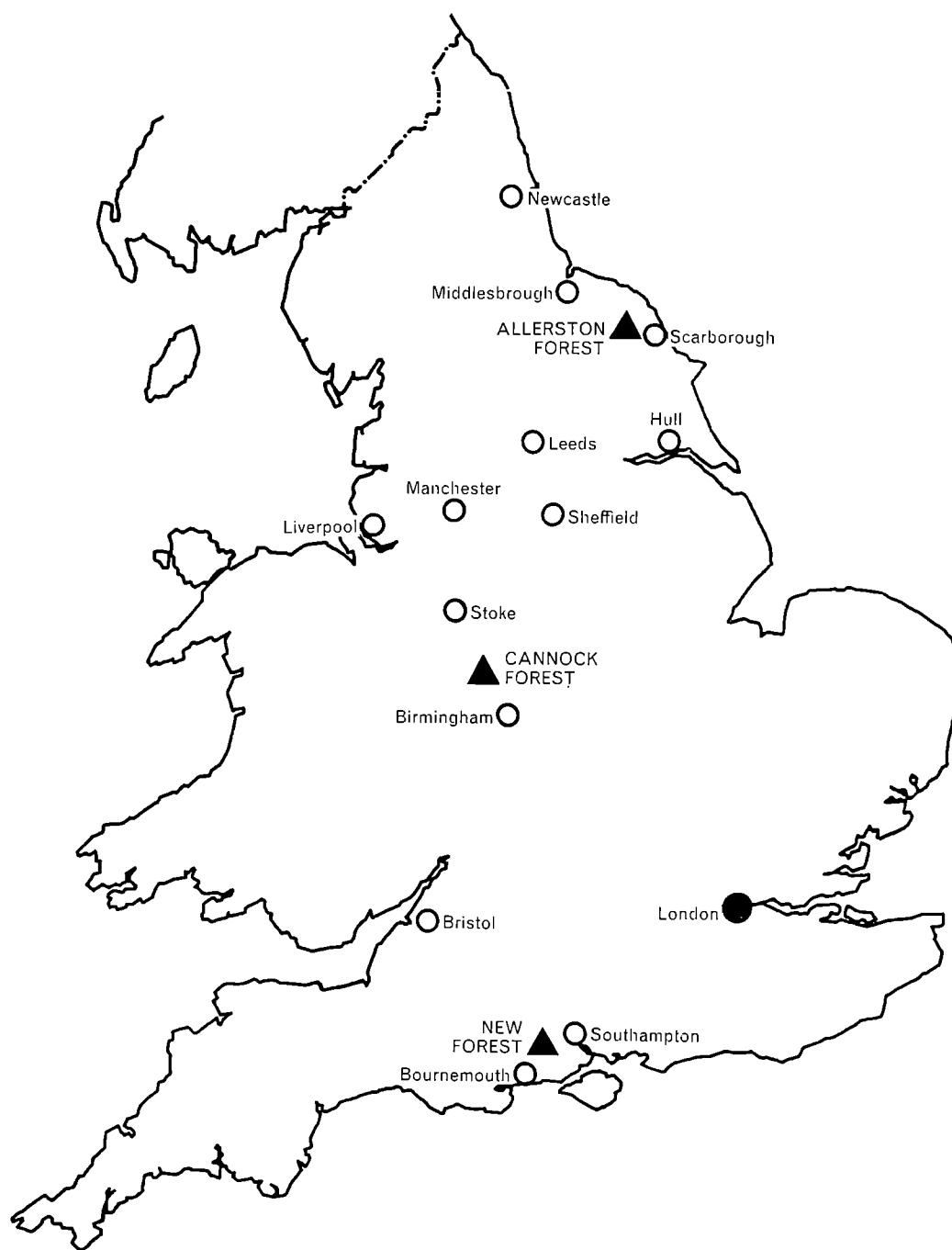


# Public Recreation in National Forests: A Factual Study







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Maps from author's sketches

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FORESTRY COMMISSION

Booklet No. 21

# Public Recreation in National Forests: A Factual Survey

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## Foreword

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As the Commission's young forests grow in stature, they are attracting an ever-increasing stream of visitors, but few systematic enquiries have been made into the factors that attract them. In 1963, therefore, the Commission invited Dr. W. E. S. Mutch, of the Edinburgh University Department of Forestry and Natural Resources, to organise a factual survey at a limited number of representative forests.

Field work was carried out during the summers of 1963 and 1964, and the results have since been carefully analysed on a statistical basis. This booklet sets out the author's findings just as they were received. Some shortcomings in the existing arrangements are apparent, but Dr. Mutch has drawn helpful conclusions that point the way to a better use of this valuable new resource.

March, 1967

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# Background to the Survey

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This paper presents the results of investigations during 1963 and 1964 into the demand by the public for the recreational use of some national forests in England and Scotland. The research was intended principally as a methodological study, and it forms part of a wider investigation into the multiple use of forests in Britain.



FIG. 1 Ancient and Ornamental Woods in the New Forest, managed with an eye to amenity. A view in Knightwood Inclosure

It is not intended here to review the extensive literature on the provision of recreation opportunities in forests, nor to make detailed deductions for forest management from the information obtained in the surveys. Rather it seems appropriate to present the basic data and some of the simple relationships revealed, just as timber production data from sample plots are commonly published without deductions, in order to provide a basis for rational forestry planning.

A major change of policy for the Forestry Commission was announced during 1958. In brief, the former objective of creating a large standing reserve of timber for use in a war of attrition was abandoned; the Commission was charged instead with managing and extending the national forest estate, although it was not immediately clear in the Parliamentary announcements what principles were to direct the management, and what precise objectives the Commission had been given. These were stated in broad terms in Ministerial announcements in 1958 and 1963, and the detailed objectives were published in the *44th Annual Report of the Forestry Commissioners* (1964). Part of the new function is to provide a public recreation opportunity in the national forest estate, and this study is concerned with the definition of the demand for this opportunity and with its possible effects on forest management for timber production. An urgent question for multiple use planning concerns the extent to which the predominantly coniferous forests which have been planted for timber production may fill a public recreation need.

In the period before 1960, public access to national forests was encouraged or at least tolerated in some districts, but was not encouraged in others, especially where the entry of private cars to Commission property was involved. This ambivalence was forced on the Commission because tourism unreasonably increased the fire hazard in a forest estate comprising mainly young stands of inflammable conifers. Nevertheless the Forestry Commission in recent years has increasingly allowed public access to its areas. Modern opinion, typified by Chard (1965), seems to favour opening forests for recreation as a means of educating the public, and thus winning support for the Commission's activities. The first Forest Park was opened in 1936, and in the years following a series of them was created: Argyll, Snowdonia, Glen More, The Border, etc. Each has been the subject of a Forestry Commission guide book, now typically priced at six shillings, containing articles on the history, fauna, flora, etc., by experts in the subjects. The guide books have been designed to interest and instruct the naturalist-walker.

There is no charge for entry to state-owned forests in Britain. The Commission's revenue from public recreation is limited to camp and caravan fees; nevertheless direct expenditure is incurred in providing the access and some facilities. Moreover, it seems likely that the increased scale of forest recreation will involve some reduction in the amount of timber that might otherwise have been grown. The economist's term for costs expressed as values foregone is Opportunity Cost; the cost of providing for public recreation may thus be measured not in terms of money spent but in terms of the sacrifice of other goods and services.

Direct costs and important opportunity costs are being incurred, and very valuable benefit is reputedly claimed, through the provision of forest recreation,



in spite of a general absence of information about the level of demand. In these circumstances an attempt at the evaluation of the unpriced services seems desirable and well justified.

### **Objectives**

When the research project was conceived there were three principal matters on which information was required:

- 1 The quantity of recreation use and the trend of that use, in numbers of visitors, numbers of cars, size and age structure of the groups of visitors, etc.
- 2 The nature of the demand. What is sought by different groups of visitors to the forest; how do they want the recreation opportunity managed, preserved and extended?
- 3 The value of the recreation opportunity, particularly the national value of forest recreation.

In order to obtain data, the obvious first approach was to ask the people using the forest for recreation by making a "market survey" enquiry, and that is the subject of this publication. The Forestry Commission financed the field work of the survey which was carried out over two years by the Department of Forestry and Natural Resources in the University of Edinburgh.

The surveys in the national forests were partly methodological, but in the second year they sought also to reveal information for limited areas on why and how people come to the forest; in what groups and where from; how cost conscious they are; how aware they are of production forestry in the areas they visit; how the recreation opportunity may be valued, and how its use may affect and integrate with forest management for timber production.

### **Acknowledgements**

The author acknowledges with thanks the advice which was given by Miss Jacqueline Marrian of the Department of the Organisation of Industry and Commerce at the University of Edinburgh, in the design of the 1964 questionnaire; and the permission by the Dean of the Faculty of Social Science to use the card sorting equipment in the Social Science Research Centre of the University.

# Method of Study

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Field work in 1963 was limited to the New Forest (Hampshire), the area being chosen because of the known importance of recreation in the management of this forest.

University students who knew the area interviewed 569 individual respondents from groups using the New Forest for recreation. It was anticipated (incorrectly, in the event) that there would be some objections to the collection of information, and for this reason the questionnaire was short and simple. The date, place of interview, time of day and the weather were recorded by the interviewer. The respondent was asked:

- 1 The number of people in the party.
- 2 The reason for the visit (recorded under *pleasure driving, coach outing, day picnic, walking holiday, cycling, camping, caravanning* and *others*, although these categories were not mentioned in the question).
- 3 Means of travel (recorded as *rail, bus, coach, car, motor cycle, bicycle, walking*).
- 4 Home town or district.
- 5 Make and model of car, or approximate size category (*small, medium or large*).
- 6 "Have you been to this forest area before?"
- 7 "Will you come again, given the opportunity and good weather?"
- 8 "If travelling were to cost the party 2 shillings and 6 pence (or 5 shillings, or 10 shillings) more, would you still come?"

Respondents who answered question 7 in the negative were not asked question 8. The three increases in travelling cost postulated in question 8 were used in rotation.

During the survey respondents were very willing to co-operate; only 1 per cent refused to answer questions or gave facetious answers to cause rejection of the information. Faults, however, were soon found in this questionnaire: it was too brief; a party often had several reasons for their visit (question 2); a party sometimes had different means of transport to and in the forest (question 3); there was no provision for recording the place from which the respondent had made the forest visit when this differed from his home (question 4).

The response in the New Forest was sufficiently encouraging to justify an extension of the survey. In the summer of 1964 four questionnaire surveys were made, two in England and two in Scotland. The interviewers were recent graduates in forestry. The English forests were Cannock Forest (Staffordshire)

and Allerston Forest (Yorkshire); those in Scotland were Glen More (Inverness-shire) and the Loch Lomond—Trossachs Forests (Stirlingshire and Perthshire). These were selected because two (Cannock and Loch Lomond—Trossachs) are within a short day trip of large conurbations (Birmingham and Glasgow), and two are near popular holiday centres (Allerston near the Yorkshire coast, and Glen More near Speyside).

For the 1964 survey the questionnaire was much more searching than in the previous year. It was intended to obtain more precise information about the respondent: the composition (including sex and age groups) of the party, their home and holiday accommodation, etc. Respondents were asked to rank their recreation activities and were questioned on their knowledge of the existence of facilities for these activities prior to their visit. They were asked whether they favoured improved access and improved facilities, and were shown cards listing possible improvements from which they were asked to select three and rank them in decreasing importance. They were asked about their estimated costs of travel, their awareness of travel cost in deciding to make the trip, and their willingness



FIG. 2

A mature crop of Scots pine, valued for timber, now being managed to encourage replacement by natural seeding. Highlands Water Inclosure, New Forest



to spend more. Lastly, respondents were given an opportunity to comment in their own words on the desirable and undesirable features of the forest area.

The 1964 questionnaire is given in full in Appendix I, although not in the same lay-out as on the field sheets. At the points indicated, the respondents were shown cards from which to select activities and rank them. The words for display on the cards were randomised in two orders to make card sets A and B. The card set used for a particular respondent was recorded on the questionnaire, and the results were tested for bias of reading order. The card for question 7 showed only those activities that were possible in a particular forest. There were A and B cards for each forest.

The information on the field sheets of both surveys was transferred to 80-column punch cards; it was then analysed on the I.C.T. card sorting machines of the



FIG. 3 In the Open Forest near Lyndhurst. Beech and holly on land that is open to grazing by cattle and ponies



University of Edinburgh Social Science Research Centre.

The forms were completed by the interviewer, not by the respondents. The interviewers were instructed how to conduct the questioning, how to act with unco-operative and facetious respondents (this material was well under 1 per cent and has been rejected), and how to complete the forms. They were told to operate on Forestry Commission land, and were to make it clear, if asked, that the survey had no connection with charges for the use of the forest or with increased caravan fees.

Interviewers found that questions on forestry practice and policy were often asked by the respondent at the end of his interview, and public interest in forestry was obvious in all the survey areas.



FIG. 4 Open heathland, studded with gorse and broom bushes, with pinewoods beyond, near Minstead, New Forest

# The Pilot Survey: New Forest, 1963

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The New Forest contains a large area of unenclosed land, and its situation in the densely populated south of England makes it liable to heavy recreation use in summer. It comprises approximately 95,000 acres, of which more than 66,000 are in state ownership, much of this being “open forest” and subject to grazing and other rights. Although the regeneration in the last hundred years has been commonly with pines and Douglas fir, the overall character of the area remains that of oak forest with intervening open heath.

One of the obvious features of the New Forest is its network of excellent public roads, which provides many points of entry. The area is bisected by the main Southampton–Bournemouth road, and on the forest boundary it is impossible to differentiate between through-traffic and traffic that will use the forest for recreation. It is an exceptionally difficult area in which to make a recreation census, and it is impossible to relate the 1963 sampling results on day visitors to a defined population, although this can be done with the campers.

The New Forest is used increasingly for camping and caravanning. Since the Forestry Commission charges fees for this facility and issues permits, there is a reasonably well-defined population to which the sample results can be related. Interviews were made in the caravan sites at Holmsley, Stoney Cross, Shave Green and Hollands Wood. The survey was made on two weekends in August 1963, the first being Bank Holiday weekend, on 3rd, 4th, 5th, 17th and 18th August.

Day visitors and short-term campers outside the main sites were interviewed as opportunity allowed, and a pre-planned sampling that had been devised was not followed. This method of opportunist interviews was considered adequate for the methodological study. In most places the visitors using cars choose to pull only a short distance off the road, or are restricted by a fence or earth bank within about twenty yards. The interviewers walked along the roads and took the parties as they came to them, parked, walking or picnicking, without selection or rejection. The localities sampled are widely spread, and the results are taken to cover a good range of the visiting population. Finance limited the days for interviewing, and the sample results are, to some extent, particular to the chosen weekends. August Bank Holiday was used for the main work in order to avoid bias caused by local holidays. The study, however, was intended to test the interview method rather than to obtain information from which general conclusions might be drawn for forest management.

## Size of Group and Reason for Visiting

For most purposes the caravanners and the day visitors must be treated as distinct populations. The camping and caravanning groups are sufficiently similar to be regarded as a single population; they are so treated hereafter.

TABLE 1                      SIZE OF GROUP: NEW FOREST, 1963

Principal activity	Groups	Mean group	Standard deviation
Caravanning	132	4.15 people	2.18
Camping	185	4.23	2.43
Pleasure driving	116	3.45	1.51
Picnicking	121	4.75	2.59
Others	15	3.66	—

In the characteristic of size of group the pleasure driving category is significantly different at the .05 level from the other types of visitor; its modal group (40 per cent) is 2, whereas the picnicking, caravanning and camping visitors all have a modal group of 4.

The mean for all the New Forest visitors interviewed was 4.16 people per group.

## Visitors' Homes by Regions

The respondents were asked the home town, or district, of the group to which they belonged. By regions and countries they were distributed as in Table 2.

TABLE 2                      VISITORS' HOMES

Region or country	All groups
Greater London	20.8 per cent
Kent and Sussex	6.9
Hampshire	35.6
Bristol and S.W. counties	13.3
West Midlands	6.2
East Midlands	5.6
East Anglia	4.7
North-east England	3.3
North-west England	1.1
Wales	1.8
Scotland	nil
Overseas	0.7
	100 per cent

The regions used in Table 2 are defined in Appendix II.

A high proportion of the Hampshire visitors were interviewed in the evening, and, as might be expected, many people made a short journey of 10 or 15 miles to visit the forest at a time when visitors from more distant places had left for

home. If a small sample were taken, time of day would be a significant factor in creating bias according to home district.

### Distance from Home

The road distance by the shortest route from the respondent's home to the interview point was as follows:

Day visit groups                      mean distance 38 miles.

Camping and caravan groups    mean distance 95 miles.

Among the day visitors more than 62 per cent had travelled less than 25 miles, whereas among the caravanning and camping groups 68 per cent had travelled between 50 and 150 miles.

TABLE 3                      DISTANCE FROM HOME UNITED KINGDOM VISITORS ONLY

Distance travelled	Day visits	Camping, etc.
< 10 miles	16.1 per cent	5.5 per cent
10-25	46.2	5.8
26-50	13.1	10.1
51-100	14.8	41.2
101-150	5.5	25.0
151-200	3.0	5.2
201-300	1.3	6.7
301-500	—	0.5
	100 per cent	100 per cent

The importance of taking account of the weather when observing recreation behaviour is well shown by the results on particular days. On one day which was generally wet in the morning and cleared only in the afternoon, the mean distance travelled by the day visitors was only 18.9 miles, whereas the overall mean for this class on all days was 37.9 miles. The number of sampling days was insufficient to measure differences associated with the day of the week.

### Previous Visits

The respondents were asked, "Have you been to this forest area before?"

<i>Reply</i>	<i>Day visitors</i>	<i>Campers, etc.</i>	<i>All United Kingdom Respondents</i>
Resident in New Forest	8	—	8
Yes (i.e. been before)	240 (90%)	215 (74%)	455
No (i.e. first visit)	27 (10%)	74 (26%)	101

As was expected, there was an inverse relationship between distance travelled and previous visits.



TABLE 4

DISTANCE TRAVELLED AGAINST PREVIOUS VISIT TO THE NEW  
FOREST: ALL UNITED KINGDOM RESPONDENTS

Distance travelled	No (on first visit)	Yes (i.e. been before)
< 10 miles	1	47
10-25	4	124
26-50	3	61
51-100	39	131
101-150	32	63
151-200	11	13
201-300	11	14
301-500	—	2
Total groups	101	455
Mean distance	116.7 miles	63.7 miles



FIG. 5

Heather, larch, and pine—the characteristic scenery of Cannock Forest seen near Beaudesert



FIG. 6 Corsican pine, Scots pine and silver birch, fringing rides through Cannock Forest. The short steep hills are characteristic

Only 10 per cent of the day visitors were making first visits, whereas 26 per cent of the camping visitors were making their first visits. This supports a suggestion that the increase in the popularity of the New Forest for outdoor recreation is based more on its convenience as a camping ground for people who are making a south coast holiday, especially at Bournemouth, than upon forest recreation as such.

Most of the new visitors came from the East Midlands, the West Midlands and the North-west of England, which all contributed more of the newcomers than their overall share of the visitors. South-west England contributed many fewer new visitors than its overall share (5 per cent of the increment in place of 13 per cent). This was associated with the national holiday; the result might be heavily influenced by regional holidays, and over the whole summer this relationship might not hold.

### Method of Travel

The great majority of visitors (about 94 per cent of those interviewed) travelled by car, both to the district and in the forest. A few people travelled by rail to the district, and then hired transport, or walked, or took the bus.

TABLE 5 METHOD OF TRAVEL: ALL RESPONDENTS

	Travel to District	Travel in Forest
Resident	8	—
Rail	9	—
Bus	—	3
Coach	—	—
Car	528	535
Motor cycle	16	16
Bicycle	8	10
Walking	—	5
	569	569

The proportion of visitors travelling by car was large, and was in keeping with the type of forest and the density of roads, but after the 1963 survey it was uncertain whether this pattern of use would be repeated in all forests, or whether in other localities there was a desire to exclude cars in order to improve walking and other recreational facilities. It is important to determine the demand in Britain for wilderness areas, which are such a pronounced feature of American outdoor recreation.

### Cost of Visiting

The cost of travel was calculated for each party of visitors. For car travellers this was done by classifying the cars into three sizes, and by assuming a mean charge per mile for each size class. The mean charge per mile appropriate to the car actually used by the respondent was multiplied by twice the distance from the respondent's home to the interview point. Allowance was made for increased petrol consumption when a caravan was towed.



