CRRAG CONFERENCE 1974
Information Systems for Recreation Planning
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CRRAG CONFERENCE 1974

INFORMATION SYSTEMS FOR RECREATION PLANNING

Edited by

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Organised for the Countryside Recreation Research Advisory Group by the Tourism and Recreation Research Unit

Acknowledgements

This report records the proceedings of the Countryside Recreation Research Advisory Group's Conference held at Edinburgh University on 23rd and 24th of September 1974; the theme was *Information Systems for Recreation Planning*. Arrangements for the Conference were made by the Tourism and Recreation Research Unit under the supervision of an organising committee comprising Roger Carter (Scottish Tourist Board), David Coleman (Countryside Commission), Mike Owen (Tourism and Recreation Research Unit) and Peter Pearson (Countryside Commission for Scotland).

The administration was handled by the Centre for Industrial Consultancy and Liaison at the University and special thanks are due to Ron Hurley of the Centre who coped with the tasks of organising secretary with cool efficiency. He was ably supported at the conference itself by Jim Angus of TRRU.

The production of this report is further testimony to the efforts of a number of people at TRRU and the Geography Department of Edinburgh University. Irene Scott designed the report and with Jon Best has guided it through the production phases. Mona Robertson has produced a meticulous typescript; photographic work was undertaken by Alec Whitelaw and finally, from the original typescript and graphics, Ray Harris, Alec Bradley, David Lennie and Douglas Hunter have reproduced a polished publication.

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J.M.Davidson

The study of information systems for outdoor recreation reveals the contrasting views of researchers and planners. Planners want researchers to justify their approaches in practical terms, while researchers want planners to specify their requirements more carefully. These contrasting approaches are essentially the result of difficulties in communication though this is not helped by the wide use of acronyms, such as CRESS, TRIP and PSA. It is the object of this conference to improve such communication.

Information on recreation is required for two purposes – for strategic planning at various levels, (structure plans, regional plans and national plans), and for the management of individual sites, and it is necessary to ask whether these two needs can be met from the same information system. The Countryside Commission has been particularly concerned with the latter and I should like to pay tribute to Cheshire for its collaboration in a pilot scheme with the Countryside Recreation Statistics System (CRESS). Data can be collected on a regular basis only by local authorities and the role of the Commission lies in co-ordinating the collection of data and in aggregating such data for national purposes. The TRIP system, on the other hand, is more concerned with the strategic view of recreational planning. The conference will hear about and consider these two approaches.

Finally, I should like to ask delegates to give some attention to the nature of CRRAG conferences and to other possible topics which might be considered at further meetings.

Session 1
Tourism and Recreation Information Package (TRIP) - System Description

Chairman T. Huxley

Tourism and Recreation Information Package (TRIP) - System Description

M.L.Owen

INTRODUCTION

The Tourism and Recreation Information Package (TRIP) has been designed to fulfil a remit given to the Tourism and Recreation Research Unit of the University of Edinburgh (TRRU) by its original sponsors, the Countryside Commission for Scotland (CCS) and the Scottish Tourist Board (STB), though it is hoped that, while meeting the needs of these sponsors, TRIP will be of wider interest.

The first phase of the project commissioned in May 1972, required the Tourism and Recreation Research Unit to design a computer-based tool which would include a data bank of resources for tourism and recreation and facilities for analysis and output of results in various forms. It was also made clear that the system should be devised in such a way that it could at some future date incorporate data for *demand* as well as for *supply*. Furthermore, while the project was seen initially as an opportunity to develop a pilot information system and to test it at a national scale, it was also envisaged that results might subsequently be required at regional and local scales.

This first phase is now complete and the implementation of a second phase is well advanced. The content of this second phase was agreed between TRRU and an expanded group of sponsors (STB, CCS being joined by the Forestry Commission and the Scottish Arts Council) in March 1974 and included the commissioning of further developments of the TRIP system. These facilities are outlined later in this paper and will be added to the system's repertoire in due course. Further options are under consideration and the original system is continually being improved and made more efficient.

The potential quantity of information which is relevant to the future policies and strategies of the sponsors is vast and it has hitherto been impractical to handle such large heterogeneous bodies of data. The TRIP system has been designed to permit these data to be systematically assembled and *filed* in such a way that any item can be retrieved either for use in its unaltered form, or to be edited or manipulated in some way within the system before results are produced.

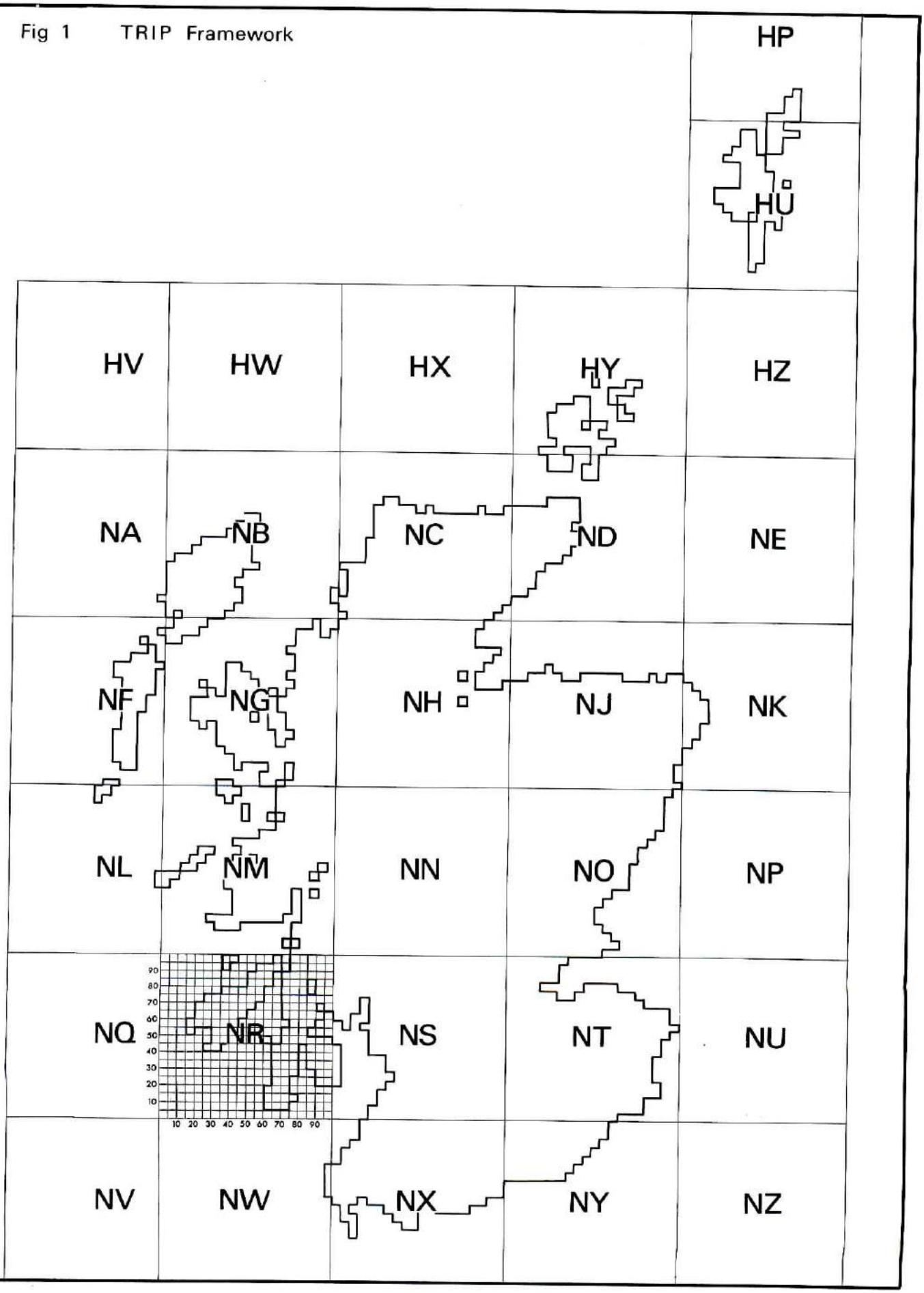
TRIP makes use of the computing facilities available at the Edinburgh Regional Computing Centre, but although it is computer-based, no previous experience or familiarity with computers is required in order to obtain a general understanding of the system. For those who need more specific knowledge an introductory user's guide has been written and will be published shortly by TRRU. The system makes use of an IBM 370/158 computer which has been fitted with a specially modified printer to produce map output; the programs are written in IMP, a local derivative of Atlas Autocode. For the present the Tourism and Recreation Research Unit will function as the intermediary between users and the machine, however, it is hoped that at some future date a degree of direct access will be provided.

THE GENERAL FRAMEWORK OF THE SYSTEM

There are advantages in adopting a spatial approach in the assembly and analysis of information for tourism and recreation, for many of the factors considered, including both physical resources and settlements, can be located in geographical space and have characteristics and inter-relationships which can be spatially defined. For this and other reasons it was decided to collect data for the TRIP data bank by areal units, and the system was initially based upon information for 5 km x 5 km squares of the National Grid, each of which is referenced by a unique number. The area covered by the 5 km x 5 km system comprises 3,416 such squares, and for each square data are identified, recorded and permanently stored within the system (Fig. 1).

Squares were chosen in preference to irregular areal units for several reasons. Whereas irregular units are difficult to define and cannot easily be compared, the use of squares ensures greater objectivity in the collection of data, makes possible the exact comparison of distributions and permits a very large number of items to be assembled for each unit, so that no issues need be prejudged. A further advantage is that the National Grid can be used in referencing certain types of data. Data collected in this way

Fig 1 TRIP Framework



can also be manipulated very easily and economically by computer.

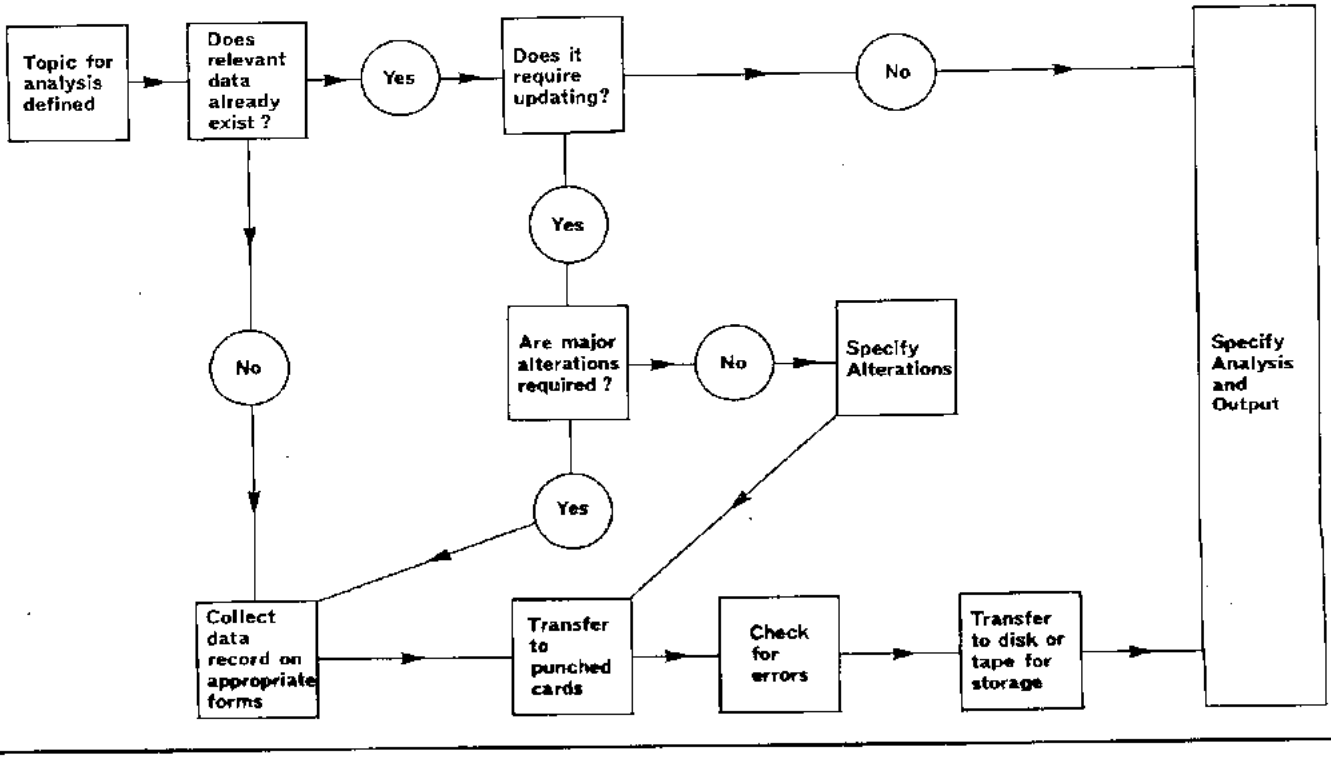
The use of grid squares poses problems of scale and requires sensitive judgements about the methods of data collection and the degree of detail required. While it can be argued that some distortion is inevitably introduced when squares are used, it is also true that, provided an appropriate size of grid is chosen, its rigidity will become almost unobtrusive over a large area. For analyses of the whole of Scotland, and even to some extent of its regions, the 5 km x 5 km grid provided a satisfactory framework.

STEPS IN ASSEMBLING DATA

The stages involved in assembling data for the TRIP system are summarised in Figure 2. The first step, once the topic for analysis has been defined, is to ascertain whether data are available in the system. If data do not exist, new information must be assembled and this task may be either undertaken by the user or commissioned by him.

The data bank can be thought of as a well-organised filing system providing a number of cells in which information may be stored. The basic unit for filing data is the data set which is a collection of logically

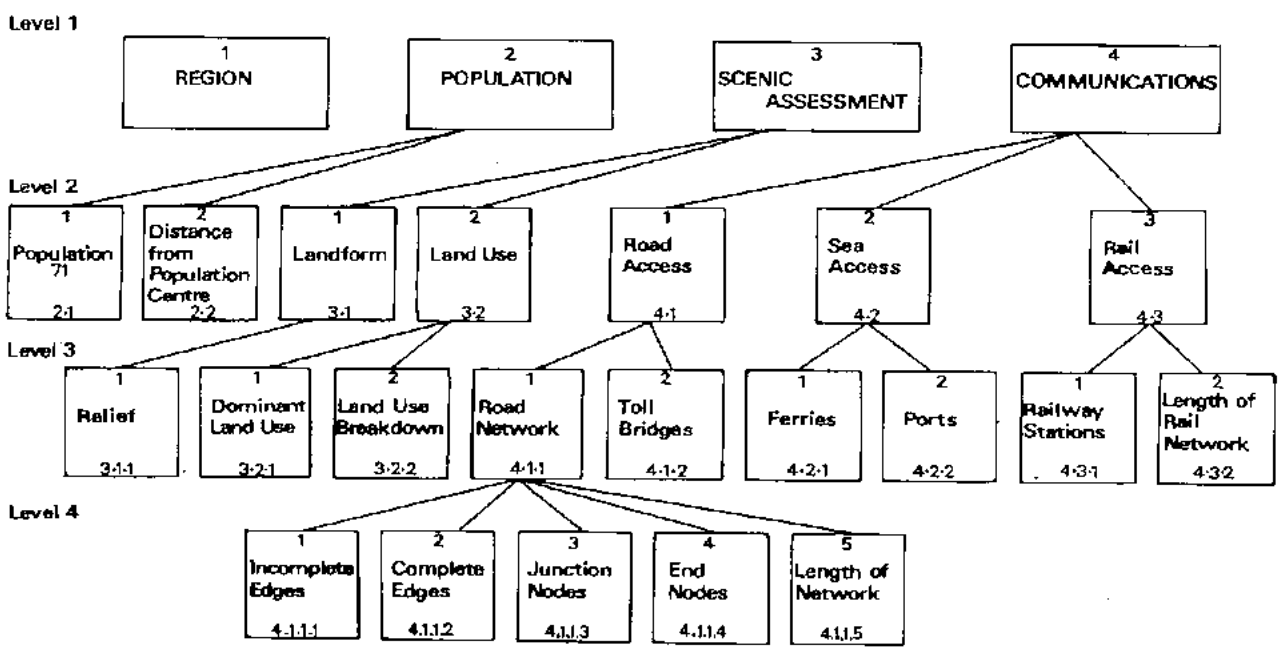
Fig 2 Procedure for Analysis and Correction



related information, for example, the details of all hotels in Scotland. The filing system developed for the data bank resembles a family tree in its organisation. The hierarchical structure provides a flexible and efficient system of storage giving fast access to the information required (Fig. 3). The basic units in this structure are called cells. They can be thought of as pigeon holes and each one has a name which identifies both the cell and any information in it. The topmost level of the structure comprises cells which have a very general nature, usually with names classifying general types of data (e.g., population, communications, scenic assessment). These cells at the top are *brothers* to one another, and may have *sons* at the level below. The cells at this second level have classifications which are relatively more specific; for example, cells below *communications* are: *road access*, *sea access* and *rail access*.

The system can store and manipulate data which refer to areas (e.g., the amount of woodland for each square), to point locations (e.g., the precise situation of an historic building), to linear features (e.g., roads, railways or rivers, which can be defined by a sequence of such points), or to characteristics of the square as a whole (e.g., maximum relief). Furthermore, there are facilities within the data bank for storing large amounts of detail; up to 255 attributes may be used in one data set. For

Fig 3 Organisation of the Data Bank



example, the set for archaeological sites contains information for almost 1,000 locations, each with 16 attributes, viz., code number, map reference, county, local authority region, local authority district, Scottish Tourist Board region, Scottish Tourist Board sub-region, period, class, sub-class, ownership, access (place), access (time), charges, guide book and interest.

Data to be incorporated into the system are recorded on code sheets in a standard form before being transferred to eighty-column punched cards. Figure 4 shows an example of a code sheet upon which data for archaeological sites have been recorded and the punched card which refers to the first site on the sheet.

Checking cards is an important stage in preparing data for storage since human errors inevitably occur during the transfer of information from the code sheets to cards.

Data to be retained for storage and subsequent analysis are transferred to disk files or magnetic tape. Magnetic tape is used only to retain archive copies; the TRIP data bank is currently based on one disk file which, physically, is cylindrical in shape, and approximately 10 inches high and 15 inches in diameter. This disk can retain approximately 90 million characters, any of which can be *extracted* from the file in about 1/30th of a second. Once data have been written on to disk, the analysis and form which output is to take can be specified.

If a data set already exists in the bank, but requires alteration, the facilities for editing permit any item to be supplemented or updated. When only minimal alterations are required, the appropriate data set can be edited directly; for major alterations, it would probably be best to proceed as with a new data set, progressing from cards to disk.

THE SCOPE FOR ANALYSIS AND PRESENTATION OF RESULTS

Introduction

Resources and demand for tourism and recreation can frequently be representated by objective measurements, for example, the characteristics of land-use types or resident population statistics. Nevertheless, deciding which factors to measure and how to measure them and their relative importance frequently involves subjective judgement. Ideally, standards are required so that the suitability of a resource for a specific purpose can be gauged. Meanwhile, TRIP

Fig 4 Coding Form and Punched Card

POINT DATA CODING FORM

Subject:- ARCHAEOLOGICAL SITES Sheet No:- 14 of 71

Code No.	Map Reference	ATTRIBUTES									
		County Access (time)	L.A. Region Charges	L.A. District Guide-Book	STB Region Interest	STB Sub-Region	Period	Class	Sub-Class	Ownership	Access (place)
144	NB 211355	3 2	11 3	50 3	1 3	3	1	1	1	3	1
145	NH 527497	3 2	1 3	3 3	1 2.	8	2	3	10	3	1
146	NH 543										1
147	NB 234										1
148	NB 22										1
149	NB 22										1
150	NB 37										2
151	NB 23										5
152	NH 663										4
153	NH 506585	3 2	1 3	3 3	1 8	8	3	2	6	3	3
154	NH 696769	3 2	1 3	3 3	1 2.	8	3	2	6	3	4

144 NB211355 3 11 50 1 3 1 1 1 3 1 2 3 3 3

provides a ready means for examining a range of possibilities; for flexibility is a major feature of the system.

The facility provided by TRIP for assembling a comprehensive inventory of all relevant resources, to which easy reference can be made, itself offers considerable advantages for planners. In addition, though, once the data are stored in the system they can be manipulated in a number of ways. It is possible to output absolute and relative values of data for resources or activities which may also be related to attributes (e.g., price, quality). Moreover, information about a specific resource or activity can be related to other resources and activities. For example, individual types of land use could be related to the total area of agricultural land; similarly, the demand for recreation of a particular kind could be related to land use. Results of analysis can be produced in the form of lists, statistical tables or maps.

Listing

The listing facility permits examination of information contained within any data set stored in the system or of any data resulting from an analysis of existing data sets. The user has a wide choice of both the cases and their attributes to be included in the list, and the format of the list may be freely specified. Figure 5 shows a list of archaeological sites owned by the Department of the Environment and located within half a mile of a class A or B road. For the 36 sites which fall into this category, values of eleven attributes are given.

Statistical Tables

The TRIP system currently includes three statistical packages which can be used to examine any data set stored in the system or the results of manipulating any such data set.

THE STANDARD PACKAGE This package allows an examination of the statistical characteristics of any numeric variable in a data set; any combination of eight options is available, viz., the maximum, minimum and range of values, the mean, the standard deviation and variance, skewness and kurtosis. Figure 6 shows an example of output from the Standard Package, from an examination of the total length of road network in each 5 km square.

Fig 5 Listing

ARCHEOLOGICAL SITES OWNED BY THE D.O.E. AND WITHIN 1/2 MILE OF A MAIN ROAD

CODENO	GRIDREF	LAREG	LADIST	STBREG	STBSUB	PERIOD	SUBCLASS	ACCESST	CHARGE	GUIDEBOOK	INTERESTPAGE #
1	HY230187	10	5	1	2	1	4	1	1	1	1
3	HY317127	10	3	1	2	1	1	1	1	1	1
4	HY202117	10	5	1	2	1	1	3	2	2	2
10	HY426276	10	6	1	2	1	1	3	2	2	2
11	HY414275	10	5	1	2	1	1	3	2	2	2
12	HY484261	10	6	1	2	1	1	3	2	2	3
23	HY294134	10	6	1	2	2	10	3	2	2	1
24	HY386125	10	5	1	2	2	10	3	2	2	3
41	HY397096	9	4	1	1	1	4	1	1	1	1
52	HU465488	9	4	1	1	3	5	3	2	2	1
59	HU397696	9	4	1	1	3	5	1	1	1	1
199	NH630286	1	8	1	9	4	6	1	2	3	3
253	NJ738628	2	12	2	16	1	1	3	2	3	3
259	NJ478634	2	15	2	17	1	1	3	2	3	2
260	NJ976628	2	12	2	43	2	2	3	2	3	2
273	NJ760225	2	13	2	43	4	12	3	2	3	4
286	NR833968	7	33	1	13	2	2	3	2	3	2
292	NR838983	7	33	1	13	2	2	3	2	3	2
293	NR831985	7	33	1	13	2	2	3	2	3	2
296	NR836918	7	33	1	13	2	12	3	2	3	2
298	NR831928	7	33	1	13	2	12	3	2	3	2
358	NO287446	3	18	3	20	4	12	2	2	1	2
383	NO528655	3	16	3	19	4	12	3	2	3	4
385	NO352474	3	16	3	19	4	12	3	2	3	4
508	NR958211	7	44	4	38	1	1	3	2	3	2
513	NR893346	7	44	4	38	2	18	3	2	3	2
532	NX383565	6	46	7	41	2	18	3	2	3	2
541	NX352446	6	46	7	41	2	12	3	2	3	4
542	NX370443	6	46	7	41	2	12	3	2	3	4
567	NX347412	6	46	7	41	3	6	3	2	3	2
749	HU399895	9	4	1	1	8	9	1	1	1	1
751	HY442117	10	5	1	2	7	9	3	2	2	2
752	HY397127	10	5	1	2	7	9	3	2	2	2
754	NO582344	3	16	3	19	7	9	3	2	3	2
763	N3662798	6	32	3	22	6	9	3	2	2	3
764	N3614793	6	32	3	22	6	9	3	2	2	2

All headings on this line are attributes of the Archaeological Sites data set and must be specified by the user.

Code number of site

NUMBER OF SELECTED CASES = 36

Fig 6 Standard Statistics

STANDARD STATISTICS FOR LENGTH OF NETWORK

This is the standard heading which specifies the variable being considered. In this case OLON represents overall length of road network.

SUMMARY OF OLON

MEAN	9.532	STANDARD DEVIATION	10.444	VARIANCE	109.073	SKEW	1.655
KURTOSIS	7.384	MINIMUM	0.000	MAXIMUM	87.700	RANGE	87.700

NUMBER OF CASES = 3416

THE TABLES PACKAGE The Tables Package allows data to be presented as frequency counts in tabular form. Figure 7 shows the number of historic buildings in various classes by local authority region. Two variables only (local authority region and class) are used here to partition the data set, but up to ten dimensions could be requested. Similarly, tables produced need not include all the four values shown in Figure 7, any combination of which could be used.

Fig 7 Two-Dimension Crosstabulations

TABLE OF CLASS BY LOCAL AUTHORITY REGION FOR HISTORIC BUILDINGS

CROSSTABULATION OF LAREG BY CLASS

Key to contents of each box

LAREG	CLASS 1 (Ecclesiastical)	2 (Fortifications)	3	4	ROW TOTAL
1 Highlands	11 15.9 9.2 1.8	58 72.5 11.9 8.9	8 11.6 13.6 1.3	0 0.0 0.0 0.0	69 11.1
2	13 15.3 10.9 2.1	58 68.2 13.8 9.3	14 16.5 17.5 2.2	0 0.0 0.0 0.0	85 13.6
3	11 17.5 9.2 1.8	46 73.0 10.9 7.4	6 9.5 7.5 1.0	0 0.0 0.0 0.0	63 10.1
4	14 17.3 11.8 2.2	53 65.4 12.6 8.5	14 17.3 17.5 2.2	0 0.0 0.0 0.0	81 13.0
5 Borders	12 23.1 10.1 1.9	32 61.5 7.6 5.1	8 15.4 10.0 1.3	0 0.0 0.0 0.0	52 8.3
6	5 14.7 4.2 0.8	28 58.8 6.8 3.2	8 23.5 10.0 1.3	1 2.9 33.3 0.2	34 5.5
7	14 17.6 11.8 2.3	82 75.9 19.5 13.2	7 6.5 8.7 1.1	0 0.0 0.0 0.0	108 17.3
8	11 18.3 9.2 1.8	46 76.7 10.9 7.4	3 5.0 3.7 0.5	0 0.0 0.0 0.0	60 9.6
9	0 0.0 0.0 0.0	3 100.0 0.7 0.5	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 0.5
10 Orkneys	11 78.6 9.2 1.8	2 14.3 0.5 0.3	1 7.1 1.2 0.2	0 0.0 0.0 0.0	14 2.2
11	4 66.7 3.4 0.6	1 16.7 0.2 0.2	1 16.7 1.2 0.2	0 0.0 0.0 0.0	6 1.0
12	8 16.7 6.7 1.3	28 58.3 6.7 4.5	10 20.8 12.5 1.6	2 4.2 66.7 0.3	48 7.7
COLUMN TOTAL	119 19.1	421 67.6	80 12.8	3 0.5	623 100.0

There is a total of 69 Historic Buildings in Local Authority Region 1 (Highlands).

Of all Historic Buildings in Scotland 11·1% are in this region.

This shows that there are 50 Historic Buildings in Class 2 (Fortifications) in Local Authority Region 1.

65·1% of all Historic Buildings in the Borders Region are Fortifications.

10·1% of all Ecclesiastical Historic Buildings are situated in the Borders Region.

1·8% of Historic Buildings are Ecclesiastical and are situated in Orkney

Of the total of Historic Buildings (623) 119 are in the class Ecclesiastical

67·6% of the Historic Buildings in the class are Fortifications

THE BREAKDOWN PACKAGE The Breakdown Package allows statistical analysis of sub-sections of data sets. The major difference from the facilities offered by the Tables Package is that, instead of cases being counted, one specific variable is isolated for detailed analysis. Figure 8 shows part of such an analysis in which the capacity of hotels, as measured by available beds, is examined by two control variables (local authority region and licensed status). While two control variables have been used in this table, up to five can be specified.

Mapping

In addition to its conventional printing facilities, the computer can produce results in mapped form. A line printer used in Edinburgh has been modified to allow printing at ten lines to the inch, instead of the conventional six, thereby producing a square rather than rectangular grid and so removing the vertical distortion which previously has presented problems. In addition, a special print chain allows a more adequate range of mapping symbols and so ensures a product of high quality.

The range of options for analysing and presenting results offered by the mapping packages within the

Fig 8 Breakdown Table

```
BREAKDOWN OF HOTEL CAPACITY BY LOCAL AUTHORITY REGION AND LICENSING STATUS,

BREAKDOWN OF CAPACITY
      BY  LAREG
    AND BY LICENSED

FOR TOTAL POPULATION
MEAN            35,30
STD DEV         44,91
VARIANCE      2017,03
NUMBER      (   2279)
TOTAL        80459,00
MISSING           150
CASES WITH MISSING CONTROL VALUES = 19

LAREG'                  LICENSED

VALUE                1  VALUE                1
MEAN            38,60  MEAN            40,10
STD DEV         39,19  STD DEV         38,80
VARIANCE      1535,78  VARIANCE      1505,35
NUMBER      (    426)  NUMBER      (    366)
TOTAL        16445,00  TOTAL        14677,00
MISSING            5  MISSING            5

                        VALUE                2
                        MEAN            29,47
                        STD DEV         40,30
                        VARIANCE      1624,21
                        NUMBER      (     60)
                        TOTAL         1768,00
```

The variable shown here is the one to which all results in the table relate; in this table, the capacity (number of beds) of hotels

In this table, capacity has been broken down by local authority region and licensing status.

ie. all hotels in the data bank.

Local Authority Region 1 (Highlands)

Licensed Hotels

Capacity in terms of beds for licensed Hotels in the Highland Region.

Unlicensed Hotels

This section of the table is repeated for all other regions.

system is considered in the following five sub-sections.

Areal Data

Automated cartography is particularly suitable when areas are to be represented, especially if data have been assembled by squares. Figure 9 illustrates the ability of the system to undertake an analysis by area of squares of a grid; it shows all squares in which at least 8 per cent of the total surface area is woodland.

Data for Specific Locations

It is also possible to record information for particular locations in Scotland (point data) by specifying the National Grid map reference at the stage of coding. Figure 10 illustrates the use of such data and presents the results given in list form in Figure 5. This map demonstrates the system's ability to select information depending on the presence or absence of facilities with particular characteristics. In itself, this capability offers a wide range of possibilities because selection could be made on the basis of a very complex set of conditions.

Whereas Figure 10 has been based on the main subject (the location of archaeological sites) for a particular group of data, the system can also produce maps based on attributes within a data set without considering the main topic of the data set. For example, Figure 11 has been based on the data set for pony-trekking, but the location of pony-trekking establishments (the first level at which data are stored) has not been mapped; one of the attributes has been used to ascertain the number of horses available in each square and these data were then allocated to one of five categories which have been specified for this particular map.

Data for Linear Features

While the line printer does not provide facilities for drawing lines, it is possible to show linear features by mapping the squares which contain them, although the resulting lines are usually stepped. Thus in Figure 12 squares containing a specified length of railway line have been mapped and so define the railway network. Indeed, this weakness can be turned to some advantage, for instead of recording simple absence or presence, attributes of the linear feature can be included, such as the class of road and its width. Such linear features as main roads, rivers and coastal footpaths may be of great importance in any assessment of potential for recreation and tourism; this was shown in

Fig 9 Scotland : Woodland

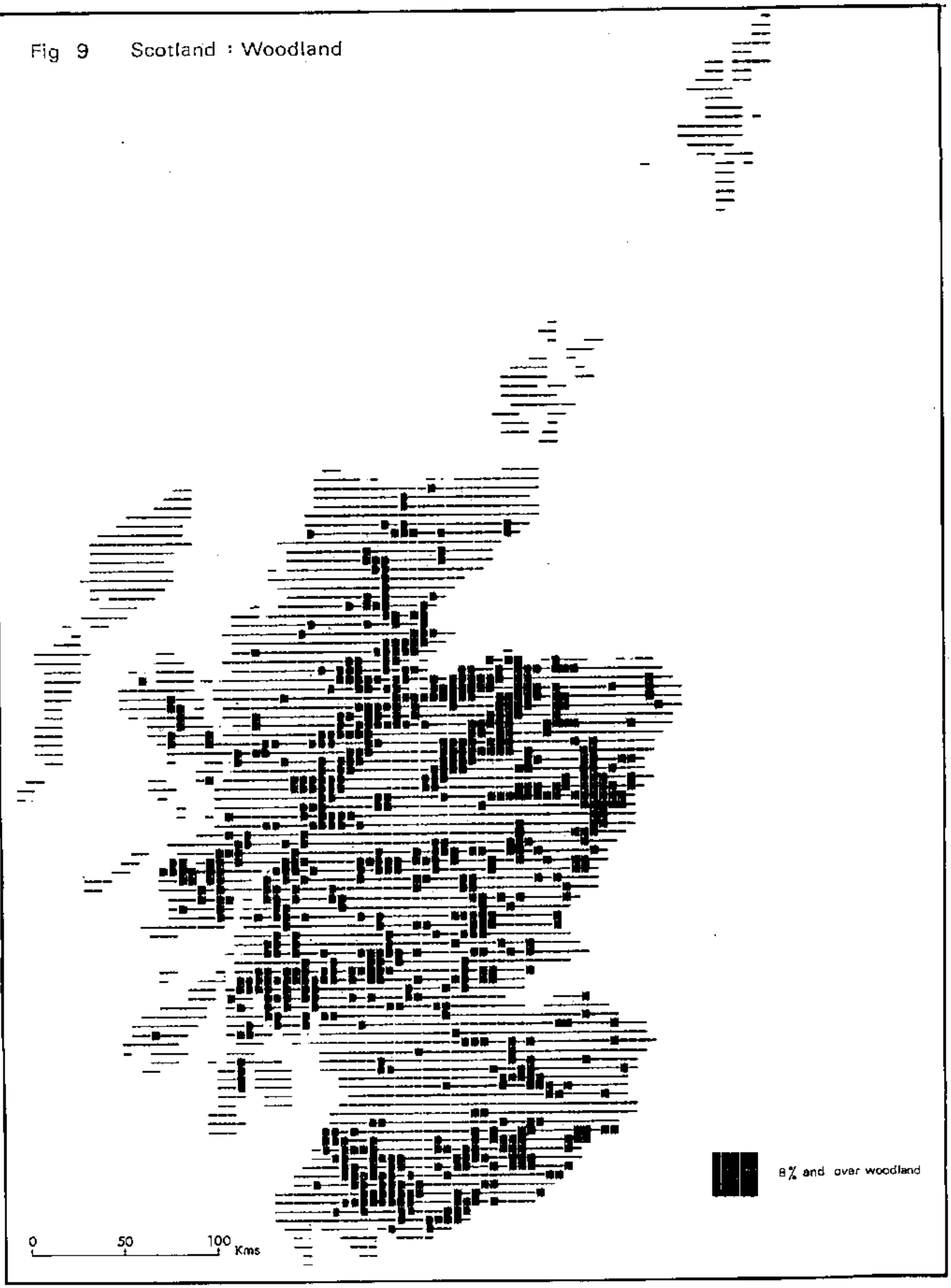


Fig 10 Scotland : Archaeological Sites

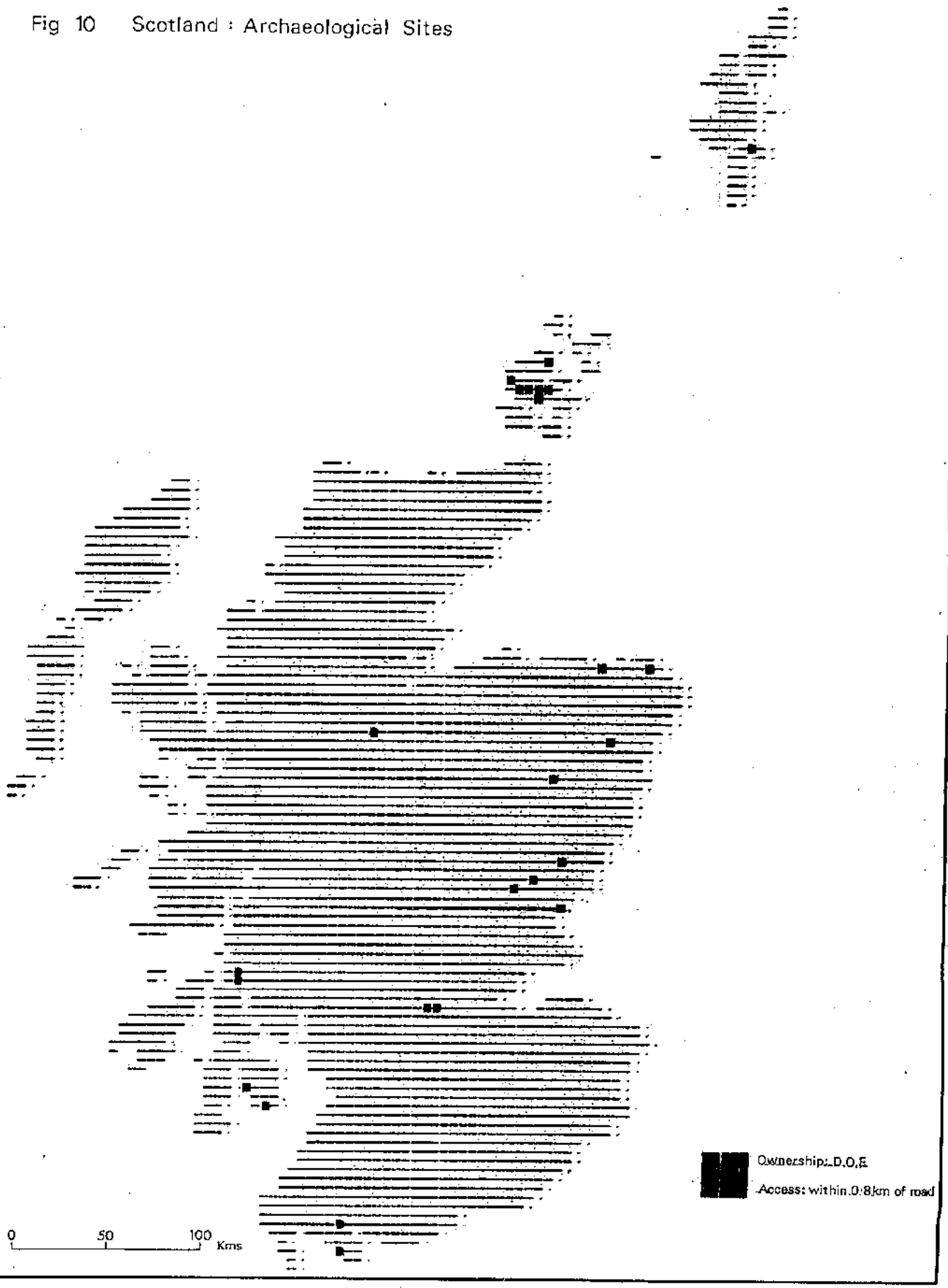
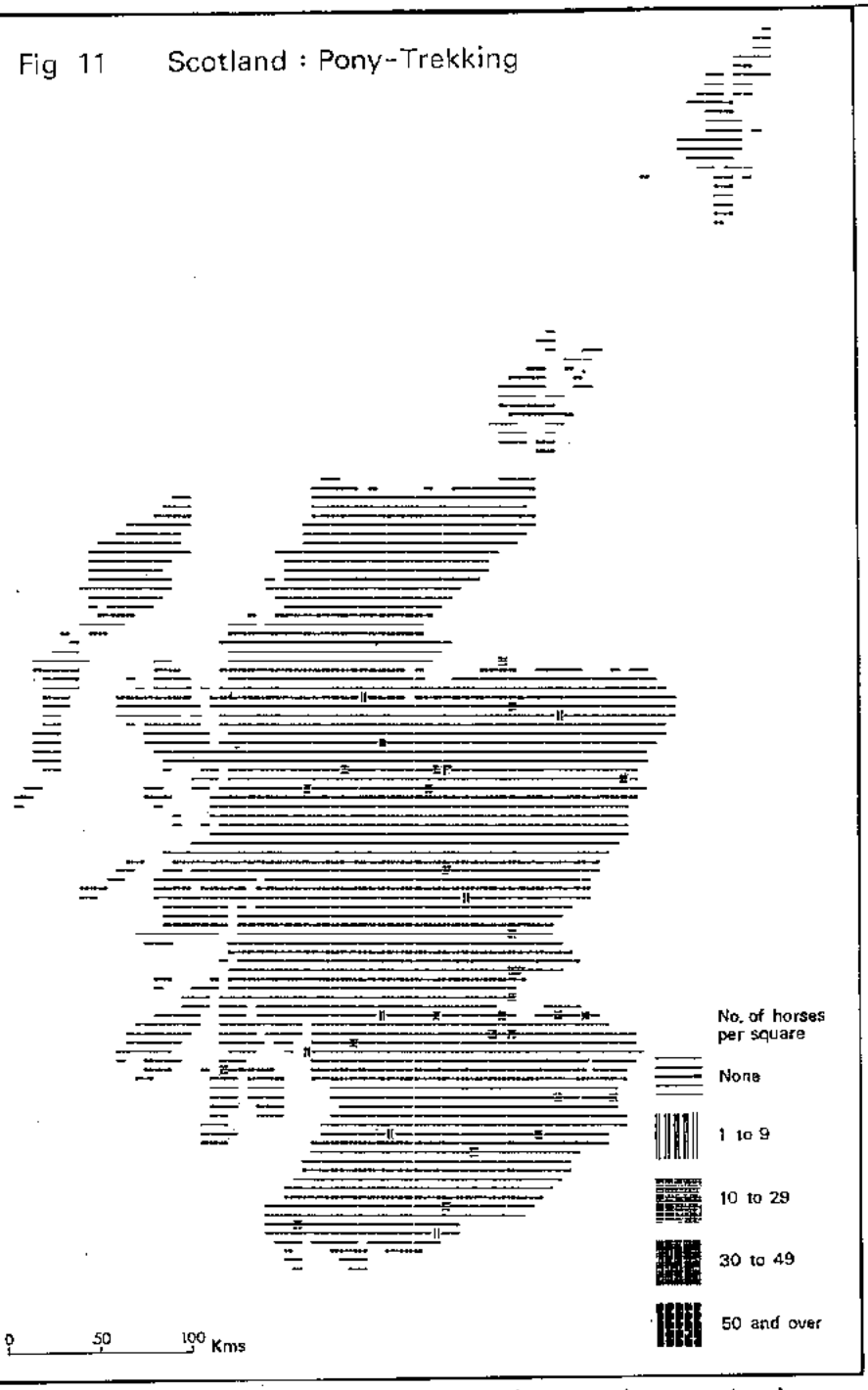


