

# Hunting Leases on Private Nonindustrial Forest Land in North Carolina

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*Abstract:* Landowners in North Carolina leased hunting rights on about .91 million ha (12%) of forest land for about \$3 million in 1984. Large proportions of forest land were leased in the northern (30%) and southern (26%) coastal plains. Average tract size leased in the northern coastal plain was 550 ha and in the southern coastal plain was 389 ha. In the Piedmont, the proportion of leased land (12%) was substantially less than in the coastal plain, and average tract size was only 154 ha. Only about 3% of mountain land was leased for hunting with an average tract size of 117 ha. The average lease rate was \$3.09 per ha, and was expected to rise to \$4.03 per ha in the near future. A near-term increase of about 5% in amount of leased acreage for hunting was indicated. Deer was the most important game species on leased land, but quail was the species most owners preferred to increase.

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North Carolina woodlands (7.5 million ha) consist of private nonindustrial holdings (80%), forest industry (11%), and public agencies (9%) (Governor's Advisory Task Force 1978). Forest industry holdings are predominantly in the coastal plain while most public land lies in the Piedmont and mountains. Access to hunting areas depends heavily on availability of private lands. The North Carolina Wildlife Resources Commission maintains nearly 0.8 million ha in game lands accessible to the public for a \$9 annual fee. During the 1982–83 season, 34% of licensed sportsmen purchased game lands use permits; thus 66% of licensed sportsmen depended exclusively on private lands not under commission management. A newly established program entitled RENEW attempts to improve sportsmen-landowner relations. It currently has 850 cooperators providing permit hunting and fishing on 82,962 ha of private land.

During 1980, 2.8% of North Carolina sportsmen owned or leased land specifically for hunting or fishing at an average annual cost of \$131.10 per sportsman (U.S. Dep. Int., Fish and Wildl. Service 1981). Big game hunting was the largest component of leasing, (51%), followed by small game hunting (20%). An addi-

tional 6% of hunters paid private daily land use fees totaling \$19.75 annually (U.S. Dep. Int., Fish and Wildl. Service 1981).

The concept of leased land for hunting is not new to most regions of the southeastern U.S. (Nabi 1983, Lassiter 1985). Private land has been leased in Texas for deer hunting since the 1930s (Michael 1958, Sargent et al. 1958, Shult 1977), and recent demand is at an all time high. Annual lease rates for prime hunting approached \$25 per ha. Wildlife population density, location, and accessibility influenced potential lease rates. In the southeastern U.S. forest industry lands have been leased for hunting for many years (Stout 1974, Buckner 1977, Kinard 1979, Yoho 1981). This trend was expected to strengthen as consumer demand pushed prices higher (Starnes 1982, Bromley 1985). Stricter trespass laws and improved liability protection have increased leasing by forest industry (Yoho 1981, Lassiter 1985).

Woodland properties leased for hunting had higher game populations so hunters had more success than on unrestricted lands (Allen and Dickson In press). Lessees often developed a surrogate owner relationship with the land that promoted good stewardship by the lessee and improved public relations for the woodland owner.

Numerous guidelines for marketing hunting opportunities on private land have been published (Fields 1963, Carlton 1974, Byford 1978, Bromley 1982). Forest managers often lacked reliable data on the economics of game leasing and management. Potential economic trade-offs between timber returns and wildlife production have been discussed (Smith 1974, McKee In press). Wildlife values have often been called intangible non-market values too difficult to value. As hunting leases become more prevalent, market values of game production can be documented, providing economic measures of combined timber and game management benefits.

More current information on hunting leases was needed by private and public consultants and resource managers to better serve hunters and landowners in the management and harvesting of game and timber resources. The purpose of this study was to gather such information.

## Methods

A questionnaire was designed to gather information on various aspects of hunting leases on private nonindustrial forest land in North Carolina. A mailing list of about 2,200 names was compiled from members of the American Tree Farm System and from lists of clients supplied by private consultants and industrial-landowner-assistance foresters. The list of potential respondents was purposefully selected to represent owners who had demonstrated an interest in forest management. It was suspected this list would also represent larger than average ownerships, a bias paralleling the suspected trend in propensity to lease hunting rights.

One mailing of the survey was done with no follow-up. Approximately 1,100 (50%) of the surveys were returned. About 95% (1,048) contained useful information. No direct measure of response bias was made. It was assumed that a landowner's desire for help with leasing was closely related to probability of response.