TABLE 6

## TRAVEL COST: NEW FOREST

Travel cost per group	Day visitors		Campers and Caravans	
	No. of groups	Aggregate amount spent	No. of groups	Aggregate amount spent
		£		£
< 10s.	141	35.25	31	7.75
10s. to £1	43	32.25	51	36.25
£1 to £2	29	43.5	82	123
£2 to £3	12	30	82	205
£3 to £5	7	28	44	176
£5 to £7	1	6	18	108
£7 to £10	—	—	15	127.5
£10 to £15	—	—	4	52
£15 to £20	1*	17.5	3	51.5

\* a party with three cars.



FIG. 7 Looking across young pine plantations towards the Trent Valley; an eastward view from the Cannock uplands



Since the total number of day visitors in the forest is not known, it is impossible to proceed from these data to a calculation of the total travel cost, on the method of Burton and Wibberley (1965). It is clear that the day visitors are a different population, in the statistical sense, from the campers and caravanners; the demand schedules for the recreation opportunity are obviously distinct in the two classes. Among the day visitors the graph of the total number of groups against the group travel cost (Table 6) forms an approximation to a rectangular hyperbola with a cut-off point about £5; this is shown alternatively by the tendency to equality among the aggregate travel costs within the cost brackets. In the campers the equivalent graph is single-peaked with the culmination at about £2 on the X-axis.

### Price Elasticity of Demand

As a development of the calculation of travel cost, an attempt was made to measure the price elasticity of demand at different levels of that cost. Each respondent who had expressed willingness to make a return visit to the New Forest was asked, "If travelling were to cost the party 2s. 6d. more (or 5s., or 10 shillings more), would you still come?" The three hypothetical increases in travelling cost were used in rotation. The responses were analysed in relation to the estimated travel costs for the respective groups. They are summarised in Table 7.

TABLE 7 PRICE ELASTICITY OF DEMAND: NEW FOREST

Travel cost per group	Respondents willing to come at increased travel cost						Total
	+ 2s. 6d.		+ 5s.		+ 10s.		
	Yes	No	Yes	No	Yes	No	
< 10s.	88	2	59	2	19	1	171
10s. to £1	31	—	35	3	24	—	93
£1 to £2	30	—	42	—	34	3	109
£2 to £3	18	—	35	—	32	2	87
£3 to £5	5	—	21	—	20	3	49
£5 to £7	3	—	10	—	5	1	19
£7 to £10	—	—	7	—	8	—	15
£10 to £15	1	—	1	—	2	—	4
£15 to £20	—	—	2	—	1	—	3
Total	176	2	212	5	145	10	550

The replies which indicated an unwillingness to return if the price was increased were very few (3 per cent overall), and even massive increases of 5 or 10 shillings on a base price of less than twenty shillings brought little response in reduced demand. This suggests great inelasticity of demand, in line with the findings of Clawson (1959) in the U.S. National Parks.

The negative replies were so few and the nil scores so frequent that a Chi-square test is considered inappropriate to compare the rows of the table. Nevertheless

the negative replies in the totals row represent 1.1 per cent on the 2s. 6d. increase, 2.3 per cent on the 5s. increase, and 6.5 per cent on the 10s. increase. The response was disappointingly weak statistically, but it suggested that the method might be developed. Applied to the travel cost of the whole group these increases were too small to evoke a response from most of the visitors interviewed.

### **Interviewer Bias**

Several of the results were tested for possible influence by the interviewer. There was no significant or consistent bias found in the figures, and on this basis it was decided to treat the results as one group from this standpoint.



FIG. 8 Birches fringing young pinewoods, with a clump of mature Scots pine on the skyline; Abraham's Valley, near Colwich, Cannock

# Cannock Forest Survey, 1964

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The four surveys made in 1964 are treated separately. The selection of the forests for survey has been referred to in Chapter 2.

## **Cannock Forest**

Although the ancient Royal Forests, of which the New Forest is one, are important recreation areas, they are not typical of the forests which the Forestry Commission has created since 1919. The open oak woodlands of the Dean and New Forest are greatly favoured by holiday makers, but there is no intention of creating similar extensive, open-grown hardwood forest elsewhere. The extent to which predominantly coniferous plantations managed for timber production may provide satisfactory public recreation opportunities is a matter of interest and importance for the professional forester and for the public.

Cannock Forest lies within Cannock Chase, approximately 17 miles north of the centre of Birmingham. More than 2½ million people live within 25 miles of the forest, and it is ringed with manufacturing towns: to the north lie Newcastle-under-Lyme, Stone, Stafford and Stoke-on-Trent; to the south is the arc of the West Midlands conurbation, Wolverhampton, Walsall, Wednesbury, West Bromwich, Birmingham, etc. For the inhabitants of these crowded, prosperous and, in places, particularly ugly cities, Cannock Chase is a well-known and important country “lung” within a short distance of their homes.

The soils at Cannock are sandy gravels, mostly strongly podsolised, and the Chase was mostly open heathland before large areas were acquired by the Forestry Commission around 1920–29. Cannock Forest now comprises 6,400 acres, principally planted with pines.

The survey was made on Saturday, Sunday and Monday, 8th, 9th and 10th August, 1964. On the 8th the weather was very wet; on 9th it was dry and fine; on 10th, dull and showery. The number of interviews on the three days was 33, 95 and 15 respectively.

The respondents were interviewed at Springslade, Penkridge Bank, Regent's Wood and near the White House, which the local forest staff said were the most popular areas. Interviewers moved among the visitors on foot, as in the New Forest. The questionnaire and the associated cards shown to the respondents have been referred to already and are given in detail in Appendix I.

The survey results were analysed carefully for interviewer bias. The replies to questions 37 to 44 and 47 to 49 of the questionnaire as reported by each interviewer were compared with the equivalent responses to the other interviewers by Chi-square tests; the differences all proved to be not significant at the .05 level. It was assumed from these exhaustive tests that there was no interviewer bias, and all the returns were analysed as one sample.

The respondents were shown lists and asked to rank the recreation activities for which they had come to Cannock (question 7), and to rank the access improvements (question 26) and the facility improvements (question 28) which they favoured. The order in which these lists were printed (and, by inference, the reading order) might have had an influence on the preferences expressed. Two versions of each list were prepared, the printing orders being randomised by table; the list used on each interview was recorded, and the list A results were compared with the list B results. Chi-square tests showed there was no significant bias at .05 level resulting from the printing order, and again the results have been treated as one sample.

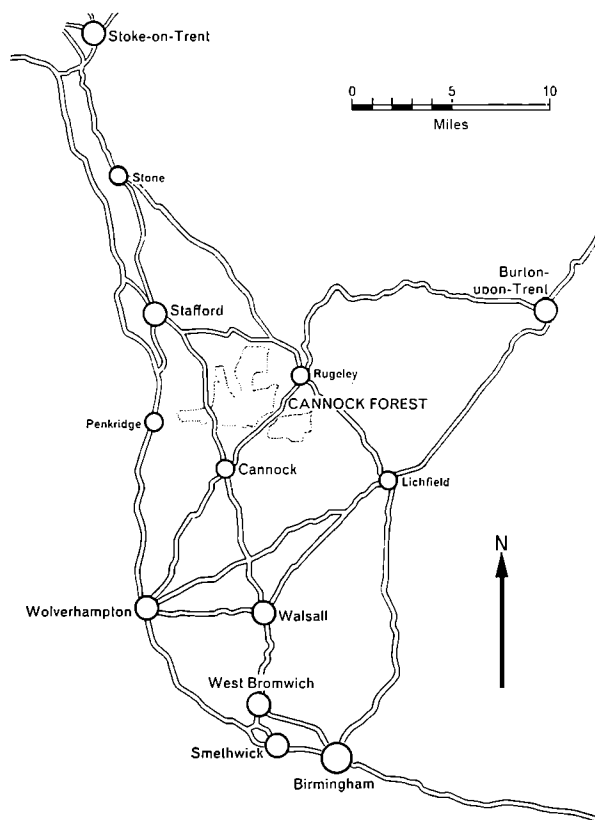


FIG. 9 Cannock Forest: map to show situation relative to neighbouring towns



## Size and Nature of Groups

143 groups were represented. The mean group was 3.66 people, and the standard deviation 1.68.

TABLE 8 COMPOSITION OF GROUPS: CANNOCK FOREST

Group Type	Frequency	Frequency per cent
Respondent alone	6	4
Families	119	83
Friends	14	10
Family and friends	4	3
	143	100

Of the 143 groups in the sample, 79 had a child or children in them.

TABLE 9 PRESENCE OF CHILDREN: CANNOCK FOREST

Number of children per group	Frequency percentage of all groups
0	44 per cent
1	24
2	18
3	4
4	10
	100 per cent

The average group was thus composed of 2.54 adults and 1.12 children. The 79 groups with children had 161 of them, almost exactly 2 children per group.

The sample of 143 groups was made up, therefore, of 143 adult respondents, 220 other adults and 161 children, a total of 524 people. The ages of the respondents and accompanying adults were estimated; no child (i.e. under 15 years) was interviewed as a respondent.

TABLE 10 AGES OF RESPONDENTS: CANNOCK FOREST

Age brackets	Frequency			Total frequency per cent
	Men	Women	Total	
15 to 19 years	2	1	3	2.1
20 to 25	18	—	18	12.6
26 to 45	68	10	78	54.5
Over 45 years	39	5	44	30.8
Totals	127	16	143	100 per cent

TABLE 11

AGES OF ALL ADULTS, INCLUDING RESPONDENTS

Age brackets	Frequency			Total frequency per cent
	Men	Women	Total	
15 to 19 years	2	8	10	2.7
20 to 25	25	15	40	11.0
26 to 45	94	116	210	57.9
Over 45 years	58	45	103	28.4
Totals	179	184	363	100 per cent

### Reason for Visit

Apart from two groups camping or caravanning outside the forest, all were day visitors, although some had stopped to picnic in the forest in the course of a holiday journey.

TABLE 12

REASONS FOR VISITS: CANNOCK FOREST

Motives for visit	Ranking, by percentages			
	1st choice	2nd choice	3rd choice	4th choice
Picnicking	38.5	17.4	4.2	6.3
Pleasure driving	29.4	21.0	11.8	6.3
Caravanning	0.7	—	—	—
Camping	0.7	—	—	—
Heath walking	8.4	13.3	3.5	2.8
Rambling	11.8	12.6	5.6	0.7
Bird watching	1.4	2.1	7.7	2.8
Other nature studies	2.1	4.9	2.1	4.9
Pony trekking	0.7	—	—	—
Photography	2.1	6.3	8.4	5.5
Other*	3.5	1.4	0.7	0.7
Don't know	0.7	—	—	—
No secondary activity	—	21.0	56.0	70.0
	100	100	100	100 per cent

\* Includes: Courting (2); Gathering bilberries (3); Gathering fungi; Gathering stones; Flying model aircraft; Playing cricket.

Those who came primarily for picnicking, although they ranked pleasure driving as their next most important activity, were more active (33 per cent walked and only 11 per cent had no other pursuit) than those who came primarily for pleasure driving, 33 per cent of whom had no other interest.

<i>1st choice</i>	<i>2nd choice</i>	
Picnicking	Pleasure driving	44 per cent
	Walking	33
	Others	11
	No other activity	12
Pleasure driving	Picnicking	29 per cent
	Walking	31
	Others	7
	No other activity	33
Walking	Picnicking	35 per cent
	Pleasure driving	14
	Others	34
	No other activity	17



FIG. 10

The Allerston plantations stand on flat-topped hills above steep-sided dales; Troutdale seen from Bakers' Warren, near Hackness, west of Scarborough

An attempt was made to determine the order of importance of the possible activities open to the forest user; first choices were awarded 4 marks, second choices 3 marks, third choices 2 marks and fourth choices 1 mark. Expressed as percentages, the results are as follows:

Picnicking	29 per cent
Pleasure driving	28
Walking	24
Nature study, including birds	8
Photography	7
Others	4

**Knowledge of Recreation Opportunities**

In answer to questions 10 and 11, 83 per cent of the respondents said they were aware that Cannock provided opportunities for the recreational activities they ranked as important, and that they came especially for these. 13 per cent said they were aware of the opportunities but did not come especially for them. The remaining 4 per cent did not know of Cannock’s opportunities and hence did not come especially for them. This level of awareness is consistent with the record of previous visits to Cannock (see Table 14).

**Visitors’ Homes by Regions**

At the time of the survey the forest was visited by people from a restricted area. Unlike the New Forest, Cannock does not draw visitors from a long distance; the 5 to 7 per cent who had travelled far were picnicking *en passant*. There was no visitor from Scotland, Wales or overseas. (See Table 13).

**Distance from Home**

The road distance by the shortest route from the visitor’s home to the interview point was calculated. The mean distance was 16.75 miles, but this is less useful than the measure of distance travelled on the day of interview.

The mean distance travelled on the day of interview was 15.5 miles (standard deviation 16.5 miles). 92 per cent of the groups travelled less than 25 miles, and two-thirds of these came from the south-east, south and south-west, i.e. from the Birmingham conurbation. One fifth of the visitors from less than 25 miles came from Stoke and Stafford.



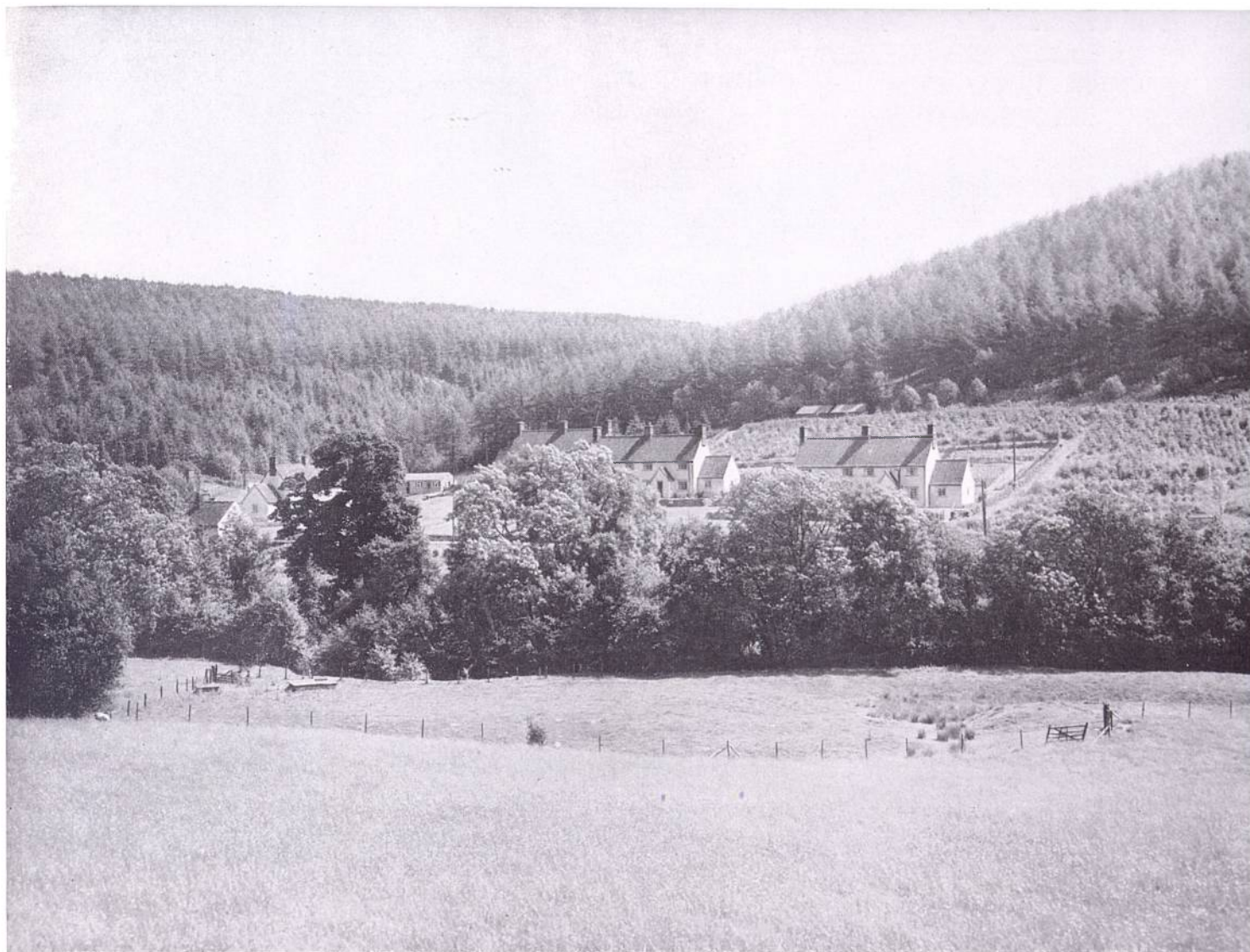


FIG. 11 Dalby Forest Village, on the Forest Drive near Thornton Dale, Allerston Forest

TABLE 13 VISITORS' HOMES: CANNOCK FOREST

Region	All groups
Greater London	1 per cent
Kent and Sussex	—
Cannock area (Stafford, Cannock, Lichfield, Rugeley, Penkridge)	32
Bristol and S.W. England	3
West Midlands	59
East Midlands	2
East Anglia	1
North-east England	1
North-west England	1
	100 per cent

See Appendix II for a definition of the regions.

## Method of Travel

More than 95 per cent of the visitors travelled to the forest by car. One respondent came by bus, two walked from their home three miles away, and one came on a horse.

The 95 per cent car travellers were divided into 45 per cent who remained in or near their cars and 50 per cent who walked in the forest. Those who came other than by car also walked in the forest, and the horseman continued to ride.

With more than 50 per cent of the visitors walking, the behaviour pattern was very different from that found in the New Forest, where less than 1 per cent of the visitors claimed to walk. Superficially this appears to be a different type of use, but it is based on replies to different questionnaires and the results are not strictly comparable; nevertheless there did appear to be much more walking at Cannock than in the New Forest.

## Previous Visit

For planning purposes it is important to establish the trend of the recreational use of the forest, the recruitment rate of new visitors, and whether returning visitors come frequently or seldom. In the Cannock survey the recruits (i.e. those on their first visit) amounted to 11 per cent of the visitors (i.e. excluding the residents), and the pattern of use was as follows:

TABLE 14 PREVIOUS VISIT TO CANNOCK FOREST

Last Visit	Frequency
Recruits, on 1st visit	15 respondents
Last week	38
Within last month	43
Within last six months	15
Within last year	17
Two years ago	3
More than two years ago	5
Residents	7
	143

## Access Improvement

When respondents were asked (question 25) if they favoured improvement of access to the forest, they replied as follows:

Yes	82 respondents	57 per cent
No	58	41
Don't know	3	2

The 82 respondents who favoured improvement of access were asked to select and rank the three improvements most important to them from the nine shown on a card.



FIG. 12 Riders in Allerston Forest

TABLE 15 ACCESS IMPROVEMENT RANKING: CANNOCK FOREST

Improvement	Frequency of Respondents' ranking votes			Score: 1st=3 2nd=2 3rd=1
	1st	2nd	3rd	
More roads	3	2	4	17
Better surface and wider roads	36	7	3	125
More parking places	7	19	7	66
Signposted footpaths	17	21	5	98
More caravan and camp sites	3	6	3	24
Bus services to the forest	—	1	2	4
Public transport in forest	—	3	4	10
Cycle paths	1	—	2	5
Maps of the forest	14	12	21	87
Other*	1	2	2	9
No selection	—	9	29	—

\* Includes: Signposts on roads (2); Stiles; Signposted car parks(2).

Both on the basis of the frequency of first rank choice and on the basis of the weighted scoring shown in the last column of Table 15, the order of preference at Cannock for the improvement of access was as follows:

1	Better surface and wider roads	28 per cent
2	Signposted footpaths	22
3	Maps of the forest	20
4	More parking places	15

These made up 85 per cent of the demand for access improvement. These results appear to be consistent with the main reasons expressed for visiting the forest, picnicking, pleasure driving and walking. The other selections were at much lower frequencies and are negligible; "More roads" attracted support from less than 4 per cent of those who wanted improved access and from only 2.3 per cent of all respondents.

### Facility Improvement

When respondents were asked (question 27) if they favoured improvement of facilities in the forest, they replied as follows:

Yes	105 respondents	73 per cent
No	37	26
Don't know	1	1

The 105 respondents who favoured the improvement of facilities were asked to select and rank the three improvements most important to them from the eight shown on the card.

TABLE 16 FACILITY IMPROVEMENT RANKING: CANNOCK FOREST

Improvement	Frequency of Respondents' ranking votes			Score: 1st=3 2nd=2 3rd=1
	1st	2nd	3rd	
Roadside picnic sites and litter bins	29	22	19	150
Sanitation	51	18	8	197
Roadside fireplaces	—	1	—	2
Water points	3	26	15	76
Shelter huts	4	12	8	44
Facilities for special interests	1	—	2	5
Information office	4	2	7	23
Restaurants-garages	11	10	14	67
Others*	2	—	4	10

\* Includes: Signposted forest plots (2); First aid point (2); Swimming pool.

