Recreation areas and their use: an evaluation of Wisconsin's public and private campgrounds, swimming beaches, picnic areas and boat accesses. No. 55 1972

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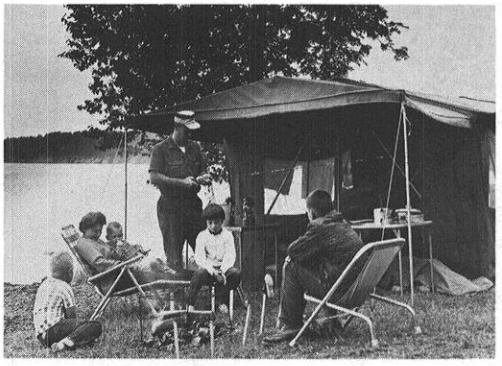
RECREATION AREAS AND THEIR USE

An Evaluation of Wisconsin's Public and Private Campgrounds, Swimming Beaches, Picnic Areas and Boat Accesses



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ABSTRACT

Parts of the findings from two outdoor recreation research projects are used in this report. A study of 65 publicly owned establishments and another study of 135 private outdoor recreation businesses, or a total statewide sample of 200 ownerships in Wisconsin, provide the basic information. The principal recreation areas, facilities, and their use covered in this report are those for camping, picnicking, swimming, and boating (boat accesses); a total of 558 developed site-areas are covered. Also, preferences for campground features were obtained from 1,407 campers. The studied samples included approximately 27 percent of all camping spaces in the state, 20 percent of all picnic tables, 9 percent of the swimming beaches, and 12 percent of the public use boat accesses.

Statewide projection factors are computed for each activity.

Campgrounds. The study included 149 campgrounds which were scored for quality. About three-quarters of them had average quality or better. The average length of open season per campground was 156 days annually. Camping space use averaged about 3 campers per weekend day in the summer. State owned areas had the heaviest use while the least used were city owned campgrounds. Cleanliness, swimming facilities and plenty of shade are the 3 out of 26 campground features considered most important by 78 percent or more of the campers interviewed.

Picnic Areas. The 166 picnic site-areas studied had an average of 5.3 acres each. There was an average of 13.7 picnic tables per acre and 429 picnicker days use per table. No relationship was found between total use per table and numbers of tables per ownership. Number of tables per acre on private ownership was more than twice the number on public owned areas Generally use per table decreased as density of tables per acre increased. Around 72 percent of all picnickers traveled 10 or more miles from their homes; more than one-third of the picnickers using city owned areas traveled 10 or more miles. Picnic area capital investments averaged $355 per picnic table. On some ownerships capital costs per picnicker day of use averaged over 10 to 15 years would amount to at least 50 cents while on some other ownerships it would be only 2 cents.

Swimming Beaches. Approximately 63 percent of all 91 beach-sites studied had less than one-half acre; only a few had 1 or more acres each. Including backup land adjacent to beach-sites gave an average size of about 3.4 acres per beach area. On the largest-use-day(s) there were an average of 766 swimmers per beach which amounted to 3,522 swimmers per beach-site acre. Intensity of use per beach-site acre was about 4 times greater on state beaches than on private owned beaches, and both had a type of fee charge for use of the beaches. Excluding those state owned the average distance between beaches was approximately 5 miles. Beaches without a bathhouse had only one-third as many swimmers as those with a bathhouse. Current values of capital investments for beach areas, exclusive of land costs, amounted to an average of $11,221 per beach area.

Boat Accesses. The 166 boat accesses studied had an average of 0.71 acres per access-point. Addition of adjacent backup lands gave a total of approximately 1 acre per access area. Nearly three-quarters of all accesses were a single lane size. On a usual summer weekend day an average of about 14 boats were launched per access. Generally about 70 percent of the users came to the ownerships only to launch their boats. Some charge was made for use of approximately one-third of the accesses, mostly from 50 cents to $1.00 per entrance. The average current capital investment per access, exclusive of land costs, was $2,686 each. There was a relationship between larger investments and greater use per access only for those county owned.

Serious water use conflicts were reported for 77 percent of the water acreage. The most common conflicts were between water skiing and fishing and between pleasure boating and fishing.

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INTRODUCTION

In statewide planning for recreation areas and facilities both publicly owned and privately owned supplies must be considered. To evaluate how supplies may meet demands, we must know not only the capacity of recreation facilities, but also how much use is made of them in different ownerships. The amount of use made by recreationists of similar kinds of supplies differs by types of ownerships and by their locations in the state.

This report evaluates campgrounds and camper preferences for various campground features; picnic areas; swimming beaches and boat accesses on state, county, city and private ownerships. The results are based on two research studies of facilities on a statewide sample of 200 ownerships: 135 privately owned and 65 publicly owned (16 state, 26 county and 23 city, or village).[1] Emphasis is placed on comparisons of facilities and their use on the four types of ownerships. Also, factors are developed for projecting facility uses statewide either by separate types of ownerships or by total supply. The projection factors may be applied to inventory data of statewide supplies.

Research findings and evaluations are presented in four principal sections of this report: Campgrounds; Picnic Areas; Swimming Beaches; and, Boat Accesses.

[1] Data were collected by field studies made in 1968 for the privately owned sector and in 1970 for the public ownerships. The schedules used are included in the private sector studies published in a series of Research Reports dealing with Private Outdoor Recreation Businesses (Cohee, 1970 and 1971).

DEFINITIONS

AREA: (with antecedent word designating recreation activity, like swimming area, boat access area or camping or campground area); Includes the designated site-area and the backup lands used by the participating recreationists.

AVERAGE OR USUAL WEEKEND DAY (OF USE): That number of people using a recreation area or facility on Saturday or Sunday as an average figure throughout the prevailing season (of the year) for the recreational activity.

BACKUP LANDS: Undeveloped areas adjacent to a developed site-area and used by the recreation activity participants (e.g., backup lands for a campground site-area used by campers; backup lands for a swimming beach site-area used by swimmers, etc.).

BEACH: Refers to the site-area of land adjacent to swimming waters used by swimmers in conjunction with their swimming activities; and it excludes backup land adjacent to the beach site-area. When used in general or less technical expressions, however, "swimming beach" or "beach" most often means an area including the beach site-area and its backup land. In this report, this larger area is termed "beach area".

BOAT ACCESS: The designated area used by boaters in conjunction with their boating activity including the launching of their boats. It includes the land immediately adjacent to and in the water (where the launching is made), the immediate roadway approaches, car and trailer parking spaces, areas for service facilities and any undeveloped backup lands used by the boaters.

ACCESS POINT (BOAT): This is the developed area of the boat access; it excludes undeveloped backup lands used by the boaters.

CAMPGROUND: The area used by campers to place their tent or trailer and the adjacent lands used primarily by campers.

OWNERSHIP: Refers to that area of and considered by the owner as a single operating tract on which is located 1 or more recreation areas; all of the tract need not be used for recreational purposes since nonrecreation enterprises may also be located on it. When used with antecendent words like private or public (state, county or city) the phrase expresses the kind of owners for such tracts of lands.

LARGEST-USE-DAY: The greatest number of people using a recreation area or facility on a single day during the year.

PARTICIPANT DAY (PD): The occasion of one person taking part in a recreation activity for a day or part of a day.

SERVICE FACILITIES: Those mechanical or building appurtenances on a recreation area used by the recreationists: for example, toilets, drinking water outlets, bathhouse, electrical and sewage disposal outlets, etc.

SITE-AREA: (with antecedent word designating recreation activity); Refers to the designated and developed part of the lands (excluding backup lands) that are used directly in conjunction with the main pursuits of the recreation activity.

UNDEVELOPED LANDS: Those areas on the ownership that are not developed for some specific recreational activity; they are not considered as backup lands for a developed site-area unless adjacent to it and used by the campers, swimmers, etc.

CAMPGROUNDS

INTRODUCTION

Research findings have been analyzed for 149 campgrounds with 174 developed site-areas, each having varying numbers of camping spaces (or units). There were 82 private, 37 state, 22 county and 8 city owned campgrounds. The location of the campgrounds studied is shown in Figure 1. Also, camper preferences for campground features were obtained from 294 camping parties including 1,407 campers at 113 of these campgrounds. The camping parties were about equally distributed between those (141) on private and those (153) on public owned campgrounds.

The campgrounds studied had 7,804 camping spaces including 4,214 spaces on private ownerships and 3,590 spaces on publicly owned lands (Table 1). Compared with total numbers of camping spaces in the state in a 1968 survey (Woodall, unpubl.), this sample included 26 percent of the total spaces in privately owned campgrounds and 27.7 percent of those on public ownerships. No samples were included for campgrounds on federal lands which account for about 4 percent of all camping spaces in the state (WORP*, 1968).

For each campground, information was collected on size, facilities provided, quality (by use of a score card covering 22 subject items), and on amount of backup lands (undeveloped lands). Procedures followed in making these studies are covered in Cohee, (1970e). The score card is shown in Appendix A.

*WORP = Wisconsin Outdoor Recreation Plan

QUALITY

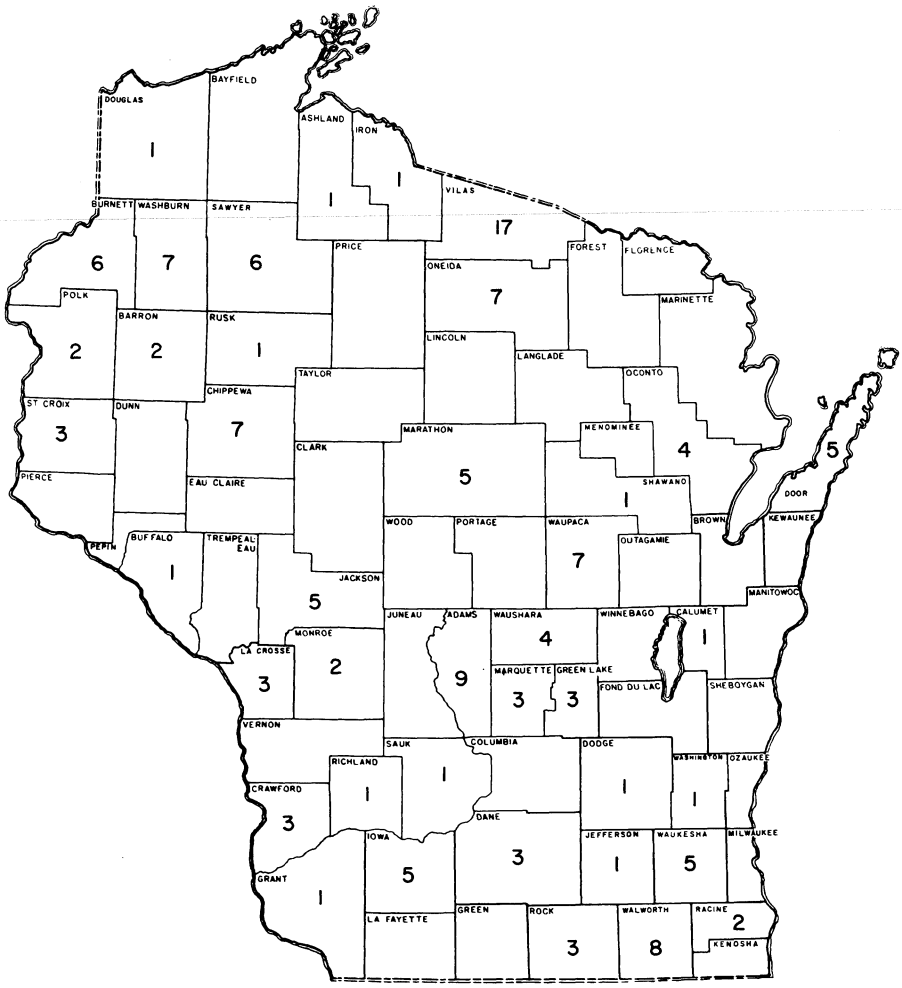
All campgrounds were scored and classified with an overall rating ranging from A to E (Table 2). Although the highest quality individual campgrounds were on private ownerships, so also were the lowest quality ones. The highest rating (A) campgrounds included 17 percent of the private, 78 percent of the state, 14 percent of the county but none of the city owned campgrounds. However, if the B-rated campgrounds are added to the A group, then around 50 percent of the private, county and city campgrounds and 78 percent of the state owned campgrounds had these two higher ratings.

As a whole, approximately three-fourths of all campgrounds studied had a C or better rating. Based on a statewide projection of these data, the average rating for Wisconsin's campgrounds was 72.7 percent, which is slightly above the upper limit of the C group range of 60-71 percent (Table 3). Even though only about 17 percent of all camping spaces in Wisconsin are on state owned lands, there can be no doubt that the high quality of their campgrounds has favorably influenced the status of campgrounds statewide.

SIZE

Strictly on the basis of acres of developed lands, campgrounds on state ownerships were the largest (averaging 12.6 acres each) (Table 4). County and private owned campgrounds were about 2 or 3 acres smaller; however, city campgrounds were considerably smaller, averaging only 2.6 acres each. Furthermore, the city campgrounds were also the smallest

FIGURE 1. Number of Campgrounds Studied (149 in 40 counties).



when measured by their 28.6 camping spaces each compared to an average of 51 to 58 spaces each for campgrounds on the other three ownerships (Table 4).

State owned campgrounds provided more room per camping space than did other ownerships. These more spacious grounds had only 77 percent as many spaces per acre as the private and county campgrounds and only about 40 percent of the number per acre as found on city owned campgrounds. However, wider distances (51-100 feet vs less than 50 feet) between camping spaces was not necessarily associated with larger campgrounds. In some instances smaller campgrounds, especially city and county owned, had the greater distances between camping spaces. Although it might seem that larger ownerships, larger developed campground site-areas and wider distances between camping spaces would go together, this was not true. In fact, no important relationship was found between these three size factors for the 149 campgrounds studied.

Size of ownership varied greatly between separate holdings as also did numbers of acres developed for all recreational purposes on the holdings. This was true for all four types of ownerships. Private ownerships ranged from 3 to 3,800 acres in size with 3 to 325 acres developed; state ownerships had from 320 to 140,000 acres in their holdings, with 47 to 442 acres developed; county ownerships were from 1 to 1,450 acres in size, with 1 to 235 acres developed; while city ownerships had from 8 to 396 total acres each, with 3 to 60 acres of developed recreational lands. From these numbers it would appear that the larger holdings had more developed recreational lands, as in fact is true with state ownerships, which averaged 18,819 acres each and 169 acres developed for recreational use. On a relative basis, however, this means that less than 1 percent of the average state holding is developed (5% exclusive of state forests). County ownerships had nearly 32 percent (55 acres) developed from their 173 acres per holding (Table 4), and city and private ownerships had 22 and 25 percent developed, respectively.

There were relatively more county and city parks used almost entirely for those recreational purposes requiring site-area developments than was the case for state and private ownerships. In general, however, there is no basis for expecting a direct relationship between size of owership and acreages of developed recreational lands. Therefore, statewide projection factors for total size per ownership and for acreage of all developed recreation lands can be used from the averages of separate types of ownerships in this study, but single composite factors for all types of ownerships would not be reliable.

BACKUP LANDS

Backup lands are undeveloped areas associated with developed site-areas. They are the areas where campers walk or play when not at their camping space or using the service facilities. Such backup lands are a part of the total area considered for participants in the camping activity, and may serve only for related camping activities (single purpose) or for two or more purposes (shared purpose or multiple purpose). Undeveloped lands which are not used by campers, even though close to or adjoining some part of a developed camping site-area, are not considered as backup lands for this activity.

Privately owned campgrounds had more backup lands per campground (22.5 acres) and per site-area (18.6 acres) than did those on either of the other three types of ownerships (Table 4). City parks had the fewest acres in these respects (1.6 acres both per campground and per site-area). Since size of campgrounds and site-areas vary between types of ownerships, the actual acres of backup lands do not afford good comparisons. The ratio of backup lands per acre of developed site-area in a campground is significant. It varies from 0.44 acre on county ownerships to 2.5 acres for privately owned campgrounds. State ownerships had a ratio of 1.4 acres to 1 acre, and city ownerships had 0.63 acre to 1 acre. On some ownerships, acreage for backup purposes was not available because most of the holding is covered by developed site-areas. On some other ownerships, large acreage of undeveloped lands were located on the holding but either were not accessible to campers or simply were not used by them.

To project these data to the statewide inventory of campgrounds, the ratios shown in Table 4 should be applied separately by each of the four types of land ownerships.

SERVICE FACILITIES

Prevalence and types of toilets, water, sewage disposal, electricity, laundry machines, store and other facilities for camper use varied greatly between individual campgrounds and types of owerships (Table 5). Extremes went from one case with a hand pump, unclean pit toilets and trench garbage disposal to another campground having a pressure water system, electricity and sewage hookups at each camping space and completely modern, clean flush toilets and hot water showers, laundry machines and general store on the grounds, plus well placed public telephone booths. Only one facility was common to all campgrounds, namely drinking water supply. However, outlets were not always close enough to all camping spaces and frequently a desirable firm dry base with adequate drainage was not provided. As an average (Table 3), all service facilities scored 75.1 percent, with state ownerships having above average (score 85%) quality within the types of facilities provided.

Although city owned campgrounds might be expected to have more facilities for electricity supply and sewage disposal, this was not the case. More of the privately owned campgrounds had flush toilets (77%), hot water (79%), bath showers (77%) and electric hookup at camping spaces (91%), than did campgrounds on any of the other three types of ownerships. Most of the city owned campgrounds, however, are provided as a convenience for transient campers, rather than as a major business enterprise and investments have purposely been minimal in most instances. Even so, half or more of the city campgrounds had flush toilets, hot water and showers and electrical outlet hookups at camping spaces.

Less than one-fourth of all campgrounds (and these were mainly on private ownerships) had laundry machines or a store. All campgrounds had a picnic table at some of their camping spaces and most of them had a table at each space. Provision of a cooking grill at each camping space seems to be unnecessary and less than half (47%) of all campgrounds had any grills. The city and county campgrounds had the most grills (Table 5).

Campers' preferences for some of these service facilities are not the highest priority among campground features (Table 6). For example, 67 per-

cent of the campers want bath-shower facilities, 60 percent want a store on the grounds, but only 49 percent want flush toilets only 10 percent want both sewage and electric hookups at the camping spaces. This may explain why campground management usually does not have electric or sewage outlets at each camping space or rarely has only flush toilets and no pit toilets. Installation costs for advanced modern features are too great to allow wise management to install unrequired types of service facilities, but this varies between ownerships and expectations for the campground enterprises.

