RESULTS OF A STUDY OF FOREST RECREATION USE PATTERNS AND VISITOR PREFERENCES IN THE DWELLINGUP REGION

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INTRODUCTION

The area of State Forest surrounding Dwellingup is becoming increasingly popular with sightseers, picnickers, bushwalkers, canoeists and other recreationists. The major attraction in this region is the Murray River, the last large undammed stream within the day-use zone south of Perth.

Over the past decade, the level of recreational use in the region, particularly along the more accessible portions of the Murray to the south and west of Dwellingup, has increased substantially (the 1973 use level was estimated to be 40 000 visitor days/year). This growth in activity has been accompanied by problems such as overcrowding and littering which are contributing to the deterioration of certain sites.

By the early 1970's, it had become evident that additional facilities and more effective controls over visitor movement were required in order to minimize further site deterioration problems. Consequently in 1973, an interim plan outlining proposals for development was produced. This plan was largely based on the results of a broadscale study of recreation use patterns and visitor preferences which was initiated in 1972. The purpose of the following paper is to briefly report on the findings of this study.

STUDY OBJECTIVES AND PROCEDURE

The basic objectives of this study were to ...

1. Assemble information on the type, level, timing and distribution of recreational use which was occurring on both developed and undeveloped sites within the region.

2. Sample the forest visitor's preference for various recreational activities, facilities and landscapes.

The main part of the study involved the distribution of questionnaires to all stationary parties of forest visitors encountered on selected sampling dates along two preplanned routes. The group leader of spokesman for each party was informed of the purpose of the survey and asked to complete the questionnaire and deposit it in one of several collection boxes set up at key locations along the survey routes. Survey personnel also recorded information on the location of all groups observed in order to obtain an indication of the distribution and level of visitor activity occurring in different parts of the landscape.

Surveys were conducted on a number of weekends over the period from October 7, 1972 to September 2, 1973. A total of 345 questionnaires were distributed and of this number, 183 groups representing 1 343 persons returned forms which were used in the analysis. In addition, traffic counters were installed at 4 locations to provide a measure of vehicular activity over the 1973 Easter holidays.

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Also during the 1972/73 marron fishing season and again in the 1976/77 season, several surveys of marron fishermen were carried out along a 53 km section of the Murray. The results of these surveys are presented in the following section.

STUDY RESULTS (QUESTIONNAIRES)

Group type and number of recreationists:

Type of group	Number of Groups	Percent of total	Number of Visitors	Percent of total	Average group size
Single person	5	2.7	5	0.4	1.0
Single family	54	29.5	194	14.4	3.6
Two or more families	55	30.1	467	34.8	8.5
Group of friends	39	21.3	267	19.9	6.8
Organised group	30	16.4	410	30.5	13.7
Totals	183	100.0	1 343	100.0	7.3

Age grouping:

Age Group	Percent of total	W.A. Census (1966)	Age Group	Percent of total	W.A.Census (1966)
0 - 4	7.2	10.1	30 - 39	17.2	12.4
5 - 9	8.8	10.7	40 - 49	8.0	11.7
10 - 14	15.4	10.3	50 - 64	7.3	14.0
15 - 19	13.3	9.5	65 +	2.4	7.7
20 - 29	20.4	13.6			

Educational level:

Level	Attending		Level	Completed	
	Percent	Census		Percent	Census
Primary	14.3	14.6	Primary	2.6	16.5
Secondary	10.0	6.7	Secondary	29.6	42.9
Tertiary	3.3	*	Tertiary	12.5	3.7
Totals	27.6	21.3	Totals	44.7	63.1

* Included with completed education, secondary level

Group leader's occupation:

Occupation	Percent of total	Occupation	Percent of total
Trades/technical	51.1	Sales	5.2
Professional	16.1	Farming	2.9
Managerial	10.3	Student	2.3
Clerical	6.9	Other	5.2

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Group leader's place of birth:

Place of birth	Percent of total	W.A. Census (1966)
Australia	69.9	76.2
Britain	18.6	12.0
Europe	6.6	9.2
Other	4.9	2.6
Totals	100.0	100.0

Group leader's residence:

Area	Percent of group
Metropolitan	
Northern suburbs	35.8
Central and eastern suburbs	19.7
Southern suburbs	15.6
Rockingham/Medina area	9.8
Subtotal	80.9
Country	
Pinjarra/Mandurah area	8.1
Dwellingup	4.6
Other	5.8
Subtotal	18.5
Out-of-state	
Eastern States	0.6
Overseas	-
Subtotal	0.6
Total	100.0

Number of previous recreational visits made to the Dwellingup region over the preceding 12 months:

Number of visits	Percent of groups
0	23.3
1 - 2	25.0
3 - 5	23.8
6 - 10	16.6
11 - 20	4.5
21 +	6.8
Total	100.0

Average number of previous visits per group = 5.9

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Seasonal visitation pattern:

Season	Percent of visits
Spring	28.0
Summer	32.2
Autumn	21.9
Winter	17.9
Total	100.0

Intended length of stay:

Length of stay	Percent of groups
0 - 1 hour	10.6
1 - 2 hours	12.9
2 - 3 hours	17.9
3 + hours*	58.6
Total	100.0

*While many of the groups surveyed were camping overnight, no breakdown on numbers is available.