The probability of response of those who were interested in leasing was estimated and compared to the estimated probability of response of those who were not interested in leasing. The response index was the product of the estimated class frequency times the proportion of the class who said they wanted help:

$$\begin{aligned} \text{Interested in leasing } (.20) \times \text{wanted help } (.67) &= .13 \\ \text{Not interested in leasing } (.49) \times \text{wanted help } (.17) &= .08 \\ \text{Estimated Bias} &= .05 \end{aligned}$$

This estimate indicated a slightly higher tendency for those interested in leasing to respond but the magnitude of the bias was considered insignificant.

The precision of estimates of percentages ranged from about  $\pm 1$  percentage point for extreme values (5% or 95%) to about  $\pm 5$  percentage points for values near 50%, based on at least 1,000 df and a 1 in 20 sampling error (Student's  $t$  - test = 1.96) (Steel and Torrie 1960).

## Results

### Characteristics of Respondents

Most respondents (70%) were > 50 years of age; the mean and median age was 57, the mode was 60 years. The majority (84%) were male. Respondents were well-educated: 74% had 1 or more years of college; only 7% had not graduated from high school. About half were hunters (43%) and/or fishermen (53%). Retirees were 30% of all respondents; the balance was predominantly professional (30%), farmers (20%), or white collar workers (13%). Annual income in excess of \$25,000 characterized 70% of the respondents.

### Response by Regions

Respondents in the mountains were 7% of the total and owned 5% of the total land represented. Respondents in the Piedmont were 36% of the total and owned 25% of the total land. Respondents in the northern coastal plain were 29% of the total and owned 38% of the total land. Respondents in the southern coastal plain were 28% of the total and owned 32% of the total land. Regions coincided with U.S. Department of Agriculture, Forest Service timber survey units.

### How Land Was Acquired

Most owners (42%) purchased their land; 31% inherited their land and 22% acquired their land by purchase and inheritance. Only 5% was acquired by gift or other means.

### Reasons for Ownership

Landowners were asked to indicate 1 or more reasons for owning forest land without regard to priority. Timber production was listed by 92%, land investment 72%, farm use 45%, hunting and fishing 31%. For the 4 most frequently listed rea-

**Table 1.** Reasons for ownership indicated by varying proportions of North Carolina private nonindustrial land-owners and the proportions of acreage represented by each response class.

| Reasons           | Respondents (%) | Hectares (%) |
|-------------------|-----------------|--------------|
| Timber Production | 92              | 94           |
| Land Investment   | 72              | 68           |
| Farm Use          | 45              | 48           |
| Hunting/Fishing   | 31              | 30           |
| Other Recreation  | 26              | 14           |
| Residence         | 19              | 14           |
| Other Uses        | 12              | 23           |

sons for ownership, proportions of acreages represented were very similar to the proportions of owners (Table 1).

**Sizes of Ownerships**

In this survey, 78% of the land was in tracts of >162 ha, and was owned by 22% of respondents. The largest single tract was 20,235 ha; the 9 largest tracts contained 76,487 ha, one-third of the total sample acreage. Conversely, 22% of the land was in tract sizes of 162 ha or less, and was owned by 78% of respondents.

**Control of Hunting**

Only 20% of the land provided unrestricted access for hunters. About 35% of the land was accessible by permission only. Hunting rights were leased on 25% of the land, and hunting was not allowed on 20%. Half of the leased land was leased at no charge to hunters.

**Regional Trends in Hunting Leases**

The highest proportion of land leased for hunting was in the coastal plain, about equally divided between northern and southern areas. Estimated acreage leased in the Piedmont was slightly higher than that in the northern coastal plain, but constituted a substantially smaller proportion of total land area. Acreage and proportion of land leased in the mountains were low. Average tract sizes were largest in the coastal plain and smallest in the Piedmont and mountains. The total estimated acreage under paid hunting leases was .91 million ha, about 12% of forest land in North Carolina (Table 2).

**Proportion of Acreage Leased**

Most respondents (63%) leased slightly less than half (47%) of the acreage they owned. A large proportion of respondents (28%) leased all their land, and a few respondents (9%) reported leasing more acreage than they owned. The latter category included hunting subleases from agricultural or timber production leases.