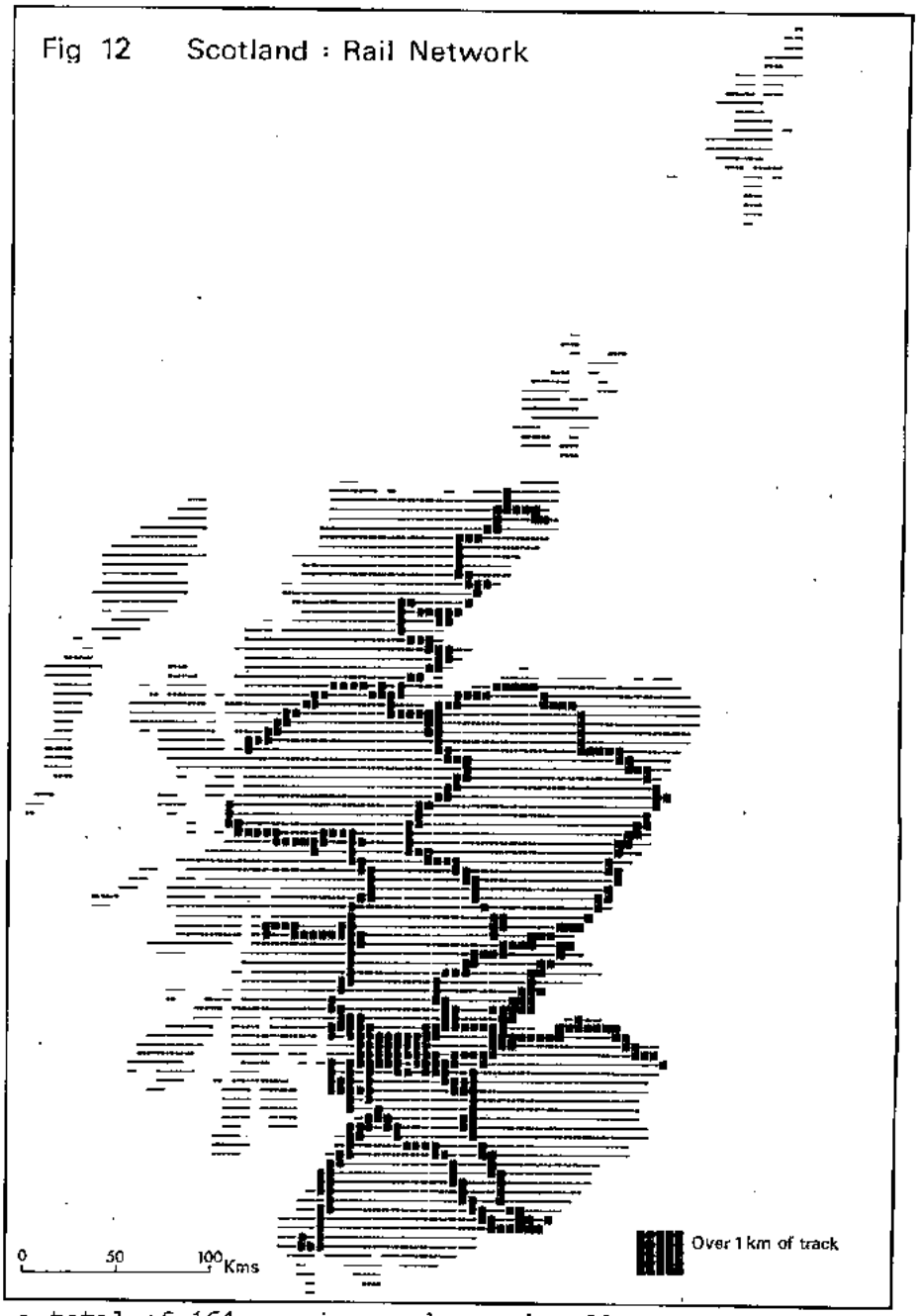
Fig 11 Scotland : Pony-Trekking



exercises to define *recreation environments* in studies of Lanarkshire (Duffield & Owen, 1970) and Greater Edinburgh (Duffield & Owen, 1971).

The Scale and Area of Maps

Within the mapping framework there are no limitations on the number of squares which may be used to produce a map; any area may be plotted, from one 5 km x 5 km square to a complete map of Scotland. At present, maps have been specified for: Scottish Tourist Board regions and sub-regions, new Scottish local authority regions and districts, existing Scottish counties and Forestry Commission conservancies;



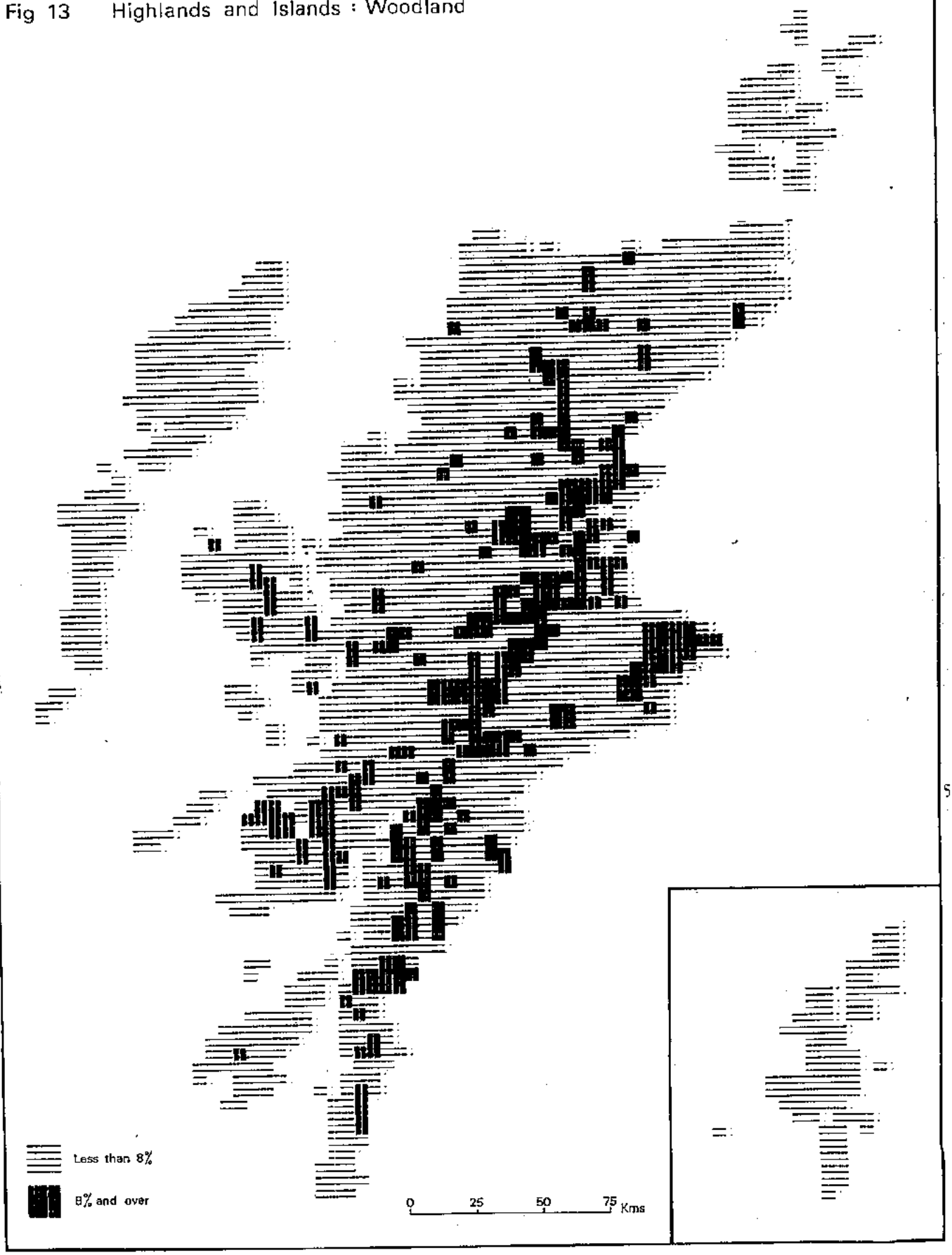
a total of 161 mapping packages in all.

In addition, squares can be mapped at any scale in multiples of the smallest cells of the grid. The map of the Highlands and Islands Development Board region (Fig. 13), produced at twice the scale of the previous computer maps, illustrates these two features. This map also shows squares which contain at least 8 per cent woodland and the effects of altering the scale can be seen by comparing this map to the one shown in Figure 9.

Potential Surface Analysis

Potential surface analysis will be a focus of attention later in this conference; thus, this paper does not examine its theory or concepts in detail.

Fig 13 Highlands and Islands : Woodland



However, the TRIP system offers suitable facilities for undertaking such experiments which involve identifying areas of greatest potential by combining and inter-relating factors whith have been considered important indicators. The following eight maps provide a rudimentary demonstration of the way in which this type of analysis can be undertaken by TRIP.

For this illustration an attempt is made to identify areas which might be suitable for the location of country parks, assuming that the most appropriate environment would be in either *rolling countryside* or *hill country* within reach of population centres of a prescribed size, where land use was diverse and there was a body of inland water.

The presence of at least 5 per cent of inland water is shown in Figure 14. Figure 15 shows a map of

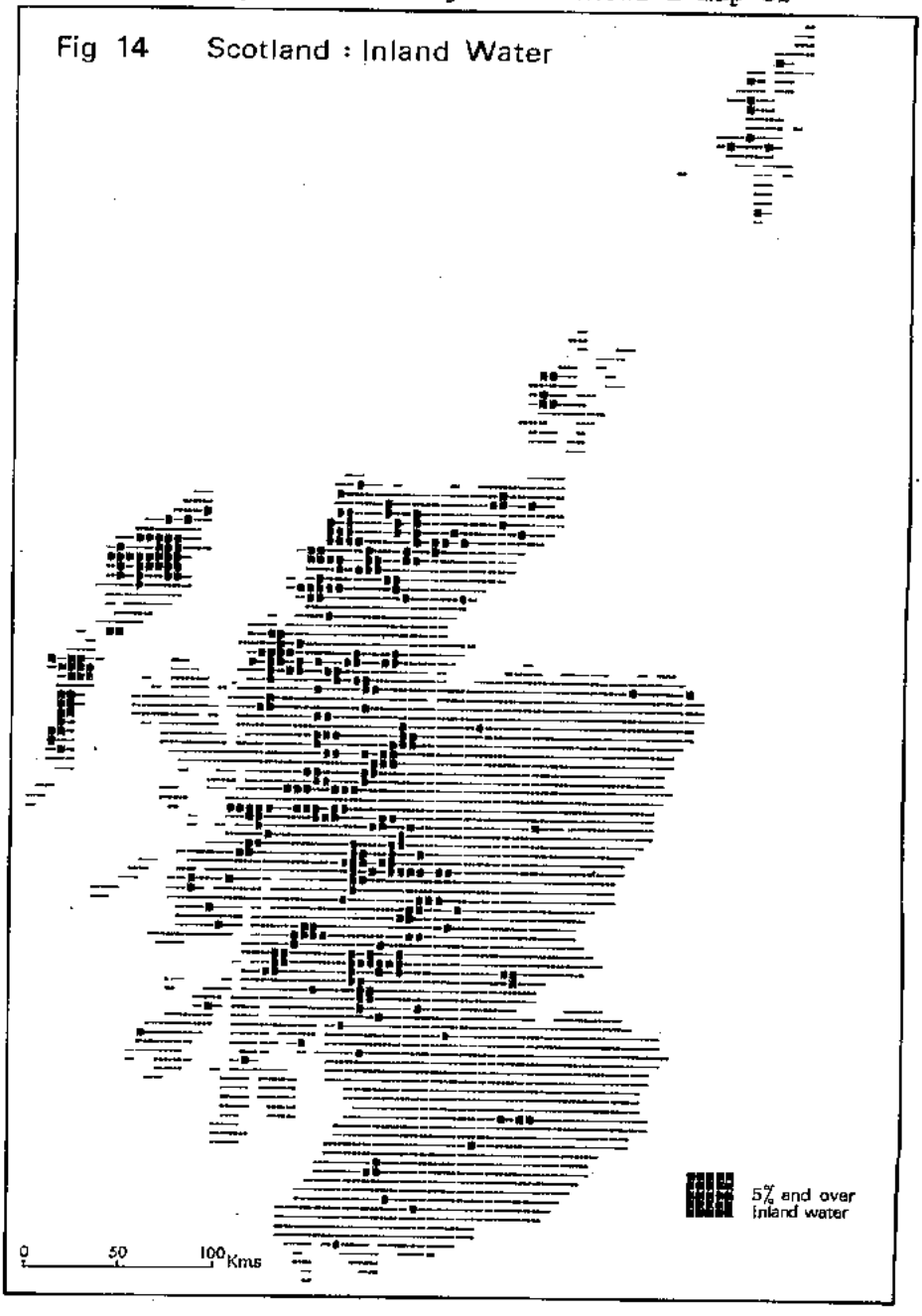
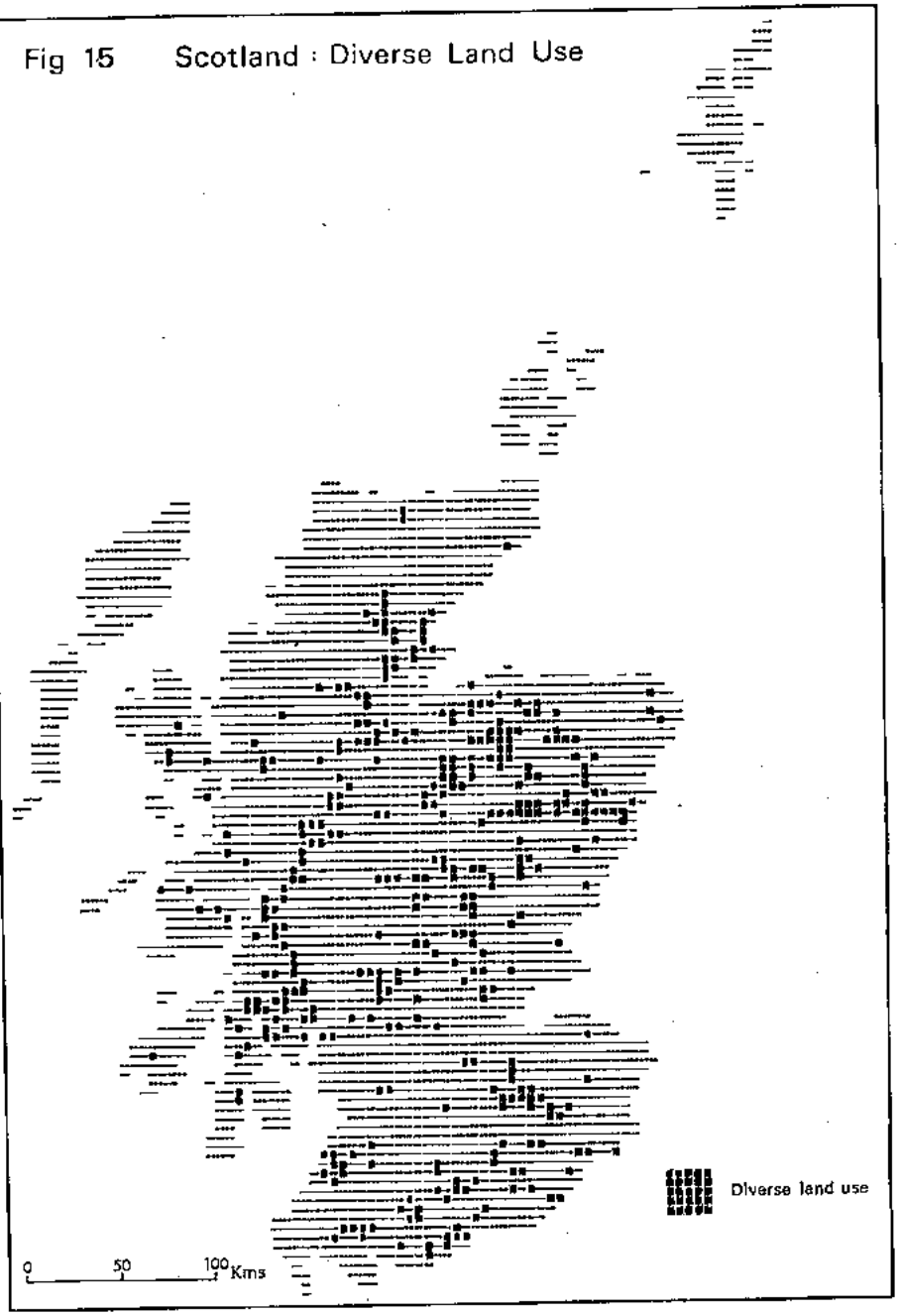
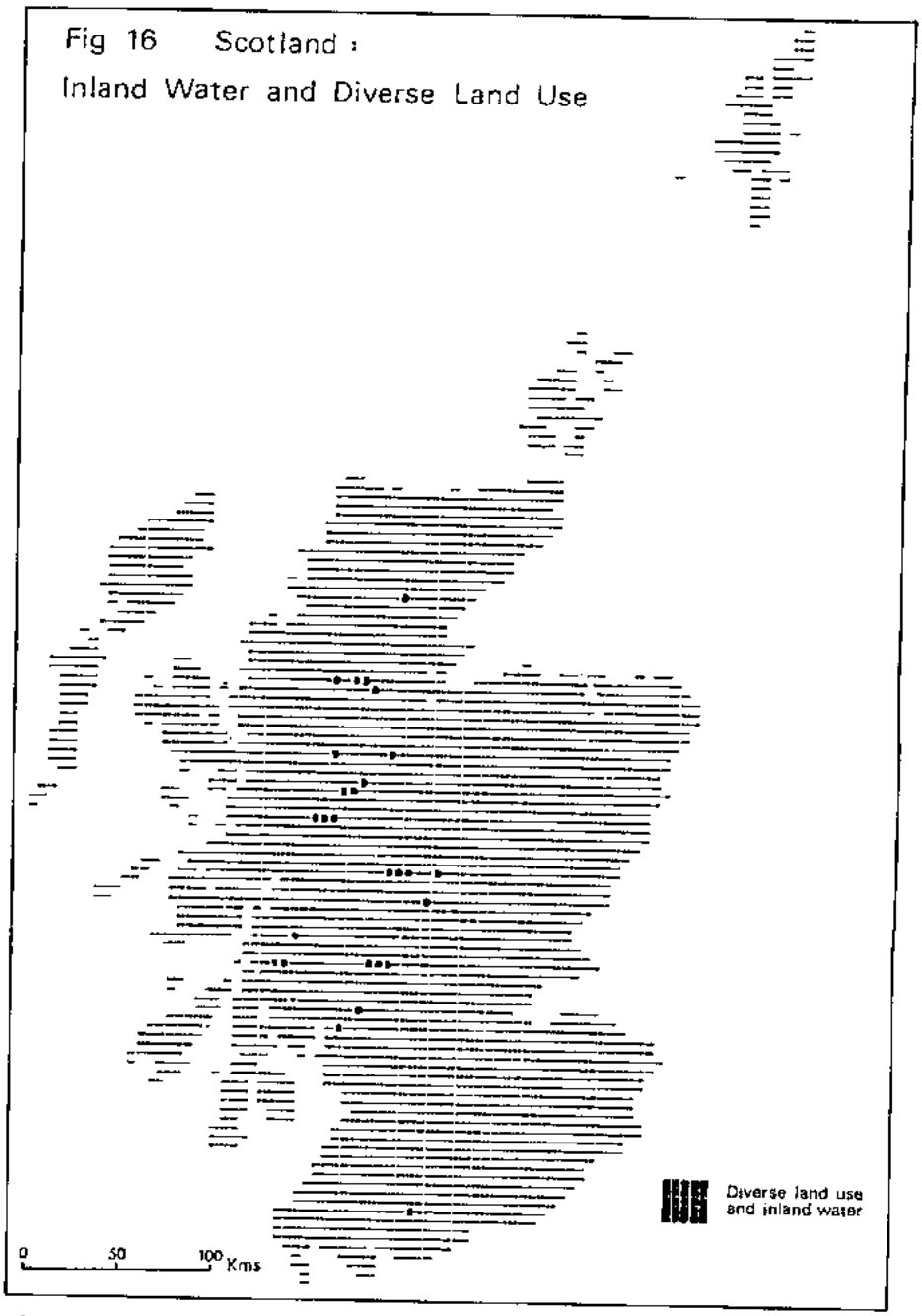


Fig 15 Scotland : Diverse Land Use



areas of diverse land use and is derived from the land-use data set. This *surface* has been included on the premise that country parks should be set in scenically pleasing areas and that an element of diversity in countryside adds to its attractiveness. Squares have been selected which include more than 8 per cent moorland, more than 8 per cent agricultural land, and more than 4 per cent woodland, figures which have been chosen empirically on the basis of past experience.

Figure 16 combines the data used to compile Figures 14 and 15, and shows those squares of diverse land use which also include at least 5 per cent inland water. The number of squares so identified is, of course, much smaller and the range of possible locations is thus considerably narrowed.



The next surface in this series (Fig. 17) shows areas of rolling countryside and hill country. Again, it is suggested that varied relief would enchance the scenic quality of the site, although very strong contrasts might lessen opportunities for development. Thus, in order to define rolling countryside, the relief data set has been used to identify those squares which have an available relief (the difference between highest and lowest points) of between zero and 800 feet, provided that the maximum relief did not exceed 1,500 feet. Hill country has been defined as squares with available relief of between 600 and 1,500 feet with a maximum relief identical to that of rolling countryside.

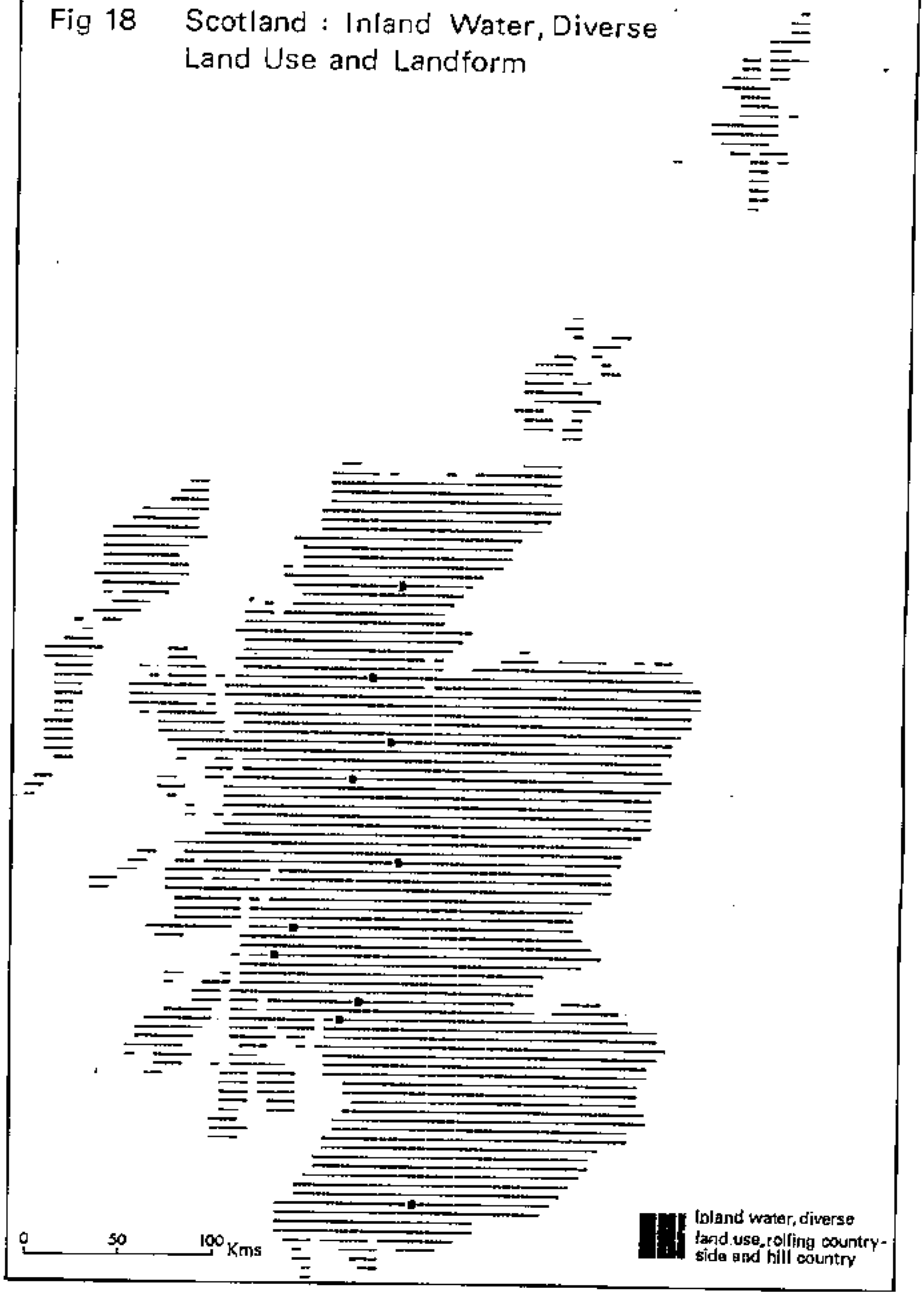
Combining Figures 14, 15 and 17 reduces the area of search even further and the result is shown in Figure

Fig 17 Scotland : Landform

18. Now only ten squares possess the necessary qualities.

Lastly, factors of population pressure and access are considered. Figure 19 shows a map produced from a data set giving the shortest distance by road from the centre of each square to the nearest population settlement of 5,000 or more people. For this map a value of twenty miles has been used, and squares have been identified within twenty miles of which there exists at least one population centre with a minimum of 5,000 people. From the composite surface (Fig. 20), which combines the data for inland

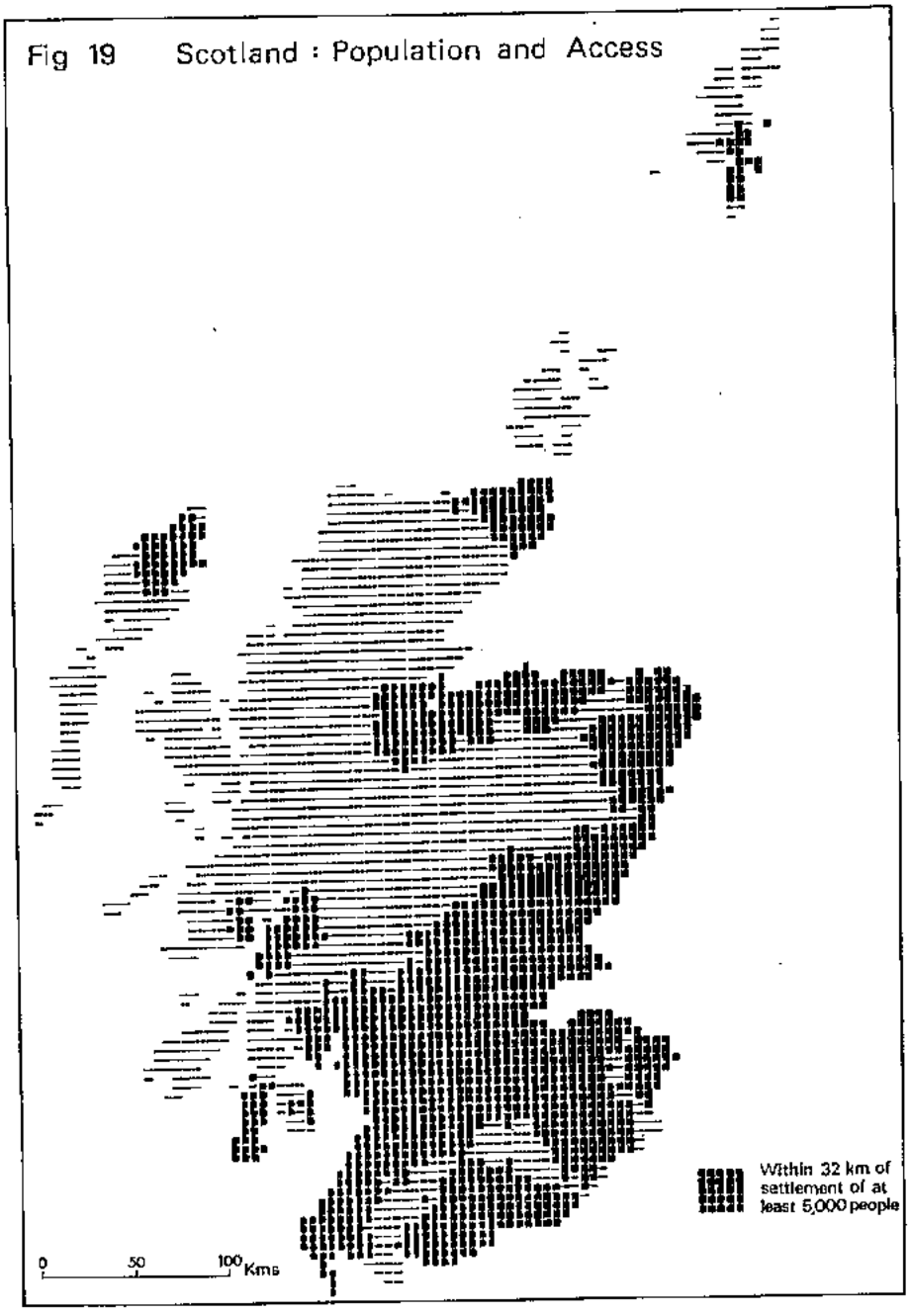
Fig 18 Scotland : Inland Water, Diverse Land Use and Landform



water, land use, landform, population and access, it can be seen that only six squares possess all the characteristics specified.

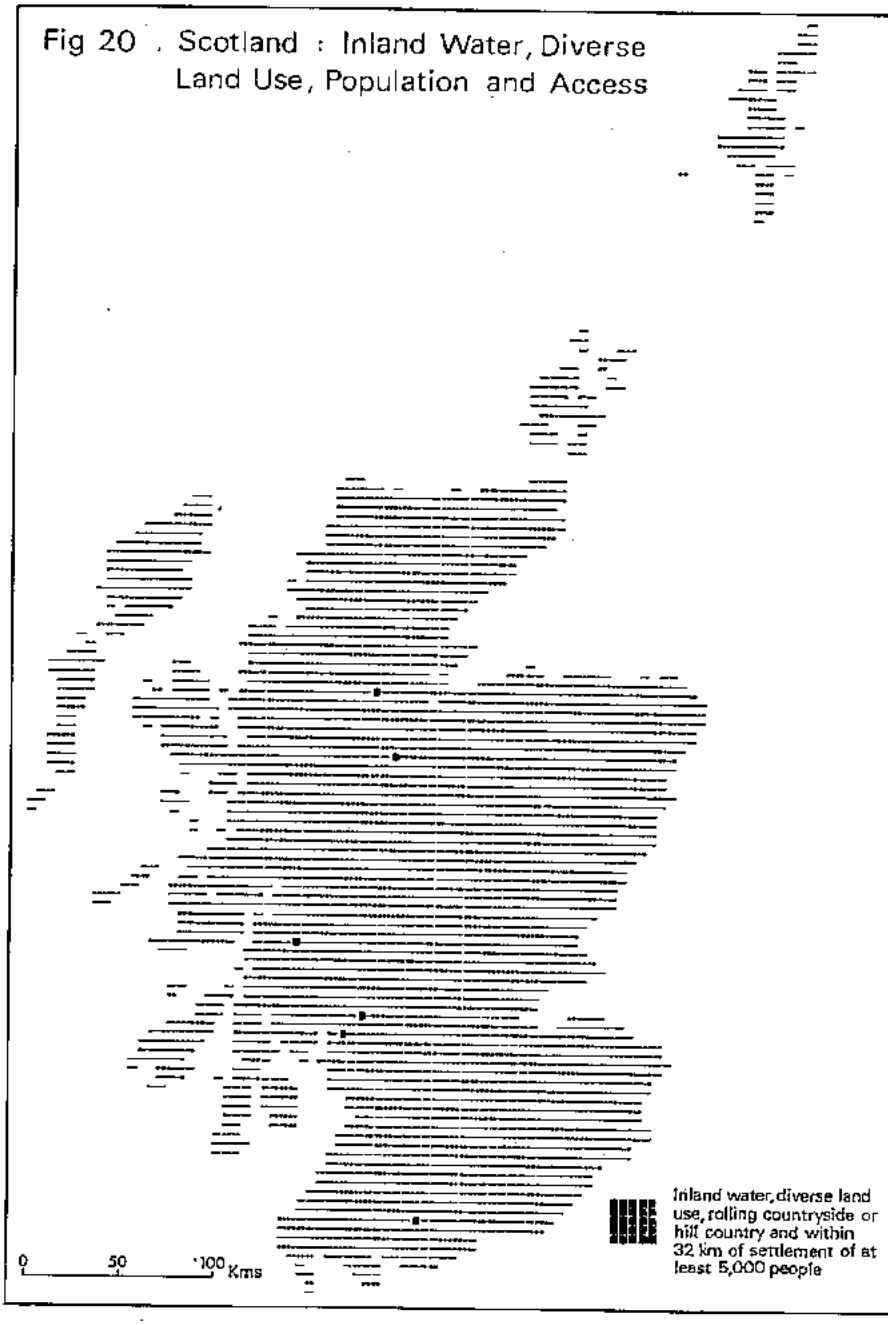
While it is true that none of the steps in reaching this conclusion has been conceptually complex, the sheer volume of work accomplished by the computer has been very large. The surfaces used to illustrate this planning technique have deliberately been kept very simple, but in any actual planning problem, they could be extremely complex; there is no practical limit on the number of relevant criteria which could be used to construct one surface.

Fig 19 Scotland : Population and Access



The data used to achieve the result shown in Figure 20 have been used again from an entirely different viewpoint to produce a map (Fig. 21) which presents information in a less specific way and gives a more general picture. Moreover, two further dimensions have been added in that the squares of the grid have been graded and a weighting factor applied to one of the criteria. Each time a square satisfied the criteria for inland water, diversity, landform and population and access, it was allotted a score of one. Scores for inland water were then doubled, so

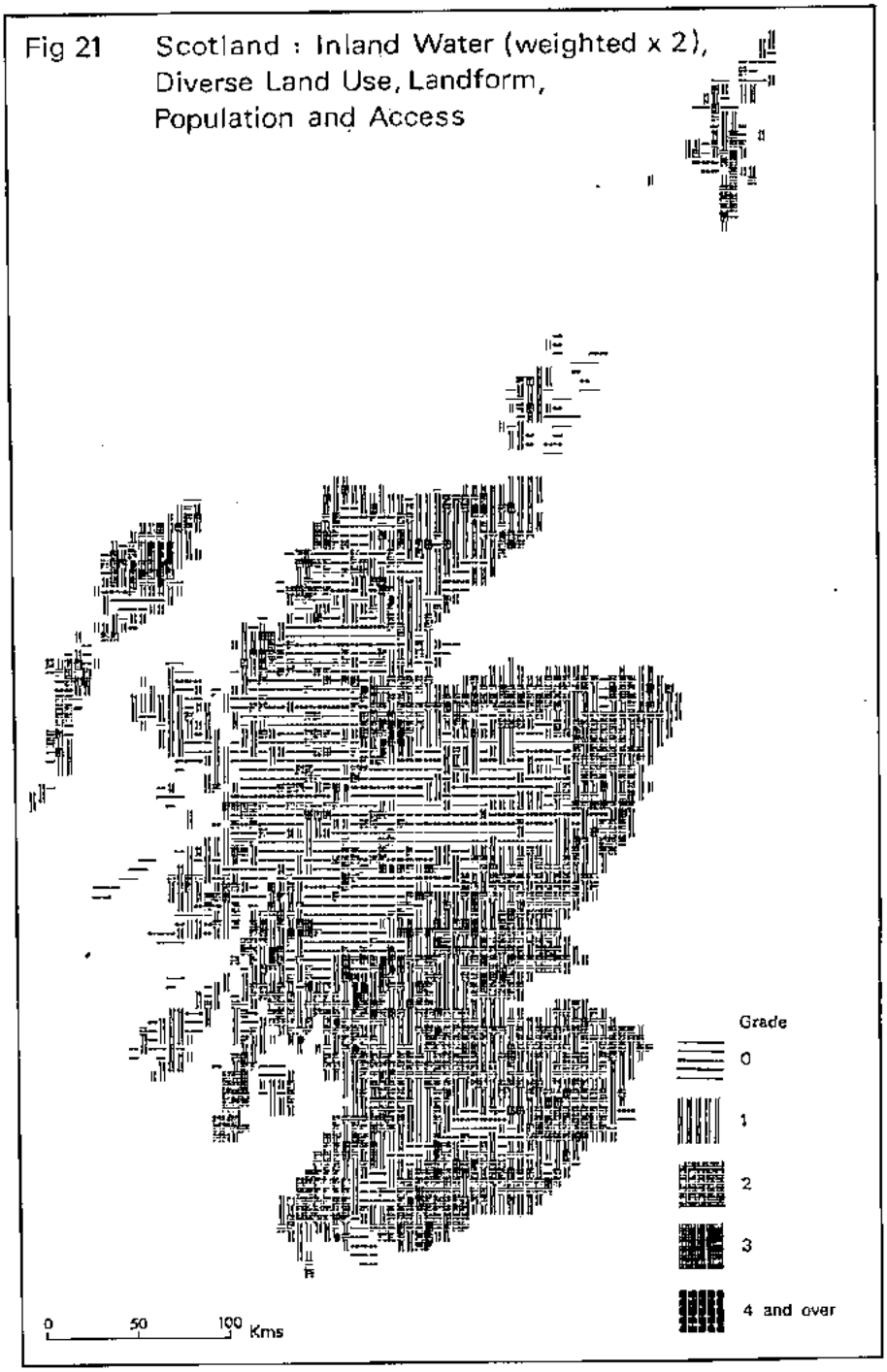
Fig 20 . Scotland : Inland Water, Diverse Land Use, Population and Access



that the total possible score for any one square was five. The shadings used show the results in five divisions from nought to more than three.

