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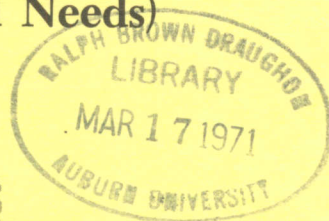
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Participation in Outdoor Recreation in Alabama

(A Guide for Establishing Recreational Needs)



Agricultural Experiment Station
of Auburn University

E. V. Smith, Director

Auburn, Alabama

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FOREWORD

"Participation in Outdoor Recreation ... A Guide for Establishing Recreation Needs" is the first of two volumes. This volume establishes a method for deriving recreational demand data for an area, and by use of conversion standards, establishes recreational needs.

The second volume "A Computer Program for Summarizing Outdoor Recreation Supply" indicates a format for supply data collection and summarization. Use of the methodology presented in both volumes will enable a planning agency to determine unmet recreational needs. Additional information regarding these volumes can be obtained by contacting:

Outdoor Recreation Demand-Supply-Needs

Department of Agricultural Economics and Rural Sociology

Auburn University

Auburn, Alabama 36830

PARTICIPATION IN OUTDOOR RECREATION IN ALABAMA-
A GUIDE FOR ESTABLISHING RECREATIONAL NEEDS*

E. W. McCoy^{1/}

Introduction

With the establishment of official planning and development districts in Alabama and increased interest in recreational planning there is a need for measurements of participation in various outdoor recreation activities. Ideally each planner should conduct a participation survey within his geographic area of interest before attempting to plan recreational developments. Such studies would yield the best estimates of local participation and reveal any particular needs that are unique for the local area. Often due to time or money constraints, it is not feasible to conduct such a study. In those instances the information presented in this report can be used to estimate local participation for one or several adjoining areas.

Methodology

All values presented in this report were derived for use in the demand sector of the Alabama Statewide Comprehensive Outdoor Recreation Plan.^{2/} The methodology of projection of demand is presented in Appendix

*Work on this study was conducted under project Alabama 1-037, Comprehensive State Outdoor Recreation Plan, J. H. Blackstone, Project leader. Appreciation is expressed to the many individuals who contributed to the demand portion of the study. Special appreciation is expressed to Mrs. B. T. Kenney who assisted with all phases of this study.

^{1/}Assistant Professor, Department of Agricultural Economics and Rural Sociology.

^{2/}Alabama Department of Conservation; 1970 Alabama Statewide Comprehensive Outdoor Recreation Plan, Alabama Department of Conservation, Montgomery, Alabama (3 volumes).

A. If the local area has sufficient data available, demand projections can be derived using the method suggested in this report. The primary assumption of the projection in this study is that as individuals move to different age, income, or other socioeconomic levels they will begin to assume the recreation characteristics of a different level.

The State was divided into four planning regions for purposes of analysis, Figure 1. This subdivision allows a more precise estimate of participation for Subareas within the regions. Thus a county in Region 1 will have a more accurate estimate of participation by using the region parameters than by using state-wide estimates.

Participation data were derived from a sample of 1,346 individuals within the State. The sample was stratified by the four planning regions such that each regional sample was proportionate to the regional population. Additional stratifications were made to select for urban and rural proportions of the population. Additional secondary information was used to supplement the sample.

Participation in outdoor recreation can be defined as the kind and amount of outdoor recreation activities individuals presently engage in given the present conditions of income, age, other socioeconomic conditions and available supply. Demand, however, is the kind and amount of outdoor recreation persons desire to participate in under given socioeconomic conditions without respect to available supply. Participation is "expressed demand." It is of little value to derive demand estimates if there is no likelihood that they can be "expressed." Demand in this report refers to projected participation with the assumption that at least the same supply-demand relationship will exist in future time periods. In some areas this assumption is untenable. It may be unreasonable to assume the water surface or hunting areas can be increased

appreciably in some areas. In these areas modification of the projections must be made.

Data in this report are presented in two forms; the number of persons participating in various outdoor recreation activities at least one time per year and the average number of activity days of participation per year for each person participating. An activity occasion is defined as participation in a recreation activity for at least 30 minutes during a day. One individual can participate in several activity occasions of outdoor recreation during one day. The outdoor recreation population, i.e., persons 12 years of age or older, is used as the base. It was explicitly recognized that individuals under 12 engage in many recreation activities and are especially active participants in swimming, however it was assumed that these individuals are not direct recreation decision makers. Census or other data can be used to determine the proportion of the population within this age group. The State estimates for the proportion of the population 12 years of age and older are:

Percentage of Population 12 Years of Age or Older in Alabama

| <u>Year</u> | <u>Per Cent</u> |
|-------------|-----------------|
| 1967 | 72.3 |
| 1980 | 72.4 |
| 2000 | 76.4 |

If it is more convenient to use the total population as a base then the percentage participation and activity occasions data can be multiplied by the percentage of the population over 12. This retains the assumption of no participation by persons less than 12 years of age. A second alternative would be to multiply the total population by the percentage participation and user days. This assumes that persons under 12 participate at the same rate as persons over 12. None of the alternatives are entirely

satisfactory. An example of the results using each method will be presented in this report.

Determining Area Participation

The percentage of the resident population participating in 20 selected outdoor recreation activities is presented in Table 1. All of the percentage participation figures have been adjusted to the proportion of the population over 12. Data in Table 1 are divided by regions of the State, Figure 1. To determine participation by the local resident population within an area requires three steps.

Step 1. Determine the region where the local area is located. Pike

County in Region 4 will be used as an example.

Step 2. Determine the population of the county or area. Census estimates or other sources can be used to derive population figures. Pike County was estimated to have the following population:^{3/}

| <u>Year</u> | <u>Population</u> |
|-------------|-------------------|
| 1967 | 25,300 |
| 1980 | 26,100 |
| 2000 | 28,400 |

Step 3. Determine the participation by the local area outdoor recreation population. Picnicking is used for an example; however, the outdoor recreation population derived by following the initial three steps is used for all 20 recreational activities. The picnicking participation percentages are listed in Table 1.

^{3/} Population projections based on logarithmic extension of trend lines from census years adjusted for Census Bureau projections of total State population.

Table 1. Present and Projected Percentage of the Population Participating in Selected Outdoor Recreation Activities by Regions of the State, 1967, 1980, and 2000.

| Activity | Region | | | | | | | | | | | |
|-------------------------------|--------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | | | 2 | | | 3 | | | 4 | | |
| | 1967 | 1980 | 2000 | 1967 | 1980 | 2000 | 1967 | 1980 | 2000 | 1967 | 1980 | 2000 |
| Picnicking | 44 | 50 | 54 | 44 | 50 | 58 | 36 | 43 | 45 | 35 | 43 | 47 |
| Driving for pleasure. | 35 | 35 | 34 | 35 | 35 | 37 | 35 | 35 | 34 | 35 | 35 | 35 |
| Fishing, all waters.. | 29 | 30 | 33 | 29 | 30 | 35 | 25 | 26 | 28 | 24 | 26 | 29 |
| Swimming..... | 26 | 31 | 31 | 26 | 31 | 34 | 29 | 35 | 35 | 29 | 35 | 36 |
| Bird watching..... | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Playing golf..... | 5 | 6 | 6 | 5 | 6 | 6 | 5 | 6 | 6 | 5 | 6 | 6 |
| Gardening..... | 24 | 22 | 19 | 24 | 22 | 20 | 24 | 22 | 18 | 24 | 22 | 19 |
| Walking for pleasure. | 22 | 22 | 21 | 22 | 22 | 23 | 22 | 22 | 21 | 22 | 22 | 22 |
| Sightseeing..... | 22 | 22 | 21 | 22 | 22 | 23 | 22 | 22 | 21 | 21 | 22 | 22 |
| Playing games..... | 17 | 17 | 17 | 17 | 17 | 18 | 17 | 17 | 17 | 17 | 17 | 17 |
| Boating..... | 14 | 19 | 21 | 14 | 18 | 23 | 12 | 16 | 19 | 12 | 16 | 19 |
| Viewing games..... | 36 | 37 | 36 | 37 | 37 | 38 | 37 | 37 | 36 | 36 | 37 | 37 |
| Bicycling..... | 9 | 10 | 10 | 9 | 10 | 10 | 7 | 8 | 8 | 7 | 8 | 8 |
| Water skiing..... | 6 | 8 | 9 | 6 | 8 | 10 | 5 | 6 | 8 | 4 | 6 | 8 |
| Nature walking..... | 8 | 8 | 8 | 8 | 8 | 8 | 5 | 6 | 5 | 5 | 6 | 6 |
| Horseback riding..... | 4 | 5 | 8 | 4 | 4 | 8 | 5 | 5 | 8 | 5 | 5 | 8 |
| Camping..... | 8 | 10 | 10 | 8 | 10 | 11 | 6 | 8 | 8 | 6 | 8 | 8 |
| Hiking..... | 12 | 12 | 10 | 12 | 13 | 11 | 4 | 5 | 4 | 5 | 5 | 4 |
| Hunting..... | 12 | 12 | 16 | 12 | 12 | 17 | 11 | 12 | 15 | 11 | 12 | 16 |
| Viewing outdoor exhibits..... | 30 | 30 | 29 | 30 | 30 | 31 | 30 | 30 | 29 | 30 | 30 | 30 |