On the basis of the weighted scoring shown in the last column of table 16, the



order of preference for the improvement of facilities in the forest was as follows:

1	Sanitation	34 per cent
2	Roadside picnic sites and litter bins	26
3	Water points	13
4	Restaurants—garages	12
5	Shelter huts	8

These preferences represented more than 93 per cent of the positive demand.

### Attitudes to Production Forestry

The attitudes of respondents to the improvement of recreational access and facilities were tested against their attitudes to the continued development of the forest for its original purpose of timber production. 21 respondents (15 per cent) wanted the forest "As it is".

TABLE 17  
RESPONDENTS' DESIRES FOR LOCAL RECREATIONAL DEVELOPMENT AND FOR MORE TIMBER PRODUCTION

Timber: Recreation	Number of Respondents			Total (%)
	Want more timber	Don't know (about timber)	Want less timber	
Want more recreation	48	11	12	71 (50)
Don't know (about recreation)	17	14	9	40 (28)
Want less recreation	6	2	2	10 (7)
Total	71	27	23	
Percentage	(50)	(19)	(16)	

The detailed replies were analysed against the replies by the same respondents to question 27 on the improvement of recreation facilities, and it was found that those who answered "No" to question 27 (i.e. they did not want improvements) were more decided in their opinions on timber and recreation development than those who answered "Yes".

Question 27	Question 30			
	More timber	Less timber	Don't know	As it is
Yes	45%	15%	22%	18%
No	65%	19%	11%	5%

15 per cent of the respondents were unaware that "This is a Forestry Commission area". The replies to question 30 were tested against awareness that the recreation area was part of a national forest (question 2). At the .05 level there was no significant difference in response to the development question between the section that was aware of the national forest and the section that was unaware. Those respondents who had paid a previous visit or visits to the area did profess greater awareness of the fact that they were in a Forestry Commission area.

There appeared to be no significant relationship between knowledge that this was a national forest and professed interference of commercial timber operations with recreation (question 31). (Since the Cannock survey was made at the weekend most people saw no work in progress, although they could see evidence of it).

3 per cent noticed commercial timber operations and said the work interfered with their enjoyment of the recreation opportunity. 56 per cent noticed the operations and said there was no interference with their enjoyment. 40 per cent did not notice any operations and thus suffered no interference. 1 per cent did not know.

There was no relationship between awareness of the national forest and distance travelled or the location of the respondents' homes.



FIG. 13      Deepdale, in the heart of the Allerston woods

## Avoiding Improvements or Developments

The replies to question 29, “What improvements do you think should be avoided?” have been grouped.

TABLE 18

### OPPOSITION TO DEVELOPMENTS

Commercialisation (31%), buildings (36%), restaurants (3%), houses (2%), amusements (2%), kiosks (2%), shops, factories and vans (1% each)	79 per cent
Main roads and more roads	5
Caravans and camp sites	2
Pylons	1
Military use	1
Solid conifers	1
Others	1
“All development” and similar replies	7
Don't know	3
	100 per cent

## Desirable and Undesirable Features

The analyses of the answers to question 37 presented difficulties in that the replies were in the respondents' words instead of in a multiple-choice format. The results have been grouped according to the key words in the replies.

TABLE 19

### DESIRABLE FEATURES AT CANNOCK FOREST

Peaceful: Quiet: Seclusion: No traffic	16 per cent
Natural: Unspoiled	12
Scenery: Beauty	13
Open ground: Lack of development	10
Trees: Plants	9
Fresh air	8
Freedom: Space: “Away from it all”	7
Convenient: Easy to get at	1
Others	2
Don't know	22
	100 per cent

TABLE 20

UNDESIRABLE FEATURES AT CANNOCK  
FOREST

Litter	32 per cent
Flies: Rain	16
People: Traffic: Presence of roads: Bus parties: Transistor radios	6
Narrow roads: Gates: Fences (restriction of pulling off)	7
No lavatories	5
Tips: Wasteland: Army hut foundations	5
No catering	1
Organised stopping: Haphazard parking	2
Regular conifers: Lack of variety of species	3
Interference with the forest (meaning obscure)	1
Others (Adders, gorse, bogs, bad roads, etc.)	22
	100 per cent

**Special Questions**

Two special questions were asked in Cannock Forest. The first sought to test the popularity of the exclusion of cars from the forest and from parts of the open land. (See Appendix I, questions 31a and b).

In spite of the fact that over 95 per cent of the respondents were motorists, the answers were overwhelmingly in favour of the traffic-free zone. The answers to question 31a were:

Yes (in favour of traffic exclusion)	87 per cent
No	6
Don't know	7

The second question sought to test the popularity of restricting the public to footpaths; "Does this restricted access reduce your enjoyment?"

Yes	14 per cent
No	81
Don't know	5

Some respondents commented, however, that the footpath restrictions were largely nominal and unenforced, and several said that if the restrictions were enforced their enjoyment would be reduced.

There was no correlation between replies to these questions and either the method of travel in the forest or the reason for visiting the forest. Even pleasure drivers with no other objective were in favour of maintaining the traffic-free zone.

**Cost of Visiting**

Respondents were asked to estimate the cost per visitor for travelling from home to the forest. The results are summarised in Table 21.



TABLE 21

## TRAVEL COST: CANNOCK FOREST

Travel cost per head	Group frequency (mean group=3.66)	Estimated aggregate amount spent
Less than 1s.	37	68 shillings
1s. to 2s.	53	291
2s. 1d. to 5s.	26	333
5s. 1d. to 10s.	15	412
10s. 1d. to 25s.	1	63
Don't know (use mean cost)	6	<u>52</u>
		1219 shillings

Sample checks made on the probable accuracy of the respondents' estimate suggest that they may be a little low, but not unduly so. The mean price per car/mile is just over 6d.

Each respondent was asked if the group would have come had the travel cost been 5 shillings (or 10 shillings) *more* per head. The response was as follows:

TABLE 22

## PRICE ELASTICITY OF DEMAND: CANNOCK FOREST

Travel cost per head	Respondents willing to come at increased cost						Total
	+ 5s.			+ 10s.			
	Yes	No	Don't know	Yes	No	Don't know	
Less than 1s.	18	2	—	13	4	—	37
1s. to 2s.	23	—	2	21	7	—	53
2s. 1d. to 5s.	12	—	—	8	6	—	26
5s. 1d. to 10s.	7	—	—	8	—	—	15
10s. 1d. to 25s.	—	—	—	1	—	—	1
Don't know travel cost	1	—	—	—	3	—	4
							136

Seven respondents declined to answer this question, or the question could not apply. From the table the following calculations are made of the elasticity of demand.

$$\epsilon_D = \frac{\text{Proportionate change in quantity}}{\text{Proportionate change in price}}$$

Between 6d. and 5s. 6d.	$\epsilon_D = 0.1$
Between 6d. and 10s. 6d.	$= 0.012$
Between 1s. 6d. and 11s. 6d.	$= 0.038$
Between 3s. 6d. and 13s. 6d.	$= 0.15$

## **Willingness to Return**

The strong inelasticity of demand was confirmed by the replies to questions 35 and 36. 93 per cent of the respondents said they would come again at the hypothetical increased price if their suggested improvements in access and facilities were made; 7 per cent said they would not come at the increased price, and all of these were at the level of 10 shillings increase.

## **Cost Consciousness**

A very important result of the Cannock questionnaire in the field of costs and price elasticity was the response to question 32: "When you decided to come here, did you think about the cost of travelling particularly?" The replies were:

Yes	2
No	137
Don't know	2
Reject	2 (Resident and walked, involving no expenditure)
	<hr/>
	143

Thus 96 per cent of the respondents claimed that they did not think closely of the cost of travelling. This suggests that they are not cost-conscious, which is supported by the extraordinary price inelasticity of their demand. As confirmed in other forests this appears to make travel cost a poor valuation measure of recreation opportunity.

# Allerston Forest Survey, 1964

Allerston Forest is in the North Riding of Yorkshire, on the south side of the Yorkshire Moors, which form a compact rectangle of hill land about 1,000 square miles in area close to the east coast. The plateau is deeply cut by steep-sided valleys, the parent rocks being Jurassic limestone, of which the harder, upper series form irregular cliffs on the rims of the valleys. On the southern edge of the Moors, the flat-topped Tabular Hills form a well-defined escarpment above the Vale of Pickering. This is the southern edge also of Allerston Forest which occupies over 25,000 acres.

There are extensive Boulder Clay deposits on the Moors, and many glacial outwash soils in the valleys. Over most of the area strong podsoles have developed, the leaching often being complete and leaving an A horizon of almost pure quartz sand; an iron pan B horizon is usual at 2 or 3 feet. Modern afforestation here involves tine-ploughing, but even then the forester is limited in the species that he may select for planting. Scots pine and, recently, Lodgepole pine have been the species commonly chosen; Corsican pine was used, but its planting has now stopped. The yield class (or mean annual increment per acre) of the pine plantations is not high, but in afforesting these podsollic heaths there are few opportunities for using any tree species that is fertility-demanding.

The forest is not close to any large industrial area: Leeds is more than 40 miles to the south-west; Darlington and Middlesbrough are only some 30 miles distant in a straight line to the north-west, but considerably farther by road.

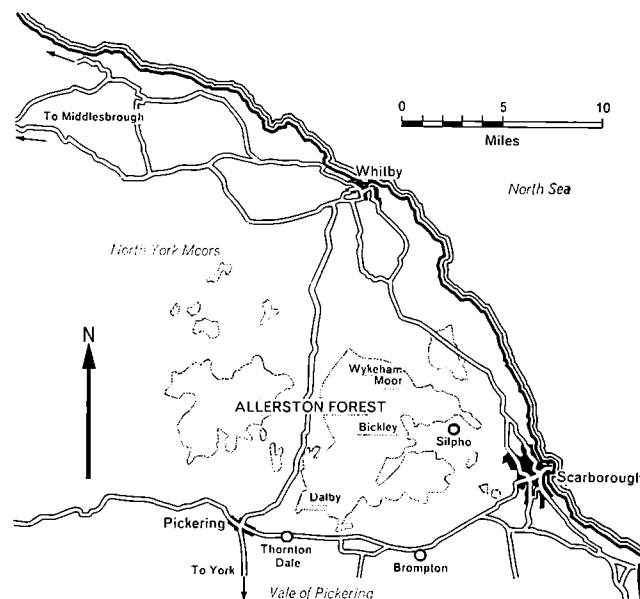


FIG. 14 Allerston Forest: Map to show situation and towns nearby

Unlike Cannock Forest this forest is not conveniently placed for day visits by urban industrial workers, although the survey showed that many people do make quite long journeys for single-day visits to it. The main area of Allerston Forest, however, is less than ten miles west of Scarborough which attracts very large numbers of summer holiday visitors. Many of these people visit the forest as a one-day trip, or a part-day trip, from their holiday centre on the coast. The Forestry Commission has provided some facilities for visitors, the best and most-used of which is Dalby Forest Drive, a through motor route in the forest north of the main Pickering-Scarborough road. The Forestry Commission clearly wishes to increase the use of the forest for public recreation of the sight-seeing, walking and picnicking kinds, while at the same time restricting special expenditure on recreation, and minimising the interference with timber production.



FIG. 15      Loch Morlich and the old Caledonian pinewoods, with heather moors rising to an arctic vegetation on the rock-strewn tops and ski slopes. Glen More Forest Park, Cairngorms



The survey was made on Tuesday to Monday inclusive, 11th to 17th August, 1964. In that period the weather was mainly dry; there were some rain showers on Wednesday and Thursday, 12th and 13th. The number of interviews each day was as follows:

TABLE 23 INTERVIEWS EACH DAY AT ALLERSTON FOREST

Day and Date	Respondents
Tuesday 11th August	47
Wednesday 12th	62
Thursday 13th	55
Friday 14th	60
Saturday 15th	48
Sunday 16th	95
Monday 17th	22 (short day)
Total	389

Respondents were interviewed on Dalby Forest Drive, at Adderstone Rigg, High Staindale and Sieve Dale; on Silpho Moor; and at Baker's Warren Top and at the car park in the Wykeham section of the forest.

As with the returns from Cannock Forest, tests were made for interviewer bias in the replies to questions 37 to 44 and 47 to 49 of the questionnaire, which seemed the most sensitive parts. No bias was found that was significant at the .05 level on the printing order of the test cards (see p. 10).

### Size and Nature of Groups

389 groups were represented. The frequency distribution and composition are set out in Table 24. The mean group was 3.94 people; standard deviation 4.07. Excluding the two exceptionally large groups the mean is 3.69 (Cannock=3.66), and the standard deviation 1.79.

The fact that the standard deviation (4.07) is numerically greater than the mean (3.94) is statistically acceptable; it is merely an indication of the positively skewed distribution.

TABLE 24

## SIZE AND COMPOSITION OF GROUPS: ALLERSTON FOREST

Persons per group	Frequency of Groups				Total
	Family	Friends	Family and friends	Organisations	
1	—	—	—	—	13
2	87	21	—	1	109
3	51	7	1	2	61
4	86	15	7	4	112
5	34	3	—	1	38
6	25	—	5	1	31
7	8	1	4	—	13
8	1	—	3	—	4
9	1	—	1	—	2
10	—	—	1	—	1
11	—	—	1	—	1
12	—	—	—	—	—
13	—	—	1	—	1
14	—	1	—	—	1
37	—	—	—	1	1
70	—	—	—	1	1
Totals	293	48	24	11	389

TABLE 25

## COMPOSITION OF GROUPS, ALLERSTON FOREST

	Respondents		All persons	
	Frequency	per cent	Number	per cent
Alone	13	3	13	1
Families	293	76	1064	70
Friends	48	12	159	10
Family and friends	24	6	156	10
Organisations	11	3	142	9
Totals	389	100%	1534	100%

Of the 389 groups in the sample, 168 included a child or children; there were 329 children in all, almost exactly 2 per group.

TABLE 26

## PRESENCE OF CHILDREN, ALLERSTON FOREST

Number of children per group	Frequency per cent of all groups
0	57
1	15
2	18
3	7
4	2
5	1
	100 per cent



FIG. 16

A scout troop descending Cairngorm towards Lochan Uaine, the Green Lochan, in the Pass of Ryvoan, Glen More Forest Park

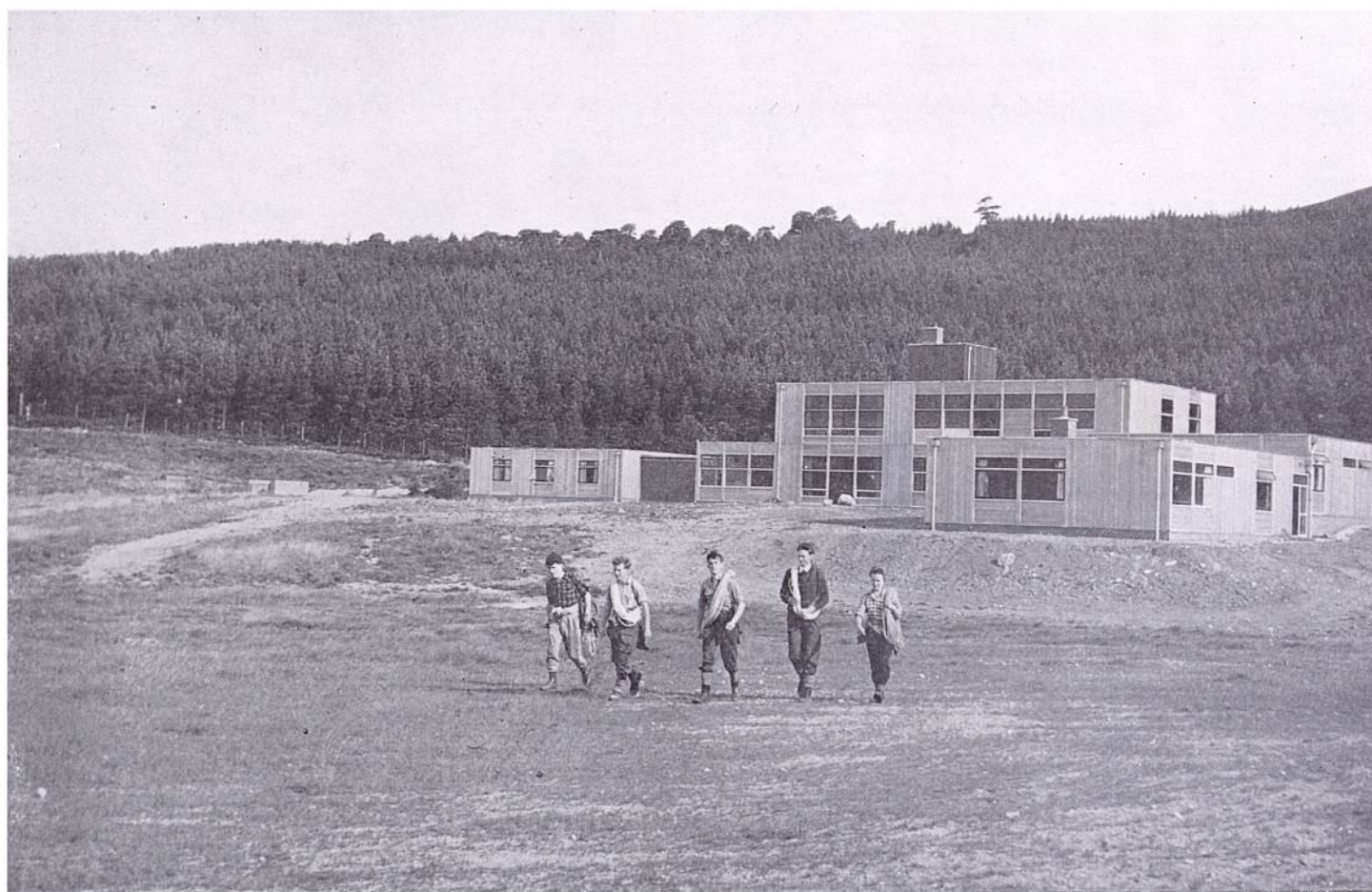


FIG. 17 A climbing party sets out for the hills from Glen More Lodge, the hostel run by the Scottish Council for Physical Recreation

The mean group was composed of 3.10 adults and 0.84 children. The sample of 389 groups was composed, therefore, of 389 adult respondents, 816 other adults and 329 children, a total of 1,534 people. The ages of the respondents and the accompanying adults were estimated (tables 27 and 28); no child (i.e. under 15 years) was interviewed as a respondent.

TABLE 27 AGES OF RESPONDENTS: ALLERSTON FOREST

Age brackets	Frequency			Total frequency per cent
	Men	Women	Total	
15 to 19 years	18	3	21	5.4
20 to 25	23	4	27	6.9
26 to 45	182	19	201	51.7
Over 45 years	128	12	140	36.0
Totals	351	38	389	100



TABLE 28

AGES OF ALL ADULTS, INCLUDING RESPONDENTS

Age brackets	Frequency per cent
15 to 19 years	9.3
20 to 25	7.9
26 to 45	51.3
Over 45 years	31.5
	100 per cent

## Reasons for Visits

Pleasure driving was the strongest reason for visiting the forest; the motives for visiting are summarised in Table 29.

TABLE 29

REASONS FOR VISITS: ALLERSTON FOREST

Motives for visit	Ranking, by percentages			
	1st choice	2nd choice	3rd choice	4th choice
Picnicking	13.1	20.1	11.0	6.9
Pleasure driving	54.5	20.3	9.8	5.6
Caravanning	—	—	—	—
Camping	0.3	—	—	—
Heath walking	9.5	6.4	1.3	1.0
Rambling	9.7	9.5	5.9	1.3
Bird watching	0.3	2.3	2.1	3.6
Other nature studies	3.1	3.6	2.6	4.4
Pony trekking	0.3	—	0.8	0.3
Photography	4.9	8.5	8.7	6.7
Fishing and shooting	0.8	0.3	0.8	0.3
Others	1.5	0.5	1.0	0.3
Don't know	2.0	—	—	—
No secondary activity	—	28.5	56.0	69.6
	100	100	100	100 per cent

Three-quarters of the visitors who came primarily for picnicking ranked pleasure driving as their next most important activity, and the picnickers showed no greater preference for walking than those who came primarily for pleasure driving (cf. Cannock). Many pleasure drivers had no other activity than driving.