Weighting poses major problems in potential surface analysis, and lack of knowledge concerning the relative merits of individual components frequently prevents objective calibration. Further work is necessary to establish more objectively the value of the elements included in surfaces as well as the relative importance of the individual surfaces themselves.

Fig 21 Scotland : Inland Water (weighted x 2), Diverse Land Use, Landform, Population and Access



DEVELOPMENTS TO THE TRIP SYSTEM

Introduction

At the request of the sponsors of this project further work has already begun on some developments of the system, and these are outlined below. Many other developments are also possible.

Reduction in Scale

For more detailed analyses of smaller areas and for greater definition of spatial distributions within

regions, the development of a 1 km x 1 km grid base was thought desirable. There will be occasions when the 5 km x 5 km grid will be too coarse, for example, in the Scottish programme of regional studies to be sponsored by the Scottish Tourist Board, Countryside Commission for Scotland, Forestry Commission and the Scottish Sports Council. Data collected at the 1 km x 1 km scale will provide much of the necessary additional detail required to aid policy decisions at this level and it will still be possible to aggregate them to any more generalised level which is specified. Existing point data in the system would not be made redundant at larger scales; in fact, their value would be increased in that they could be located much more precisely. Further applications may be found in sub-regional studies where the location of country parks, forest parks or nature reserves might be considered.

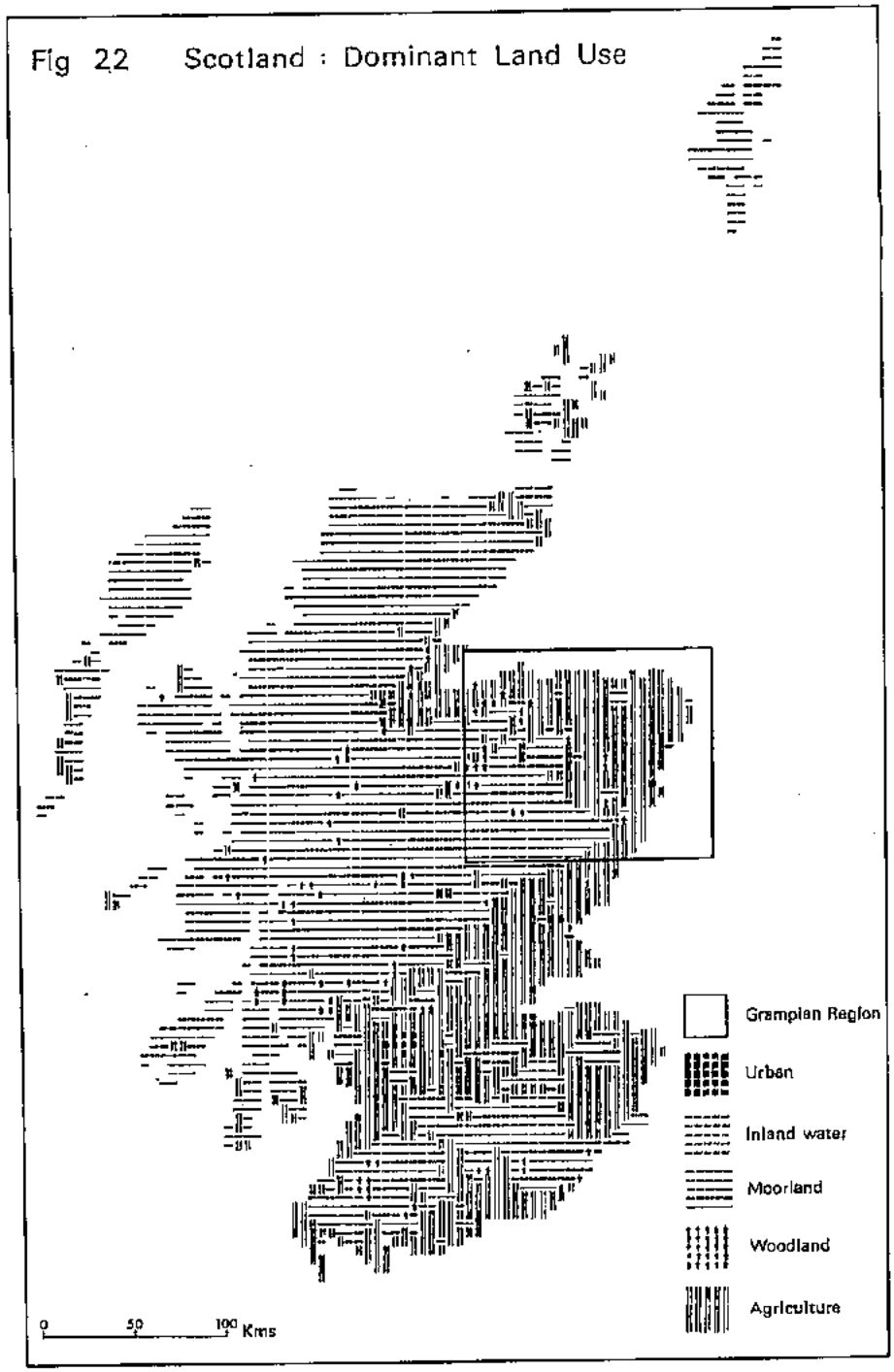
Although analysis at the 1 km scale is not at present an option, Figures 22 and 23 illustrate the effect of the change of scale from 5 km squares to 1 km squares. Figure 22 shows the dominant land use for each 5 km x 5 km square throughout Scotland, but also highlights the Grampian region. Figure 23, a simulated 1 km map, also records dominant land use, but this time for the Grampian region alone, corresponding to the area within the inset on Figure 22.

Collection of data for some 85,000 1 km squares covering Scotland would be expensive, but the regional or sub-regional studies which the sponsors plan would provide excellent opportunities for obtaining such data, since collection could be phased over a longer period.

A Search Technique

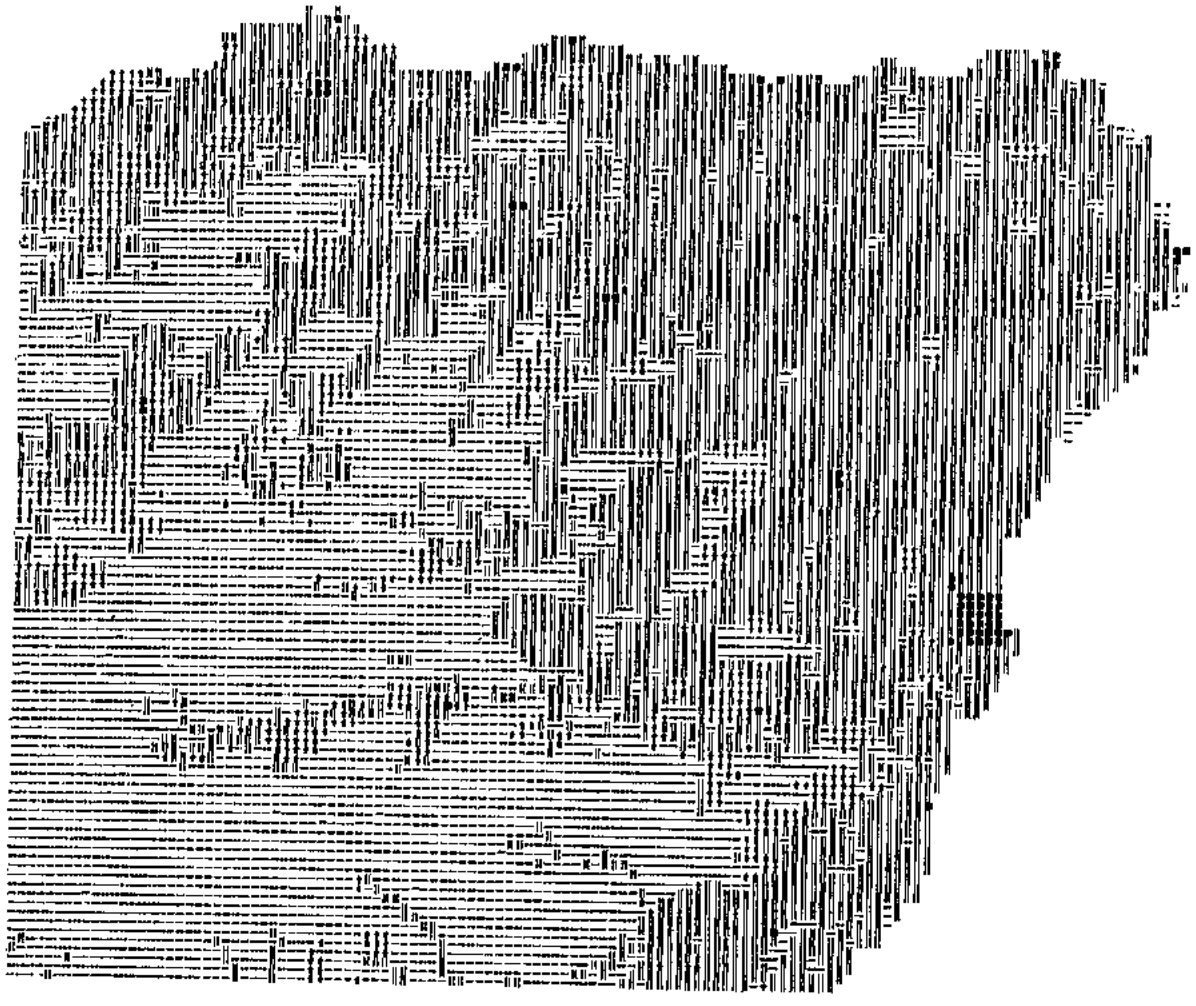
A further technique which is being incorporated into the system is one for searching defined areas for data and this will transform the system's capabilities for analysis. A useful application of this technique would be a search for squares containing resources capable of supporting certain activities; for example, all the squares containing over 10 per cent mixed woodland (and therefore suitable for natural history pursuits) within twenty miles of a town.

It will also be possible to take into account any form of barrier which inhibits direct access, such as a large body of water, or an extensive conurbation. Thus, both actual travelling distance and direct linear distance can be measured. Furthermore, other forms of barrier such as financial, psychological and time barriers, may be introduced so that *real* situations could be modelled as closely as possible.



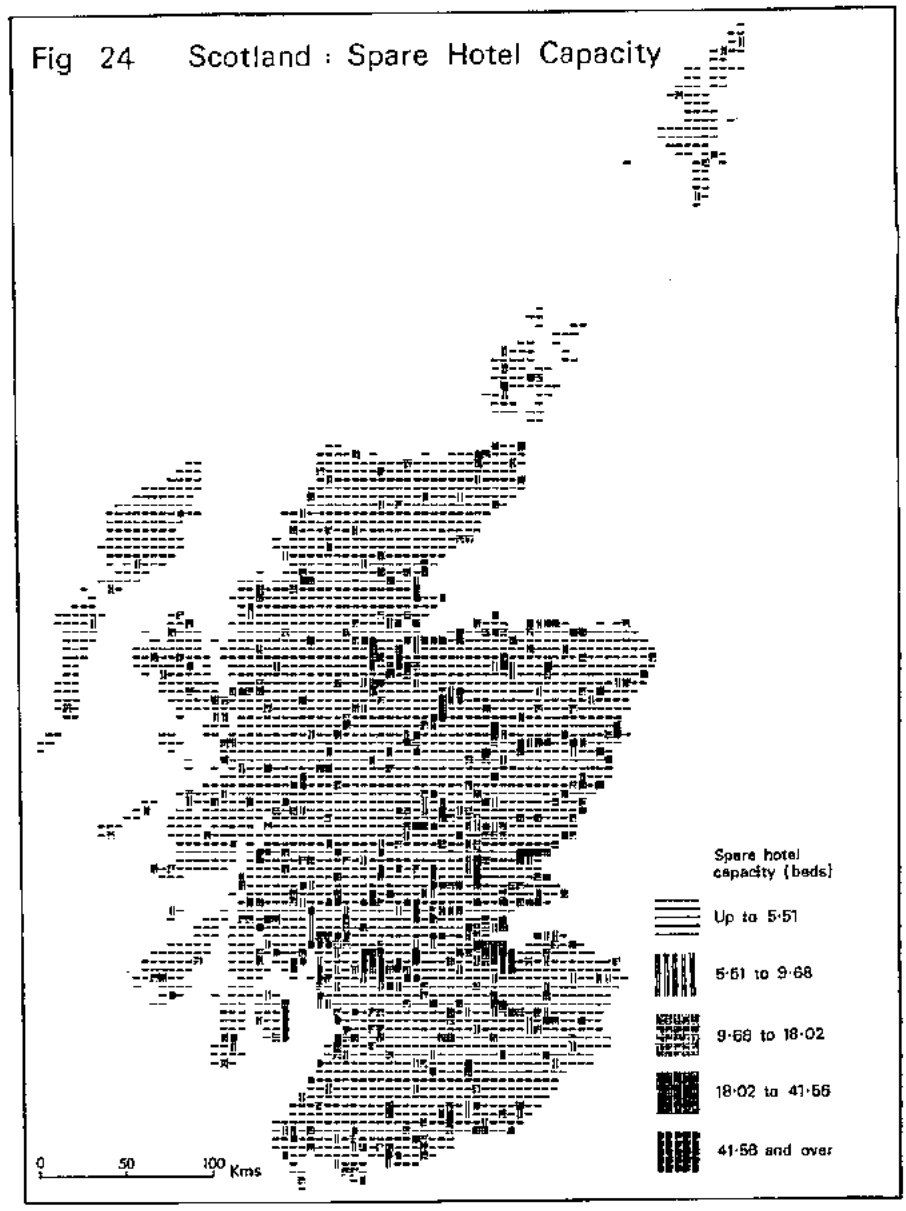
In addition, it will be possible to consider constraints on the use of specified squares. For example, the distances people are prepared to travel to acquire particular recreational experiences clearly affect patterns of demand. Surveys in Scotland have established distance relationships for both formal and informal recreation. For example, a radius of ten miles could be used to define suitable areas for the location of golf courses; a further modification could be added by assuming that a viable course would require a 20,000 population resident within this distance.

Fig 23 Grampian Region : Dominant Land Use



One of the most important facilities such a search technique can offer is the ability to assess the quantity and availability of any resource within a certain radius. Thus, a resource can be valued in terms not only of user potential but also of the availability of similar resources in the vicinity. If, for example, in a given area there were several squares within a fixed radius containing, say, suitable woodland for picnic areas, there would be a number of options for development. A potential site in an area where no other possibilities existed would be far more valuable and such evidence might be crucial if a case had to be made for its development in the face of competition from other spheres.

Experiments which exploit the search technique will be described later in this conference by my colleague, Brian Duffield. The remaining two maps illustrate

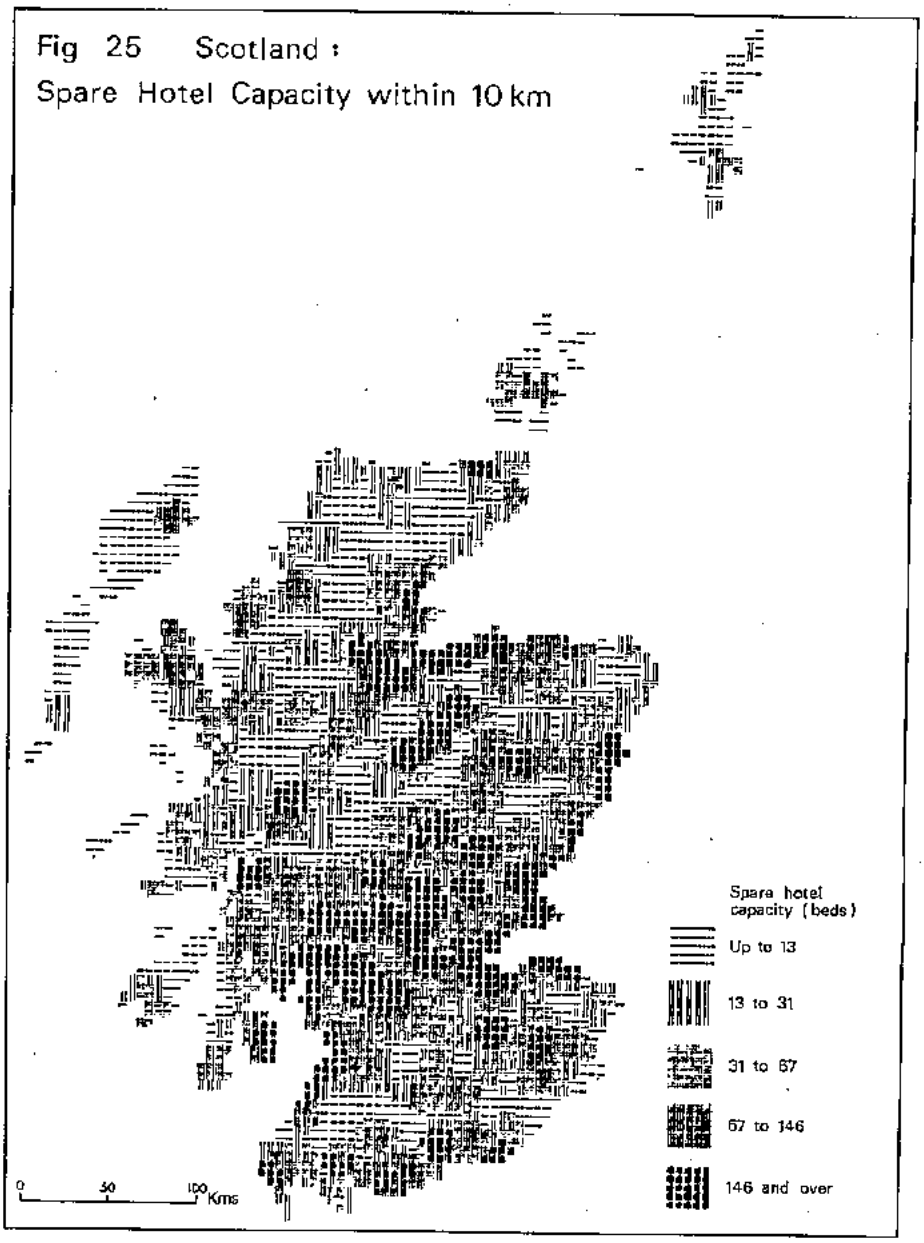


the ability of TRIP to combine a data set containing information relating to the location and capacity of hotels using the results of an occupancy survey. The first of these maps (Fig. 24) shows spare hotel capacity throughout Scotland, as defined by average annual occupancy statistics. However, the specific location of spare capacity may not always be so relevant as the capacity available within easy travelling distance. In Figure 25, the search technique has been used to show spare hotel capacity within 10 km and reveals an entirely different pattern.

Statistical Analysis

Basic statistical tests were included in the first phase of TRIP, but more complex statistical analyses would also be valuable, and techniques such as correlation and regression are being incorporated

Fig 25 Scotland : Spare Hotel Capacity within 10 km



into the system. As well as the parametric statistical tests already contained within the TRIP system it is intended to include a range of non-parametric tests. In addition, it is proposed to establish links with a computer-controlled graph plotter, thus providing an alternative means of visual representation. This machine is capable of plotting distributions and drawing histograms, graphs and regression lines.

Integration with Other Surveys

TRIP is not envisaged as a self-contained project; it is expected that data derived from other research projects will be added to the data bank and used within the system; the Scottish Tourism and Recreation Study, also being undertaken by the Tourism and Recreation Research Unit, is one such study. This

project has generated a large volume of data relating to the demands for tourism and recreation in Scotland. Thus, existing and future data on available supply of resources in Scotland may be combined with comparable data on the demand for these resources.

REQUESTING OUTPUT FROM THE SYSTEM

The computer programs and routines which provide the *software* of the system are, to the layman, enormously complicated and amount to some three year's work and development on the part of the computer staff of TRRU. By contrast, now that the system is operational, the means of requesting output can be simple (depending upon the complexity of the analysis specified).

Requests for output are specified by means of special *commands* and *instructions* and the simplicity of the language of TRIP is testimony in itself to the system's designer.

It will be recalled that Figure 9 showed a map of the area of woodland in each 5 km x 5 km square. All that was required to produce this map was the punching of the program illustrated in Figure 26 on to computer cards which was subsequently read into the machine.

Fig 26 Example Program for TRIP

```
//EJJCO3TT  JOB(R=256K),'DOWERS A.H.'
//EXEC TRIP
//SYSIN DD *

*MAP
DATA SET=LAND USE BREAKDOWN
SELECT IF(WOODLAND>1)
HEADING=SCOTLAND:WOODLAND
GRADING=ABSOLUTE 0,1,25
MAP WOODLAND
*END
```

The first three cards and last card comprise general instructions (JCL cards) which are standard to any analysis for which the computer is used. The TRIP program itself is contained within the remaining seven lines:

*MAP - specifies the mapping facility;
the data set to be used is specified in the second line;
the third line instructs that squares are to be selected for mapping if they are in categories of woodland greater than 1;
the *heading* instruction allows the map to be given a title;
the *grading* instruction and *absolute* option allows values to be attributed to a maximum of seven different grades specified freely by the user; this instruction means : put values between 0 and 1 in grade 1 and between 1 and 25 in grade 2;
the penultimate line instructs that woodland is to be mapped;
the final command terminates the program.

FUTURE ORGANISATION AND OPERATION OF TRIP

The TRIP system is now operational; shortly, the second development stage will be completed and attention is currently being drawn towards the system's future organisation and development.

Since work first began on the system the number of sponsors has grown from two to four; analysis has already been undertaken for non-sponsors and the list of potential users is likely to grow. Furthermore, the geographical area which is presently encompassed might well be extended. So far, the TRIP system has been considered only in a Scottish context, but the system is not restricted to this country and may be applied to any data for any location. There is no reason why similar studies to those undertaken in Scotland should not be carried out elsewhere in the United Kingdom; the system can be expanded very easily. Even as it stands, some 30 per cent of the United Kingdom is already covered.

While this stage of affairs is a healthy one, it is not without its implications for, amongst other things : funding and staffing of the system, the establishment of development priorities, methods of access, ownership of the system and its data, charging policies and publicity and user information.

A working party has been formed which will consider these issues and the roles which might be played by *steering* and *user* committees to guide the future development of the system.

Discussion

S.L. EDWARDS opened the discussion and raised three issues. First, financial resources had not been mentioned in the paper and it might be useful to know the order of costs required to set up TRIP. Secondly, the ability to handle resource data had been explained, but he thought the system was lacking if it was incapable of storing and using data concerned with the generation of recreation and tourism trips. He wondered whether or not using TRIP, it would be possible to ascribe numbers of day-trippers and holidaymakers to *generating* and *receiving* areas. Thirdly, while he accepted that pressures on recreation resources were affected by population density and travel distance, *population within 20 miles of an attracting area* was not necessarily a valid indicator.

In dealing with the costs of the research, J.T. COPPOCK reiterated that, so far, the TRIP system had been developed in two distinct phases. The first phase had been started following a contract between the Tourism and Recreation Research Unit and the Scottish Tourist Board and the Countryside Commission for Scotland, the fee for which amounted to only £5,000. However, it ought to be said that the Unit, backing its own faith in the future of the System, invested considerable resources of its own, particularly in terms of manpower, which makes a figure probably twice this size more accurate as an assessment of the original *setting up* costs. The secondary developments to the System which had been mentioned were the subject of a separate contract supported by four sponsors : the Countryside Commission for Scotland, the Scottish Tourist Board, the Forestry Commission and the Scottish Arts Council at a total cost of £18,000. Asked by J.M. DAVIDSON about the number of personnel involved and their contributions, J.T. COPPOCK went on to say that the situation varied according to the nature of the work involved. In the early stages, the senior staff had been involved in the initial concepts and principles and general design of the system, but later, exchanging the ideas for computer software had been largely the work of

Steve Dowers and his assistant Alan Paterson.

Data collection was yet another component, and while it need not make heavy demands of skill, it is frequently time-consuming, labour intensive and therefore expensive. As the occasion arose, part-time labour, particularly students during vacations, had been enlisted to cope with such exercises.

While the costs of the project were no doubt interesting to note, it was not envisaged that others would repeat the exercise undertaken by TRRU. The System had been designed for users, and as such, was available to all who wished to make use of it. At present, only coverage of Scotland was available, but there was no reason in principle why TRIP should not be set up for other areas. No doubt many improvements could still be made, and individuals would have their specific criticisms, but J.T. COPPOCK emphasised that, while other systems existed in name, TRIP was already operational, *turn around* time did not involve long delays and analysis was undertaken speedily and at relatively low costs.

In answer to the question concerning information for origins and destinations of recreationists and tourists, M.L. OWEN explained that it was not a question of the system's capability but one of availability of data. It was hardly surprising that, since the development had been undertaken in a department of Geography, there had been heavy emphasis on the ability to experiment with spatial interactions. TRIP had been designed so that it could store and manipulate data either for specific geographical locations, in terms of six figure grid references, or for areas in terms of 5 km or 1 km squares.

As far as the emphasis on resources in this paper was concerned, this merely reflected the early aims and timing of the work undertaken. Data sets for resources were the first to be stored, but there was no reason why data for demand could not also be incorporated. Indeed, the Scottish Tourism and Recreation Study referred to in the paper was first and foremost a demand survey. More than 18,000 interviews were undertaken altogether, approximately 11,500 with visitors to Scotland on holidays and 7,000 with Scottish residents. The questionnaires had been designed so that travel patterns for tourism and recreation could be precisely recorded, even to the extent of plotting stops of more than a quarter of an hour made during recreation trips from home. All these data from the Scottish Tourism and Recreation Study had been added to the TRIP data bank and analyses were at present being undertaken on them.

As far as the indicators used in the experiments were concerned, M.L. OWEN explained that the examples in his paper were merely illustrative and had all been based on criteria which had been arbitrarily chosen. While attempts had been made based on experience to make these criteria as realistic as possible, they were not put forward as firm indicators which could be accepted. There was no special significance, for example, in examining population pressure within a range of 20 miles in the experiment to look for suitable locations for a country park. On the contrary, the problems which researchers faced at present in deciding upon the criteria to be used in such experiments had been emphasised; however, the scope which TRIP offered for experimentation in this regard was seen as one of the system's most valuable assets.

G. BARROW expressed concern about *the problems of collecting data for TRIP, particularly with respect to landforms, land use and scenery. It seems that there is a need for considerable research and testing into the usefulness of landscape data collected on a grid square basis, and also which size of square is most suitable.*

M.L. OWEN agreed with G. BARROW *landscape assessment* was a research frontier and much work remained to be done. The appropriateness of data collected for grid squares was an interesting topic. Ideally, it should be possible to quantify the data so that distributions can be compared exactly. Attempts have been made to evaluate landscape using *character zones* or *tracts* of countryside.

The inference that irregular tracts which inevitably vary in size, can be readily defined seemed difficult to defend. Landforms do not consist of units which can be defined by discrete boundaries, and while watersheds may enable more exact definitions of landform units, they do not provide a credible alternative. For, if physical characteristics are to be considered, it hardly seems logical to ignore land use. Visual tracts are no less difficult to locate than landform tracts and the opportunities for inconsistency are numerous. First, there is the difficult choice of position from where to view the tract - obviously the area seen from a high ridge will be vastly different to that seen from a valley floor. Even relatively small movements of position may drastically affect the field of vision because of intervening obstacles such as shelter belts and results from survey at one location can be totally different from those collected only a short distance away. A further point is that even when landscape is an important component, visual tracts may still be inappropriate because of the wide range of variations in character that are possible

within any one scene.

Although the use of squares in analysing countryside might seem completely contrary to the natural character of the landscape, they nevertheless provide a convenient and objective basis for classification, they free the surveyor from any subjective definition of areas and illusory boundaries need not be suggested. There are the added advantages that an infinite number of items can be assembled for each unit and no issues need be pre-judged; furthermore, direct comparisons are easy to make.

As far as the size of squares was concerned, sensitive judgements would have to be made related to the areas under study. There are examples of studies based on a 1 km grid; (the study of recreation in the South-east of England, including Greater London and 11 counties); it might be more appropriate in a national survey, however, to use the quarter inch series and a 5 km grid. While it can be argued that some distortion is inevitably introduced when squares are used, it is also true that, provided an appropriate size of grid is chosen, its rigidity will become almost unobtrusive over a large area. For general rather than detailed studies, inaccuracies can be retained within tolerable limits.

While present options were limited to analysis of 5 km and 1 km squares, there was no reason why, as the system evolves, other scales should not be provided. It should be recognised, though, that, if a fine scale were used over a large area, the initial data collection might be a considerable undertaking.

Referring to the 5 km grid, B.K. PARNELL commented that the presence of specified characteristics in a square was not necessarily a guide to its suitability for development. *To the planner the spatial relationship of the characteristics present determines the potential and the grid square does not, of course, give any guide to these relationships.*

The Country Park analysis has shown how an attempt to sieve out the grid squares, supposedly suitable for use, could come to grief - suggesting park sites mostly in areas where they could not be considered and omitting the known possible sites in Scotland.

I suggest that the system appears more suitable for use as a negative rather than a positive sieve, defining areas where conclusive negative factors exist and so making it clear that there is a broad area of possibility which could be searched by local knowledge and fieldwork.

M.L. OWEN agreed that if data were merely considered for individual squares in isolation, the analytical possibilities would indeed be limited. Perhaps it had not been appreciated that developments to the system presently going forward were seen as measures to overcome this weakness. As has been mentioned the *search technique* would make it possible to assess the availability and quantity of resources and, if desired, relate them to data for demand or use within any specified distances. This technique was already available in an experimental form and its use would be demonstrated in a later session of the conference.

Referring back to comments made earlier, M.L. OWEN stressed that there had been no judgement of the validity of the *suitable* locations for country parks which had been identified in the experiment and none was intended. Indeed, for this reason, there had been no attempt to define precisely their whereabouts. The exercise was undertaken to demonstrate the usefulness of TRIP in potential surface analysis. Of course, much greater sophistication would be required in specifying criteria, but the point not to be missed was that, no matter how complicated were the indicators and subsequent analysis, TRIP provided a suitable and readily available means of progressing towards acceptable conclusions.

The choice of using TRIP either as a positive or negative sieve was an interesting issue, but in M.L. OWEN's opinion, neither alternative need necessarily be exclusively used. It was possible to envisage occasions where either positive or negative values would be more suitable or more easily defined and there were no technical difficulties in either approach. Perhaps it was worth emphasising, however, that no matter what the approach there is a need to see recreation planning in a regional and even national context. Planning at such a scale would be concerned with an overall view rather than the detail which would be essential at a local level. There is a case, then, for a two-stage evaluation, in which the approach to the analysis of physical resources included an initial general assessment, followed by a more detailed examination of selected areas. At the first stage resources would be examined by means of a coarse sieve, thus, areas would be identified worthy of more thorough examination at the second stage. The criteria that would be relevant in a broad regional assessment are quite different from those appropriate to the selection and planning of a specific site. Even at the first stage, however, the nature of relationships and the analysis required might be extremely complicated, stressing the value of an automated tool such as TRIP and an objective method of data collection.

D.G. HALL wished to draw attention to the need to ensure that the data bank was valid in terms of keeping information up to date. M.L. OWEN agreed that the facility to *up-date* was essential, but assured delegates that data could be edited or brought up to date very easily; indeed, some of the data sets stored by the sponsors were already revised versions. D.E. COLEMAN asked whether or not the sponsors or the Unit had thought of incorporating *historic information*, and while he envisaged that retrospective analysis might be of value, wondered whether the rate of growth and eventual volume of the data bank that this might bring about could be coped with. J.T. COPPOCK agreed that storage of data would have to be considered; it was clear that historic information might well be considered useful, for example, data from the census office, but the data bank and its future contents was really a problem for the sponsors. While discretion would be required in deciding which data should be stored on disks and therefore readily accessible to the system, information could also be *archived* on magnetic tape at relatively low cost and brought out for use as and when required. R. CARTER anticipated that *in terms of up-dating historic information one could draw a distinction between resource and demand information. Data for resources would require continual up-dating but there would be occasions, for example with lists of hotels and their facilities, when, instead of merely editing, it would be necessary to preserve the original data set to permit time series analyses. Data for demands are not so easily or cheaply obtained and it would be less a case of up-dating than of undertaking new surveys to acquire up-to-date information.*

Whether or not the system had been evaluated by the sponsors in these specific planning exercises was a question asked by MR. BELWOOD; he also wished to know if the *package* could be bought and whether it could be transferred to another computer.

Addressing himself to the first point, R. CARTER said that *the system has only recently been fully operational, and we are not yet in any position to evaluate it. The main purpose of the system is to assist in the strategic planning of tourism and recreation, and, in this context, the first main use will come during a set of national and regional planning studies due to commence at the beginning of 1975. The system will play an important role in providing the analysis necessary to generate alternative strategies for tourism and recreation.*

A limited number of analyses for planning have already been carried out, and BRIAN DUFFIELD will be illustrating them in his paper tomorrow.

The system can also be used to provide day to day information for management and general planning purposes. Arrangements for the establishment by the University of an on-going service for meeting the sponsors' day to day information requirements are to be considered shortly by a working party.

M.L. OWEN added, that while there had never been a suggestion that the system's software would be for sale, it had already been agreed in principle by the sponsors that the on-going service referred to by R. CARTER could be bought by users other than the sponsors or TRRU. No clear guidance could yet be given as to arrangements for obtaining analysis, but it can be said that the working party set up to consider a TRIP users' service aimed to devise a means of easy access at unprohibitive costs. T. HUXLEY, speaking for the sponsors, confirmed these points and added that as well as the system itself being available, the data sets assembled by sponsors could also be at the disposal of users, except only in cases where they contained confidential information.

Dealing with the possibility of transferring to another computer, clearly machines with similar capabilities to those at the Edinburgh Regional Computing Centre were available elsewhere; it was explained by M.L. OWEN, however, that the question was not merely one of simple transplant. The computer language used to write the complicated programs for TRIP was one developed in Edinburgh called IMP and facilities for its use would not be commonly available. In addition, the line-printer at Edinburgh had been adapted so that it incorporated special mapping symbols and could produce a square rather than a rectangular grid format. Nevertheless, the fact that potential users may not all be situated in Edinburgh need not be a major disadvantage. Access to the system could be obtained without undue delay from other parts of the U.K. Indeed, one of the sponsors of TRIP was situated 50 miles away from the machine yet had already begun to exploit the system's facilities with little inconvenience.

Having heard about *potential* D.M. EAGER wished to enquire whether *the consequences of that potential being realised should be included in the system, for example, traffic congestion, site capacity and management costs?* M.L. OWEN answered that, always assuming that data could be provided and ascribed to areas for sufficient locations, there was no limit to the factors which could be included in analysis relating either to resources or demands for them. Though forecasting techniques for predicting recreation demand were far from wholly developed, it would nevertheless, through TRIP,

be possible to make use of the best information available at any given time to build in assumptions or estimates. Furthermore, it would be possible to examine the consequences of a range of developments in moving towards a preferred strategy.

Session 2
Countryside Recreation Statistics System

Chairman J.M. Davidson

The National Context
P. Lawson

INTRODUCTION : HISTORICAL CONTEXT

No doubt this audience is familiar with the provisions of the 1968 Countryside Act - and its Scottish equivalent - which recognised the growth of informal recreation in the countryside and made provisions for grant-aiding certain facilities and services. It had hardly required a sophisticated survey to conclude that the post-war years, and particularly the 1960s had witnessed unprecedented increases in informal recreation. The reasons for these phenomena - for example, increased mobility, affluence and leisure time - have been postulated ad nauseam elsewhere. Much of the reasoning has been, and still is, largely hunch - albeit sometimes informed hunch. Reasoning ranges from the patently obvious to a variety of individual *backwoods* philosophies such as *the increasing need of materialistic urban man to refresh his immortal, if somewhat polluted, soul!*

NEED FOR A FACTUAL BASIS

My own view is that the intervening six years since the 1968 Act - or perhaps even before that - would have been better employed in concentrating effort on establishing where informal recreation takes place. This factual basis, even for a limited area but carried out systematically and periodically, would have provided some firm factual hooks upon which to hang speculative ideas on the reasons why.

It is a sad reflection on the lowly status of informal recreation that despite the *Establishment* paying lip-service to its importance, no sub-regional planning study or structure plan - so far as I am aware - has thought it worthwhile to undertake a comprehensive factual survey of the existing supply and use situation. It can hardly be recommended as a sound forecasting technique to plan future provision by

compounding an unknown quantity. Accepting *guestimates* as good intentions, even these good intentions carry little conviction when informal recreation is subsumed under headings such as *environmental services* or *urban and countryside leisure*. Sad too that in times of economic stringency these services are the first to be severed.

THE MAIN COMPONENTS

The preceding paragraphs have considered *Why?* and *Where?* Two other principal questions are involved: *How much?* and *How does the pattern change over time?* Recreation Statistics sets out to discover *How much?* and *Where?* and to devise a system for storage and retrieval of this information. It is assumed that you will have read the draft manual, describing the system as finally devised. However it is worthwhile remembering that initially we were working very much in the dark - a not unique situation in research. The manual is neat and compact, but I can assure you that we suffered, or took sustenance, from the usual agonisings both in contemplation - *Have we got it right?* and on reflection after the event - *If we had only had time to...!* Nevertheless I think all of us who were involved are agreed that we have met our terms of reference in evolving a system which is practical, good value for money and within the competence and resources of all county authorities.

PLANNING

Intuitively we concluded that the county level was the optimum level for data collection. Obviously it was administratively convenient, it fitted the broad structure or strategic level of planning and, for the Commission's purposes, it involved a manageable number of local authority contacts.

At the same time we were convinced, and our experience since 1970 has confirmed this view, that informal countryside recreation is best analysed and planned for at the regional or sub-regional scale. This involves shedding more light on the elusive *Why?* and it might be useful to pause here a moment and contemplate the total leisure complex. Such evidence as exists suggests a complicated interaction of use of facilities - formal and informal, rural and urban. In holiday areas there is the added complexity of massive seasonal additions to the *resident* population. There is the vital interplay between attractiveness and accessibility of site and location of areas of demand. Publicity, i.e., knowledge that the site

exists, substitutability, capacity - in its various end elusive forms, are also important elements in the equation.

In planning for informal recreation one must add to the obvious natural and man-made attractions, potential sites such as derelict land and water areas, opportunist sites, the role of private enterprise and public bodies, changes in fashion, i.e., whim or force of circumstances, such as high fuel costs, and last, but not least in its perversity, changes in government policies and financial assistance.