| <u>Year</u> | <u>Percentage participation in picnicking by Region 4 residents</u> | | <u>Total population in Pike County</u> | | <u>Pike County picnicking population</u> |
|-------------|---|---|--|---|--|
| 1967 | 35 | x | 25,300 | = | 8,855 |
| 1980 | 43 | x | 26,100 | = | 11,223 |
| 2000 | 47 | x | 28,400 | = | 13,348 |

If the number of participants engaging in a recreational activity is sufficient, then the three step procedure outlined above will allow derivation of the participating population.

The procedure above delineates the number of persons who participate in an outdoor recreation activity. Such data would be useful in determining the number of people who might be interested in using some recreational development. In many instances it would be important to have some indication of total participation in various recreational activities within an area. Table 2 lists the average number of activity occasions by participants for each outdoor recreation activity by regions. To derive the number of activity occasions of a selected outdoor recreation activity by residents of an area the outdoor recreation population derived above is multiplied by the average number of activity occasions:

| <u>Year</u> | <u>Average activity occasions of picnicking by residents of Region 4</u> | | <u>Pike County picnicking population</u> | | <u>Total activity occasions of pic- nicking by Pike County residents</u> |
|-------------|--|---|--|---|--|
| 1967 | 14 | x | 8,855 | = | 123,970 |
| 1980 | 12 | x | 11,223 | = | 134,676 |
| 2000 | 12 | x | 13,348 | = | 160,176 |

The total activity occasions of picnicking indicates the number of persons who engage in the activity as well as the frequency of participation. The activity occasions indicate how many times the resident population will engage in picnicking without respect to where they will engage in the activity.

Table 2. Annual Per Person Present and Projected Activity Occasions of Participation in Selected Outdoor Recreation Activities by Regions of the State, 1967, 1980 and 2000

| Activity | Region | | | | | | | | | | | |
|----------------------------------|--------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | | | 2 | | | 3 | | | 4 | | |
| | 1967 | 1980 | 2000 | 1967 | 1980 | 2000 | 1967 | 1980 | 2000 | 1967 | 1980 | 2000 |
| Picnicking..... | 10 | 10 | 9 | 10 | 10 | 9 | 14 | 11 | 10 | 14 | 12 | 12 |
| Driving for pleasure... | 15 | 19 | 20 | 15 | 19 | 22 | 17 | 19 | 21 | 17 | 22 | 25 |
| Fishing, all waters... | 8 | 8 | 10 | 8 | 8 | 11 | 9 | 10 | 12 | 9 | 11 | 15 |
| Swimming..... | 24 | 28 | 36 | 24 | 28 | 40 | 23 | 25 | 34 | 23 | 28 | 30 |
| Bird watching..... | 5 | 5 | 6 | 5 | 5 | 7 | 5 | 5 | 6 | 5 | 6 | 8 |
| Playing golf..... | 26 | 33 | 61 | 26 | 33 | 64 | 28 | 33 | 62 | 27 | 36 | 71 |
| Gardening..... | 21 | 23 | 24 | 21 | 22 | 28 | 21 | 22 | 25 | 21 | 26 | 33 |
| Walking for pleasure.. | 24 | 29 | 35 | 24 | 28 | 39 | 24 | 28 | 37 | 24 | 32 | 45 |
| Sightseeing..... | 20 | 29 | 42 | 20 | 29 | 44 | 24 | 29 | 43 | 24 | 31 | 46 |
| Playing games..... | 31 | 43 | 45 | 31 | 42 | 64 | 33 | 42 | 60 | 33 | 47 | 55 |
| Boating..... | 15 | 18 | 22 | 16 | 18 | 24 | 20 | 20 | 26 | 20 | 23 | 30 |
| Viewing games..... | 5 | 6 | 8 | 5 | 6 | 8 | 6 | 6 | 8 | 6 | 7 | 10 |
| Bicycling..... | 37 | 37 | 42 | 37 | 37 | 45 | 48 | 44 | 51 | 48 | 49 | 60 |
| Water skiing..... | 19 | 23 | 30 | 20 | 23 | 32 | 26 | 28 | 37 | 25 | 31 | 44 |
| Nature Walking..... | 17 | 23 | 35 | 17 | 23 | 36 | 30 | 34 | 52 | 30 | 35 | 54 |
| Horseback riding..... | 20 | 23 | 20 | 19 | 26 | 21 | 20 | 22 | 18 | 20 | 24 | 21 |
| Camping..... | 12 | 18 | 28 | 12 | 17 | 28 | 19 | 22 | 35 | 19 | 23 | 37 |
| Hiking..... | 5 | 8 | 13 | 5 | 8 | 14 | 18 | 19 | 31 | 14 | 22 | 42 |
| Hunting..... | 12 | 16 | 16 | 12 | 16 | 16 | 31 | 40 | 41 | 31 | 41 | 41 |
| Viewing outdoor exhibits..... | 15 | 16 | 17 | 15 | 16 | 17 | 15 | 16 | 17 | 15 | 16 | 17 |

All of the participation by residents does not occur within the local area. Some of the activity occasions occur in other parts of the State and some occur out-of-state. The proportion of total activity occasions that occur within the State is listed in Table 3. To derive the number of activity occasions occurring within the State, the total activity occasions are multiplied by the proportion occurring within State:

| <u>Year</u> | <u>Total activity occasions of picnicking by Pike County residents</u> | | <u>Percentage of picnicking activity occasions by Region 4 residents occurring within State</u> | | <u>Total activity occasions of within State participation by Pike County residents</u> |
|-------------|--|---|---|---|--|
| 1967 | 123,970 | x | 47 | = | 58,266 |
| 1980 | 134,676 | x | 58 | = | 78,112 |
| 2000 | 160,176 | x | 66 | = | 105,716 |

The activity occasions of within State participation do not necessarily occur within the local area. Local participation is dependent on local supply conditions as well as socioeconomic conditions affecting local residents. If information is not available regarding local use patterns, then the within State participation can be used to approximate local use on the assumption that other areas of the State contribute approximately the same number of visitors to the local area as the local area contributes to other areas of the State.

In addition to local participation in the local area some consideration should be given to tourists recreating in the area. The estimated number of activity occasions by out-of-state visitors should be added to the net within area participation. If data are not available for estimating tourism to the area, then the total activity occasions should be used. Use of this figure would assume that total recreation out of the area is balanced by visitor recreation within the area.

