

TRENDS IN RECREATIONAL ACCESS TO PRIVATE RURAL LANDS

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Abstract.--There are 1.35 billion acres of private rural lands in the United States. In the past several years there have been some dramatic changes in the structure and circumstances surrounding ownership and use of these forest, range and farm lands. One effect of these changes seems to be a strong trend toward more restricted recreational access for the public to both nonindustrial and industrial lands. This paper traces the changes in rural land ownership and the associated recreational access trends.

Additional keywords: Recreation, private land, access, forest land, leasing, trends, posting, farm land.

Recent changes in federal and state funding for public land acquisition, development, and management for recreation have heightened interest in private lands as a recreational resource. Government budget reductions, coupled with continued strong growth in most forms of outdoor recreation participation, point to a need to understand the potential role of private rural lands as a recreational resource.

Private individuals and corporations own about 60 percent of the U.S. land--about 1.35 billion acres. Between 7 and 8 million farm, ranch, and forest owners hold 93 to 95 percent of this private land in an estimated 14 to 17 million parcels. Of the remaining land, 2 to 3 percent is used for housing, and 3 to 4 percent is classified as commercial, industrial, urban, and other developed land (Wunderlich 1979).

Forest and range lands.--Some 886 million rural acres are classified as nonfederal forest and range land (about 1/3 of the U.S. land base). Almost all of this land is privately owned. Of the privately owned forest land of the United States, about 3/4 is east of the Mississippi River, where the greatest population concentrations occur (USDA Forest Service 1983). Most of the private rangeland, on the other hand, is west of the Mississippi. The eastern concentration of privately owned forest lands, in particular, will continue to be of interest as potential future sources of outdoor recreation opportunities. If recent population migration patterns continue, the private forest and range lands of the western states may also rise to greater recreational importance. The vast acreages of federal land in the West, however, should continue to provide a major proportion of the needed space and settings for outdoor recreation in that portion of the country.

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Farm lands.--Some 530 million acres of U.S. land are classified as crop and pasture lands. Like forest land, much of this land is in the East. Crop and pasture lands are intensively managed. Frequent cultivation and extensive fencing alter the potentials of these lands for outdoor recreational uses, although they still have value for some forms of recreation.

This paper looks at the available literature and data which indicate trends in public recreational access to private rural lands. Most of the paper focuses on trends in relevant recreational participation patterns; on factors which act to restrict public access--such as posting, leasing, and land conversion; and on owner and ownership circumstances as likely determinants of public access policies. One principal source of information on nonindustrial lands is the 1976 National Private Landowner Survey<sup>2/</sup> (NPLOS) conducted by the Forest Service and the Soil Conservation Service. The next-to-last section of this paper presents a brief discussion of recreational access to industrial or corporate forest lands.

#### RECREATION PARTICIPATION CHANGES

The 1976 NPLOS identified 6 principal recreational activities permitted by owners of private land. Previous National Recreation Surveys have indicated that growth between 1960 and 1982 in number of participants in these 6 most frequently permitted activities was as follows: hunting 10%, hiking 129%, fishing 15%, picnicking 11%, camping 162%, and horseback riding 10% (Cordell and Hartmann 1984). Because the number of participants in these activities in 1982 ranged from a low of 2.2 million (hunting) to a high of 39.9 million (picnicking), these percentage increases in participation represent an estimated 200 thousand to 4.4 million added participants per activity, since 1960.

The 1982 A. C. Nielsen Company national sports participation survey indicated that fishing and camping are among the 10 most popular U.S. sports. The 1980 U.S. Fish and Wildlife Service survey of wildlife related recreation indicated that number of hunters grew 15 percent and the number of fishermen grew 65 percent between 1960 and 1980.

A significant observation about these time series surveys is that for the 2 most frequently permitted private land activities--fishing and hunting--participation has recently decreased. Estimated number of days of fishing participation fell 5.3 percent from 1975 to 1980; estimated number of days of hunting participation for this same period fell 3.5 percent. Similarly, the rate of growth of fishing and hunting license sales fell between 1975 and 1980. In the northern states snowmobiling registrations also seem to be dropping--in New York for example, from a peak of 155,000 in 1972 to about 87,000 in 1980.<sup>3/</sup> Snowmobiling is a regionally important private lands activity.

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<sup>2/</sup> The 1976 National Private Landowner Survey was a joint Forest Service and Soil Conservation Service project conducted cooperatively with Clemson University, Stephen F. Austin State University, and the University of Kentucky.

<sup>3/</sup> Personal communication with Tommy Brown, Senior Research Associate, Department of Natural Resources, Cornell University, February 12, 1985.