CAMPER PREFERENCES

Data on preferences for certain campground features were obtained from 294 camping parties including 1,407 people, interviewed on 113 campgrounds (65 privately owned, 21 state owned, 21 county owned and 6 city or village owned). Of the camping parties interviewed, 153 were on publicly owned campgrounds and 141 were on privately owned campgrounds. Each camping party gave its preference for campground features that were sufficiently important to make an appreciable difference in their selection of a campground.[2] Indication of preferences pertained to all campgrounds used by the camping party without reference to the one being used at the time of the interview. Type of ownership was not considered as having any major influence since 85 percent of the camping parties interviewed had used both public owned and privately owned campgrounds.[3]

The ranking of 26 campground features or characteristics by percent of all camping party preferences for each one is presented in Table 6. Three features, namely, cleanliness of campground and its facilities, availability of swimming facilities and plenty of shade ranked first, second and third in that order. Over 75 percent of the camping parties had a preference for these features. However, the intensity of preference for them was not the same. The camping parties were asked to indicate their 5 most outstanding preferences in order of their importance (Table 7). For those 98 percent of the campers who preferred cleanliness, 84 percent ranked cleanliness among their 5 most important preferences. Similarly, 88 percent of the campers preferred swimming facilities at the campground and 81 percent of these campers placed this preference among the 5 having most importance to them.

Contrasts in intensity of preferences can be illustrated by comparing two campground features, for example, plenty of shade and low price for the camping space (respectively ranked 3rd and 15th, Table 6). Regarding preference for plenty of shade: important feature—78 percent said "yes"; unimportant—3 percent; and impartial indication— 19 percent. (And, only 38 percent of the "yes" group placed shade among their five most important preferences.) Regarding low price for the camping space: important feature —only 40 percent said "yes"; unimportant—12 percent; and, impartial indication—48 percent. (And 27 percent of the "yes" group placed low price among their five most important preferences.) The higher intensity of preference for shade, therefore, must be interpreted in relation to other campground characteristic preferences polled and the priority position taken by all campers interviewed. Of all 294 parties interviewed only 29 percent had a priority preference for plenty of shade and only 11 percent had a priority preference for low price for a camping space (Table 7).

Preference for flush toilets were about evenly divided between those campers (49% of all) who wanted this service facility and those (42%) who gave it no preference, plus those (8%) who indicated it as unimportant. It ranked 12th among 26 features. And, about one-half (54%) of those who wanted flush toilets on a campground had strong preferences as evidenced by this feature being included among their 5 highest priority preferences (Table 7). Interpretation could be that this 12th ranking feature among those preferred by campers is about an average or middle-of-all preference, just as is the 13th ranked feature, i.e., privacy at the camping space because of its screening (usually by vegetation) from other spaces.

It is easy to interpret preferences for those campground features least preferred. For example, the one ranking 26th was nearness of a campground to a super highway. Only 2 percent of all campers preferred this feature (Table 6). Seventy-one percent of the campers indicated it was unimportant for a campground to be close to a super highway and another 27 percent of the campers gave it neither a preference nor an indication of unimportance.

The ten campground features that generally received the most indications of preference from campers were: cleanliness, swimming facilities, plenty of shade, wide distance between camping spaces, helpful operator, fishing facilities, quietness, bath-showers, store on the grounds, and good roads from the main highway. These 10 campground features also received the most preferences when data were evaluated separately for campers interviewed on the four different types of ownerships. There were only two exceptions, namely, that preferences by campers on county owned campgrounds gave bath-showers 11th place ranking (among 26 features studied) and preferences by campers on privately owned campgrounds placed good roads from the main highway in 12th rank. This was caused respectively by privacy (from space screening) ranking 10th for campers on county owned lands, and by flush toilets ranking 9th for campers on privately owned lands.

USE

Each day or part day of use by a person is commonly known as a "participant day" for camping activity. There were about 1,532,600 participant days (PD's) annually for all of the 149 campgrounds studied.[4] The state owned campgrounds averaged 13,774 PD's each for the year, county owned campgrounds had 12,391 PD's, privately owned campgrounds had 8,645 PD's, and city owned camp-

[2] See Cohee (1970e) for details on full content and procedures followed in obtaining these research data from campers. Steps followed by the interviewer with campers: (1) Reviewed all 26 items (features); (2) Read each item and camper indicated "yes" if important to his party; (3) From those items recorded "yes", camper indicated priority of the 5 having most importance to his party; (4) From all items not having a "yes" recording, camper indicated 5 items having the very least or no importance for his party.

[3] Apparently this assumption was well founded since there were not great differences in the major preferences between campers interviewed on the four different types of campground ownerships.

[4] The percentages of these PD's of camping by types of ownerships represented in the sample are: private—46%; state—33%; county—18%; and city—3%.

grounds had 5,179 PD's each (Table 8).

Since the number of camping spaces per campground is not the same for the four ownership groups of campgrounds, the more significant comparative figure for annual use is the number of PD's per camping space. State owned campgrounds had the greatest use with an average of 245 people served per space annually. County owned campgrounds had the next largest annual use with 213 PD's per space. City owned campgrounds were third (181 PD's per space) with about one-fourth less use per space, while one-third less use (168 PD's per space) was experienced on privately owned campgrounds.

Length of season, i.e., days open for business a year, however, has an influence on total use (PD's) of a campground. As an average the privately owned campgrounds were open only 147 days per year and city owned 148 days, while those state owned were open 185 days and county owned for 173 days.

Comparison of available space-days and number of space-days-occupancy gives an estimate of annual intensity of campground use.[5] On the basis of weighted averages for all 149 campgrounds studied, the total number of space-days-occupancy was equivalent to 32.8 percent of the camping spaces being filled each day the campgrounds were open during the year. Privately owned campground spaces had the highest equivalent use at 35 percent, county owned was next at 32 percent, followed closely by city owned at 31 percent, and it was not greatly different for state owned campgrounds at 29 percent. However, use of camping spaces on the average or usual weekend day for the season is much greater. County owned campgrounds, for example, had 54 percent of their camping spaces filled on the usual or average weekend day which was approximately one-fifth greater than their average annual fill. (Holiday weekend days are not included in these percentage figures since most regular camping spaces are filled and many campers use "overflow" or temporary areas nearby.) State, city and private campgrounds had 6 to 17 percent greater fill on the usual weekend day of the season as compared to their respective total uses for the year. It is obvious, therefore, that county owned campgrounds, with the second largest annual volume of use per space, are much more "weekend campgrounds" throughout the year than are either state, city or privately owned campgrounds.

The campground use picture is considerably different when examined for the 90 to 101 day summer period including mainly June, July and August. That part of annual participant days of use occurring in this summer period ranged from 77 percent for private owned campgrounds to 93 percent for those state owned. Furthermore, the camping spaces had high percentage fill on the usual weekend day in this summer period. State owned campgrounds averaged 68 percent fill of their camping spaces (holiday weekend days excluded) with a range of between the low of 43 percent for one campground studied to the high of 93 percent for another. Intensity of use during this summer period on the usual weekend day was less for the other ownerships, amounting to 58 percent for county, 56 percent for city and 52 percent for privately owned campgrounds. The range was great between individual campgrounds in these 3 ownerships, from the low of 5 percent for one to 100 percent for some others.

In general, campgrounds in northern Wisconsin had a higher percentage of their total use in the summer than did those in the southern part of the state. For example, state owned campgrounds in the northern part had about 96 percent of their annual PD's of camping in the 101 day summer period, while the southern campgrounds had 88 percent.

On usual weekend days during the summer the state owned campgrounds averaged more campers (participant days of camping) per camping space than did other ownership campgrounds (Table 9). Numbers of campers (PD's) averaged over all camping spaces on state campgrounds showed 2.86 participants days per space. Similarly, each city owned campground space had 2.15 campers (PD's), while county owned and privately owned campgrounds were between these figures respectively with 2.53 and 2.48 PD's per camping space.

Two principal statewide projections were made from the data on participant days of camping obtained in this study. The first estimates the annual participant days of camping on all campgrounds in the state. The second estimates the participant days of camping on a usual weekend day in the June, July and August summer period. In developing each estimate the campground use data shown in Tables 8 and 9 were projected by types of ownership to their respective total number of camping spaces in the state. The number of camping spaces in the state available for transient campers was assumed to be approximately 27,000 spaces.

These projections indicate that there were approximately 5,100,000 participant days of camping annually in the state. If averaged over all camping spaces each space would have had the equivalent of 187.7 participant days for the year. This camping was distributed by types of ownership with 55.5 percent on privately owned, 22.2 percent on state owned, 13.6 percent on county owned and 8.7 percent on city (and village) owned campgrounds.[6]

The projections also provide an estimate that 68,000 campers used Wisconsin campgrounds on a usual weekend day during the summer period including June, July and August. As an average if these participant days of camping were spread over all camping spaces each space would have had an equivalent of 2.52 campers.[7]

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[5] Number of days open times number of camping spaces in the campground gives annual space-days; sum of the numbers of spaces filled on each day of the open season gives annual space-days-occupancy.

[6] A revised estimate for annual participant days of camping in the state can be easily made from use data in Tables 8 and 9 when total number of spaces and their percentage distribution between types of ownership are altered. For example, if 33,000 camping spaces were assumed and distributed: 17% state and federal owned, 10% county, 6% city (& village & town) owned, and 67% privately owned, there would be a projected total of 6,150,120 participant days of camping annually in Wisconsin. (State owned use data were applied to federal owned camping spaces.)

[7] This 68,000 figure can be compared to demand survey data for a usual weekend day of transient camping in the state. If holidays are included, the average result would be approximately 73,670 campers per day. Or, if non-transient (seasonal or permanent camping trailer) spaces were included for the private campgrounds (holidays excluded), the average result would be approximately 72,500 campers per day. And, if both holidays and non-transient spaces are included, it would be about 78,500 campers per weekend day of the summer period.

SUMMARY PROJECTION FACTORS FOR USE WITH INVENTORY DATA

1. Total number of participant days of camping *annually* per camping space; by campground ownership:

Private	168
State	245
County	213
City	181
All four	196
Projected statewide average per camping space(weighted average)	188.7

2. Number of participant days of camping for an average weekend day throughout the year per camping space; by campground ownership:

Private	2.0
State	1.67
County	2.09
City	1.85
All four	1.91
Projected statewide average per camping space (weighted average)	1.94

3. Number of participant days of camping for an average weekend day during the 90–101 days summer season per camping space; by campground ownership:

Private	2.48
State	2.86
County	2.53
City	2.15
All four	2.59
Projected statewide average per camping space (weighted average)	2.52

4. Distribution of annual participant days (camper days) of camping by percentages of total camping; by campground ownership:

Private	55.5
State	22.2
County	13.6
City	8.7
All four	100

5. Number of camping spaces per campground and number of spaces per acre of developed site-area; by campground ownership:

	No. Spaces	Spaces /Acre
Private	51	5.7
State	56	4.4
County	58	5.7
City	29	11.2
All four	52	5.4

6. Number of acres per campground in developed site-areas and in backup lands; by campground ownership:

	Site-Area Acres	Backup Lands
Private	9.1	22.5
State	12.6	18.2
County	10.2	4.4
City	2.6	1.6
All four	9.8	17.7
Ratio (weighted average) for acres of backup lands per each acre of developed site-area lands	1.8 to 1.0	

7. Average number of days (annually) per campground that establishments are open for business; by campground ownership:

Private	147
State	185
County	173
City	148
All four (weighted average for sample)	160
Projected statewide average campground (weighted average)	156

TABLE 1. Size of Sample Studied Within Various Ownerships

	Private	State	County	City	Total
Number					
Ownerships	82	16	21	8	127
Campgrounds	82	37	22	8	149
Developed Camping Site-Areas	99	43	24	8	174
Camping Spaces (Units)	4,214	2,079	1,282	229	7,804
Acres					
In Ownerships Studied	12,136	301,099	3,638	694	317,567
Developed for (all) Recreation	3,116	2,700	1,164	154	7,134
In Developed Site-Areas (Camping)	744	468.5	224	20.5	1,457
Backup Lands for Site-Areas	1,846	675	97.5	13.0	2,631.5

TABLE 2. Campground Quality Ratings*

Rating	Private	State	County	City	Total
A -- Number	14	29	3	--	46
Percent	17	78	14	--	31
B -- Number	23	8	8	4	43
Percent	28	22	36	50	29
A and B -- Number	37	37	11	4	89
Percent	45	100	50	50	60
C -- Number	24	--	10	2	36
Percent	29	--	45	25	24
D -- Number	17	--	1	2	20
Percent	21	--	5	25	13
E -- Number	4	--	--	--	4
Percent	5	--	--	--	3
D and E -- Number	21	--	1	2	24
Percent	26	--	5	25	16
Total Campgrounds	82	37	22	8	149
Sample projected statewide to all campgrounds**					
A and B -- Percent	--	--	--	--	51
C -- Percent	--	--	--	--	27
D and E -- Percent	--	--	--	--	22

* See Appendix A for Campground Score Card -- Schedule S. The alphabetical scores include percentage score point ranges of: A for 84-95 points; B for 72-83 points; C for 60-71 points; D for 48-59 points; and E for 36-47 points. No campground had over 95 or under 36 score points. (Percentages are from the rated score divided by the possible score; scoring system covered in detail in Cohee, 1970).

**Weighting factors used are in percentage ratio to state composition of all camping spaces by ownerships (WORP, 1968), which are: 62 percent - private; 17 percent - state; 12 percent - county; and 9 percent - city and village owned.

TABLE 3. Summary of Campground Rating Scores

Score Card Rating Sections	Average Scorings by Ownership Groups				
	Private	State	County	City	Total*
I. Roads - access and circulation					
Possible score points	18.7	19.9	17.6	16.7	18.6
Rating score points	13.6	18.6	14.7	13.2	14.5
Score (%)	72.7	93.6	83.5	79.1	78.2
II. Design - general and site-area					
Possible score points	46.5	47.3	47.1	45.0	46.6
Rating score points	30.7	39.0	32.7	28.2	32.1
Score (%)	66.0	82.5	69.5	62.8	69.0
III. General service facilities					
Possible score points	29.5	27.4	27.2	26.7	28.6
Rating score points	21.5	23.3	20.4	19.6	21.5
Score (%)	73.0	85.0	75.0	73.4	75.1
IV. Totals (of I, II, III)					
Possible score points	94.7	94.5	92.3	88.5	93.8
Rating score points	65.8	80.8	67.9	61.1	68.2
Score (%)	69.0	85.5	73.7	69.0	72.7
Rating intervals (%)	36.0-95.0	75.0-93.2	54.4-91.0	57.0-79.1	36.0-95.0**
Rating interval mid-point (%)	65.5	84.1	72.7	68.05	69.8
Number of ownerships	82	16	21	8	127**
Number of campgrounds	82	37	22	8	149**
Avg. No. Camping spaces/campground	51	56	58	29	52**

* Weighted averages; by use of data for ownership groups weighted by their respective representation in the statewide total numbers of camping spaces; weighting percentage factors used for state composition (WORP, 1968) are: 62 - private; 17 - state; 12 - county; and 9 - city and village.

**Not weighted.

TABLE 4. Average Size of Ownerships and Camping Areas*

	Private	State	County	City	Total
Per Ownership -- Acres					
Total Land	148	18,819**	173	87	2,500
Developed (all) Recreational Lands	38	169	55	19	56.2
Per Campground[1]					
Developed Lands -- Acres	9.1	12.6	10.2	2.6	9.8
Camping Spaces -- Number	51.4	56.2	58.3	28.6	52.4
Backup Lands (Campers' use) - Acres	22.5	18.2	4.4	1.6	17.7
Per Campground Site-Area[1]					
Developed Lands -- Acres	7.5	10.9	9.3	2.6	8.4
Camping Spaces -- Number					
Total	42.6	48.3	53.4	28.6	44.8
Per Acre	5.7	4.4	5.7	11.2	5.4
Backup Lands (Campers' use) - Acres	18.6	15.7	4.1	1.6	15.1
Ratio (Acres)					
Backup Lands Per 1 Acre of Developed Site-Area Lands	2.5	1.4	0.44	0.63	1.8

* Based on data in Table 1.

**Excluding the 3 state forests, average of the other 13 state parks was 3,220 acres each.

[1] A campground may include one or more separate site-areas but is managed as one unit, usually separated by one or more miles from another campground when both are on the same ownership -- this is common on some state ownerships; separated site-areas in the same campground are found on some of all 4 types of ownerships.

TABLE 5. Percentage of Campgrounds Having Various Service Facilities Available*

Service Facilities	Private	State	County	City	All
Toilets					
Pit toilets only	23	51	82	25	49
Pit toilets	62	97	91	50	74
Flush toilets only	38	3	9	50	26
Flush toilets	77	25	19	75	52
Both pit & flush toilets	39	8	10	25	26
Water (domestic purposes)					
Drinking water	100	100	100	100	100
Hot water	79	5	14	50	50
Showers	77	5	10	50	48
Electricity and sewage					
Electric hookups	91	16	55	62	66
Sewage hookups	20	-	-	-	11
Both elec. & sew. hookups	20	-	-	-	11
Laundry machine(s) & store					
Laundry machine(s)	28	-	-	12	16
Store	30	-	-	-	23
Both laundry mach. & store	23	-	-	-	13
Grills	44	32	68	87	47

* Total campgrounds: Private 82; State 37; County 22; and City 8.

TABLE 6. Ranking of Camper Preferences (Percent) for Various Campground Features*

Rank	Feature	Important	Unimportant	Impartial
1	Cleanliness	98	0	2
2	Swimming facilities	88	2	10
3	Plenty of shade	78	3	19
4	Wide distance between camping spaces	73	5	22
5	Helpful operator	71	2	27
6	Fishing opportunity	69	6	25
7	Quietness	69	3	28
8	Shower bath facilities	67	4	29
9	Store on grounds	60	8	32
10	Good roads from main highway	58	9	33
11	Acreage to use near camping space	51	10	39
12	Flush toilets	49	8	43
13	Privacy (by screening of spaces)	46	14	40
14	Trails (walking, hiking and/or nature)	44	17	39
15	Low price for camping space	40	12	48
16	Nature study opportunity	32	9	59
17	No other activity nearby	27	22	51
18	Boat rental supplies	26	43	31
19	Nearness to home residence	19	41	40
20	Electricity (only) at space	18	23	59
21	Water sports opportunity	18	43	39
22	Hard surface boat ramp	15	69	16
23	Nearby entertainment facilities	15	60	25
24	Other (miscellaneous)	14	0	86
25	Electricity and sewage disposal at space	10	23	67
26	Nearness to super highway	2	71	27

* From 294 camping parties with 1,407 camper members on 113 campgrounds. The horizontal lines separate the campground features into four percentage groups for the "Important" rankings; for example features 1, 2, & 3 were preferred by over 75 percent of the campers, and features 19 through 26 were preferred by less than 25 percent of the campers.