While a complete system for estimating outdoor recreation for selected activities has been presented, it is not necessary to use all data

Table 3. Present and Projected Percentage of Within State Activity Occasions of Selected Outdoor Recreational Activities by Regions of the State, 1967, 1980 and 2000

| Activity | Region | | | | | | | | | | | |
|--------------------------|--------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | | | 2 | | | 3 | | | 4 | | |
| | 1967 | 1980 | 2000 | 1967 | 1980 | 2000 | 1967 | 1980 | 2000 | 1967 | 1980 | 2000 |
| Picnicking..... | 55 | 54 | 59 | 54 | 54 | 62 | 47 | 54 | 60 | 47 | 58 | 66 |
| Driving for pleasure... | 83 | 78 | 78 | 83 | 78 | 80 | 79 | 78 | 79 | 79 | 81 | 83 |
| Fishing, all waters.... | 98 | 90 | 78 | 98 | 90 | 79 | 97 | 90 | 78 | 97 | 91 | 82 |
| Swimming..... | 74 | 69 | 63 | 74 | 68 | 66 | 68 | 68 | 64 | 68 | 72 | 61 |
| Bird watching..... | 85 | 84 | 78 | 84 | 84 | 80 | 82 | 84 | 79 | 84 | 86 | 83 |
| Playing golf..... | 82 | 66 | 48 | 82 | 65 | 51 | 77 | 65 | 49 | 77 | 68 | 55 |
| Gardening..... | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Walking for pleasure... | 83 | 80 | 74 | 83 | 80 | 76 | 83 | 79 | 75 | 84 | 82 | 79 |
| Sightseeing..... | 41 | 33 | 26 | 41 | 32 | 28 | 34 | 32 | 27 | 34 | 36 | 32 |
| Playing games..... | 81 | 76 | 62 | 80 | 76 | 73 | 76 | 76 | 72 | 76 | 79 | 69 |
| Boating..... | 69 | 63 | 52 | 69 | 62 | 55 | 63 | 62 | 53 | 63 | 65 | 59 |
| Viewing games..... | 93 | 90 | 79 | 93 | 90 | 81 | 91 | 90 | 80 | 91 | 91 | 84 |
| Bicycling..... | 81 | 72 | 60 | 81 | 71 | 63 | 76 | 71 | 62 | 76 | 74 | 67 |
| Water skiing..... | 62 | 62 | 58 | 59 | 62 | 61 | 56 | 62 | 60 | 59 | 65 | 65 |
| Nature walking..... | 38 | 30 | 22 | 38 | 29 | 25 | 32 | 29 | 23 | 31 | 34 | 28 |
| Horseback riding..... | 60 | 50 | 42 | 60 | 50 | 45 | 53 | 50 | 43 | 53 | 54 | 49 |
| Camping..... | 34 | 25 | 19 | 34 | 25 | 21 | 28 | 26 | 20 | 28 | 29 | 24 |
| Hiking..... | 54 | 50 | 43 | 54 | 49 | 46 | 46 | 49 | 44 | 46 | 53 | 50 |
| Hunting..... | 95 | 94 | 92 | 95 | 94 | 92 | 97 | 97 | 97 | 97 | 97 | 97 |
| Viewing outdoor exhibits | 94 | 90 | 84 | 93 | 90 | 84 | 91 | 90 | 84 | 91 | 90 | 84 |

presented. If a local area can obtain population data for the study area, participation estimates can be derived. However, any additional outdoor recreation information that is available for the local area can be fitted into the procedure. For example, if local area data regarding tourism are available, this should be added to net activity occasions. If data indicating more or less people participate in an activity than is shown in the tables, these data should be substituted. The procedure and data in the tables were derived to supplement local information and not to supplant it. Local areas should use the data in the tables only for those activities where local data are not available. The data are averages for the entire region and will not precisely portray any subsector within the region.

Alternative Method of Computing Activity Occasions

If local data are available for 1967 or some other recent year, the information in Table 4 can be used for estimating participation. Table 4 indicates the proportionate change in activity occasions over time. The number of activity occasions in the base year is multiplied by the appropriate table figure to project activity occasions. Using the Pike County data derived previously:

| <u>Year</u> | <u>Total activity occasions by Pike County residents, 1967</u> | | <u>Projected change in picnicking participation, Region 4</u> | | <u>Projected activity occasions of picnicking by Pike County residents</u> |
|-------------|--|---|---|---|--|
| 1967-80 | 123,970 | x | 1.22 | = | 151,243 |
| 1967-2000 | 123,970 | x | 1.62 | = | 200,831 |

The alternate method is independent of the first method presented and the results will be similar only if the area selected has population growth characteristics similar to the region in which it is located. The alternate method combines changes in population as well as changes in average activity occasions into one multiplier. The results will be seriously

Table 4. Index of Projected Changes in Activity Occasions of Selected Outdoor Recreation Activities by Regions of the State, 1967 to 1980, 1967 to 2000, and 1980 to 2000

| Activity | Region | | | | | | | | | | | |
|----------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | 1 | | | 2 | | | 3 | | | 4 | | |
| | 1967 to 1980 | 1967 to 2000 | 1980 to 2000 | 1967 to 1980 | 1967 to 2000 | 1980 to 2000 | 1967 to 1980 | 1967 to 2000 | 1980 to 2000 | 1967 to 1980 | 1967 to 2000 | 1980 to 2000 |
| Picnicking..... | 1.49 | 2.09 | 1.40 | 1.50 | 1.98 | 1.32 | 1.30 | 1.77 | 1.35 | 1.22 | 1.62 | 1.33 |
| Driving for pleasure.. | 1.61 | 2.43 | 1.51 | 1.61 | 2.37 | 1.47 | 1.53 | 2.28 | 1.49 | 1.48 | 2.18 | 1.47 |
| Fishing, all waters... | 1.42 | 2.92 | 2.05 | 1.42 | 2.83 | 1.98 | 1.42 | 2.87 | 2.02 | 1.40 | 2.70 | 1.93 |
| Swimming..... | 1.84 | 3.58 | 1.94 | 1.84 | 3.42 | 1.85 | 1.70 | 3.23 | 1.90 | 1.62 | 2.30 | 1.42 |
| Bird watching..... | 1.49 | 2.53 | 1.69 | 1.47 | 2.42 | 1.65 | 1.44 | 2.38 | 1.65 | 1.44 | 2.36 | 1.63 |
| Playing golf..... | 2.14 | 5.42 | 2.52 | 2.15 | 5.08 | 2.36 | 2.03 | 4.98 | 2.45 | 1.93 | 4.42 | 2.29 |
| Gardening..... | 1.25 | 1.71 | 1.37 | 1.25 | 1.71 | 1.37 | 1.24 | 1.71 | 1.37 | 1.25 | 1.71 | 1.37 |
| Walking for pleasure.. | 1.56 | 2.82 | 1.81 | 1.56 | 2.74 | 1.75 | 1.57 | 2.79 | 1.78 | 1.52 | 2.64 | 1.74 |
| Sightseeing..... | 1.92 | 4.01 | 2.09 | 1.93 | 3.65 | 1.89 | 1.62 | 3.22 | 1.99 | 1.46 | 2.71 | 1.85 |
| Playing games..... | 1.81 | 2.79 | 1.54 | 1.82 | 3.47 | 1.91 | 1.71 | 3.33 | 1.95 | 1.65 | 2.37 | 1.44 |
| Boating..... | 1.94 | 4.18 | 2.15 | 1.95 | 3.94 | 2.02 | 1.77 | 3.70 | 2.09 | 1.68 | 3.32 | 1.98 |
| Viewing games..... | 1.48 | 2.54 | 1.72 | 1.48 | 2.48 | 1.67 | 1.45 | 2.46 | 1.70 | 1.43 | 2.35 | 1.65 |
| Bicycling..... | 1.49 | 2.45 | 1.65 | 1.49 | 2.34 | 1.57 | 1.41 | 2.26 | 1.61 | 1.35 | 2.08 | 1.54 |
| Water skiing..... | 2.20 | 4.91 | 2.23 | 2.11 | 4.45 | 2.11 | 2.00 | 4.36 | 2.17 | 2.00 | 4.18 | 2.10 |
| Nature walking..... | 1.90 | 3.97 | 2.09 | 1.91 | 3.60 | 1.88 | 1.59 | 3.16 | 1.98 | 1.43 | 2.63 | 1.84 |
| Horseback riding..... | 1.73 | 3.37 | 1.95 | 1.74 | 3.14 | 1.80 | 1.54 | 2.89 | 1.88 | 1.43 | 2.53 | 1.77 |
| Camping..... | 2.34 | 5.93 | 2.54 | 2.35 | 5.35 | 2.27 | 1.94 | 4.65 | 2.40 | 1.73 | 3.85 | 2.22 |
| Hiking..... | 1.93 | 3.94 | 2.04 | 1.94 | 3.68 | 1.90 | 1.68 | 3.31 | 1.97 | 1.56 | 2.91 | 1.87 |
| Hunting..... | 1.78 | 3.35 | 1.88 | 1.80 | 2.95 | 1.64 | 1.81 | 3.23 | 1.78 | 1.55 | 2.53 | 1.63 |
| Viewing outdoor exhibits..... | 1.41 | 2.07 | 1.46 | 1.43 | 1.82 | 1.28 | 1.41 | 1.93 | 1.37 | 1.20 | 1.51 | 1.25 |