Eighty-five percent of all hunting was done on the approximate 1-1/3 billion acres of private land in 1960 (Grahame 1960). A survey of hunters in Kentucky in 1966 indicated that 92 percent of hunting was on private land. The 1975 National Fishing and Hunting Survey indicated that 58 percent of big game hunters, 71 percent of small game hunters, and 69 percent of migratory bird hunters hunted on private land. The 1980 national survey indicated that 68 percent of all hunters hunted on private lands. Since 1960, the percentage of hunting that was on private lands has decreased, shifting pressure to public lands. This shift may be caused by decreased access to private lands. A decrease in the number of hunting licenses sold between 1957 and 1966 was partly attributed to decreasing access to Kentucky's private land (Durell 1967). These surveys provide evidence that recent hunting and fishing participation decreases, as well as the shift to public lands, may be linked to decreases in public access to private lands (Wildlife Management Institute 1984).

Under the questionable assumption that opportunities to hunt will steadily increase, a 1977 study projected hunting participation to continue to rise to the year 2000--a 13 percent rise was projected for small game and a 33 percent rise was projected for waterfowl hunting. For fishing, projected participation growth was 39 percent for freshwater and 62 percent for saltwater fishing (USDA Forest Service 1980). These projections suggest that strong wildlife and fish oriented recreational participation growth would exist, if opportunities to hunt and fish expand each year through 2000. This growth will obviously depend in large part on the availability of hunting and fishing opportunities on private lands. The next section of this paper examines trends in public recreational access to private lands.

#### PUBLIC ACCESS TO NONINDUSTRIAL PRIVATE LAND

There are 4 principal factors which define the amount of private rural land to which the public at large has access for recreation. These are posting, leasing, land use conversions (from natural and agricultural to developed), and ownership circumstances. The interaction of each of these factors with public access restriction is discussed in this section. We acknowledge that restrictions on public access do not necessarily exclude everyone from recreationally using the affected private lands. Personal use by the owners and their associates, as well as by lessees, seems usually to be practiced. But restrictions on public access, up to and including total exclusion, greatly reduce the number of persons having access to private lands.

##### Posting

Posting is the most obvious form of land access control. Several different studies have indicated that as much as 25 to 65 percent of private rural lands have access restrictions, including posting, and that in the more populated northeastern states, as much as 80 percent may be closed (Wildlife Management Institute 1984). Landowners may post their land for a number of reasons including fears of liability, property damage, privacy loss, and vandalism.

There seems to be a trend toward more posting of public access to private lands. For example, posting of New York's private rural lands rose from 26 percent in 1963, to 42 percent in 1972, to 48 percent in 1980 (Brown et al. 1984). In east Texas in 1971, 33 percent of landowners had closed their lands to public access (Waters 1972). In 1976 nearly 1/3 of the private commercial forest land in southern New England was posted (Kingsley 1976). In New Jersey in 1975, almost 2/3 of the privately owned commercial forest land was closed to public use (Kingsley 1975). In Kentucky in 1978, 24 percent of landowners posted their lands; an additional 27 percent said their land was closed but not posted because state law requires owner permission for access (Birch and Kingsley 1978). Just under 1/2 the private landowners in Pennsylvania prohibited public recreational use in 1981 (Dennis 1982). In South Carolina in 1983, 83 percent of a sample of landowners closed their acreage to public recreational access (Cordell and Stevens 1984).

A national survey of landowners conducted by Colorado State University in the mid-1960s (USDA Forest Service 1974, p. 80) reported that only 12 percent of ownerships provided no access, while 63 percent of ownerships provide free or fee access. This is quite a contrast to the later 1976 NPLOS which indicated that just over 2/3 of the nonindustrial private forest and range lands in the U.S. were closed to public recreational access (Cordell et al. 1980). The above cited studies point to a trend toward greater closure and posting. This apparent increase in closure and posting continues a trend noted by Barclay and Lindzey (1968) in a 1963 study in Pennsylvania.

Liability concerns are usually among the reasons for closing and posting land (or for not opening land to begin with). Liability concerns can be traced back to early English Common Law which mostly protected the owner. Gradually, though, courts chipped away at the original doctrine of no liability, partly to provide more mechanisms for compensating for accidental injuries. As the law began to shift toward greater responsibility on the landowner, the nature of the relationship between landowners and those using their land came to involve three categories of users: 1) "trespassers", who received the least legal protection, 2) "licensees", persons using the land, with permission and knowledge of the owner and receiving moderate protection, and 3) "invitees", those entering by permission and usually paying a fee to the owner, and having the most protection.

A more recent trend has been toward changes in state liability laws in the landowner's favor. Since 1960, 46 states have altered their liability laws to reduce landowner duties to trespassers and licensees (Kaiser 1984). This has begun to reverse the trend since early English Common Law which almost totally favored the landowner (Stradt 1971). Since 1971, many of the other states have also lessened landowner liability through statute modification. Quarterman (1975) noted, however, that statute modification may not have the impact expected in the courts. Case law continues to demand greater care by the landowner--a fact that could counterbalance the intent of the revised statutes.

