attitude was significantly ($P < .05$) more prevalent in southcentral and southeastern Montana than in the remaining three regions. Fifty-four percent of the respondents felt they should be reimbursed directly by sportsmen, 16 percent felt that they should be reimbursed by the state and 14% preferred receiving indirect benefits (e.g., tax breaks). Many operators may not view tax benefits as a positive incentive because they are losing money in their current agricultural operations. Some Montana landowners have expressed concern over using tax breaks (Pers. Comm.). In their opinion, it can be difficult to repeal tax legislation if it is found to be unsuitable, especially in states where the legislature meets once every two years. Fourteen percent of the respondents preferred a combination of two or more methods of reimbursement.

Comments written by respondents on the questionnaires indicated that the need to supplement traditional agricultural income was responsible for most of the increased interest in managing wildlife resources on private land. Another motivating factor was a backlash resulting from landowners' perception that there has been an erosion of individual rights (i.e., the replacement of "private-property rights" by new "public rights" including recreational opportunities, scenic-site access, and erosion control). As long as these factors persist, the number of landowners charging for access is expected to increase.

Existing Landowner-Sportsmen Programs

Special programs to encourage recreational access on private land have been developed in Montana, Oregon, and Washington, but not in Idaho (R. Clough Pers. Comm.). An example of state agency efforts is the block grant and walk-in program administered by Montana's Department of Fish, Wildlife and Parks (FW&P). While the

landowner permits hunter access to specific areas, department personnel provide signs and maps of the area, and patrol the land for compliance. At present, FW&P reports that there are more landowners willing to participate than funding allows, and more than 242,400 ha (600,000 ac) of private land has been entered into the program. However, this type of program does not provide the economic incentive for private landowners to improve wildlife habitat. The need for habitat management on private land (Poelker and Buss 1972, Gottschalk 1977, and Pineo 1985) and the comments from respondents in the present survey, indicate that alternative programs need to be evaluated in Montana.

Special legislation was enacted in California to encourage wildlife management on private land (California, Department of Fish and Game, 1985). Landowners work cooperatively with the Department to develop and implement wildlife management plans. The results of the plans are monitored and as the designated wildlife species responds, the landowners are rewarded with a certain number of hunting permits which can be used or sold at their discretion. Preliminary results suggest that landowners are enthusiastic about the program, and the general public is satisfied that big game numbers are increasing and more "total" hunting opportunities are available. According to the California Department of Fish and Game (1985), wildlife habitat on private land is improving. Colorado has also enacted specific programs to encourage habitat management on private lands.

Not only does the California experience suggest that it may be time to evaluate current wildlife management programs on private land in the Pacific Northwest, but the merits of fee hunting on public land has been advocated by the Public Land Law Review Commission, National Research Council and officials within the

U.S. Department of Agriculture (Thomas 1984). Thomas suggested that fee hunting on public lands would be more acceptable if 25 percent of the fees were distributed to counties, 25 percent to states, 25 percent to habitat improvement, and the remainder to the federal treasury. In his effort to stimulate consideration, Thomas reported that the Sikes Act of 1974 provides the states with the opportunity to take the lead in prescribing fees for hunting on federal lands. Such fees are presently charged by Virginia, West Virginia, and Arizona.

Conclusions

The present survey indicated that 8 percent of survey respondents charged access fees for providing recreational activities on private land, but 90 percent of the respondents felt that they should be reimbursed for providing these opportunities. Because of the concern about the low-level of wildlife management on private lands, and the probability of increasing demand on the nation's wildlife resources, it is appropriate to further discuss management strategies that provide landowners with economic incentives to improve wildlife habitat. Furthermore, an educational effort is clearly needed to encourage sound stewardship and improvement of wildlife habitat on private lands. This consideration is supported by the present survey which indicates that landowners who charge access fees tend to invest more in habitat improvement practices.

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