maladjusted for areas in which growth exceeds or lags behind the growth of the region. The method also should only be used when independent estimates of present activity occasions are available. Adjustment of the activity occasions follows in the same manner as previously outlined. Interpolation within the table is valid under the assumption that change will be relatively constant over the time period. Thus if data are available for 1970, the multiplier for 1980 projections will be 10/13 of the table figure for the 1967 to 1980 times the 1970 data. If the planner has information to indicate growth will occur in a different fashion, then these data should be used.

If the entire population is used as a base, under the assumption that individuals under 12 recreate in all activities at the same rate as persons over 12, the number of activity occasions is increased. For Pike County the present and projected activity occasions of picnicking would be higher as shown:

| <u>Year</u> | <u>Population of Pike County</u> | | <u>Percentage participation in picnicking, Region 4^{1/}</u> | | <u>Activity occasions per person of picnicking, Region 4</u> | | <u>Activity occasions of picnicking, Pike County</u> |
|-------------|----------------------------------|---|--|---|--|---|--|
| 1967 | 25,300 | x | 48 | x | 14 | = | 170,016 |
| 1980 | 26,100 | x | 59 | x | 12 | = | 184,788 |
| 2000 | 28,400 | x | 62 | x | 12 | = | 211,296 |

^{1/} Table 1 percentage divided by population adjustment on page 7.

Conversion of the total activity occasions to the local area would follow the same procedure as previously outlined.

The data derived must always meet the criteria of discretion for knowledgeable persons in the local area. The figures in the tables are only estimates and should be adjusted to conform to local situations. In highly urbanized areas the number of persons and the amount of swimming that occurs should be increased while the amount of hunting and fishing should be decreased.

Certain of the outdoor recreation activities do not exhibit an upward trend in activity occasions over time. In the case of driving for pleasure, the proportion of the population participating is projected to decline even though the activity occasions per person are projected to increase. Picnicking exhibits a different trend with an increase in the proportion of the population participating and a decrease in the activity occasions per participant. Other activities increase both in proportion participating and the average number of activity occasions. Each recreational activity was projected using the methodology outlined in Appendix A. Changes in age, income, and other factors influence activities differently. They also have diverse effects upon the number of participants and the activity occasions of participation within a single activity.

Conversion Standards

The derivation of participation data is only the first step in determining recreational needs. The participation data must be converted to supply units for comparative purposes. Conversion standards were derived for the Alabama Comprehensive Outdoor Recreation Plan and are reproduced in Appendix B. The conversion standards are based on "best" estimates of use of facilities that will contribute to recreational enjoyment without appreciably destroying the environment. The standards are estimates and should be adjusted in those areas where more precise information is available.

Facility needs for the individuals recreating in the area are determined by dividing the participation data by the appropriate standard. The resultant facility needs figure indicates the number or amount of supply facilities that are needed to allow participation to occur at the rate pos-

| <u>Year</u> | <u>Within State picnick- ing participation by Pike County residents</u> | | <u>Picnicking table conversion standard rural area</u> | | <u>Picnicking fa- cility needs in Pike County</u> |
|-------------|---|---|--|---|---|
| 1967 | 58,266 | ÷ | 900 | = | 65 |
| 1980 | 78,112 | ÷ | 900 | = | 87 |
| 2000 | 105,716 | ÷ | 900 | = | 117 |

tulated and under the supply conditions incorporated into the standards. The present supply then can be compared with participation. A method for determining supply is presented in Volume 2, "A Computer Program for Summarizing Outdoor Recreation Supply."

Summary

A method for estimating the present and projected facility needs for selected outdoor recreation activities has been presented. A work table example is presented to demonstrate the entire procedure in an orderly fashion. Items 8 and 10 in the work table specify the need for local data. The facility needs can be estimated from population data alone; however, any local recreational estimates that are available will improve the precision of the facility needs.

Work Table for Estimating Facility Needs

Activity: PicnickingYear: 1980

| Item | Source | Pike County example |
|---|--------------------|------------------------|
| 1. Area population | Census Projections | 26,100 |
| 2. Percentage participation by region residents (insert local estimates when available) | Table 1 | 43 |
| 3. Number of residents participating | 1 x 2 | 11,223 |
| 4. Average number of activity occasions per participant per year (insert local estimates when available.) | Table 2 | 12 |
| 5. Total resident activity occasions | 3 x 4 | 134,676 |
| 6. Percentage resident participation within State (insert local estimates when available.) | Table 3 | 58 |
| 7. Total resident within State activity occasions | 5 x 6 | 78,112 |
| 8. Percentage resident participation within local area ^{1/} | local data | 90% |
| 9. Total resident activity occasions within local area | 7 x 8 | 70,301 |
| 10. Number of tourist activity occasions ^{2/} | local data | 35,000 (est.) |
| 11. Total activity occasions in local area | 9 + 10 | 105,301 |
| 12. Conversion standard for activity (insert local estimates when available.) | Appendix B | 900 |
| 13. Facility needs for local area ^{3/} | 11 ÷ 12 | 117 tables |

^{1/}If local estimates are not available insert 100 per cent.

^{2/}If local estimates are not available insert the difference of No. 7 - No. 5; in the example 134,676 - 78,112 = 56,564.

^{3/}Facility needs should be subtracted from present supply to determine unmet needs.

APPENDIX A

METHODOLOGY OF PROJECTING ACTIVITY DEMAND

Demand for outdoor recreation activities consists of two facets. First, the proportion of individuals who engage in the activity and second, the number of occasions they engage in the activity in a given unit of time. Taking each independently--

The Percentage Participation

Percentage participation estimates for 1967 were derived from primary sample data. Socio-economic factors related to users were devised from the same sample thus;

$$\bar{P}_{1967} = \sum \frac{x_i}{n} \quad i = 1 \dots T$$

where

\bar{P} = average percentage participation

x_i = number of participants in the i th group

n = total number in all groups

T = number of groups

The group might be based on age with the population subdivided into various age groupings. Using swimming as an example:

| <u>Age groups</u> | <u>No. swimmers</u> | <u>Per cent of swimmers</u> | <u>Per cent of total</u> |
|-------------------|---------------------|-----------------------------|--------------------------|
| 12-19 | 150 | 28.9 | 11.1 |
| 20-29 | 142 | 27.4 | 10.5 |
| 30-39 | 148 | 28.5 | 11.0 |
| 40-49 | 49 | 9.4 | 3.7 |
| 50-59 | 19 | 3.7 | 1.4 |
| 60-69 | 7 | 1.3 | .5 |
| 70-79 | 4 | .8 | .3 |
| Total swimmers | 519 | 100.0 | 38.5 |
| Total sample | 1,346 | | |

Assuming that individuals continue to swim at the same proportion by age groups over time, the only change in percentage would be because of a population shift within age groups.