Regardless of changes in statutes or in court rulings, liability continues to be a landowner concern. The NPLOS in 1976 indicated that 16 percent of private nonindustrial landowners said that, "as conditions for

opening more lands," they would have to have more protection from potential lawsuits (Cordell et al. 1980). Apparently, landowners are unaware that suits by recreationists against landowners are rare (Brown 1981).

Concern for liability, in all of its variations, is by no means the only reason for posting. The 1976 NPLoS indicated that the principal reasons for land closure were fear of property damage or vandalism (16%), preserve privacy (15%), prevent interference with other land uses (14%), and protect wildlife (12%) (Cordell et al. 1980). A study of access in New Jersey indicated that damage to crops, animals or equipment was a concern. In New Jersey, where property assessment is high anyway, these damages were viewed as creating additional ownership expenses (Barry 1984).

### Leasing

Two general forms of leasing affect public access to private lands. First, state and local governments lease private lands explicitly to provide public access. Second, private clubs and organizations lease land for the exclusive use of their members and in effect preclude other people from using the leased lands.

Government leases.--Some states directly purchase access rights, usually with money received from special fees or access stamps purchased by hunters. These receipts are used to compensate landowners for enrolling their land in wildlife or other access programs.

Wisconsin, one state with a public access program, leases close to 56,000 acres at 30-60¢/acre. North Carolina has 3 million acres under lease with private forest landowners and with the U.S. Forest Service. Part of an \$8 hunting fee is used to control the number of hunters at one time in the leased areas. The remainder is distributed to cooperating landowners according to their acreage (Wildlife Management Institute 1984).

To provide snowmobilers increased access to private lands, the Michigan Department of Natural Resources (DNR) started a program in the winter of 1972-73 which paid landowners \$2 per acre for access (Manning and Holecek 1975). Initially nearly 18,000 acres were leased from 81 different landowners. The DNR financed these leases from snowmobile registration funds. Landowners were given boundary and directional signs and were asked to provide parking areas. Currently, about 90,000 acres are leased under this program.

A followup study in Michigan in 1975, however, indicated that landowners in general were concerned about property damages and liability and did not favor public access programs (Holecek and Westfall 1977). In 1968, Kelley reported that after 10 years of operation, 44 public hunting or fishing areas had been enrolled on 276,441 acres of private land. This public program was mostly aimed at owners of large tracts and only nonmonetary incentives were involved.

Though the programs in the several participating states have seemed to be successful, available information indicates that only limited additional acres are made accessible to the public through government leases. In addition, the

few scattered studies which address these programs indicate that landowners who participate may be those whose land was already open to the public. Feltus and Holecek (1979) found this to be the case with most of the landowners participating in Michigan's Public Access Stamp (PAS) program. Over 3/4 of these landowners had their land open to the public prior to participation in the PAS program.

Private leases.--Far more significant in effects on access to private land are leases by private clubs and organizations. The effects are two-fold--(1) assured access to lessees and (2) closure to public access.

Of the little information existing to describe private leasing, there is strong evidence that this form of recreational access is quite extensive and growing. In Illinois in 1965, hunting clubs, shooting preserves, and general leased hunting areas ranged from 350 to 580 acres each (McCurdy and Echelberger 1968). A study of land leasing in Indiana, Ohio, and Kentucky in 1967 revealed that the median size of hunting/shooting lease was 400 acres (Whittaker 1968). In New York in 1968, 124 surveyed groups reported owning or leasing 313,484 acres--72 percent of this was leased, and of the land that was leased, 84 percent was leased for hunting, fishing, or shooting. Lessees reported they would like to increase their acreage indicating at that time more than 100,000 acres additional land in New York may be leased for recreation in the near future. A 1977 study in Mississippi reported that 6 percent of landowners leased their land while most of the other owners permitted recreational access only to family, friends, and guests (Nabi et al. 1983).

Increasingly, it appears that leasing private land has strong economic appeal to landowners. As early as 1960, Uhlig (1961) reported that leases for waterfowl hunting averaged \$5.10 per acre per year in Minnesota. In Texas, leases sometimes run \$1,000 to \$1,500 per gun per year. Shult (1977) concluded that landowners can make a profit from managing their lands for the lessees.

Growth in the number of persons and acreage leased for recreation is evident by comparing the 1955 and 1980 National Surveys of Fishing and Hunting. In 1955, total membership in hunting and fishing clubs was 1.37 million (acreage was not reported). In the 1980 Survey, 817,000 persons leased and 934,000 owned land primarily for fishing or hunting. Assuming the 1955 estimates included both owners and lessees, the total of 1.75 million persons in 1980 represented a 28 percent growth in members. The 1980 club members had acquired exclusive access to 436.5 million acres of land--89 percent of which was leased. This represents 19 percent of the U.S. land and water base and about 1/3 of all private land in the United States.

#### Private Land Conversions

Most forms of outdoor recreation require a large amount of land or water space, and many forms of participation depend on a natural or seemingly natural setting. Conversion of natural forest and range land to cultivated agricultural uses, and further conversion of forest, range and agricultural lands to developed uses, such as utilities, transportation, residential,

urban, or industrial, modify the recreational potential of those lands. Thus for most forms of outdoor recreation, conversion of private lands from natural to developed use represents a loss of access to opportunities for outdoor recreation seekers.