TABLE 7. Intensity of Camper Preferences for Various Campground Features*

Feature	Important			Percent High Priority of All Parties (294)
	Total Number	High Priority** Number	Percent	
Cleanliness	289	242	84	82
Swimming facilities	260	210	81	71
Plenty of shade	228	86	38	29
Wide distance between camping spaces	215	109	51	37
Helpful operator	209	61	29	21
Fishing opportunity	203	128	63	44
Quietness	202	60	30	20
Shower bath facilities	197	105	53	36
Store on grounds	177	58	33	20
Good roads from main highway	171	34	20	12
Acreage to use near camping space	150	12	8	4
Flush toilets	145	78	54	27
Privacy (by screening of spaces)	136	64	47	22
Trails (walking, hiking and/or nature)	128	24	19	8
Low price for camping space	118	32	27	11
Nature study opportunity	94	11	12	4
No other activity nearby	79	3	4	1
Boat rental supplies	77	13	17	4
Nearness to home residence	56	22	39	8
Electricity (only) at space	54	38	70	13
Water sports opportunity	53	15	28	5
Hard surface boat ramp	45	15	33	5
Nearby entertainment facilities	43	11	26	4
Other (miscellaneous)	41	20	48	7
Electricity and sewage disposal at space	30	18	60	6
Nearness to super highway	7	1	14	-

* From 294 camping parties with 1,407 camper members on 113 campgrounds.

**Includes preferences of camping parties for 5 campground features having most importance to them. The three horizontal lines represent the separations established in Table 6. Each percentage is based on 294 total.

TABLE 8. Annual Use of Campgrounds Within Various Ownerships

	Private	State	County	City	Total
Sample Studied					
Campgrounds	82	37	22	8	149
Camping spaces/campground -- avg.	51	56	58	29	52
Annual participant days (APD's)					
Total -- in all campgrounds	709,000	509,639	272,603	41,363	1,532,605
Per campground -- avg.	8,645	13,774	12,391	5,179	10,285
Per camping space (S) -- avg.	168	245	213	181	196
Data Projection Statewide					
Percentage of all camping spaces (R)*	62	17	12	9	100
APD's per camping space (S) x (R)**	(104.16)	(41.65)	(25.56)	(16.29)	187.66
Percentage distribution of annual participant days	55.5	22.2	13.6	8.7	100

* Percentages of all camping spaces by ownerships are determined exclusive of federal owned campgrounds which account for less than 4 percent of all camping spaces (WORP, 1968).

**These numbers are a result of weighting the annual participant days (APD's) per camping space by the percent of all spaces (statewide) in a respective ownership; they are only meaningful when applied to the total number of camping spaces in the state to obtain annual participant days (APD's) for the respective type of ownerships.

TABLE 9. Participant Days of Camping per Average Weekend Day (By Annual and Summer Season Periods)*

	Private	State	County	City	All
Over Annual Season					
Per campground	101	94	122	58	100
Per camping space**	2.0	1.67	2.09	1.85	1.91
Over Summer Season (of 90-101 days)					
Per campground	128	161	147	67	136
Per camping space (S)**	2.48	2.86	2.53	2.15	2.59
Sample data projected statewide					
Percentage of all camping spaces (R)1/	62	17	12	9	100
Participant days per camping space (S) x (R)1/	(1.54)	(.49)	(.30)	(.19)	2.52**
Percentage distribution of participant days for a summer weekend day	61	19	12	8	100

* A participant day (PD) of camping is one person (camper) for a day.

** Weighted average

1/ These numbers are a result of weighting the number of participant days per camping space (S) by the percentage of all spaces (statewide, R) in a respective ownership; they are only meaningful when applied to the total number of camping spaces in the state to obtain PD's for a summer weekend day for the respective type of ownerships.

PICNIC AREAS

INTRODUCTION

Research findings for 76 ownerships with 166 developed picnic site-areas have been analyzed to provide factors regarding: size of areas, backup lands —single purpose for picnickers and shared purposes with others, and number of people using picnic areas. The 76 ownerships included: 16 privately owned enterprises, 16 state ownerships, 21 county ownerships, and 23 city ownerships. Location of these areas by counties is shown in Figure 2.

Procedures followed in making these studies of picnic areas are covered in Cohee (1970a, Appendix A). For many of the picnic areas studied a general measurement of acreage was made by research personnel; this was not necessary when layout maps were available. Also a rough count of tables was made to verify the number of tables reported by an operator for his area(s).

Overcounting of picnic tables for picnicking use is common by operators of recreation areas on private, county and city ownerships when they have both a campground and a picnic area. This comes about because many of their picnic tables are available for picnickers when not in use at camping spaces. Data included in this study are for those picnic tables available throughout the season for use of picnickers only. Usually those weekend days having large numbers of campers are also the same days that the larger number of picnickers are on the ownership and camper tables are not available for picnickers. On week days it is an exceptional situation when picnickers cannot find available tables at their chosen picnic area.

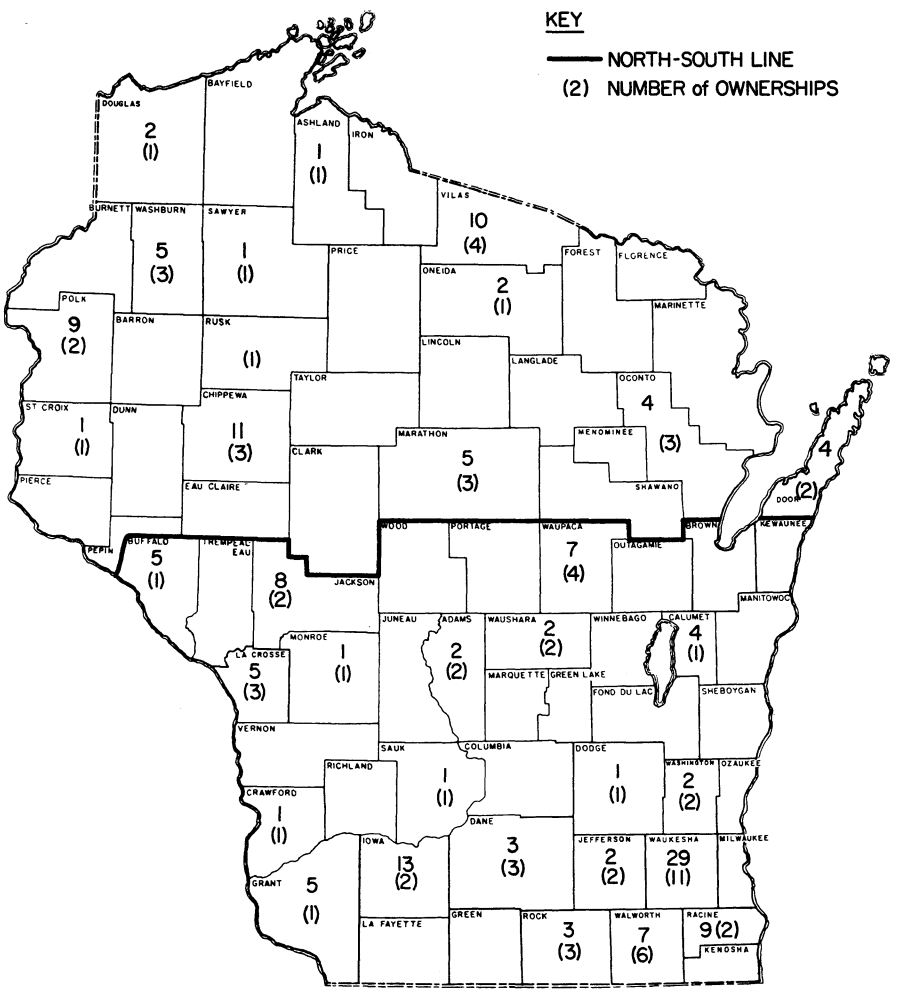
PICNIC AREAS AND PICNICKING

For purposes of this study a picnic area is defined as a definite area with tables established for use of picnickers. Roadside spots with picnic tables primarily used by travelers making short stops were not included. Also tables at camping units, on swimming beach areas or on other recreational areas were not included.

A picnic site-area is the developed part of the picnic area where tables and service facilities are located. Most picnic areas also included some backup (undeveloped) lands adjacent to the site-area(s). They are the lands where picnickers may engage in informal play or may rest when not on the main picnic site-area immediately around the tables. Such backup lands were counted only if picnickers definitely used them in association with their picnicking activity (the ownership may also include other undeveloped lands).

All outings involving a picnic basket lunch do not necessarily make pic-

FIGURE 2. Number of Picnic Areas Studied (166 on 76 ownerships in 33 counties).



nicking a primary purpose for the day. Frequently a person will combine picnicking and some other recreation activity on a day's outing. Also, all picnicking is not done only on designated picnic areas or with the use of a picnic table. Even on established picnic areas picnickers often choose a spot removed from the tables where they sit on the ground while eating their lunch or stand around a card table used for serving their food. Nevertheless, the prevailing pattern for most picnicking includes a definite area with picnic tables and service facilities—drinking water and toilets. Indications of size and intensity of use of picnic areas should be helpful in projecting statewide supply and demand information for area needs.

The average number of days throughout the year that some picnicking took place was 149 days each for all 76 ownerships studied. This average figure was about the same for all state and city and for northern county owned areas (Table 10). However, all privately owned areas were open an average of approximately 3 weeks less with their southern ownerships open only 119 days. Southern county owned areas were open the longest, averaging 180 days. (Some public owned areas were open all year but picnickers rarely used them on days not accounted for in Table 10.)

SIZE

All four types of ownerships in the northern part of the state were larger than were those for the corresponding type in southern Wisconsin (Table 10). For all areas studied state ownerships were the largest and city ownerships the smallest. City ownerships averaged 52 acres each with about 40 percent (20 acres) used for recreational purposes. Private ownerships had about the same size recreation acreages each (22 acres), but the ownerships had an average of 88 acres each. County ownerships were three times larger than city and double the size of private ownerships, but they had only about one-third (54 acres) of their land in developed recreational uses (hunting excluded).

Most state ownerships (parks and forest recreation areas) included at least several hundred acres and some had several thousand. Also, state lands for all recreational purposes added up to large acreages, averaging 169 acres per ownership for all types of developed areas. This was over 3 times more recreation lands per ownership than on county ownerships and around 8 times more than that for city or private ownerships studied.

The number of picnic tables per city or county ownership averaged about the same (83 or 84) while private ownerships had fewer tables (51). State ownerships had an average of 208 tables each. The range in numbers of picnic tables was the greatest between individual city parks, with 4 tables on one ownership and 717 tables on another. On county ownerships, the number of tables ranged from 5 to 400; on private ownerships, from 5 to 120, and on state ownerships from 35 to 600. The average for all 76 ownerships studied was 103 tables each.

There are great differences between sizes of developed site-areas (Table 11). These differences are pronounced between types of ownerships. Privately owned site-areas averaged about one-third (2.2 acres) the size of those on state ownerships (6.9 acres) and were only approximately 40 and 55 percent the size of county and city areas. For all four types of ownerships, their southern site-areas were larger than their northern ones. All 166 site-areas studied had an average of 5.3 acres each but those 60 in the northern part of the state averaged about 13 percent smaller. Southern county owned site-areas were more than twice the size of their northern areas which was the largest difference between these location areas for any of the four types of ownerships.

The amount of backup lands per site-area differed greatly among areas and especially by types of ownerships. These differences are just opposite to those for size of site-area(s). The average privately owned area had from more than double to over four times more backup lands per site-area than did those areas on the other types of ownerships. State ownerships had the fewest acres of backup land per acre of developed site-area (Table 11). Furthermore, for all four types of ownerships their northern areas had more acres of backup lands per acre of site-area than did their southern areas. Not included as picnic area backup lands were designated walking trails, animal zoo areas, sports areas, other lands used for specific purposes, as well as any wide expanses of undeveloped lands on an ownership.

When the combined acres of site-area and backup lands are considered the picnic areas on private ownerships with larger amounts of backup lands were still smaller (average of 7.3 acres) than those on other ownerships. Also, picnic areas on state ownerships, with relatively small amounts of backup lands per site-area, were the largest (average of 10.6 acres) of those on any of the ownerships. County owned picnic areas (average of 7.6 acres) were more like the size of private owned areas while city picnic areas were larger with an average of 8.6 acres. Between ownerships, therefore, it appears that the size of site-areas is in general the dominate factor for comparing the size of picnic areas.

Size of the picnic areas can also be measured by the number of picnic tables per ownership. When all 76 ownerships were arbitrarily divided into three size groups, based on number of tables each, it was evident that the largest establishments are on state ownerships and the smallest on city owned tracts (Table 12). Approximately 69 percent of the state ownerships had over 120 tables each while 61 percent of the city ownerships had less than 49 tables each. A majority of the county ownerships (57%) had less than 50 tables each. The private ownerships were equally divided into the smallest and middle size groups, i.e., with 50 percent having no more than 50 tables each and the other one-half having 50-120 tables each. For all 76 ownerships studied about one-half of them (46%) had less than 50 tables each and the other ownerships were about equally divided between those having 50-120 tables each and those having over 200 tables each.

TABLE DENSITY AND USE

Number of Tables

In general, the ownerships with larger picnic site-areas had more tables. Also, as the size of site-area increased there were more tables per acre of site-area. For example, the group of state ownerships having over 120 tables averaged 275 tables each, 7.3 acres per site-area and 10.8 tables per acre of site-area, whereas their group with 50-120 tables each had only one-fourth as many tables per ownership, 30 percent fewer acres per site-area and 25 percent fewer tables per acre of site-area (Table 12). Only 2 of the 12 ownership groups showed exceptions to this pattern. These two

were the county with 50-120 tables each and the city with over 120 tables each.[8]

Spacing of Tables

Picnickers' privacy is permitted if there is a reasonable distance between tables. When some picnickers move the tables for short distances to suit their desires for shade or group use some discomfort may be experienced because of table congestion. Or, if there are too many tables per unit of area all the time picnicking experiences may be less favorable. However, in general the number of tables per acre of site-area is a good measure for density of tables.[9]

There were 7,805 picnic tables on the 166 picnic site-areas included in this study, which averages 13.7 tables per site-area acre (Table 11). This would permit an equal spacing of around 56 feet between separate tables. Picnic areas in the southern part of the state had an average of 15 tables per site-area acre while those areas in the north averaged 13.1 tables per acre.

Privately owned picnic areas do not provide wide spacings between tables. Southern Wisconsin private areas, for example, had an average of 35.3 picnic tables per acre of site-area which is about 7 times more per acre than on state owned picnic areas in this part of the state (Table 11). In general, the density of picnic tables on private ownerships was double that on either one of the other three types of ownerships (state, county or city). However, there are reasons for many of these noticeable differences between ownership areas. Several of the private picnic area operators cater to large group-picnicking trade (50 to 150 people in a group). All kinds of beverages are handily available on the grounds for picnickers and small space between tables seemed to be of no consequence. A number of the state, county and city recreation areas obviously were planned and designed so that more picnic tables can be added when demands dictate their need, and their operators indicated additional tables would be provided.

Influence on Use

If density of picnic tables has any relation to their use, it is likely such an effect would be seen on those weekend days having the largest numbers of picnickers (during June, July and August). Data for state and county ownership areas were used to examine this proposition (Figs. 3 and 4).

No relationship prevails between amount of table use and density of tables per acre of picnic site-area. Even with such heavy use that 10 to 100 percent of the tables (Fig. 4, bars with stars) were used twice on the same day, some of these areas had high and some others had low numbers of tables per acre of site-area. Conversely, where use was less and never more than each table being used once a day (Fig. 4, bars with circles), some of these areas had high and some

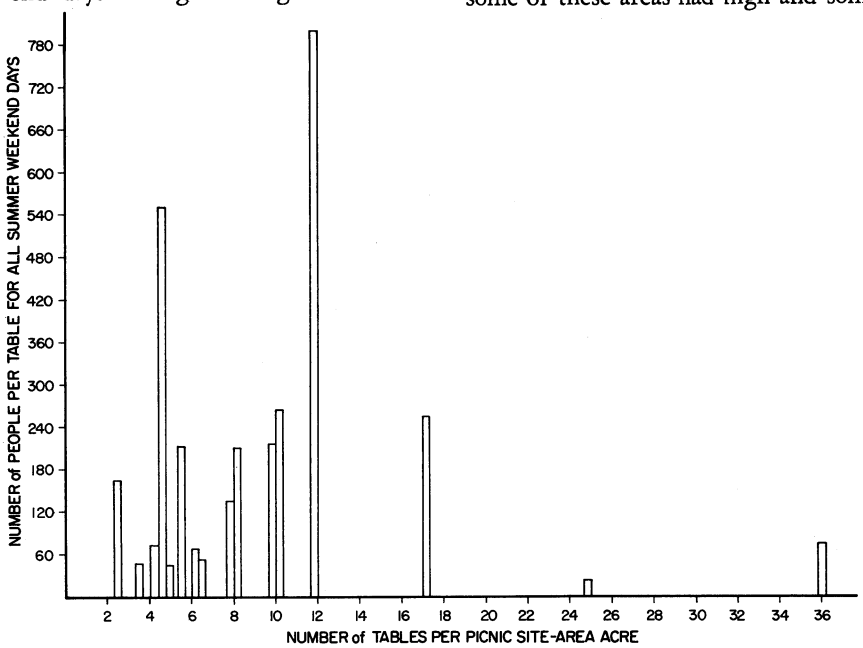
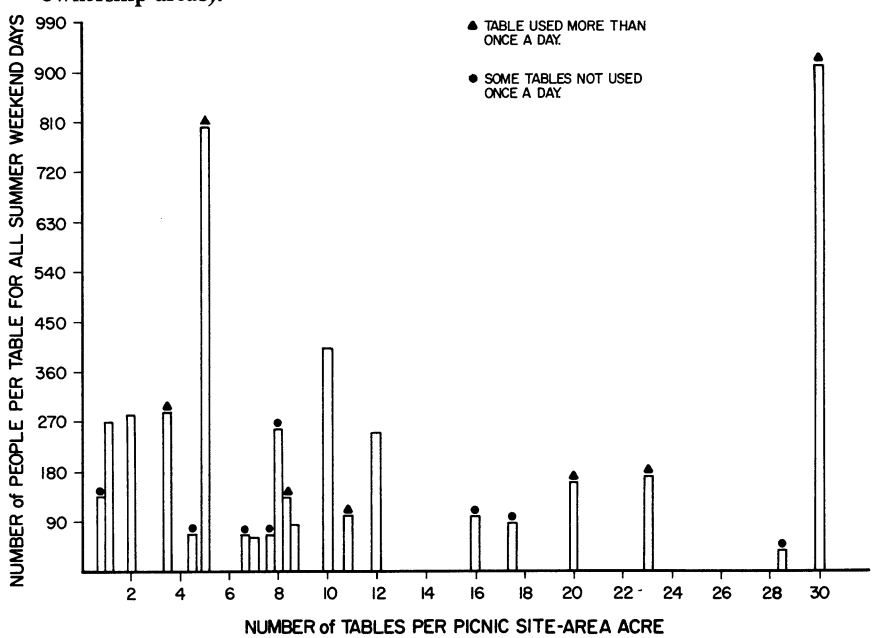


FIGURE 3. Picnic Table Use by Number of Tables per Site-Area Acre (State ownership areas).