Appendix Table 1. Present and Projected Age Distribution of Alabama Population, 12 Years of Age or Older

| Age | 1967 | 1980 | 2000 |
|-------------------|----------------------|------|------|
| | ----- Per cent ----- | | |
| 12-19 | 14.7 | 14.2 | 15.0 |
| 20-29 | 15.4 | 15.8 | 14.5 |
| 30-39 | 9.7 | 10.8 | 12.5 |
| 40-49 | 10.4 | 9.3 | 11.6 |
| 50-59 | 9.7 | 9.3 | 9.0 |
| 60 and over | 12.4 | 13.0 | 13.8 |

The projection model for age would be:

$$P_j = \sum \frac{c_i b_i}{A_i} \quad i = 1 \dots T$$

where:

P_j = projected percentage participation

c_i = percentage of total in the i th group

b_i = percentage of future population in the i th group

A_i = percentage of 1967 population in the i th group

For the 1980 projection the distribution would be:

| <u>Age</u> | <u>Projected per cent of total</u> |
|------------|------------------------------------|
| 12-19 | 10.7 |
| 20-29 | 10.7 |
| 30-39 | 12.2 |
| 40-49 | 3.3 |
| 50-59 | 1.3 |
| 60-69 | .8 |
| Total | 39.0 |

The same procedure was used with place of living, income, race, and other factors. The net effect of each of these was added to the present participation to derive the aggregate projected participation.

$$P_A = P_{1967} + \sum (P_j - P_{1967}) \quad j = 1 \dots L$$

where:

- P_A = aggregate projected participation rate
 P_{1967} = 1967 participation rate
 P_j = projected participation rate based on the j th socio-economic factor
 L = number of socio-economic factors included

The User Occasion Days of Participation

Estimates of average user occasion days were derived from the sample for 1967. Projections were made on the basis of analysis of regression techniques. Assuming factors related to present participation would remain relatively constant over time a projection model was derived.

$$\bar{Y} = a + \sum (b_i x_i) \quad \text{where } i = 1 \dots n$$

a = constant participation rate

b_i = coefficient of change with unit changes in variable

x_i = factors related to the user day rate

Three types of factors were present in the regression equation :

- factors that cause adjustments in "a"
- factors related to the family
- factors related to the individual

With the use of 0 - 1 variables the constant was adjusted for nominal scale factors. Family and individual factors were entered as ordinal values. The entire procedure used to derive and project weekend summer boating is presented below.

Boating ^{1/}

During the 1967 year 18.7 per cent of the population 12 years of age or older engaged in boating. The average number of activity days per participant was in excess of 17 including both resident in and out of State participation. This did not represent the entire boating population since 85 per cent of the boating families included at least one member less than 12 years of age.

The age, income, sex, race, and place of residence classification of the boating population are shown in Appendix Table 2. Assuming the

^{1/}Each of 21 activities was individually estimated based upon sample participants engaging in the activity similar to the method illustrated by boating.

Appendix Table 2. Percentage of Boating Population Within Selected Cross Groupings, Alabama, 1967

| Grouping | | Percentage of population participating |
|------------------------|-----------------|---|
| Age: | 12-19 | 3.7 |
| | 20-29 | 4.8 |
| | 30-39 | 5.4 |
| | 40-49 | 2.5 |
| | 50-59 | 1.5 |
| | 60 and over | 0.8 |
| Race: | White | 17.6 |
| | Non-white | 1.1 |
| Sex: | Male | 10.7 |
| | Female | 8.0 |
| Living Classification: | | |
| | Urban | 11.8 |
| | Rural non-farm | 6.3 |
| | Rural farm | 0.6 |
| Income: | 0-2,999 | 0.5 |
| | 3,000-5,999 | 2.8 |
| | 6,000-8,999 | 5.8 |
| | 9,000-11,999 | 5.2 |
| | 12,000-14,999 | 3.4 |
| | 15,000 and over | 1.0 |

incidence of boating remains constant within groups, projections of changes in the total incidence of boating can be derived by examining the projected changes within groupings, i.e., the present population participation rate in the age grouping 12-19 is 3.7 per cent. This age group represents 14.7 per cent of the population. In 1980 the age group is projected to represent 14.2 per cent of the population. This distributional shift within the population should lead to a decrease of 0.7 per cent in boating participation. Continuing through the age distribution and aggregating the changes would result in a 19.0 per cent participation rate in 1980 because of shifts in the age distribution. Further shifts in the age distribution by 2000 would increase the participation rate to 20.3 per cent. Shifts in the age distribution alone would increase boating participation by 1.6 per cent by 1980 and 8.0 per cent by 2000.

Taking the second factor, income, into consideration and assuming the participation within an income group remains constant, the 1980 boating participation rate increases to 22.9 per cent or an absolute increase of 22.5 per cent. The year 2000 participation rate increases to 22.5 which is 20.3 per cent higher than the 1967 rate but 1.8 per cent lower than the 1980 rate. The incidence of participation is less strongly affected as the population moves to higher income ranges. If age and income effects are linear additive, then the projected participation based on these factors alone would be 23.2 per cent in 1980 and 24.1 per cent in 2000.

Race

In Alabama as in other states public recreation facilities are integrated. Unlike certain other areas this is a comparatively recent occurrence. While federal laws specify integrated public facilities, custom and history have specified separate facilities. In Alabama 23.6 per cent of the white population engaged in boating in 1967 while only 4.3 per cent of the non-white population participated. It is difficult to mathematically separate racial effects and income effects; however, if the non-white population began to engage in boating at the same rate as the white population there would be a net increase of 26.2 per cent in boating. Since these differences are assumed to narrow by 1980, no projections based on race are made beyond that date. The participation in 1980 based on race, age, and income would be 28.1 per cent. This percentage would increase to 29 per cent by 2000.

Sex

Certain outdoor recreational activities are more suitable to one sex than the other. A notable example is hunting which has over 90 per cent male participants. Among all boaters 57.2 per cent were male and 42.8 per cent were female which differs from a 50:50 ratio. The small changes in the sex ratio of the population will have little influence on boating participation. In the event females were to increase their participation in boating to the male rate, total boating participation

would increase by 14.4 per cent. The total aggregate participation rate would be 30.3 per cent in 1980 and 31.7 per cent in 2000.

Place of Residence

Where an individual lives may influence not only the availability of boating facilities but the desire to engage in boating activities. For the boating population 63 per cent lived in urban areas and 37 per cent lived in rural areas. This differed significantly from the sampled population. The number of urban boaters was significantly less proportionately than the number of urban dwellers in the sampled population. The shifts of population from rural to urban will lead to a decrease of 5.6 per cent in boating by 1980 and 8.7 per cent by 2000.

Number Employed and Hours Worked

Participation in boating should be highly related to the number of household members employed. For the boating population 74 per cent of the participants were from families with one member employed, 21 per cent from families with two members employed and 5 per cent from family units with three or more members employed. With a projected increase in the number of women employed, the amount of time available for boating will be lessened. This factor will be curtailed somewhat by a decrease in the number of working hours per week. During 1968, 78 per cent of the household heads of families which engage in boating worked 40 hours per week. The remaining 22 per cent worked more than 40 hours per week. The form of the increased free time will strongly influence the type of recreational activities an individual can engage in.

Summary of Factors Affecting Boating Participation

The total projected boating participation rates for 1980 and 2000 are indicated in Appendix Table 3. The projected 1980 participation rate based on the selected thirteen factors and the assumptions in the body of the report is 24.3 per cent. The projected participation rate in 2000 is 27.4 per cent. Under different assumption or using different factors the rates would differ.

The Activity Days of Participation

While aggregation analysis coupled with visitation assumptions can reveal some basic boating relationships, the family participation function is required to determine the intra-family participation. This function is based on the assumption that the family member has already decided to participate in boating. The family member boating model equation is:

Appendix Table 3. Percentage Boating Participation By Factors

| Factor | Projected participation | |
|---|-------------------------|------|
| | 1980 | 2000 |
| | ----- Per cent ----- | |
| Age of participant | 19.0 | 20.3 |
| Family income | 22.9 | 22.5 |
| Race of participant | 23.6 | 23.6 |
| Sex of participant | 21.4 | 21.4 |
| Place of residence | 17.7 | 17.2 |
| Leisure time ^{1/} | 18.1 | 18.0 |
| Number employed in household | 16.5 | 16.0 |
| Family size | 17.0 | 16.2 |
| Mobility ^{2/} | 17.8 | 17.5 |
| Distance | 19.0 | 23.0 |
| Handicap | 19.2 | 20.1 |
| Education | 18.5 | 18.0 |
| Family composition ^{3/} | 18.0 | 18.0 |
| Aggregate boating participation ^{4/} ... | 24.3 | 27.4 |

^{1/} Multiple factor composed of hours worked by husband, wife, and other family members.