Ideally we contemplate a strategic coverage by regions (yet to be determined) as the context for structure planning and providing a national framework. However we recognise that some counties, and Cheshire might well be one of these, are better placed than others to plan for informal recreation within its borders or by combining with one or two neighbours. Undoubtedly it will be of great assistance, and a significant stimulus for planning whether at regional, sub-regional, county or district level to have the benefit of established data systems such as Cheshire's. It is interesting to note that other providers of recreation facilities are already using the Cheshire data to plan their own facilities with greater confidence. Admittedly the full potential of the system will only be realised when all counties participate. But even with incomplete national coverage individual county surveys will progressively add significantly to our understanding of informal recreation especially after several county systems have been running for a number of years.

RESEARCH

Finally we hope that researchers will derive benefit from ready-made and consistent county based data. So much research (and planning) in the past has been hampered by the virtual dearth of hard facts on supply and use. Recreation Statistics project has, we hope, demonstrated that collection, storage and retrieval of basic data on supply is a practical and relatively inexpensive proposition. It has the merit of simplicity, combined with flexibility to incorporate additional secondary data. This means that any ad hoc data could now be maximised within the system.

We hope too that researchers will be interested in refining the system or pointing up any defects. We are aware of several minor deficiencies but, by and large, we are satisfied that the project achieved its principal objective - that is to produce a package

which would be within the means of all counties to set up and maintain and which would provide good value for money. We are less certain that the Cheshire system will be applicable to very different county situations, e.g., holiday areas, or remote areas: would it, for example, be appropriate to Scotland?

BENEFITS TO THE COMMISSION

The Countryside Commission see benefits as follows:

i) Better local distribution of resources in structure and local plans; improved planning and management.

ii) Improving understanding of the nature and scale of informal recreation in a range of country circumstances and how these may change over time.

iii) Eventually, with continuity and by aggregation, a means of identifying regional variations, national trends etc.

iv) Providing substantial evidence to support the case for total national resources and their distribution.

v) Providing the summary data context for a range of research studies.

Implementation in Cheshire

R.M.Smith

INTRODUCTION

The Countryside Commission has two main points of contact with local authorities on countryside recreation: the examination of structure plans, and processing applications for financial support. Experience has shown that few plans and fewer specific proposals, are supported by reliable statistical evidence. Generally speaking, there is a dearth of factual knowledge - even if a wealth of supposition - about countryside recreation sites and the users of them; such data as exist are rarely comparable with related information collected by other agencies. Lack of data also hinders investment decisions by the private sector and prejudices the quality of much research work done in universities and elsewhere.

In 1971 the Countryside Commission invited Cheshire County Council to participate in a pilot study to design and test a system for the collection, storage and retrieval of countryside recreation information, which would be suitably adapted to the needs of other counties and applied widely. The Commission believes that data collection on countryside recreation should be a normal part of a local authority's responsibilities, both in preparing their plans and in support of their applications for grant aid. Cheshire's objectives in accepting the invitation were to help form more relevant policies and proposals for countryside recreation and to provide data for use in the day to day management of sites.

The Countryside Commission will soon be publishing a detailed report of the Cheshire project. The purpose of this paper is to describe briefly the proposed system devised in Cheshire. Interested parties are invited to discuss with the Commission how the system might be applied in particular situations.

The system which is described in this technical paper will provide information about countryside recreation for local authorities, the Countryside Commission and others for their various purposes. The Commission commends it to County Councils. At a minimum the system will provide a running record of information about the sites, related costs and the number of users. The collection of information in the last category is the subject of a detailed explanation. Essentially it involves relatively intensive monitoring of the use made of the most important sites, less intensive attention to others and a cursory survey of a third group. By simple regression analysis it is possible to receive far more information about patterns and levels of use than is obtained directly by the monitoring and surveys themselves. The data which are collected can initially be stored manually but within a few years computer storage will be preferable.

AIMS

The aim of the Countryside Recreation Statistics System is to provide information to meet the needs of local authorities in the strategic planning and detailed management of facilities for informal outdoor recreation in the countryside; and the needs of the Countryside Commission in promoting the development of these through advice and grant. The system could also be of benefit to the private sector.

The county scale is considered most appropriate for an information system of this type because all counties have responsibility for strategic planning, and most have a significant role in site management. However, the success of the system will depend upon the support of those District Councils and private owners of land who manage countryside recreation facilities.

The proposed system has two important underlying characteristics:

a) It is not a comprehensive data base, but allows for the inclusion, selectively, of those sets of information which are known to be required for decision making. It is assumed, though, that if a county sets up a system, certain basic data will always be collected. Experience in Cheshire suggests that this essential requirement accords well with the minimum required by the Commission.

   This minimum is termed the primary data. Any amount of secondary data may be included in the system, according to local preference and

requirements, by increasing the detail in the primary sets or adding new sets.

b) The primary data are composed of information about informal outdoor recreation facilities and their use by visitors. All of the data can be collected without questionnaires. There are three data sets:

i) Site characteristics - including information about the physical features of the site and its management

ii) Financial aspects

iii) Use by visitors.

Figure 27 gives a broad indication of the information collected in the primary data sets, and suggests some possibilities for secondary data.

The system is designed to be very flexible. It is possible to collect primary data with varying degrees of accuracy, as will be made apparent in later sections. There are no universal instructions as to how much information should be collected or to what degree of accuracy; that decision must be taken by the county in the light of the importance they attach to countryside recreation, the number of sites in their area and the financial and man-power resources available to them. The Countryside Commission is ready to offer what help it can in guiding the county's choice of data, although in practice it may take several years of operational adjustment before the information provided by the system matches a local authority's needs.

THE SURVEY FRAMEWORK

The stages required to define the resource base of the system and build it into a hierarchy based on the detail of information collected are set out below.

Site Identification

The resource base of the system is represented by all sites used for informal countryside recreation:

Visiting houses, castles and gardens
Picnicking
Casual activities
Walking (less than 2 miles).

If these sites cannot be identified from existing experience it may be worth mounting a peak hour summer Sunday survey to reveal the location of the

Fig 27 Primary and Secondary Data Sets

PRIMARY	SECONDARY
I SITE CHARACTERISTICS	
Identification	
Location	
Type of site	
Structure Plan Notation	
Accessibility	
Dimensions	
Features: checklist	Detailed breakdown
Facilities: checklist	"
Activities: checklist	"
Landscape: checklist	"
Designation	
Staff: checklist	Detailed breakdown
Opening hours	
Ownership	
Management	
Tenure	
II COSTS	
Acquisition	Breakdown by item
Capital	"
Rent	"
Running	"
Loan charges	"
Income	"
Grant-aid	"
III USE	
Number of visitors:	Breakdown by time period or entrance point
High season - Weekdays	
- Saturdays	
- Sundays	
Low Season - Weekdays	
- Saturdays	
- Sundays	
	SECONDARY
IV TRIP MAKING	
Origins of visitors	
Other sites visited	
Frequency of visit	
SECONDARY	SECONDARY
V SOCIO-ECONOMIC CHARACTERISTICS	
Family size	
Income	
Terminal age education	
VI ECOLOGICAL STATUS	
Habitats present	
Species composition	
Measures of erosion	

sites which are used by visitors. Some local authorities have found aerial photography very helpful for this purpose (1).

Site Exclusion

Sites are then excluded from the above list on two grounds:

a) they are in an urban area

b) they receive an insigificant level of use.

The criteria of *urbanity* and *significance* will depend upon the particular needs of the county, and are likely to vary from area to area, for example, near conurbations it may well be necessary to adopt a less demanding standard of *countryside* than in more rural counties.

Boundary Delineation

The boundaries of each site are then delineated and all data collected for the area. This is a straightforward task for fenced sites, but serious problems may arise in the following situations:

a) dispersed access with dispersed use. Comprehensive monitoring will be extremely difficult if there are many points of access to the site; only a few sites will be so important as to justify the extra costs.

b) Concentrated access with dispersed use. Often information will be required about a series of contiguous sites which are not separated by a fence or other obstacle. Where this occurs the area will have to be divided up for data collection purposes into sub-areas based on the access points.

Site Classification

The definitive list of sites must now be categorised into three clases: Master, Slave and Minor, according to the level of detail of information required about the use by visitors. The proportion of sites in each class is a matter for the county to decide in the light of its own needs, but an average division might be 20% : 30% : 50%.

MASTER SITES are monitored continuously by traffic counters, providing detailed figures of use.

1 *see The use of Aerial Photography in Countryside Research published by the Countryside Commission for CRRAG, 1972.*

SLAVE SITES are monitored on a sample of days in one year, providing precise estimates of use. MINOR SITES are surveyed by a simple peak hour summer Sunday count of parked cars, providing a broad guide to the level of use.

The criteria used in this classification process will usually be:

a) Importance: more information will generally be required about:

   i) heavily used sites,

   ii) nationally designated sites (e.g., country parks and picnic sites recognised by the Countryside Commission),

   iii) sites affected by special policies – certain sites may be of special significance to the county.

These sites will normally be in the Master or Slave classes. It will be seen that in the case of (iii) a site may be given Master status for a limited period of time. However, there should always be a core of permanent Master Sites to provide continuity of records and to allow trends to be isolated.

b) Cost: the costs of survey are difficult to obtain because of the different nature of monitoring at the three classes of site, and the many ways in which surveyors may be provided. However, the following general points can be made:

   i) Master Sites : high initial capital cost for the purchase and installation of counters: then recurring costs for reading and maintenance.

   ii) Slave Sites : high surveying costs repeated every 2-3 years (this will be described later).

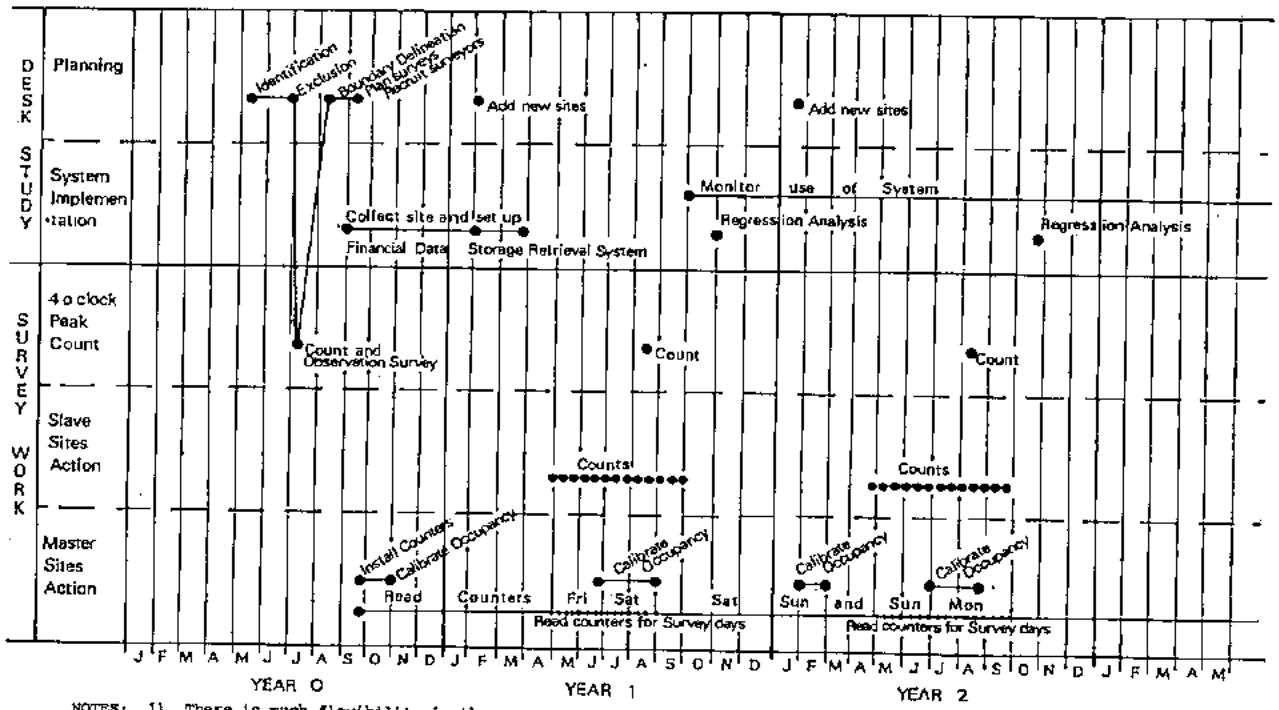
   iii) Minor Sites : low annual surveying costs.

c) Ease of Survey : some important sites which would appear suitable for inclusion in the Master category may be classified as Slave or Minor because of the costs associated with surveying them in detail. The reason is likely to be one of those mentioned above.

DATA COLLECTION

A programme for data collection is illustrated in Figure 28.

Fig 28 Programme for Data Collection



NOTES: 1) There is much flexibility in the programming of the work, and the above represents only one possibility
2) This programme assumes the minimum pre-existing knowledge of recreation facilities in the county.
3) Subsequent years are as year 2.

Site Characteristics

The primary data shown on the site characteristics data sheet (Appendix 1) is collected for every site in the system. Certain sections (e.g., activities) will need to be completed by someone with experience of the site, and if such is not available a limited amount of extra observation will be needed at the site. This could conveniently be made to coincide with the peak hour count.

Consideration should be given to any more detailed (secondary) data which might be required; for example a management authority may be interested in information about the performance of different kinds of picnic furniture at its sites.

Financial Data

Ideally the financial data sheet (Appendix 2) should be completed for each site. Some private managers will find difficulty in releasing this information, although experience in Cheshire suggests that they will willingly co-operate if assured that the information they give will be treated in strict confidence and only disseminated in a suitably aggregated form - e.g., total expenditure on all informal recreation sites in the county.

Consideration should again be given to the need for secondary data. Continuing the picnic furniture example, a detailed record might be kept of the purchase, installation and maintenance costs of the furniture at each site.

USE

The methodology employed for estimating use is based on the United States Forest Service RIM System (USFS, 1967).

Sites with Entrance Charge

Where a charge is made for entry or parking, ticket sales can often be used to obtain figures of use. However, before this method is used it is important to examine the conditions at each site and ensure that ticket sale figures are complete and do not, for example, fail to record visitors who are members of an organisation allowed free entry.

Periods for Estimation

The year must be divided up into the periods for which estimates or direct counts of use are required. The first recommended distinction is between:

High Season - normally May to September
Low Season - normally October to April.

The precise division of the months between High and Low Season will depend upon local conditions, although the split shown above should apply over most of the country.

It is recommended that in the first years of the system, Master Site counters are read throughout the year, but surveying at Slave and Minor sites is performed only during the High Season. The full system can be extended to the Low Season in subsequent years, if desired, by which time there will be experience in operating the system.

The second recommended distinction relates to both the High and Low Seasons, it is:

Weekdays (Monday to Friday)
Saturday
Sunday.

Available evidence suggests that the levels and characteristics of use on Saturdays are sufficiently different from those on Sundays to be considered a separate population. However this substantially increases survey costs and some counties may consider it impracticable. If this is the case, it is recommended that Saturday be considered a weekday, unless there is substantial local evidence to suggest that its characteristics of use are more like Sundays.

Subsequent discussion will assume that the recommended scheme is being followed, i.e., estimates/counts of use are being made for:

High Season (May - September)	Weekdays	
	Saturdays	
	Sundays	
Low Season (October - April)	Weekdays)	Master
	Saturdays)	Sites
	Sundays)	only

Standard Unit

For purposes of comparison, it is necessary to establish a standard unit of use. It is recommended that this should be the number of visits by persons rather than by vehicles and all figures of use should be expressed in persons. No distinction is made on age in the primary data, although a division into children and adults would be an obvious example for secondary data.

Master Sites

Master Sites are monitored by one or more manually read pneumatic traffic counters. Care should be taken

to ensure that:

a) the apparatus is situated in the best position for accurate operation,

b) there is provision for both protection from, and repair in the event of vandalism.

Counts of vehicles for each type of day are obtained by reading the counters on Friday evening/Saturday morning (weekday), Saturday evening/Sunday morning (Saturday) and Sunday evening/Monday morning (Sunday).

Counters will need to be calibrated on installation, and checked from time to time thereafter.

So as to provide figures in terms of persons rather than vehicles, extra survey work must be undertaken to establish vehicle occupancy rates for each of the 6 populations (including Low Season). Some of this work can conveniently be combined with calibration and peak hour counts.

A use data form (Appendix 3) is filled in for each Master Site as the information is collected.

Slave Sites

Slave Sites are monitored manually on a sample of days in the High Season. A relationship is defined between the use at each Slave Site and one or more Master Sites, which can then be employed to estimate use at the Slave Site throughout the season. This relationship is expected to remain constant for 2-3 years if no major changes take place in the provision of facilities at or near the site.

The sample of days is selected randomly. Thus, the period May - September represents:

109 weekdays
22 Saturdays
22 Sundays.

Six days are randomly selected from each population. All Slave Sites are monitored, on these days and numbers of cars, occupancy and, where necessary, numbers of visitors arriving by other means than private car, are recorded. On the selected weekdays, Master Site counters are read to give a daily figure.

For each Slave Site the three sets of figures are then regressed against their equivalent from one or more Master Sites, resulting in a relationship of use for each of the three populations.

A use data form is completed for each Slave Site (Appendix 4).

Minor Sites

A 4 o'clock High Season Sunday count of parked cars is made at ALL sites - including Master and Slave. This will:

a) identify any Minor Site which is receiving unexpectedly high use, and so might be considered for Slave status in a subsequent year,

b) provide a gross estimate of informal countryside recreation use in the county,

c) suggest a crude relative relationship of use amongst the Minor Sites, and between the Minor and Master and Slave Sites.

In practice one surveyor covers a number of sites, but the count should take place over a span between 3 o'clock and 5 o'clock. This should not represent a problem as long as there is no obvious bias, such as all surveyors working from outlying areas towards a major urban centre.

A use data form (Appendix 5) is filled in for each Minor Site.

Non-Car Access

It is important at an early stage to consider the problem of counting users who do not arrive by private car. Because pedestrian access is by its nature far less constrained than vehicular, monitoring is labour intensive and expensive. This consideration may radically affect the allocation of sites to the Master, Slave and Minor classes, resulting in a downgrading of sites at which non-car access is high. Care must be taken, therefore, to ensure that some monitoring of pedestrian access is maintained so that any important trends can be identified at an early stage.

MASTER/SLAVE/MINOR RELATIONSHIP

The relationship between the three classes of site is now apparent.

Master Sites

Master Sites are composed of a permanent *base-line* set of sites, plus those sites of special policy interest which may only hold Master status for one or two years. As the years pass, one would expect the number of Master Sites to increase steadily as major new facilities are opened and as the use of certain Slave Sites rises to a level which will justify Master Status.

Slave Sites

Slave Sites are composed of those facilities which are sufficiently well used to be of interest, but which for financial or practical reasons cannot be surveyed in enough detail for Master status. There is an annual cycling of sites through the Slave category as old Slave sites are re-sampled every 2-3 years (or sooner if new facilities are included for the first time).

Minor Sites

Minor Sites are, in any one year, composed of four types:

a) the many small recreational open spaces which are individually insignificant but in total account for a large proportion of recreational use in the county,

b) a number of sites which are known to be of strategic importance, but have not yet been able to be fitted into the programme of Slave Site surveys,

c) a handful of sites which are known to be heavily used, but which present such serious survey problems (e.g., because of pedestrian use) that they cannot be accorded Slave or Master status,

d) a handful of new sites which have just begun to be used, being surveyed for the first time.

REGRESSION

A simple linear equation of the form:

$$Y = a + bX$$

where Y = number of people visiting the Slave Site
X = vehicle counter reading from the Master Site
a, b = constants

is derived for each Slave Site for each of the three types of day (High Season only).

Experience in Cheshire suggests that quite good relationships of this type (R2 about 70%) can be defined between Slave and Master Sites. However, in some cases the Master Site which provided the most accurate estimate was up to 40 miles away. It is therefore advisable to test all Master Sites as estimators against each Slave Site, not only those in the immediate vicinity.

In this way precise estimates of Slave Site use can be obtained for each period the Master Site counters are read.

STORAGE/RETRIEVAL

Automation

It is recommended that the system be implemented manually in the first place. The volume of data in the first two years will be well within the scope of a manual system and valuable lessons will be learnt during this period which will facilitate transference to an automatic system at a later date if so desired. However, the volume of data will grow rapidly and so every effort should be made during the manual period to design forms etc. for easy conversion to computer input.

Updating

Most of the use data will be updated each year as the surveys are undertaken. Further arrangements must be made to ensure that the site characteristics and financial data are updated at the same time, and that new sites are included.

Access

The County will wish to consider which organisations, apart from the Countryside Commission and the District Councils, should be given access to the system, and what procedures should be adopted to maintain confidentiality etc.

Monitoring

It will be helpful if a record is kept during the first two years of the type of user, the nature of the query, and the data supplied. Examination of this information at regular intervals will allow the system to be tailored more accurately to the needs of its users.

After the first two years the intensity of this monitoring of users' needs may be reduced, but enough should be maintained to ensure that changes are identified at an early stage and steps taken to adapt the system.

MANPOWER AND FINANCIAL RESOURCES

The system is designed to be implemented at many different scales and levels of detail. It is thus

impossible to lay down precise guidelines on the manpower and financial requirements. It should be possible to set up a skeleton system - consisting of, say, 5 Master Sites, 5 Slave Sites and 20 Minor Sites - as part of a countryside section's work programme, without taking on extra staff.

However if a more ambitious system is desired, it is recommended that one officer be committed completely to the project for a period of at least 6 months. He should also be provided with an assistant to administer the survey work; a temporary post which could be filled by a student on vacation. The work load should significantly reduce after the first year, and a full-time officer in charge of the system should not be required.

The precise strategy followed in the recruitment of surveyors will depend on local conditions. Solutions which tend towards a small number of full-time surveyors have the advantage that as the people gain experience the quality of data collection should improve, and less call is made on supervisory staff. However, flexibility is lost, and the sickness of one surveyor could mean the loss of many days' data. There is also a problem of boredom with full-time staff when only numbers of visitors are being counted. The employment of large numbers of part-time staff avoids these difficulties but can raise severe administrative problems. There will generally be two or three possible arrangements of staff capable of performing the required amount of work. It is recommended that full details are obtained for each one before a decision is taken.

Appendixes

These forms were drawn up by Cheshire County Council for their Countryside Recreation Statistics System and are not presented here as *standard* forms. However they do include all the system's primary data, and so should form a basis for those which any county adopts.

COUNTRYSIDE RECREATION STATISTICS SYSTEM

SITE CHARACTERISTICS DATA SHEET

PART 1 IDENTIFICATION AND LOCATION OF SITE

1 Identification

1.1 Name

1.2 Accession Number

1.3 Site Status

1.4 Confidentiality partial/complete

Details:

2 Location

2.1 Economic Planning Region

2.2 County

2.3 District

2.4 Parish - Optional

2.5 Grid Reference - 12 figures, all numeric

3 Type of Site

3.1 Master - metered

3.2 Master - ticket sales

3.3 Slave

3.4 Minor

3.5 Aggregated

4 Structure Plan Notation

4.1 National Park

4.2 Area of Outstanding Beauty

4.3 Suggested Heritage Coast

4.4 Area of High Landscape Value

4.5 Green Belt

5 Accessibility

5.1 Distance from nearest major urban area boundary (km) ☐☐☐

Name of urban area:-

5.2 Site access - Description

5.3 Public Transport: Bus None ☐

Infrequent ☐

Frequent ☐

Rail None ☐

Infrequent ☐

Frequent ☐

Other - specify ☐

PART 2 SITE CHARACTERISTICS

6 Dimensions (Metric)

6.1 Land Area - Total (hectares) ☐☐☐☐

6.2 Land Area - Open to Public (hectares) ☐☐☐☐

6.3 Water Area (hectares) ☐☐☐☐

6.4 Height above Sea Level (Highest Point) (meters) ☐☐☐☐

6.5 Length on Longest Axis (meters) ☐☐☐☐

7 Features

7.1 Historic House ☐

7.2 Garden ☐

7.3 Wildlife Park ☐

7.4 Views ☐

7.5 Other - specify ☐

8 Facilities

8.1 Toilets : specify type ☐

8.2 Refreshments : specify type

8.3 Car Parks : Number
Total Capacity (approx.)

8.4 Litter bins

8.5 Interpretative facilities - Centre
Trails
Leaflets
Information - Boards etc.

8.6 Picnic furniture

8.7 Other - specify

9 Activities

9.1 Walking

9.2 Picnicking

9.3 Views

9.4 Informal games : specify type

9.5 Formal games : specify type

10 Site Landscape

10.1 Parkland

10.2 Wooded - coniferous

10.3 Wooded - deciduous

10.4 Heath

10.5 Grass

10.6 Reclaimed - From communications and industrial use

10.7 Hill

10.8 Lakeside/Reservoir

10.9 Moorland

10.10 Coast ☐

PART 3 MANAGEMENT ASPECTS

11 Designation

11.1 CC Country Park ☐

11.2 CC Picnic Site ☐

11.3 DOE Transit Picnic Site ☐

11.4 DOE Ancient Monument ☐

12 Staff

12.1 Warden Services - Full-time - No ☐☐

12.2 Warden Services - Part-time - No ☐☐

12.3 Warden Services - Voluntary - No ☐☐

12.4 Other Staff - Full-time - No ☐

12.5 Other Staff - Part-time - No ☐

13 Opening Hours

13.1 Average Hours/Week ☐☐☐

13.2 Indicator for complicated opening hours ☐

Details:

13.3 Unrestricted hours ☐

14 Charges - for entering and/or parking ☐

for features ☐

Details:

15 Ownership

15.1 Local Authority - County _____ ☐

15.2 Local Authority - Metropolitan County _____ ☐

15.3 Local Authority - District _____ ☐

15.4 Local Authority - Metropolitan District _____ ☐

15.5 Parish ☐

15.6 National Trust ☐

15.7 Forestry Commission ☐

15.8 Central Government ☐

15.9 British Waterways Board ☐

15.10 Water Authority ☐

15.11 Crown Land and Duchys ☐

15.12 Private ☐

15.13 Other (including commons) ☐

16 Management Authority

16.1 Management (if different from 11) - specify ☐

17 Tenure

17.1 Freehold ☐

17.2 Leasehold - Period (years) ☐☐☐

18 Grant Aid

COUNTRYSIDE COMMISSION ☐
OTHER ☐

18.1 Aiding Authority - specify _____

18.2 Aided Authority - specify _____

Notes for completion of site characteristics data sheet

1 Identification

1.2 Accession Number - A unique reference number.

1.3 Site Status - It is possible that an area containing more than one monitored site may itself be needed to be considered as a site. Thus the *site status* will take the form of:

1 A unique site

2 An aggregated site with more than one monitoring site

3 A monitoring site within (or associated with) a larger area

1.4 Confidentiality - This provides a means of preserving confidentiality within the system. It is anticipated that most files will not be confidential but some, especially those containing financial information, may have to have limited access. It is coded:

1 Partial confidentiality

2 Complete confidentiality

3 No confidentiality restrictions

3 Type of Site

Tick the relevant box - if the Site Status key is 2 then the aggregate box is also ticked.

4 Structure Plan Notation

This refers to the area within which the site is located - tick the relevant box(es).

5 Accessibility

5.2 Site Access - Briefly describe the access on to the site.

5.3 Public Transport - tick the relevant boxes. If the bus stop or station is more than about 1 mile from the site, answer *none*. If only 2 or 3 buses or trains stop near the site each morning and afternoon, answer *infrequent*.

9 Activities

Tick the relevant box if the activity takes place on site.

10 Site Landscape

Tick the relevant boxes.

13 Opening Hours

13.2 Place a tick in the box if there are complicated opening hours.

13.3 Place a tick in the box if access is permitted 24 hours per day.

14 Charges

Only tick the parking box if all on site parking is charged for.

15 Ownership

15.1 - 15.4 Write in the name of the authority (or authorities, if more than one is involved), and tick the relevant box.

16 Management Authority

16.1 If the management authority differs from the owning authority place a tick in the box and specify the authority in the space provided.

17 Tenure

17.1 Freehold - if freehold place a tick in the box.

17.2 Leasehold - if leasehold place a tick in the box and specify the leasehold period.

18 Grant Aid

If grant aid is received tick the relevant box.

18.1 Aiding Authority - Name the authority providing grant aid.

18.2 Aided Authority - Name the authority in receipt of grant aid.

FINANCIAL DATA SHEET

SITE: NAME NUMBER

YEAR

COSTS

Acquisition Costs

Capital Costs

Rent

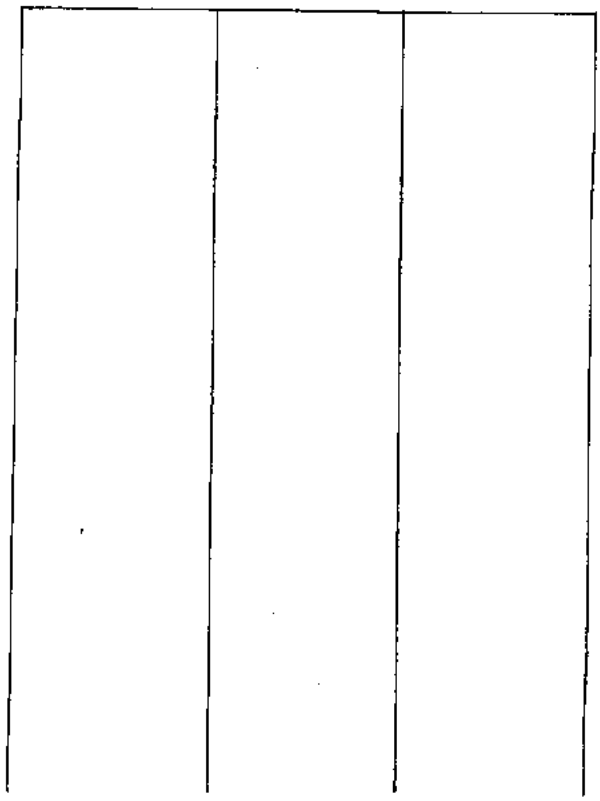
Running Costs

Loan Charges

Income

Grant Earning Costs - Capital
Running

Grant Paid - Capital
Running



NOTE - 1) CAPITAL COSTS TO BE CUMULATIVE
2) RUNNING COSTS TO BE THOSE INCURRED IN YEAR

MASTER SITE USE DATA FORM

SITE: NAME NUMBER ☐☐☐

1 DEPENDENT SITES: SLAVE: NAME NUMBER ☐☐☐

☐☐☐

☐☐☐

☐☐☐

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MINOR: NAME NUMBER ☐☐☐

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2 IF ASSOCIATED: AGGREGATED SITE NAME NUMBER ☐☐☐

3 TYPE OF MONITORING

TICKET SALES: PEOPLE ☐

CARS ☐

COUNTERS: NUMBER ☐☐

TYPE

CALIBRATION: NUMBER OF DAYS CALIBRATED ☐☐
CALIBRATION FACTOR ☐☐☐☐

4 CAR OCCUPANCY ☐☐☐☐

5 PEAK COUNT

DATE OF COUNT _____ COUNT ☐☐☐☐

_____ ☐☐☐☐

_____ ☐☐☐☐

_____ ☐☐☐☐

SLAVE SITE USE DATA FORM

SITE: NAME

1 MASTER SITES USED: NAME NUMBER

2 DEPENDENT MINOR: NAME NUMBER

3 ESTIMATES

	MASTER SITE	MASTER SITE	MASTER SITE
NAME			
EQUATION			
PERIOD OF ESTIMATE			
PERIOD OF ESTIMATE			
PERIOD OF ESTIMATE			
PERIOD OF ESTIMATE			
ESTIMATE			

4 CAR OCCUPANCY

5 PEAK COUNT

DATE OF COUNTS _____ COUNT

_____

_____

_____

MINOR SITE USE DATA FORM

SITE NAME

1 MASTER SITES USED: NAME NUMBER

2 SLAVE SITES USED: NAME NUMBER

3 PEAK COUNT

DATE OF COUNT _____ COUNT

The County View
D. Tattersall

County Councils were interested in the development of the project from two viewpoints:

i) as the organisations most likely to have to put the system into operation;

ii) as the principal users through planning and countryside management work.

County authorities faced with the preparation of positive planning policies for rural areas and also trying to establish a programme of countryside recreation projects, found themselves lacking in the most basic information. Studies commissioned by some Sports Councils (e.g., Leisure in the North West) showed that a high proportion of recreational trips were to the countryside but where precisely were *they* going, when, in what numbers and who were *they* anyway? The planner needs this information to formulate policies and monitor trends; the designer needs it to ensure that the right facilities are provided; and the manager needs it in the most sophisticated form possible to assist him in making the best uses of his resources. Always, it was hoped that the magnitude of the number involved would itself be a strong argument for the allocation of a reasonable share of scarce resources to countryside recreation work.

The Countryside Recreation Statistics System will be of main benefit to the local planner, the designer and the manager; the structure planners' need for information is likely to be better met by other information systems. The scale and cost of informal countryside recreation facilities are increasing and the larger facilities are now approaching in cost the more established recreation facilities such as swimming pools. Such expenditure cannot be justified without the most careful investigation into the benefits which the development is likely to give and the population which it will serve. A knowledge of existing use and facilities is the

essential starting point for any such study.

Because resources are scarce, a complex scheme involving the collection on a comprehensive basis of all the data which the varying interests might require, was unlikely to find favour. The basic scheme concentrates therefore on *site characteristics* and *costs* which are usually known or easily ascertainable; and *use* which is the principal unknown. The full use of the traffic counters increasingly installed at country parks and picnic sites as a part of the initial development; the use of the full time and voluntary countryside ranger services now to be found in many counties; and the recruitment of additional voluntary help, should permit several counties to adopt the *Primary System* for sensitive parts of their areas without incurring substantial additional costs.

The *Secondary System* is very much more demanding in time and financial resources and I cannot see it being adopted as part of the general system. For special projects or faced with particular problems, county councils will no doubt collect this information for small areas as they have done in the past. If the System permits this information to be prepared in a standard form, it will be of considerable help.

To be acceptable, the System had to be simple and flexible, concentrating on the principal unknown of use. The System as now drawn up meets this objective and I hope that it proves to be acceptable and is widely adopted. It will provide much needed information.

Equally, I hope that the decision-making bodies will use the information collected with discretion, as a guide rather than as a workshop manual having the answer to every question. Inherent in all nationally applied information systems is the danger that wrongly used they will inhibit the working out of policies born of local circumstances.

Discussion

Referring to the experiment undertaken in Cheshire, A. THORBURN enquired *Is the system going to be useful for informal recreation in towns? Naturally, local authorities are often concerned with both countryside and urban environments. Is it possible simply to apply the system in a town or is further time required to adapt it to the urban situation?*

Although the work in Cheshire had been orientated towards countryside recreation, R. SMITH did not think that a new project or major adjustments would be required in order to include information on recreation in towns. Some recreation in the urban environment was very similar in general character to the informal activities of the countryside, for example, the use of town parks, but it should even be possible to incorporate data for more formal activities.

It appeared to P. PEARSON that the data accumulated in the project had referred almost exclusively to car-borne visitors; he wished to know if those who had devised and implemented the system in Cheshire were concerned by this aspect.

In reply R. SMITH said that he and his Steering Committee had given much thought to the problem of pedestrian access to sites. However the decision to concentrate efforts on monitoring car-borne visitors was influenced by three main factors:

1) car-borne visitors represent the greater proportion of use in Cheshire;

2) car-borne visitors are more difficult to plan for and manage;

3) surveys to monitor non-car use are expensive in financial and manpower terms. Thus extensive survey work could not be undertaken within the constraints of the project budget and available manpower.

One major problem as far as A. THORBURN was concerned was the difficulty of monitoring (and coping with) concentrated patterns of demand throughout the year. This was not helped by the fact that as yet monitoring devices, particularly traffic counters, were unreliable and therefore required frequent inspection and attention. R. SMITH agreed that, based on his experiences, the complicated arrangements required to service automatic traffic counters should not be underestimated.

Commenting on the patterns of use on countryside recreation sites, R. SIDAWAY suggested that *there does appear to be a frequent pattern of Sunday afternoon peaking at many sites close to large centres of population. Forestry Commission monitoring of day-visitor facilities in forests shows this to be the most common pattern, but in tourist areas, peaking may occur at different times; for example at Saturday lunchtimes at popular transit stops.*

It is less easy to establish the length and amplitude of seasonal patterns because of the vagaries of the weather, but again the proportion of tourists among visitors using an area can be influential. The Forestry Commission Statistics Section is at present attempting to model mathematically seasonal variations of traffic counter records allowing for weather and trends from year to year.

This leads me to comment that the Countryside Recreation Statistics System is very dependent on the reliability of traffic counters and the continuity of records. For various reasons we have had difficulty in maintaining many sets of continuous counter records and with the Countryside Commission for England and Wales have started a joint feasibility study of the development of cheap, simple and reliable, semi-automatic counters.

To conclude the session M. DOWER, speaking as Director of the Dartington Amenity Research Trust and as a member of the English Tourist Board, said he warmly welcomed the work undertaken on the CRESS project and on the development of the TRIP system and believed that the CRRAG agencies should give hard and urgent thought to their scope, further development and use. He believed that a system, such as TRIP, should be seen as what it was - not a substitute for judgement, but rather an aid to judgement, a powerful tool for handling data. But its value as a tool could depend directly on how extensively it was used, not merely for tourism and recreation planning in Scotland but for more general planning in the United Kingdom. The plain fact was that, in the 27 years since the 1947 Planning Act, planners and others had gathered masses of

data on a variety of map scales, systems etc. so disparate as to preclude their swift, comparable handling, whether for tourism/recreation planning or for any other purpose. The TRIP system had the capability to absorb and handle data of all relevant kinds : but, unless it was widely used, its value would be largely lost.

He hoped the CRRAG agencies would state their view as to the future of the system.

Session 3
Informal Evening

Informal Evening Session

During this informal session which took place in the evening of the first day, delegates were provided with opportunities to:

i) see a programme of films provided by the Scottish Tourist Board and the Countryside Commission for Scotland on various countryside topics;

ii) meet informally for private discussions;

iii) visit the department at the Edinburgh Regional Computing Centre which houses the machine on which the TRIP system is based.

Those who visited the computer centre saw a demonstration of output from TRIP being generated by the machine.

The team of computer scientists from the Tourism and Recreation Research Unit were available at this session to answer technical questions about the system. A brief outline of the system's background is included here for those who require such technical detail.

The system so far has been based on the IBM 370/155 CPU at the Edinburgh Regional Computing Centre including:

768 K bytes storage
4 x 3330 disk drives
4 x 3420 tape drives
1 x 1403-NI lineprinter (special print chain; 10 lines/inch)
1 x 2540 cardreader/punch

This machine is shortly to be replaced by an IBM 370/158 CPU, including 1.5 M bytes core store and 6 disk drives.

The communications network is linked via 2701 CCU's to several remote terminals of card reader/line-printer combination and to other machines.

The system at present, uses approximately 500 k bytes of disk storage (permanently mounted) organised in three direct access files:

i) a control file containing tree structure information and data description;

ii) a name file containing names associated with tree structure and names of variables for data sets;

iii) a data file containing all the data stored in the system.

The organisation of the system includes provision for the addition of cases and/or variables to data sets by means of *tagged-on* data descriptions. Types of variable may be: identification number, logical integer, real, grid reference, string or value count. String variable allows names, addresses or similar information to be stored. Value count variables allow multiplier values for one variable or a group of associated variables; this can be useful when the results of surveys are stored which include the answers to *open-ended* questions.

The program language for the system is IMP, an Edinburgh derivation of Atlas Autocode. When running, the program uses 256 k bytes of store, which includes part of the SIM System. This is a System Interface Module designed to hide system/machine changes from the user. Mapping packages are stored as data sets which are compact and easily specified; grid references are used to locate point data.

