

CHAPTER 7

Water Based Recreation

Availability of high quality shoreline recreational opportunities coupled with hot, dry summers and warm lake waters combine to make the Okanagan Valley one of the most popular recreation areas in British Columbia. In addition, there has been a general upsurge in outdoor recreational activities in the Okanagan due to the rapidly growing populations of Western Canadian and the Pacific Northwest United States, coupled with their increasing affluence, mobility and leisure time. Nearly half a million summer holiday visitors were attracted to the basin in 1971, their expenditures providing a substantial economic return to the Okanagan economy. Furthermore, the availability of water-based recreation opportunities provide important social and environmental benefits to Okanagan residents. The management of shoreline recreational resources is included as one of the basic components of a comprehensive framework plan because of their reliance on good water resource planning and because of their potential contribution to the social betterment and economic growth of the Okanagan.

The major water-based recreational activities in the Okanagan basin are swimming, boating and fishing. Fishing is closely related to the availability of fishery resources, and is discussed separately in Chapter 8. Swimming is broadly defined to include all beach-oriented activities such as sun-bathing, beach games, picnicking, and paddling, while boating comprises power boating, sailing and water skiing.

Most of the information used in this report was obtained from studies carried out under the Okanagan Basin Agreement. Virtually no information was available from other sources. Data on shoreline land tenure, landuse and public recreation sites were obtained from large-scale base maps, air photographs and field surveys. Information on water-based recreationists behaviour, participation and attitudes was obtained from a series of questionnaire surveys of both tourists and residents undertaken during the summers of 1971 and 1972, and receipts obtained from a sample of hotels, motels and campsites in the region. The quality of the data base, particularly as it relates to the problems of interpreting information gained from the questionnaire surveys is fully discussed in Technical Supplement VIII.

7.1 SHORELINE LANDUSE AND LAND TENURE PATTERNS

There are 252 miles of shoreline around the main valley lakes of the Okanagan Basin (Table 7.1). Nearly half (47%) of this shoreline is undeveloped land, though little of it has recreational potential because of poor access and

TABLE 7.1

SHORELINE LANDUSE AROUND MAIN VALLEY LAKES

LAKE	Miles											
	RESIDENTIAL	GENERAL	COMMERCIAL MOTELS	CAMP- SITES	INDUST- RIAL	AGRI- CULTURE	WATER USE	RECRE- ATION	ROAD AND RAIL	PUBLIC ACCESS	UNDEV- ELOPED	TOTAL
Okanagan	40.3	0.7	2.3	1.6	2.1	3.4	0.8	9.0	13.8	1.5	91.3	166.8
North ¹	18.3	0.1	0.8	0.5	0.4	1.5	0.2	1.3	0.9	0.5	30.0	
Central ²	15.4	0.3	1.3	0.8	1.1	0.9	0.2	3.8	7.2	0.8	36.0	
South ³	6.6	0.3	0.2	0.3	0.6	1.0	0.4	3.9	5.7	0.2	25.3	
Skaha	3.5	0	0.4	0.5	0.1	0.3	0.1	1.2	10.6	0.2	1.2	18.1
Vaseux	0.4	0	0.1	0.3	0	0.3	0	0.5	2.9	0	2.6	7.1
Osoyoos	3.6	0	0.5	0.9	0.2	0.9	0.1	2.1	2.3	0.2	10.2	21.0
Tugulnuit	1.0	0	0.1	0.1	0	0.2	0	0.1	0	0	0.4	1.9
Wood	0.6	0	0.6	0.3	0	0.2	0	0	7.9	0.1	0.9	10.6
Kalamalka	4.4	0	0.5	0.6	0	1.0	0.1	0.2	7.8	0.1	12.6	27.3
TOTALS	53.8	0.7	4.5	4.3	2.4	6.3	1.1	13.1	45.3	2.1	119.2	252.8
PERCENT- AGE	21.3	0.3	1.8	1.7	1.0	2.5	0.4	5.2	17.9	0.8	47.1	100%

¹ Okanagan Centre Northwards² Peachland to Okanagan Centre³ Peachland south

terrain. The developed portions of shoreline are used for residential (21%) and road and rail transportation routes (18%). Approximately 26 miles of shoreline (10% of the total resource) are presently developed for recreational activities with 10 miles of public beaches, 14 miles of motel and campsite developments and about 2 miles of public access points. Although shoreline recreation resources represent a relatively small proportion of the total shoreline area, most of the developments are on prime recreational sites. More information on the location and characteristics of shoreline landuse is presented in a set of large-scale maps contained in the back of Technical Supplement VIII.