FIGURE 4. Picnic Table Use by Number of Tables per Site-Area Acre (County ownership areas).



[8]Even so, both of these groups were in-pattern for numbers of tables per ownership as also was the city ownership group for number of tables per acre of site-area; but for the county group with smaller site-areas and relatively larger numbers of tables it moved out of pattern for tables per acre of site-area. All of these results are from weighted averages made from basic data supporting but not shown in Table 12.

[9]Picnic tables are usually 6 or 8 feet long. In this study there were some longer tables, sometimes 12 to 16 or 20 feet long, but their numbers were converted to an equivalent of single tables.

others had low numbers (density) of tables per acre of site-area. Considering this one factor, density, alone it seems evident that picnic tables may be heavily used irrespective of how closely they are spaced.[10] Therefore, high density of tables alone is not an adverse factor on use of picnic areas.

USE BY DAYS AND SEASON

Weekend Use

On the average weekend day throughout the picnicking year there were 503 picnickers using each of the 76 ownerships studied (Table 13). Although southern ownerships had about 10 percent more picnickers per ownership they also had about 14 percent more tables each.

State ownerships had approximately double the number of picnickers (993) of any other type of ownership on a weekend day but the state areas had more than twice as many tables per ownership. Although state owned southern areas had only one-fifth more tables than their northern areas, they averaged almost twice the number of picnickers on the usual weekend day. Both private and county southern ownerships had approximately 2½ times more picnickers per ownership than did their northern areas but there were 3 to 4 times more tables per southern ownership. City owned areas were different in these respects as their southern areas had 40 percent fewer picnickers and fewer tables per ownership than their northern areas.

Weekday Use

On an average weekday picnickers numbered about one-fifth (99) as many as on the weekend day. Each type of ownership in the southern part of the state had appreciably more picnickers than on northern ownerships (Table 13). About one-third of all picnicking was done on weekdays.

Seasonal Use

Picnicking is primarily a summertime recreational activity in both the southern and northern parts of the state. About 89 percent of all picnicking was done during the 90-110 days including June, July and August.[11] However, there were apparent variations between the different ownerships in the percentage of all picnicking done during the 90-110 days: 69 percent for private, 84 percent for state, 87 percent for county and 95 percent for city ownerships. Analysis of the statistics presented provide no answers as to why these differences should exist. There must be circumstantial differences, however, such as picnickers' preferences during late spring and early fall seasons, family travel desires and opportunities for use of certain picnic areas, and other reasons which, for example, spreads picnicking over more of the year for state ownerships than for city ownerships. These percentage differences between the public owned areas and the private ownerships could be partially caused by the shorter availability period of private areas (see Table 10, days open) but this should not account for differences between the public ownerships. If desired, future research would be necessary to determine basic causes for lack of seasonal spread of picnicking on some areas and not on others, and how greater distributions might be fostered.

Use Per Table

There is a relationship between total use per table and numbers of tables per ownership. When picnic table use on all weekend days during the summer (90-110 day period; Table 13) is accounted for, each table on those ownerships with 50 or more tables had an average of 169 picnickers (participant days use). This use per table increased by 19 percent more picnickers on those ownerships having less than 50 tables each. Such difference was most pronounced for the private ownerships; i.e., use of each table on ownerships with 50 or more tables amounted to less than one-half the average use of a table on ownerships with less than 50 tables. The same relationship was found among county ownerships with a 25 percent difference and on state areas it was about 10 percent.[12] The city ownerships were an exception to this pattern and those with the larger numbers of tables each had an average use per table amounting to 24 percent more than for the ownerships with less than 50 tables each. However, in general total use per table decreases as numbers per ownership increases. This conclusion is without exception when average use per table on ownerships having over 120 tables each is compared to that on ownerships having fewer tables.

Intensity of Use

Number of people (participant days) per acre of picnic site-area and per picnic table provide indicators for intensity of area use (Table 14). For example, on a usual weekend day southern county owned areas had an average of 103 people per acre which was approximately double that for either state or city owned areas. However, with more tables per unit on the county areas approximately the same density of table use was found on these county and state areas (4.8 and 4.7 picnickers/table). But, city owned southern areas, including large table turnover use on some areas, had the highest density of table use (7.2 picnickers/table).[13] Correspondingly, the private owned southern areas had a heavy density of picnickers per acre of site-area (80/acre) but low density of table use (2.4 picnickers/table) resulted because of large numbers of tables.

Likewise number of people per acre of site-area and per picnic table showed variations between areas when considered for the summer season (of

[10] Undoubtedly there is a density that becomes entirely undesirable to picnickers and they will not use the area fully, but this study did not determine such density.

[11] The summer period as considered by most recreation enterprise operators was from near Memorial Day in May through Labor Day week in early September. Technically speaking, as reckoned astronomically, summer extends from June solstice (about June 22) to the September equinox (about September 23).

[12] Only one state ownership had less than 50 tables; therefore, for this exercise the per table use on ownerships with over 120 tables each was compared with the per table use on ownerships having 50-120 tables each. The one state ownership (@ 800 picnickers per table) was also excluded in determining the 19% figure used above.

[13] Table 14 data are weighted averages. Arithmetic averages would give different and misleading results, some city areas had as many as 17 to 20 picnickers per table during the course of a usual weekend day while other areas had as few as an average of 1.5 to 4 picnickers per table.

90-110 days). The northern city owned areas had the heaviest total use per site-area acre of any ownership group (by location) of picnic areas. This is evidenced from Table 14 data showing that an average of 5226 picnickers (participant days) used each acre of site-area during the summer season. In the course of a week approximately 250 people picnicked on each acre of site-area. However, the number of picnickers who used each table in this summer period was not as great as on some of the other ownership areas since relatively more tables were provided.

For the year on all 76 ownerships studied, with their 166 picnic site-areas and 7805 tables, each table was used by an average of 429 picnickers (participant days). Each acre of picnic site-area had an average of 3978 picnickers on it. Even if backup lands were included, the use approximated 2300 people per acre of picnic area.

Continuous and intensive use left their marks on some areas. Worn turf, soil erosion, damaged low growing bushes and trees and various unappealing appearances of the service facility locations, i.e., around water outlets, toilets, children's play equipment, shelter houses and garbage disposal containers, gave evidence of overuse on some areas. This was not a matter of ineffective daily clean up and maintenance, rather it resulted because the physical conditions of those areas were not able to withstand the intensity of use caused by the large numbers of picnickers served. Further study could be helpful in determining appropriate intensity of use for picnic areas.

Turnover In Use of Tables

On some areas on a weekend day all picnic tables are occupied at the same time, and when one party leaves another uses the table. If all tables on an area are used at least once during a day, the second usage of a table on the same day is referred to as turnover —a term related to capacity use. This circumstance is in contrast to normal distribution of use during the day when usually between late morning to mid-afternoon and late afternoon into the evening the total number of parties using tables is not greater than the number of tables on the area. It is also in contrast to second-time use of some tables on the same day because picnickers have preferences for certain locations and may wait until they are free even though other tables in the area are vacant all day.[14]

Nineteen of the 76 ownerships studied had turnover use on an average weekend day. A percentage rate for turnover is determined by dividing the number of tables used more than once on the same day by the total number of tables.[15] By individual picnic areas turnover varied from 5 percent of all tables used twice to another case where all tables were used an equivalent of 3 times each. The weighted average, however, was 11.3 percent turnover considering all tables on all 76 ownerships. It was significant on city ownerships (23%) and also appreciable (12%) on county ownerships. On the basis of turnover rates found in this study and projected statewide to all tables by types of ownerships, the average rate is 12 percent.[16]

MILEAGE PATTERNS OF PICNICKERS

Picnickers travel an appreciable distance to picnic areas. Most of the picnickers traveled 10 or more miles from their homes to the picnic areas (Fig. 5). This was true for about two-thirds to 89 percent of the picnickers using the private, state and county picnic areas respectively whether they were in the northern or southern parts of the state. The exception was with city owned areas where only 33 percent of the picnickers using southern areas and 48 percent using northern areas traveled so far. Furthermore, for all ownerships, whether their areas were in the northern or southern parts of the state, at least 17 percent of the picnickers traveled 30 or more miles from their homes and it amounted to nearly 45 percent for state owned picnic areas.

It was not determined from this study how far picnickers travel in excess of 30 miles from their homes to picnic areas. It is apparent, however, that most of the picnicking was not done within walking distance of picnickers' homes or even within 9 miles distance. In fact, for all 76 ownerships studied, around 72 percent of the picnickers traveled 10 or more miles to the picnic areas despite the large percentage (67%) on southern city owned areas who traveled fewer miles.

CAPITAL INVESTMENTS

Capital investments for picnic facilities averaged $27,745 per ownership exclusive of land costs (Table 15). Value estimates made by the picnic area operators or park managers were at current prices for facilities in their present condition. Included were tables, grills, children play equipment, shelter houses, water systems, toilets, parking area developments, garbage containers and any other equipment or buildings for picnickers' use. Investment value for a facility used by picnickers and other recreationists was prorated according to the percentages of use between the recreational activities.

The size and number of picnic site-areas and number of tables vary between ownerships so that total amount of investment per ownership is not the most meaningful way to compare picnic areas. For example, the average investment per state ownership was $72,171 which was by far the largest for all four types of ownerships but developments and numbers of tables on state ownerships were also the largest (Table 15). However on the basis of an acre of site-area, the average investment cost was $4,295 on state ownerships which is not much larger than the comparable amount ($3,888) for city ownership areas. On a per-picnic-table basis the average investment of $477 on state ownerships was the largest of all four types of ownerships. This state ownership cost was about 8 and 34 percent less respectively per city and county owned table which is in contrast to only $61 per table for privately owned picnic

[14] This preference type of turnover use took place on about 60 percent of the ownerships; the weighted average turnover rate was 25% of all 7805 tables. By ownerships these turnover rates were: private —9.5%; state—27.6%; county—12%; and, city—40.6%. Projected statewide by ownership distribution of picnic tables this turnover rate was 24.2 percent.

[15] All tables must be used at least once; if all tables are used twice the rate is 200%, and if half of the tables are used a third time the rate is 250%. Turnover rates were mostly in the range of 10 to 50% for those picnic areas heavily used and having any turnover use—otherwise if space permitted, additional tables had been provided.

[16] Federal ownership table use was considered at the same rate as on state ownerships.

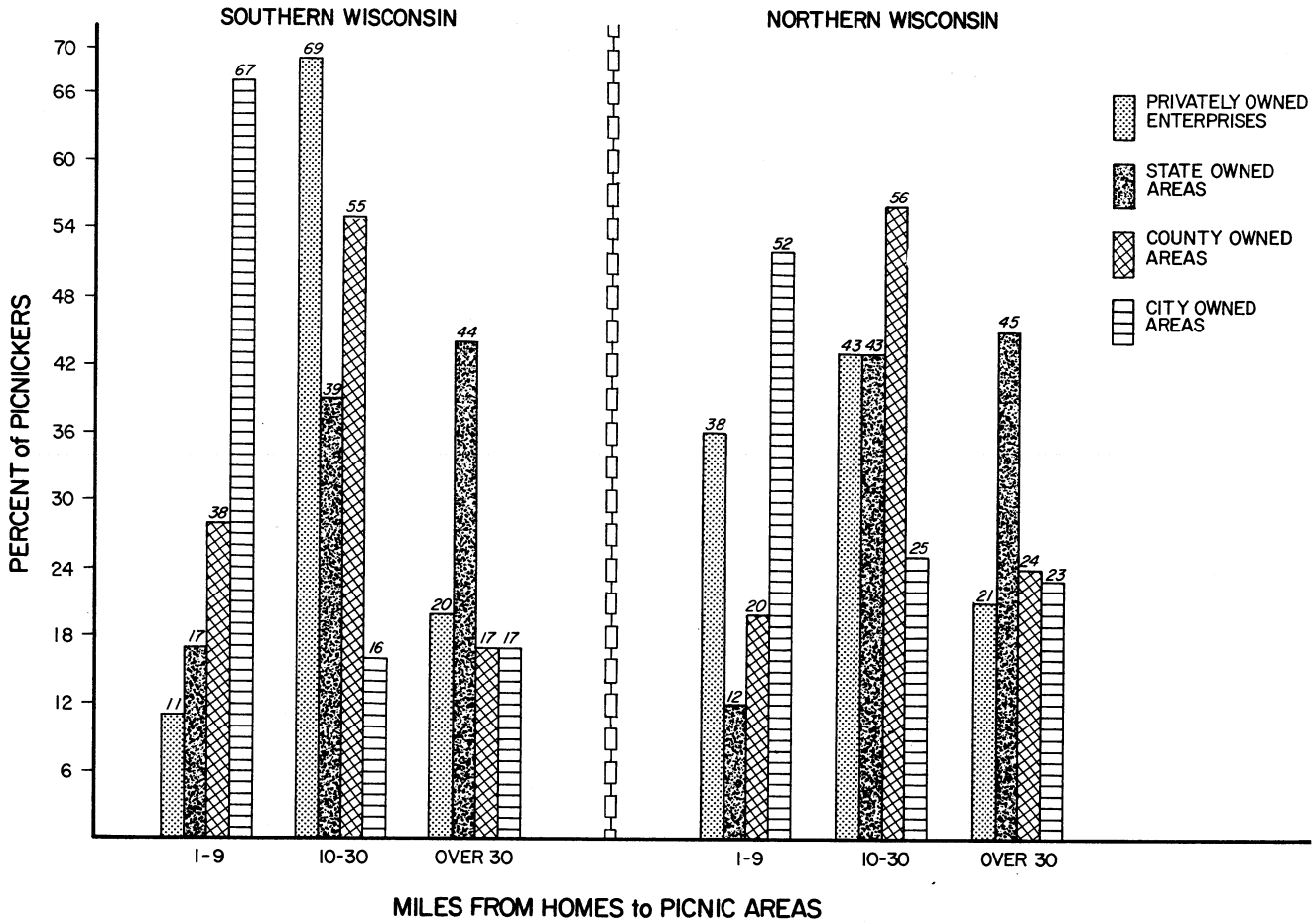


FIGURE 5. Distances Travelled by Picnickers.

areas.

Future remaining "life" of the facilities were not evaluated by this study but observations dictated that many of the private owned facilities would need replacement relatively soon while comparatively more of those on the public owned areas were less depreciated. The main difference accounting for the lower investment amounts, though, is that many of the private ownerships had far less pretentious facilities, such as pumps instead of pressure water systems, older type toilets instead of newer pit or flush toilets, graveled car parking lot or no special parking area rather than hard surfaced areas, and other less costly features.

Costs and Intensity Use

There was a general trend for investment costs per participant day to decrease as the number of participant days (PD) per acre of site-area increased. For example, 4 of the 6 state ownerships with each having less than 1200 PD's per acre of site-area had over $2.00 investment costs per PD. However, 8 of the other 10 state ownerships with each having more than 1200 PD's per acre had less than $2.00 cost per PD. The 6 ownerships had an average investment cost of $4.28 per PD with an average of 590 PD's per acre of site-area while the 10 ownerships correspondingly had $1.13 investment costs with 6,014 PD's. The 23 city ownerships had the same general trend exemplified by 9 with an intensity of use averaging 1,147 PD's per acre of site-area and an investment cost of $2.06 per PD, while the other 14 ownerships averaged 5,558 PD's per acre with a $1.30 per PD investment cost.[17] Likewise on privately owned areas investment costs per PD decreased as PD's increased.[18]

For the 21 county ownerships studied the average investment costs per PD remained almost constant even with a large difference in the number of PD's per acre of site-area. Those 8 ownerships having less than 1,200 PD's per acre of site-area (avg. 712) had an average investment cost per PD of $1.37 while the other 13 ownerships correspondingly had a $1.36 cost and 7,342 PD's.

There are no known criteria for measuring when investment costs are too high or too low in terms of per unit of picnic area development or in terms of per participant day of use. It is obvious, however, that variations are great between types of ownerships and between individual areas. On some ownerships if the investment costs

[17] Only 4 ownerships had less than 1200 PD's per site-area acre, averaging $1.94 investment costs per PD while the other 19 ownerships averaged $1.53; the separation was made on not over 1650 PD's per acre of site-area to give a larger number of ownerships (9) in the lower density use group (of picnic areas) and a comparable distribution (37-39%) as for state and county ownerships.

[18] See Cohee (1970a)

were spread over 10 or 15 years they would still amount to 35 to 55 cents per PD at present levels of use. On other ownerships comparable figures would be as low as 2 or 3 cents per PD at present levels of use. Future research studies should determine what levels of development costs are necessary to provide most desirable picnicker satisfactions.[19]

[19] It is possible that some costly niceties may have only marginal amenity values.