A further document will shortly be published by the Tourism and Recreation Research Unit of Edinburgh University, which explains how the system may be used:

TRIP SERIES NO. 2 Introductory Users' Guide.

Session 4
Tourism and Recreation Information Package (TRIP) - An Aid to Planning

Chairman R. Carter

R. Carter

Introducing this session the Chairman said that *yesterday you heard about two systems concerned with providing information for recreation planning and management. My own feeling is that these should not be seen as alternatives, since they have been designed to do distinctly different jobs. It is probably fair to say that the TRIP system has been designed primarily for strategic planning purposes, while the Cheshire system has been designed primarily for management purposes.*

In the first session this morning we are going to look closely at the potential applications of the TRIP system. I mentioned yesterday that over the next year or so, national agencies concerned with tourism and recreation planning in Scotland intend to use the TRIP system extensively in their strategic planning work, both at national and regional level. To date, the system has been used for several large ad hoc projects, and it is on these that Brian Duffield will be concentrating this morning. I think that these will illustrate well the type of role which a system such as this can play in strategic planning.

Tourism and Recreation Information Package (TRIP) - An Aid to Planning

B.S. Duffield

The aim of this paper is to demonstrate the potential of TRIP as an analytical tool which can be used in planning exercises. Three such exercises were undertaken for the Countryside Commission for Scotland and the Scottish Tourist Board and have been used to illustrate the practical application of the system in a variety of situations and at different levels of the decision making process. While these national bodies have agreed that the results of these exercises may be used as a demonstration of TRIP's capabilities, the manner of their presentation and the conclusions drawn do not necessarily reflect their views.

In financing the TRIP system our sponsors were motivated more by the desire to add to their repertoire of planning tools than to contribute to academic study and great care has been taken to tailor the analytical procedures and output of the system to these needs. As far as the Countryside Commission for Scotland and the Scottish Tourist Board are concerned some of their responsibilities can be categorised as:

a) planning
b) marketing
c) development.

The examples chosen illustrate the use of TRIP for each of these purposes and demonstrate the way in which data can be manipulated to serve several different needs.

Another major requirement was that TRIP should make a contribution at all stages of the planning process; that it should be as relevant to the initial stages of understanding a problem as well as to the final stages of analysis. One of TRIP's most distinctive contributions is to allow an early input of objective analytical techniques into the planning process. The sifting of data and the ability to quickly examine, and if necessary discard, an idea is as valuable to the researchers as the powerful *data-crunching* and model-building techniques which characterise the later stages of analysis. In this way information systems can help create hypotheses as well as test them and in a field

like recreation planning where tested methodologies are still embryonic, this data dredging technique has much to commend it. However, computer-based facilities should not be used exclusively by the systems' analysts or quantitive planners although it must be admitted that during the research and development phases of planning there would be few occasions when a computer-based information system would not make a contribution to its resolution. This point will emerge from consideration of *real-life* planning situations.

A PARK SYSTEM FOR SCOTLAND

Unlike England and Wales, Scotland does not possess a National Parks System. This is not only due to historical developments but also to quite different resource-user relationships in Scotland than those that exist in England; this topic has been the subject of continuing debate long before the Countryside (Scotland) Act of 1967.

Since its formation, the Countryside Commission for Scotland has accepted the responsibility to evaluate the ways in which areas of outstanding landscape were being protected in Scotland and to consider possible steps to improve on the present situation. The subject concerns anyone who cares for the future of our countryside involving traditional land uses such as agriculture, forestry and sport and its more recent uses for recreational activities and conservation of the scientific interest, including also their relationships to the landscape. The Tourism and Recreation Research Unit was asked by the Countryside Commission for Scotland to participate in a study designed to explore this area of concern and to test the use of various criteria governing the identification of suitable areas for a parks system for Scotland. It is important to stress that in no way was the exercise meant to designate specific areas, but rather to demonstrate how the TRIP system, utilising factual data, might objectively contribute, not only to the methodology used to sift out areas worthy of closer examination, but also to generate policy alternatives.

Prior to the commencement of the study, a pro forma had been drawn up by the Countryside Commission for Scotland for a physical and social analysis of resources and information on relevant planning constraints in areas before inclusion in a parks system. This analytical framework, although designed for limited geographical areas, was also capable of being adapted to assess the whole of Scotland on a 5 x 5 km square basis using the TRIP system. It was eventually decided to adopt the method embodied in Figure 29 which would both generate information of intrinsic worth to those considering this problem and test a simple methodology

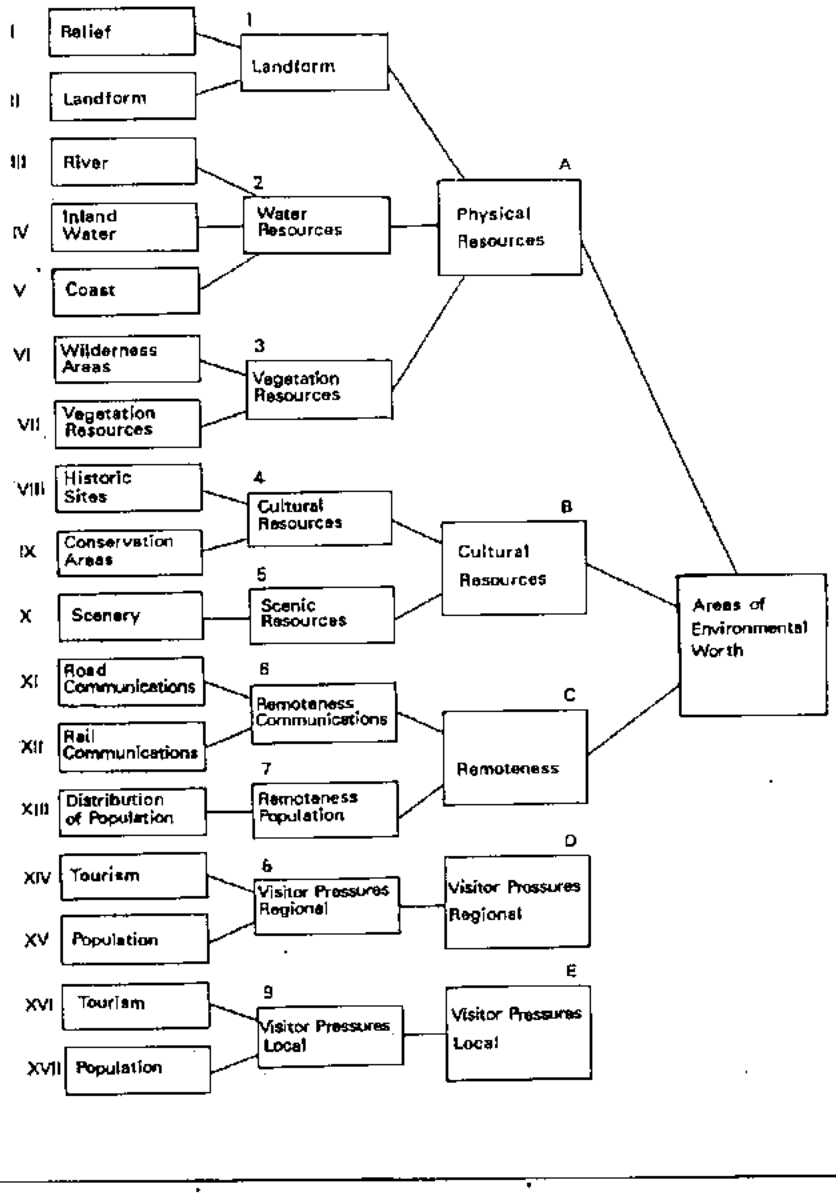
for synthesising disparate resource elements and planning constraints - a methodology which, if successful, would be capable of refinement at a later stage.

The basic premise of the technique was that individual resources could be assessed and then brought together at increasing levels of aggregation to define different *resource surfaces* culminating in a map which would indicate, against the selected criteria, areas of environmental worth. Similarly, planning factors likely to influence policies of park designation would also be integrated to produce *planning constraint surfaces*. This concept has its origins in the sieve-maps of the planners and is evident in greater sophistication in the *potential surface* technique. The application of the TRIP system, which can output numerous maps at great speed, can alter the combinations of the surfaces and attach *weights* to these surfaces to reflect known, or desired, assessments of their importance, gives this technique enormous flexibility. One element of resource assessment, namely, the contribution of landform resources to areas of *environmental worth*, combined with one factor of planning constraint, namely, the pattern of regional visitor pressures, illustrates this technique.

The key factor in the delimitation of any surface is the availability of a data base, and in the exercise undertaken for the Countryside Commission for Scotland, substantial body of data was collected so that the analytical process could take place. To define landform resources, it was decided to combine two factors, viz., available relief and the variety of landform types.

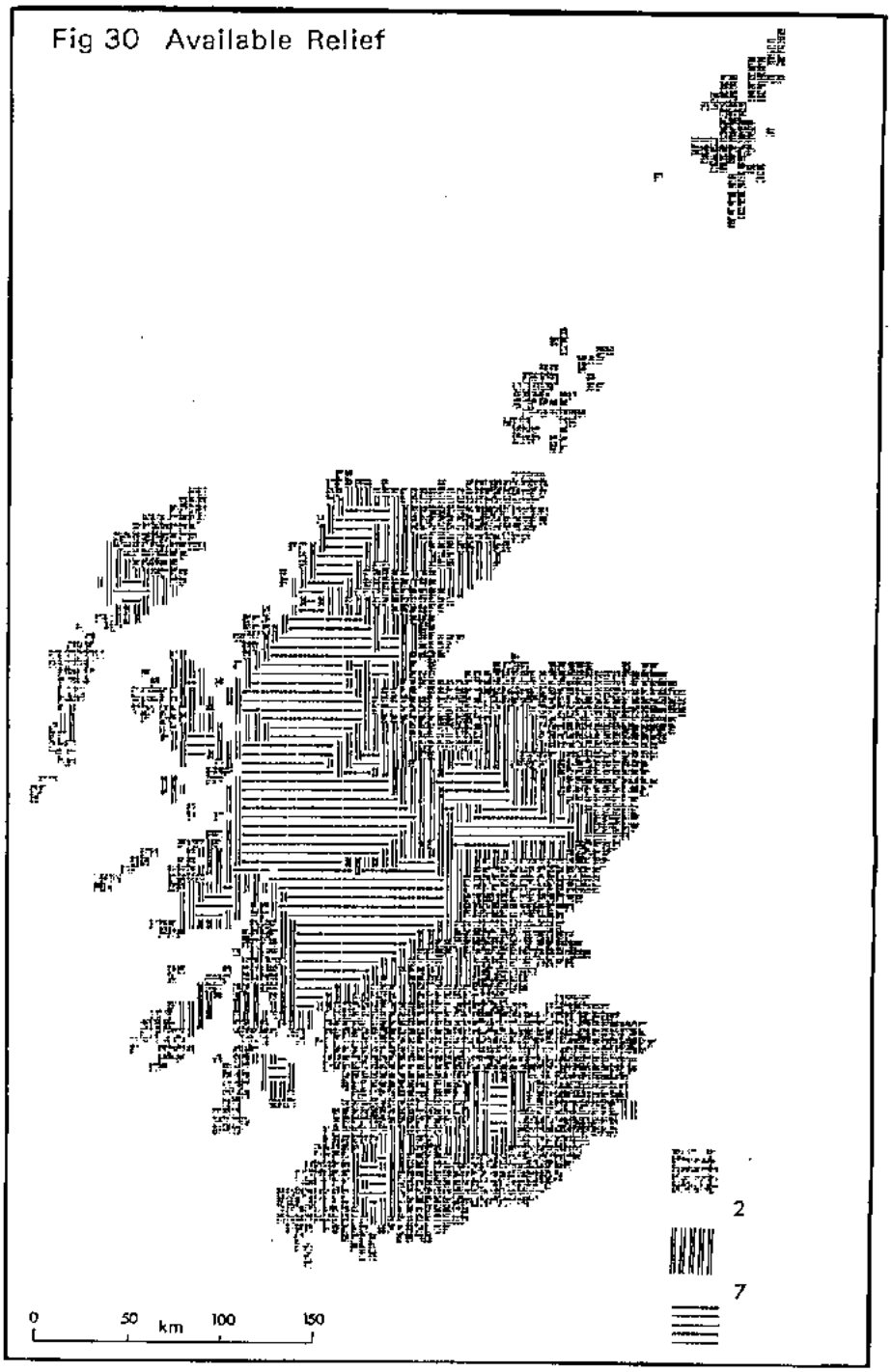
Available relief is the amplitude of relief defined as the difference in height between the highest and lowest points in each square. This variable was included on the basis that a park area should be characterised by topographic variations and that amplitude of relief would indicate these. Data sets in the system were available which gave the maximum and minimum heights found in each of the 3,416 squares of the 5 km x 5 km grid which makes up the Scottish map framework; thus, it was a straightforward task to compute the available relief for each square. Given this value, important conceptual issues had to be resolved before proceeding with the resource evaluation, i.e., whether, in undertaking the assessment, it was enough to record the characteristics of individual squares, or whether a broader geographical basis of evaluation was required. A single square might itself contain only minor variations in relief, although if it were located, for example, in a valley or on a plateau top, might nevertheless be set within a wider area of topographic variation. In these circumstances to plot the particular value for the square itself would be of limited value, particularly in this study where the objective was to identify

Fig 29 Areas of Environmental Worth – Definition



broader geographical tracts. Based on these points it was decided to plot the variations in relief around each square to a distance of 10 km from its centroid rather than the scale of relative relief.

Thus, Figure 30 grades each square according to the number of squares within 10 km with a relative relief equal to or greater than 1500 ft. This was achieved using the *search procedure* available as an option within TRIP which allows the scale or variety of resources within specified distances to be searched for and recorded.



Another point of interest in Figure 30 is the shading system. A TRIP user can specify various shading categories and systems to serve his needs; in this case choice was governed by the fact that overlay transparencies were to be used. An *inverse* shading regime was therefore chosen, the highest graded areas being shown in the lightest shade so that when overlain on an overhead projector against maps showing the distribution of other resources, areas showing the appropriate *resource mix* could be most easily identified. This inverse shading regime has been used throughout the figures in this paper with the exception of the final maps in the series

which have adopted a normal grading system.

It will be appreciated that available relief is but one parameter of landform resources and one which favours upland areas. Variety of landform types, *per se*, regardless of their individual intrinsic values, might be considered a positive characteristic of a park area, contributing to the wealth of environmental habitats present. It was decided, therefore, to grade areas on the diversity of landform types to be found within 20 kms of the centre of each square. The different types of landform landscape were defined using an adaptation of the technique devised by Linton (1968) and used by the Tourism and Recreation Research Unit in two recreational planning studies undertaken in Scotland (Duffield & Owen, Ed., Coppock, 1970, 1971). This technique is based on the premise that, as a result of two factors (absolute and relative relief) it is possible to define the following seven landform types:

a) lowlands
b) rolling countryside
c) upland plateau
d) hill country
e) bold hills
f) high hills
g) mountain country.

Figure 31 shows the level of diversity of these landform types over Scotland although no attempt has been made to grade the various types of landform since it was considered that diversity was more important than the presence or absence of a single landform type.

The next step was to combine the two elements to define the relative value of landform resources. This is achieved in Figure 32 where each square is given a score from one to five on each of the two criteria; the score for landform resources was calculated by summing these two values and dividing by two.

This initial delimitation of resources and their amalgamation to define resource types, was carried out for a wide range of variables. Water and vegetation resources were the other major physical resources examined, while cultural, scenic and remoteness factors were assessed as further aspects of the human environment. The calculation of indices depended upon the individual surfaces, some recording a simple presence or absence of a resource (e.g., presence of railway - Fig. 33) others a measure of the quantity of resource (length of coastline - Fig. 34), while yet others required fairly complex computation involving several data sets (scenic variety - Fig. 35). The final result of this process was the specification

Fig 31 Variety of Landform within 20km

```
*SEARCH
DATA SETS=SQGR,LANDFORM
EXTRA VARIABLES=(VAR)
VARIABLE TYPES=(I)
COMPUTE VAR=2**CLASS
OUTPUT LIST=VAR
*MAP
DATA SET=SQGR(20)
HEADING=VARIETY OF LANDFORM WITHIN 20 KM
STORE BYTE LNDVAR
MAP SEARCH
```

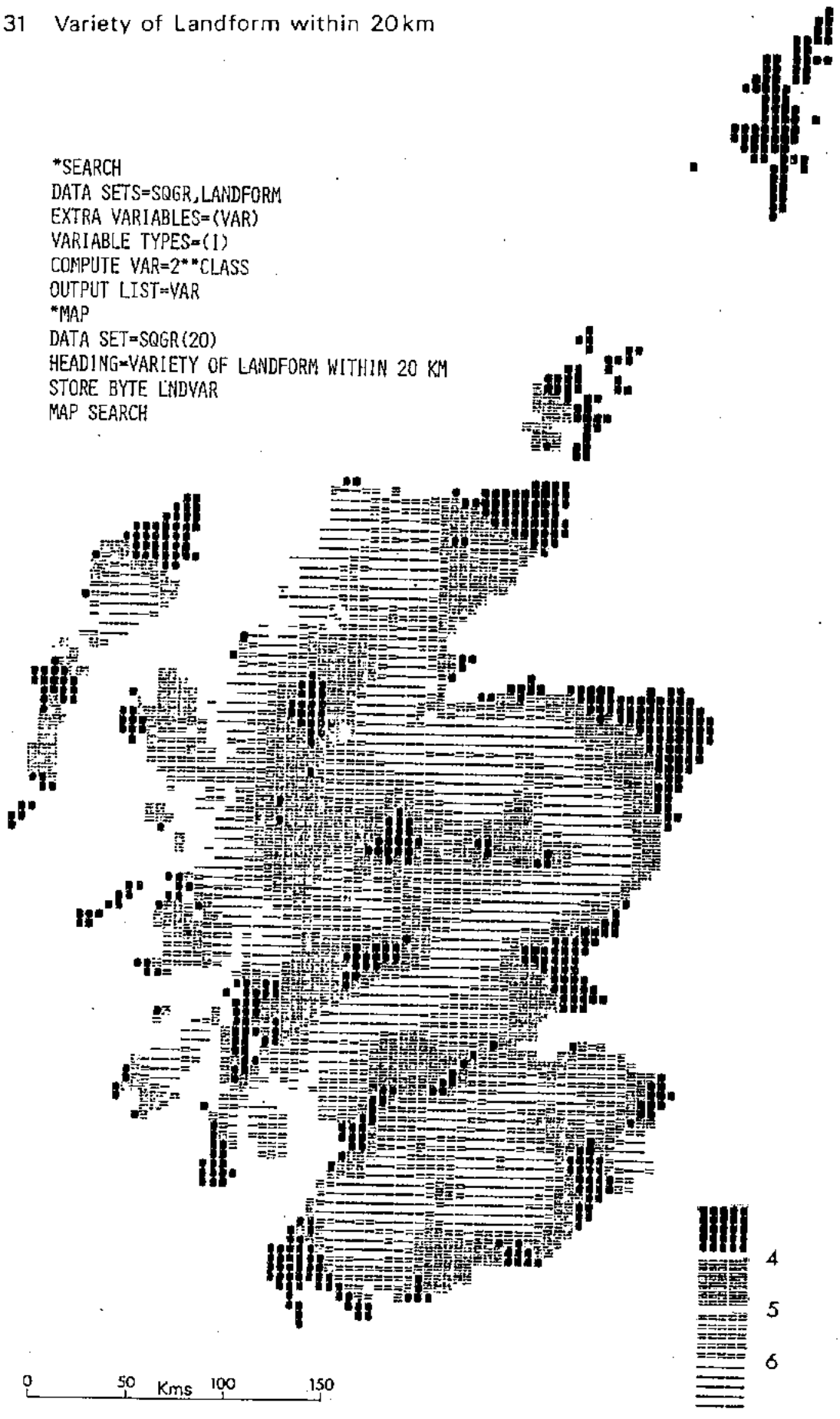
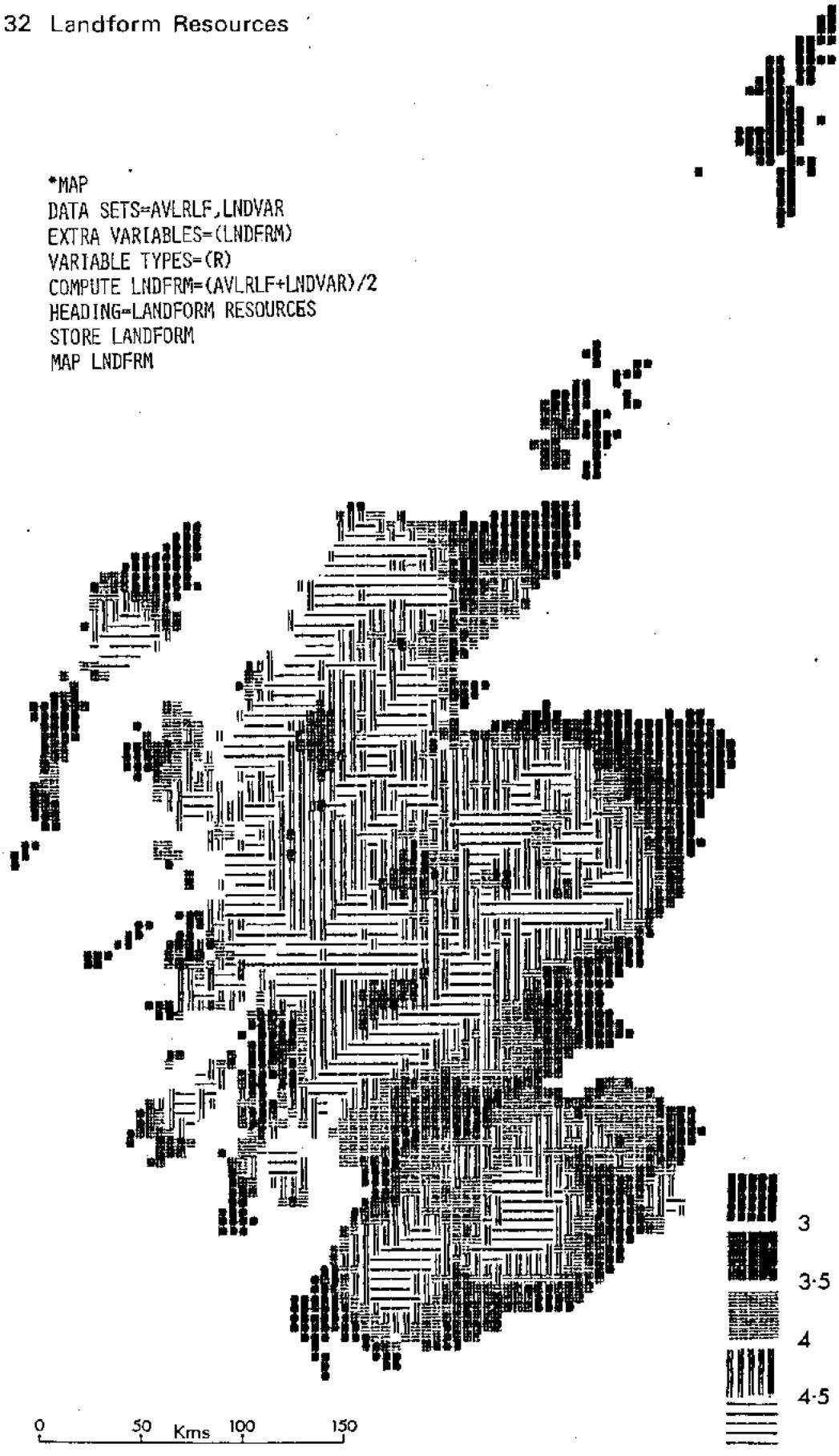


Fig 32 Landform Resources



of seven resource surfaces:

a) landform resources
b) water resources
c) vegetation resources
d) cultural resources
e) scenic resources
f) remoteness - communications
g) remoteness - population.

In turn these were further amalgamated to define three major indices of resource quality:

a) physical resources
b) cultural resources
c) remoteness.

The quality of landform resources is then combined with water and vegetation resources to provide a final aggregate of physical resource quality (Fig. 36).

Finally, these three resource indices were combined to provide an assessment of *areas of environmental worth* (Fig. 37). In this final map high grade areas are shown in dark shading. The intention is not to suggest that this evaluation process provides a rigorous assessment of resources.

Clearly there are weaknesses associated with the selection of resources themselves, the quality of data, and the processes of amalgamation. However, seen as an input into the formulation of hypotheses and as a contribution to research methodology the technique demonstrates many advantages. The analytical process used shows the ability to differentiate between resource characteristics and their spatial grouping. Examination reveals that the areas defined are indeed of high environmental quality and that many of them coincide with areas defined by more subjective evaluations of Scotland's resources. Moreover, the TRIP system allows the disaggregation of resources as easily as it permits their aggregation. A large number of alternative resource relationships can be examined, new elements inserted or existing ones deleted. Furthermore, while this particular exercise avoided the *weighting* of individual resources the TRIP system can easily cope with such a procedure, provided the operator has sufficient knowledge and skill.

While the inherent quality of the environmental resource base is a vital ingredient in evaluating an area's suitability for park designation, there are other factors to be taken into account, in particular, those arising from the envisaged patterns of use by visitors. Some people may take the view that National Parks should be conservation areas, relatively free from user pressures, while others feel that such

Fig 33 Length of Rail Network

```
*MAP
DATA SET=LENGTH OF RAIL NETWORK
EXTRA VARIABLES=(RAIL)
VARIABLE TYPES=(R)
INITIAL VALUES=(1)
IF (LORN>0) THEN RAIL=5.0
HEADING=LENGTH OF RAIL NETWORK
STORE BYTE RAIL
GRADING ABSOLUTE 1.5,5.
MAP RAIL
```

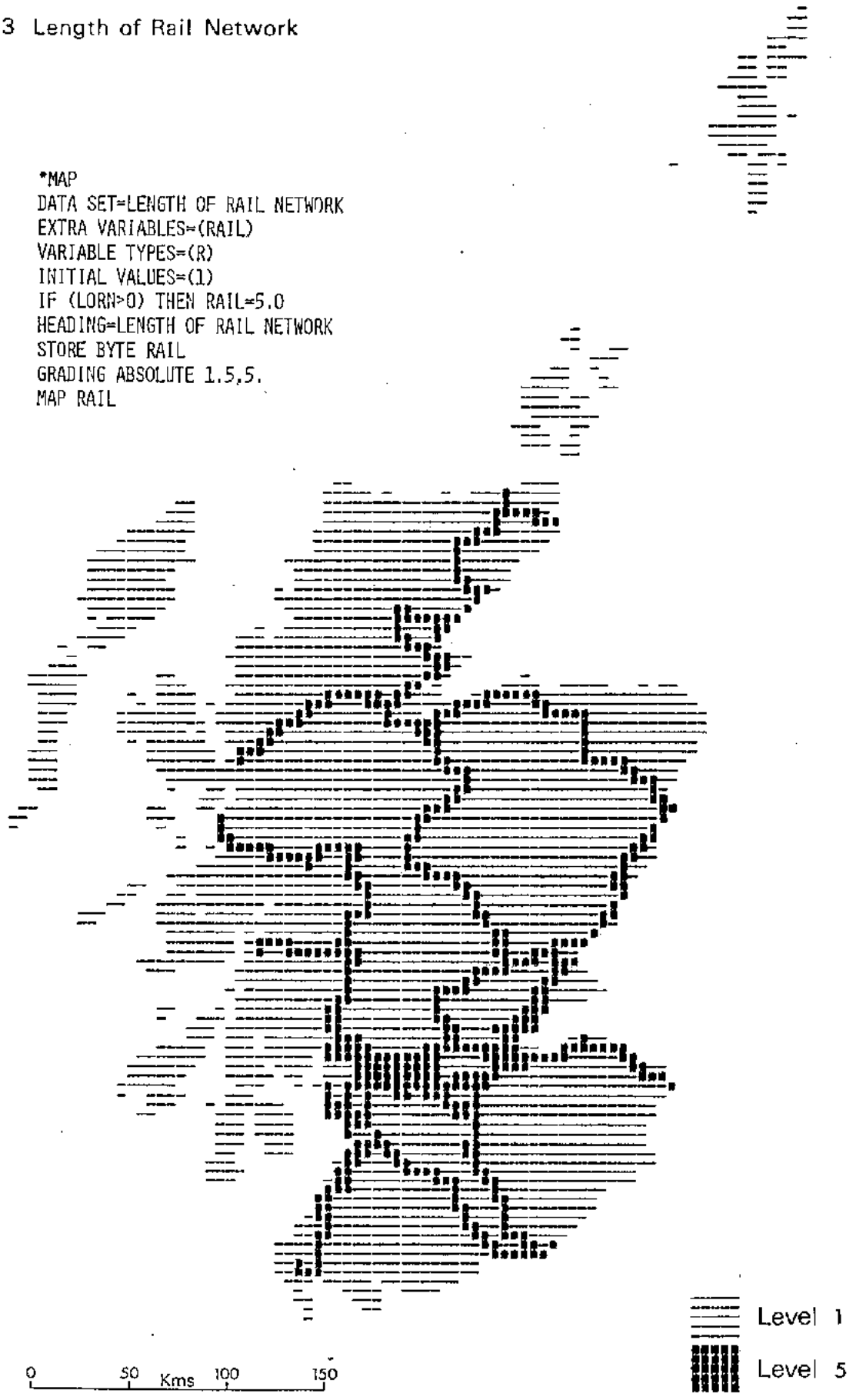
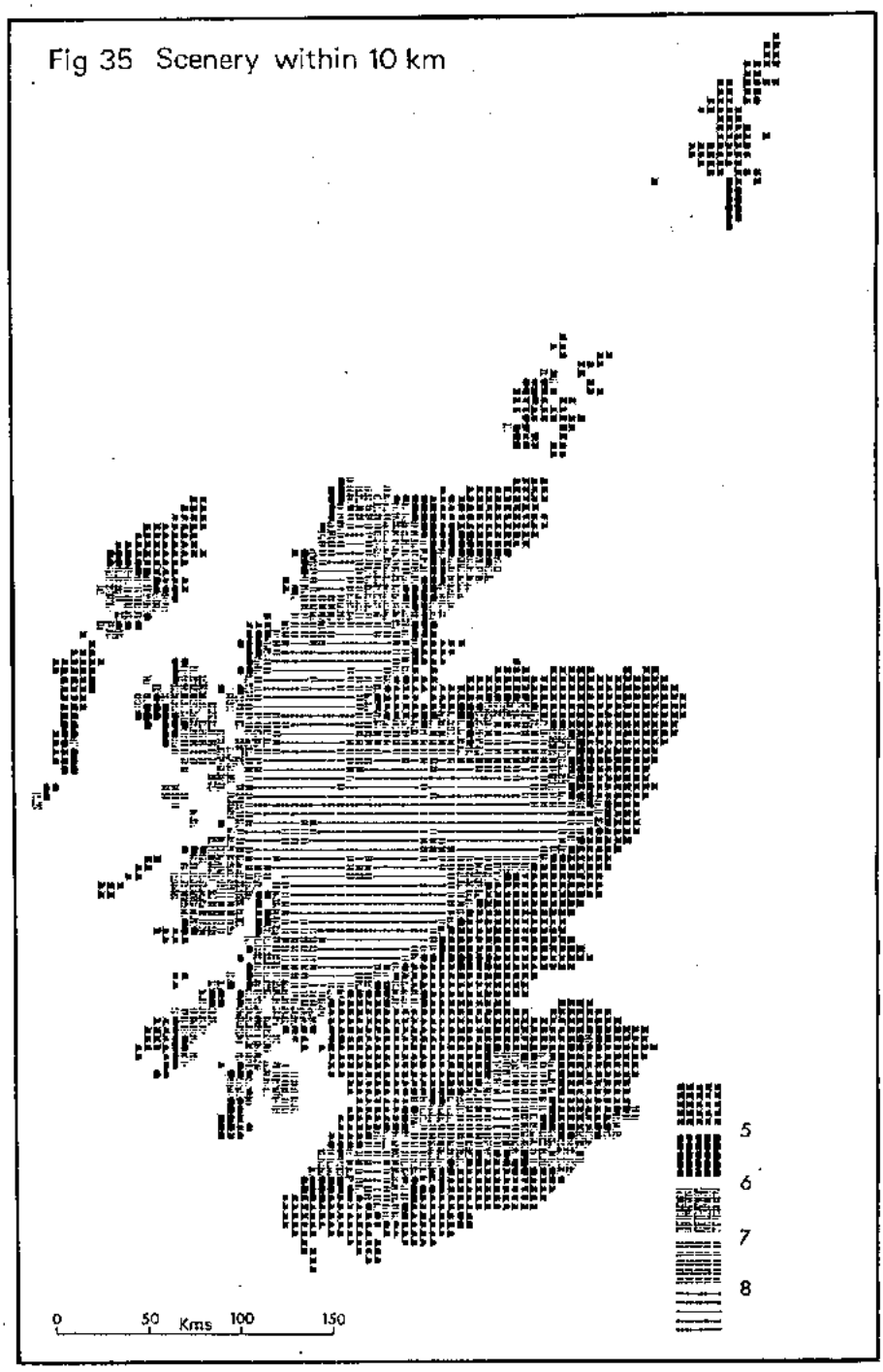


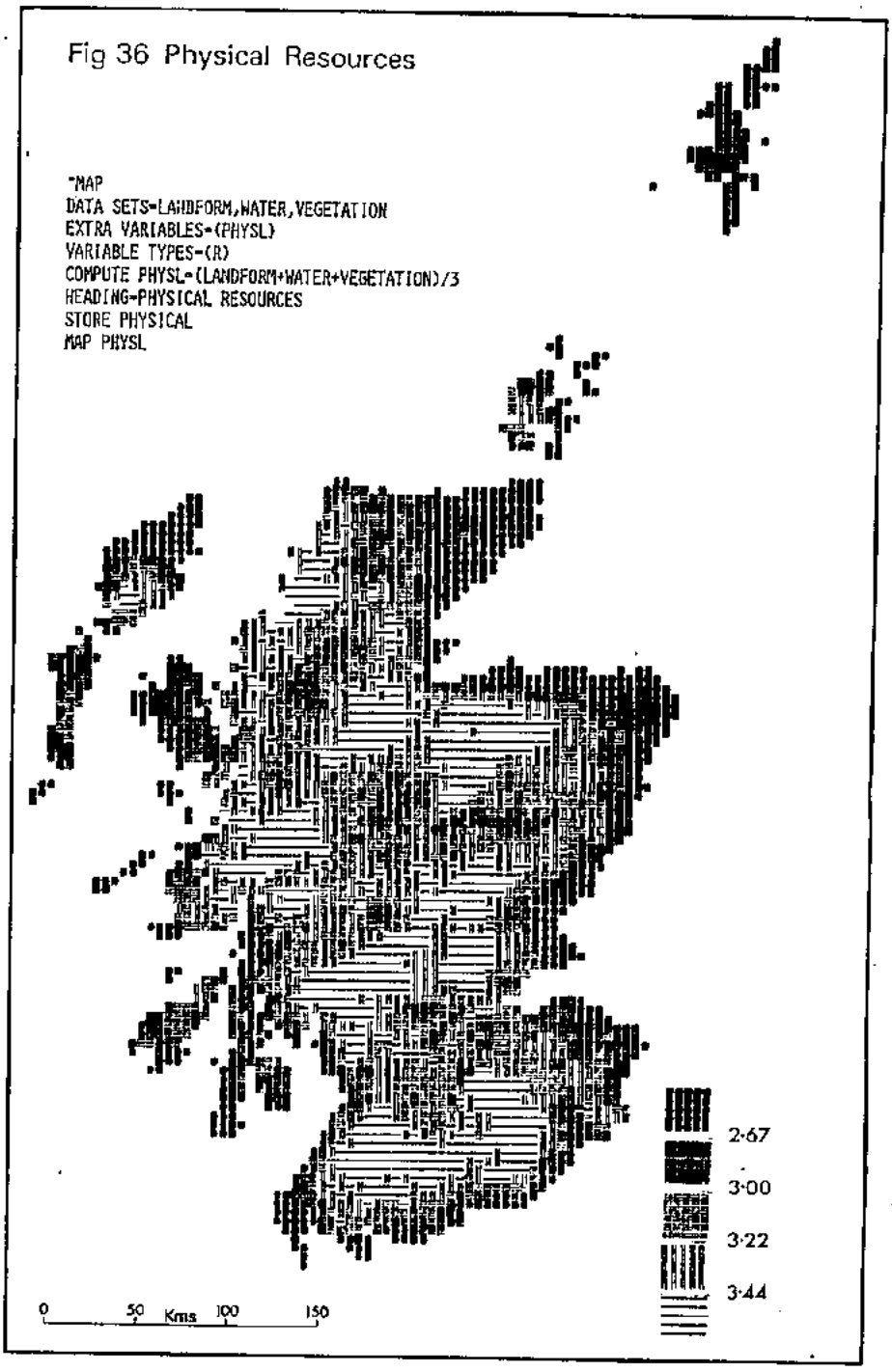
Fig 34 Length of Coastline within 10km



parks should serve the recreational needs of Scottish residents and tourists alike. A process of assessment was undertaken, using the TRIP system, therefore, to define the patterns of local and regional visitor pressures which could be input as constraints in an evaluation of resources.

Visitor pressures can be categorised in two ways. First, those emanating from holiday visitors temporarily resident in Scotland, and secondly, pressures from Scottish residents themselves on recreational journeys from home. Tourist pressures at a regional scale are shown in Figure 38 where the bed-capacity of

Fig 36 Physical Resources



hotels, youth hostels and caravan and camping sites within 20 km of each square are plotted. The shading regime is inverse, and clearly reveals those areas of rural Scotland under the greatest potential pressure from existing holiday accommodation.