^{2/} Completion of interstate, increased automobile registrations, changes in residence (moving).

^{3/} Age distribution of family members i.e. under 6, 6-11, over 12.

^{4/} Linear additions of 1967 rate (18.7) and factor changes.

$$\hat{Y} = b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5$$

where:

\hat{Y} = estimated number of activity days of boating

b_i = linear relationship between the dependent "x" variables and boating activity days

x_1 = education of the household head (coded)

x_2 = age of the youngest child (years)

x_3 = place of residence (coded)

x_4 = family income (coded)

x_5 = hours worked by the household head (hours)

The numerical predictor equation is:

$$\hat{Y} = 0.58 x_1 + 0.13 x_2 + 1.67 x_3 - 0.52 x_4 + 0.10 x_5$$

Std. error (.31) (.06) (.56) (.20) (.03)

Two of the variables are quantitative and measured in uncoded units. Family income and education were coded to facilitate tabulation although each was initially measured quantitatively. The place of residence is a qualitative measure and is measured as linear shifts in the intercept value. The code values are given in Appendix Table 4. While the coefficients are all significant at the .10 level, the explanatory power of the entire equation is low. Only 50 per cent of the total variation is removed by regression. The standard error of estimate was 6.1 activity days.

By 1980 the general educational level of the Alabama population is projected to increase. The age of the youngest child is projected to increase primarily because of a lowering of the number of children in families. The residence classification is projected to move toward urban. Family income is projected to increase and the hours worked by the head of the household is projected to decrease. In terms of the predictor equation two variables tend to increase participation. Under prevailing conditions the boating population is relatively well educated (intercept value 4.34) and relatively high income, intercept value 6.46. One upward step in education will cancel an increase in income. A one-year increase in average age of the youngest child will cancel a one-hour decrease in hours worked by the household head. Movement into urban areas can change activity days a minimum of .65 days per year. In effect the equation indicates little change in activity days per person because of the

Appendix Table 4. Data Code for Computation of Regression Equations

| Factor | Code Value | Factor | Code Value |
|-------------------------|------------|------------------------------|------------|
| Income Range Dollars | | Education Years of School | |
| 0-1,499 | 1 | 0-4 | 1 |
| 1,500-2,999 | 2 | 5-8 | 2 |
| 3,000-4,499 | 3 | 9-11 | 3 |
| 4,500-5,999 | 4 | 12 | 4 |
| 6,000-7,499 | 5 | Some College | 5 |
| 7,500-8,999 | 6 | B.S. | 6 |
| 9,000-10,499 | 7 | M.S. | 7 |
| 10,500-11,999 | 8 | Ph.D. | 8 |
| 12,000-13,499 | 9 | Place of Residence | |
| 13,500-14,999 | 10 | Urban | 1 |
| 15,000-19,999 | 11 | Rural non-farm | 2 |
| 20,000 and over | 12 | Farm | 3 |

relevant factors in the equation. When three additional factors which are expected to change are included in the equation, the results are somewhat different. Forced entry of hours worked by the wife, the number of members in the family and the number of family members employed does not appreciably change the coefficients of the previous entrants but adds to the activity days projected. Using the entire equation based on an intercept value of 17.3 activity days in 1967, the projected 1980 activity days are 19.1 and 25.0 in 2000. The entire projected values are presented in Appendix Table 5.

Appendix Table 5. Present and Projected Boating Resident Participants and Activity Days of Participation, 1967, 1980, 2000

| Year | Participation | | Activity days | |
|------------|--------------------------|---------------------|----------------------|------------|
| | Percentage participation | Total ^{1/} | Days per participant | Total |
| | Per cent | 1,000 persons | Days | 1,000 days |
| 1967 | 18.7 | 476 | 17.3 | 8,244 |
| 1980 | 24.3 | 797 | 19.1 | 15,258 |
| 2000 | 27.4 | 1,253 | 25.0 | 31,384 |

^{1/}Based on resident outdoor recreation population of 2,544,700 in 1967, 3,277,200 in 1980 and 4,577,000 in 2000

Multiple Activity Analysis

Participation in various types of outdoor recreation activities are not mutually exclusive. To the contrary, some types of recreational activities display an almost symbiotic relationship. Competitive, complementary and supplementary type relationships exist in outdoor recreation. In planning and designing multiple use recreation facilities some indication of the magnitude of these relationships would be useful.

Using the boating segment of the population as an example a method of designating joint recreational relationships was derived. The dual activity table, Appendix Table 6, has a listing of the joint relationship of boating and nine other outdoor recreation activities. The per cent boating column indicates the percentage of the boating population who also participated in the cross referenced activity. The per cent B column indicates the percentage of the cross referenced activity who engaged in boating. The per cent population column indicates the percentage of the sample who engaged in both activities.

Appendix Table 6. Dual Activity Table - Boating

| Activity B | Per cent boating | Expected per cent boating | Per cent B | Expected per cent B | Per cent popula- tion | Expected per cent population |
|----------------------|---------------------|---------------------------------|---------------|---------------------------|-----------------------------|------------------------------------|
| ----- Per cent ----- | | | | | | |
| Picnicking..... | 88.9 | 56.9 | 29.2 | 18.7 | 16.6 | 10.6 |
| Swimming..... | 77.8 | 38.6 | 37.8 | 18.7 | 14.6 | 7.2 |
| Camping..... | 29.4 | 9.9 | 57.8 | 18.7 | 5.5 | 1.9 |
| Fishing..... | 70.6 | 37.9 | 34.9 | 18.7 | 13.2 | 7.1 |
| Hunting..... | 30.5 | 16.5 | 34.7 | 18.7 | 5.7 | 3.1 |
| Bicycling..... | 25.0 | 11.2 | 41.7 | 18.7 | 4.7 | 2.1 |
| Horseback riding. | 15.9 | 6.5 | 50.0 | 18.7 | 3.0 | 1.2 |
| Water skiing..... | 31.4 | 7.2 | 81.4 | 18.7 | 5.9 | 1.3 |
| Golfing..... | 14.7 | 7.0 | 40.0 | 18.7 | 2.8 | 1.3 |

Approximately 57 per cent of the population participated in picnicking. If no relationship existed between picnicking and boating the expected percentage of the boating population who engage in picnicking would be 57 per cent. The expected percentage of picnickers who also engage in boating would be 18.7 per cent; and the expected percentage of the population who engage in both activities would be 10.6 per cent or the product of the individual percentages. In actuality almost 90 per cent of all boaters engaged in picnicking which was substantially higher than expected. Picnicking and boating were highly related. Most of the boating population also engage in picnicking; however, only about 30 per cent of the picnickers engage in boating. Water skiing represents a different position. Over 80 per cent of the water skiing population also engage in boating; however, only 31 per cent of the boaters also engage in water skiing. In planning facilities for boating consideration should be given to the inclusion of ancillary facilities for water skiing, picnicking, swimming and fishing. Additional facilities for camping might be considered since the joint relationship between these activities indicates over half of the campers participate in boating.

A priority of site facility development can be made based on the key activities with their joint activities. The effects of these joint relationships were considered when feasible in projecting demand. An increased demand for picnicking was incorporated into the increased demand for boating. Certain primary activities such as boating were assumed to influence secondary activities. A demand increase in picnicking would not increase demand for boating. Judgement assumptions regarding primary activities were made based on survey data and secondary information.

Specific formulations regarding all activities shown in this report can be obtained from the Department of Agricultural Economics and Rural Sociology, Auburn University, Auburn, Alabama 36830.

Definition of Outdoor Recreation Activities

Picnicking

An outdoor activity where the primary purpose is the preparation or eating of food. This includes cookouts and barbecues other than at home but excludes normal meal preparation while camping or hiking.

Driving for Pleasure

Driving or riding in an automobile when the purpose is primarily for pleasure.