To 1970.--The land use mix changed only moderately between 1920 and the early 1970s. Meyer (1977) reported these changes as follows:

	<u>Year</u>	<u>Acres</u> (MM)	<u>Change</u> (MM acres)
<u>Forest and woodland:</u>	1920	721	
	1950	721	0
	1974	718	-3
<u>Grassland, pasture, range:</u>	1920	731	
	1950	701	-30
	1974	681	-20
<u>Cropland (cultivated):</u>	1920	402	
	1950	409	+7
	1974	382	-27
<u>Developed uses:</u>	1920	416	
	1950	442	+26
	1974	482	+40

Though the reported acreage changes appear relatively small among the above categories of land, the emerging trend is clear. Forest, grassland, pasture, range and cropland acreages were falling to the early 1970s while developed uses (including impoundments) were increasing. There are some important regional changes not reflected by these national figures--future papers with less space restrictions should deal with these regional trends.

Since 1970.--Land use conversions are accelerating in the United States. Between 1969 and 1978, acreage in farm ownerships (by Bureau of Census definition) changed from 1.14 billion to 1.05 billion acres--a net conversion of 90 million acres from cropland, range, pasture, forest and related uses. The National Resources Inventory of the Soil Conservation Service estimated an annual conversion of private cropland, forest and range of nearly 3 million acres. From a recreation supply standpoint, the impact of these conversions is partly mitigated by the fact that 30 percent of the converted acreage is to manmade reservoirs, lakes and ponds. The Forest Service's Assessment of Renewable Resources in the United States estimated a continuing trend of conversion that would include 1-1/2 million acres of forest and range land per year through the 1980s (USDA Forest Service 1980). Wetlands (important to waterfowl and several other game species) are being lost at an alarming rate of 458,000 acres per year. Forest Service projections predict that the area of forest land will drop by 19 million acres and that the area of rangeland will drop by 56 million acres by 2030 (USDA Forest Service 1983). Much of this change will occur in the South and the gain in water impoundment area will continue, though at a slower rate, as prime impoundment sites are depleted.

### Ownership Circumstances

Evolution of individual circumstances surrounding and underlying rural land ownership both determine and describe changes in the degree to which private land is accessible for public use. The ownership circumstances of most interest in this paper include changes in tract size distribution, reasons for owning rural land, and owner characteristics. Changes in the first two of these circumstances are explored in this sub-section; the next section provides more detail about the characteristics of the owners of rural land.

Tract Size.--Binkley (1983) reported that the number of private forestland owners in the U.S. rose from 4.5 million in 1953 to 7.8 million in 1978. Average tract size decreased and percentage of forestland ownerships with less than 100 acres dramatically increased in these 25 years. However, the percentage of land acreage in ownerships with less than 100 acres fell while percentage of land in ownerships of 500 acres or more rose substantially, from 80 million acres in 1953 to 90 million acres in 1978. In other words, there are many more ownerships but less total acreage in smaller tracts, which have more limited recreational potential. More ownerships in large tracts represent more total acreage in this size class of U.S. forestland which typically offer greater recreation potential.

Farmland ownerships (using the Census of Agriculture definition) have fared similarly to forest land in the U.S. Total area for all farms in 1959 was 1.123 billion acres; in 1974 the total area was down to 1.061 billion acres (Meyer 1977). From 1960 to 1977, over 46 percent of America's farm ownerships disappeared. During this same period average farm size increased from 288 to 389 acres (Meyer 1977). At the end of this period, there were the beginnings of a proliferation of small farms. According to the 1982 Census of Agriculture, between 1978 and 1982 the number of small farms (fewer than 50 acres) increased 17 percent. Eighty percent of the owners of these small farms derive most of their income from nonfarm employment.

As noted above, the total number of farms in the U.S. declined--from over 6 million in 1940 to about 2.2 million in 1982. As shown in Table 1, there was a very rapid drop from 1945 to 1974 in the number of small farms, while the number of large farms increased. In the past decade, however, the rise in the number of smaller farms and the rise in the number of larger farms are beginning to produce a bipolar distribution of farm land ownerships. At one pole are the large holdings typical of agribusiness. Very small parcels of less than 50 acres make up the other pole. The growth of small and large ownerships has been at the expense of the middle-sized farm (50-499 acres), that has for decades characterized American agriculture.

The trend toward an increasing number of smaller rural ownerships may affect both public access and the types of recreational experiences that can be obtained on these lands. Several outdoor recreation activities, including big game hunting, horseback riding, hiking, snowmobiling, all-terrain vehicle use and cross-country skiing, are ideally pursued in unconfined settings. But on small acreage ownerships, the amount of area available in any single holding may be insufficient to support the wildlife on which hunting depends, or to provide enough space for safe or satisfying free-ranging recreational use.