<i>1st choice</i>	<i>2nd choice</i>	
Picnicking	Pleasure driving	72 per cent
	Walking	18
	Other	4
	No other activity	6
Pleasure driving	Picnicking	25 per cent
	Walking	18
	Other	14
	No other activity	43
Walking	Picnicking	27 per cent
	Pleasure driving	36
	Other	28
	No other activity	9

An estimate was made of the order of importance of the possible activities open to the visitors, by awarding marks; 4 for 1st rank to 1 mark for 4th rank. Expressed as percentages the results are as follows:

Pleasure driving	42 per cent
Walking	19
Picnicking	19
Photography	9
Nature study including birds	6
Others	3

## Knowledge of Recreation Opportunities

In answer to questions 10 and 11, 76 per cent of the respondents said they were aware that Allerston Forest provided opportunities for the recreational activities they ranked as important, and that they came especially for them. 5 per cent said they were aware of the opportunities but did not come especially for them. 19 per cent were not aware of Allerston's opportunities before their visit.

The local Forestry Commission staff asked that an attempt be made to establish how visitors came to know that Allerston Forest and Dalby Forest Drive were open to the public. Some advertising had been undertaken, and there was interest in testing its effectiveness.

TABLE 30 VISITORS' SOURCES OF KNOWLEDGE CONCERNING FOREST RECREATION: ALLERSTON FOREST

1. Local press	9 per cent
2. National press	0.5
3. Periodicals	2
4. Radio and TV	—
5. Forestry Commission publications	0.25
6. Word of mouth	31
7. Notices in hotels, hostels and shops	1
8. Resident; long known	6
9. Accidental; exploring; map reading	46
10. Guide book; AA itinerary	2
11. Coach trip brochure, library, etc.	2

The analysis shows that the Forestry Commission's own publications had been entirely ineffective for the purpose of informing the public of the existence of this recreation opportunity though it must be borne in mind that the Commission's guide book *North Yorkshire Forests* (H.M.S.O. 7s. 6d.) had only just been put on the market when the survey was made. Table 31 shows the analysis of the source of knowledge of the forest recreation against the record of previous visits to this forest.

### Previous Visit

A "recruitment rate" of 34 per cent was found. This is unexpectedly high, suggesting either that the recreation use is growing very fast or that the respondents tend to make few visits to the same place.

TABLE 31 PREVIOUS VISIT TO ALLERSTON FOREST AGAINST SOURCE OF KNOWLEDGE

Last visit	Source of knowledge, frequency (rubrics as in Table 30)									Total Frequency per cent
	1	2+3	5	6	7	8	9	10	11	
On first visit	26	3	—	43	3	4	45	35	2	34
Last week	1	—	—	25	1	3	37	1	—	17
In last month	5	2	—	10	1	7	28	—	—	14
In last 6 months	1	2	—	14	—	3	22	1	3	12
In last year	1	—	1	15	—	3	19	—	—	10
Two years ago	—	—	—	3	—	—	12	—	—	4
More than 2 years	2	2	—	8	—	2	12	1	2	7
Residents	—	—	—	—	—	4	—	—	—	1
Don't know	—	—	—	—	—	4	—	—	—	1
Totals (389)	36	9	1	118	5	30	175	8	7	100%

### Visitors' Homes by Regions

At the time of the survey the forest was visited mainly by people whose homes were in Yorkshire, Northumberland and Durham County. Many people who are on holiday at Scarborough go to Allerston Forest, and nearly 80 per cent of the visitors were local residents or were from other parts of North-east England. There were three respondents from overseas and four from Scotland.

TABLE 32

## VISITORS' HOMES: ALLERSTON FOREST

Region or country (see Appendix II)	All groups
Greater London	8 per cent
Kent and Sussex	0.5
Local (Scarborough, Pickering, Ganton, Whitby)	28
Bristol and South-west England	0.5
West Midlands	2
East Midlands	3
North-east England	50
North-west England	5
Wales	0.2
Scotland	1
Overseas	0.8
	100 per cent

### Distance from Home

The main road distance by the shortest route from the U.K. visitor's home to the interview point was 78.4 miles.

The mean distance travelled on the day of interview was 27.75 miles (standard deviation 26.36 miles). In the period of the survey 40 per cent of the visitors came from Scarborough and nearby (between 6 and 15 miles to the east), and 25 per cent came from places between 25 and 60 miles to the south and south-west.

### Length of Stay and Accommodation

More than half the respondents were day visitors.

TABLE 33

## LENGTH OF STAY IN DISTRICT: ALLERSTON FOREST

One day	55 per cent
2 days	1
3	3
4	2
5	2
6	0.5
7	12
Two weeks	21
More than 2 weeks	3
Allerston residents	2



TABLE 34 ACCOMMODATION USED BY VISITORS (EXCLUDING ONE-DAY VISITORS)

Camping	4 per cent
Caravanning	7
Hostel	7
Hotel	24
Guest house	22
Other (including friends)	36
	100 per cent

### Method of Travel

More than 93 per cent of the groups (360 respondents) travelled to the forest by car. Two respondents came by rail, 6 by service bus, one by hired coach, 5 by motor cycle and 4 by bicycle; 7 walked to the forest.

The 360 car drivers were divided into 198 (55 per cent) who remained beside or in their cars, and 161 (45 per cent) who walked in the forest; one used a pony. 45 per cent of all visitors walked in the forest.

### Access Improvement

When respondents were asked (question 25) if they were in favour of improving the access to the forest, they replied as follows:

Yes	244 respondents	64 per cent
No	136	35
Don't know	3	1

The 244 respondents who favoured improvement of the access were asked to select and rank the three improvements most important to them from the nine offered on the card or others they might suggest.

TABLE 35 ACCESS IMPROVEMENT RANKING: ALLERSTON FOREST

Improvement	Frequency of Respondents' ranking votes			Score: 1st=3 2nd=2 3rd=1
	1st	2nd	3rd	
More roads	14	8	9	67
Better surface and wider roads	59	22	16	237
More parking places	22	26	28	146
Sign-posted footpaths	85	43	22	363
More caravan and camp sites	6	7	5	37
Bus services to forest	7	9	5	44
Public transport in forest	1	4	5	16
Cycle paths	3	2	7	20
Maps of the forest	43	74	35	312
Others	4	1	1	15
No selection	—	48	111	—

On the basis of the frequency of the first rank choice, the order of preference for improvements was Sign-posted footpaths, Better roads and Maps of the forest, but on the basis of the weighted scoring for ranks 1, 2 and 3, the order of preference was:

Sign-posted footpaths	29 per cent
Maps of the forest	25
Better surface and wider roads	19
More parking places	12

These make up 85 per cent of the demand for access improvement. The results are compatible with the main reasons given for visiting the forest (Table 29). There is very little demand for caravan sites, and only 5 per cent support for "More roads" in the weighted score.

Among the suggestions listed under "Other" in Table 35 for improvements of access were: Signposted roads (6); Footpath notices showing distance and time for the walk; Better publicity of access; Cattle grids instead of gates.

The answers to question 25 were analysed against the day of the week. There was no significant difference between the results on different days.

## Facility Improvement

When the respondents were asked (question 27) if they were in favour of the improvement of the facilities in the forest, they replied as follows:

Yes	234 respondents	61 per cent
No	143	37
Don't know	5	2

The 234 respondents who were in favour of the improvement of facilities were asked to select and rank the three improvements most important to them from the eight shown on the card or others they might suggest. The results are shown in Table 36.

TABLE 36 FACILITY IMPROVEMENT RANKING: ALLERSTON FOREST

Improvement	Frequency of Respondents' ranking votes			Score: 1st=3 2nd=2 3rd=1
	1st	2nd	3rd	
Roadside picnic sites and litter bins	73	25	32	301
Sanitation	71	44	18	319
Roadside fireplaces	4	2	3	19
Water points	18	47	29	177
Shelter huts	10	20	12	82
Facilities for special interests	2	3	5	17
Information office	20	16	15	107
Restaurants-garages	33	20	13	152
Others*	3	3	2	11
No selection	—	54	105	—

\* Includes: Signposts to places of special interest (3); Maps and leaflets with forestry information(2); Fishing in all Forestry Commission water on day permit only (3).

On the basis of the weighted scoring, the order of preference for improving the facilities was as follows:

Sanitation	27 per cent
Roadside picnic sites and litter bins	26
Water points	15
Restaurants—garages	13
Information office	9

These preferences represented 90 per cent of the demand.

### Attitudes to Production Forestry

More than 13 per cent of the visitors were unaware that “this is a Forestry Commission area”. Those who had made a previous visit to the forest were significantly more aware of the ownership of the forest than those on their first visit.

Less than 1 per cent noticed commercial timber operations and said the work interfered with their recreation enjoyment. 41 per cent noticed the operations and said there was no interference with their enjoyment. 55 per cent did not notice any forestry work. Some respondents said that timber working increased the interest of the visit and increased their enjoyment.

TABLE 37 RESPONDENTS’ DESIRES FOR LOCAL RECREATIONAL DEVELOPMENT AND FOR MORE TIMBER PRODUCTION

Timber: Recreation	Number of Respondents			Total (%)
	Want more timber	Don’t know (about timber)	Want less timber	
Want more recreation	105	25	9	139 (60)
Don’t know (about recreation)	33	6	—	39 (17)
Want less recreation	5	4	2	11 (5)
Total	143	35	11	
Percentage	(61)	(15)	(5)	

44 respondents (19 per cent) wanted the forest “As it is”.

### Avoiding Developments

Question 29 was not a multiple choice; the replies have been grouped according to their sense and key words.

TABLE 38 OPPOSITION TO DEVELOPMENTS: ALLERSTON FOREST

Commercialisation (34%), buildings (14%), restaurants (8%), amusements (1%), shops (2%), kiosks (2%), vans (2%)	63 per cent
Main roads and more roads	4
Caravan and camp sites	7
Military use	2
Solid conifers	0.25
Others	8.75
All developments	12
Don’t know	3
	100 per cent

## Desirable and Undesirable Features of the Forest

TABLE 39 DESIRABLE FEATURES AT ALLERSTON FOREST

Peaceful: Quiet: Seclusion: No traffic	26 per cent
Natural: Unspoiled	15
Scenery: Beauty	25
Open ground: Lack of development	3
Trees: Plants: Forest	12
Fresh Air: Smell of the pines	4
Freedom: Space: "Away from it all"	4
Others	11
	100 per cent

TABLE 40 UNDESIRABLE FEATURES AT ALLERSTON FOREST

Litter	21 per cent
Flies: Rain	13
People: Bus Parties: Traffic: Roads	6
Narrow roads: Restriction of pulling off:	
Gates: Fences	6
No lavatories	3
"Wasteland"	7
Regular conifers	11
Others	33
	100 per cent

## Cost of Visiting

Respondents were asked to estimate the cost per visitor for travelling from home to the forest; the results for Allerston Forest are summarised in Table 41.

TABLE 41 TRAVEL COST: ALLERSTON FOREST

Travel cost per head	Group frequency (mean group=3.68)	Estimated aggregate amount spent
Less than 1s.	29	53 shillings
1s. to 2s.	119	656
2s. 1d. to 5s.	89	1148
5s. 1d. to 10s.	103	2841
10s. 1d. to 25s.	17	1097
25s. 1d. to 40s.	3	359
40s. 1d. to 100s.	2	515
Don't know (use mean cost)	21	388
		6957 shillings



Respondents were asked if the party would have come if the travel cost had been 10 shillings (or £1) more per head. The response is summarised in Table 42.

TABLE 42 PRICE ELASTICITY OF DEMAND: ALLERSTON FOREST

	Respondents willing to come at increased cost						
	+ 10s.			+ 20s.			
Travel cost per head	Yes	No	Don't know	Yes	No	Don't know	Total
Less than 1s.	10	5	—	9	2	—	26
1s. to 2s.	40	11	1	42	23	—	117
2s. 1d. to 5s.	36	8	—	20	22	2	88
5s. 1d. to 10s.	44	3	—	34	17	5	103
10s. 1d. to 25s.	9	—	—	6	1	1	17
25s. 1d. to 40s.	2	1	—	—	—	—	3
40s. 1d. to 100s.	1	—	1	—	—	—	2
Don't know travel cost	10	3	—	4	2	2	21
							377

12 respondents declined to answer the question, or the question could not apply. From the information in Table 42 the following calculations are made of the price elasticity of demand.

$$\epsilon_D = \frac{\text{Proportionate change in quantity}}{\text{Proportionate change in price}}$$

Between 6d. and 10s. 6d.	$\epsilon_D = 0.017$
6d. and 20s. 6d.	$= 0.005$
1s. 6d. and 11s. 6d.	$= 0.032$
1s. 6d. and 21s. 6d.	$= 0.053$
3s. 6d. and 13s. 6d.	$= 0.064$
3s. 6d. and 23s. 6d.	$= 0.092$
7s. 6d. and 17s. 6d.	$= 0.048$
7s. 6d. and 27s. 6d.	$= 0.125$
17s. 6d. and 37s. 6d.	$= 0.125$
32s. 6d. and 42s. 6d.	$= 1.083$

### Willingness to Return

The strong inelasticity of demand was confirmed by the replies to questions 35 and 36. 85 per cent of the respondents said they would come again at the hypothetical increased price if their suggested improvements to access and facilities were made; 15 per cent said they would not come at the increased price. 5 respondents,  $1\frac{1}{2}$  per cent, said they would not come back even at the same travel cost.

**Cost Consciousness**

In reply to question 32, on whether they considered travelling cost particularly before coming, respondents replied:

Yes	3 per cent
No	94
Don't know	1
(rejects)	2 (came for business)

This result confirms that at Cannock Forest.

**Special Questions**

Two additional questions were asked at Allerston Forest.

To question 31c, on the suitability of the pine forest for holiday use, 90 per cent of the respondents said the forest was suitable, 2 per cent said it was unsuitable, and 8 per cent did not know.

To question 31d, on the relative attractiveness of pines and hardwoods at Allerston Forest, 63 per cent said pines were more attractive than hardwoods, 15 per cent said pines were less attractive than hardwoods, 18 per cent said they were equally attractive and 4 per cent did not know. Many respondents commented that a mixture was preferable to either pines or hardwoods alone.

# Glen More Forest Park Survey, 1964

Glen More Forest Park, also called Queen's Forest, is in Inverness-shire, immediately on the north side of the massif of the Cairngorm Mountains which rise as a dissected plateau to over 4,000 feet. The parent rocks of the area are principally granite. The land was heavily glaciated, and there is a complex arrangement of morainic soils, boulder till and glacial outwash sands and gravels. The soil texture is light and the soil is generally strongly evolved to the podsol. Other than on the high mountains, the ground vegetation is heath under natural forest of Scots pine and birch.

The Forestry Commission owns approximately 12,500 acres, including land above the tree limit. The forested area of 4,000 acres is almost entirely Scots pine forest, some semi-natural, some planted. The Commission has always allowed the public access to this area, but it is only since 1955 that the demand has been heavy. There has been a phenomenal growth in the popularity of winter sports on Cairngorm Mountain, and in the demand for summer camping at the Commission's camp site at the east end of Loch Morlich.

The forest is far from any large industrial city; Glasgow and Edinburgh are more than 100 miles to the south and day-visiting from home is negligible. On the other hand, the forest is part of the most important wild area for holidaying in Britain, and there are many small towns and villages nearby in which tourism is the main industry; Aviemore, Kingussie, Nethybridge, Boat of Garten and Grantown-on-Spey are all within 15 miles.

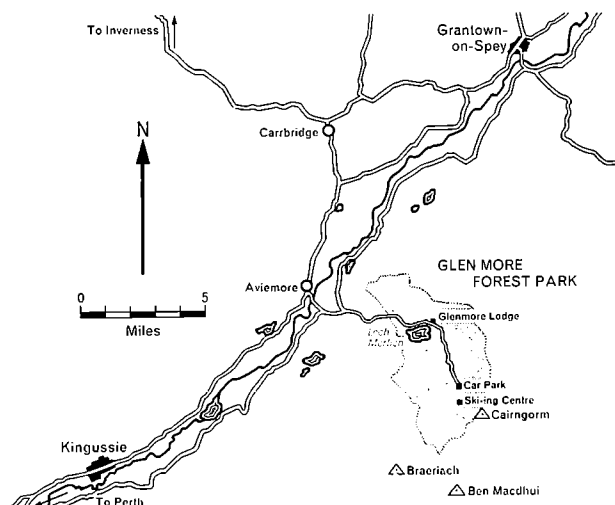


FIG. 18 Glen More Forest Park; Locality map

The survey was made on Thursday to Wednesday inclusive, 20th to 26th August, 1964. Throughout the week the weather was dull and cool or cold; Sunday 23rd was showery, and Monday 24th was wet. The number of interviews each day was as follows:

TABLE 43 INTERVIEWS EACH DAY AT GLEN MORE

Day and Date	Respondents
Thursday 20th August	44
Friday 21st	79
Saturday 22nd	69
Sunday 23rd	67
Monday 24th	39
Tuesday 25th	68
Wednesday 26th	41
Total	407



FIG. 19 Loch Lomond at Rowardennan, with the peaks of Ptarmigan and Ben Lomond rising steeply from the forest fringe. Queen Elizabeth Forest Park



Respondents were interviewed at the Glen More Camp Site and Glen More Lodge; on the south side of Loch Morlich; at the Top Car Park and on the Ski Road on Cairngorm.

Tests were made for interviewer bias and for bias on the printing order of the cards. No bias that was significant at the .05 level was found in the  $\chi^2$  tests.

### Size and Nature of Groups

407 groups were represented. The frequency distribution and composition of the groups are set out in Table 45. The mean group was 4.08 people, and the standard deviation was 4.58. Of the 407 groups, 171 included a child or children.

TABLE 44                      SIZE AND COMPOSITION OF GROUPS: GLEN MORE

Persons per group	Frequency of Groups				Total
	Family	Friends	Family and friends	Organisations	
1	—	—	—	—	13
2	72	40	—	1	113
3	61	18	—	1	80
4	92	12	5	—	109
5	42	2	—	—	44
6	15	—	—	1	16
7	11	1	2	1	15
8	3	—	1	1	5
9	—	—	1	1	2
10	1	—	—	—	1
11	—	—	—	—	—
12	—	1	—	1	2
17	—	—	—	1	1
21	—	—	—	2	2
33	—	—	—	1	1
41	—	—	—	1	1
45	—	1	—	—	1
56	—	—	—	1	1
Totals	297	75	9	13	407

TABLE 45 COMPOSITION OF GROUPS: GLEN MORE

	Respondents		All persons	
	Frequency	per cent	Number	per cent
Alone	13	3	13	1
Families	297	73	1106	67
Friends	75	19	256	15
Family and friends	9	2	51	3
Organisations	13	3	236	14
Totals	407	100%	1662	100%

TABLE 46 PRESENCE OF CHILDREN: GLEN MORE

Number of children per group	Frequency per cent of all groups
0	58
1	14
2	16
3	8
4	2
5	1
6	1
	100 per cent

There were 360 children in 171 groups, 2.1 children per group. The mean group was composed of 3.20 adults and 0.88 children. The sample of 407 groups was composed of 407 adult respondents, 895 other adults and 360 children, a total of 1,662 people. The ages of the respondents were estimated (table 47).

TABLE 47 AGES OF RESPONDENTS: GLEN MORE

Age brackets	Frequency			Total frequency per cent
	Men	Women	Total	
15 to 19 years	23	5	28	6.9
20 to 25	63	10	73	18.0
26 to 45	176	34	210	51.5
Over 45 years	88	8	96	23.6
Totals	350	57	407	100 per cent

## Reasons for Visits

As at Allerston Forest, pleasure driving was the strongest principal reason for people visiting Glen More.

TABLE 48

## REASONS FOR VISITS: GLEN MORE

Motives for visit	Ranking, by percentages			
	1st choice	2nd choice	3rd choice	4th choice
Picnicking	4.9	12.3	9.2	9.8
Pleasure driving	32.7	15.7	11.1	7.1
Caravanning	6.6	1.5	1.7	1.6
Camping	9.6	7.1	5.1	2.0
Climbing	1.0	0.7	1.0	0.6
Hill walking	23.3	13.8	6.6	2.5
Rambling	7.1	11.5	8.4	3.5
Bird watching	1.0	1.5	3.9	4.2
Other nature studies	2.5	3.4	2.9	4.0
Swimming	0.7	2.2	5.4	5.5
Sailing	2.0	2.5	2.0	1.5
Pony trekking	0.7	0.3	1.2	0.8
Photography	3.2	15.0	17.9	10.6
Fishing and shooting	2.5	3.0	3.2	1.9
Others	2.2	0.5	1.0	0.1
No secondary activity	—	9.0	19.4	44.3
	100	100	100	100 per cent

A very small proportion of visitors came primarily for picnicking. A high proportion came primarily for walking, and most of these visitors said they were involved in hard, hill walking rather than a gentle stroll. In general, the range of activities was wide, and all groups took advantage of this except those who came primarily for picnicking.