SUMMARY PROJECTION FACTORS FOR USE WITH INVENTORY DATA

1. Number of people re: Average weekend day (average day excludes holidays), by types of ownerships

Per ownership per weekend day—average over entire (annual) period areas are open, by state locations

		Private	State	County	City	All
1)	Southern Wis.	173	1,293	403	447	520
2)	Northern Wis.	74	693	161	744	477
3)	Statewide	136	993	334	576	503

Per picnic table per weekend day—average over entire (annual) period areas are open, by state locations*

		Private	State	County	City	All
1)	Southern Wis.	2.4	4.7	4.8	7.2	5.3
2)	Northern Wis.	4.7	4.0	5.8	6.4	5.9
3)	Statewide	3.3	4.3	5.1	6.9	5.6

Per developed acre of site-area per weekend day–average over entire (annual) period areas are open, by state locations*

		Private	State	County	City	All
1)	Southern Wis.	80	56	103	47	74
2)	Northern Wis.	39	52	69	88	65
3)	Statewide	65	54	93	65	70

Per picnic table for **all weekend days** during 90–110 days of summer season, by state locations*

		Private	State	County	City	All
1)	Southern Wis.	66	271	203	235	194
2)	Northern Wis.	128	127	277	217	187
3)	Statewide	89	199	224	227	191

Per picnic table for **all weekend days** during 90–110 days of summer season, by size of establishment measured by number of tables*

		Private	State	County	City	All
1)	4–49 tables	121	-**	245	208	201
2)	50 or more tables	57	159	196	258	169

* Weighted averages.

**Adequate sample not available since most state ownerships (parks and forest recreation areas) have more than 50 tables each; recommend use of other breakdowns: 50–120 tables @ 170 and, over 120 tables @ 154 (from Table 13) if projection factors by two size groups are needed.

2. Number of people re: All days, by types of ownerships**

During entire (annual) period open

	Private	State	County	City	All
1) Per site-area acre	3,087	3,982	4,816	3,832	3,978
2) Per table	210	432	598	425	429

During 90–110 days of summer season

	Private	State	County	City	All
1) Per site-area acre	2,422	3,379	4,243	3,642	3,512
2) Per table	127	314	347	398	309

3. Site-areas, by types of ownerships**

	Private	State	County	City	All
Acres per developed site-area	2.2	6.9	4.0	5.3	5.3
Backup land per developed site-area acre	2.3	5.4	.89	.62	.71
Number of tables per developed site-area acre	26.6	10.2	11.0	9.7	13.7

4. Per ownership, by types of ownerships

All kinds of recreational acreages, by locations

	Private	State	County	City	All
1) Southern Wis.	12	215	56	19	64
2) Northern Wis.	38	122	49	21	57
3) Statewide	22	169	54	20	61
Number of picnic tables	51	208	84	83	103
Number of days open for picnickers (annually) by locations					
1) Southern Wis.	119	151	180	150	152
2) Northern Wis.	136	144	149	147	145
3) Statewide	126	148	172	149	149
Capital investments ($)*					
1) Total	2,571	72,171	13,179	27,654	27,745
2) Per site-area acre**	1,346	4,295	3,525	3,888	3,338
3) Per table**	61	477	313	439	359
4) Per participant day (annually)**	0.43	2.31	1.37	1.60	1.44

* Exclusive of land costs.
**Weighted averages.

5. Turnover rate per table per weekend day, by ownerships**

	Private	State	County	City	All
Rate (percent of tables)	0.25	0.7	12	23	11.3*

* For statewide basis for all picnic tables the turnover rate is 12 percent on a weighted average basis. Method: sum results for all types of ownerships from application of respective ownership rate (found in this study) times its number of tables and divide the results by total number of picnic tables on all ownerships (tables on federal ownerships considered at rate found on state areas).
**Weighted averages.

TABLE 10. Statistics on Picnic Areas Within Various Ownerships, by State Locations

Item and Location*	Private	State	County	City	All
Number of ownerships					
South	10	8	15	13	46
North	6	8	6	10	30
All	16	16	21	23	76
Number of picnic site-areas					
South	12	42	36	16	106
North	6	26	11	17	60
All	18	68	47	33	166
Avg. acres in ownership					
South	51	11,187	114	45	2,007
North	149	26,450	290	61	7,162
All	88	18,819	164	52	4,041
Avg. recreation acres per ownership					
South	12	215	56	19	64
North	38	122	49	21	57
All	22	169	54	20	61
Avg. number of tables per ownership					
South	72	227	105	65	108
North	16	189	31	107	95
All	51	208	84	83	103
Avg. number of days open for business (annually)** per ownership					
South	119	151	180	150	152
North	136	144	149	147	145
All	126	148	172	149	149

* Division between north and south was made for state, county and city ownerships by a connecting line on the upper boundary sides of the following counties: Buffalo, Trempealeau, Jackson, Wood, Portage, Waupaca, Outagamie, Brown, and Kewaunee. For private ownerships 7 counties in SE Wisconsin (Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington and Waukesha) are included in the "south" and all others are in the "north".

**This includes the period for some appreciable use of the picnic area(s).

TABLE 11. Acres and Tables per Unit of Picnic Site-Area

Item & Location	Private	State	County	City	All
Acres per site-area					
South	2.4	7.3	4.6	6.1	5.5
North	1.7	6.4	2.0	4.6	4.6
All	2.2	6.9	4.0	5.3	5.3
Backup land (acres) per acre of site-area**					
South	1.8	.49	.82	.46	.64
North	3.6	.63	1.40	.82	.86
All	2.3	.54	.89	.62	.71
Used for picnicking only (percent)[1]					
South	39	61	57	47	55
North	29	60	35	77	56
All	35	61	54	64	55
Number of tables per acre of site-area**					
South	35.3	6.4	11.7	8.4	15.0
North	11.9	14.0	9.2	11.4	13.1
All	26.6	10.2	11.0	9.7	13.7

* Arithmetic means

**Weighted averages

[1] The other backup lands are also used by campers, swimmers, or others

TABLE 12. Number of Tables Within Various Ownerships per Acre of Site-Area

Item and No. Tables	Private	State	County	City	All
Number of ownerships having					
4-49	8	1	12	14	35
50-120	8	4	4	5	21
over 120	0	11	5	4	20
All	16	16	21	23	76
Acres per site-area*					
4-49	2.1	3.0	3.1	3.2	2.9
50-120	2.2	5.1	2.5	9.6	4.3
over 120	0	7.3	5.9	7.0	6.7
All	2.2	6.9	4.0	5.3	5.3
Tables per ownership*					
4-49	22	35	16	17	18
50-120	80	66	68	81	75
over 120	0	275	258	318	279
All	51	208	84	83	103
Tables per acre of site-area**					
4-49	18.9	11.7	7.2	7.6	10.2
50-120	34.3	8.2	19.9	9.3	20.6
over 120	0	10.8	13.3	17.7	12.9
All	26.6	10.2	11.0	9.7	13.7

* Arithmetic means

**Weighted averages

TABLE 13. Number of People Using Picnic Areas (Averages per Ownership)

Time Periods & Locations	Private	State	County	City	All
On average weekend day					
South	173	1,293	403	447	520
North	74	693	161	744	477
All	136	993	334	576	503
On average weekday					
South	32	258	60	112	103
North	12	207	23	89	92
All	24	233	50	102	99
During 90-110 days of summer season					
South	6,480	73,831	21,345	23,330	27,802
North	2,668	37,393	7,273	39,407	25,096
All	5,050	55,612	17,324	30,320	26,733
During entire (annual) period open					
South	9,181	83,337	24,752	23,780	31,282
North	4,278	42,418	7,837	42,492	27,899
All	7,342	62,878	19,919	31,915	29,946
Average per table*; for all weekend days during 90-110 days of summer season					
4-49	121	800	245	208	218**
50-120	57	170	312	349	197
over 120	--	154	103	143	139
50 or more	57	159	196	258	169
All tables	89	199	224	227	191

* Weighted averages. Saturdays and Sundays only. Size groups are number of tables per ownership.

**Without the 1 case @ 800 on state ownership the average would be 201.

TABLE 14. Average Number of Picnickers per Acre and per Table*

Time Periods & Locations	Private	State	County	City	All
On average weekend day					
Per acre of site-area					
South	80	56	103	47	74
North	39	52	69	88	65
All	65	54	93	65	70
Per table (incl. turnover)					
South	2.4	4.7	4.8	7.2	5.3
North	4.7	4.0	5.8	6.4	5.9
All	3.3	4.3	5.1	6.9	5.6
On average weekday					
Per acre of site-area					
South	11.0	6.7	6.2	15.0	8.3
North	6.8	9.9	6.2	11.4	10.0
All	10.0	7.8	6.2	13.5	8.8
Per table					
South	.44	1.14	.58	1.73	.97
North	.75	.91	.74	.84	.85
All	.48	1.03	.59	1.23	.93
During 90-110 days of summer season					
Per acre of site-area					
South	3,132	3,846	4,500	2,424	3,502
North	1,437	2,913	3,600	5,226	3,526
All	2,422	3,379	4,243	3,642	3,512
Per table (total)					
South	102	398	294	364	290
North	169	229	481	442	338
All	127	314	347	398	309
Per table for weekend days only					
South	66	271	203	235	194
North	128	127	277	217	187
All	89	199	224	227	191
During entire (annual) period open					
Per acre of site-area					
South	3,676	4,749	5,226	2,522	4,042
North	2,107	3,214	3,792	5,534	3,881
All	3,087	3,982	4,816	3,832	3,978
Per table (total)					
South	184	556	634	378	450
North	254	308	509	486	397
All	210	432	598	425	429

* Weighted averages; number of picnickers is participant days.

TABLE 15 Capital Investments*

	Private	State	County	City	All
Number					
Ownerships	16	16	21	23	76
Picnic site-areas	18	68	46	33	166
Tables					
Per ownership	51	208	84	83	103
Per site-area	45	53	37	58	49
Per acre of site-area**	26.6	10.2	11.0	9.7	13.7
Annual Participant Days					
Per ownership	7,342	62,878	19,919	31,915	29,946
Investment (Dollars)					
Per ownership	2,571	72,171	13,179	27,654	27,745
Per site-area	2,285	16,981	5,888	19,274	12,703
Per acre of site-area**	1,346	4,295	3,525	3,888	3,338
Per table**	61	477	313	439	359
Per participant day**1/	0.43	2.31	1.37	1.60	1.44

* Exclusive of land costs

**Weighted averages

1/ Participant days for entire (annual) open period

SWIMMING BEACHES

INTRODUCTION

Swimming has the largest number of participants of all the active outdoor recreation activities in Wisconsin. It is expected that the number will greatly increase in the next ten years. Supply of swimming facilities in Wisconsin does not meet user demands especially in the southeastern and east central parts of the state.

Research findings for 91 swimming beach areas have been analyzed on 58 separate ownerships (city, 14; county, 20; state, 40; and private, 17) (Figure 6). Attention was directed to size of beach, backup lands, number of swimmers, distances traveled to beaches and related aspects. All of the beach areas were available for general public use. The number of beaches studied accounted for about 9.4 percent of the state total.[20]

The beach areas studied were located in 28 counties. Based on an arbitrary division of the state, about 43 percent of the beaches are in the southern part of the state and 57 percent in the northern part (Table 16).[21]

SIZE

There was a wide range in size of swimming beaches studied. This refers to the beach or site-area itself exclusive of backup land. There was also differences in shapes of the beaches and measuring was necessary in most cases to overcome serious errors in operator's estimates of size.[22]

The beach sizes varied from 0.05 acre to 4 acres. Over half of the beaches were a quarter acre or less, and three-fourths of them were no more than a half acre (Table 17). Only 9 percent of all beaches had 1 acre or more.

[20] Current estimates account for approximately 1,100 swimming beaches in Wisconsin; however, 137 are on quasi-public ownerships which usually are not available for use of the general public.

[21] Except for three counties, the separation coincides with state planning areas used in the Private Outdoor Recreation Businesses evaluations (Cohee, 1970 and 1971) if areas I through V are considered southern and areas VI through VIII are considered northern.

[22] As considered in this study a swimming beach, (1) is a definite area specifically designated for use of swimmers, and, (2) its acreage includes only the immediate beach site-area adjoining the water, usually open sand but sometimes grassed, without the associated backup lands of the swimming area.

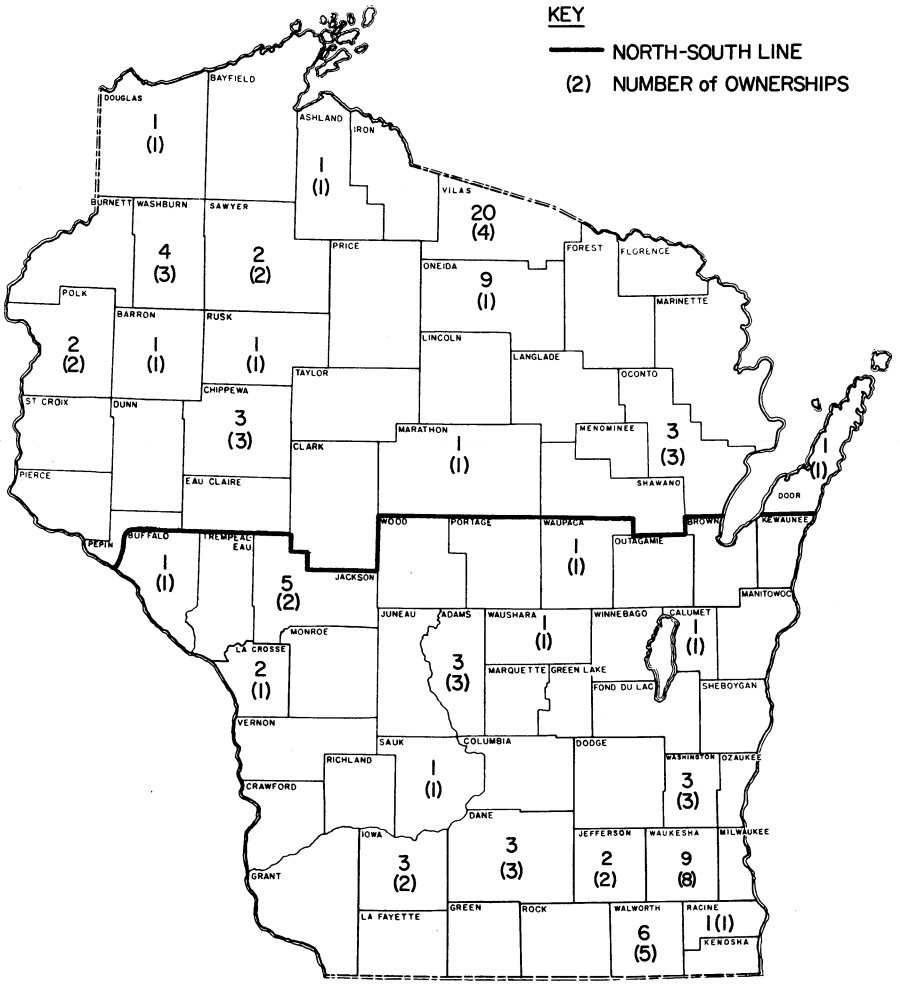


FIGURE 6. Number of Swimming Beaches Studied* (91 on 58 ownerships in 28 counties).

Relation to Principal Users

Many of the swimming beaches in Wisconsin are intended principally for use by recreationists on an ownership for another purpose such as for camping or picnicking. It might be expected that these beaches would be smaller than those intended mainly for the swimming recreationists themselves. No relationship was found, however, between primary purposes for beaches and size. For example, 71 percent of the city beaches and similarly 78 percent of the state and county beaches were a half acre or less. However, most swimmers on city beaches were on the ownership just to swim while those using state and county beaches were on the ownership for other primary purposes like camping, picnicking or another activity. Furthermore, there was a closer similarity in percentages for beaches having only a quarter acre or less—64 percent of the city beaches and 67 percent of the state and county beaches were of this size.

Average Size

The average size of the 91 beaches studied was slightly more than one-third acre (Table 18).[23] State owned beaches were the smallest (avg. 0.2 acre), while privately owned beaches were the largest (avg. 0.8 acre).

Northern privately owned beaches were much larger than any others studied. This resulted from natural availability of site acreage rather than any intentional developments based on numbers of swimmers to be served. Otherwise, the southern beaches by ownerships were on the average at least twice as large as those in the north. This is probably accounted for by planned design to provide for more swimmers.

Backup Lands

Practically all (98%) of the swimming beaches had backup lands used by swimmers. These areas are directly associated with developed or designated beach site-areas and are a part of the total beach area. The swimmers walk, play or rest on the backup areas when not on the beach or swimming.

Backup lands can be considered in three categories. About one-fifth of the beach areas had backup lands primarily used only by swimmers. At a few more beaches (31%) all backup lands were also used by other recreationists, which are multiple purpose backup areas. The other approximately one-half of all beach areas had both single purpose and multiple purpose backup areas.

Many other recreationists, especially campers and picnickers, like their activity site-areas to be near the swimming beach which may account for so many beach areas having multiple purpose backup areas. Those areas with multiple purpose use accounted for over three-fourths (77%) of the total backup lands in all beach areas (Table 19).

Even though the amount of backup lands per beach area varied from around 1 to 4 acres by types of ownership, the ratios per acre of beach were little different. For all beach areas there was an average of 8.4 acres of backup land per each acre of beach (Table 19).

USE

Weekends and Weather

Beaches had the greatest influx of swimmers on weekend days (and on a holiday). However, weather conditions have great influences. Beach area operators pointed out that rainy or chilly days are not good for swimming and even on hot days if it is cloudy and generally "muggy" weather the number of swimmers is not large. On the other hand, on bright sunny weekend days even if the air is a bit breezy and not extremely warm there are large numbers of swimmers. But,

[23] These findings were revealing, since previous statewide surveys from beach owners and operators showed much larger size for the beaches. For example, all public owned beaches (321) used in WORP (1968) averaged about 1.6 acres each in contrast to public owned beaches (74) used in this research study that had an average of 0.3 acre each (Table 18). And, assuming survey reports could have included beach backup lands in the 1.6 acres figure, for comparison this study found 0.69 acre of backup lands and if added (to the 0.3 acre) would give only 0.99 acre per beach. Apparently general surveys have tended to seriously over-estimate beach sizes.

according to many of the operators, "swarms" or "hordes" of swimmers come to their beaches on bright sunny weekend days when it is stiffling hot (practically no breeze), and especially so if such weather conditions have prevailed for a few days.[24] It is on these largest participant days that swimming beach capacities and intensities of use become most significant.