Table 1.--Number of farms by acres harvested, 1945-1978<sup>a/</sup>

<u>ACRES</u>	<u>1945</u>	<u>1950</u>	<u>1954</u>	<u>1959</u>	<u>1964</u>	<u>1969</u>	<u>1974</u>	<u>1978</u>
	----- <u>Thousands</u> -----							
1-49	2,249	1,968	1,697	1,058	820	636	508	690
50-499	3,324	3,117	2,763	2,317	1,982	1,728	1,444	1,411
500-999	174	182	192	200	210	216	207	215
1,000+	113	121	130	136	145	151	155	162

<sup>a/</sup>National data on size categories from the 1982 Census of Agriculture for the entire United States were not yet published at the time this paper was written; available state data indicate that the growth in the number of very small farms has accelerated.

SOURCE: U.S. Department of Commerce, Census of Agriculture.

The contrast between deer hunting on public lands in Colorado and on leased private land in parts of Texas is a case in point (Pope 1984). In Colorado, hunters have an opportunity to track deer over vast areas of publicly owned land. But in Texas, deer hunting can be an almost sedentary activity. On smaller leases, prefabricated blinds and automatic feeders are becoming increasingly popular, and are advertised even in such traditional conservation publications as Texas Parks and Wildlife. Restrictions imposed by small ownerships, together with the economic pressure on a lessor to "produce," yield an entirely different hunting experience than that obtained on public lands. Moreover, restrictions on free movement across property boundaries undoubtedly affect the desirability of small ownerships for many other types of outdoor recreation.

Reasons for Ownership.--The absence of comprehensive regional and national longitudinal studies describing primary ownership objectives prohibit conclusive descriptions of trends. However, documented state-by-state studies since 1960 indicate that most private nonindustrial owners of forest land then, as well as now, do not own land primarily to increase their income (e.g., Worley 1960; Babeu, et al. 1965; Larsen and Gansner 1972; Zeichick and O'Keefe 1983). In fact the trend seems to be toward more persons owning forest land for recreational, residential, speculative and other personal reasons. This increasing emphasis on nonincome personal interests in owning rural land seems to be a major factor leading to closure and/or posting to restrict public recreational access on small-acreage ownerships (Cordell and Stevens 1983).

In concert with a general trend toward nonincome ownership objectives is growth in part-time and hobby farming. In the past, the bulk of privately owned land in rural areas of the United States has been utilized principally for farming and ranching (Larson 1981). However, more and more rural property is being purchased by individuals for nonagricultural uses. Although income-producing ranching or agriculture may not be totally excluded from these ownerships, they are not the major objectives of many property owners. One indication of changing property ownership objectives comes from a study by Pope and Goodwin (1983). Rural land brokers in Texas ranked the desire for a place to participate in outdoor recreation activities, live in the country, or own a rural retreat as becoming more important motives for purchasing land than the desire to farm or ranch. The implications of this trend for public recreational use have not been fully examined, but available evidence suggests the effects may be negative.

Pope (1984) suggests that persons who purchase rural property for purposes other than agriculture or ranching are often motivated by a desire for privacy, an escape from urban living, and exclusive recreational use. Other studies have substantiated these purchase motivations (Zeichick and O'Keefe 1983) leading to speculation that public access to hobby farms and rural retreats may become more heavily restricted. Previously unreported data from private forest owners in southern Wisconsin support this conclusion. Tighter restrictions on public access were imposed by rural landowners who worked in white-collar occupations, who described their forestland as being part of property other than a farm, and who earned 10 percent or less of their yearly income from agricultural and forestry operations on their property. Similar findings have been reported in other studies (Brown and Thompson 1976; Lee and Kreutzwiser 1982). Moreover, these nonfarm owners make up a significant proportion of the rural landholders in many eastern states, and their numbers appear to be increasing.

Research in New York (Brown et al., 1984) reported that almost one-half (45 percent) of upstate landowners who lived on their rural property in 1980 and owned 10 or more acres could be classified as "nonfarm" residents. Additional studies have revealed that professional, executive and white-collar workers make up a large portion of the rural forestland owners in Maryland (Kingsley and Birch 1980), Pennsylvania (Birch and Dennis 1980), New Hampshire and Vermont (Kingsley and Birch 1977), and Ohio (Birch 1982). Significantly, in each of these states the total acreage owned by these property holders exceeds that owned by farmers. The 1982 Census of Agriculture indicate that 80 percent of owners of small farms (< 50 acres) earned most of their income in nonfarm occupations.

While the 1945 Census of Agriculture estimated that about 18 percent of all persons classified as farm operators were part-time farmers, Figure 1 shows that this number rose to 44 percent by 1978 (Albrecht and Murdock 1984). This represents a major shift in the social and economic structure of rural America. The increase in part-time farming is partially due to rising land values and agricultural production costs that threaten the financial viability of traditional farms and ranches. These cost rises are forcing operators to take additional nonfarm employment. However, this trend is also fueled by a

desire among a growing number of city-dwellers, many of them professional and white-collar employees, for a home in the country (Fliegel and Sofranko 1984; Fuguitt and Zuiches 1975; Zuiches 1980).