**Table 2.** Regional differences in leasing of hunting rights on private nonindustrial forest lands in North Carolina.

| Region                 | Proportion of Respondents Who Leased (%) | Proportion of Acreage Leased (%) | Total Forest Land <sup>a</sup> (× 1000 ha) | Estimated Total Leased Area (× 1000 ha) | Average Tract Size Leased (ha) | Proportion of Acreage Sampled (%) |
|------------------------|--|----------------------------------|--|---|--------------------------------|-----------------------------------|
| Mountain               | 4  | 3                                | 1745                                       | 52.2                                    | 117                            | 0.6                               |
| Piedmont               | 12                                       | 12                               | 2265                                       | 269.5                                   | 154                            | 2.5                               |
| Northern Coastal Plain | 15                                       | 30                               | 1546                                       | 235.9                                   | 550                            | 5.4                               |
| Southern Coastal Plain | 17                                       | 26                               | 2134                                       | 362.6                                   | 389                            | 3.4                               |
| Total                  |  |                                  | 7670                                       | 916.2                                   |                                |                                   |

<sup>a</sup>Total forest land for each region reported by U.S. Dep. Agric., For. Serv. 1983–84 Timber Survey, Southeast. For. Exp. Sta., Asheville, N.C.

### Reasons for Not Leasing

Among respondents who did not lease, 43% retained hunting rights for personal use. A substantial proportion of owners (26%) did not lease because they disliked hunters and/or hunting. Other respondents (23%) did not lease because of liability laws covering people on their property. Others (9%) indicated that they simply did not need the money.

### Lease Fees-Present and Future

The current average price for a hunting lease was  $\$3.09 \pm 0.37$  cents (95% CL) per ha ( $\$1.25$  per acre) and the maximum reported was  $\$8.65$  per ha by respondents who definitely plan to continue leasing their land. Those respondents expected to raise the average lease rate to  $\$4.03 \pm 0.57$  cents per ha ( $\$1.63$  per acre) in the near future, but the maximum expected fee remained  $\$8.65$  per ha. Respondents who were undecided about leasing in the future were receiving lower current rates and wanted to receive substantially higher rates than those who definitely planned to lease. Respondents who required lease agreements for hunting rights but received no payments were not included in average prices.

### Future Trends in Leased Acreage

Among respondents interested in leasing hunting rights, only 12% had leased in the past but did not plan to lease in the future. An equal proportion of respondents had not leased in the past but planned to lease in the future. Most respondents (56%) representing 84% of the leased acreage planned to lease the same amount of land in the future as they had in the past. A few (5%) planned to lease more in the future and only 1% planned to lease less. For respondents who had leased in the past but were unsure about the future (6%), only 75% of the acreage was included in the estimated future acreage. For respondents who had not leased in the past and were unsure about the future (8%), only half of the acreage was included in the estimated future acreage. A 5% increase in total available leased acreage was indicated for the near future, with a 9% increase in average tract size from 324 to 354 ha.

### Most Important Species

Deer was the most important game species as indicated by 65% of all respondents and by 77% of those who leased hunting rights. Quail was ranked second by 15% of all respondents and by 8% of those who lease. Other game species were ranked by only a few respondents.

### Favorite Species to Increase

Respondents overwhelmingly chose quail as the game species they would like most to increase. Deer and turkey were ranked second, rabbits third, and squirrel a close fourth. A few respondents wanted to increase non game birds, and some wanted nothing to increase.

### Game Management Practices

Half of the respondents (51%) indicated that they had done 1 or more kinds of game management practices. Food plots were the most frequent practice (51%), prescribed fire second (20%), and nesting boxes third (16%). Prescribed fire not intended for game management was omitted.

### Sources of Assistance

Consulting foresters had been hired at some time by 48% of the respondents. Wildlife management was discussed by the owner and the forestry consultant in 35% of these instances. About 33% of all respondents wanted help with game leasing, of which 29% were already leasing. Some 12% were now leasing but did not want any help.

## Discussion

Leasing of hunting rights by a small proportion (12%) of North Carolina landowners obtained revenues approaching \$3 million in 1984. Owners expected lease rates to increase somewhat in the near future, but anticipated only a 5% increase in amount of leased land. There was still a large potential for increased income from leased hunting rights. For example, roughly 25% of owners controlled hunting by leasing, but only 12% received payments. As lease rates increase, more owners can be expected to charge fees for hunting leases.

Leasing is expected to remain concentrated in the coast plain where tract sizes are largest and big game populations most dense. Nevertheless, if landowners have their way and do increase quail and other small game, then the larger Piedmont tracts could have enhanced potential for hunting leases.

For hunters who prefer not to lease hunting rights, 55% of the land represented in this survey was unrestricted or by permission. For those who prefer to lease, a gradual increase in available land can be expected as lease rates also increase.

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