How the groups learnt about the area that they were contacted at:

How groups learnt about area	Percent of groups
By accident	36.3
From friends	52.5
Maps/publications	11.2
Total	100.0

Whether group leader had visited the location that they were contacted at previously:

Previous visit to area	Percent of groups
Yes	61.7
No	38.3
Total	100.0

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Expressed preferences for additional developments or facilities in State Forest:

Type of development or facility	Percent of groups			Total times mentioned (Percent of groups	Importance value*
	First preference	Second preference	Third preference		
Toilets	20.8	16.9	7.7	57.9	100
Picnic tables/barbecues	17.4	12.0	7.1	50.3	81
Camping areas - tents	8.8	9.3	6.0	33.9	49
Walking tracks	6.6	7.7	8.2	35.5	42
Canoe courses	7.7	3.8	3.8	18.6	33
Scenic drives	4.4	4.9	9.9	34.4	32
Camping areas - caravans	3.3	3.3	5.5	19.7	21
Litter bins	2.7	1.6	0.5	18.0	12
Picnic shelters	0.5	2.7	4.4	14.2	11
Horse riding areas	0.5	1.1	0.5	6.6	4
Improved roads	1.1	0.6		8.7	4
Boat ramps	0.5	1.1		4.9	4
Signs		0.6	2.2	21.9	3
Swimming areas			0.5	2.2	1
Trail bike areas				2.7	-
Drinking water				2.7	-
Field sports areas				1.6	-
No preference expressed	25.7	34.4	43.7	-	-
Totals	100.0	100.0	100.0	-	-

* A weighted value (i.e. 1st preference = 3, 2nd preference = 2, etc) which has been normalised on the scale of 1 to 100.

Reasons for visiting State Forest in the Dwellingup region:

Reasons	Percent of groups			Importance value
	First Reason	Second reason	Third reason	
Sightseeing	15.3	16.9	15.3	100
Picnic - barbecue	18.6	12.0	4.9	89
Solitude and retreat	16.4	7.7	11.5	80
Picnic - cold	8.8	10.9	4.9	56
Swimming	4.9	10.9	7.7	47
Marron fishing	8.8	4.4	2.2	39
Viewing fauna and flora	1.6	7.1	9.9	30
Canoeing	7.1	2.2	2.7	30
Photography	0.5	4.4	7.7	20
Bushwalking	2.2	2.2	3.3	15
Trout fishing	2.2	1.1	1.6	11
Horse riding	0.5		0.5	2
Business	0.5			2
Other	4.4	3.8	1.1	23
No reason expressed	8.2	16.4	26.7	-
Totals	100.0	100.0	100.0	-

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Main reason for visiting State Forest as related to type of group:

Reasons	Type and number of groups					Totals
	Single person	Single family	Two or more families	Group of friends	Organised group	
Sightseeing		11	11	4	2	28
Picnic - barbecue	1	6	13	11	3	34
Solitude and retreat		14	7	5	4	30
Picnic - cold		3	7	4	2	16
Swimming		2	3	1	3	9
Marron fishing		3	6	7		16
Viewing fauna and flora	1	1	1			3
Canoeing	1	1	1	3	7	13
Photography			1			1
Bushwalking	1			1	2	4
Trout fishing	1	3				4
Horse riding					1	1
Business		1				1
Other			2	2	4	8
No reason expressed		9	3	1	2	15
Totals	5	54	55	39	30	183

Location where groups were contacted at as related to the number and type of groups:

Location	Totals		Type of Group				
	Number of Groups	Percent of Total	Single person	Single family	Two or more families	Group of friends	Organised group
Murray Valley							
Developed sites	82	44.8	3	22	29	17	11
Undeveloped sites	67	36.6		21	14	15	17
Subtotals	149	81.4	3	43	43	32	28
Darling Scarp							
Developed sites	7	3.8	1	2	1	3	
Undeveloped sites	8	4.4		1	5	1	1
Subtotals	15	8.2	1	3	6	4	1
Lateritic uplands							
Developed sites	16	8.8		8	5	3	
Undeveloped sites	3	1.6	1		1		1
Subtotals	19	10.4	1	8	6	3	1
Totals	183	100.0	5	54	55	39	30