<i>1st choice</i>	<i>2nd choice</i>	
Picnicking	Pleasure driving	75 per cent
	Walking (including climbing)	0
	Other	15
	No other activity	10
Pleasure driving	Picnicking	24 per cent
	Camping and caravanning	6
	Walking (including climbing)	23
	Other	28
	No other activity	19
Walking, including climbing	Picnicking	9 per cent
	Pleasure driving	16
	Camping and caravanning	19
	Nature studies	12
	Other	40
	No other activity	5

Camping and caravanning	Picnicking	9 per cent
	Pleasure driving	23
	Walking (including climbing)	47
	Other	21

An estimate was made of the order of importance of the possible activities open to the visitors, by awarding marks; 4 for 1st rank to 1 mark for 4th rank. Expressed as percentages the results are as follows:

Walking	27 per cent
Pleasure driving	23
Caravanning and camping	12
Photography	11
Picnicking	9
Nature studies, including birds	6
Swimming	3
Sailing	2
Others	7

The relatively low importance of picnicking, which is mainly a day-visit activity, is interesting (cf. Cannock Forest).

### Knowledge of Recreation Opportunities

74 per cent of the respondents were aware before they came that the area provided opportunities for the recreation activities they ranked as important, and they came especially for them. 10 per cent said they were aware of the opportunities but did not come especially for them. 14 per cent were not aware of the area's opportunities before their visit.

### Previous Visit

An unexpectedly high "recruitment rate" of 57 per cent was found in the sample, higher even than Allerston Forest (34 per cent).

TABLE 49 PREVIOUS VISIT TO GLEN MORE

Last Visit	Frequency	
	Respondents	Percentage
Recruits, on 1st visit	232	57
Last week	9	2
Within last month	7	2
Within last 6 months	26	6
Within last year	62	15
Two years ago	23	6
More than 2 years	44	11
Residents	1	—
Don't know	3	1
	407	100 per cent

## Visitors' Homes by Regions

At the time of the survey the forest was visited mainly by people whose homes were in London and southern England. The regions referred to in Table 50 are defined in Appendix II.

TABLE 50 VISITORS' HOMES: GLEN MORE

Region or country	Frequency per cent All groups
South Scotland	1 per cent
West Scotland (including Glasgow, Lanark and Stirling)	4
S.E. Scotland	9
N.E. Scotland	8
Highlands and North Scotland	10
Northern Ireland	$\frac{1}{2}$
Wales	$1\frac{1}{2}$
Greater London	$21\frac{1}{2}$
Kent and Sussex	3
Bristol and S.W. England	5
West Midlands	$4\frac{1}{2}$
East Midlands	$4\frac{1}{2}$
East Anglia	$4\frac{1}{2}$
North-east England	14
North-west England	9
	100 per cent

## Distance from Home

The mean main road distance by the shortest route from the United Kingdom visitors' homes to the interview point was 210 miles.

The mean distance travelled on the day of interview was 26.09 miles (standard deviation 36.09 miles). In the period of the survey 34 per cent of the visitors came from nearby Speyside towns (Aviemore, Grantown, Kingussie, etc.), and 15 per cent from Inverness and nearby; 24 per cent stayed at the Loch Morlich camp site or at the Glen More hostels.

## Length of Stay and Accommodation

In contrast to those at Cannock and Allerston Forests, most of the visitors to Glen More stayed more than one day. 5 per cent were passing through only, and 12 per cent were one-day visitors.



TABLE 51 LENGTH OF STAY IN DISTRICT: GLEN MORE

Passing through	5 per cent
One day	12
2 days	15
3	12
4	8
5	4
6	4
7	12
Two weeks	21
More than 2 weeks	4
Residents	3

TABLE 52 ACCOMMODATION USED BY VISITORS (EXCLUDING 1-DAY VISITORS)  
AT GLEN MORE

Camping	35 per cent
Caravanning	11
Hostelling	3
Hotel	30
Guest House	11
Other (including friends)	10
	100 per cent

## Method of Travel

More than 93 per cent of the groups (379 respondents) travelled to the district by private car; 4 per cent (16 respondents) travelled by rail. 5 respondents came by service bus, 2 by motor coach, 2 by motor cycle and 3 walked.

The 379 car drivers were divided into 79 (21 per cent) who remained in or beside their cars during their visit, 293 (77 per cent) who walked in the forest, 5 (1 per cent) who left their cars only to go on the ski-lift, and 2 respondents who went pony trekking. 77 per cent of all visitors walked in the forest. 64 respondents (16 per cent) used the ski-lift on Cairngorm Mountain.

## Access Improvement

When respondents were asked (question 25) if they were in favour of improving the access to the forest, they replied as follows:

Yes	260 respondents	64 per cent
No	133	33
Don't know	3	3

The 260 respondents who favoured improvement of access were asked to select and rank the three improvements most important to them from the nine offered on the card, or others they might suggest.

TABLE 53

## ACCESS IMPROVEMENT RANKING: GLEN MORE

Improvement	Frequency of Respondents' ranking votes			Score:
	1st	2nd	3rd	1st=3 2nd=2 3rd=1
More roads	26	14	17	123
Better surface and wider roads	60	30	18	258
More parking places	11	31	35	130
Sign-posted footpaths	81	57	34	391
More caravan and camp sites	12	17	23	93
Bus services to forest	3	6	8	29
Public transport in forest	4	4	3	23
Cycle paths	1	3	6	15
Maps of the forest	57	67	28	333
Others	5	2	3	22
No selection	—	29	85	—

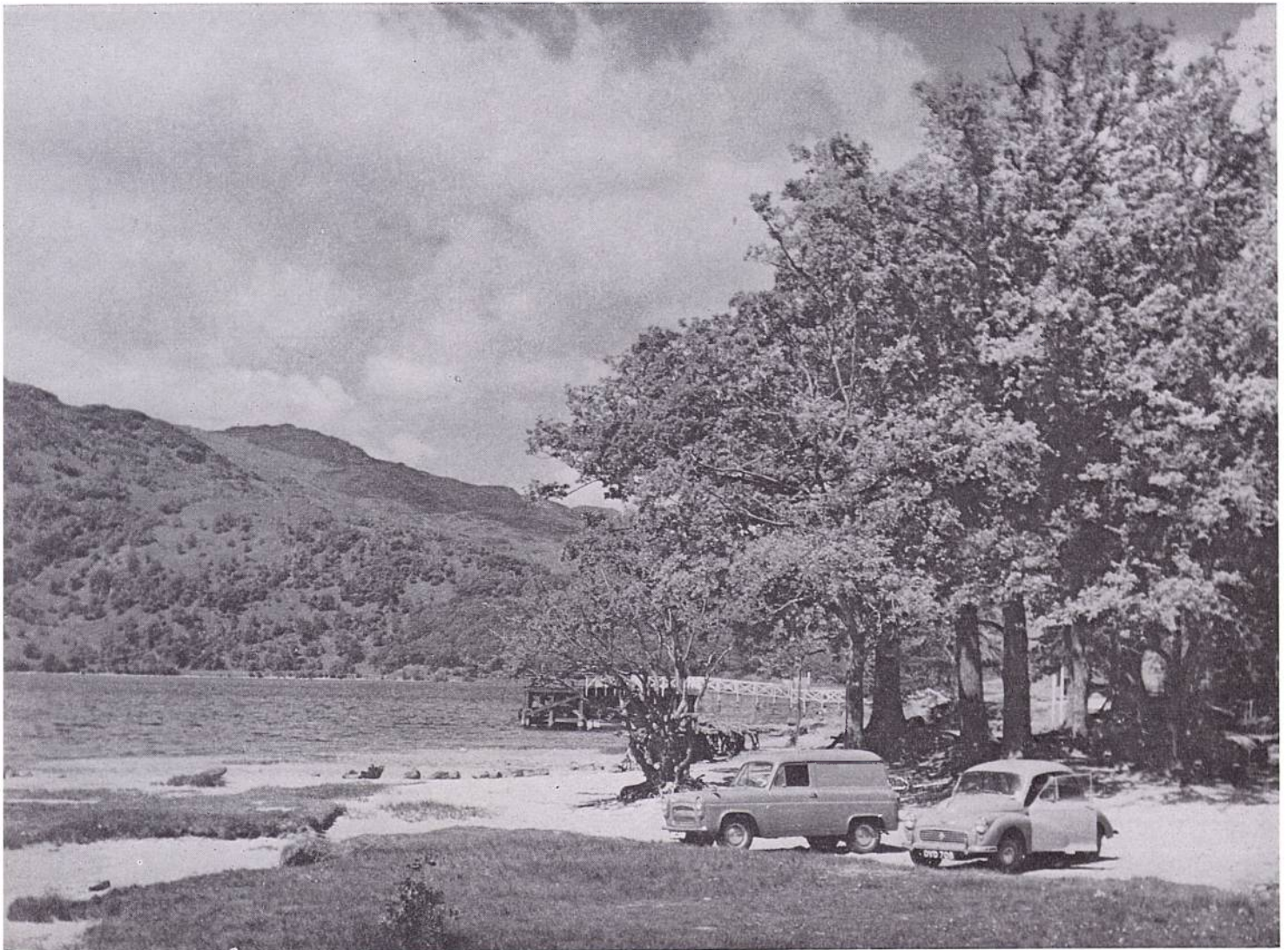


FIG. 20

The westward view from Rowardennan across Loch Lomond towards Inverbeg and Beinn Bhreac. Queen Elizabeth Forest Park



On the basis of the frequency of the first choice, the order of preference for improvements was Sign-posted footpaths, Better roads, and Maps of the forest, but on the basis of the weighted scoring for ranks 1, 2 and 3, the order of preference was:

Signposted footpaths	28 per cent
Maps of the forest	24
Better surface and wider roads	18
More parking places	9

These make up 79 per cent of the demand for access improvement. In the weighted score there is relatively little demand for more roads (<9 per cent), and even less (7 per cent) for more caravan and camp sites.

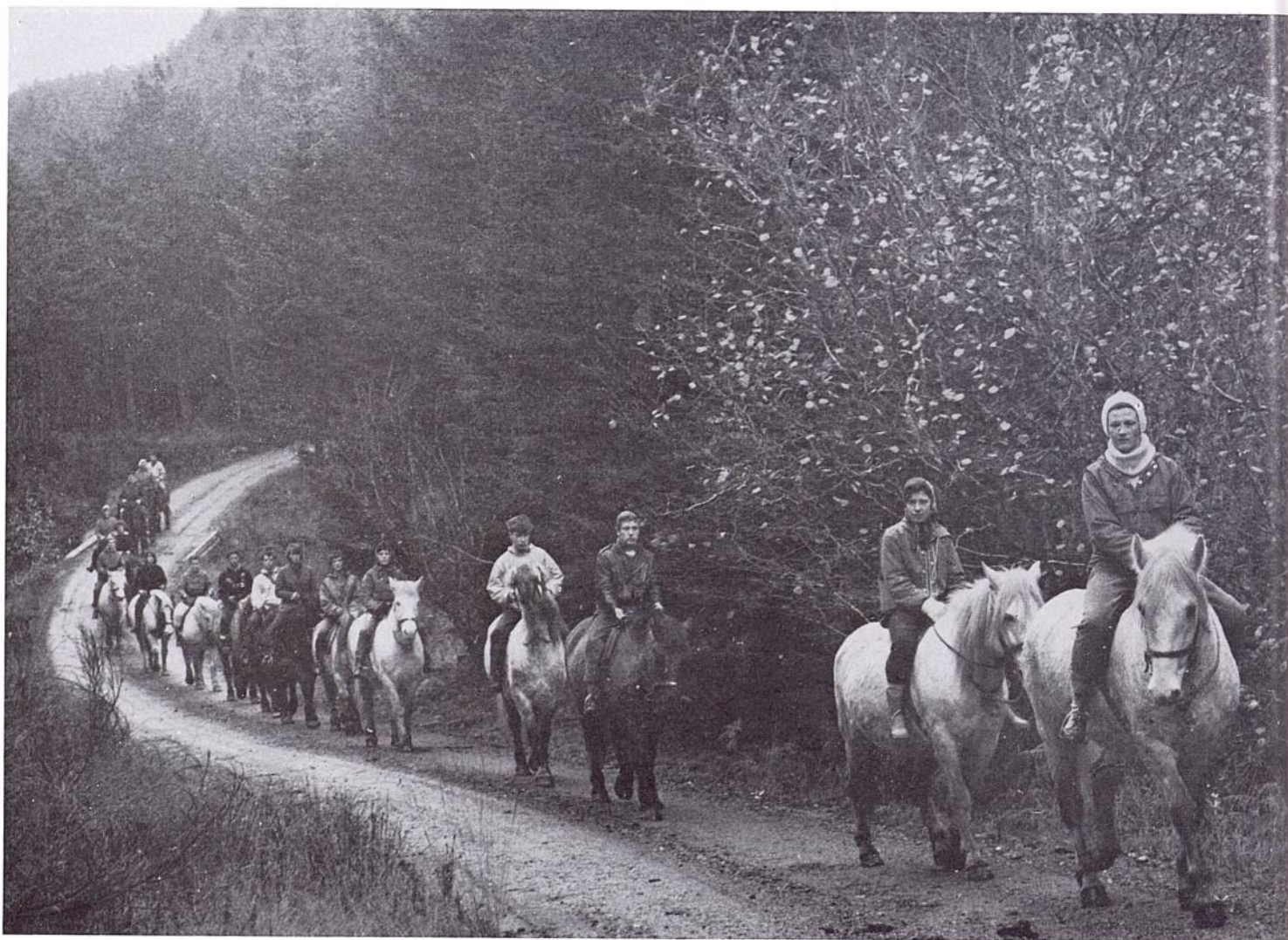


FIG. 21 Pony trekkers near Aberfoyle, Loch Ard Forest, Queen Elizabeth Forest Park

## Facility Improvement

When respondents were asked (question 27) if they favoured the improvement of the facilities in the forest, they replied as follows:

Yes	287 respondents	70 per cent
No	96	24
Don't know	24	6

The 287 respondents who favoured improvement of facilities were asked to select and rank the three improvements most important to them from the eight shown on the card, or others they might suggest.

TABLE 54

FACILITY IMPROVEMENT RANKING: GLEN MORE

Improvement	Frequency of Respondents' ranking votes			Score:
	1st	2nd	3rd	1st=3 2nd=2 3rd=1
Roadside picnic sites and litter bins	70	47	38	342
Sanitation	85	63	36	417
Roadside fireplaces	2	8	7	29
Water points	22	33	33	165
Shelter huts	46	39	32	248
Facilities for special interests	1	6	7	22
Information office	16	29	34	140
Restaurants-garages	32	23	19	161
Others	12	2	3	43
No selection	—	36	77	—

On the basis of the weighted scoring, the order of preference for improving the facilities was as follows; these preferences represented 95 per cent of the positive demand.

Sanitation	27 per cent
Roadside picnic sites and litter bins	22
Shelter huts	16
Water points	11
Restaurant—garage	10
Information office	9

## Attitudes to Production Forestry

10 per cent of the visitors were unaware that “this is a Forestry Commission area”.

The attitudes of respondents to improvement of access and of recreation facilities were tested against their attitudes to timber production:

TABLE 55

RESPONDENTS' DESIRES FOR LOCAL RECREATIONAL DEVELOPMENT AND FOR MORE TIMBER PRODUCTION: GLEN MORE

Timber: Recreation	Number of Respondents			Total	(%)
	Want more timber	Don't know (about timber)	Want less timber		
Want more recreation	203	65	20	288	(73)
Don't know (about recreation)	3	4	—	7	(2)
Want less recreation	58	16	8	82	(21)
Total	264	85	28		
Percentage	(67)	(22)	(7)		

18 respondents (4 per cent) wanted the forest "As it is".

## Avoiding Developments

Question 29 was not a multiple choice; the replies have been grouped according to their sense and key words.

TABLE 56

OPPOSITION TO DEVELOPMENTS: GLEN MORE

Commercialisation (22%), buildings (11%), restaurants (9%), amusements (4%), shops (4%), kiosks (4%), vans (1%), hotels (2%)	57 per cent
Main roads and more roads	10
Caravan and camp sites	7
Military use	3
Pylons	1
Others	11
All developments	11
Don't know	0
	100 per cent

## Desirable and Undesirable Features of the Forest (question 37)

TABLE 57

DESIRABLE FEATURES AT GLEN MORE

Peaceful: Quiet: Seclusion: Remoteness	11 per cent
Natural: Unspoiled	13
Mountains: Scenery: Beauty	40
Open ground: No development	15
Trees: Forest: Plants	7
Fresh air: Cleanliness	3
Freedom: Space: "Away from it all"	3
Others	8
	100 per cent



TABLE 58

## UNDESIRABLE FEATURES AT GLEN MORE

Litter	13 per cent
Flies	2
Rain	22
The Camp site: especially sanitation	17
Caravans	2
Bus parties: People	16
Roads: bad: presence of: and narrow	10
Others	18
	100 per cent

Of the 161 respondents who were users of the Glen More camp site at the end of Loch Morlich, 68 were adversely critical of the site (i.e. 56 per cent of the camping and caravanning element of the sample). The comments were principally directed at poor sanitation resulting from crowding, and a lack of privacy. To many respondents, the crowded, bare site seemed an anomaly in the middle of a twenty square-mile land holding, much of it forested.

### Cost of Visiting

Respondents were asked to estimate the cost per visitor for travelling from home to the forest.

TABLE 59

## TRAVEL COST: GLEN MORE

Travel cost per head	Group frequency (mean group=4.08)	Estimated aggregate amount spent
Less than 1s.	2	4 shillings
1s. to 2s.	9	55
2s. 1d. to 5s.	19	271
5s. 1d. to 10s.	50	1530
10s. 1d. to 25s.	63	4498
25s. 1d. to 40s.	54	7160
40s. 1d. to 100s.	107	30559
100s. 1d. to 200s.	42	25704
More than 200s.	16	19584
Don't know (use mean cost)	16	3803
		93168 shillings

Respondents were asked if the party would have come if the travel cost had been 10 shillings (or £1) more per head. The response is summarised in Table 60.

TABLE 60

PRICE ELASTICITY OF DEMAND: GLEN MORE

Travel cost per head	Respondents willing to come at increased cost						Total
	+ 10s.			+ 20s.			
	Yes	No	Don't know	Yes	No	Don't know	
Less than 1s.	1	—	—	1	—	—	2
1s. to 2s.	3	2	—	2	2	—	9
2s. 1d. to 5s.	8	2	—	7	1	1	19
5s. 1d. to 10s.	23	1	—	19	6	1	50
10s. 1d. to 25s.	31	—	—	30	2	—	63
25s. 1d. to 40s.	29	—	—	24	—	—	53
40s. 1d. to 100s.	63	—	—	44	—	—	107
100s. 1d. to 200s.	17	—	—	25	—	—	42
More than 200s.	5	—	—	11	—	—	16
Don't know travel cost	9	—	—	7	—	—	16
							377

Thirty respondents declined to answer the question or the question could not apply. From the information in Table 60 the following calculations are made of the price elasticity of demand.

Between 1s. 6d. and 1 1s. 6d.	$\epsilon_D = 0.060$
1s. 6d. and 2 1s. 6d.	$= 0.044$
3s. 6d. and 1 3s. 6d.	$= 0.070$
3s. 6d. and 2 3s. 6d.	$= 0.029$
7s. 6d. and 1 7s. 6d.	$= 0.031$
7s. 6d. and 2 7s. 6d.	$= 0.094$
1 7s. 6d. and 3 7s. 6d.	$= 0.055$

### Willingness to Return

The strong inelasticity of demand was confirmed by the replies to questions 35 and 36. 92 per cent of the respondents said they would come again at the hypothetical increased price if their suggested improvements in access and facilities were made; 3 per cent said they would not come at the increased cost; 5 per cent did not know.

### Cost Consciousness

Respondents were asked (question 32) if they thought particularly about travel cost before coming to the Cairngorms area; respondents replied:

Yes	73 (18 per cent)
No	328 (81 per cent)
Don't know	6 (or the papers were rejected)

This rate of cost consciousness was higher than at other forests, probably because the mean cost of travel to Glen More was higher than at the others.

# Loch Lomond—Trossachs Forests, 1964

The fourth part of the survey in 1964 was made in Queen Elizabeth Forest Park of which the central part is Loch Ard Forest. Work was done also in Rowardennan and Achray Forests which are contiguous with Loch Ard Forest and also form part of the Park. The total area of the Forest Park is 41,500 acres.

The Loch Lomond—Trossachs forests lie between 20 miles and 30 miles north of the centre of Glasgow, and only about 10 miles from its northern edge. The forests are bounded on the west by Loch Lomond and contain a large area of high ground, including Ben Lomond (3,192 feet), which is above the planting limit. Geologically, all but a small area lies north of the Highland Fault, and the parent rocks are mainly schistose grits, mica schist and slates of the Dalradian Series. The district was heavily glaciated, and the many lochs are of glacial origin, in over-deepened valleys or dammed behind terminal moraines. The climate tends towards the West of Scotland pattern, but there is a steep rainfall gradient from about 90 inches in the west of the forest to about 50 inches in the east.