The pressures resulting from the resident population of Scotland are mainly centred in and around the Central Belt of Scotland where the majority of the population lives. In an attempt to delimit those areas likely to attract resident visitors on a day trip, a search distance of 80 km was chosen; several studies have demonstrated that this distance contains

Fig 37 Areas of Environmental Worth (Scenery with Culture)

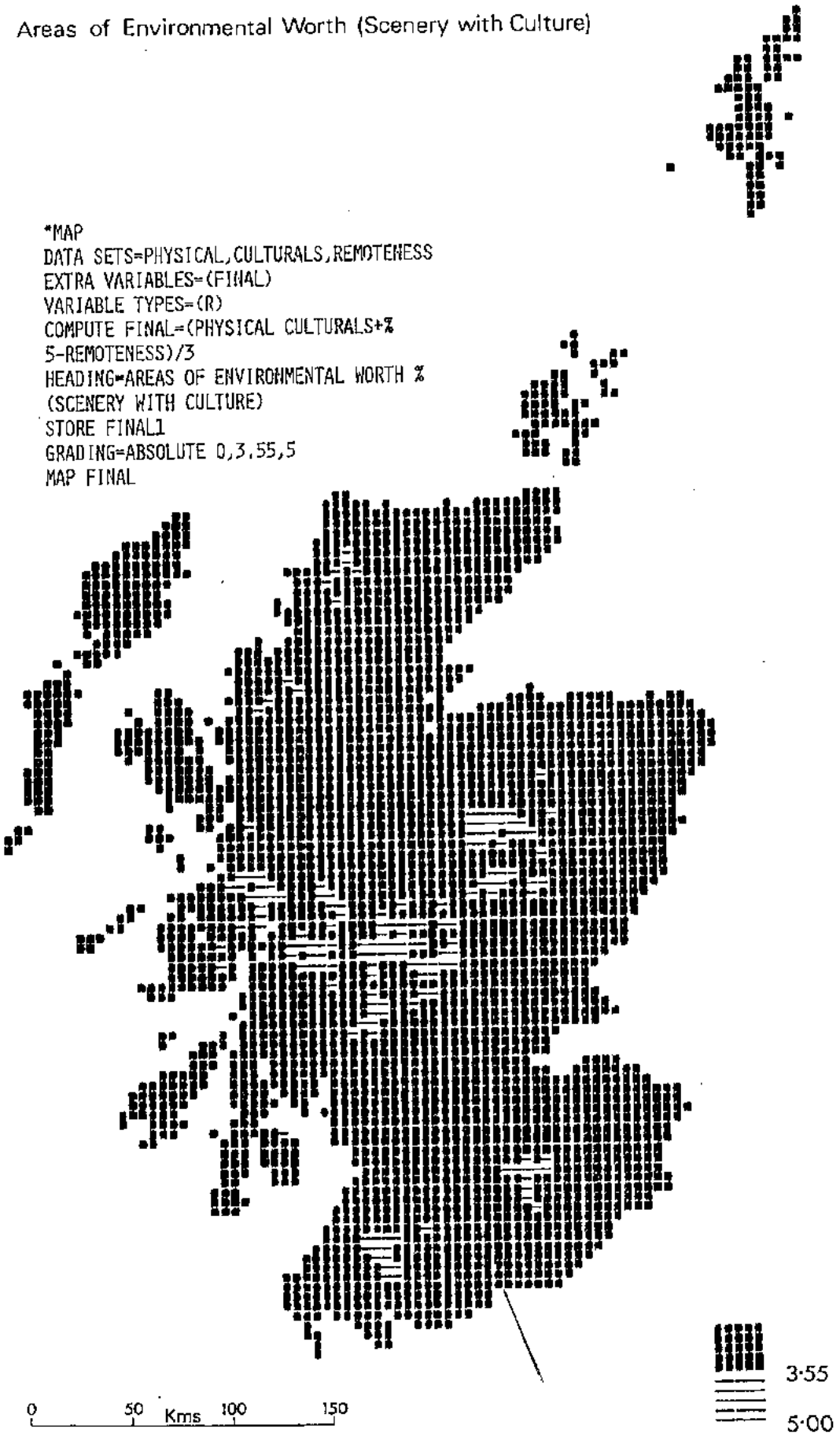
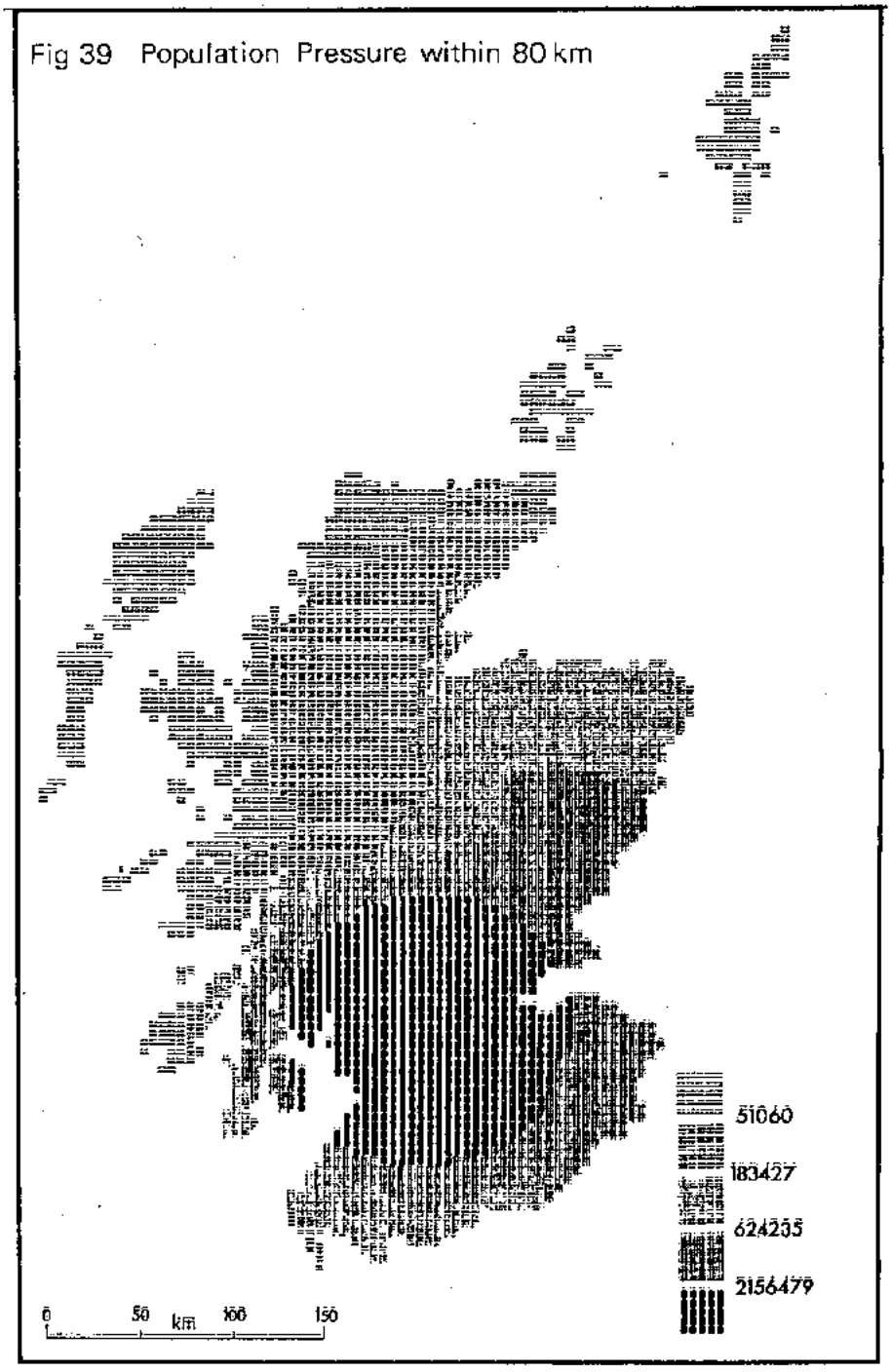


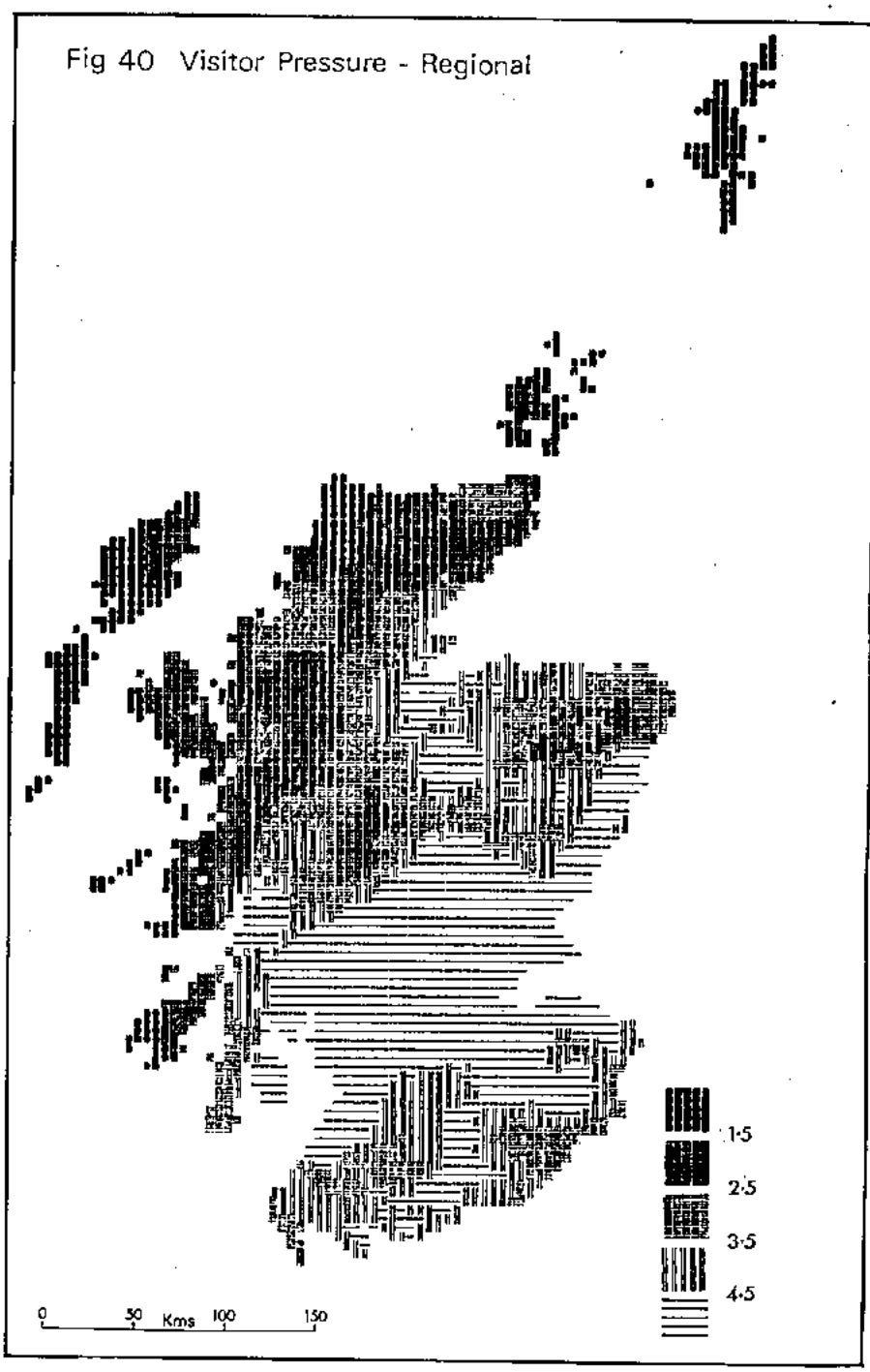
Fig 38 Tourist Pressure within 20 km



the vast majority of day recreational journeys. The pattern of this visitor potential is shown in Figure 39. Combining Figures 38 and 39 it is possible to indicate a combination of visitor pressures at the regional level (Fig. 40). A similar exercise was also undertaken to differentiate the expected pattern of local visitor pressures.

The surfaces showing visitor pressures were then used in conjunction with the map of *areas of environmental worth* (Fig. 37) to illustrate a range of policy alternatives. Figure 41 shows areas of high resource quality outwith both local and regional visitor

Fig 40 Visitor Pressure - Regional



pressures. Areas thus defined would be of most interest to those committed to a *conservationist* policy, who in designating parks would wish to avoid areas likely to be subject to heavy visitor pressure. At the other end of the scale, the areas shown in Figure 42, which are relatively high in environmental quality, are accessible to visitors at both a regional and local level. Parks designated on the basis of this map would need to support high levels of both resident and tourist demand of all types.

A further alternative is illustrated in Figure 43 which is based on the argument that, while National Parks

Fig 41 Areas without both Regional and Local Pressure

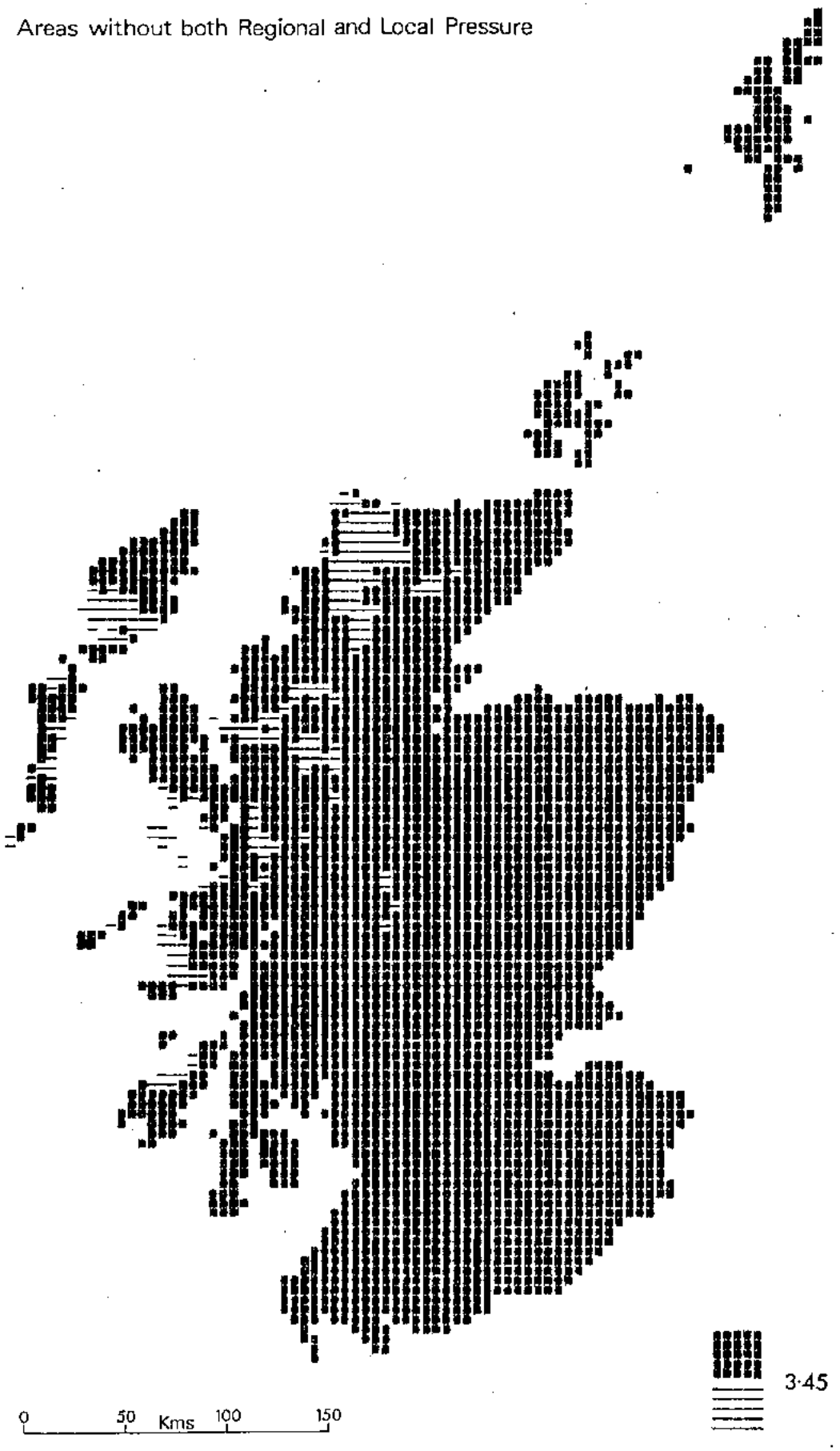
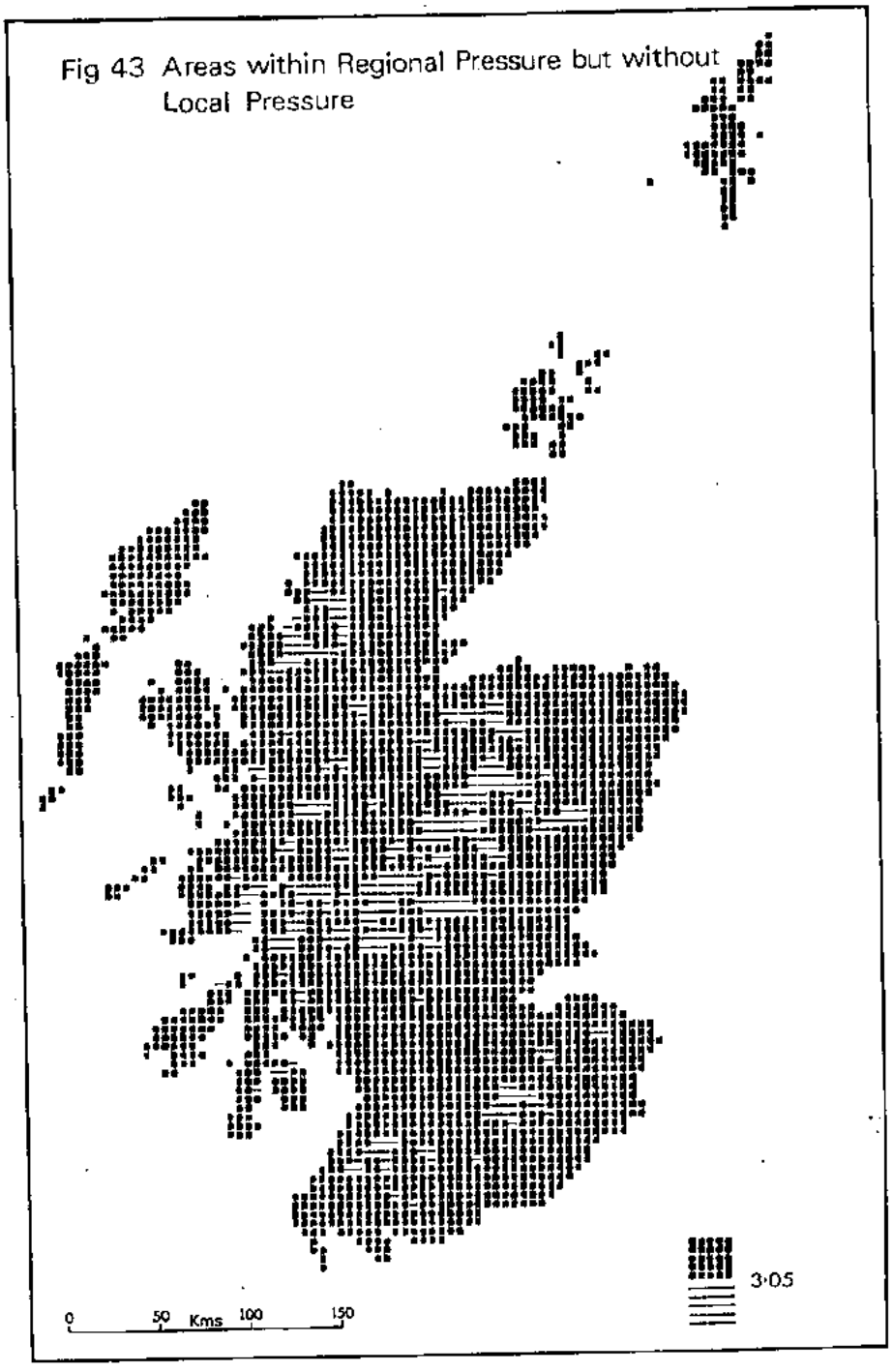


Fig 42 Areas within both Regional and Local Pressure



might be expected to serve the recreational needs of both residents and tourists, they should be free from the overwhelming pressure of locally-generated use which might engulf the natural resources and threaten the quality of the recreational experience itself. Accordingly, resources have been assessed which lie outwith areas of local pressure but within areas of regional visitor use.

The research investigation outlined illustrates the versatile character of TRIP and demonstrates the way in which the analytical techniques of the system transform it from a mere repository for data into a

planning tool of some power. Meanwhile, the debate on the desirability, the nature and delimitation of a parks system for Scotland continues. Ideas on both policy and assessment will no doubt also continue to develop and crystallise, but even at this early stage, it can be seen that TRIP can provide a valuable input into such a planning process.

THE SCANDINAVIAN HOLIDAY MARKET

The Scottish Tourist Board's responsibility to promote tourism and market Scotland's recreational resources provided an opportunity to illustrate the use which can be made of TRIP in the marketing process. The exercise undertaken on behalf of the Scottish Tourist Board identified the location of tourism resources able to meet the known requirements of a particular market sector.

The continued and sustained growth of the Scottish tourist industry requires the efficient marketing of available resources in accordance with the demands of potential customers. Market survey techniques have long been used to establish customer's requirements; TRIP can now be used to identify and locate the resources.

The exercise was designed to investigate Scotland's ability to meet potential Scandinavian markets. The approach adopted was to try to identify areas which had an accommodation/activity combination of attributes likely to appeal to various segments of the Scandinavian market. The preferences of Scandinavians were identified from market survey information supplied to the Scottish Tourist Board by the British Tourist Authority, although the data themselves were somewhat inadequate. Norway and Sweden were covered best; less information was available regarding the Danish market and very little at all on Finland; analysis was thus confined to Norway, Sweden and Denmark.

The quality of the data base made it difficult to establish precise products which might appeal to Scandinavian markets. Factors attracting people to particular destinations were often expressed in very general terms, such as, *being able to relax in peace and quiet in undisturbed surroundings*. It was therefore necessary to concentrate on a limited number of factors where a product demand was reasonably well defined. Also, while a breakdown of accommodation usage was available for each market, the proportions of visitors within these totals who might buy given activity/accommodation packages were not known. It was therefore necessary to assume relationships between popular activities and popular accommodation.

The *products* identified for each country are described below.

SWEDEN

Visitors from Sweden constitute the primary Scandinavian market as far as Scotland is concerned; they use relatively expensive hotels and like *good scenery*. The exercise undertaken for this market was therefore to identify bed capacity for hotels charging over £4 per night for bed and breakfast in areas of high scenic value. A comprehensive hotel data set was used which had been placed in the TRIP data bank by the Scottish Tourist Board; it contains information for 2,429 hotels in Scotland including details of tariff, location, bed capacity, licensed status, central heating, etc. Figure 44 shows the pattern of hotel capacity produced according to these constraints graded by the number of beds per square into one of five categories.

Another feature of the Scandinavian market was revealed by a 1972 survey of Swedish youth which indicated that this market segment showed a high interest in *observing nature*. Accordingly a map was produced (Fig. 45) showing Youth Hostel capacity in areas with nature reserves or with Sites of Special Scientific Interest.

NORWAY

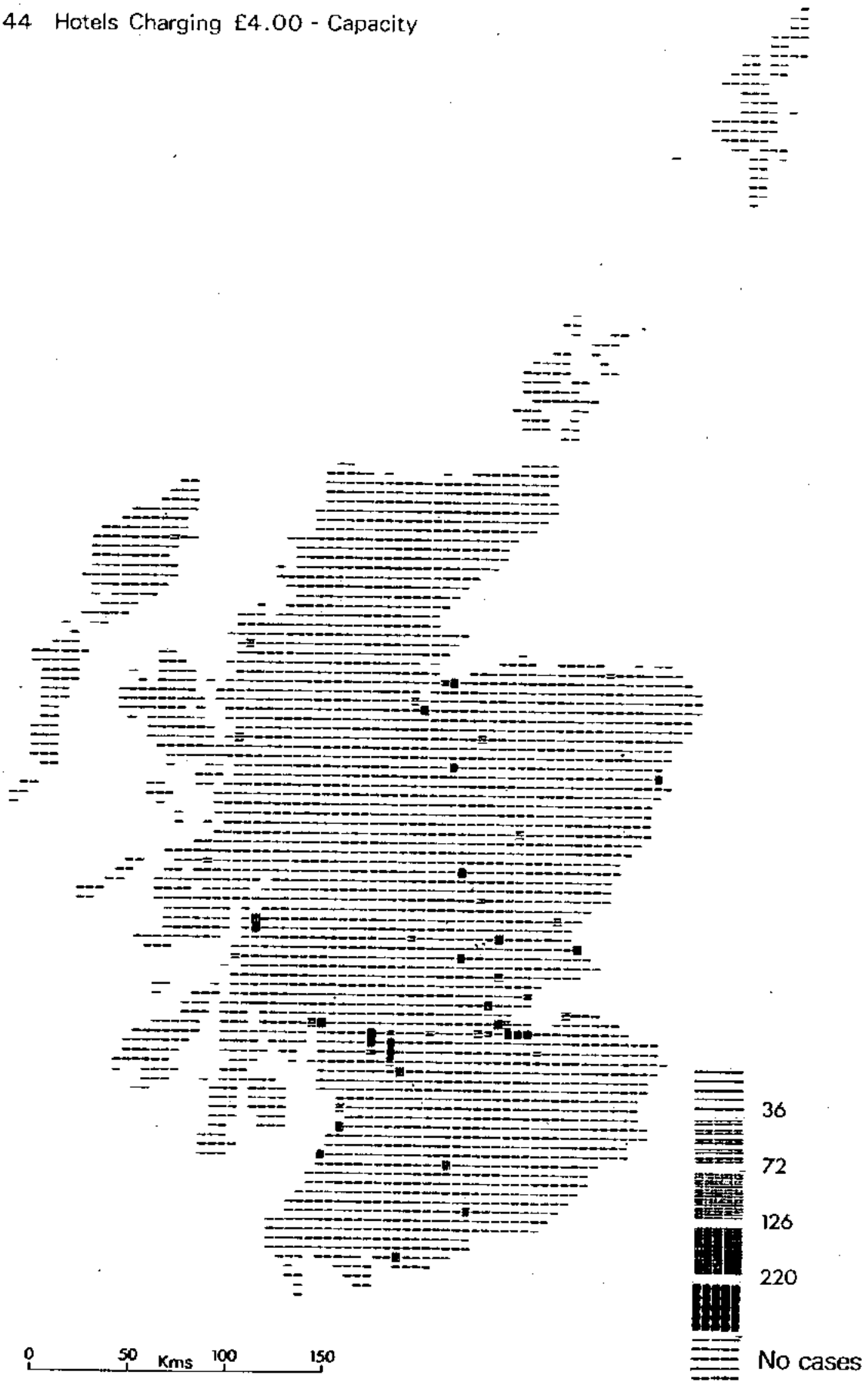
The data available also suggested that Norwegians prefer expensive hotels, but substantial proportions also camp and youth hostel. Their main tourist interests are historic buildings and fishing. Figure 46 shows bed capacity for hotels in the £4+ category, in areas where historic buildings are available. Another feature of the Norwegian market is the positive relevance of package tours and therefore analysis included only those hotels which accepted coach tours and which were available as part of a package product.

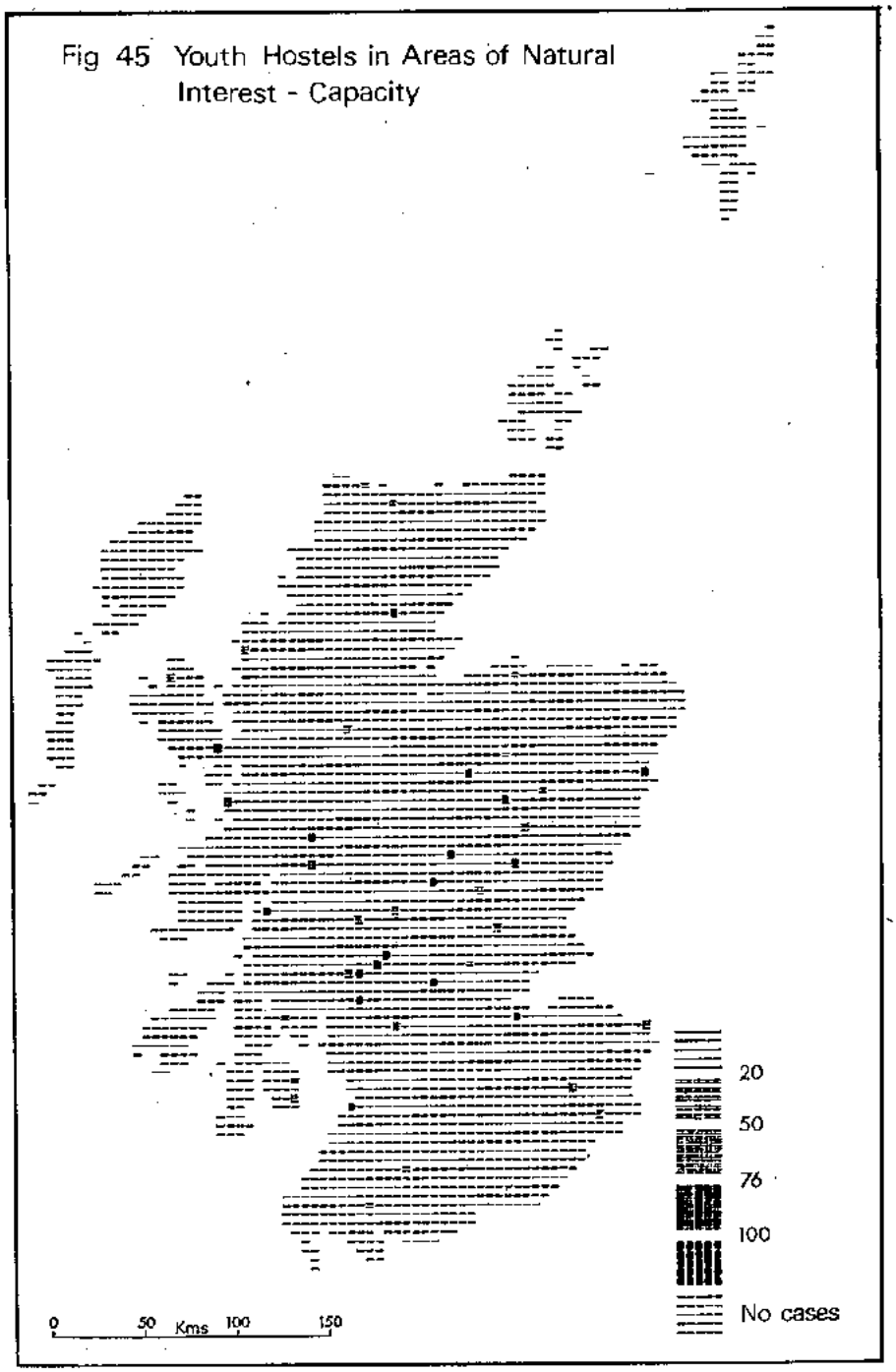
Additional maps were produced relating camp-site capacity to historic buildings and to fishing, and youth hostel capacity to fishing.

DENMARK

The main features of the Danish market were the desire for medium-priced holidays abroad, coupled with interest in good scenery and historic buildings.

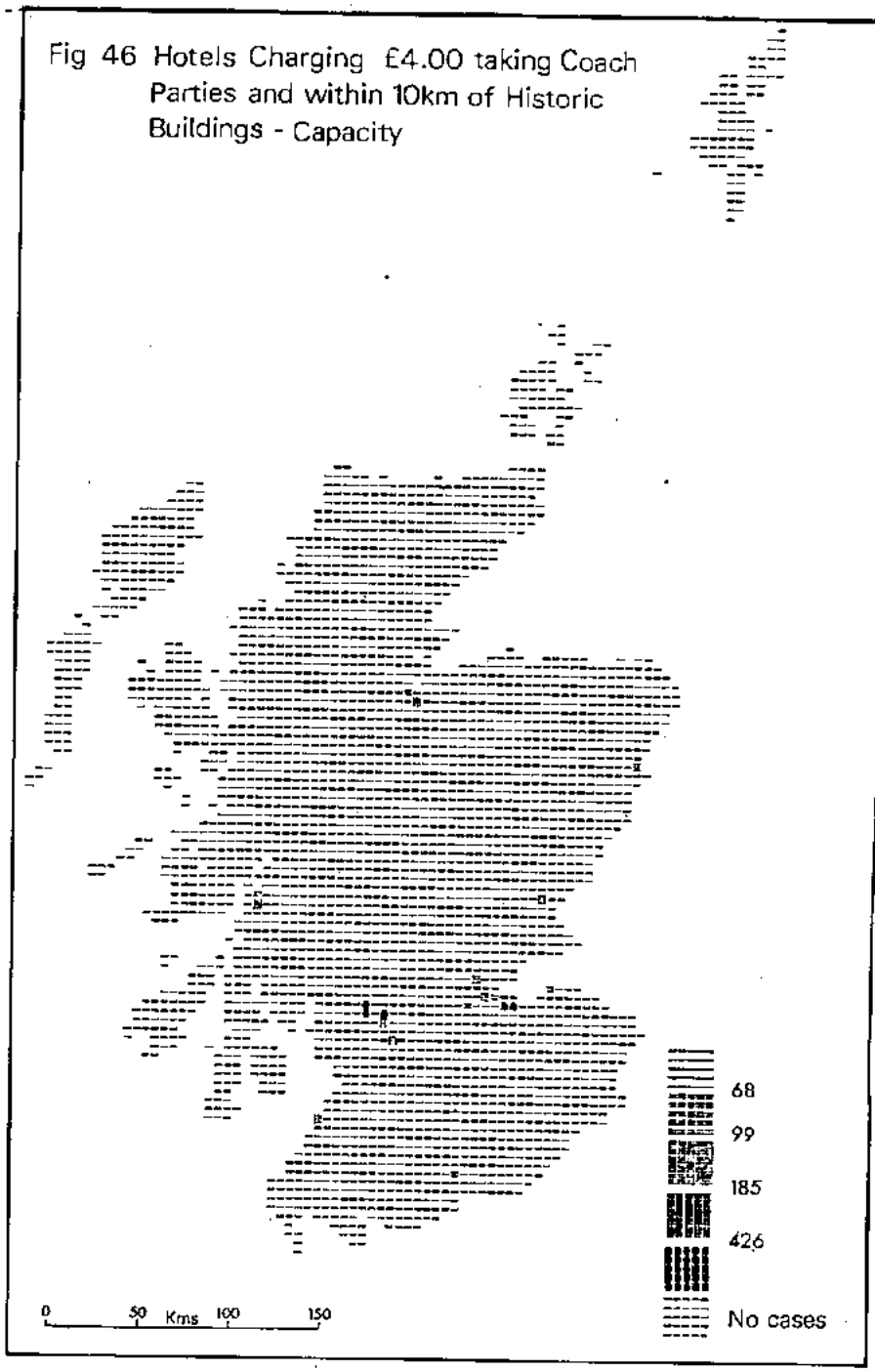
Fig 44 Hotels Charging £4.00 - Capacity





Hotels of £3+ were therefore related to these resource factors (Fig. 47).

This limited market-resource analysis illustrates a distinctive facility available within TRIP, to search for and identify particular environments, defined in this case by known parameters of the market itself. The experiment emphasises the necessity to collect and store, not only adequate resource data, but also tightly defined user/customer characteristics. A factor which the Scottish Tourist Board will no doubt wish to consider is that market potehtial needs to be defined more exactly in terms of the numbers of



tourists who might be interested in buying the types of accommodation/activity packages which were identified. This essential feedback into survey design and strategy formulation imposed by the analytical rigour of the TRIP procedures is perhaps the most valuable by-product of the system and its operation.

SPORTS HOLIDAYS IN SCOTLAND

Another study undertaken for the Scottish Tourist Board was concerned less with the marketing of tourist facilities, but more with factors underlying their

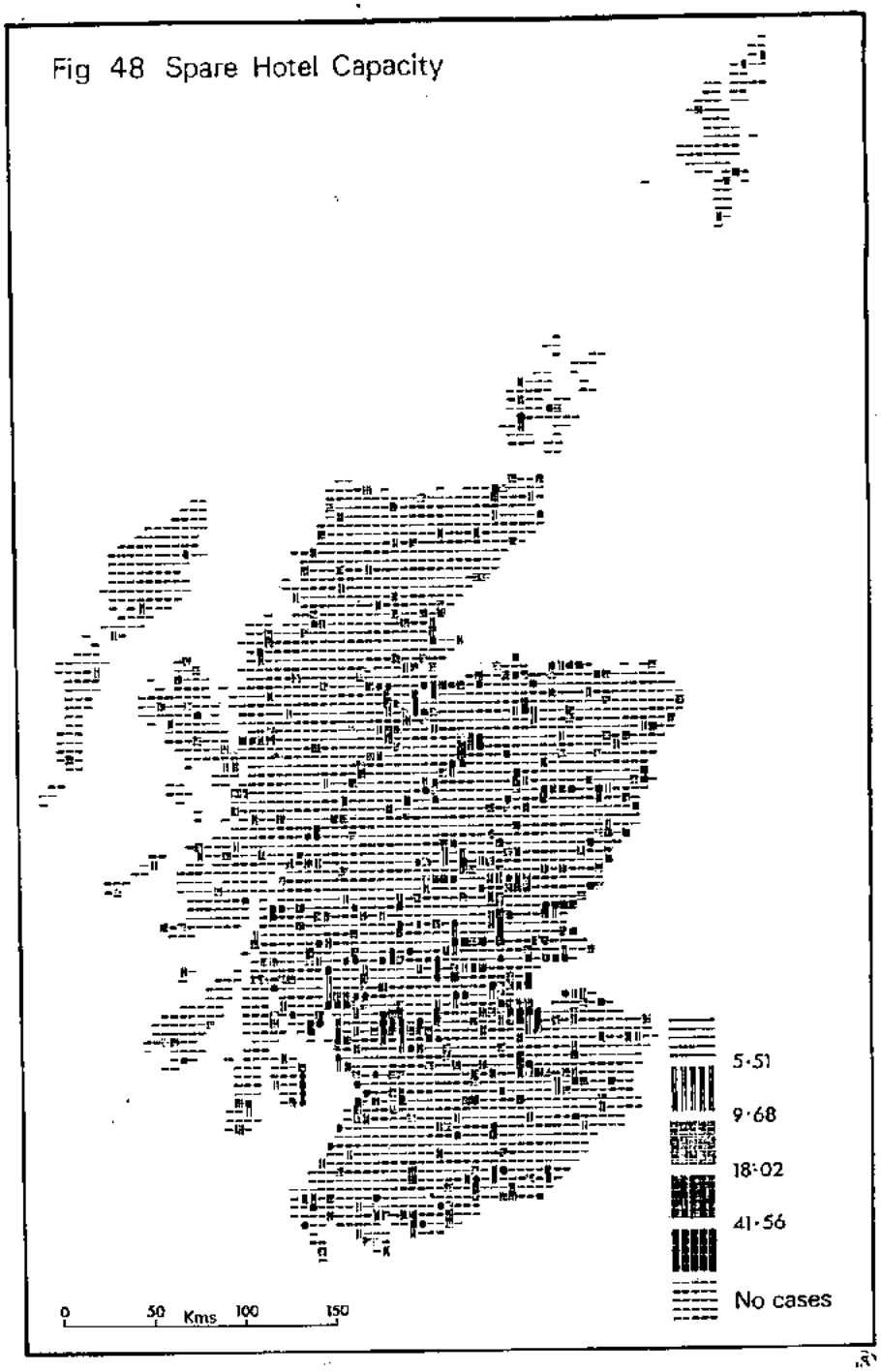
Fig 47 Hotels Charging £3.00 and within 5km of Scenery

development. For many years a major component of Scotland's appeal to tourists has been the *sports holiday* and the Scottish Tourist Board has responded to this distinctive appeal by promoting holidays in areas where skiing, golfing, fishing, sailing and pony-trekking can be taken. Each year, with the Scottish Sports Council, the Board hosts a conference for those concerned with this particular sector of the tourist market. To nurture effectively this type of holiday requires, not only the development of sports facilities, but also the availability of holiday accommodation within easy travelling distance. Even given these two key elements the supply/demand mix is difficult to resolve because of competition for facilities from Scottish residents and by lack of available hotel accommodation resulting from high occupancy rates during the tourist season. In order to throw some light on these complex relationships, the Tourism and Recreation Research Unit in conjunction with the Scottish Tourist Board undertook a series of analyses linking the following elements:

a) hotel capacity
b) hotel occupancy statistics for 1973
c) the scale and distribution of existing sports facilities
d) an assessment of resource capability for sports activities
e) the resident Scottish population.