Fishing

The attempt to catch fish whether successful or unsuccessful in fresh, brackish or salt water for noncommercial purposes.

Swimming

Swimming in a pool, lake, stream or ocean and includes wading, surfing, skin diving and sunbathing at swimming areas.

Bird watching

Specific observation of birds in their natural surroundings.

Playing golf

Engaging in golf activities at a facility specifically designed and maintained for that purpose.

Gardening

Planting and/or maintenance of vegetables, flowers, trees, grass, or shrubs for pleasure.

Walking for pleasure

Any walk with pleasure as the primary motive that is not classified as hiking or nature walk.

Sightseeing

The viewing of a specific outdoor attraction.

Playing games

Engaging in competitive activities, i.e., croquet, badminton, volleyball, softball, baseball, etc. for pleasure and not as a means of livelihood.

Boating

The recreational use of any boat. The use of a boat for transportation or to assist in other recreational activities is excluded.

Viewing games

The attendance at any sporting event as a spectator.

Bicycling

Any bicycle riding for pleasure.

Water skiing

Any of several activities where an individual is towed behind a boat.

Nature walking

Purposeful walking to observe plants, birds, etc., often along designated trails with identified plants.

Horseback riding

Riding horses for pleasure. This includes buggy rides or other horse-drawn vehicle rides.

Camping

Living outdoors overnight. This includes group camping which may be indoors.

Hiking

Walking with a back pack.

Hunting

Search for game for noncommercial purposes.

Viewing outdoor exhibits

This includes outdoor concerts, plays, dramas, art shows, outdoor movies, and special events such as the blessing of the shrimp fleet, the rock swap, etc.

Other

Included are air sports, archery, target shooting, wildlife and bird photography, training animals, skiing, ice skating, spelunking, mountain climbing, and other activities.

APPENDIX SECTION B

Standards Used In The Alabama Plan

Demand for outdoor recreation exists in terms of individuals and is measured in units of user or activity days. Supply exists as physical units of facility, i.e., picnic tables or beach areas. Before comparative statements can be made regarding supply and demand they must be expressed in the same units. Since the planner initially is concerned with supply facilities for existing demand, it is most convenient to convert demand data to physical units. The choice of conversion standard influences the amount of supply necessary to meet the demand. Conversion standards are based on the following criteria: (1) providing the recreational user with a pleasant experience, (2) conservation of the recreational resource, and (3) consideration of the recreational patterns of use. Thus standards include consideration of spatial as well as time aspects of recreational use. Observation and inquiry has established that present usage approximates the standards as given. Future needs are projected on the basis of changing use patterns. Obviously one set of standards is not ideal for rural and urban population nor for present and future populations. Urban picnicking is not as firmly linked to other recreational activities, thus the turnover rate is somewhat higher. Certain activities do not have specified supply facilities as such. Walking, sightseeing, driving for pleasure and birdwatching are recreational activities for which supply facilities are difficult to define.

However, standards were developed for these activities to use in providing a guide to requirements.

Standards were derived to calculate the carrying capacity of certain recreational resources for the Alabama plan. Standards were devised for twenty-six outdoor recreational activities including four activities which do not have designated facilities. Urban and rural standards were devised for facilities located in these districts. Other factors were considered in the development of standards including but not restricted to:

1. The average number of persons the supply unit can accommodate at any one time without overcrowding.
2. The length of daily use - daily turnover rate.
3. The length of season during which the facility is primarily used during a 12-month period.

There are two sets of standards for most activities, urban standards for planning areas exceeding 50,000 in population and rural standards for the remaining areas. As an area changes from rural to urban the use standards will change to acknowledge the increased concentration of population.

The distinction between urban and rural areas serves a dual purpose. First it accounts for an increased level of usage with increased population and secondly it points towards the need to increase facilities before the population growth occurs. An area which is expanded in acreage to satisfy rural standards may only require additional tables or sites on this expanded acreage to satisfy urban standards.

Standards are tools for comparing supply of facilities and the demand for outdoor recreation activities. The level of standards

specified can influence supply needs. The standards presented in Appendix Table B 1 are designated to meet the three criteria previously listed.

Appendix Table B 1. General Recreation Standards for Urban and Rural
Planning Districts, Alabama

| Item | Planning district | |
|---|-------------------|--------|
| | Urban | Rural |
| <u>Picnicking</u> | | |
| Unit of land, acres | 1 | 1 |
| No. of tables per acre | 9 | 6 |
| No. of persons per table | 5 | 5 |
| Daily rate of turnover | 1.5 | 1.0 |
| Length of picnic season, days..... | 180 | 180 |
| Activity occasion per acre | 12,150 | 5,400 |
| Activity occasion per table | 1,350 | 900 |
| <u>Swimming in pools</u> | | |
| Unit of water, 1 sq. ft. $\frac{1}{2}$ | 1 | 1 |
| No. of persons per sq. ft. of water | .037 | .037 |
| Daily rate of turnover | 2 | 1 |
| Length of swimming season, days | 103 | 108 |
| Activity occasion per sq. ft. of water | 8 | 4 |
| $\frac{1}{2}$ Deck area should be twice the water area. | | |
| <u>Swimming in lakes, reservoirs, or Gulf</u> | | |
| Unit of beach, 1 lineal yard | 1 | 1 |
| Beach area per lineal yard of beach, sq. ft. | 405 | 405 |
| Beach water per lineal yard of beach, sq. ft. | 81 | 81 |
| No. of persons per lineal yard of beach | 1 | 1 |
| Daily rate of turnover | 2 | 1 |
| Length of season, days..... | 103 | 108 |
| Activity occasion per lineal yard of beach | 216 | 108 |
| Activity occasions per sq. ft. of beach | .53 | .27 |
| Activity occasions per sq. ft. of water..... | 2.7 | 1.3 |
| Swimming occasions per access area | 162,000 | 81,000 |
| Occasions per parking space | 540 | 270 |

Appendix Table B1-- Continued

| Item | Planning district | |
|--|-------------------|--------|
| | Urban | Rural |
| <u>Playing golf - 9 hole course</u> | | |
| Unit of course, holes | 9 | 9 |
| No. of persons per hole | 4 | 4 |
| Daily rate of turnover | 3 | 2 |
| Length of golf season, days | 220 | 220 |
| Activity occasions per 9 hole course | 23,760 | 15,840 |
| <u>Playing golf - 18 hole course</u> | | |
| Unit of course, holes | 18 | 18 |
| No. of persons per hole | 4 | 4 |
| Daily rate of turnover | 2.0 | 1.5 |
| Length of golf season, days | 220 | 220 |
| Activity occasions per 18 hole course | 31,680 | 23,760 |
| <u>Boating</u> | | |
| Unit of water, acres | 1 | 1 |
| No. of boats per acre of water | .05 | .05 |
| No. of boat access areas per acre of water needed | .001 | .001 |
| No. of boat and trailer parking per acre of water needed | .05 | .05 |
| No. of persons per acre of water | .2 | .2 |
| Daily rate of turnover | 2 | 1 |
| Length of season, days | 180 | 180 |
| Activity occasions per acre of water | 72 | 36 |
| Activity occasions per boat | 1,440 | 720 |
| Activity occasions per access area | 72,000 | 36,000 |
| Activity occasions per parking space | 1,440 | 720 |

Appendix Table B 1-- Continued

| Item | Planning district | |
|--|-------------------|--------|
| | Urban | Rural |
| <u>Water skiing</u> | | |
| Unit of water, acres | 1 | 1 |
| No. of tow boats per acre of water | .02 | .02 |
| No. of boat access area per acre of water | .001 | .001 |
| No. of boat and trailer parking per acre of water | .02 | .02 |
| No. of persons per acre of water | .06 | .06 |
| Daily rate of turnover | 5 | 2 |
| Length of skiing season, days | 150 | 150 |
| Activity occasions per acre of water | 45 | 18 |
| Activity occasions per boat | 2,250 | 900 |
| Activity occasions per access area | 45,000 | 18,000 |
| Activity occasions per parking space | 2,250 | 900 |
| <u>Birdwatching and wildlife photography</u> | | |
| Unit of land, acres of habitat | 1 | 1 |
| No. of persons per acre of habitat | .2 | .2 |
| Daily rate of turnover | 2 | 1 |
| Length of season, days | 180 | 180 |
| Activity occasions per acre of habitat | 72 | 36 |
| <u>Walking for pleasure</u> | | |
| Unit of land, miles of footpaths | 1 | 1 |
| No. of persons per mile of footpath | 20 | 10 |
| Daily rate of turnover | 4 | 4 |
| Length of season, days | 200 | 200 |
| Activity occasions per mile of footpath | 16,000 | 8,000 |