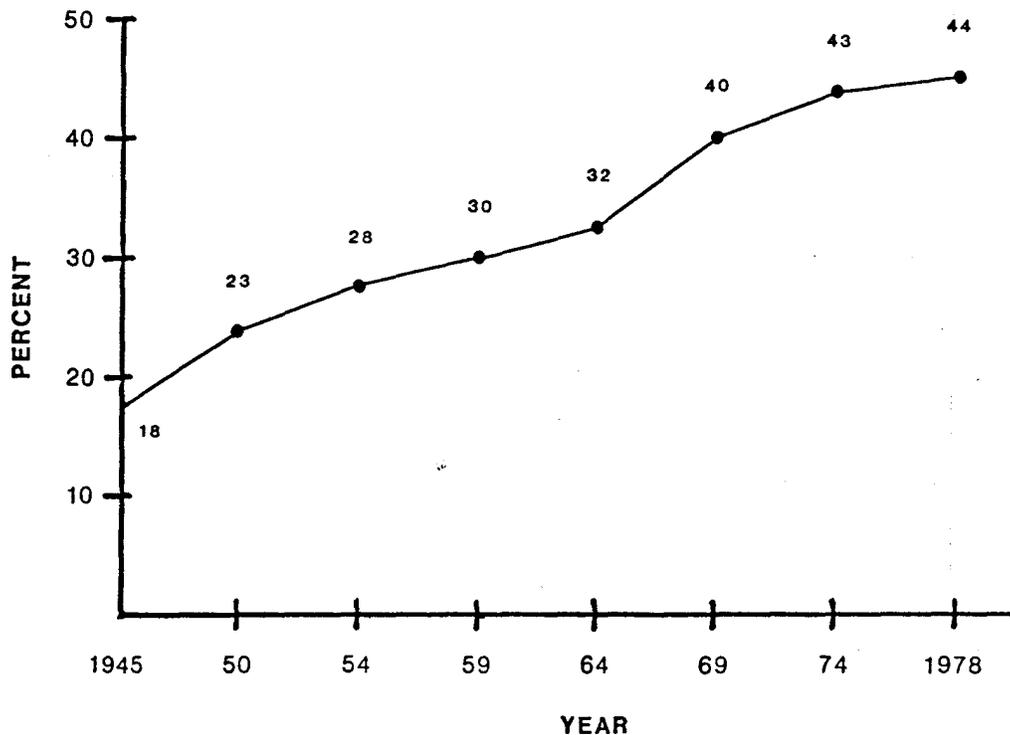


Figure 1. Proportion of farm operators classified as part-time farmers (having 100 or more days of off-farm employment) by year. (Source: U.S. Department of Commerce Census of Agriculture.)

The rate of growth of hobby farms is accelerating, especially on the urban fringe and on land with high aesthetic value. For example, between 1978 and 1982 the number of "minifarms" with gross sales of less than \$5,000 per year increased from 391 to 606 in Montgomery County, Texas, a heavily forested region located on the edge of the Houston metroplex. Similarly, in more remote rural areas, such as the Ozark region and the hill country of central Texas, an increasing amount of land is being purchased in small pieces for primarily non-agricultural reasons (McCarthy and Morrison 1979). Although Census of Agriculture data are not detailed enough to demonstrate it conclusively, the survey research described above indicates that many people acquiring this land are the professional and white-collar owners who are more likely to exclude public recreation.

Speculation regarding a desire for exclusive recreational use is supported by research showing that increases in property holders' recreational use of their land leads to stricter limits on public access (Birch 1982; Brown et al. 1984; Gramann et al. 1983; Lee and Kreutzwiser 1982). In the case of activities that consume limited resources, owners may adopt a restrictive public use policy as a way to preserve recreational opportunities for themselves. In some states studies indicate that if landowners carry out formal habitat management activities to increase the amount of game on their property, they also are more likely to limit public use (Brown et al. 1984).

Relationship Between Tract Size and Ownership Objectives.--Numerous studies have indicated that reasons for owning large tracts of land differ substantially from reasons for owning small tracts. The principal difference is that owners of large tracts are more interested in income producing objectives--a relationship that hasn't changed much over time (McClay 1961; Straka et al. 1984). Income producing objectives mostly center on farming, ranching, and timber growing.

The trend toward more U.S. acreage and ownerships in large tracts (500 acres or more) of farm and forest land seems to be leading toward more closure or exclusive leasing of private land. In addition, the proliferation of numbers of owners of small tracts (under 100 acres), whose objectives center on active, personal involvement and use of their land, is seeming also to result in more acreage restricted to public access.