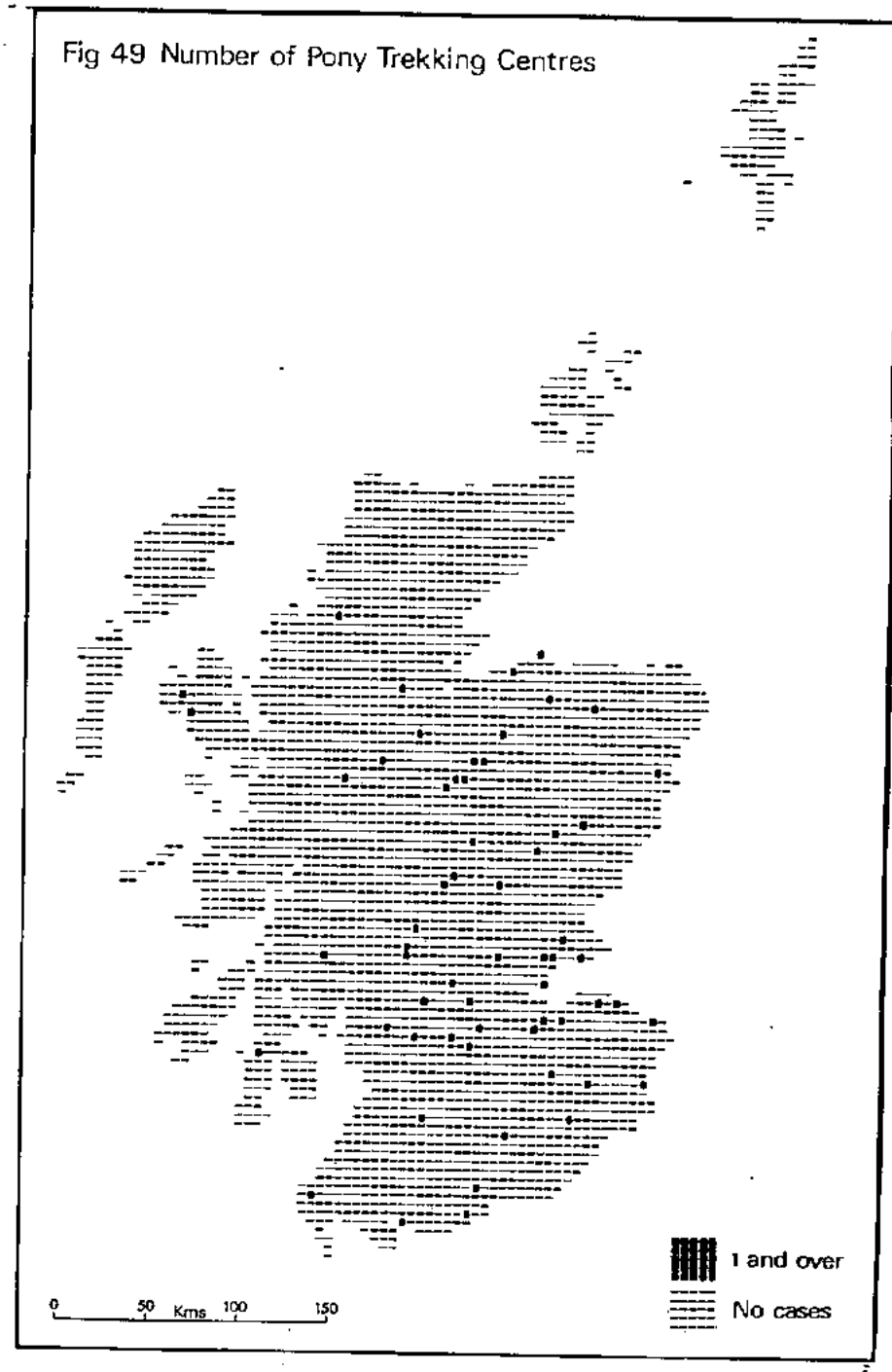
The research project was undertaken for four activities, namely; golf, pony-trekking, fishing and sailing and involves an intricate modelling operation supplying valuable insights into the nature of supply/demand relationships.

As far as tourist accommodation is concerned the basic raw material is hotel bed capacity. However, although this statistic provides a useful gross measure of available accommodation, it can be extremely misleading as far as development is concerned. For many parts of Scotland existing hotel accommodation, however plentiful, is under severe pressure during the holiday season from present tourist pressure. In these circumstances, a more appropriate statistic is spare hotel capacity. Fortunately, for several years now the Scottish Tourist Board has carried out Hotel Occupancy Studies which have established for different areas and different types of hotels the levels of occupancy throughout the year. Figure 48 shows the pattern of spare hotel capacity combining the absolute level of hotel capacity with the results of the occupancy survey for 1973. In so doing, it illustrates a powerful facility of TRIP to integrate the results of resource data sets and user surveys to provide a dynamic and up-to-date picture of resource capability. Figure 49 plots the location of facilities for pony-trekking, the basic supply data on which this map was



based together with a range of data relating to them having been provided by the Scottish Tourist Board.

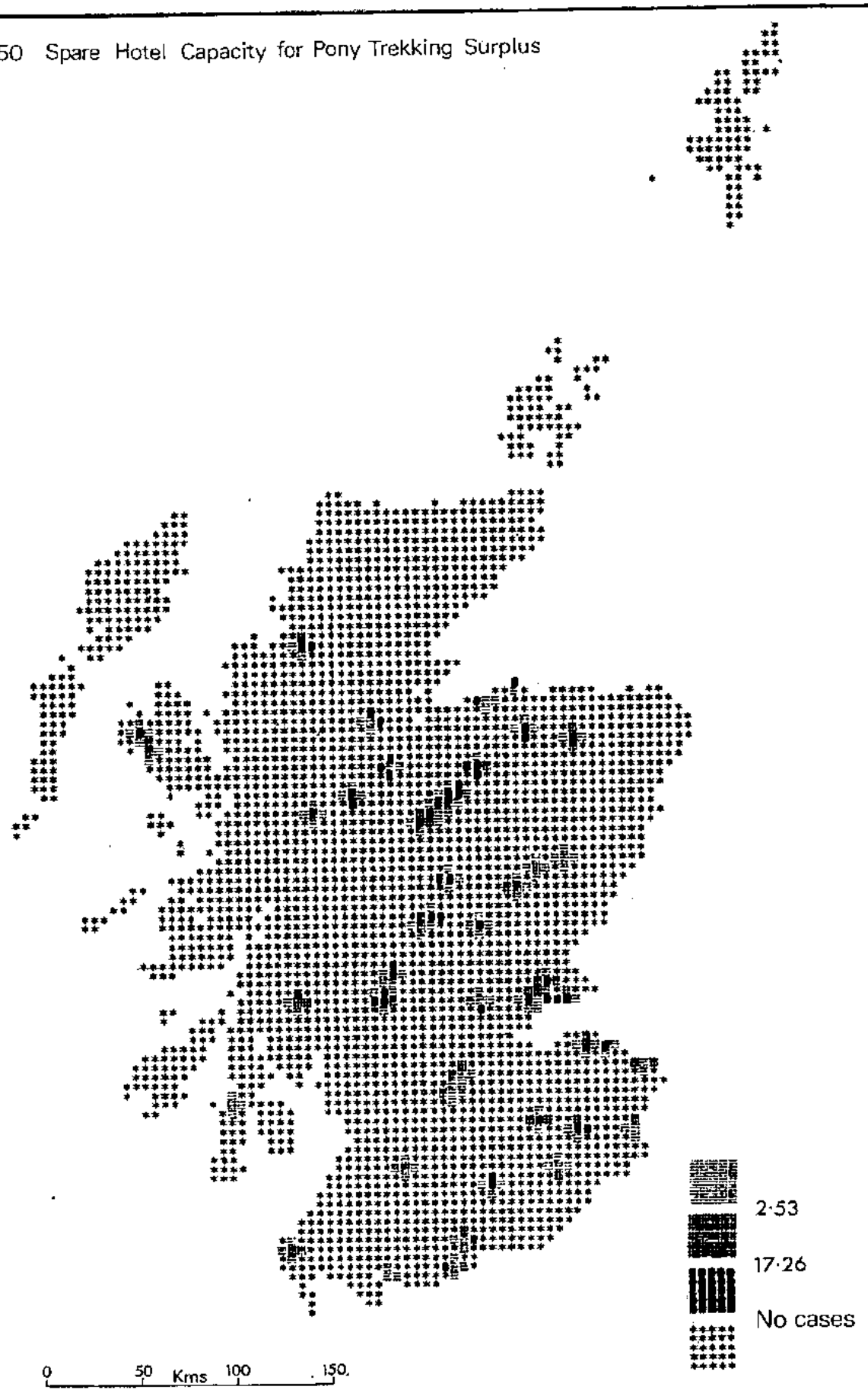
There then followed an intricate assessment of Scottish residential demand. This exercise involved establishing average levels of provision for pony-trekking at a national level and then using these mean figures to calculate *spare* or *deficit* provision for each individual square. The analysis involved both the pony-trekking and population data sets and the use of distance functions relating to the activity concerned derived from survey data. One of the end products of these calculations which locates areas combining

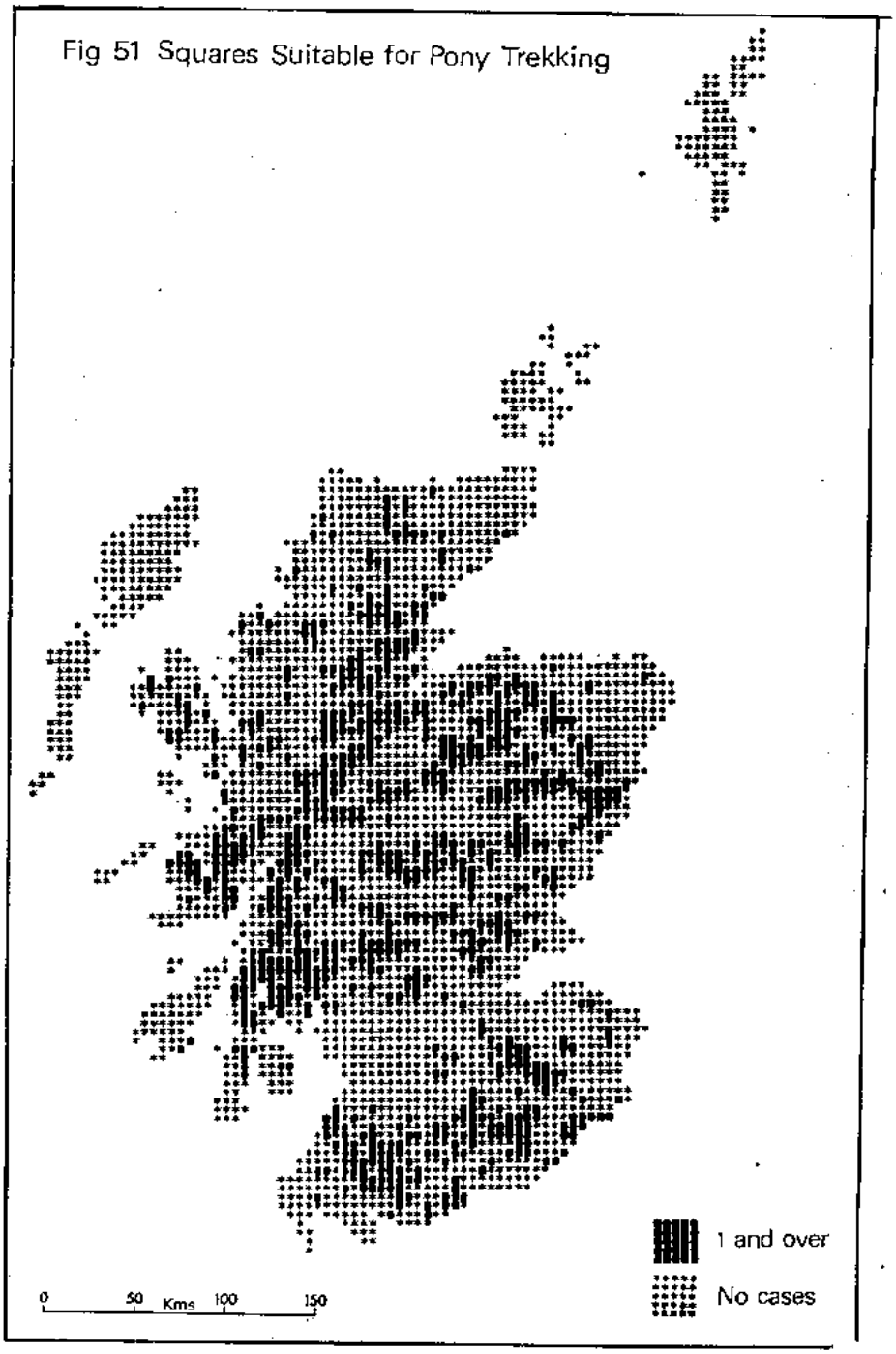


spare hotel capacity and surplus sports facilities is seen in Figure 50. This map effectively provides for hoteliers a market profile for sports holidays and for the Scottish Tourist Board, a resource and accommodation balance which could form the foundation of a selective marketing project.

Development potential for the entrepreneur interested in the development of sports facilities requires a slightly different approach involving the identification of potential demand and of areas capable of supporting the activity under study in terms of available accommodation. As far as demand was concerned, it

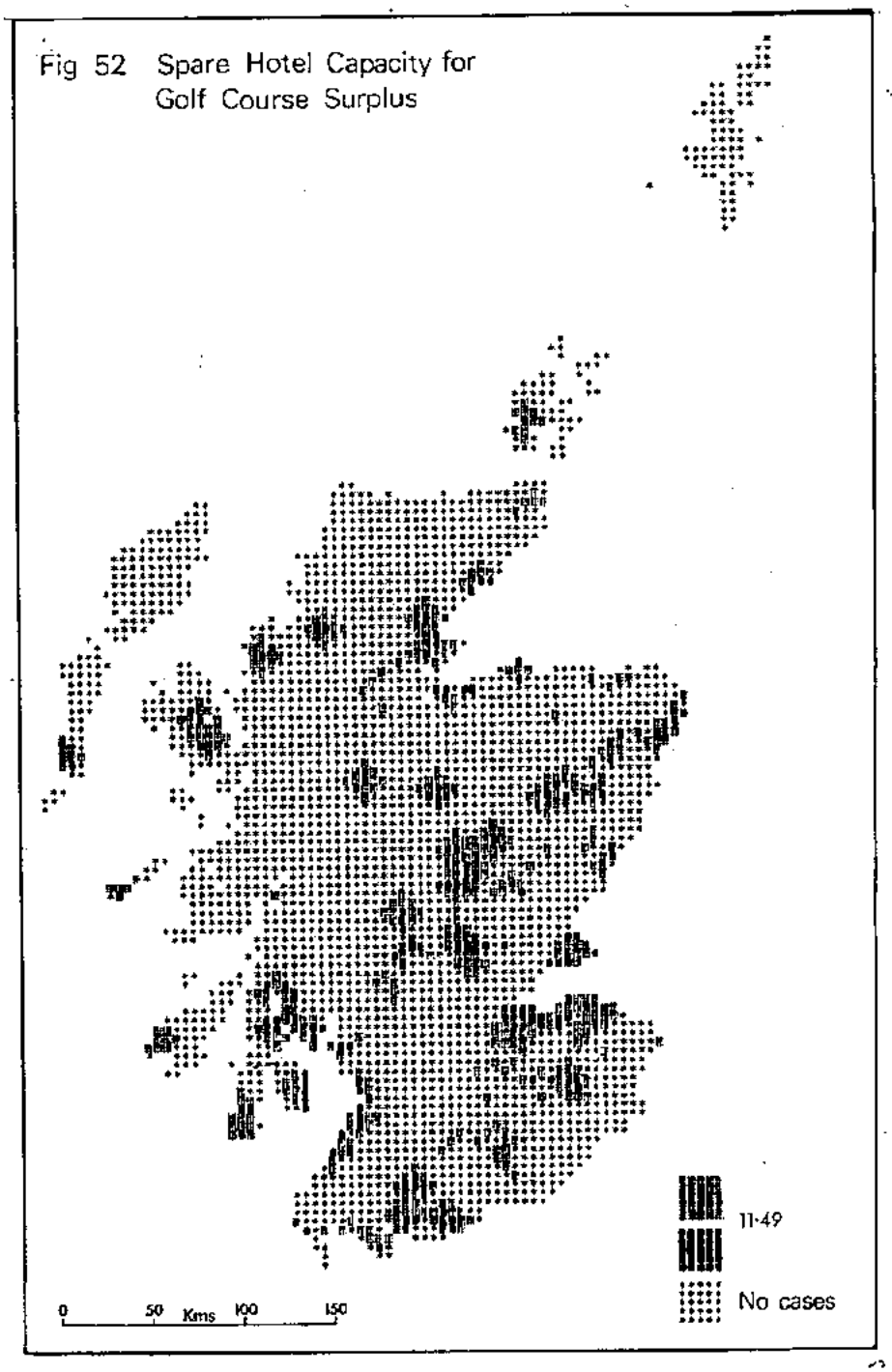
Fig 50 Spare Hotel Capacity for Pony Trekking Surplus





was assumed that this would follow the pattern of holiday accommodation available to tourists; the potential supply situation was more problematical, however, and was finally based on objectively-derived, but nevertheless arbitrary, criteria. As far as pony-trekking was concerned these were the presence of woodland and moorland and a range of relief of at least 500 ft. The areas fulfilling these resource requirements are shown in Figure 51.

To provide an assessment of the likely prospects of actual facility developments in these areas, a demand factor was built in to show tourist pressure for



areas of potential supply. The resulting map, Figure 52, gives an indication to developers of those locations where they might be expected to achieve the greatest success.

Such an exercise, however intricately modelled, can only be seen as an initial input to investment decisions, nevertheless, it does reveal how an information system can provide useful objective criteria to guide and formulate development decisions.

Discussion

R. SMITH opened the discussion with a query relating to the ability of the TRIP system to output information for the individual squares which make up the mapping packages. B.S. DUFFIELD confirmed that the system was flexible from this point of view. Analyses for the whole of Scotland or for smaller areas were possible defined by *standard* mapping packages; furthermore, areas could be specifically defined for a particular analytical project. The TRIP system could supply a count for a particular variable relating to a series of squares (e.g., number of hotels), or could list squares if they fulfilled certain pre-selected criteria (e.g., those within a certain distance of, say, country parks).

J. ZETTER expressed concern regarding the evaluation procedure described in the paper, particularly the linearity of measurement functions and the possibility of double counting among the factors incorporated in the final assessment of areas of environmental worth. B.S. DUFFIELD accepted that these points were valid, but stressed that the identification of areas of environmental worth had not been undertaken as a definitive exercise in resource evaluation but rather as a means of understanding relationships between recreationists and both physical and cultural resources in order that, at a later stage, more rigorous and properly structured evaluations could take place. In this sense the exercise had been one contributing to the generation of an hypothesis rather than hypothesis testing.

K.J. THOMSON of the University of Newcastle examined the conceptual difference between an information system and a data bank. In his view, TRIP remained a data bank rather than an information system, in the sense that a question or hypothesis is needed before *data* become *information*. To formulate the *questions* requires a lot of time spent in respecification of the initial query by contact between those familiar with the system and the consumer new to it. K.J. THOMSON went on to request details

about the average response time involved in servicing a request for analysis. The processes of analysis specification, discussion and eventual delivery of output were all time-consuming and he reminded the Conference that it had been said of other systems that 5 per cent of resources devoted to them are needed to build the system while the other 95 per cent are required for input/output design, including discussion with consumers.

In reply, B.S. DUFFIELD accepted the distinction drawn between data and information, but felt that K.J. THOMSON's contribution related more to the users of information systems rather than to the systems themselves. Certainly, TRIP constituted a data bank; a place where users could store, up-date and eventually retrieve data in a particular format. At the same time, however, it had a range of sophisticated analytical facilities which, by permitting analysis of the basic data, could provide information to the user in an ordered and systematic manner.

Any information system available to a wide number of users would inevitably be subject to enormous variations in its patterns of use. For some, the ability to store and retrieve data at a later date would be sufficient, while others would wish to undertake ambitious and complex analysis. This had certainly been the case as far as TRIP was concerned, even within the short period of time it had been available. Already, over and above the work which had been reported at this conference, other schemes of analysis relating to patterns of resource use and recreational traffic patterns had taken place. Up to the present time, much of this more advanced analysis had been undertaken by members of TRRU who were familiar with the TRIP system and its capability. However, it was confidently expected that, as public authorities become more used to the system, they too would undertake more ambitious programs of analysis. In the fullness of time, existing staff in the public authorities were likely to obtain more skill and aptitude in utilising the large potential of the TRIP system; in addition, specific appointments might be made of personnel skilled in the use of computer systems.

As far as *turn-around* time for analysis was concerned, it was difficult to be too specific. The TRIP system had been very much in a *research and development* phase with analysis and servicing being undertaken by those already committed to the design of the system. Recently, a joint TRRU and sponsor's committee had been established to examine ways in which a service system for TRIP could be defined and operated.

R. CARTER of the Scottish Tourist Board added that this User's Committee would conclude its deliberations

in two or three months, by which time the framework of the on-going service arrangement would be agreed.

M.J. ANKERS asked about the availability of data capable of supporting the types of analysis currently required. He wondered how often it had been the case that data needed were not available thus necessitating a certain amount of data collection before the requested information could be provided. In reply, B.S. DUFFIELD stated that the need for the collection of data was an on-going one for any information system but was subject to the law of diminishing returns. In the early days of the TRIP system, the collection of data by TRRU had gone hand-in-hand with the design of the system itself, although the sponsors had also accepted the responsibility of providing information. As far as the definition of areas of environmental worth was concerned, a significant proportion of the data was not readily available. A data collection exercise was undertaken by students during December 1973 for this purpose. M.J. ANKERS continued by focussing attention on the relative priority of research undertaken using information systems in the field of recreation. As far as the work done by the CRESS and TRIP systems was concerned, there had been a great deal of attention paid to the question of the *supply* of recreational resources rather than the *demands* made upon them. M.J. ANKERS felt that more attention should be paid to the generation of recreation and holiday trips, for while site surveys geared to examination of the supply of recreation resources were important, they were inevitably inconclusive because they told little about the causal relationships underlying recreational activity. He felt that it was the predictive element arising out of surveys of demand that was most useful particularly within a planning context. The forecasting of future levels of demand and provisions to cope with it were the prime necessity. In trying to establish a preferred use to which information systems should be put, M.J. ANKERS identified the following types of priority question:

a) Which specific recreation areas are used by specific urban populations?

b) What factors are likely to change the demand for and the supply of recreation facilities?

c) What are the dynamic elements which will affect the cost of getting from urban areas to recreation sites?

In responding to M.J. ANKER's contribution, B.S. DUFFIELD accepted the importance of demand surveys but saw them as complementary elements within an overall scheme of investigation. Certainly in the

early stages of TRIP development much endeavour had gone into collecting information on the resource base available for recreation activities. However, TRIP was not merely a tool for examining the supply side of the recreation equation. Indeed, at present, the results of a major study of recreation and tourist demand in Scotland (Scottish Tourism and Recreation Study) were being fed into the TRIP system and initial analyses were already underway. As far as resolving the questions uppermost in the planners' minds was concerned, the key lay less in concentration on one aspect of recreation activity, but more in the interaction of supply and demand criteria. Already TRIP had been used by sponsors to examine these interrelationships as the paper had made clear. The analysis of the STARS survey itself had been designed so that data for supply could be seen alongside the extensive information for demand resulting from the 18,000 interviews that had been completed as part of that study.

A. THORBURN was of the opinion that for many planners demand information was frequently of limited assistance in coping with the supply of recreational facilities. The major problem in making facilities available was often the limited availability of resources suitable for development.

The discussion was brought to a close by T. HUXLEY of the Countryside Commission for Scotland who commented on recent developments in the Commission's thinking regarding the Park evaluation exercise undertaken by TRRU using the TRIP system. Whilst the caveats made by B.S. DUFFIELD on behalf of the Commission were correct at the time the study began, there had been significant developments since that date which suggested that the Countryside Commission's choice of criteria for examining landscape resources may be changing. It was true that, initially, the work related to the formulation of a *national strategy* for landscape conservation. However, the Countryside Commission for Scotland was now actively considering the balance between conservation and the recreational use of landscape resources with a view to defining a policy of recreation provision for the whole of Scotland.

Session 5
Potential Surface Analysis

Chairman J.A.Zetter

Following the printing of the final Conference Programme, contact was made with J.A. SOULSBY of St. Andrews University, Department of Geography who had undertaken experiments in Scotland using Potential Surface Analysis on a grid square basis. It was decided to include a contribution from him in this session which was distributed to delegates before he spoke.

The South Wales Studies
E.C. Hitchings

INTRODUCTION

A *Potential Surface* can be defined as:-

A representation of the suitability of land for any given purposes. It is therefore concerned with the assessment of land as a resource and can be illustrated as a contoured map on which high scores represent high potential.

In late 1970 a Recreation Working Party was set up by the Standing Conference on Regional Planning in South Wales with instructions to prepare a study of recreation for the Standing Conference area. The area consisted of the Counties of Glamorgan and Monmouth and the County Boroughs of Cardiff, Newport, Swansea and Merthyr Tydfil, and therefore covered much the greater part of industrial South Wales. The Working Party decided that one of the matters it should tackle was an Outdoor Informal Recreation Resource Evaluation for the whole Standing Conference Area, in addition to work on demand and urban recreation. The Countryside Commission which was later represented on the Working Party provided particulars of the Commission's work on the Sherwood Forest Study. The approach adopted was basically the same as for Sherwood Forest but because of the much greater area involved, 1,430 sq. miles as compared with 50 sq. miles for Sherwood Forest, it was decided to use the Glamorgan County Council computer for data handling.

I have divided this paper into four sections, and will begin with a brief outline of the process as developed in South Wales, then comment in more detail on a few specific problems. I will then describe the way the results have been used in local studies and put forward a few ideas on the way that the potential surface might be used in working towards a strategy for informal countryside recreation at the sub-regional level. Time will not allow me to describe all the details of the method and the scoring systems used, but for those who

are interested, the whole process has been very fully described in the Countryside Commission's publication entitled *Planning for Informal Recreation at the Sub-Regional Scale*.

One question which seems to trouble many planners is the relationship of potential surface analysis to the traditional sieve mapping technique. I would suggest that the traditional sieve map technique really consists of two stages; in the first the areas which meet the criteria of suitability for the type of use for which the sieve is designed are defined usually on a straight yes/no basis. In the second stage some of the suitable areas are excluded because they conflict with some other actual or potential use that is judged to be more important. PSA is simply a more sophisticated attempt at the first stage of this process.

The basic process of deriving a potential surface involves seven stages.

The four objectives that were adopted were:

i) to locate informal countryside recreation activities in places easily accessible from the centres of demand;

ii) to ensure ease of accessibility by road to individual recreation sites;

iii) to locate informal countryside recreation activities in areas containing the features that provide an attractive environment for informal countryside recreation;

iv) to provide a choice of recreational opportunities in terms both of facilities provided and of landscape character.

A fifth objective was considered:

to ensure that the intensity of informal countryside recreation use in any area does not destroy the existing physical and ecological character. The main reasons for its exclusion were the lack of satisfactory data on absorption capacities of different environmental types, and the fact that capacity is relatively easily modified by investment and management measures.

The objectives were ranked and weighted by a staff participation exercise. A spatial sub-division of 1 kilometre squares was used of which there were 3,700 in the Standing Conference Area. This compares with 3,400 5 x 5 km in the TRIP model of Scotland.

Index 1, used to describe the decay of accessibility potential with increasing distance, was based upon

that developed by Hansen (1959). The distance matrix used in this version was based upon interzonal travel times for Glamorgan County Council's regional study system of 84 zones, and the distance decay function used was a power function with a parameter of 2.0, which was derived from site surveys of existing recreation sites. Population totals for the base year were available on the same zonal basis. At the earlier stages of the development of the computer programs, this analysis was dealt with by a separate program PLRI and the zonal results manually transferred onto a grid square base and written in on the basic data sheet.

Index 2 was scored according to the proportion of the grid square within 0.5 of a kilometre of certain roads.

Index 3 included ten separate attractions: rivers and canals, lakes and reservoirs, parkland and height differential were obtained from the 2½ inch ordnance survey series; dunes, deciduous woodland, coniferous woodland, and downs and moors were obtained from the Land Utilisation Survey which had been completed for the whole Standing Conference Area. This information was updated from air photographs. Information on the coastline and special countryside attractions which included listed buildings, ancient monuments and conservation areas were all obtained from existing County Council records. No ground survey work of any kind was undertaken for this survey. I estimate that it took two vacation students six weeks to prepare the information for about 2,000 kilometre squares. Where possible the scores were given in hectares since there are 100 hectares in a kilometre square. This conveniently gives a score out of 100, but for rivers and canals, coastline, special countryside attractions and height differential, special scoring systems had to be devised. Weightings were given to the attractions of Index 3 in the same way as to the objectives by the same staff participation exercise.

Index 4 which may be called the scoring of *variety*, relied entirely on the data of Index 3 and in general the more attractions that were present in any square the higher the variety score, although some account was also taken of the relative importance of the attractions.

The main computer program searched Index 3 for attractions and automatically scored variety with a maximum of 100. The program weighted the attractions 1 to 9, aggregated them, and rescored so that the maximum score was 100; it then took the scores for all four indices and reweighted them according to the weighting preferences. They were then added together, rescaled again so that the maximum was 100 and printed out in simple tabular form. An option exists in the program for the use of the Symap Computer Mapping

System. We did not in fact find Symap very useful for our purposes but I understand that it has since proved useful for similar structure plan work, and you have seen an improved version used in the TRIP system. The two separate computer programs have now been combined. An option exists for conversion of traffic zonal scores to grid squares, and various forms of output are available.

It will be seen that the potential surface analysis system used is not fundamentally different from the type of analysis used in, say, the Agricultural Land Classification. The advantages of computerisation are that although there is still a large subjective element in the choice of the weights, at least they are applied consistently over the whole area, and it is a relatively simple matter to experiment with alternative weighting systems. In this case alternative weightings were made the subject of a Countryside Commission research experiment and the results are fully documented in the report that I referred to earlier.

The following main problems and issues surfaced during our work. Can the public usefully participate in the derivation and weighting of objectives? It is my opinion that the type of objectives involved in the development of a potential surface are more in the nature of technical criteria and that the views of the public are much more realistically gauged by looking at their use of existing recreation sites. I suggest that this is better than asking them in a highly artificial situation to allocate scores to objectives when they cannot possibly be expected to appreciate the effect of these decisions on the type of provision that may eventually be made. A further problem is that when the results from the staff of the Planning Department were analysed, it was found that the views had a definite bi-nodal tendency suggesting that respondents tended to weight the objectives more in a binary high/low way than a fully continuous score out of 100. In this situation, taking the mean score is an inadequate representation of a number of quite different viewpoints. However, if it was found that the scoring across several objectives represented more than one common view it would be possible to produce a potential surface for each.

The choice of the national 1 km grid to provide the framework for data collection and presentation was based firstly on the fact that the national grid is common to many data sources, and second that the 1 km size seemed to be appropriate at the sub-regional scale. It was felt that 2 x 2 km grid would have resulted in the loss of significant detail by absorption in the general scores for a wider area. The potential surface analysis, analyses each kilometre square in complete isolation from its neighbours and, therefore, any

smaller size of grid would have hidden significant relationships between attractions to a much greater extent than the one kilometre size and would have made the variety scoring system rather meaningless. It would probably be well worth considering amending the PSA programs so that the score of any one square is enhanced by a set proportion of the scores of adjoining squares. This would have helped to overcome the problem of discontinuity caused by the grid boundaries. Another possibility would be to alter the position of the grid. To use this method it would have been necessary to have collected the original basic data in some unit smaller than the one kilometre square but even a 1/4 km square division could have quadrupled the amount of paper work involved in the collection and processing of the original basic data. A much more crude possibility would be to create an artificial data score by taking a quarter of the scores of four adjoining squares.

Another problem which came to light at an early stage in the work was concerned with the basic mathematics of the score aggregation processes. It very soon became clear that the weightings used were not having the desired effect. It must be said at this point that the method of calibration for an informal recreation potential surface is necessarily very crude. The only way of achieving any form of calibration is to compare the results with the known potential of well-known areas of the County.

It soon became clear that Index 1 was having a very marked effect on the scores of much the greater part of the area. This problem arose because, although prior to weighting all scores have been reduced to the range 0 to 100, some indexes included a very high proportion of low scores, while others had a more even distribution. It was therefore found necessary to apply an additional weight to compensate for this abnormality.

The potential surfaces produced were found to be remarkably stable even against major alterations in the weighting system and the alterations which were produced were as might have been anticipated. At a later stage of calibration it was decided that lakes, mainly because of their small size, have not been sufficiently highly scored. The subsequent alteration in the scoring for lakes had the effect, since a lake occurred in the highest scoring square, of depressing all other scores for Index 2 so that quite different weightings had to be reapplied in order to correct the situation.

It will be noted that no detractions were included, for instance power lines, derelict land, adjoining obnoxious industries etc. It was felt that these were better dealt with as amendments to the final

surface, and in the case of derelict land the possibilities of recreation use through reclamation had to be borne in mind.

A key question is the value of the potential surface analysis in providing a new viewpoint as compared with a conventional ground survey. I would suggest that the value of the analysis lies not so much in the final result as in the fact that the system enforces a rigorous logical approach, and that the results demand of the planner a reappraisal of long held assumptions.

Glamorgan County Council carried out two local studies in which the potential surface for informal countryside recreation was used in conjunction with other potential surfaces to develop rural planning policies. Immediately west of Swansea lies the Gower Area of Outstanding Natural Beauty, an area subject to heavy recreation pressures and to restrictive policies on development. For this area four potential surfaces are available, though only one, the recreation surface, has been produced by the County Council in the way just described. The first surface is agricultural potential which is simply the agricultural land classification produced by MAFF transferred to grid squares. Second there is an ecological classification prepared by the Nature Conservancy on a 1/4 grid square basis. Third a landscape evaluation surface prepared by the County Council by purely subjective ground survey techniques. Fourth the recreation surface. It can of course be argued that there should also be residential, industrial, mineral surfaces and so on, but in the case of the Gower area of Outstanding Natural Beauty its designation effectively precludes any large scale development of these kinds, and therefore, the preparation of potential surfaces for such uses was unnecessary. It will readily be appreciated that where high potential for two or more surfaces occur in the same grid square some possibility of policy conflict exists. In order to illustrate this situation a composite was prepared in which the grid squares have been divided into four quadrants and each quadrant has been allocated to one of the surfaces and coloured if that surface scored highly. The resulting interactions and conflicts map can be used more or less directly in the preparation of rural policy zones. In the case of the Gower study these policy zones are not defined by grid squares, although in the case of the later Vale of Glamorgan Heritage Coast Study this method was employed. The advantage of using grid square boundaries is that the formal boundaries are very obviously artificial, and it is clear to everyone that no great significance can be attached to precisely where the boundaries run.

I do not want to give the impression by this brief exposition that rural policy plans can be prepared simply from potential surfaces, all I would argue is

that this approach provides a useful aid to rural planning, and helps to provide a better structured framework.

I regret that, mainly due to local government re-organisation research has not proceeded beyond the preparation of the basic potential surface. However, it may be useful to speculate a little as to its use in the preparation of County Structure Plans.

The potential that has been measured will to some extent have been exploited by existing facilities. The first stage must be to decide on the goals and objectives. The objectives must each be capable of quantification by an index to measure achievement.

For example the objectives might be:

i) to maximise informal rural recreation opportunities;

ii) to avoid detraction from and damage to the landscape and other features of the Gower Area of Outstanding Natural Beauty.

Crude measurements of their achievement would be:

i) the total number of new trips generated;

ii) the total maximum reduction of trips to Gower.

These measures are necessarily somewhat crude and the first might not result in the most equitable distribution of sites among the whole population. These two objectives are unlikely to be best satisfied by the same distribution of facilities so that a compromise must be struck dependent on the relative weight given to each objective.

It might be possible given sufficient data and sufficient research effort to construct a mathematical model to explain the existing pattern of trip making and to test the introduction of new facilities.

I doubt whether this would justify the research effort expended.

A key consideration not previously considered is the relationships of facilities to potential. The connecting link is investment. In the case of informal rural recreation there is usually a minimum level of investment to enable land to be brought into use and a higher level at which the natural potential can be said to be largely exploited. Further investment will then tend to go to capital provision relatively unrelated to the natural potential of the site. Therefore in considering a programmed strategic investment policy, it is necessary to look not only at sites but at the most appropriate levels

of investment in them. It may well be that in some cases further investment in existing sites would be a more effective use of available resources.

What I now regard as a somewhat mechanical approach to this problem is set out in more detail in *Planning for Recreation at the Sub-Regional Scale*.

Kincardineshire : A Scottish Case Study

J.A. Soulsby

This study was undertaken as a final year undergraduate research project based on the method described in Countryside Commission Publication CCP-71 (1974) as an attempt to use a goal-orientated procedure for determining potential supply of recreational resources.

Kincardineshire was selected for study for four reasons:

i) it shows a variety of landscapes, being bisected by the Highland Boundary Fault, showing on the one hand rugged upland scenery and on the other, fertile farmland; it also possesses a varied coastline;

ii) it is positioned between the two major population concentrations of Dundee and Aberdeen;

iii) its area (998 sq kms or 380 sq miles) was of a convenient size for the project;

iv) the county has a fairly low level of exploitation for informal countryside recreation at the present time.

The basic areal units used for data collection were the 1 x 1 km squares of the National Grid which allowed direct use of the One Inch and 1:25,000 Ordnance Survey sheets, each square could be readily identified and given a 6 figure grid reference. Some 1,000 grid squares were used in the survey. A blank dyeline outline of the county incorporating the National Grid was used, and the basic data sets were built up on these blanks prior to final collation and transfer to punch cards. Each grid square used 42 digit data spaces on a normal 80 unit card. Areas of principally urban and industrial use were excluded if 75 per cent or more of the grid square was in such usage.

The five objectives of the study were those defined in Chapter 2, Paragraph 4 of CCP-71 (1974). The objectives were weighted by asking 136 geography

students in the first and second year classes at St. Andrews University to weight them relative to a score of 100. The results are shown in Table 1, Column 2, and demonstrate a similar ranking to that obtained by the Glamorgan County Planning staff. The two sets of data were combined and used in the First Run of the Potential Surface program.

The techniques used in the calculation of Indices 1 to 4 followed those in CCP-71 (1974) except in two specific cases:

1. The calculation of index 1 (Potential accessibility)

Use of the gravity model

$$\text{potential}_{ij} = \frac{\text{population } j}{\text{distance } ij^2}$$

produced problems in measurement of both distance and population.

i) Distance. A value of 30 mph was felt to be adequate for leisure driving, and a simple system of concentric time/distance zones was used with radii at ½ hour (15 miles) intervals up to a maximum of 2 hours (60 miles). From central Kincardineshire this extends to Inverness in the north west and to Edinburgh in the south. The system disregards the road network, but there is partial compensation for this in Index 2.

ii) Population. Total population within a 2 hour drive of central Kincardineshire is about 1 million, which had to be divided into some form of areal units which allowed discrete measurement of population. Civil parishes were used as a suitable breakdown taking the total parish population centred on the main parish settlement which avoided a parish being split between two time/distance zones. Parish area was disregarded.

Table 1 : Weightings of Objectives

	1 CCP-71	2 St.A's	3 Run1	4 Run2	5 Run3
OBJECTIVE 5 (capacity)	100	100	100	100	100
OBJECTIVE 3 (attractive location)	94	79	87	70	90
OBJECTIVE 1 (macro access)	88	79	82	90	70
OBJECTIVE 4 (choice)	84	73	81	70	90
OBJECTIVE 2 (micro access)	77	68	73	90	70

Index 1 was then computed on a 5 x 5 km grid square basis and the value obtained assigned to all 25 squares within that block. This produced a considerable saving of time which more than offset the very small difference between contiguous squares. Program PLR 1 to evaluate Index 1 using different parameters for the comparison of distance decline function was not used because of conversion problems from the original to a form suitable for use in an IBM computer.

2. The calculation of Attraction 1, Index 3

Rivers and canals were classified and weighted as shown in Table 2.

Table 2 : Weightings of Attraction 1, Index 3

Minor Streams	1
Major Streams/Minor Tributaries	2
Major Tributaries/Minor Rivers	3
Major Rivers (River Dee only)	4

Weightings were used as multipliers of the length of each grade of river contained in a 1 x 1 km square. Thus a grid square containing 0.25 km of Grade 1 and 0.5 km of Grade 4 would score 0.25 + 2.0 = 2.25.