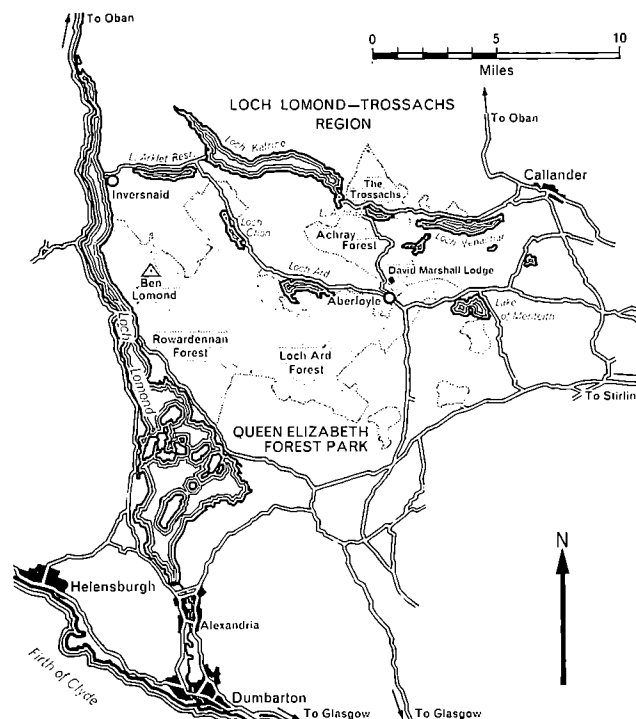


FIG. 22 The Loch Lomond-Trossachs region, showing the situation of Rowardennan, Loch Ard and Achray Forests in the Queen Elizabeth Forest Park

Outdoor recreation is very popular in this district, and was popular before the land was bought by the Forestry Commission; the forests lie between Loch Lomond and The Trossachs, both of which are powerful attractions for visitors from Scotland, from England and from abroad. The forests are young (planting began only in 1930), and are almost entirely coniferous; about 80 per cent is spruce, the recent planting being mainly Sitka spruce.

There are several Youth Hostels in the district, and for several years the Forestry Commission has encouraged the recreational use of the forest for walking by hostellers.

The survey was made on Friday, Saturday and Sunday, 28th, 29th and 30th August, 1964. The weather was mainly sunny and cool, although there were some rain showers on the 28th. The number of interviews, and the places of interview were as follows:

TABLE 61                      DAYS AND PLACES OF INTERVIEWS: LOCH LOMOND—  
TROSSACHS

Location	28th	29th	30th	Total
Rowardennan Youth Hostel	7	—	16	20
The Duke's Road	42	32	36	110
David Marshall Lodge	—	14	19	33
North end of Loch Chon	—	8	—	8
North side of Loch Ard	—	1	—	1
Rowardennan, Loch Lomond side	4	—	4	11
Totals	53	55	75	183

The interviewers worked as in the other regions. Tests were made for interviewer bias and for bias on the printing order of the test cards; no bias was found that was significant at the .05 level using  $\chi^2$  tests.

### Size and Nature of Groups

The mean group was 4.21 people and the standard deviation 5.45. (Excluding the unusually large group of 73, the mean was 3.84 and the standard deviation 1.92).

Of the 182 groups in the sample excluding the group of 73, 70 had a child or children. There were 138 children in all, almost exactly two per group, plus 40 children in one group of 73. Excluding the group of 73 which included 40 children, the average party was thus composed of 3.08 adults and 0.76 children.

TABLE 62

## SIZE AND COMPOSITION OF GROUPS: LOCH LOMOND—TROSSACHS FORESTS

Persons per group	Family	Friends	Family and friends	Organisation	Total
1	—	—	—	—	2
2	40	13	—	—	53
3	27	3	—	—	30
4	34	10	4	—	48
5	18	1	1	—	20
6	16	1	1	—	18
7	2	—	—	—	2
8	2	—	—	1	3
9	2	1	—	—	3
10	1	—	—	—	1
11	1	—	—	—	1
12	—	—	—	—	—
13	—	—	—	—	—
14	—	1	—	—	—
73	—	—	—	1	1
Totals	143	30	6	2	183
	79%	16.5%	3.3%	1.2%	

TABLE 63

## PRESENCE OF CHILDREN: LOCH LOMOND—TROSSACHS FORESTS

No. of children per group	Frequency	Frequency per cent of all groups
0	112	61
1	22	12
2	31	17
3	14	8
4	3	1½
—	—	—
40	1	½
	183	100 per cent

The sample of 183 groups was composed of 183 adult respondents, 410 other adults and 178 children, a total of 771 people. The ages of respondents and accompanying adults were estimated; no child (i.e. under 15 years) was interviewed as a respondent.



TABLE 64

AGES OF RESPONDENTS: LOCH LOMOND—TROSSACHS FORESTS

Age brackets	Frequency			Total frequency per cent
	Men	Women	Total	
15 to 19 years	8	5	13	7
20 to 25 years	21	9	30	16
25 to 45 years	79	19	98	54
Over 45	38	4	42	23
Totals	146	37	183	100 per cent

TABLE 65

AGES OF ALL ADULTS, INCLUDING RESPONDENTS: LOCH LOMOND  
—TROSSACHS FORESTS

Age brackets	Frequency per cent
15 to 19 years	9
20 to 25 years	16
26 to 45 years	52
Over 45 years	23
	100 per cent

## Reasons for Visits

Pleasure driving was the strongest reason for visiting the forests. Walking and picnicking were well behind; see Table 66.

TABLE 66

REASONS FOR VISITS: LOCH LOMOND—TROSSACHS FORESTS

Motives for visit	Ranking, by percentages			
	1st choice	2nd choice	3rd choice	4th choice
Picnicking	11	22	12	6
Pleasure driving	52	18	6	3
Caravanning	4	1	1	1
Camping	4	4	3	0
Climbing	—	—	—	—
Hill walking	8	10	3	2
Rambling	8	13	10	3
Bird watching	—	—	2	1
Other nature studies	1	—	2	2
Swimming	—	1	3	3
Sailing	2	3	5	1
Pony trekking	—	—	—	—
Photography	7	16	18	7
Fishing	3	—	1	1
No secondary activity	—	12	34	70
	100	100	100	100 per cent

<i>1st choice</i>	<i>2nd choice</i>	
Picnicking	Pleasure driving	75 per cent
	Walking	15
	Other	5
	No other activity	5
Pleasure driving	Picnicking	31 per cent
	Walking	21
	Other	31
	No other activity	17
Walking	Picnicking	15 per cent
	Pleasure driving	26
	Other	33
	No other activity	26

An estimate was made of the order of importance of the possible activities open to the visitor; first choices were awarded 4 marks, etc., to fourth choices 1 mark.

Pleasure driving	34 per cent
Walking	20
Picnicking	17
Photography	14
Camping and caravanning	7
Others	8
	—
	100 per cent

### Knowledge of Recreation Opportunities

70 per cent of the respondents said they were aware that the Loch Lomond—Trossachs Forests provided opportunities for the recreation activities they ranked as important, and that they came especially for these. 12 per cent said they were aware of the opportunities but did not come especially for them. 18 per cent were not aware of the forests' possibilities before their visit.

### Previous Visit

TABLE 67 PREVIOUS VISIT TO LOCH LOMOND—TROSSACHS FORESTS

Last visit	Frequency	
	Respondents	Percentage
Recruits, on 1st visit	73	40
Last week	10	5
Within last month	16	9
Within last 6 months	27	15
Within last year	22	12
Two years ago	6	3
More than 2 years	28	15
Residents	—	—
Don't know	1	1
	183	100 per cent

## Visitors' Homes by Regions

The majority of the visitors came from Glasgow and its environs. Seven respondents were from overseas. The regions are defined in Appendix II.

TABLE 68 VISITORS' HOMES: LOCH LOMOND—TROSSACHS FORESTS

Region or country	Frequency per cent All groups
South Scotland	$\frac{1}{2}$ per cent
West Scotland (including Glasgow, Lanark and Stirling)	45
S.E. Scotland (including Edin- burgh, Fife and Lothians)	3
N.E. Scotland (including Aberdeen and Dundee)	—
Highlands and N. Scotland	—
Northern Ireland	1
Wales	1
Greater London	$11\frac{1}{2}$
Kent and Sussex	5
Bristol and S.W. England	3
West Midlands	3
East Midlands	3
East Anglia	$5\frac{1}{2}$
North-east England	11
North-west England	$7\frac{1}{2}$
	100 per cent

## Distance from Home

The mean road distance by the shortest route from the United Kingdom visitors homes to the interview point was 170 miles.

The mean distance travelled on the day of interview was 25.7 miles (standard deviation 21.38 miles). More than half the visitors came from the south and south-east, i.e. from Glasgow.

## Length of Stay and Accommodation

Unlike Glen More, this area is used mainly for one-day trips and "passing through"; half the visitors were of this kind.

TABLE 69                      LENGTH OF STAY IN DISTRICT: LOCH LOMOND—TROSSACHS FORESTS

Passing through	13 per cent
One day	36½
2 days	10
3 days	12
4 days	4
5 days	2
6 days	2
7 days	7
Two weeks	13
More than 2 weeks	½
Residents	—

TABLE 70                      ACCOMMODATION USED BY VISITORS (EXCLUDING 1 DAY VISITORS):  
LOCH LOMOND—TROSSACHS FORESTS

Camping	17 per cent
Caravanning	10
Hostelling	13
Hotel	31
Guest House	15
Other (including friends)	14



FIG. 23                      Ramblers in Allerston Forest

## Method of Travel

91 per cent of groups (166 respondents) travelled to the district by car; 1 per cent (2 respondents) travelled by rail; 4 per cent (7 respondents) travelled by bus. One respondent came by motor coach, two by motor cycle, and five walked. The 166 car drivers were divided into 69 (42 per cent) who remained in or beside their cars, and 97 (58 per cent) who walked in the forest. 60 per cent of all visitors walked in the forest.

## Access Improvement

When respondents were asked (question 25) if they were in favour of improving the access to the forest, they replied as follows:

Yes	158 respondents	86 per cent
No	21	12
Don't know	4	2
	183 respondents	100 per cent

The 158 respondents who favoured improvement of access were asked to select and rank the three improvements most important to them from the nine offered on the card, or others.

TABLE 71 ACCESS IMPROVEMENT RANKING: LOCH LOMOND—TROSSACHS FORESTS

Improvement	Frequency of Respondents' ranking votes			Score: 1st=3 2nd=2 3rd=1
	1st	2nd	3rd	
More roads	16	9	3	69
Better surface and wider roads	31	14	8	129
More parking places	21	27	15	132
Sign-posted footpaths	55	26	11	228
More caravan and camp sites	6	4	7	33
Bus service to the forest	1	2	3	10
Public transport in the forest	1	1	2	7
Cycle paths	—	5	2	12
Maps of the forest	25	32	26	165
Others	2	4	1	15
No selection	—	34	80	—

On the basis of the frequency of first choice and of the weighted scoring, the order of preference was Sign-posted footpaths and Maps of the forests. The weighted scoring of the ranked preferences was:

Sign-posted footpaths	29 per cent
Maps of the forest	21
More parking places	17
Better surface and wider roads	16



These make up about 83 per cent of the demand for access improvement. There was relatively little demand for more roads (9 per cent) and even less (4 per cent) for more caravan and camp sites.

## Facility Improvement

When respondents were asked (question 27) if they favoured the improvement of facilities in the forests, they replied as follows:

Yes	150 respondents	82 per cent
No	31	17
Don't know	2	1

The 150 respondents who were in favour of the improvement of facilities were asked to select and rank the three improvements most important to them from the eight shown on the card, or others.

TABLE 72 FACILITY IMPROVEMENT RANKING: LOCH LOMOND—TROSSACHS FORESTS

Improvement	Frequency of Respondents' ranking votes			Score: 1st=3 2nd=2 3rd=1
	1st	2nd	3rd	
Roadside picnic sites and litter bins	30	12	20	134
Sanitation	57	20	18	229
Roadside fireplaces	1	2	3	10
Water points	15	32	10	119
Shelter huts	11	21	18	93
Facilities for your own special interest	—	2	6	10
Information office	21	12	6	93
Restaurant-garage	13	15	9	78
Others	2	1	2	10
No selection	—	33	58	—

Both on the basis of the first choice and of the weighted scoring the preference was for sanitation and then for roadside picnic sites. These preferences on weighted scoring, representing 85 per cent of the positive demand, were as follows:

Sanitation	29 per cent
Roadside picnic sites and litter bins	17
Water points	15
Shelter huts	12
Information office	12

## Attitudes to Production Forestry

18 per cent of the visitors were unaware that "this is a Forestry Commission area". There was an inverse correlation between knowledge of the land ownership and previous visits to the area.

TABLE 73

RESPONDENTS' DESIRES FOR INCREASED RECREATION AND TIMBER  
PRODUCTION: LOCH LOMOND—TROSSACHS FORESTS

Timber: Recreation	Number of Respondents			Total	(%)
	Want more timber	Don't know (about timber)	Want less timber		
Want more recreation	70	21	7	98	(54)
Don't know (about recreation)	18	8	2	28	(15)
Want less recreation	14	10	5	29	(16)
Total	102	39	14		
Percentage	(56)	(21)	(8)		

28 respondents (15 per cent) wanted the forest "As it is".

Only 1 per cent noticed timber production operations and said the work interfered with their recreation enjoyment. 30 per cent said they noticed the operations and there was no interference with their enjoyment. 69 per cent did not notice any forestry work and thus suffered no interference.

**Avoiding Developments**

The replies to question 29 have been grouped according to the key word or words.

TABLE 74

OPPOSITION TO DEVELOPMENTS: LOCH LOMOND—TROSSACH  
FORESTS

Commercialisation (31%), buildings (16%), houses (2%), restaurants and hotels (9%), shops (4%), kiosks (3%), holiday camps (3%)	68 per cent
Main roads and more roads	4
Caravan and camp sites	6
Military use	2
Pylons	4
Others	5
All	10
Don't know	1
	100 per cent

**Desirable and Undesirable Features of the Forest**

TABLE 75

## DESIRABLE FEATURES AT LOCH LOMOND—TROSSACHS FORESTS

Peaceful: quiet: seclusion: remoteness	11 per cent
Natural: unspoiled	12
Scenery: beauty	45
Open ground: lack of development	14
Trees: forest	7
Fresh air: cleanliness	2
Space	3
Other	6
	100 per cent

TABLE 76

UNDESIRABLE FEATURES AT LOCH LOMOND—TROSSACHS FORESTS

Litter	15 per cent
Flies	7
Rain	18
People: bus parties: traffic: caravans	25
Bad roads: narrow roads: gates: restricted parking	20
No lavatories	2
Regular conifers	1
Others	12
	100 per cent

### Cost of Visiting

Respondents were asked to estimate the cost per visitor for travelling from home to the forests.

TABLE 77

TRAVEL COST: LOCH LOMOND—TROSSACHS FORESTS

Travel cost per head	Group frequency (mean group=4.2)	Estimated aggregate amount spent
Less than 1s.	3	6
1s. to 2s.	25	158
2s. 1d. to 5s.	29	427
5s. 1d. to 10s.	56	1768
10s. 1d. to 25s.	16	1179
25s. 1d. to 40s.	14	1916
40s. 1d. to 100s.	20	5894
100s. 1d. to 200s.	9	5684
Over 200s.	5	6315
Don't know (using mean cost)	2	260
		23607 shillings

Respondents were asked if the party would have come if the travel cost had been 5 shillings (or 10 shillings) more per head. The response is summarised in Table 78.

TABLE 78

PRICE ELASTICITY OF DEMAND: LOCH LOMOND—TROSSACHS  
FORESTS

Travel cost per head	Respondents willing to come at increased travel cost						Total
	+ 5s.			+ 10s.			
	Yes	No	Don't know	Yes	No	Don't know	
Less than 1s.	2	—	—	1	—	—	3
1s. to 2s.	13	—	—	9	2	1	25
2s. 1d. to 5s.	13	2	—	10	3	1	29
5s. 1d. to 10s.	30	2	—	22	2	—	56
10s. 1d. to 25s.	9	—	—	6	1	—	16
25s. 1d. to 40s.	9	—	—	5	—	—	14
40s. 1d. to 100s.	7	—	—	13	—	—	20
100s. 1d. to 200s.	4	—	—	5	—	—	9
Over 200s.	3	—	—	2	—	—	5
Don't know travel cost	—	—	—	2	—	—	2

Four people did not answer the question because it did not apply to them. From the table the following calculations are made of the elasticity of demand.

Between 1s. 6d. and 11s. 6d.	$\epsilon_D = 0.031$
3s. 6d. and 8s. 6d.	$= 0.093$
3s. 6d. and 13s. 6d.	$= 0.088$
7s. 6d. and 12s. 6d.	$= 0.094$
7s. 6d. and 17s. 6d.	$= 0.063$
17s. 6d. and 27s. 6d.	$= 0.250$

### Willingness to Return

The inelasticity of demand was confirmed by the expressed willingness to return to the forest. 90 per cent of visitors said they would come again even at the hypothetical increased prices if their suggested improvements were made; 4 per cent said they would not come back at increased cost, though they would come at the same cost (1 respondent would not come back at any price); 5 per cent did not know.

### Cost Consciousness

In reply to question 32, on whether they considered travelling cost before coming, respondents replied:

Yes	14 per cent
No	86
Don't know	—

The cost consciousness indicated by this result is higher than among the visitors to the predominantly day-visit forests in England which were surveyed, but the reason for the different result is not known. One possibility is that the people who visit the Loch Lomond—Trossachs forests are less affluent than the day visitors from Yorkshire and the West Midlands to Allerston and Cannock; no information was sought on income brackets.

### **Special Questions**

As at Allerston Forest, two additional questions were asked.

To question 31c, on the suitability of the evergreen conifer forest for holiday use, 91 per cent said the forest was suitable,  $7\frac{1}{2}$  per cent did not know, and  $\frac{1}{2}$  per cent said it was unsuitable.

To question 31d, on the relative attractiveness of spruce and hardwoods in the Loch Lomond—Trossachs Forests 75 per cent said spruce was more attractive than hardwoods, 10 per cent said it was less attractive, 13 per cent said they were equally attractive, and 2 per cent did not know.



# Discussion and Conclusions

Comparisons and aggregations of the data from the four 1964 surveys are possible for some of the characteristics that were investigated. Some doubt was felt about aggregating the results, but the uniformity of the characteristics among the samples showed that it was justified and that for many purposes the visiting population in the forests is uniform.

## Size of Group

TABLE 79

	No. of groups	Mean group	Standard deviation
Cannock	143	3.66	1.68
Allerston	389	3.94	4.07
Glen More	407	4.08	4.58
Loch Lomond—Trossachs	183	4.21	5.45
Weighted Mean:	1122	4.00	—

In the measures of the mean group size in the forests, much of the variation in the results above is caused by the inclusion of groups from organisations, which varied in size from 2 to 73. Exclusive of parties from organisations, the number and mean size of groups was as follows:

TABLE 80

	No. of groups	Mean group	Standard Deviation
Cannock	143	3.66	1.68
Allerston	378	3.69	1.80
Glen More	394	3.62	2.20
Loch Lomond—Trossachs	181	3.81	1.90
Weighted Mean:	953	3.68	2.09

This is a very uniform statistic. In all the forests the commonest group sizes were 2 and 4 people (27 per cent and 28 per cent respectively of all groups). The weighted mean size of group is an important measure in order to plan for the provision of facilities; it seems to be provided by this study.

## Composition of Groups

The surveys showed that the visitors were predominantly in family parties, and this is the category that appears to deserve first consideration in the provision of facilities.

TABLE 81 COMPOSITION OF GROUPS

Forest	Number of Groups					Totals
	Alone	Family	Friends	Family and friends	Organisations	
Cannock	6	119	14	4	—	143
Allerston	13	293	48	24	11	389
Glen More	13	297	75	9	13	407
Loch Lomond—Trossachs	2	143	30	6	2	183
Totals	34	852	167	43	26	1122
Per cent	3	76	15	4	2	100

## Presence of Children

Nearly half the groups contained children. Where children were present there were almost exactly 2 per group.

TABLE 82 PRESENCE OF CHILDREN: PERCENTAGE FREQUENCY BY GROUPS

Forest	Number of children per group								Total
	0	1	2	3	4	5	6	More	
Cannock	45	24	18	3	10	—	—	—	100%
Allerston	57	15	18	7	2	1	—	—	100
Glen More	58	14	16	8	2	1	1	—	100
Loch Lomond—Trossachs	61	12	17	8	1½	—	—	½	100
Weighted mean	57	15	17	6½	3	1	½	0·	100

## Reasons for Visit

The reasons for visiting may be more properly contrasted than amalgamated because the forests are used in different ways, partly on account of the opportunities they offer, and partly on account of their different locations relative to population centres.