#### Cropland Leasing of Rural Land

Another significant trend in rural land use patterns is the growing incidence of cropland leasing. As the market value of prime agricultural land increases, leasing becomes a more attractive alternative to fee simple ownership. Research indicates that private individuals who lease agricultural land are more committed as farmers than are hobby farmers (Albrecht and Thomas 1985). Consequently, the leased land is almost exclusively prime cropland. This is also true for corporate leasing. Even though forestland, marshland and wooded pasture are generally considered more desirable for recreation, cultivated areas receive heavy use for some types of activities, particularly hunting in the fall following harvests.

The full implications of the cropland leasing trend for recreational access are unclear. However, for those activities that can make use of croplands, the consequences could be significant. Farmers working leased land may not be responsible for the access policy. Thus, the characteristics of lessors, as well as lessees, should be taken into account when charting access trends or developing access incentive programs. Many lessors live outside the immediate area of their property, or even outside the country. Recreational access research and incentive programs have operated under the assumption that rural land is held primarily in fee simple ownership by private individuals engaged in farming or ranching as their primary occupations. This situation, while perhaps an accurate description of the past, may not apply now. The growth of small ownerships, the increase in hobby farming, and the prevalence of land leasing by both corporations and individuals foreshadow major changes in the structure of rural land ownership in the future.

## INDUSTRIAL FOREST LANDS

Approximately 786 million acres of forest, range and associated water area are privately owned in the U.S. An estimated 20 percent of this acreage is owned by corporate (industrial) interests. Little is known about corporate ownerships of rangeland or their public recreational access policies. Thus this section deals mostly with the trends in recreational access to the 69 million acres of industrially owned commercial forest land. In 1963, the area of industrially owned commercial forest land was 66.6 million acres, indicating a 3.6 percent increase in acreage between 1963 and 1984.

Between 1956 and 1960, the percentage of industrial forest land open to public access changed very little and most of it was open. In 1960, 96 percent of the industry's acreage was open for fishing and 92 percent for hunting (New York Times 1960). During this 4-year period, the requirements for public access, such as requiring written permission, were even relaxed somewhat.

Between 1960 and 1967, a trend reversal began to emerge. Forest industries began charging more fees to help cover rising costs associated with public recreation, and the acreage open for public use dropped from an estimated 96 percent open in 1960 to 88 percent open in 1967 (Forest Farmer 1969). By 1977, the estimated percentage of forest industry lands open to public access had dropped to 59 percent, or 40 million acres, down from its high of 64 million acres in 1960 (Cordell et al. 1980).

To our knowledge, the public access policies of agribusinesses have yet to be studied, possibly because cropland is considered less important than forests and range lands for recreational use. But despite intensive efforts in some states to preserve the "family farm," corporate agricultural operations are becoming increasingly common across the United States. More data on public access to such lands are needed. To a certain extent, any future growth in restricted access to noncorporate lands may be counterbalanced by more lenient policies among agribusinesses. Although corporate holdings currently represent a small portion of the privately owned or leased rural land in the United States, individual units tend to be larger, and thus more desirable for some types of outdoor recreation. It is possible that corporate owners may be more receptive to incentive programs promoting public use of their land, particularly if they contribute revenue in the form of tax relief or lease income.

## FINDINGS AND IMPLICATIONS

Changes occurring in America may make the 1.35 billion acres of private rural land more important in the future as a public recreational resource. But as public budgets for recreation continue to decrease and apparent demand for recreational opportunities increase, almost all the relevant facts and speculations point to increasingly less future access to private lands for a growing public. A summary of these facts and speculations follows:

- 1) The estimated decreasing number of people hunting and fishing, the majority of whom practice their wildlife-oriented activities on private lands and waters, may in part be attributed to less access to private lands now than in the past.

- 2) The percentages of private acreage and ownerships that are posted have increased over time.
- 3) Changes in state landowner liability statutes have not seemed to lessen landowners' anxieties over potential suits. In fact, case law seems to be running more in favor of the user regardless of the state statute changes.
- 4) Government leases and access incentive programs seem to have had a limited impact on opening previously closed lands to public access. Their principal potential impact seems to be in providing incentives for landowners not to close lands that are already open.
- 5) Private club and group leasing of rural land, particularly for hunting, seems to be on the rise. Private leasing may currently encompass as much as 1/3 of all private rural land in the country.
- 6) The acreage of land in forests, grasslands, range, and farms is decreasing while developed uses that are less suitable for many forms of outdoor recreation are increasing. This trend is projected to accelerate in the future.
- 7) The number and total acreage of small farm (<50 acres) and forest land (<100 acres) ownerships are growing and the owners of these small tracts seem less inclined to open their land to public access because they have acquired their land to assure some private space for themselves. Smaller tracts are also less well suited for many recreational pursuits.
- 8) At the other extreme, the total acreage and number of ownerships of large tracts (>500 acres) is also growing and these ownerships are much more income-producing oriented. Large tracts are much better suited for recreational leasing, especially hunting, in part leading to speculation that more and more leasing of these larger tracts is occurring at the expense of general public access.
- 9) The incidence of part-time, hobby, and nonfarm ownerships is rapidly increasing. In concert with greater numbers of small ownerships, more nonfarmer owners could mean less public recreational access.
- 10) Cropland leasing is becoming more prevalent. The full implications of the cropland leasing trend are unclear, however, lessees are usually more committed to farming and may differ substantially from the landowners from whom they lease in their attitudes toward public recreational access. Cropland leasing and other shifts in ownership circumstances indicate that substantial changes in rural land access may occur in the future.
- 11) The acreage and percentage of acreage held by industrial forest ownerships which is open for public recreation have dropped substantially since 1960.