The weighting departs from the CCP-71 practice as minor streams are included in this system. It was felt that it was desirable to include even minor streams as water is often the focal point of informal countryside recreation. The weightings were used as multipliers of the length of each grade of river within a 1 km square, as problems were considerable in the computation of area covered by a river in a 1 x 1 km square. The values were again rescaled to a maximum of 100.

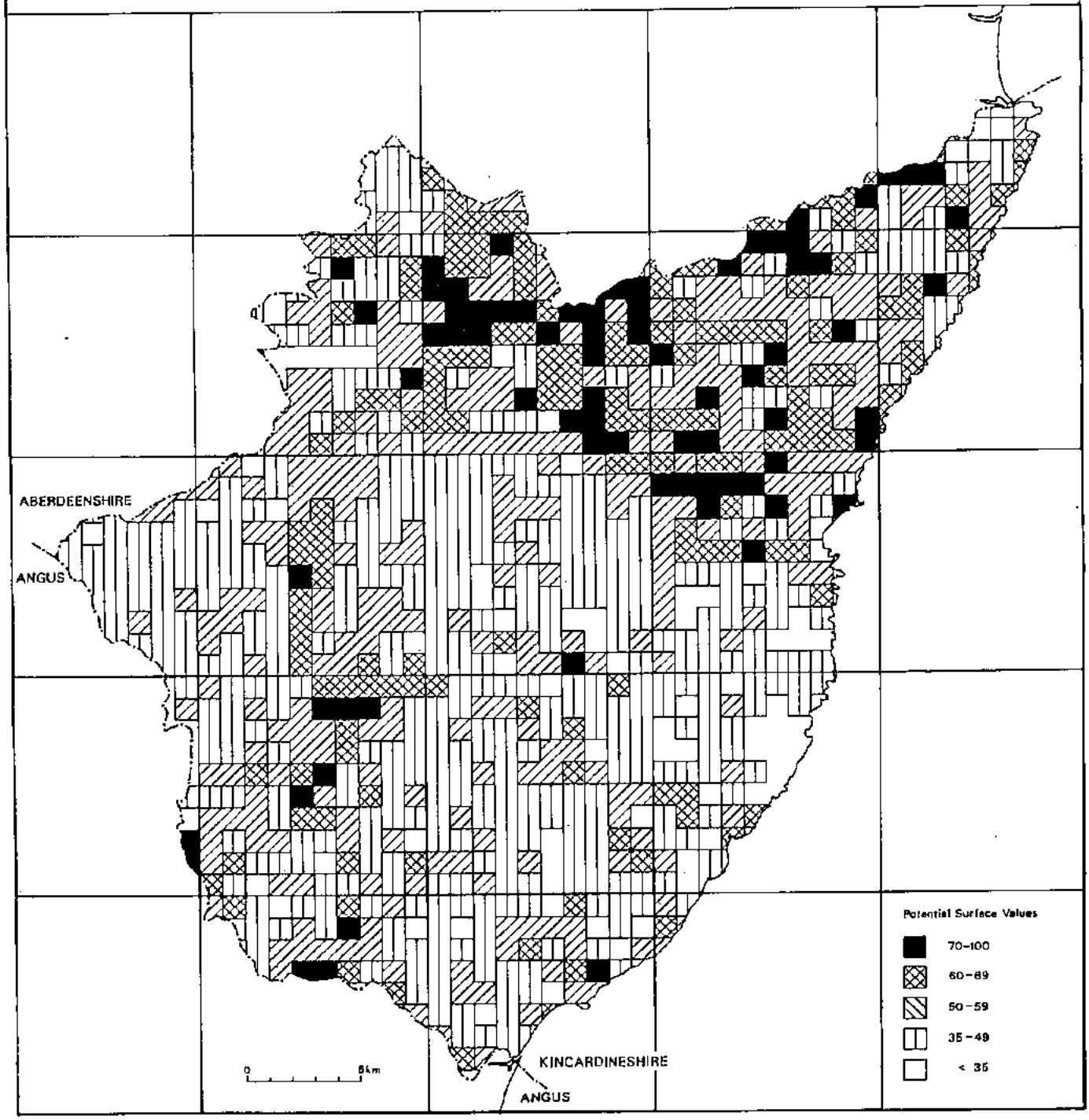
The potential surface output was produced in two forms:

i) a choropleth map for areal units produced by the SYMAP computer program; this has been redrawn as Figure 53;

ii) an isoline map which was then translated into a three-dimensional surface (Fig. 54) by the SYMVU program, which, whilst not amenable to rigorous interpretation helps to visualise the nature of the surface.

The suite of programs was run three times. Run 1, the *preferred* run produced the basic map whilst runs 2 and 3 depended upon alteration of the objective

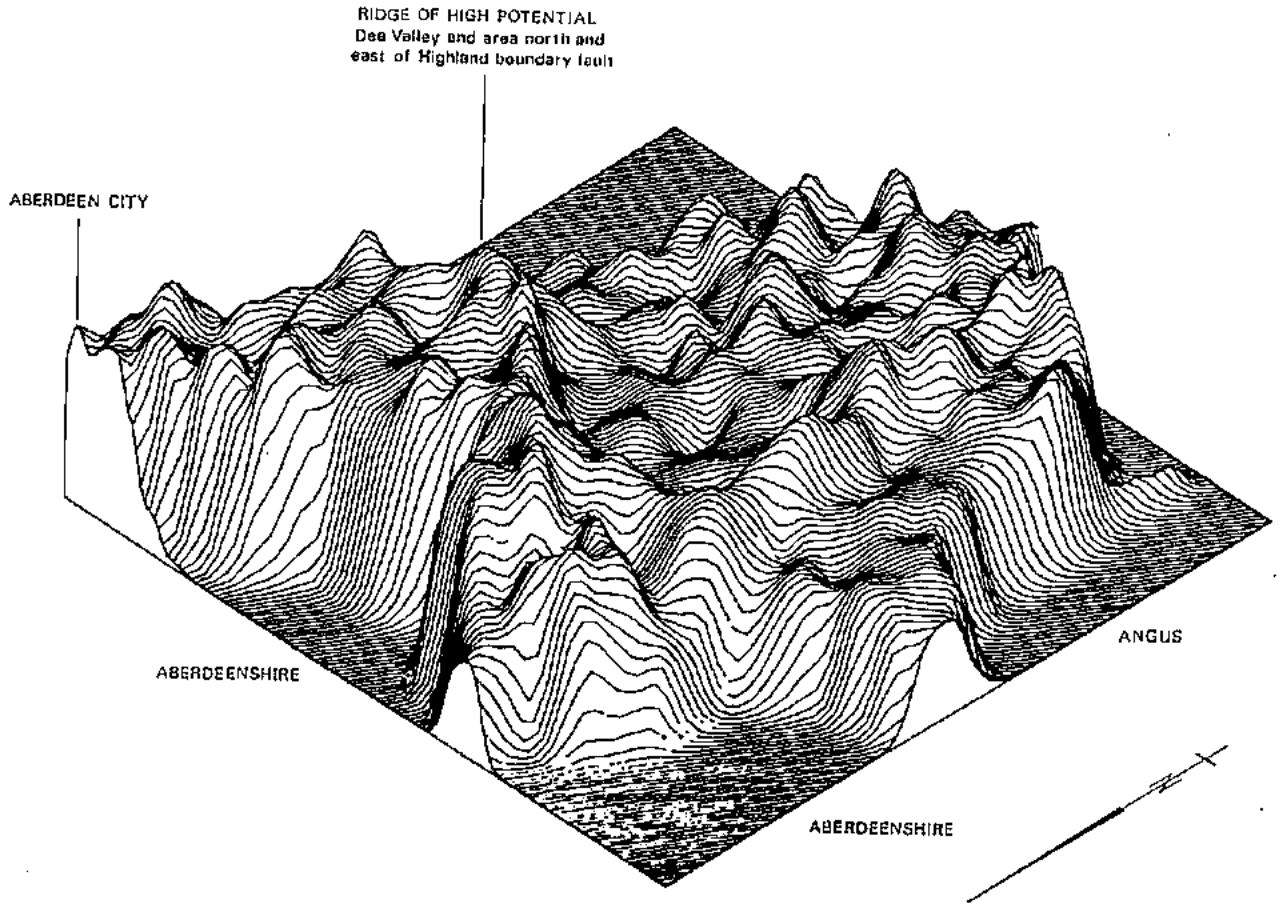
Fig 53 Potential Surface of Kincardineshire for Informal Rural Recreation Run 1



weightings to favour accessibility on Run 2 and attractiveness on Run 3 (see Columns 4 and 5, Table 1).

The minimum possible value on the surface was about 10, and about 10 per cent of all values lay below 35. At the other end of the range, 5 per cent of values lay above 70 and 20 per cent of all values scored more than 60. Seventy per cent of the values (about 700

Fig 54 Kincardineshire Surface Produced by SYMVU Program



squares) lay in the intermediate range of 35 - 60 distributed normally about a mean of 50. Two further divisions were therefore produced, 35 - 49 and 50 - 59 giving five divisions (see Fig. 53). These divisions were such that small changes in potential did not alter the general balance of the map when Runs 2 and 3 were attempted. Examination of the SYMVU output showed large areas of *mediocrity* in terms of potential values. The upper range (50 - 59) shows above average values transitional to high values; the lower range (35 - 49) covers the relatively uniform values which cover 40 per cent of the study area.

RESULTS

Figure 53, the map from Run 1, shows a ridge of high potential, closely associated with the accessible, highly attractive Dee valley area with many wooded tributaries, and a dense road network. A high value band to the south is associated with the Strachan -

Fettercairn road, one of the few to cross the uplands, in the west of the county. The North Esk valley on the Angus border, which includes one of the two areas of parkland in the county, also produces high scores.

Three areas of low potential can be distinguished. Those on the western and southern boundary are attributable to low accessibility scores and widespread zero scores for Index 2 (accessibility) allied to low attractiveness other than height differential. The second low potential area lies south of Stonehaven in the south east part of the Howe of the Mearns. The area has a dense road network but is virtually unattractive. Surprisingly, the final low potential area is the coast. This is a result of two factors:

i) the coastline is rocky and thus on the basis of the coastal matrix (p.28 of CCP-71 - 1974) it achieves a series of low scores (rarely more than 50 out of a possible 300) for coastal Index 3; this would suggest a revision of the scoring system;

ii) the low coastal scores also demonstrate the grid size sensitivity of the scoring system; if, for example, the square only has 20 per cent of its surface occupied by land, this automatically reduces the proportion of, say, deciduous woodland that can be scored for the square.

The final point to note is that widespread areas are of the lower-middle values range where the countryside is uninteresting or inaccessible and where *recreation use is incidental, and in that sense more typical of Britain's countryside in recreational terms.* (Patmore, 1970).

In Run 2, the high potential areas are intensified when access weightings for objectives are altered to 90 and attractiveness weightings reduced to 70. The low scores for the Howe of the Mearns are upgraded to lower middle scores as a response to the denser road network. The western and central parts of the county, where the network is less dense, show little change. In Run 3 the high scoring ridge is less intense, whilst the relatively unattractive Howe emerges as a strongly low potential zone.

It would appear that the Potential Surface is thus relatively stable within the limits tested in Runs 2 and 3, although further research might be undertaken to see if adjustment of the objective weightings significantly raised or lowered all potential values in the same direction, and, if so, to what extent. A number of problems have yet to be resolved.

1. The simple gravity model has several obvious weaknesses - population, for example, does not occur at point sources within parishes. Urban and rural

populations are considered to have an equal chance of participating in informal recreation which is, perhaps, unrealistic. The rate of distance decay needs to be derived empirically for the area from a full transportation study but this is obviously an expensive undertaking.

2. Index 3 has some important anomalies. The coastal matrix, as mentioned earlier, seems to need refinement in terms of scoring to avoid unrealistic low scores which reflect the matrix's preference for sandy beaches. The inherent attractiveness of any coastal environment cannot be denied, and a simpler scoring system is outlined in Table 3.

The height differential index, based on the Lanark study by Duffield and Owen (1970) also appears to require adjustment as some hills rise to 2,500 ft. in the Kincardine area. The scoring system for this attraction should perhaps be upgraded to correspond to woodland. Under the present system, all grid squares are scored and all squares receive a minimum value of at least 5. This, in itself, is not important in Index 3, but it compounds itself in the non-zero element in the computation of Index 4. Refinements suggest themselves but will not be considered here. Under attractiveness one might also add garden centres, nature trails, even perhaps pubs?

3. The objective weightings have only been scored by what might be described as a *middle class, ecologically aware* population sample. Public participation in this scoring and also perhaps in the Index 3 scores might produce a different result. Certainly the wide range of scores and the high standard deviation obtained from the 136 St. Andrews undergraduates indicates widely differing and frequently held opinions.

In spite of these difficulties, however, the analysis has been shown to have a number of features which are of benefit to the planner.

1. The casual observer cannot grade the areas of lesser attractiveness in a successful manner, even though he could pick out an attractive area such as Deeside.

Table 3 : Revised Coastal Scoring System

Grade 1 Coast (greater than 75% in sand and/or shingle)	=	150 points
Grade 1 Coast (25 - 75% of coast in sand or shingle)	=	125 points
Grade 3 Coast (1 - 25% of coast in sand and/or shingle)	=	100 points
Grade 4 Coast (no sand or shingle)	=	90 points

2. A consistent and logical disciplined approach can be applied throughout the study area.

3. Surfaces for all rural land use - forestry, agriculture etc might be constructed concurrently and recreational facilities blended around these primary uses, by cutting out potential recreation areas with a high degree of conflict between recreation and other uses. The remaining squares, excluding those with low scores, might then be incorporated into the regional structure plan and allow high potential areas to be suitably designated.

4. The technique can be used as a predictive tool for future situations by including new roads, future population projections etc in a potential surface assessment. It is, therefore, of considerable value for the structure planner.

Discussion

R. DONNISON asked *in the work undertaken in South Wales could you give some estimate of how long the exercise took and how much it cost? Furthermore, what are the basic data requirements for this sort of exercise?*

In reply, E.C. HITCHINGS said that the *development of the technique took place over two years and was very expensive in terms of professional staff time. I would not, with hindsight, advise Planning Departments to take on this type of exercise which I feel is best left to academic institutions.*

The cost of actually using the programs and preparing data is comparatively small. I estimate about £100 per 1,000 km squares for staff time in data preparation, but this assumes a good data base and no field work whatsoever. The data requirements are detailed in the Countryside Commission published report 'Planning for Informal Recreation at the Sub-Regional Scale'. Computer costs might be in the region of £100 - £200 but this depends entirely on the number of program runs undertaken.

Following on, A. THORBURN stated that in *the work that I have been concerned with on Potential Surface Analysis, the aspect that has fascinated me most has been the problems of creating alternative weighting systems. Subjectivity is a real problem and the question of landscape potential is particularly difficult.* He wondered *whether TED HITCHINGS would like to comment on these points with reference to his work in South Wales.*

E.C. HITCHINGS agreed *that the subjectivity of weighting systems and of calibration is a real problem, but at least the adoption and discussion of such systems does bring subjective judgment out into the open. Perhaps the main value of this approach is the way in which the results force planners to examine their subjective judgments. There are also mathematical problems in the relationships between*

index scores which I accept have not been satisfactorily resolved.

On the question of landscape evaluation, I take an entirely different view. It seems to me that it is not possible to evaluate landscape by a mathematical analysis of its component parts, and therefore I favour a direct subjective judgment in the field by as many observers as practical.

Session 6
Appraisal and Prospects

Chairman J.T.Coppock

S.M. Barrett

The conference was entitled Information Systems for Recreation Planning and two systems, TRIP and CRESS have been discussed. I am going to confine my comments to a brief look at these systems in the wider context of information systems for management.

First of all, what is an information system, and what is it supposed to be for? My definition of an information system is a data base or integrated collection of data, plus procedures for collecting, storing, updating and retrieving data to provide information for management. An information system should not be regarded as an end in itself, but as a tool for management. All levels of management decision - whether day to day transactions or large scale forward planning - use information, thus the provision and maintenance of reliable and up to date information should be regarded as an integral part of the management process. At the same time this does not necessarily imply putting everything on to a computer and a manual system that delivers the goods is more use than a computer system that does not.

There is still, however, a tendency to regard information systems as something separate that only the *computer people* can understand. This kind of myth can only be dispelled if computer-based systems are developed in reponse to a definite management need and in such a way that they are simple to use for retrieving data.

Turning now to TRIP and CRESS, both represent systems for providing information and both, I think, illustrate my last point in that each has been developed for a particular purpose, and both are designed to be simple to use. Some of today's discussion seemed to be trying to compare the two to see which is *best*. However, the two systems are designed to serve very different purposes, and can be regarded as complementary rather than competing. I do not intend to compare the two, but take some points

of difference to illustrate alternative approaches to system design.

TRIP is basically a software system for the handling and retrieval of data, with emphasis on spatial analysis and presentation in map form. It is aimed at bringing together and presenting a variety of factors of significance in assessing the constraints and opportunities for recreation planning at a national scale. It therefore depends on having a comprehensive inventory of descriptive data for the area concerned, albeit at a highly aggregated level, on which to operate. CRESS, by contrast, is designed to monitor the use of certain areas for informal recreation and is a system for collecting, updating and presenting very specific information about individual sites. The data base is therefore selective and disaggregated; the items of data being chosen as significant indications of levels of use for management purposes.

Perhaps three points are worth highlighting from these contrasts, relating to data base design. First, the comprehensiveness of data collected should relate to the purpose of the system. Data collection is an expensive process, and there is little point in amassing a data bank that is not used. Second and linked to the first point, the level of data aggregation must be geared to the kind of use to which data will be put. Ideally, data should be collected and stored in disaggregate form so as to give greatest flexibility in processing. However, again with resources in mind, if the system is purely for large scale analysis then data aggregate will be adequate for this level of operation. Third, and perhaps most important of the three, is the question of updating. Very little has been said at the conference about this aspect of information systems. The time and effort put into the development of computer programs to analyse and present information will be wasted if the data base on which these programs operate gets out of date. Thus when considering the development of an information system equal thought should be given to how the data will be maintained. On the one hand the use of a system may be constrained by availability of data, e.g., if data are only available annually, the system cannot be used for monthly monitoring purposes. On the other hand there is no point in spending a lot of money on continuous field surveys, if a 2 or 3 year update is adequate for the purposes for which the system is required. The main *message* from all this is to spend enough time thinking about who and what the system is for and how it will be maintained over time before either starting to collect data or designing procedures and programs to handle it.

Finally a point about recreation data in a wider context. Recreation planning and management is not going on in a vacuum and there may be opportunities for (and benefits from) integrating the development of information systems with other management information needs. This does not necessarily mean going for an authority-wide management information system, but in the first instance avoiding duplication of effort and making sure that the definitions, coding structures and procedures adopted are compatible with other systems so as to facilitate integration. This point is equally valid whether a manual or computer-based system is being considered. As I said earlier, these points are not intended to convey criticism or comparison of TRIP and CRESS. Each has been developed for a particular purpose - and these purposes are complementary. TRIP at present operates at a national level, but a similar facility could be developed at county level to help in planning the use of recreation resources, coupled with the CRESS approach to monitor the supply and use of individual sites.

The Conference clearly identified the value and need for the collection of data for recreation planning at all levels. The implementation of informal countryside facilities has progressed, at least in part, along opportunist lines and whilst this may be acceptable in the initial stages of provision, further expansion by an authority demands a more measured approach. There is increasing pressure on local authorities to restrict expenditure, particularly in the field of recreation, and yet there is considerable resistance to developing systems which cost little and which would provide a basis for the optimum placement of capital and revenue resources.

The CRESS system developed by Cheshire County Council and the Countryside Commission illustrates very well how a monitoring exercise can be developed by the user and can be progressively expanded to increase its scope as requirements and resources allow. It does not call for sophisticated techniques or operatives and yet is capable of forming the foundation for long term development. It is felt that if authorities could be persuaded to get over the initial hurdle and start with the installation of a car counter system, then the fairly immediate benefits in monitoring usage and distribution levels would encourage them to go further. The advantages of positive information in aiding planning, design and management have been discussed and even on a limited scale would help to make the rather imprecise science of recreation development better understood.

The TRIP system represents an altogether larger and more complex concept, necessitating the use of computer techniques and highly specialised inputs. It is difficult to see it being initiated at local authority level although there is great potential on a client basis. The potential for planning at regional and strategic level however, is immense and its scope in providing data for a wide range of sponsors has been described.

The two systems can be seen to be complementary rather than competitive and the papers presented show the positive strides that have been made by the organisations represented. Over recent years, most recreationists have had to accommodate a bombardment of countryside areas, by surveys, questionnaires and research projects from a variety of sources and perhaps can be excused if they have become somewhat inured to the many claimed benefits accruing. It is hoped that the studies presented to Conference will convince them of the considerable advantages to be gained from active participation in an objective information system.

A.Thorburn

In a time of economic crisis there is no money for recreation at all, as we are finding at the moment to our cost. There will not be any money - as far as I can see - if we do not identify correctly the problem and need that recreation is trying to meet. I would strongly stress the need to monitor what is going on so that we have a complete and logical knowledge of the recreation environment. We can then identify the problem and present it to our elected masters, persuade them that they should do something about it and, hopefully, get us to advise them in detail what to do. The test that I think we need to consider is whether or not the information handling systems that have been discussed help us to that more logical and complete understanding. I have some doubts about this.

My first doubt is whether we manage to identify the question correctly. I understand that the Japanese when they are studying problems spend all their time trying to identify the question, not trying to find a solution to it. We in England spend all our time trying to find a solution without adequately identifying the question and I think again and again we have got onto the wrong question. The terms of reference of all the studies were wrong, in my view.

My second doubt is the assumption that kept coming out that information is mutual and that as soon as you have collected and categorised information it is no longer mutual. It is biased by the decisions made in the categorisation and it seems to me that much of the information collected in these studies is so biased as to be suspect in the eyes of the users.

One point I would like particularly to express doubts over is the question of what is the hypothesis that we are trying to examine. If there is no hypothesis, I doubt whether there ought to be study. I think we really are using information in order to examine a hypothesis of whether certain arrangements of this or that are going to be beneficial if they are continued

with and if they are added to by means of planning action. Now, that hypothesis has not been proven. It has not been proven that we ought to plan recreation at all.

This links with my next doubt which is the tendency for a rather deterministic approach to creep in; a feeling that people ought to like certain sorts of landscape because they have liked them in the past and it therefore follows automatically that whenever that sort of landscape is found, it will be liked. My understanding of the evolution of the British countryside is that there is a lot of randomness in it and a lot of things have happened - more as a result of a particular folly or quirk of individuals and not because everything ran together logically. So, I am afraid, the deterministic view is not sufficiently attacked.

The next doubt I have is whether we have really got a closed system of countryside recreation at all or whether it is not an integral part of an urban and rural interaction system and therefore we ought not to have a countryside recreation advisory group, nor countryside recreation identified as a separate activity at all. What is more, is there a distinction between formal and informal recreation or are those two pretty mixed up also? I suspect we have got a bit of a system and we are calling it a whole system with the result that we are bound to get the answer wrong.

I also doubt whether people are being realistic about costs of all their work. The figures we have been told about seem to me to discount staff costs. Staff costs in the Planning Department of a professional man are at the moment about £35 per man-day.

Six man-months comes to something in the order of £3,500 without any extras. Dare I say there is a lack of political realism about some of these things. I have the feeling that our political masters say that what matters is whether there is any opposition to a particular scheme, whether I can get 51% of my Council voting for it or against it, and that this may be done in many other ways than by putting statistics together.

My last doubt concerns the assumption that a planning strategy is desirable. I am not absolutely convinced either way about it, but I think that if you have a planning strategy and no power to implement it by force over private ownership, and that is really the pattern of recreation, should you have the strategy at all? Something in the nature of a check-list against which you consider individual schemes as they come up might work perfectly well without the spatial strategy in the normal sense that has been envisaged in structure plans and others.

That brings me to the end of my doubts. Could I now welcome Brian Duffield's point that in planning and recreational authorities, people with understanding of the way all these systems work and the complexities of analysing information are better than people without that understanding and that a large part of this work is useful in terms of training people to understand things better and perhaps that is a plus you can chalk up to the value of the work here, despite my cautions.

I think there is a need for the Countryside Commission or someone else to demonstrate that these studies are really needed and are not just desirable luxuries. Local authorities might feel that we ourselves should better formulate our research needs rather than let the research bodies work out what they think we ought to need and then try to persuade us that we ought to need it.

M. J. Wilkinson

It is difficult speaking at the end of a two-day conference to say something that already has not been covered, but as one whose name falls at the latter end of the telephone directory, who is quite used to waiting after all others to speak, or to be interviewed or to be paid in the Services, I am not unfamiliar with this problem.

Accordingly, I would prefer to place my emphasis on the latter part of the Conference title, that is, *Recreational Planning* rather than *Information Systems* because I feel that the end product of the exercise has not been fully covered in this Conference.

My own background has dealt with recreation matters in Lanark County including the Lanark Recreation Study with Edinburgh University, the Clyde walkway proposals, the future of New Lanark as well as membership of the Scottish Joint Committee on Information Systems. In mentioning the Leisure + Countryside = study for Lanarkshire I can assure delegates who may be worried about the *academic* nature of Brian Duffield's and Mike Owen's work that their study was of real value to local planning authorities as a framework for future action and that the only constraints which prevented full implementation of the proposals were staff shortages and the impending local government reform.

With regard to development potential analysis mentioned yesterday, this was used in the West Central Scotland Plan and I would agree with Brian Parnell that rather than try to assume attraction points such as high quality scenery and the attraction of expensive hotels for Scandinavian visitors which can prove fallacious - I met a Scandinavian couple visiting archaeological sites on a British Railways roundabout ticket and staying at bed and breakfast places in Orkney this summer - one should eliminate the impossible absolute

constraints, e.g., the impracticability of building houses above the 700 ft. contour.

In relation to Mr. Hitching's suggestion that public participation in the formulation of goals and objectives is inappropriate, this was done effectively in the West Central Scotland Plan and I believe it is a perfectly valid method and probably one of very few ways available of involving the public in exercising a degree of choice when planning at the regional scale. The value of development potential analysis is its discipline, its objectivity and its fairness and I am sure it is a tool that will improve over time as experience is gained in applying the weights.

Much recreation planning has been done or should be done by local authorities and it is sad that some inertia may now be lost through the turmoil of local government reform in Scotland, although this may not affect the activities of the Countryside Commission for Scotland, the Scottish Tourist Board and the National Trust for Scotland etc. Already it is clear from the emphasis on the Paterson report that leisure and recreation *is a very important sector in local government activity* and this has been recognised in the advertisements for jobs for new posts of Directors of Recreation and Leisure put out by region and district councils.

It is inevitable that conflicts will occur over the greater responsibilities between region and districts, but I hope that these differences can be resolved within a leisure plan which would be agreed by local authorities and implemented by both levels of local authority.

The key here is in the free flow of information between region and district authorities, government and other public bodies and private groups and herein lies the importance of an information system with free access to all parties to minimise suspicion between one organisation and another and to act as a stimulus for action.

Discussion

The last discussion period was opened up by D.M. EAGER who asked A. THORBURN *three questions about a point which is probably beginning to exercise a good many people. This is the need to compare the merits of recreation facilities, whether it is a picnic site, a play space, a sports hall or a footpath. Could we have some suggestions on how to achieve this comparative evaluation? Who should do this - the counties or the districts? What part do structure, local or other plans have to play in this work?*

In reply, A. THORBURN believed that ultimately *the choice between different facilities is one for elected Members to make on the basis of their own preferences and working within the total budget available. If they choose schemes which the public do not wish to have, they will probably find that their total budget is not increased as rapidly as they would wish or is even reduced. I think that we can assist Members in making this decision by assessing the costs, the quantity of usage, the type of usage in relation to each sector of the population and matters of this kind, and setting them out clearly. Perhaps we have not done this enough.*

The provision of facilities being a joint function between the county and district, the evaluation made by Members of the priorities should also be discussed between the two levels and, as far as possible, agreed. In many cases it would be possible to divide responsibility so that the county provides those facilities used by people from more than one district or which are so large that they present a major financial burden on a particular district. I think we have to shake out a number of prejudices in our county/district relationships.

At this stage I am still not quite clear how far structure plans should delve into recreational policy and how far they are the responsibility of the spending committee's programme together with local plans.

We are hoping to work all this up over the next eighteen months and sort out their relationships but in principle I think that the distinction between structure and local planning is not absolute. One should really only include in structure plans such policies as clearly affect two or more districts and where there is a clear and demonstrable need that policy guidance is necessary.

We should give as large a measure of freedom for public or private initiative as possible and not seek a mechanistic control of our total environment.

M. BLACKSELL followed on by introducing points relating to the costs associated with information systems and problems of data collection. He pointed out to the Conference that the *costs of setting up a system, such as TRIP and CRESS, by a local authority or other body must be set against the costs already incurred for data collection, analysis and storage. There is good reason to believe that the introduction of such a system may in fact produce considerable savings, especially in the long-term. A related factor was that throughout the conference there has tended to be too much emphasis on the workings of the systems themselves and too little on the data to be fed into them.* He hoped that in a future TRIP manual there would be guidance given to users on methods of collection and storage of data.

M.L. OWEN assured the conference that in the second publication currently being produced by the Tourism & Recreation Research Unit on the TRIP system which had been referred to earlier, problems of data collection and storage would be comprehensively covered.

Adding strength to M. BLACKSELL's last point, S.M. BARRETT stressed that data collection on recreation topics required co-ordination. There was clearly a danger that researchers and organisations concerned with their own individual projects might fail to appreciate the relevance for other investigations of the information they gathered. It had become apparent that a number of different bodies were collecting data and that it would be wise to avoid duplication and to ensure compatibility.

Furthermore, J. ZETTER added that *information systems need to be related to a defined need for data and information. If the issues in making decisions about resource allocation in the recreation sector are non-spatial in the majority of cases, then information systems need to have a non-spatial basis.*

It was C. GORDON's view that there *is a need to produce a system which will provide an ability to test proposals and predict the results of decisions or*

possible decisions. We assume that certain lines of development (trends) have to be extrapolated as a basis for future plans. We must have a system which provides us with a tool to test "judgement" (to follow Michael Dower's term) and creative planning proposals which might not be apparent from the extrapolation of current trends; it should be an aid to decision making. Perhaps TRIP comes closest to fulfilling this task. Is this, in fact, the case?

J.T. COPPOCK thanked C. GORDON for the remarks that he had made about the system and reiterated that TRRU had accepted during the design phase of the system that it would be necessary to include facilities for examining the future implications of alternative strategies. The system's basis, consisting of the collection of individual items of data for squares of a grid, resulted in the ability to alter these individual items at will. Thus it would be possible to edit single pieces of information already stored, either on the basis of actual change that had taken place, or to undertake experiments assuming certain changes that may occur in the future.

V.T.C. MIDDLETON continued the discussion and felt that there was *a danger in discussing information systems, of assuming that at some point reliable gravity models for predicting recreation flows will emerge as a guide for planners. If such an assumption were even realistic, events in the 1970s - energy crises, economic problems, inflation effects, substitution possibilities in recreation provision - all these factors make mathematical modelling exercises impractical at this time and for the foreseeable future.*

I would suggest therefore two ways to improve the utility of information systems as tools for decision-makers. First, without of course ignoring the spatial analysis of resources, I would suggest that more effort is put into the continuous monitoring of what actually happens in terms of consumer usage patterns to discover the reality of demand trends over time. Secondly, that those who monitor trends should actually note all events, for example, of a major economic significance, or the opening of new motorways, as they occur, so that those who subsequently seek to interpret demand trends have available the essential facts influencing the recreational patterns. This may be a mundane point, but its significance in making sense of historical trends should not be overlooked.

At this point M. DOWER re-emphasised his hope that the CRRAG agencies would give some clear and positive indication of their views on the future of the TRIP system. This system appeared to have a unique capability to store, and to allow the highly flexible

and integrated handling of great masses of data which might otherwise be substantially unused after the original purpose which prompted their collection had been served.

As a representative of the CRRAG agency T. HUXLEY felt that one of the values of the conference has been to listen to others commenting on what some of us have been investing in. On the whole, I have felt that criticisms were constructive. Personally, I agree with M. DOWER about the need for "a leap of faith"; moreover, we must put in more resources to improve the data so that evaluation in another five years can be more reliable.

Bringing the discussion from the floor to a close, R. CARTER said that we have heard criticisms during this conference but these have mostly related to the uses of the systems which have been illustrated, rather than the systems themselves. I feel that it is easy to criticise uses which are not immediately relevant to one's own requirements; for example, some of the exercises carried out for the Scottish Tourist Board, and illustrated by BRIAN DUFFIELD, may not be immediately relevant to local authority planners, but they are of relevance to the Board's own operations.

In considering the points raised at this Conference, it may be useful to pose to potential users, three questions. First, are we interested in planning? Despite the doubts raised by ANDREW THORBURN, I feel that most of us here would answer in the affirmative.

Secondly, if we are, do we wish to do it on the basis of information or intuition? The implication of some of the points made is that we should work on the basis of intuition. This may be realistic where there exist experienced people with a comprehensive understanding of the problem in question, but in general, it is unlikely to satisfy those in Central and Local Government responsible for planning and investment decisions.

Thirdly, if we are going to obtain information, are we going to organise it into a system? There is little doubt in my mind that any organisation collecting information in a significant way will find that a system of some type will help it to gain maximum value from the information. A system such as TRIP, which can operate with any level of sophistication (depending on the requirements, skill and imagination of the user) would therefore seem to have considerable relevance to planning at both central and local government level.

Summary
J.T. Coppock

It is difficult to summarise a discussion of this kind, especially when many diverse points of view have been advanced and where I have a vested interest in one aspect of the conference, the TRIP system. On one matter there is clearly agreement, the total inadequacy of information on recreation in the countryside, and this, I believe, reflects the relatively recent occurrence of MICHAEL DOWER's *Fourth Wave*, the extreme diversity of recreation in the countryside, the diffuseness of many kinds of recreation information and the low place of recreation in the thinking of most politicians and administrators. One has only to contrast the resources devoted to collecting data on, say, road traffic with those provided for recreational studies, or the place of, say housing and education in structure planning with that of recreation to appreciate this point. There is less agreement among recreational planners on the need for adequate information, which seems to spring mainly from doubts about the use to which it might be put; but most participants would, I believe, agree that there is an urgent need to improve the situation, for planning and policy-making cannot adequately be undertaken without a satisfactory information base.

The second issue that emerges is the discordance between the realities of outdoor recreation and the framework of local government. Outdoor recreationists recognise no administrative boundaries, yet local government is reponsible for both public provision and, in so far as it requires facilities and planning consent, private provision. The recent and impending reforms of local government have improved the situation, particularly in Scotland, where the city-region concept has been adopted; but boundaries conceived for quite different purposes still will not fit the patterns of journeys to play, and local authorities will inevitably be providing facilities for others than their own electors. Many aspects of recreational policy and planning need to be conceived on a regional rather than a local scale.

Although academics often have an interest in information for its own sake, that collected by public agencies ought to serve explicit public purposes - though it would be interesting to discover how far the vast quantities of data currently collected by official agencies on many topics are in fact used, for there is a large element of historical inertia about data gathering. Information about recreation is required for a variety of purposes; as a basis for policy making, as an aid to planning, for the monitoring of plans and policies and for the management of specific recreational resources. It is essential that those who are to collect information should have a clear idea of the questions which those who need information are to ask of it, of the scale at which it is required, and the degree of urgency with which it is needed. There is no point in collecting information which is not in the form required for answering these questions, which is at too general or too detailed a level, or which is available too late - we are all too aware of the deficiencies of the population census in this last respect.

If information on outdoor recreation is to be collected some mechanism must be established for doing so. Until recently, such information on outdoor recreation has been obtained from ad hoc surveys, but monitoring, planning and management require a continuing supply of comparable information. Central government could collect information on recreation, as it does on population, agricultural production and the like; but central government requires such information only on a broad strategic scale. There is no executive arm of government with the necessary staff and resources, and there is, unlike the household or the farm, no readily identifiable unit from which information can be obtained. While central government agencies have a part to play (and the increasing coverage of leisure in the government's household survey is a welcome development) the main burden must fall on local government. Data collection is costly, a point which has repeatedly been made in discussion; but it is also important to consider not only the cost of collecting information, but also the cost of not collecting it, in for example, the build up of problems which require more expensive solutions than if they had been perceived earlier, dissatisfaction over the quality of recreational experience which results from congestion and overcrowding, and the construction of white elephants which do not serve the needs they are supposed to meet. It may also be possible to obtain more information from ongoing administrative or other processes, for example, by asking farmers about recreational use as part of the agricultural census or by increasing the recreational component in standard traffic censuses. What is desirable is that the collection of recreational data should be part of the routine

processes of local government, ideally using some existing administrative procedure, such as the preparation of rating lists.

As important as the cost of data collection (and closely related to it) is the quality of information, particularly its reliability. Much of the information already available is unsatisfactory in that the degree and the nature of error are unknown. Here the scale at which information is required is important; a properly constructed sample may provide information of good quality within an acceptable level of error if it is required at a high degree of aggregation for policy making, but not if it is needed in detail for planning purposes. This example underlines one of the difficulties of multi-purpose information systems in which it is necessary to hold information at the lowest level of aggregation possible so that it can serve a variety of needs at different scales.

There is thus an additional reason for minimum aggregation and pre-classification of data, to retain maximum flexibility, though we must recognise that some categories of data, particularly those relating to financial matters, can be used only in aggregated form for reasons of confidentiality. The question of weighting of data has been mentioned several times in the context of schemes of classification, for example, of scenic quality or recreational capability, and it is clear that we know too little at present to give meaningful weights to the different categories of data. If data are retained in disaggregated form this deficiency can be remedied later (especially in relation to resource data). If, on the other hand, data are classified at the point of collection, the possibility of re-interpreting them at a later stage is lost.

This potential flexibility is one of the advantages of a computer-based system. The other is speed, particularly in handling large quantities of data. There is little doubt that both central and local government make inadequate use of the information they currently possess simply because it cannot be got in the right form at the right time. Perhaps policy-making and planning at the highest levels can be undertaken with matchsticks and on the backs of envelopes, but this is often done because the necessary information, though available, cannot be assembled. Of course, there is nothing magic about computer systems, which can only do what can be done manually (at least in theory). Admittedly, there are costs in preparing and storing data and in obtaining the information from the system - though we often ignore those which are involved in traditional systems because they are not explicit, as when a highly skilled planner rummages through map chests in the search for some useful information which he vaguely recalls. There are also

barriers of fear or incomprehension to be overcome, though evidence of computing in schools and in organisations where information systems serve routine purposes, as in airline booking systems, shows how easy use can become. Perhaps universities can help in this respect through access to their generally much greater computing resources and by providing opportunities both to experiment and to gain familiarity through post-experience courses.

Systems and data are both necessary. There is little value in sophisticated systems if the data they contain are unreliable and of poor quality; there is equally little value in data of high quality if they cannot be made available when required. In making an evaluation of computer-based systems there are two other considerations which should be borne in mind. First, their construction requires that every assumption and procedure must be made explicit; we are often not fully aware of those we adapt in intuitive assessments. Secondly, the flexibility of computer systems means that a wide range of policy options and their likely consequences can be examined before decisions are taken.

We are still at a very early stage in both data collection and the construction and use of individual systems. We need the Countryside Commission's evaluation of its information project and the testing of this project by other authorities; we need to monitor the sponsors' experience of the use of TRIP for operational purposes; and we need to consider experience elsewhere, as in the Canadian Geographic Information System. Above all, we need continuing discussion, not only among officials, but also with the elected members who must vote the necessary funds but who stand to benefit from better-founded plans and policies.

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