Over half (54%) of the shoreline is privately owned and a further 14% is situated on Indian Reserves (Table 7.2). Because most of the unalienated Crown Land is occupied by road and rail transportation, only 7% (20 miles) of the total shoreline is undeveloped and potentially accessible to the public. Almost all the remaining undeveloped shoreline is privately owned. Only 1% (2.2 miles) is owned by municipalities and less than half of this (1 mile) represents undeveloped public access. Although all shoreline areas below the high water mark are public property, public access is restricted by the limited availability of publicly owned recreational lands above high water mark and by the maintenance of high lake levels during the summer months. In addition many public access points are not properly marked and in some cases, are actually used as private property.

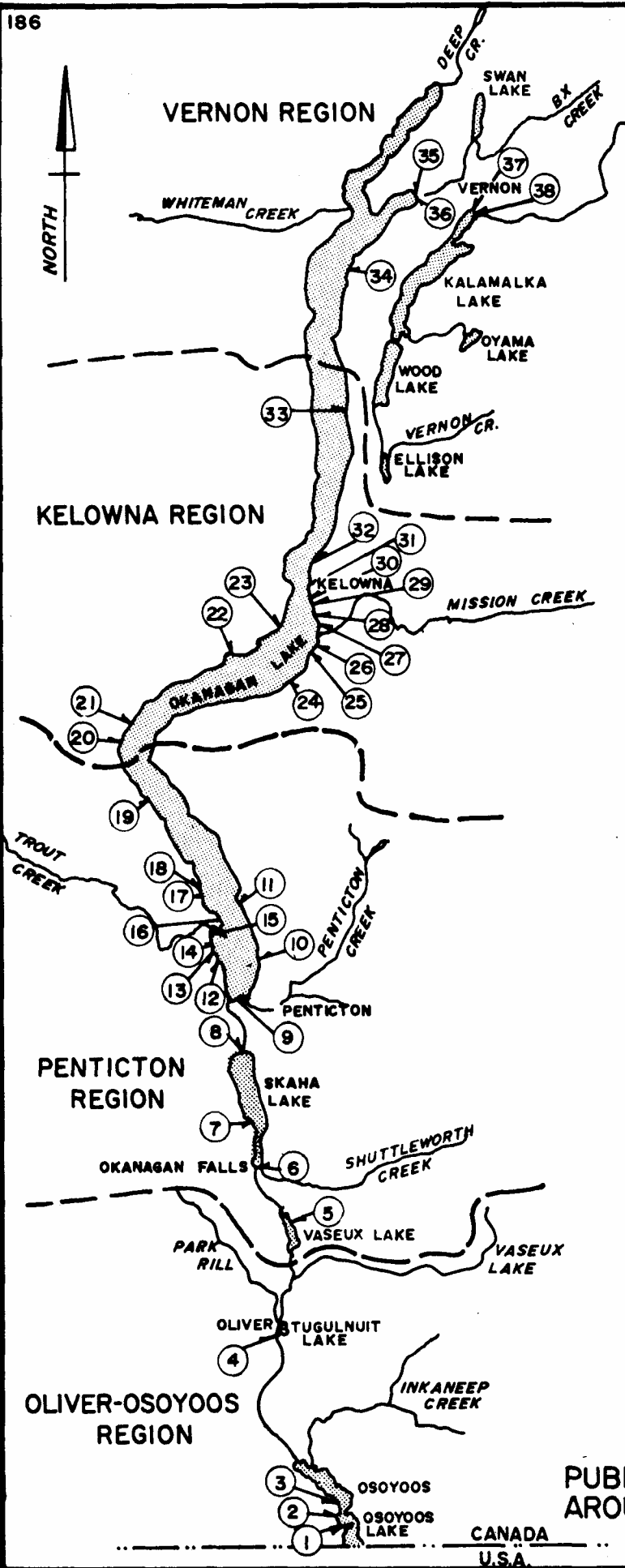
TABLE 7.2
SHORELINE LAND TENURE AROUND MAIN VALLEY LAKES

LAKE	Miles												TOTAL
	INDIAN RESERVE		PRIVATE		CROWN			MUNICIPAL		PUBLIC ACCESS		ROAD AND RAIL	
	DEVELOPED	UNDEVELOPED	DEVELOPED	UNDEVELOPED	DEVELOPED	PARK RESERVE	UNDEVELOPED	DEVELOPED	UNDEVELOPED	DEVELOPED	UNDEVELOPED		
Okanagan	9.8	18.0	40.4	58.8	5.5	6.1	6.8	4.5	1.6	0.9	0.6	13.8	166.8
North	8.8	15.5	13.0	12.8	1.2	1.7	0	0.1	0	0.3	0.1	0.9	
Central	0.6	2.5	18.7	28.8	2.1	2.2	1.5	2.2	0.9	0.5	0.4	7.2	
South	0.4	0	8.7	17.2	2.2	2.2	5.3	2.1	0.7	0.1	0.1	5.7	
Skaha	0.7	0	4.6	1.1	0.1	0	0	0.7	0.1	0.1	0.1	10.6	18.1
Vaseux	0	0	1.2	1.6	0.4	0.8	0.2	0	0	0	0	2.9	7.1
Osoyoos	0	5.7	5.6	4.2	1.5	0.2	0.1	0.6	0.5	0.1	0.2	2.3	21.0
Tugulnuit	0.2	0.2	1.2	0.2	0	0	0	0.1	0	0	0	0	1.9
Wood	0	0	1.8	0.6	0	0.2	0	0	0	0.1	0	7.9	10.6
Kalamalka	0	0	6.4	9.3	0	0.2	3.1	0.3	0	0.1	0.1	7.8	27.3
TOTAL	10.7	23.9	61.2	75.8	7.5	7.5	10.2	6.2	2.2	1.3	1.0	45.3	252.8
PERCENT-AGE	4.2	9.5	24.2	30.0	3.0	3.0	4.1	2.4	0.8	0.5	0.4	17.9	100%

7.2 PUBLIC RECREATION SITES