Appendix Table B.1-- Continued

| Item | Planning district | |
|---|-------------------|---------|
| | Urban | Rural |
| <u>Viewing outdoor games</u> | | |
| Unit of measure, seats..... | 1 | 1 |
| No. of persons per unit of seat..... | 1 | 1 |
| Daily rate of turnover..... | 2 | 1 |
| Length of season, days..... | 100 | 100 |
| Activity occasions per seat..... | 200 | 100 |
| <u>Viewing outdoor exhibits</u> | | |
| Unit of measure, exhibit..... | 1 | 1 |
| No. of persons per exhibit..... | 500 | 500 |
| Daily rate of turnover..... | 4 | 2 |
| Length of season, days..... | 120 | 120 |
| Activity occasion per exhibit..... | 240,000 | 120,000 |
| <u>Sightseeing</u> | | |
| Unit of measure, miles of road..... | 1 | 1 |
| No. of persons per automobile..... | 2.5 | 2.5 |
| No. of automobiles per mile of road..... | 5 | 5 |
| Daily rate of turnover..... | 80 | 50 |
| Length of season, days..... | 80 | 80 |
| Activity occasions per mile of road..... | 80,000 | 50,000 |
| <u>Driving for pleasure</u> | | |
| Unit of measure, miles of road..... | 1 | 1 |
| No. of persons per automobile..... | 2.5 | 2.5 |
| No. of automobiles per mile of road..... | 10 | 5 |
| Daily rate of turnover..... | 100 | 80 |
| Length of season, days..... | 140 | 140 |
| Activity occasions per mile of road..... | 350,000 | 140,000 |
| <u>Four wheel drive and trail bike</u> | | |
| Unit of measure, miles of rough road..... | 1 | 1 |
| No. of persons per mile of rough road..... | 2 | 2 |
| Daily rate of turnover..... | 2 | 1 |
| Length of season, days..... | 180 | 180 |
| Activity occasions per mile of road..... | 720 | 360 |

Appendix Table B1-- Continued

| Item | Planning districts | |
|---|--------------------|-------|
| | Urban | Rural |
| <u>Playing outdoor games</u> | | |
| Unit of land, acres | 1 | 1 |
| No. of persons per acre of land | 15 | 12 |
| Daily rate of turnover..... | 1.4 | 1.2 |
| Length of playing season, days | 180 | 180 |
| Activity occasions per acre of land | 3,780 | 2,590 |
| <u>Bicycling</u> | | |
| Unit of land, miles of trail | 1 | 1 |
| No. of persons per mile of trail..... | 10 | 10 |
| Daily rate of turnover | 8 | 4 |
| Length of bicycling season, days | 180 | 180 |
| Activity occasions per mile of trail..... | 14,400 | 7,200 |
| <u>Nature walking</u> | | |
| Unit of land, miles of trail | 1 | 1 |
| No. of persons per mile of trail | 20 | 20 |
| Daily rate of turnover | 2.5 | 1.5 |
| Length of season, days..... | 150 | 150 |
| Activity occasions per mile of trail | 7,500 | 4,500 |
| <u>Hiking</u> | | |
| Unit of land, miles of trail | 1 | 1 |
| No. of persons per mile of trail | 10 | 5 |
| Daily rate of turnover | .50 | .33 |
| Length of hiking season, days | 280 | 280 |
| Activity occasions per mile of trail | 1,400 | 462 |
| <u>Horseback riding</u> | | |
| Unit of land, miles of trail | 1 | 1 |
| No. of persons per mile of trail | 10 | 5 |
| Daily rate of turnover | 5 | 2 |
| Length of riding season, days | 180 | 180 |
| Activity occasions per mile of trail | 9,000 | 1,800 |

Appendix Table B 1-- Continued

| Item | Planning districts | |
|---|--------------------|--------|
| | Urban | Rural |
| <u>Big game hunting</u> ^{2/} | | |
| Unit of land, acres of habitat..... | 1 | 1 |
| No. of persons per acre of habitat..... | 0.0055 | 0.0055 |
| Daily rate of turnover..... | 1 | 1 |
| Length of hunting season, days..... | 90 | 90 |
| Activity occasions per acre of habitat..... | 0.50 | 0.50 |
| <u>Small game hunting</u> ^{2/} | | |
| Unit of land, acres of habitat..... | 1 | 1 |
| No. of persons per acre of habitat..... | 0.0167 | 0.0167 |
| Daily rate of turnover..... | 1 | 1 |
| Length of hunting season, days..... | 120 | 120 |
| Activity occasions per acre of habitat..... | 2.00 | 2.00 |
| <u>Waterfowl hunting</u> ^{2/} | | |
| Unit of water, acres..... | 1 | 1 |
| No. of persons per acre of water..... | 0.0167 | 0.0167 |
| Daily rate of turnover..... | 1 | 1 |
| Length of hunting season, days..... | 60 | 60 |
| Activity occasions per acre of surface water..... | 1.00 | 1.00 |
| <u>Tent camping</u> | | |
| Unit of land, acres..... | 1 | 1 |
| No. of tent sites per acre..... | 4 | 3 |
| No. of persons per site..... | 3 | 3 |
| Daily rate of turnover..... | 1 | .7 |
| Length of season, days..... | 135 | 135 |
| Activity occasions per acre of land..... | 1620 | 850 |
| Activity occasions per tent site..... | 405 | 283 |
| <u>Trailer camping</u> | | |
| Unit of land, acres..... | 1 | 1 |
| No. of trailer sites per acre..... | 6 | 4 |
| No. of persons per site..... | 3 | 3 |
| Daily rate of turnover..... | 1.0 | .8 |
| Length of season, days..... | 150 | 150 |
| Activity occasions per acre of land..... | 2,700 | 1,440 |
| Activity occasions per trailer site..... | 450 | 360 |

Appendix Table B 1-- Continued

| Item | Planning district | |
|---------------------------------------|-------------------|--------|
| | Urban | Rural |
| <u>Group Camping</u> | | |
| Unit of land, 30 beds per acre | 1 | 1 |
| No. of people per acre | 30 | 30 |
| Daily rate of turnover | 1 | 1 |
| Length of season, days | 90 | 90 |
| Activity occasions per acre | 2,700 | 2,700 |
| Activity occasions per bed | 90 | 90 |
| <u>Fishing ^{2/}</u> | | |
| Unit of water, acres | 1 | 1 |
| Activity occasions per acre of water: | | |
| Lakes and reservoirs | 10 | 10 |
| Rivers and creeks | 5 | 5 |
| Small bodies of water | 15 | 15 |
| Put-grow-take ponds | 1,500 | 1,500 |
| Brackish and salt water | 30 | 30 |
| Activity occasions per access area: | | |
| Lakes and reservoirs | 22,500 | 20,000 |
| Rivers and creeks | 15,000 | 12,000 |
| Brackish and salt water | 20,000 | 20,000 |
| Activity occasions per parking space: | | |
| Lakes and reservoirs | 450 | 400 |
| Rivers and creeks | 300 | 240 |
| Brackish and salt water | 400 | 400 |

^{2/}Standards developed in cooperation with personnel of Game and Fish Division, Alabama Department of Conservation. The standards developed for fishing and hunting are in line with present fish and wildlife harvest needed to make these two activities interesting. In the future, more land and water will be needed to meet these yields, or higher yields will have to be produced per acre, or the activity occasions per acre of land and water will have to be increased with a corresponding decrease in yield per activity occasion.