Intensity of Use

Largest-Use-Day. Not all beaches studied were heavily used on all good swimming weekend days. The largest number of swimmers using a beach on any one day(s) varied from 75 to 4000 people, and averaged 766 swimmers (Table 20). Compensations might be expected because of differences in beach size; however, on the basis of an acre of beach site-area the range was from 250 to 18,000 people, and averaged 3522 swimmers. On the largest-use-days the county ownerships had the most swimmers (895) per beach and state ownerships had the most (5293) swimmers per beach acre when compared to other ownerships. Conversely, private ownerships had the fewest swimmers per beach and per beach acre (Table 20).

Generally, for all types of ownerships, as the size of beaches increased so did the numbers of swimmers per beach on the largest-use-days (Table 20). For example, all beaches with one or more acres each averaged at least twice as many swimmers (1430) as did all those with less than a half acre each (625). On the public owned beaches this difference averaged approximately triple as many swimmers. However, intensity of use on the smaller beaches was much greater than on the larger beaches. This is shown in Table 20 data by numbers of swimmers per beach acre. For example, the average number of swimmers per acre for all beaches having less than a half acre each was nearly 4 times larger than for beaches in the half acre to 1 acre group and over 7 times larger than for beaches having 1 or more acres each.

The number of swimmers per beach on the largest-use-day(s) averaged 80 percent more for all southern ownerships than for all those in the north. This difference ranged from less than 20 percent more for privately owned beaches to 150 percent more for county beaches. For all public owned beaches the average number of swimmers per southern beach was approximately twice that for a northern beach (Table 21).

However, only privately owned southern beaches had appreciably more swimmers per beach acre than their northern beaches. This was because the southern private ownerships had much smaller beaches compared to their northern ownerships so that there were about one-fifth more swimmers per beach. The state, county, and city ownerships, with greater numbers of swimmers per beach on southern areas, also had larger beaches so that number of swimmers per beach acre was either smaller or not greatly more than for their northern beaches. Larger size of southern county beaches did not quite offset their greater number of swimmers as compared to northern beaches. On the largest-use-day(s) all publicly owned southern beaches had an average of 28 percent less number of swimmers per beach than for their northern beaches. For all 91 beach areas studied this difference was about the same (26%) as for only those publicly owned.

A few figures in Tables 20 and 21 stand out as general indicators regarding intensity of use of the beaches. For all 91 beaches there was an average of 3522 swimmers per acre of beach on the largest-use-day(s). This intensity is even higher (4402) at beaches on public ownerships. The range among all ownerships by location groups was from a low of 490 swimmers per acre of beach on northern private ownerships to a high of 7959 swimmers on northern state ownerships.

Average Weekend-Day. Intensity for use of beaches can also be measured by number of swimmers on the average or usual weekend-day. (Table 22). In general for all ownerships the number of swimmers on an average weekend-day was approximately one-half as many as on the largest-use-day(s). The largest difference was for city ownerships with 61 percent fewer swimmers per beach on an average weekend-day than on a largest-use-day; and state ownerships had the least difference with only 40 percent fewer swimmers. Both private and city ownerships had 62 percent fewer swimmers per acre of beach on the average weekend-day compared to the number on the largest-use-day, and the state and county ownerships had around 40 percent fewer. There was an average of 2491 swimmers per acre of beach on all 91 beaches on the usual weekend-day(s) and northern beaches had approximately three-fourths more swimmers than on southern beaches.

Density and Turnover. Density of people on the beach is not necessarily indicated by intensity of beach use exemplified by number of swimmers per acre of beach per day. During the course of a day some swimmers leave and other swimmers arrive, i.e., a turnover use. This study did not provide for swimmer indentification necessary to obtain an exact rate of turnover (i.e., total number for the day divided by number at various times during the day).[25] However, general information from beach operators and life guards indicated that usually the number of swimmers at the beach area at any one time was smaller than the number for an entire day. This means that usually there is some turnover. However, consensus of their opinions prompts the conclusion that rate of turnover on weekend days was generally less than 2 and probably more like 1.5.

It was evident that rate of turnover varied greatly between different beaches and during the week. At some beaches during the 5 weekdays there was a high rate of turnover because of swimming classes for specified hours, older children being at the beach during the day and returning with their parents and younger children in the evening and various other circumstances. For the most part, however, at many beaches the weekdays, even with considerable turnover, brought no concern for either intensity or density of beach use but it was an opposite matter for good swimming weekend days.

Also, all people on the beach area at any one time are distributed between those swimming, those on the beach site-area and those on the backup area. Such distribution varied greatly between beach areas and by different days

[24] "Muggy" weather and "hordes" or "swarms" or "droves" of swimmers are expressions commonly used by beach operators.

[25] Frequently rate of turnover is used to multiply by estimated capacity of a beach to obtain total number of swimmers for a day. In this study rate of turnover was not necessary since total number of swimmers for a day(s) was obtained including any turnover.

depending upon weather conditions. This circumstance affects density on the beach itself.

No exact measurements of distribution were made in this study. It was observed, however, that usually a higher percentage of the people spent more time in the water when the swimming area had a long gradually sloping bottom than if it was only a short distance to deep water. And, when the air temperature was not greatly different from the water temperature people spent more time in the water. Conversely, on warm but not extremely hot days but with a slightly chilling breeze for swimmers coming out of the water, the people spent more time on the beach site-area. There is also a difference between on-beach and in-water time distribution for the older and teenage children and for adults and younger children, especially as influenced by swimming area and weather conditions. Additional research would be necessary by types of beach areas and weather conditions to determine useful guides covering distribution of swimmers at given times in the water, on the beach and on back-up areas.

DISTANCE BETWEEN BEACHES

The distance from each beach area studied to the nearest other public-use beach was determined. For all 91 beaches the average distance was 11.5 miles (Table 23).[26] However, this average figure is only meaningful in a broad way because the actual range of such distances was from one-half mile for one case to 35 miles for another beach. Also, about one-half of the 91 beaches studied were within 5 miles of another beach not studied, and only for state ownerships was this distance over 5 miles for a majority of their beaches. Furthermore, since state owned beaches also had large numbers of swimmers on an average weekend day this combined circumstance accounted for much of the 11.5 average miles. On the other hand, the average miles were not too different for separate evaluations of the private, county and city owned beaches, which when combined had an average of 4.9 miles per beach. In this combining calculation the shorter distance for northern city beaches (Table 23) somewhat offset the greater distance for northern county beaches.

These distance data (Table 23) by types of ownerships were projected to the currently estimated 965 general public-use beaches in the state.[27] As a broad average it is 5.4 miles between general public-use beaches in the state.[28]

CAPITAL INVESTMENTS

Costs were estimated for existing beach area developments, exclusive of land costs. These investments include initial costs for beach construction, car parking areas and service facilities such as toilets, domestic water supply, bath houses, buoys, lifeguard stands and the like. Costs for those facilities shared by swimmers with other recreationists were prorated by proportion of use. Present values were used for depreciatory equipment and facilities. Maintenance and annual replacement costs were not included.[29]

Beach Areas

Investment costs ranged from the smaller amounts of $700 for one of the county beach areas and $900 for a privately owned area to the larger amounts of $166,000 for one of the state beach areas and $135,000 for a city area. These lower and higher costs somewhat typified the relative levels of average costs for swimming beaches by types of ownerships (Table 24). Privately owned beach areas had the lowest average cost ($5295) and those city owned had the highest average cost ($24,872). Investment costs per county owned beach area ($6032) were only about one-third the amount for state owned areas ($16,087). The average capital investment cost for each of the 91 beach areas studied was $13,212.

Generally the beach areas in the southern parts of the state had higher investment costs (avg. 41%) than those in northern Wisconsin (Table 24). This difference was most pronounced with southern city beach areas which had almost 5 times greater capital investments than northern city areas. Southern state and county beach areas had average investment costs of about 30 to 70 percent more than their northern area costs. There was the exception that beach areas on northern private ownerships had a 25 percent greater cost than those on their southern ownerships. There appeared to be more natural beach conditions in the north which made it unnecessary for some usual development costs or they were required at only minimal amounts.

There were relatively large capital investments for a few of the beach areas in each of the four groups separated by types of ownership. This increased the average investment costs per beach. In all four ownership groups in Table 24, more than 50 percent of the beach areas had less investment costs than the average cost of all areas in the group. For example, the average investment cost per county owned beach area is $6,032 but for 65 percent of these areas each is less than $5,100. Also, for 55 percent of the state owned areas the investment cost for each is less than $10,100 but the average for the group is $16,087. This is further illustrated by all 91 beach

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[26] Base data included number of miles from the ownership with a beach(s) studied to the nearest public-use swimming place (beach or pool) on another ownership. Also, it included the number of swimmers at the studied beach(s) on an average weekend day. These two numbers were multiplied giving "swimmer-miles" for a given beach. Summation of such results for groups of beaches, divided by summation of their numbers of swimmers, gave the weighted average miles—between the beaches studied and their respective nearest public-use beach.

[27] State and federal owned beaches—8.3%; county—13.2%; city (& village & twp.)—25.2%; and private—53.3%. (Federal owned beaches were not studied; state beach mileage, Table 23, was applied to them.) The percentage part of all beaches accounted for by each type of ownership was applied to its respective mileage distance as found from this study and shown in Table 23.

[28] This is an "equivalent distance" indicated by weighted average miles resulting from use of the number of swimmers at a beach with mileage of such beach from the nearest other beach.

[29] On some beaches sand is added each year to replace that washed away by waves and shore action. These expenditures were excluded but any sand cost for initial beach construction was included.

areas studied with an average investment cost of $13,212 per area but this cost for any one of 70 percent of them was less than $10,100.

Per Participant Day (Swimmer)

There was no relationship between capital investment costs and number of participant days (PD) use of the beach areas. When investment costs were prorated on a per participant day (swimmer) basis, the average cost for all ownerships was $1.25 per PD (Table 25). About an equal number (21) of ownerships had less than 50 cents per PD cost as those (22) that had over $1.00 cost per PD; and, only a few less (15) had costs per PD in the middle group of 50 cents to 99 cents.

Generally as the capital investment costs per ownership increased so did the cost per participant day of beach area use (Table 25). Those ownerships (8) with the lowest investment costs had the smallest prorated cost (12 cents) per participant day but they did not have the largest number of participant days of use. It was those ownerships (11) with the highest investment costs, and also having the smallest number of participant days use, that showed the largest prorated cost ($3.78) per participant day. Larger investment costs apparently did not result because of greater participant days use of the beach areas.

The costs and participant days shown in Table 25 afford only indicators of the relationships covered above. Current values for capital investments are used without average annual accounting; and, participant days are for the summer weekends plus two largest-use-days. It is doubtful, however, that the relationships would change if total participant days for the year and average annual investment costs were used.

County ownerships (Table 25) accounted for more than half of all the ownerships that had less than 50 cents investment costs per participant day. This reflects the low investment costs per beach area (Table 24) for county ownerships and their high numbers of participant days use (Table 22). Prorated investment costs per participant day on all county ownerships was 39 cents. In contrast, city ownerships all had higher costs per participant day (Table 25), but they also had the highest investment costs and a lower number of participant days use. Prorated investment costs per participant day on all city ownerships was $2.78.[30]

There are no known criteria presenting guides for reasonableness in amounts of capital investments for a beach area relative to physical conditions and numbers of swimmers to be served. This study did not attempt to determine such answers, but it was obvious from case examinations that great differences existed between locations and types of ownerships as to extent and quality of developments and service facilities even though approximately the same numbers of swimmers were served. No pattern could be established explaining why different kinds and amounts of capital investments were made by some owners and not by others, and, this was true both within and between types of ownership groups.

FACILITIES AND LIFEGUARDS

Service Facilities

Approximately two-thirds of the beach areas had a bathhouse (Table 26). This included 8 percent that had only a clothes changing house or shelter, some of which were the roofless type. It does not include an additional 4 percent of the beaches where some swimmers used toilets for changing their clothes. Each of the private and state owned beach areas in the southern part of the state had a bathhouse but of all northern areas studied only city ownerships each had a bathhouse. Other ownerships by the two sectors of the state varied from around one-third to two-thirds of the beach areas having a bathhouse (Table 26).

Only about one out of three bathhouses (31%) had showers, and there were no showers in other buildings at any beach area. As an average for all 91 beach areas studied only 20 percent had showers. A greater proportion of the city and private owned beach areas had showers than did the county and state owned areas.

More than one-half (55%) of all beach areas had flush toilets (Table 26). The proportion reached two-thirds for all beach areas in southern Wisconsin and only county areas had less than one-half with flush toilets. Slightly less than one-half of all northern beach areas had flush toilets and it was less proportion only for state owned areas.

There was no overall relationship between beach areas having flush toilets and those also having showers. This was true even though there was always an equal or higher percentage of beach areas with flush toilets than the percentage with showers for all ownership and location groupings (Table 26). However, the two percentage figures were often considerably different. For example, although 50 percent of the southern city beach areas had flush toilets and 50 percent had showers, on their northern areas 63 percent had flush toilets but only 38 percent had showers. The reverse was true by location for privately owned beach areas with 67 percent of the northern beach areas having flush toilets and showers but on their southern areas 91 percent had flush toilets and only 18 percent had showers.

Lifeguards

About one-third (32%) of all beach areas had lifeguard services. The percentage of areas with this service varied from the highest (86%) for city owned beach areas to the lowest (12%) for privately owned areas. None of the northern private or county owned beaches had lifeguards and there were such services at only 13 percent of the northern state owned areas (Table 26). Some of the beach operators indicated their desire to provide lifeguards but suitable employees were either not available or the operators' budgets were inadequate to support the costs. Only one serious accident and one loss of life were reported by any of the operators as having occurred during their tenures

[30] On this same comparative basis investment costs determined per participant day for other types of ownerships and groupings were: 52 cents—private ownerships; $1.10—state ownerships; $1.04—all ownerships studied; $1.09—all public owned areas only; 92 cents—all ownerships excluding state owned.

The number of swimmers were determined for 28 average weekend days and 2 largest-use-days during the 100-day summer period (including June, July and August). The average number of swimmers per ownership was determined for each of the 4 types of ownership groups; and, the corresponding average investment costs were prorated to participant days of use.

at the beach areas studied.[31]

It would seem reasonable to assume that generally swimming beach areas with a bathhouse, flush toilets, showers and lifeguard services would have more swimmers than those areas without one or more of these features. This was verified from analysis of data for 65 beach areas included in this study.[32] The beaches were somewhat equally distributed between private, state, county and city ownerships. Only 10 beach areas had all four features and they had an average of 887 swimmers per beach for the usual weekend day compared to 410 swimmers per beach for each of the other 55 areas lacking one or more of the four features. Additional evaluations were made to compare the use of 27 of these beach areas that had a bathhouse and lifeguard services with the use of the other 28 areas lacking one or both of these two features. The 27 areas had an average of 740 swimmers per beach area on the usual weekend day and the 28 areas had an average of only 299 swimmers each. A further analysis for the 28 areas showed that 14 of them had no bathhouse (but 2 of them had lifeguard services) and averaged only 186 swimmers each for the usual weekend day. Furthermore, considering just the bathhouse feature, those 51 beach areas with this facility averaged 563 swimmers each for the usual weekend day. The obvious conclusion is, therefore, that a relationship existed between larger numbers of swimmers and more service features provided at beach areas.[33]

CAR PARKING

Most of the beach areas (84%) had definite car parking facilities for use of swimmers. In some instances the parking spaces were in an area also used by picnickers, boaters or other recreationists but size of those parking areas purposely allowed for swimmer's cars. Furthermore, on many ownerships with picnicking and camping facilities as well as a swimming beach, part of the total number of swimmers had car parking spaces other than on the beach area. In fact, swimmers' cars at beach areas (16%) having no definite spaces for them were parked in general car parking lots, at their camping or picnicking sites, along the roads or, as at two beaches, in open fields.

There was an average of 61 car parking spaces per beach area for all 91 areas studied (Table 27). For just those beach areas having definite parking lots or spaces for cars of the swimmers, this average figure increased to 73 spaces. There were 77 percent more car parking spaces for swimmers per southern beach area than for northern areas. This difference generally reflected the needs for more car parking spaces since on a usual weekend day the southern beach areas had 53 percent more swimmers per beach area compared to northern areas.

Except in those very few instances where beach area operators indicated a shortage of car parking facilities for swimmers, it appeared that most provisions were satisfactory. This is understandable in view of the data shown in Table 27 indicating an average of 7.4 swimmers on a usual weekend day for each parking space definitely provided for their cars. Since all swimmers are not dependent on such spaces for their car parking, and since there is some turnover use of the beach area (and parking spaces), the actual average number of swimmers per space would be less than 7.4 people. Even so, for 50 percent of the beach areas on a usual weekend day, the number of swimmers did not exceed an average of 4 per car parking space, with a weighted average for all such areas (38) of 2.6 swimmers per space. And, correspondingly another 25 percent of the beach areas, each one not exceeding 10 swimmers per car parking space, had a weighted average of 7.5 swimmers per space. However, those beach areas (19 or 25%) with more than 10 swimmers per car parking space, including 8 areas that exceeded 20 per space, had a weighted average of 17 swimmers per space. These 19 beach areas were distributed among the city, county and state ownerships.

Without specific swimmer identification in direct association with location of the car parking space used, an exact figure is not obtainable as to ratio of swimmers per car parking space. However, since the beach areas studied represent the range of conditions in Wisconsin for beach use and car parking facilities, the needs for parking spaces are not likely to differ appreciably from the average amount for the numbers of swimmers using the areas covered in this report.

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[31] The loss of life was at a beach without lifeguard service and resulted from head injuries to one of several teenagers who were scuffling on an anchored floating raft. The serious accident was reported by the three lifeguards at one beach where a small child escaped their attention until almost drowned.

[32] Some ownerships having two or more beaches each were excluded because field data separations were not suitable for this exercise.

[33] The study did not attempt to establish cause and effect in this relationship. It is known that for some of the beach areas user demands caused alterations of the original operations by additions of one or more of the four features. In many instances, however, plans for large numbers of swimmers included most of the features at the outset of operations.