Activity	Cannock	Allerston	Glen More	Loch Lomond—Trossachs
Picnicking	29%	19%	9%	17%
Pleasure driving	28	42	23	34
Camping and caravanning	1	0	12	7
Walking and climbing	24	19	27	20
Nature studies, including birds	8	6	6	1
Swimming and water sports	—	—	5	5
Pony trekking	—	—	1	—
Photography	7	9	11	14
Fishing and shooting	—	1	2	2
Others	3	4	4	—
	100%	100%	100%	100%

Cannock Forest is essentially a day-visit forest where city people may picnic and walk; pleasure driving is surprisingly light, and a high proportion of visitors walk. There are few opportunities at Cannock for water recreation or activities other than walking and picnicking.

The pattern of recreation use at Allerston and Loch Lomond—Trossachs is strikingly similar: pleasure driving is the principal reason for visiting; walking and picnicking are less important than at Cannock; these forests are used largely for sight-seeing recreation, and many people take photographs while they are there. Although the Loch Lomond—Trossachs Forests were chosen as a survey region on the basis of their proximity to Glasgow and as the Scottish equivalent of Cannock Forest, the field data showed that an important proportion of visitors came from distant places, presumably attracted by The Trossachs. The visitors to the Loch Lomond—Trossachs Forests were not attracted merely by open space, which was itself sufficient attraction to Cannock Forest for people in Wolverhampton and Walsall. The visitors to Cannock were family parties (83 per cent) all making a one-day trip from home to the country. Although many of the Allerston and Loch Lomond—Trossachs visitors also were one-day visitors (55 and 50 per cent respectively), many came to the forest on a pleasure driving trip while they were on holiday nearby; fewer than at Cannock were family picnic parties with children.

The pattern of use at Glen More is obviously affected greatly by the distance of the forest from cities and by the existence of the holiday area of the Cairngorms for which the forest provides a leading camp and caravan site. Pleasure driving is much less important to the visitors here than elsewhere; although many visitors picnic, few come in order to picnic. Caravanning and water sports are activities in this area. At Allerston and the Loch Lomond—Trossachs forests visitors to Scarborough and The Trossachs respectively may drive through the forest and look at it, but Glen More is part of a holiday area in its own right, providing accommodation and opportunities for active pursuits such as hill walking and sailing.

In the four regions of the 1964 Survey only 6 per cent of the use was concerned with nature studies, including ornithology. It seems to be easy to over-estimate the interest in nature studies among forest visitors. In general, the visitors' desire is to escape from cities and from their fellow men, to find a picnic place for the family and to have a country walk.

The form of the recreation demand in a particular area should be a matter of deep concern to the planner and to the forest resource manager, and facilities that are appropriate for the recreation demand in an intensively used, one-day-visit forest such as Cannock would be quite inappropriate in a holiday area such as Glen More. There is an obvious risk that the interests of the forest manager, which commonly may lean towards natural history, tend to be magnified in the assumed demands and interests of the public users. This is readily apparent in the form and content of the guide book publications of the Forestry Commission. The guides are lengthy and descriptive, botanical, zoological and archaeological in matter, and are intended for use in conjunction with a 1-inch or larger scale map. Undoubtedly they are absorbingly interesting guide books for the fairly small proportion of walking-holiday visitors, but they make an insignificant impact on the car-driving, day-visiting family parties who form the majority of the present visitors.

Approximately 76 per cent of visitors were aware that the area provided opportunities for their recreation activities and came especially for these; 10 per cent said they were aware of the opportunities but did not come especially for them. 14 per cent were not aware of the area's opportunities before their visit; the rate of unawareness was much lower (4 per cent) at Cannock than at the other forests.

### Previous Visit

Except at Cannock, the rate of recruitment of visitors was very high (i.e. people making their first visit to the forest); Cannock recruits 10 per cent; mean recruitment rate of other forests, 44 per cent. On this characteristic also Cannock is clearly differentiated from Loch Lomond—Trossachs forests, in spite of their similar proximity to conurbations; at Cannock 57 per cent of the respondents had been to Cannock Forest within the previous month, implying a regularity of use by the visitors, whereas at Loch Lomond—Trossachs the equivalent figure was only 14 per cent.

The records of previous visits may be compared in Table 84, but they have not been aggregated since the arrays are insufficiently alike for this to be reasonable.

TABLE 84 PREVIOUS VISIT TO THE FOREST: PERCENTAGE FREQUENCY BY RESPONDENTS

Forest	Recruits	Last week	Last month	Last 6 months	Last year	Within 2 years	More than 2 years ago	Don't know	Res.	Total
Cannock	10	27	30	10	12	2	4	—	5	100
Allerston	34	17	14	12	10	4	7	1	1	100
Glen More	57	2	2	6	15	6	11	1	0	100
Loch Lomond— Trossachs	40	5	9	15	12	3	15	1	—	100

The high recruitment rates necessarily imply either that the recreation use of the forests is growing extremely fast, or that many people come once and do not return. The latter alternative is unlikely because of the very high price inelasticity indicated, and because very many respondents said they wished, and intended, to come again. On the other hand, a recruitment rate of 40 per cent per annum undiminished by a falling away of existing visitors would result in an increase of visitors to five times the present number in five years.

Clearly it is desirable that the trend of use should be established in order to understand the dynamics of the population of users, and to plan adequately for the probable level of future demand.

**Distance of Travel**

The mean distances travelled to the four forests on the day of interview were as follows:

TABLE 85                      MEAN DISTANCES OF TRAVEL ON DAY OF INTERVIEW

	Mean distance miles	Standard deviation miles
Cannock	15.5	16.5
Allerston	27.7	26.4
Glen More	26.1	36.1
Loch Lomond—Trossachs	25.7	21.4
Weighted Mean	25.2	

Burton and Wibberley (1965) observed a similar range of travel among countryside visitors in England, and it is clear that the full range of travel provided by the car is not used. The decision not to travel further may be influenced by the desire not to drive far with young children (about half the groups had two children each); also, it is well-known that it is difficult to drive far from home for a one-day trip on summer weekends in England and leave time both for the visit itself and for the journey back in the dense homeward traffic peak.

**Method of Travel**

93 per cent of all visitors came to the forest by car, and this was constant in all areas surveyed, including the New Forest. It is this statistic, more than others, that makes it important to estimate the trend of use, because cars are difficult to accommodate. The Forestry Commission's general policy has been to exclude cars from national forests, though car parks have been provided in the Forest Parks, at Allerston, and in the New Forest.

**Access Improvement**

Two-thirds of visitors wanted improvements in the access to the forests.

TABLE 86

## IMPROVEMENT OF ACCESS: PERCENTAGE FREQUENCY

Forest	Wanted	Not Wanted	Don't Know
Cannock	57%	41%	2%
Allerston	64	35	1
Glen More	64	33	3
Loch Lomond—Trossachs	86	12	2
Weighted Mean	67%	31%	2%

The demand for improvement of access was found to be concerned almost exclusively with four improvements, which occupied the first four ranks of importance in all the forests. The distribution of the demand was as follows:—

TABLE 87

## ACCESS IMPROVEMENTS: PERCENTAGE DEMAND BY WEIGHTED RANKS

Improvement	Cannock	Allerston	Glen More	Loch Lomond —Trossachs	Weighted Mean
Signposted footpaths	22	29	28	29	28
Maps of the forest	20	25	24	21	23
Better surface and wider roads	28	19	18	16	19
More parking places	15	12	9	17	12
Others	15	15	21	17	18
Total	100	100	100	100	100

There is remarkable uniformity in the ranking and in the level of demand. The smaller demand for additional parking places at Glen More is presumably a reflection of the low importance placed there on pleasure driving relative to walking, water sports, etc., and of the abundance of car parking already provided. The comments on the questionnaires make it obvious that a large proportion of visitors are nervous about setting out to walk where footpaths are not signposted and where no large scale map is available. The usual desire is to have a footpath which will give a circular walk of stated time.

In Cannock Forest alone a test was made of opinion on traffic-free areas. 87 per cent of respondents (almost all motorists) were in favour of traffic-free areas.

It is encouraging that the two leading demands for access improvements are of a nature that can be met easily and cheaply. No policy changes and no great expense may be involved in signposting footpaths that provide circular walks or in printing and selling large-scale maps of the forests. The matters of roads and parking places will be discussed later.

### Facility Improvement

More than two-thirds of visitors wanted improvements in the facilities they found in the forests.



TABLE 88

## IMPROVEMENT OF FACILITIES: PERCENTAGE FREQUENCY

Forest	Wanted	Not wanted	Don't know
Cannock	73	26	1
Allerston	61	37	2
Glen More	70	24	6
Loch Lomond—Trossachs	82	17	1
Weighted Mean	70	27	3

In the demand for the improvement of facilities also there is a clear concentration of opinion. Two suggested improvements attract more than half the positive demand.

TABLE 89

## FACILITY IMPROVEMENT: PERCENTAGE DEMAND BY WEIGHTED RANKS

Improvement	Cannock	Allerston	Glen More	Loch Lomond —Trossachs	Weighted Mean
Sanitation	34%	27%	27%	29%	29%
Picnic tables	26	26	22	17	23
Water points	13	15	11	15	13
Shelter huts	8	7	16	12	11
Restaurants—garages	12	13	10	10	11
Information office	4	9	9	12	9
Others	3	3	5	5	4
Totals	100%	100%	100%	100%	100%

The demand for sanitation was strongest where the concentration of people was highest, at Cannock and in the local aggregations of people at Loch Lomond—Trossachs.

The demand for roadside fireplaces was negligible, and it is obvious that no inconvenience is created to the present forest visitors by the Forestry Commission's usual rule that no picnic fires may be lit; (locally, but not importantly, this rule is relaxed).

Restaurants-garages ranked fourth-equal in the weighted mean demand, but this was countered by a fairly strong opinion directly opposed to providing this type of facility, which was expressed elsewhere in the questionnaire. More than 65 per cent of visitors were opposed to commercialisation of the recreation, buildings, shops, etc., and nearly 10 per cent were opposed specifically to restaurants. The other facility improvements mentioned in Table 89 were not opposed at all.

## Attitudes to Production Forestry

There was very little positive opposition to the use of the recreation area for more timber production, or to production forestry in general. The questions, however, brought a much higher rate of "Don't know" replies than others in the questionnaire; and some comments suggested possible reasons for the respondents' indecision. Respondents deplored "public park" conditions; they wanted uncrowded forests for their pleasure, and they wanted to avoid "more recreation" if it meant devised and crowded recreation opportunities. On the other hand, they wanted more free access to state forests and an improvement of facilities, and they were afraid that "More Timber" would restrict their access and reduce the likelihood of improvement of the recreation opportunity. This section of the questionnaire was inadequate in its design, but it seems clear that few forest visitors see anything in timber production that is inherently antagonistic to their recreation; they imply that multiple use for timber and recreation is feasible.

Most of the afforestation in state forests has been with coniferous species, and among the most interesting results of the surveys at Allerston and at Loch Lomond—Trossachs were the answers to the questions concerning the suitability of evergreen conifer forest for holiday use, and the opinions on the attractiveness of conifers and hardwood trees (questions 31c and 31d; see Appendix I).

TABLE 90 ATTITUDE TO EVERGREEN, CONIFER FOREST: PERCENTAGE FREQUENCY

Opinion	Allerston	Loch Lomond —Trossachs	Weighted Mean
Conifers suitable for recreation	90%	92%	91%
Conifers unsuitable for recreation	2	$\frac{1}{2}$	1
Don't know	8	7 $\frac{1}{2}$	8
Total	100%	100%	100%

TABLE 91 RELATIVE ATTRACTIVENESS OF CONIFERS AND HARDWOODS

Opinion	Allerston	Loch Lomond —Trossachs	Weighted Mean
Conifers more attractive	63%	75%	67%
Conifers less attractive	15	10	13
Hardwoods and conifers equally attractive	18	13	17
Don't know	4	2	3
Totals	100%	100%	100%

In view of the severe criticism that the Forestry Commission's planting of evergreen conifers has sometimes drawn, the acceptance by such a large percentage of users that spruce and pine are suitable for the creation of a recreation

area in these districts is interesting and important for planning. It may be averred that those who find evergreens abhorrent in these situations probably do not visit the forest, and were not available for interview. It is possible, however, to analyse the returns in order to isolate the opinions of those who were making their first visit to each area and who, unbiased by previous visits, might thus be reasonably unsorted in their attitude to tree species; those who were making second and subsequent visits might be expected to comprise only those who found the evergreen forest reasonably acceptable.

TABLE 92 ATTITUDE TO EVERGREEN CONIFERS ANALYSED AGAINST PREVIOUS EXPERIENCE OF THE AREA: FREQUENCY

Forest	Visit	Conifers suitable	Conifers unsuitable	Don't know
Allerston	1st	116	4	10
	2nd and subsequent	228	5	20
Loch Lomond—Trossachs	1st	59	1	5
	2nd and subsequent	94	0	7
Weighted Mean	1st (Percentage)	90	3	7
	2nd and subsequent	91	1	8

Analysis shows that there is no significant difference in attitude to conifer forests between respondents on their first visits and those on second and subsequent visits. Even on their first visits, very few respondents thought evergreen conifers made the forest unsuitable for recreation, but Table 93 suggests that most respondents had a more positive attitude, and thought that evergreen conifers were more attractive than hardwood trees *in these localities*.

TABLE 93 RELATIVE ATTRACTIVENESS OF CONIFERS AND HARDWOODS ANALYSED AGAINST PREVIOUS EXPERIENCE OF THE AREA: FREQUENCY

Forest	Visit	Frequency			
		Conifers more attractive	Conifers less attractive	Conifers/Hardwoods equally attractive	Don't know
Allerston	1st	76 (58%)	24 (18%)	25 (19%)	6 (5%)
	2nd, etc.	165 (65%)	32 (13%)	45 (18%)	10 (4%)
Loch Lomond—Trossachs	1st	53 (81%)	1 (2%)	10 (15%)	1 (2%)
	2nd, etc.	72 (71%)	14 (14%)	13 (13%)	2 (2%)

In the Allerston figures there appears to be no significant difference between the samples represented by the recruits and the respondents on second and subsequent visits. In the Loch Lomond—Trossachs figures there is a difference, but it is opposed to the hypothesis that the respondents on their first visit include some who will not return because they dislike evergreen forest; a higher percentage of recruits than revisiting respondents found conifers more attractive than hardwoods.

In Glen More, where the Forestry Commission's caravan and camp site was the principal facility of this kind in the district, 56 per cent of the sample of site users interviewed commented adversely about the facilities; the criticisms covered the alleged inadequacy of the sanitary and washing facilities, and the general crowding and complete openness of the site, which seemed unnecessary in such a large and heavily wooded property.

### Cost Consciousness and Price Elasticity

The respondents commonly claimed that they did not think particularly about the cost of travel before they made the journey to the forest. This alleged lack of concern with price was most conspicuous in the forests with many short-distance, day visitors incurring low travel costs, and the price awareness was greater in the forests which involved the visitors with higher costs.

TABLE 94 COST CONSCIOUSNESS

Forest	Percentage of day-visit respondents	Mean travel cost of all groups: (shillings)	Percentage of respondents claiming unconcern at travel cost
Cannock	100	8.8	96
Allerston	55	18.2	94
Loch Lomond—Trossachs	49	131.8	86
Glen More	17	246.5	81

It is possible, of course, that respondents professed unconcern with price lest they appear niggardly. Against this possibility there is some evidence from comments by a few respondents that they were not particularly concerned with travel cost because they had set aside some holiday money, the spending of which was the current objective. This suggests an economically aberrant attitude which would make it even more difficult than anticipated to evaluate the unpriced good provided by the forest recreation opportunity.

The tests provided by the hypothetical increases in travel cost (questions 33 and 34 of the questionnaire, Appendix I) suggest strong price inelasticity of demand; people appear very unwilling to dispense with recreation even if the price were to rise abruptly, (See Tables 22, 42, 60, and 78). This confirms the lack of concern with travel cost, although these were not good tests of point elasticity. The low level of cost consciousness and the strong price inelasticity of demand suggest that it is unrealistic to represent the visitors' recreation decisions as a simple response to travel cost; on the basis of the survey results, travel cost appears to be an inadequate measure of the value of the recreation opportunity (Trice and Wood, 1958). The travel costs actually incurred by the visitors to the survey forests were rather small (Table 94). In the day-visit areas, the mean round-trip travel cost per person was approximately 4 shillings; in the districts popular for longer vacations, the travel cost was larger (over £5 per head at Glen More), but for most people it probably represented a modest proportion of their total vacation expenditure. The decision of day visitors to go to the forest

areas is possibly determined more by the time available for the trip than by the small cash expenditure, and by the convenience of visiting the forest compared to the inconvenience of alternative trips on more crowded roads. The surveys did not reveal which criteria were important in the determination of the use made of the opportunities for recreation in forests. It is important, however, to note that there is close uniformity of response to some questions in different parts of the country, especially among day visitors: in the reasons for visiting forest areas, mean distances travelled, size of group, etc.

## Age of Respondent

The simple analyses which are presented, for example, in Tables 12, 29, 48 and 66, Reasons for Visits, mask the effect of the ages of the respondents on the results. In order to test the effect of age a series of  $\chi^2$  calculations was made, using the formula

$$\chi^2 = \sum \frac{(n_{ij} - e_{ij})^2}{e_{ij}}$$

where  $n_{ij}$  are the observed frequencies and  $e_{ij}$  are the expected frequencies; the null hypothesis was that there was no significant difference between the sub-samples.

The first test involved the aggregate answers to question 7 against the statistics for the age and sex of the respondents. It was first necessary to amalgamate some of the rows of the frequency table in order to eliminate the expected frequencies ( $e_{ij}$ ) of less than 5, which the  $\chi^2$  calculation disallows; camping and caravanning were merged; climbing, hill walking and rambling were merged; bird-watching and other nature studies were merged.

Men respondents/Women respondents,  $\chi^2 = 6.388$  with 5 degrees of freedom. At the .05 level,  $\chi^2 = 11.070$  (5 d.f.). Therefore the null hypothesis may be accepted, and there is no significant difference between the response of men and women.

This test was then repeated for the four age groups:

TABLE 95 REASONS FOR VISITS BY AGE GROUPS

Reasons for visits	15 to 19 years	20 to 25 years	26 to 45 years	Over 45 years	Total
Picnicking	2 (8.2)	9 (19.0)	87 (76.2)	48 (42.2)	146
Pleasure driving	9 (27.3)	62 (62.9)	245 (252.6)	167 (139.7)	483
Camping, etc.	6 (4.6)	15 (10.6)	47 (42.5)	14 (23.5)	82
Walking, etc.	31 (14.8)	38 (34.0)	133 (136.8)	60 (75.7)	262
Nature studies and others	15 (7.9)	21 (18.1)	70 (72.8)	33 (40.3)	139
Totals	63	145	582	322	1112

Calculated  $\chi^2=65.67$ .  $\chi^2$  (.05, 12 degrees of freedom)=21.026. Therefore the null hypothesis cannot be accepted; there are significant differences between the samples which are represented by the columns of the four age groups. The unbracketed numbers are the observed frequencies; the bracketed numbers are the estimated frequencies ( $e_{ij}$ ).

Among the important differences between the groups are the paucity of picnickers and pleasure drivers among the young, and the high observed frequency of walkers. The oldest group comprised high frequencies in picnicking, pleasure driving and walking, with a relative deficiency of campers, naturalists, etc.

$\chi^2$  analyses showed that men and women respondents replied in approximately the same way to the questions about access improvement and facility improvement. The differences between the sex sub-samples of a given age were not significant at the .05 level, in spite of the differences between age groups, already mentioned, upon the reasons for visiting the areas.

### **Planning and Management for Public Recreation**

The surveys revealed very clearly the difficulty of obtaining a statistically satisfactory sample in forest recreation areas. The estimation of the base population is made difficult especially by the number of access roads. The most reliable measures of the rôle which forests play in providing public recreation opportunities may be obtained by sampling in urban areas, perhaps within the intensively questioned sample of the national census. It seems that only in this way could the use of the forest be related to the population which it may serve. Even with the shortcomings of the sampling following the failure of the forest census that was planned, some characteristics and statistics are so strong, that deductions may be made from them with good confidence as a provisional basis for planning.