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Location where groups were contacted at as related to (1) whether the group leader had visited the area previously and, (2) how the groups learnt about the area:

Location	Previous visits to area (percent of groups)		How groups learnt about the area (percent of groups)		
	Yes	No	By accident	From friends	Publications/ maps
Murray Valley					
Developed sites	56.1	43.9	43.8	45.0	11.2
Undeveloped sites	76.1	23.9	26.2	61.5	12.3
Darling Scarp					
Developed sites	71.4	28.6	14.3	71.4	14.3
Undeveloped sites	37.5	62.5	37.5	62.5	-
Laterite uplands					
Developed sites	37.5	62.5	50.0	37.5	12.5
Undeveloped sites	66.7	33.3	33.3	66.7	-
All locations	61.7	38.3	36.3	52.5	11.2

Location of all groups with respect to landscape type, site features, presence of facilities and standard of road. (based on observational data):

Landscape type	Number of groups	Percent of groups
Murray Valley	273	79.1
Darling Scarp	33	9.6
Laterite Upland	39	11.3
Site features		
Adjacent to water	321	93.0
Outstanding views	56	16.2
Presence of facilities		
Developed sites	204	59.1
Undeveloped sites	141	40.9
Standard of road		
Sealed roads	8	2.3
Gravel roads	337	97.7

STUDY RESULTS (TRAFFIC COUNTER DATA)

Over the 1973 Easter holidays, traffic counters were used to record the number of vehicles using selected roads leading to various recreation attractions or facilities within the region. Counters were installed at 4 locations (2 in the Murray Valley and 2 along Scarp Road) and readings were taken each morning between 8.00 a.m. and 845 a.m. for the period April 20 to April 26.

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The vehicle counts registered on the southern extension of Scarp Road (south of the Pinjarra-Dwellingup Road) leading to Scarp Pool are of particular interest (Scarp Pool is a Forests Department picnic area situated on the Murray at the southern extremity of Scarp Road. Visitors are directed to the site by a prominent sign located where Scarp Road intersects the Pinjarra-Dwellingup Road).

Scarp Pool visitation figures:

Day	Weather	Number of Vehicles	Number of Visitors*
Good Friday	Fine	24	92
Saturday	Fine	29	112
Sunday	Overcast	45	173
Easter Monday	Overcast/rain	56	216
Tuesday (P.S. Holiday)	Overcast/rain	12	46
Wednesday (Anzac Day	Overcast	30	116
Totals		196	755

* Based on an average of 3.85 visitors per vehicle. This figure was obtained from questionnaire return and on-site interviews conducted at Scarp Pool during the Easter period.

As can be seen in the preceding table, nearly 200 vehicles carrying some 750 persons visited Scarp Pool over the 6-day period. This represents an average peak load of over 120 visitors per day on a site which was originally designed to handle 10 cars and 40 visitors.

SURVEY RESULTS (MARRON FISHING DATA)

During the 1972/73 and 1976/77 seasons, surveys designed to measure the level and impact of marron fishing activity were carried out on 11 evenings along a 53 km section of the Murray from Scarp Pool to Howse Brook. The results of these surveys are summarized in the following table.

	Date of Survey					
	December 1972		Jan.-Mar. 1973		Dec. 1976	Jan. 1977
	Week-days	Week-ends	Week-days	Week-ends	Week-ends	Week-ends
Number of surveys conducted	1	1	5	2	1	1
Number of groups observed						
Total number	9	37	15	35	44	39
Average number/night	9	37	3	15.5	44	39
Number of persons						
Total number	41	186	67	178	233	174
Average number/night	41	186	13	89	233	174
Average group size	4.5	5.0	4.5	5.1	5.3	4.5
Place of residence						
Metropolitan	83%		75%		90%	
Country	17%		25%		10%	
Intended length of stay						
Day or evening	20%		32%		32%	
Camping overnight	80%		68%		68%	
Average number of legal marron per group	N.A.		5.3		8.1	1.1

SUMMARY AND CONCLUSIONS

The major findings of this study are as follows:

1) Family groups (both single and multi-family groups) were the most common type of recreational party observed, accounting for nearly 50% of all visitors to the Dwellingup region. While organised groups accounted for less than 20% in terms of group numbers, they contained more than 30% of total visitors. The latter finding suggests that future development should include some provision for areas capable of supporting larger groups.