As in any other analysis of trends, the complete meaning and importance of the trends we discovered cannot be interpreted with certainty. This uncertainty about the implications of these trends for the future is especially problematic. However, one general implication seems clear. Most of the evidence points toward less public access to privately owned rural lands in the future. The mitigating factors of more private land being converted to water impoundments, of scattered governmental assistance, of lessened landowner liability, and of more acreage in large ownerships seem to be outweighed by greatly increased posting, private leasing, conversion of land to developed uses, and more ownership for personal reasons.

Less private land, particularly for hunting, should mean more recreational use pressures on public lands. More leasing should mean more access to "monied" publics and less access to private lands for "non-monied" publics. Without seeking to make any sort of value judgment regarding these apparent private land trends, one general observation seems warranted. There has been a decrease in political support for providing public recreational opportunities among both governmental and private industry concerns. The apparent shrinkage in public access to private rural lands which we note in this paper is yet another indication that a crisis in outdoor recreation may be emerging.

A notable conclusion from our examination of relevant private rural land research and data bases is that there has been too little systematic research and not enough time-series data base development to enable any precision in predicting the future recreational supply potential of private lands. Needed are better predictive models and better, more geographically representative data with which to apply these models. Some of the more recent studies are beginning to indicate that better predictive models are possible.

For example, a few recent studies have reported steadily increasing posting and other access controls, both among noncorporate landowners (Brown et al. 1984; Brown and Thompson 1976) and certain classes of corporate owners (Cordell et al. 1982). Bettman (1979) argues that one of the better predictors of current behavior is whether a person has engaged in that behavior in the past. This should be true for posting practices--those most likely to post are those who have posted in earlier years (Brown et al. 1984). Similarly, a good predictor of future land management plans is whether or not an activity is presently being carried out (Gramann et al. 1984). From these findings we could conclude that it is unlikely, barring dramatic changes in present conditions or ownership trends, that the overall incidence of property closure will decline. Owners who are familiar with a land management practice develop an inertia that favors continuance of that practice (Gramann et al. 1984). Add to the existing core of posting landowners the growing number of professional and white-collar owners who are likely to adopt posting, and the future closure trend seems clearly upward. These findings of factors related to posting behavior offer the prospect that more comprehensive models could be developed to better predict probabilities of land closure in the future.

In building and interpreting models to predict probabilities of more private land being closed in the future, or more specifically of more land being posted, we must understand the meaning of the resulting predictions.

For example, does increased posting of private lands mean that the public will be excluded more so in the future? At issue here is the variety of legal and popular meanings attached to the term "posting." Many landowners regard posting as an attempt to control access, rather than to exclude the public entirely (Brown et al. 1984; Cordell 1979; Gramann et al. 1983). Even on posted land, public recreation may be allowed if permission is obtained from the owner or a fee is paid. In some states, such as Kentucky and Ohio, written permission is required by law to enter private land, whether or not it is posted. Thus, changes in actual public use restrictions will not necessarily correlate with changes in posting.

An important factor mitigating the impact of land closure is the use of social ties to gain entry to private lands. For example, even though their lands were closed to general public use, 60 percent of noncorporate landowners and 22.5 percent of corporate owners, controlling 60 percent of the private land in the southern U.S., permitted recreational access to family members, friends or employees (Cordell 1979). A survey of white-tail deer hunters in Texas (Thomas et al. 1984) found that one-third had access to private land through friendship or kinship networks. This was one of the most common ways for hunters to obtain access in Texas, surpassing in frequency hunting on one's own land and on publicly owned lands.

Better studies of landowners' management and access control behaviors and motivations and improved models that identify the factors determining these behaviors should better clarify potential programs and actions that might be implemented to enhance the public recreational potential of private rural lands. Public programs and actions should be guided by good information on landowners' attitudes toward various incentives if closure trends are to be forestalled. Repeated surveys planned to produce trend data will help in understanding the magnitude of the situation and in identifying problems and opportunities related to public access. From information currently available, the trend is toward greater public access restriction. The magnitude and consequences of this trend seem sufficient to warrant closer study and possibly action programs of mutual benefit to both the landowner and the recreation seeker. It is our hope that the newly created Outdoor Recreation Resources Review Commission, created this February, 1985, will provide a forum for this much needed study.

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