It is clear that there is already a brisk use of national forests for tourist access, and there is a strong likelihood that the demand is increasing rapidly, perhaps at a rate as high as 45 per cent per annum in some forests. Most of the visitors are seeking seclusion, quietness and freedom to wander afoot. About 95 per cent of the visitors travel to the forest by private car; most are in favour of some traffic-free areas within the forests. On the other hand, the complete exclusion of the motor car from the forest, as is ruled in many national forests, means the virtual exclusion of the people because parking areas are absent or inadequate at the forest edge. It is unreasonable to expect groups with young children, which is by far the commonest type seeking this recreation, to penetrate the forest and picnic far from their transport. The planning of access for cars, while preserving traffic-free zones and overall quietness, is essential if the national forests are to provide a service to the community commensurate with the heavy capital investment in them that is now attributed to social benefit.

It seems reasonable that private cars should be admitted to all forests of suitable age on restricted routes, preferably on roads which, for tourist traffic, are "one-way" only. The first essential in opening forest areas for recreation use appears to be the aggregation near the entrance to the forest of those people who are naturally gregarious; this can be achieved by providing a car-park, with services



such as lavatories, information bureau and even a café-restaurant as is commonly provided in continental Europe. The tourist road might then provide a chain of small parking areas, each for only six or ten cars; near these people could picnic, and from them visitors could penetrate the forest on foot by paths and roads restricted to official traffic and timber haulage. In order to avoid excessive expense on wide roads, parking between the lay-bys should be discouraged by the design of the road berms. Small clearings created near the lay-bys should provide the sites for picnic benches which are a strongly demanded facility.

The tourist roads should be for one-way traffic only if the forest road network allows this. They should be narrow rather than very wide, in order to discourage haphazard parking along them, and they should encourage slow driving, probably by leaving a gravel surface, to which British motorists are unaccustomed and of which they are wary, on all road lengths that are not likely to become very broken up. The entrance to the main car park, turning areas and similar places might require tar surfacing. Some special tourist roads in continental forests are made sinuous, even on flat ground, in order to keep motor traffic slow-moving.

The answers to the special question (31e) asked at Allerston Forest reveal the inadequacy of the usual Forestry Commission guide books as a means of reaching the public. Although a guide had recently been published, forty-six per cent of the respondents had come upon Dalby Forest Drive by chance and only  $\frac{1}{4}$  per cent as a result of a Forestry Commission publication. In all the forests it was commonly suggested that access should be improved by sign-posting and by the provision of maps.

Contrary to expectations before the survey, the main suggestions made for the improvement of access were simple, and would involve relatively little capital expenditure. The car parks and lay-bys already mentioned would involve some new investment, but many of the facilities would also have a considerable commercial value for timber working. If there is a serious intention to increase the public recreation of national forests, the public demand for sign-posted footpaths and suitable maps should be met. Neither need be costly; the maps might be sold to defray part of the cost of production, but a low price might be desirable to ensure a large circulation. The Forestry Commission appears to have neglected this opportunity for advertisement and improved public relations; many respondents who placed a very high value on the recreation opportunity they were using did not know they were in a national forest, and some had not even heard of the Forestry Commission.

The series of "Footprint" maps of national forests in Holland provides an example of excellent design for tourist maps; they are published by the forest service, the Staatsbosbeheer, in collaboration with the Royal Netherlands Tourist Board. The scale of the maps is 1 : 10,000 which is adequate to show the road system, parking and picnic places, the marked footpaths, camping areas, forest open to the public and closed, etc. They are attractively printed in black and five colours, have guide-book information on the reverse, and sell at 2s.

The provision of car parks and the suggestion of picnic places, both on the tourist map and by the building of robust rustic benches and tables, help to

locate the points at which a network of footpaths should touch the motor road. This network is not likely to be of interest to the long distance walker. The paths should be designed for the family party which wants to make a round trip on foot from, and back to, their parked car. The path should be colour-coded on the tourist map and on short posts on the ground, and both the map and the signpost at the starting point should show the walking distance and an estimate of the time required. The surveys revealed that many people who visited the forests, and who wanted to walk, were nervous of becoming lost on unsignposted paths. The marking of the paths should give the visitors confidence that they will not lose the way, while not being so obtrusive that the marks offend. A useful standard mark is a 2-inch to 3-inch diameter post sunk in the ground and sawn obliquely about one foot from the ground, with the top 4 inches brightly painted in the chosen colour for a particular path.

The official notices which face the visitor to Britain's national forests are an unsatisfactory feature of the recreation opportunity; some appear to deny that an opportunity exists. The green boundary notices which display the name of the forest are difficult to find when the trees are large, but are very obvious at the time they are often erected, immediately after planting, when the forest behind them looks most unattractive and when the Commission might do better not to draw attention to its work. (Respondent's comment).

The common fire warning notice in enamelled iron is complex, wordy and fussy in design; it looks old-fashioned and makes a poor impact on the visitor for fire prevention (comments from the survey).

The notice which states that members of the public may walk on a Forestry Commission road provided that it is not being used for another purpose (or closed on account of high fire risk) may be legally exact, but it certainly does not encourage visitors. In some national forests, including some in the surveys, there are non-standard notices designed by local staff. Some are attractive, others are ugly, but their variety of design denies to the Forestry Commission the benefit which could come from good advertisement and from the public's instant recognition of the standard sign of the national forest service. It should be possible to make all public notices in national forests of a standard and attractive appearance; with a crisp, modern design and lettering; succinct; large enough to read; proclaiming what visitors are encouraged to do, rather than what is forbidden.

In forests that were lightly used, and on days when visitors were few, more respondents asked for no improvement of facilities. Where and when the use was heavier, the demand for improved facilities was greater, especially the provision of some sanitation. Wilderness is tolerable only when the number of visitors is small. Litter and especially the faecal fouling of the ground near stopping places and popular picnic places is intolerable when the numbers of visitors increase. The provision of even the simplest latrines would be impossible if the principle of aggregation of visitors were neglected. It is where visitors congregate that facilities are required; by encouraging most visitors to congregate, the forester avoids the need for the extensive provision of services, and both the gregarious visitors and those who are solitary by nature are better pleased.

It seems undeniable that the standard of recreation opportunity due to the public should be considerably improved if it is to match the published policy and the financial value implied in the element of the Commission's discounting rate attributed to the social benefits supplied by forestry investment. The cost would probably not be high of improving and greatly extending the recreation opportunities of the national forests. For instance, there need be no severe interference with harvesting; indeed, there is evidence that visitors enjoy the evidence of timber working rather than object to it.

In most forests the management changes likely to be required in a timber production régime in order to provide adequate recreation are likely to be very limited, provided that the naturally gregarious visitors are allowed and encouraged to congregate. In the intensely used areas a decrease in timber production is inevitable in view of the need for open areas, an unstocked car-park, etc., and there will probably be losses due to soil compaction and even to the planting of a less productive species. The evidence from Allerston and the Loch Lomond—Trossachs forests, however, suggests very strongly that the demand by the public for changes of species is much less than foresters thought. It appears that satisfactory recreation can be provided in evergreen conifer forests that were planted for timber production; diversity of age is likely to enhance the recreational and the aesthetic values even more than diversity of species. There are few opportunities for the use of a wide range of species in most of the extensive afforestation areas now made available to the Forestry Commission.

Experience in Europe suggests that fire is a less severe danger than usually supposed in forests which are heavily used for public recreation; where the number of people is large, there is little chance of fire becoming established. This seems to be true even of pure pine plantations on extremely dry heath in areas like the Veluwe of the Netherlands. Nevertheless, it was reassuring to find how very small was the demand in the surveys for fireplaces and cooking facilities.

Although the surveys produced much information likely to be useful in planning the provision of public recreation, they revealed the need for more data. They failed to measure the actual numbers of visitors to the forests on particular days, as the basis of a trend of demand. The questionnaire should be redesigned especially to reveal the true "recruitment" rate of the visiting population. It is important to know soon the rate at which forest recreation use is changing, since this is a statistic as important to the planner in a multi-purpose forest as the incremental rate of timber volume in a purely timber production forest.

The stated objective of the surveys in making an estimate of the value of recreation will be pursued in another publication.

There is a large amount of sociological information about forest visitors which was not shown by these surveys, but it seems to come properly within the scope of a general study of leisure rather than in applied research aimed strictly at the impact of recreation on forest management. The development of the recreational opportunities probably will have to proceed largely on an empirical basis in view of the differences of environment and population. There is, however, a general need for a code of practice in the national forests in order that the public may not be confused by local decisions and local designs, and that the forest service may be recognised as the provider of the recreation opportunities.

# Questionnaire Form

Forest \_\_\_\_\_ Date \_\_\_\_\_ Serial number of interview \_\_\_\_\_

Location \_\_\_\_\_ Time \_\_\_\_\_ Weather: *Bright/Dull, Dry/Wet, Warm/Cool.*

Sex and age class of Respondent and other members of party \_\_\_\_\_

- 1 Have you been interviewed before in connection with the use of forests?  
*No/Today/On this trip/On another trip*
- 2 Do you know that this is a Forestry Commission area?  
*Yes (Go to 3)/No (Go direct to 4)*
- 3 Do you live in this district? *Yes (Where, please?)/No*
- 4 Would you say you are in the forest for pleasure, or are you on business?  
*Pleasure (Go direct to 6)/Business (Go to 5=last question)/Both (Go to 5 then to 6)*
- 5 If you are here on business, is your work connected with forestry?  
*Yes (May I ask what it is?)/No (May I ask what work does bring you?)*
- 6 One of the reasons for this study is the planning of recreation facilities.  
Would you be willing to answer some questions on this? *Yes/No*
- 7 Which of these, if any, are you planning to do, or have you done, on this trip? SHOW LIST  
*Picnicking/Pleasure driving/Caravanning/Camping/Climbing/Hill walking/Rambling/Bird watching/Other nature studies/*  
*Swimming/Sailing, boating, canoeing/Pony trekking/Photography/Shooting/Fishing/Don't know.* (Each recorded in two  
columns—Planning and Done.
- 8 Are you planning to do any others not shown on the list? (Ask to specify them).
- 9 How would you rank these activities you have mentioned? Which is the most important to you? . . . And the  
second choice? . . . And the third choice?
- 10 Did you know these were available here before coming? *Yes/No*
- 11 Did you come here especially for these facilities? *Yes/No*
- 12 Is your visit to this forest a one-day trip from home, or part of a holiday?  
*One-day (Go direct to 17)/Part holiday (Go to 13)*
- 13 When you did arrive in this district? date \_\_\_\_\_ OR \_\_\_\_\_ days ago.
- 14 When do you intend to leave? date \_\_\_\_\_ OR \_\_\_\_\_ days hence.
- 15 Where have you come from today? \_\_\_\_\_ town.
- 16 Since this is not a one-day trip from home, are you—*Camping/Caravanning/Hostelling/Staying in a hotel/Guest House/*  
*Other than these?* (specify).
- 17 Where is your home? \_\_\_\_\_
- 18 Have you been to this forest before? *No/Yes (When was your last visit? Last week/Last month/Within last six*  
*months/Last year/Two years ago/More than 2 years ago).*

- 19 (If interviewed alone) Are you making this visit on your own? *Yes* (Go direct to No. 23)/*No* (Go to No. 20).
- 20 (If not alone) Are you a family party? Or a group of friends? Or with an organization or club? (What is the organization? \_\_\_\_\_).
- 21 How many are in your party? \_\_\_\_\_
- 22 Any children in the party? *Yes/No* (specify)
- 23 How did you travel to this district? *Rail/Bus/Taxi/Coach/Car/Motor cycle/Bicycle/Air/Walking/Pony/Water*
- 24 How are you travelling in the forest? *Bus/Taxi/Coach/Car/Motor cycle/Bicycle/Walking/Pony/Ski/Ski-lift/Water*
- 25 Would you like to have access to the forest improved, through such things as better roads? *Yes* (Go to 26)/*No* (Go direct to 27)/*Don't know* (Go to 26).
- 26 If access is to be improved, which of these are the three most important improvements you want? SHOW LIST and rank 1, 2 and 3.  
*More roads/Better surface and wider roads/More parking places/Sign-posted foot-paths/More caravan and camp sites/Bus services to forest/Public transport in forest/Cycle paths/Maps of the forest/Other (specify)/Don't know*
- 27 Would you like better facilities for visitors in the forest? *Yes* (Go to 28)/*No* (Go direct to 29)/*Don't know* (Go to 28).
- 28 Which of these are the three most important improvements you want? SHOW LIST and rank 1, 2 and 3.  
*Roadside fireplaces/Roadside picnic sites and litter bins/Sanitation/Water points/Shelter huts/Better facilities for your special interests/Information office/Restaurant, café, garage/Other (specify)/Don't know*
- 29 What developments do you think should be avoided? \_\_\_\_\_
- 30 Are you in favour of more or less development of this forest for timber production? *More/Less/Same—Don't know* and for recreation? *More/Less/Same/Don't know*
- 31 As this is a Forestry Commission area, timber is worked commercially. Have you noticed any signs of this? *Yes/No/Don't know* And has this work interfered with your enjoyment of the forest? *Yes/No/Don't know*
- 32 When you decided to come here, did you think about the cost of travelling particularly? *Yes/No/Don't know*
- 33 What did you think it cost for each person to travel from home? \_\_\_\_\_
- 34 If the cost had been \_\_\_\_\_ more for each person, would you still have come? *Yes/No/Don't know*
- 35 Will you come again? *Yes/No/Don't know*
- 36 If your suggested improvements had been made in facilities and access, would you come again at the same cost? *Yes/No/Don't know* And at the increased cost? *Yes/No/Don't know*
- 37 What do you like most about this forest? \_\_\_\_\_  
And what do you like least? \_\_\_\_\_

In Cannock Forest only, at the request of the Forestry Commission staff, the following two questions were inserted immediately after question 31:

- 31a Cars are excluded from the forest itself and from parts of the open land in order to make a traffic-free area. Are you in favour of this? *Yes/No/Don't know*
- 31b In this forest the public is asked to keep to the footpaths. Does this restricted access reduce your enjoyment? *Yes/No/Don't know*  
In Allerston Forest the following three questions were inserted immediately after question 31:
- 31c This is mainly an evergreen, pine, forest. Do you find it suitable or unsuitable for your holiday use? *Suitable/Unsuitable/Don't know*
- 31d Do you think pines are more, or less attractive in this area than hardwood trees? *More/Less/Same/Don't know*

31e By which of these methods did you know that the forest/forest drive was open to the public? *Local Papers/National Papers/Periodicals/Radio and television/Forestry Commission publications/Word of mouth/Notices in hotels and shops/Resident, long known/Accidental and exploring, did not know previously/Other*

(Question 31c was inserted at the suggestion of the Forestry Commission staff).

In the Loch Lomond—Trossachs Forests questions 31c and 31d above were asked after question 31, but using “spruce” in place of “pine”.

In question 34, the prices of 5 shillings, 10 shillings and £1 were used. In Cannock and the Loch Lomond—Trossachs the sums were 5 and 10 shillings in alternate questionnaires; In Allerston and Glen More Forests, 10 shillings and £1 were asked alternately.

For the age assessments, the following classes were used:

Class 1	15 to 19 years
2	19 to 25 years
3	25 to 45 years
4	over 45 years

People under 15 years were classed as children. Ages were estimated by the interviewer without questions.

# Geographical Regions

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The regions referred to in Tables 2, 13, 32, 50 and 68, and in the text were taken to be as follows:

<i>Greater London :</i>	Metropolitan London, Essex, Hertford, South Buckinghamshire, Middlesex, East Berkshire, Surrey.
<i>Kent and Sussex;</i>	
<i>Bristol and South West counties :</i>	Cornwall, Devon, Somerset, Dorset, Wiltshire, Gloucester, West Berkshire, plus Hampshire in all but the New Forest survey.
<i>West Midlands :</i>	Shropshire, Stafford, Warwick, Worcestershire, Hereford.
<i>East Midlands :</i>	Derby, Nottingham, Leicestershire, Northamptonshire, Bedfordshire, North Buckinghamshire, Oxfordshire, Rutland.
<i>East Anglia :</i>	Lincolnshire, Huntingdonshire, Cambridge, Norfolk, Suffolk.
<i>North-East :</i>	Northumberland, Durham, Yorkshire.
<i>North-West :</i>	Cumberland, Westmorland, Lancashire, Cheshire.
<i>Wales :</i>	including Monmouth.
<i>Scotland :</i>	undivided in the English studies.
<i>South Scotland :</i>	Berwickshire, Roxburgh, Peebles, Selkirk, Dumfries, Kirkcudbrightshire, Wigtown.
<i>West Scotland :</i>	Glasgow, Lanarkshire, Stirlingshire, Renfrewshire, Ayrshire, Dunbartonshire and Bute.
<i>South-east Scotland :</i>	Edinburgh, East Lothian, Midlothian, West Lothian, Fife, Kinross and Clackmannan.
<i>North-east Scotland :</i>	Aberdeenshire, Angus, Dundee, Kincardine.
<i>Highlands and North Scotland :</i>	Caithness, Orkney, Zetland, Sutherland, Ross and Cromarty, Inverness-shire, Nairn, Moray, Banff, Perthshire and Argyll.



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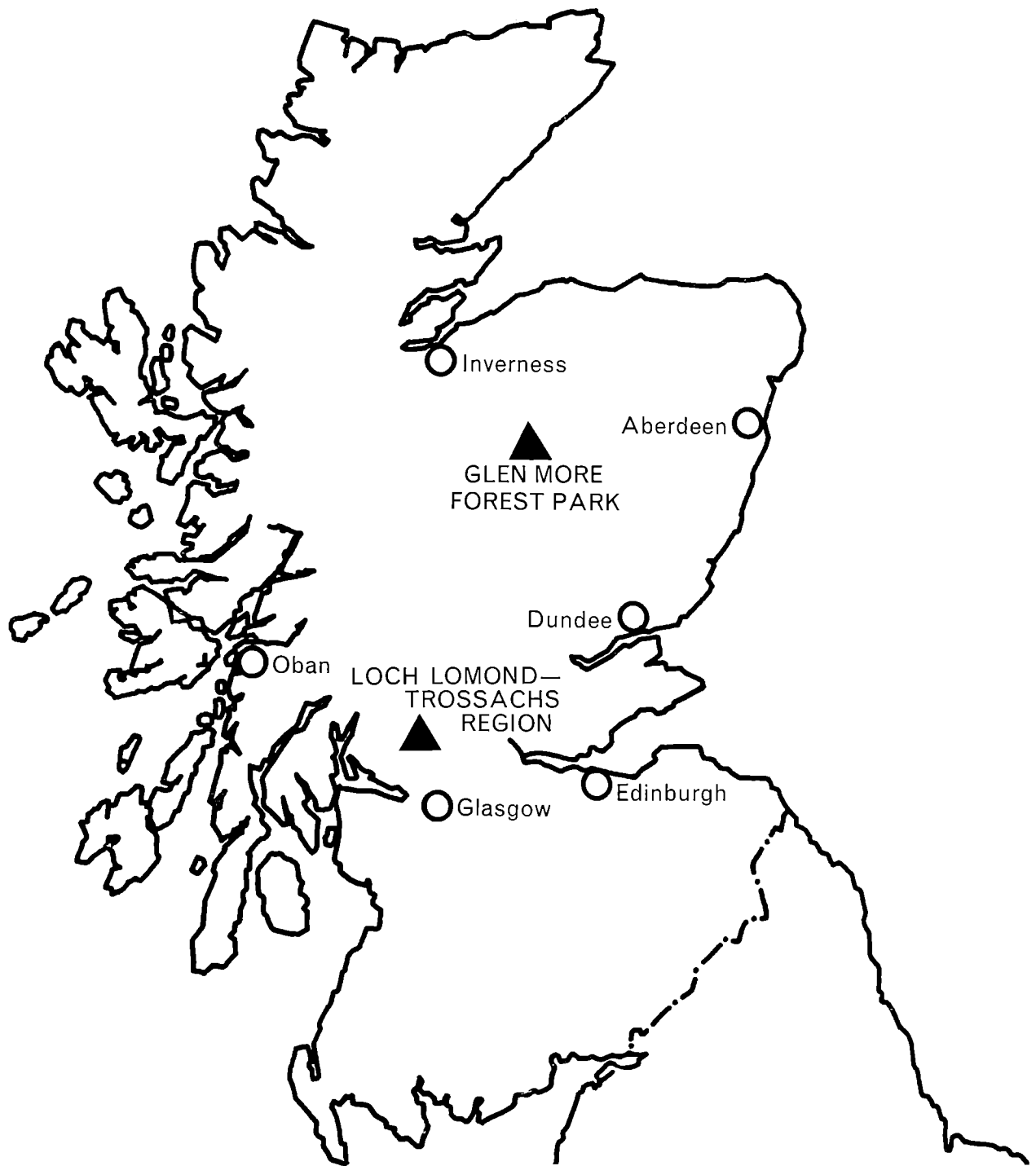
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