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2) Over 80% of all visitors come from the Perth metropolitan area. The region is within the day-use recreation zone of Perth, even though Dwellingup is well over 100 km from many of the northern suburbs.

3) The average number of visits per group to State Forest near Dwellingup in 1972-73 was approximately 6. This would seem to indicate a high degree of visitor satisfaction (as expressed by the number of repeat or return visits).

4) Summer is the highest single season of use, despite the hot weather, dust and bush flies. At this time of the year, water is the principal attraction in the region. Visits during the other seasons are substantial, with spring being the next highest followed by autumn then winter. This pattern is distinctly different from that observed in State Forest near Kelmscott and Mundaring, where the May to October period accounts for the largest number of visitors.

5) Nearly 60% of all groups stay for periods longer than 3 hours. Although the Forests Department has neither encouraged camping nor provided facilities for this activity, a substantial number of the groups surveyed camped for one or more nights. Over the Christmas-New Year period, several groups camped for periods up to eleven days along the Murray.

6) Most visitors to the region (88% of all groups) learnt about the area they were found at either from friends or by accident. This suggests that at the time the survey was conducted, a large proportion of Perth residents were unaware of many of the recreational attractions and facilities which exist in the region.

7) Over 60% of all recreational groups were return visitors; that is, they had visited the site they were found at sometime previously.

8) The most common reason for visiting the Dwellingup region was sightseeing, followed closely by picnicking and the desire for solitude and retreat. Most visitors surveyed could be described as passive recreationists. However, indications are that the more physically demanding recreational activities, such as bush-walking, canoeing and trail bike riding are increasing in popularit

9) Approximately one quarter of the groups surveyed expressed a desire to have recreational areas left in their natural state. Paradoxically many of these same groups and the overwhelming majority of all visitors wanted more intensive development. Toilets, picnic facilities, tent camping areas and walking tracks were given a high preference rating by visitors.

10) Nearly 80% of all groups observed were located in the Murray Valley The importance of water as a recreational attraction is indicated by the finding that 93% of all groups were situated on sites immediately adjacent to water. This suggests that water supply authorities will face increasing public pressure to open up certain catchment areas in the northern jarrah region for recreation.

11) A substantial number of groups (40%) were located on sites having no facilities. This finding probably reflects both the desire of many groups for solitude and retreat, and the fact that on some weekends, existing facilities were being used to capacity.

12) The traffic count figures for one site - Scarp Pool, suggest that the designed carrying capacities of certain developed areas in the Murray Valley are being exceeded on long weekends and holidays. Action (in the form of alternative areas and controls over vehicular movements) is required to minimize future site deterioration problems on these areas.

13) The level of marron fishing activity along the Murray has increased substantially over the past 4 years. Some visitors have remarked that sections of the Murray are as busy as Hay Street Mall on a Saturday morning. While the catch rate on the opening weekend of this past season was quite high (8.1 legal size marron per group) most groups along the more accessible portions of the River from Nanga Bridge to Yarrigal Brook had little fishing success. The second survey in January of this year indicated that the marron resource is quickly depleted by heavy fishing pressure, (much of it before the season opens).

With respect to future visitor use levels, there is every reason to believe that the current demand for recreational areas and facilities in the Dwellingup region and throughout State Forest will continue to grow. The question is what the scale of this increase will be.

In the United States, Clawson[1/] has estimated that the proportional increase in recreation demand will be nearly twice the increase in per capita disposable income. In estimates on recreational use in Victoria, Ferguson[2/] has supported this prediction. He has projected that the population in Australia would double and per capita disposable income increase 2.4 times for the period 1970 to 2010. This would mean that Australia could experience an almost ten-fold increase in recreational demand during this period due to increases in population growth and wealth. Even the more conservative view that demand will parallel increases in population and personal wealth would mean nearly a five-fold increase over this period. In terms of growth, this amounts to a 4 to 6% increase in demand yearly.

What such a five to ten-fold increase means in absolute terms to recreational use in the State Forest is unknown. But if the estimate of 40 000 visitor days of use for the Dwellingup region (1972-73) was anywhere near accurate, then it is possible that the region will be attracting from 200 000 to 400 000 visitor days of use by the year 2010.

In conclusion, it is obvious from what limited data that is available that the areas for both passive and active forms of recreation will need to be increased substantially, not only in State Forest, but throughout the System 6 region. The selection and development of these new areas will need to be carefully planned to minimize land use conflicts and preserve the character of the resource itself.

1/ Clawson, M. 1959. Methods of Measuring the Demand for the Value of Outdoor Recreation. Resources for the Future, Inc. Reprint No. 10.

2/ Ferguson, I.S. 1970. Planning Forest Production in Australia.