SUMMARY PROJECTION FACTORS FOR USE WITH INVENTORY DATA

1. Number of swimmers on average weekend day over swimming season, by ownerships and location

   a. Per beach*

	Private	State	County	City	All
1) Statewide	318	466	486	270	340*
a) Southern Wis. (%)	+19	+36	+21	+49	
b) Northern Wis. (%)	-36	-12	-34	-37	
2) Statewide: all public owned only					351**

   b. Per beach acre*

	Private	State	County	City	All
1) Statewide	438	3,274	2,808	1,292	1,202*
a) Southern Wis. (%)	+20	-42	-27	-9	
b) Northern Wis. (%)	-31	+49	+39	+6	
2) Statewide: all public owned only					2,073**

2. Number of swimmers on largest-use-day, by ownerships and location

   a. Per beach*

	Private	State	County	City	All
1) Statewide	653	774	895	697	706*
a) Southern Wis. (%)	+5	+56	+32	+48	
b) Northern Wis. (%)	-10	-19	-48	-36	
2) Statewide: all public owned only					767**

   b. Per beach acre*

	Private	State	County	City	All
1) Statewide	1,157	5,293	4,725	3,089	2,458*
a) Southern Wis. (%)	+41	-43	+3	-26	
b) Northern Wis. (%)	-49	+51	-5	+16	
2) Statewide: all public owned only					3,943**

3. Average size of beach area; statewide

   a. Per beach (site-area)
      1) All beaches — 0.6 acre*
      2) All public owned beaches only — 0.4 acre**

   b. Backup lands per beach (site area) acre (definite areas for swimmers use)
      1) All beaches — 8.8 acres*
      2) All public owned beaches only — 8.4 acres**

4. Weighted average distance between (general public use) beaches; statewide

   a. All beaches — 5.4 miles*

   b. Percent of all beaches less than 5 miles — 61%*
      1) Public owned only — 50%**

5. Number of car parking spaces (averages) per beach area; statewide

   a. All beach areas — 89**
      1) Only areas having spaces — 107**

   b. Public owned — 49***
      2) Only areas having spaces — 55***

6. Capital investments per beach area (exclusive of land costs; current values); statewide

   a. All beaches — $11,221**

   b. Public owned — $17,995***

7. Percent of beach areas having bathhouses; statewide

   a. All beaches — 79**

   b. Public owned — 68***

8. Percent of beaches with lifeguards; statewide

   a. All beaches — 34**

   b. Public owned — 58***

* Percentages are respectively applicable to "1) Statewide" numbers, resulting in either larger (+) or smaller (-) answers.

** Data from this study projected by respective percentage that number of beaches on each type of ownership is of total number of beaches (for general public use) in the state: Private–53.3%; State (& Federal)–8.3%; County–13.2%; and, City (Village & Twp.)–25.2%; projection results are weighted averages.

***Same method as above (*): State (& Federal)–17.8%; County–28.2%; and, City (Village & Twp.)–54%.

TABLE 16. Number of Beach Areas by Ownership and Location

	Private	State	County	City	All	Public-owned Only
No. of ownerships	15	13	17	13	58	43
No. of beach areas	17	40	20	14	91	74
In southern Wis.	11*	10	12	6	39	28
In northern Wis.	6	30	8	8	52	46

* Within the 7 southeastern counties where 4 are bounded by Lake Michigan plus the 3 adjoining them on their west sides.

TABLE 17. Number of Beaches by Size

Acreage* Size Groups	Private	State	County	City	All	Public Owned
.05-.25	3	29	11	9	52	48
.26-.50	5	5	5	1	16	11
.51-.75	5	6	2	-	13	8
.76-1.0	2	-	1	2	5	3
Over 1.0	2	-	1	2	5	3
.05-.50	4	32	15	10	61	57
.51-1.0	9	8	4	1	22	13
1.0 or more	4	-	1	3	8	4
Range (acres)	.10-4.0	.08-.75	.05-.8	.05-2.3	.05-4.0	.05-2.3

* Excludes backup lands

TABLE 18. Average Size of Beaches

	Acres*		
Ownership	All	Southern Wis.	Northern Wis.
Private	0.8	0.6	1.18
State	0.2	0.47	0.11
County	0.36	0.46	0.21
City	0.48	0.83	0.21
All	0.39	0.56	0.26
All public only	0.3	0.54	0.15

* Excludes backup lands

TABLE 19. Beach Backup Lands

Ownership	Acres Per Beach	Acres Per Beach Acre*	Percent For Swimmers Only**
Private	3.8	9.2	19.8
State	3.9	8.0	23.6
County	1.9	8.7	25.6
City	1.2	8.4	25.8
All	3.0	8.4	23.1
All public only	2.9	8.2	24.1

* Weighted average.

**Reciprocal percentages would account for multiple use backup lands.

TABLE 20. Largest-Use-Day of Beaches, by Size of Beach

	Number of People Per Day, by Acreage Size Groups							
	Per Beach				Per Beach Acre*			
Ownership	All	.05-.49	.5-.9	1 or more	All	.05-.49	.5-.9	1 or more
Private	653	463	568	1,035	1,157	2,389	997	593
State	774	627	1,139	-	5,293	8,024	2,108	-
County	895	747	975	2,800	4,725	6,093	1,533	1,077
City	697	501	250	1,500	3,089	3,773	360	1,035
All	766	625	835	1,430	3,522	5,443	1,390	741
All public only	792	636	1,020	1,825	4,402	5,759	1,685	1,035

* Weighted averages

TABLE 21. Largest-Use-Day of Beaches, by Beach Location

	No. People per Beach			No. People per Beach Acre*		
Ownership	All	Southern	Northern	All	Southern	Northern
Private	653	689	587	1,157	1,638	490
State	774	1,206	630	5,293	2,991	7,979
County	895	1,179	469	4,725	4,881	4,503
City	697	1,035	444	3,089	2,294	3,586
All	766	1,025	572	3,522	3,025	4,112
All public only	792	1,158	570	4,402	3,692	5,147

* Weighted averages.

TABLE 22. Average Weekend-Day Use of Beaches

	No. People per Beach			No. People per Beach Acre*		
Ownership	All	Southern	Northern	All	Southern	Northern
Private	318	380	203	438	528	303
State	466	635	409	3,274	1,908	4,869
County	486	590	323	2,808	2,052	3,890
City	270	403	170	1,292	1,178	1,364
All	412	514	335	1,960	1,436	2,562
All public only	434	566	353	2,491	1,808	3,207

* Weighted averages.

TABLE 23. Average Distance (Miles) to Nearest Other Swimming Place*

Ownership	All	Southern Wis.	Northern Wis.	Range**	Percent of Beaches Under 5 Miles
Private	3.9	3.9	3.9	1 -13	71
State	18.1	18.3	18.0	1.5-35	40
County	5.7	5.2	7.2	1.5-15	55
City	4.2	5.1	2.8	.5-8	50
All	11.5	9.1	14.2	.5-35	51
All Public only	12.9	10.5	15.0	.5-35	46
State excluded	4.9	4.8	5.2	.5-15	59

* Other swimming "place" included any general public use developed facility, either with fee charge or free use but without restrictions on numbers or origin of swimmers.

Weighted averages: summation of result from multiplying number of swimmers on average weekend day times miles from the ownership to nearest other general public use beach, divided by summation of number of swimmers at beaches studied.

**Actual miles, not averages.

TABLE 24. Beach Area Capital Investments*

Ownership	Range (Dollars)	Percent of Beach Areas Having Investments Under $5,100	Under $10,100	Average Per Beach Area ($) All	Southern Wis.	Northern Wis.
Private	900-- 11,000	53	88	5,295	4,870	6,073
State	2,000--166,100	7	55	16,087	20,487	14,620
County	700-- 26,000	65	85	6,032	7,277	4,164
City	1,800--135,000	38	71	24,872	45,358	9,507
All	700--166,100	33	70	13,212	15,844	11,239
All Public only	700--166,100	28	66	15,031	20,156	11,912
State excluded**	700--135,000	53	82	10,958	14,243	6,628

* Exclusive of land costs; 91 beach areas.
**Includes: private, county and city.

TABLE 25. Investment Costs per Participant Day*

	$ .01-.24	.25-.49	.50-.99	1.00-1.99	2.00 or more	All
Ownerships						
Number	8	13	15	11	11	58
Percent						
Private	25	31	27	36	9	25
State	25	7	33	10	36	23
County	50	62	13	27	-	29
City	-	-	27	27	55	23
Avg. participant days (PD)	17,500	21,227	27,616	13,209	11,790	20,009
Investment costs, (IC) dollars						
Range	700-6,000	900-26,000	1,350-123,000	2,500-86,500	6,000-166,100	700-166,100
Average per ownership	2,223	8,698	19,489	15,709	59,068	20,730
Per participant day (IC/PD)**	.12	.40	.74	1.34	3.78	1.25

* This table is constructed expressly to show the relative comparisons of investment costs and participant days use by ownerships. The per participant day (swimmer) costs are determined on the basis of current values of investments (exclusive of land costs) and numbers of swimmers on summer weekend days (28) and 2 largest-use-days. These heaviest use days are common to all ownership beach areas irrespective of total days the beach(s) is open in a year and the wide fluctuations for use during weekdays. The investment cost per participant day is not to be construed as relating to total use of a beach area or for average cost over the life of the investments.

**Weighted averages.

TABLE 26. Percentages of Beach Areas Having Bathhouse and Flush Toilet Facilities and Lifeguards

Ownership and Facilities*	Facilities			Lifeguards		
	All	Southern Wis.	Northern Wis.	All	Southern Wis.	Northern Wis.
Private				12	18	0
Bathhouses	88	100	67			
Showers	35	18	67			
Flush Toilets	82	91	67			
State				25	60	13
Bathhouses	53	100	37			
Showers	10	20	3			
Flush Toilets	48	80	28			
County				25	42	0
Bathhouses	43	50	38			
Showers	10	8	12			
Flush Toilets	45	42	50			
City				86	83	88
Bathhouses	86	67	100			
Showers	43	50	38			
Flush Toilets	57	50	63			
All				32	46	21
Bathhouses	64	77	54			
Showers	20	23	17			
Flush Toilets	55	67	46			

* Clothes changing houses (some had no roofs) were included; about 8% of all beaches had only this type bathhouse. In addition (not included) were 4% of all beaches without a bathhouse but some swimmers used the toilets for clothes changing purposes.

All beaches had some type of toilet facilities but only those flush toilets provided especially for swimmers were included; those provided mainly for campers or other recreationists and occasionally used by swimmers were not included.

TABLE 27. Car Parking by Beach Ownership and Location

	Private	State	County	City	All
All Beach Areas					
Number	17	40	20	14	91
No. Spaces/Area					
Southern Wis.	138	96	49	67	88
Northern Wis.	66	34	43	40	40
All areas	112	49	47	51	61
Beach Areas Having Definite Parking For Swimmers					
Number	16	28	18	14	76
Percent					
Southern Wis.	100	100	83	100	95
Northern Wis.	83	60	100	100	75
All areas	94	70	90	100	84
No. Spaces/Area					
Southern Wis.	138	96	59	67	94
Northern Wis.	79	56	43	40	53
All areas	119	71	52	51	73
No. Swimmers/Space*					
Southern Wis.	3.2	9.6	10.2	11.6	8.2
Northern Wis.	4.3	7.2	8.0	5.7	6.7
All areas	3.6	8.1	9.2	8.2	7.4

* Weighted averages. Based on number of swimmers for one average weekend day.

BOAT ACCESSES

INTRODUCTION

Most water-oriented recreational activities, except swimming, require accesses to lakes and rivers for boats and canoes. Number, location and use of boat accesses are important considerations in evaluating the adequacy of resources for boating, water skiing and fishing.[33]

The objective of this study was to gain knowledge of the physical aspects of boat accesses, use made of them, their size (including car and trailer parking facilities), capital investments made and business operation of the accesses. Also, water use conflicts between recreational activities were considered for those water bodies having boat accesses.

Research analyses were made of 166 boat accesses. This sample was from 200 ownerships included in two broader research projects covering private and public owned recreation areas. Approximately two-thirds (64%) of these ownerships either had developed boat accesses or adjoined water bodies having a developed boat access on other nearby lands (Table 28). The other ownerships either had no water bodies to use or their small ponds or streams were unsuitable for boating activities that require developed accesses. The accesses studied were on 73 ownerships in 34 counties (Fig. 7).

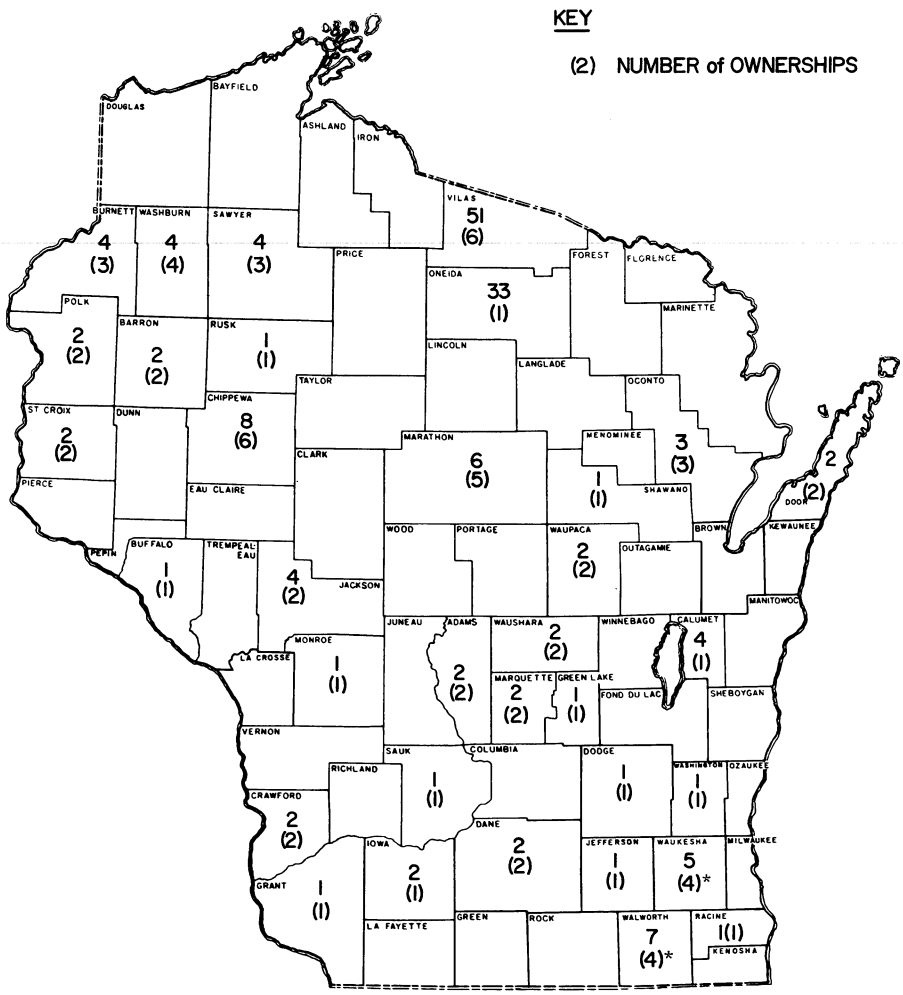
Uniform procedures were followed in studying the 166 accesses as covered by the principles presented in Cohee (1971a) for boat rental enterprises. However, those aspects not applicable to both public and privately owned and operated boat accesses were omitted.

BOATING AND BOAT ACCESSES

Boats

Thousands of people in Wisconsin own a boat. On December 31, 1971 there was a total of 341,376 boats registered in the state, and fleet registrations accounted for only 11 percent of them. Most of these boats require launching facilities to afford reasonable ease in getting them from their trailer or conveyance into the water. Some of them are kept at cottages or summer homes at lakes or rivers and they are not launched for each daily use. However, a sizable majority of the 285,992 outboard motor boats, the 7,549 sail boats and the 9,431 inboard motor boats not in fleet regis-

FIGURE 7. Boat Accesses Studied—Number of Ownerships Having the Accesses.* Only 7 ownerships since one has 2 accesses in Walworth County and another in Waukesha County.



[33] Survey instructions included the following statement about boat accesses which defines the facility: "A 'developed boat access' is a specified place where car and boat trailer can be backed to the water and boat may be unloaded and launched. It could possibly be entirely natural but this is not too likely; however, construction work is not the entire meaning for 'developed'. It could be construed to mean a 'designated' or 'regular' or 'established' boat access. It is in contrast to just any place where the boat can be put into the water with no special provision for ease or comfort or safety in so doing." All boat accesses studied were available for general public use.

trations are moved about the state and are launched from public-use accesses. Many of those kept at cottages are also first launched at a public-use access. In addition, a large number of boats are brought into the state each year by recreationists from other parts of the country which adds to the needs for public-use boat accesses.

Accesses

From a 1967 survey it was estimated that there were approximately 1400 boat accesses for general public use in Wisconsin (WORP, 1968). They were distributed in roughly equal proportions between those on public and those on private ownerships. County ownerships had about one-fourth of this total number of accesses; and, city (& village), state and federal ownerships about equally contributed one-fourth of them. Approximately 12 percent of these boat accesses were studied.

Most of the boat accesses studied were single lane capacity, i.e., with only space to launch one boat at a time (Table 29). The single type accesses were most prevalent on state and private ownerships. Most county and city ownerships had double capacity accesses, i.e., two or more lanes, which accommodated more launchings than at other accesses.

Whether the acceses were single or double capacity had no relation to size of the access point or total acreage at the facility. For example, state owned access points (exclusive of backup land) averaged 0.9 acre each and only 28 percent of them were double capacity, but those on county ownerships were only about half this size (0.5 acre) and 61 percent of them were double capacity. Also, total acreage at the facility, i.e., access point area plus backup land, was not larger at the double capacity accesses (Table 29).

Car Parking

There were an average of 10.7 car parking spaces per access for all 166 accesses studied. There was a big difference in numbers of spaces by types of ownerships, ranging from an average per access of less than 7 on state lands to 21 on county ownerships. Without detailed information, including daily turn-over-rate of use, it is difficult to determine if the number of car parking spaces was too few or in over-supply. Exact measurements were not made in this study, but access operators indicated that generally, except for holiday weekend use, there were enough car parking spaces. Additional car parking facilities had been added in the last few years at several of the accesses studied.

Boating Waters

As an average each access studied had 1,669 surface water acres for boating use. More surface water acres were available per boat access on public owned lands than from those on private ownerships (Table 29). State and county owned accesses averaged about one-third to one-half more surface water area than for accesses on city and private ownerships. Two boat accesses in the study inletted to bays of Lake Michigan and all others adjoined inland lakes or rivers.[34]

Boat Access Use

On a usual summer weekend day, exclusive of holiday wekends, an average of 11.2 boats were launched at each boat access. An average county access had more than 4 times as many boats as a state access and nearly three times the number using a city access (Table 30). Each access on private ownerships averaged only about one-sixth as many boats as for a county access. This smaller number (5.7) per privately owned access is partly because only about one-half of the boaters were on the ownerships specifically for boating. Comparatively, from two-thirds to three-fourths of the recreationists using public owned accesses were on the ownerships only to launch their boats. Two circumstances may have had influences in connection with these differences in use of boat accesses, namely, (1) a user fee was charged at over two-thirds of the private accesses but at only about one-fourth of those publicly owned, and, (2) most private accesses were not widely advertised as being available for general public use.

A large majority (70%) of those recreationists using the boat accesses were on the ownerships just to launch their boats. The balance of the boat access users were on the ownerships for other recreational purposes (camping, picnicking, etc.).[35] Source of boat users can be an important consideration for future developments of boat access facilities.

During the year the boat accesses were open for launching an average of 145 days each (Table 31).[36] The periods of use varied from only 60 days for one access to 225 days for another (both on private ownerships). County owned accesses were open the longest periods and those city owned the shortest. Usually those boat accesses used by waterfowl hunters were open for longer periods annually than were those used mainly by fishermen.

Fee Charges

Some type of charge was made for use of 37 percent of the boat accesses (Table 31). All city accesses were free but there was a fee for use of over two-thirds of those privately owned. Also there was a charge for use of about a fourth of the state and county owned accesses.

Fee charges per entrance use of a boat access varied from 50¢ to $3.00. Most charges for private owned accesses were 50¢ to $1.00 per entrance while such fees at county accesses were mostly from $1.00 to $2.00. At one county access a $3.00 charge was made for larger boats. Charges at state accesses were indirectly from a fee to enter the ownership costing $1.00 a day or $3.00 a year per conveyance.

Distance

Boat accesses are rarely in isolated locations or far removed one from another irrespective of the type of ownership they are on. For accesses studied only 6 percent were each more than 5 miles from another access (not on the ownership studied). Furthermore, only 20 percent were each more than 2 miles from another access. It was only 3.4 miles as an average dis-

[34] Excluding the two private ownerships with access to Lake Michigan bays, the other 46 privately owned accesses averaged 904 surface water acres each.

[35] This finding checks with information obtained from 294 camping parties on 149 campgrounds (see Campgrounds and Camper Use section) in that 33% of the campers had brought their own boats.

[36] Actually many of the free-use accesses had no opening or closing dates and "days open" were obtained on the basis of when practically all of the boat launchings took place. However, there were exceptions since some free-use accesses were in parks that literally opened and closed on specified dates.

tance between an access studied and the nearest other access on a different ownership not studied (Table 31).

CAPITAL INVESTMENTS

For Accesses

Boat accesses varied from those (20) having entirely natural conditions without construction costs to some with floating docks, constructed hard surface bottoms and paved ramps, roadways and car parking lots. Capital investments, therefore, exclusive of land costs, ranged from zero to as much as $10,000 for an access. Total investment costs for the 166 accesses studied averaged $2,686 each Table 31).[37]

Each of the 118 boat accesses on public ownerships (state, county and city) had some development costs. Their average cost per access was $3,573. Investments for the city accesses were small with an average cost of only about a fifth the amount for a county access ($2,592) and only a seventh of the $3,917 per state owned access. Only 42 percent of the private owned accesses had development costs, amounting to an average of $867 per access.

There is no satisfactory method for determining if all initial capital investments at an access are necessary. This study did not evaluate operation and maintenance costs but they could be higher for the low cost accesses if initial developments were unduly restricted. For example, maintenance of natural bottom accesses and their road approaches is often greater than for those with constructed hard surfaces. Also, boating activity experiences are greatly depreciated when users' cars and trailers become stuck while launching their boats at accesses without hard surface ramps or approaches.

Related to Use

Considering all accesses studied there appears to be no appreciable relationship between amounts of capital investment per access and its use (measured by number of boats launched on a usual weekend day; Table 32). The accesses that each had $999 or less capital investment averaged only 16 percent less use than for those with $1,000 or more investment. However, when those access costing as much as $2,499 each are included in the lower cost group, the average use becomes 8 percent greater than for those accesses costing $2,500 or more each (Table 32). In both group separations costs averaged less than one-eighth as much per access in the lower investment group as for an access in the corresponding higher investment group.

The county owned accesses appear to be an exception and a definite relationship does prevail between investment costs and access use. For the two group separations (Table 32) the higher cost accesses had 66 and 75 percent greater use than did the lower cost accesses. This could be accounted for by the absence of uniform development specifications to be followed irrespective of anticipated access use, consequently resulting in more extensive investments only at the more heavily trafficed accesses. In contrast, all private operators try to keep their investments as low as possible irrespective of access use while for state ownerships general installation criteria are followed for all accesses developed which somewhat precludes correlation between costs and access use. Sample size for city owned accesses was not large enough to provide a reliable pattern on this cost versus use matter.

SURFACE WATER USE CONFLICTS

Recreationists engaged in fishing, pleasure boating, water skiing or swimming frequently use the same water body, and may compete for its use. Conflicts in use result in annoyances, personal dangers, pollutants or property damages.[38] Boats serving fishermen, water skiers or pleasure boaters are always involved in surface water use conflicts. There are relatively few conflicts between swimmers and shoreland residents.

Operators of recreation areas having boat accesses are in a good position to know about water use conflicts. This is why they were solicited for information on this subject. Approximately 277,000 surface water acres serve the 166 boat accesses studied. About one-half (48%) of the operators reported serious conflicts. However, these same operators had 120 boat accesses inletting on over three-fourth (77%) of the total water acreage. Also, an accounting for separate water bodies in this study indicates that use conflicts were serious on about 60 percent of the lakes and 50 percent of the rivers.[39]

The most common conflicts are between water skiing and fishing and between pleasure boating and fishing (Table 33). Operators of accesses reported which conflicts between activities were most important for seriousness, and those of second and third importance. For the first importance group, fishing was involved in 94 percent of the conflicts between activities. Water skiing was in 69 percent of the conflicts while pleasure boating (43%) and swimming (17%) were involved less frequently. For the second and third importance conflicts, fishing was also heavily involved in all conflicts (87%) and water skiing was equally involved (87%) while pleasure boating and swimming were each in about one-third of the conflicts reported. Conflicts of first importance outnumbered those of both second and third importance by about 2 to 1.

These reported conflicts were not just enumerations of infrequent and specific instances. They reflect a general circumstance by water bodies. For some areas it is practically certain that the conflicts will take place almost every day. For other areas they are not daily happenings but are sure to occur some times during each week of the summer.

Even a conservative projection of these findings means that such conflicts are likely to be found on at least 1500 of the more than 5100 named lakes in Wisconsin. Whereas no deaths were reported from the conflicts, there were numerous instances of serious human injuries, real property and wildlife damages and much extreme agitation. These conflicts appreciably diminish enjoyments of persons engaged in water-oriented forms of outdoor recreation.

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[37] Exclusive of land costs; in general depreciated to present conditions at current prices. Includes development at the access and car parking facilities, also includes other service facilities (toilet, water, etc.) if provided primarily for boat access users.

[38] Multiple use conflicts in water areas are due to intensity of use, mixing of use, and incompatible manner of use. Growing numbers of recreational uses are competing for a fixed supply of Wisconsin waters. (Kusler, 1970)

[39] Some ownerships with more than 1 boat access have them on 3 to 6 different lakes.

SUMMARY PROJECTION FACTORS FOR USE WITH INVENTORY DATA

1. Number of boats launched per access per average weekend day; by boat access ownerships:

Ownerships	No. Boats
Private	6.1
State	16.6
County	36.6
City	13.4
All (Statewide)*	15.4
All public owned only (Statewide)**	26.6

2. Percentage distribution of total launchings by boat access ownerships:*

Ownerships	Percent
Private	22
State	8
Federal	6
County	57
City	7
All (Statewide)	100
All public owned only (Statewide)	78

3. Size of boat accesses; by ownerships:

Ownerships	Acres***	Car Parking Spaces***	Percent Double Lane
Private	1.11	14.5	19
State	.99	6.7	18
County	.66	21.0	61
City	.53	12.0	60
All (Statewide)*	.94	14.8	32
All public owned only (Statewide)**	.74	15.2	48

4. Boat access users (All, statewide)*
   Percent of users on ownership by purpose:

	Ownerships	
	All	Public Owned Only
Single purpose–to use boat access	61%	72%
Other purposes and use boat access	39%	28%

* Data from this study projected by respective percentage that number of boat accesses on each type of ownership is of total number of accesses (for general public use) in the state: Private–54.7%; State (& Federal)–13.5%; County–23.9%; and, City (& Village)–7.9%; projection factors for more than a single type of ownership are weighted averages.

** Same method as above (*): State (& Federal)–29.8%; County–52.8%; and, City (& Village)–17.4%.

***Per access; acres include backup lands.

TABLE 28. Ownership of Boat Accesses

	Private	State	County	City	All
Number of Boat Accesses*					
On project study ownerships	63	95	23	7	188
In sample studied	48	95	18	5	166
Number of Ownerships					
In project studies	135	16	26	23	200
Having boat accesses***	57**	12	20	7	96
Without boat accesses:					
Served by accesses on adjacent properties	15**	2	2	4	23
Served by accesses on nearby properties	8**	-	-	-	8
Having water bodies suitable for accesses***	3**	-	-	-	3
Having water bodies unsuitable for accesses***	29	1	2	4	36
Without water bodies***	23	1	2	8	34
Having boat accesses studied	42	11	15	5	73

* Only developed or established boat accesses are included -- bank launching areas for boats or canoes are not included.

** Boats were a part of the recreation business on 83 private ownerships.

***Considered water bodies were all sizes of lakes, streams and ponds.

TABLE 29. Size of Boat Accesses and Associated Waters

	Private	State	County	City	All
Number of Boat Accesses Studied	48	95	18	5	166
Average per ownership	1.1	8.6*	1.2	1.0	2.3
Percent single capacity	81	72	39	40	70
Percent double capacity	19	18	61	60	30
Average Access Point Acres	.4	.9	.5	.3	.7
Backup Lands					
Acres per access**	.7	.1	.2	.3	.3
Percent of accesses having**	60	4	28	60	25
Car Parking Spaces per Access***	14.5	6.7	21	12	10.7
Surface Water Acreage					
Available from all accesses[1/]	61,602	174,713	33,272	7,445	277,032
Average acres per access[1/]	1,283	1,839	1,848	1,489	1,669

* Two large state forest and recreation areas had 79 accesses; the other state ownerships studied had an average of 1.8 accesses each.

** Average per boat accesses studied; for only those having backup lands there were, respectively, 1.1, 1.5, 0.7, 4.1 and 1.1 acres per access.

***These numbers of car parking spaces include provision for parking the boat trailer with the car.

[1/] Only 2 accesses (both on private ownerships) were on bays of Lake Michigan; each was arbitrarily credited with entrance to only 10,000 acres of surface water.

TABLE 30. Average Use of Boat Accesses on Weekend-Day

	Private	State	County	City	All
Number of Boats:					
Total for all accesses studied	275	849	667	67	1,858
Per ownership	6.5	77.2	44.4	13.4	25.4
Per boat access (arithmetic average)*	5.7	8.9	37.1	13.4	11.2
Source of Boats (Percent**)					
General public--come specifically for access use	52	74	72	66	70
Users on ownership for other purposes	48	26	28	34	30

* Total number of boats divided by total number of accesses.

**Weighted average by number of boats launched by ownerships.

TABLE 31. Boat Access Charges, Availability and Capital Investments

	Private	State	County	City	All
Number of Accesses:					
Total studied	48	95	18	5	166
Free--no charge for use	15*	70	14	5	104
Fee charged for use:					
Number	33	25**	4	0	62
Percent	69	26	22	0	37
Days Accesses Available Annually***	137	148	154	124	145
Number of Miles to Another Access[1/]	2.9	3.9	2.7	2.0	3.4
Capital Investments per Access[2/]	$506[3/]	$3,917	$2,592	$550	$2,686[4/]

* All are free but 9 are for use only of other paying customers on the ownerships (campers, etc.).

** Park entrance permit required (annual or day use "Sticker" charge).

***Average on a per access basis.

1/ Averages per access. Other accesses considered were those nearest the respective ownership having an access studied.

2/ Exclusive of land costs; in general depreciated to present conditions and at current prices.

3/ Averaged for 48 accesses; only 28 had developments, with capital investment costs averaging $867 per access.

4/ Averaged for 166 accesses.

TABLE 32. Capital Investment Costs for Boat Accesses and Their Use

Capital Investment Costs for Accesses	Private		State		County		City		All	
	A	B	A	B	A	B	A	B	A	B
A. $999 or Less*										
Number of accesses	41		5		9		4		59	
Investment/access	321		280		356		188		314	
No. boats/access	5.4		12		26.9		10.2		9.9	
B. $1,000 or More*										
Number of accesses		7		90		9		1		107
Investment/access		1,575		4,119		4,828		2,000		3,994
No. boats/access		7.6		8.8		47.2		6		11.9
(A) $2,499 or Less*										
Number of accesses	43		8		13		5		69	
Investment/access	374		575		600		550		453	
No. boats/access	5.7		9.9		31.3		13.4		11.7	
(B) $2,500 or More*										
Number of accesses		5		87		5		0		97
Investment/access		1,640		4,224		7,772		0		4,274
No. boats/access		5.6		8.7		52		0		10.8

* Separations by accesses arbitrarily made at $1,000 and at $2,500 each.

Use is measured by the number of boats launched on the average weekend day.

"A" and "B" denote comparative group separations by access capital investment costs.

TABLE 33. Surface Water Use Conflicts

Code	Conflicting Uses: Fishing	Pleasure Boating	Skiing	Swimming	Number of Reports
First					First Importance
A*	X	X	X	X	3
B	X	X	X		1
D	X	X			10
E	X		X		17
F			X	X	1
G	X		X	X	2
L (canoeing) X		X			1
1	33	15	24	6	35**
(First) Second					Second Importance
(E) - A	X	X	X	X	1
(A) - B*	X	X	X		2
(L) - D	X	X			1
(D) - E	X		X		5
(G) - E	X		X		1
(E) - F			X	X	1
(E) - H	X			X	1
	11	4	10	3	12**
(First-Second) Third					Third Importance
(D) - (E) - B	X	X	X		1
(A) - (B) - E*	X		X		1
(D) - (E) - F			X	X	1
	2	1	3	1	3**

* Illustration for table interpretation: One operator reported only "A" conflicts; another operator reported only "A" and "B" conflicts; a third operator reported "A" and "B" and "E" conflicts in this order of importance. The second operator is counted in two places, namely for his "A" in first importance grouping and for his "B" in the second importance grouping, and, the third operator is counted in three places, i.e., for his "A" of first importance conflicts, for his "B" of second importance and for his "E" in the third importance grouping.

**35 operators reported conflicts; 23 of them each had only one set of important conflicts but 9 others had first and second importance conflicts and 3 other operators reported first, second and third sets of conflicts.

APPENDIX A

Campground Score Card -- Schedule S

Operator's Name _____ Sample Unit Number _____

Name of Scorer _____ Date _____

I. Roads -- Access and Circulation	Access Score Possible (1)	Access Score Rated (2)	Circulation Score Possible (3)	Circulation Score Rated (4)	Total Score Possible (5)	Total Score Rated (6)
A. Lane-if double @ 22'+; if single @ 15'+	1		1		2	
B. Surface-composition, gravel, or natural	2		2		4	
C. Adequately graded and drained	2		2		4	
D. Paralleling roads at least 200' apart	-	-	3		3	
E. Roads blend with natural topography	-	-	2		2	
F. Use system one-way; easy access to camp stalls; other	-	-	5		5	
G. Total score points (I)	5		15		20	

II. Design-General, and Site-Area	Score Possible (7)	Score Rated (8)
A. Parallel, circular or other definite design (incls. compact or loop)	5	
B. Setting, attractiveness, neatness, and cleanliness of grounds	9	
C. Camp spaces (stalls or spurs) 75' - 100' apart	5	
D. Car spurs 12' by 50' long, at 45° to 60° angle to access road; flared entrance[1]	4	
E. Designated use plots 30'-35' in diameter; cleared; sand tent pad by parking stall[2]	4	
F. Use area well drained, shaded in afternoon and more open for morning sun	5	
G. Table and fire facility (circle, fireplace or stove) provided for each space	3	
H. Barriers (natural or artificial) to define parking spaces and privacy for camp use area	6	
J. No units (spaces) too close to lake or stream preventing availability to all campers[3]	4	
K. Definite developed trails to service facilities, easily accessible to each camp space	5	
M. Total score points (II)	50	

III. General Service Facilities	Score Possible (9)	Score Rated (10)
A. Toilet location: Over 75' from most camp spaces; most camp spaces closer than 400'	3	
B. Toilet capacity: At least one large set for each 30-35 camp spaces or one small set for each 20-25 spaces; and well kept and clean[4]	5	
C. Wells or water system: All camp spaces less than 400' to convenient supply: no well closer than 75' to a toilet; firm dry base at supply location	6	
D. Garbage disposal: Garbage containers ample, attractive and locations reasonably screened	4	
E. Electricity: Lighting and outlets commendable within type of purposes intended[5]	4	
F. Registration station and area: Easy access and exit on direct route to campground that is well marked by directional signs, map, separate camp space identification, etc.	8	
G. Total score points (III)	30	

IV. Campground Score

A. Campground score points (I+II+III) 100

B. Campground Status: ___A ___B ___C ___D ___E

---

1 If trailer (or tent) to accommodate back-in parking.

2 If double unit, 50' diameter

3 Distance of 75' to 100' desirable for trails or other uses.

4 Large set is 4 stools or units per building; and, small set is two stools or units.

5 Where electrical outlets are provided, they should be adequate; where possible lines should be underground; well placed lights around wells and in toilets is a consideration.

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No. 11 Evaluations of Stocking of Breeder Hen and Immature Cock Pheasants on Wisconsin Public Hunting Grounds. (1955) Cyril Kabat, Frank M. Kozlik, Donald R. Thompson and Frederic H. Wagner

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