There are 38 public recreation sites located on the shores of the main valley lakes, ranging in size from small picnic sites to large public beach facilities and campground (Figure 7.1). These shoreline recreation sites covering 349 acres, are maintained by the Provincial Government (13 sites) and by local municipalities (25 sites). About 30% (104 acres) of this total area is directly available for beach-oriented recreation, the rest comprising parking lots, campsites or parks.

The availability and nature of public recreation facilities varies from region to region in the Okanagan (Figure 7.2). The Penticton region contains the largest area of public recreation sites (161 acres), followed by the Kelowna region (87 acres), the Vernon region (73 acres) and the Oliver-Osoyoos region (29 acres). Although all regions contain areas of sandy beaches in approximate proportion to the total recreational area, the Kelowna and Penticton regions also have significant amounts of grassed waterfront parks. In terms of beach frontage for public recreation, the Penticton region is the leading region with almost 6 miles, followed by the Kelowna region with 4 miles, Oliver-Osoyoos with 2.2 miles and the Vernon region with 1.9 miles. A more detailed description of the physical characteristics of public shoreline recreation facilities for each main lake is included in Technical Supplement VIII.



VERNON REGION

- PROVINCIAL
 34 Ellison Park
 MUNICIPAL
 35 Kin Beach
 36 Kin Beach (Indian Reserve Section leased by municipality)
 37 Kalamalka Beach
 38 Small Park

KELOWNA REGION

- PROVINCIAL
 20 Antlers Beach Park
 22 West Bank Park
 23 Kalamoir Park
 MUNICIPAL
 21 Peachland Park
 24 Beau Se Jour
 25 Small Park
 26 Small Park
 27 Rotary Park
 28 Gyro Park
 29 Warlaw Park
 30 Strathcona Park
 31 Kelowna City Park
 32 Sutherland Park
 33 Okanagan Centre

PENTICTON REGION

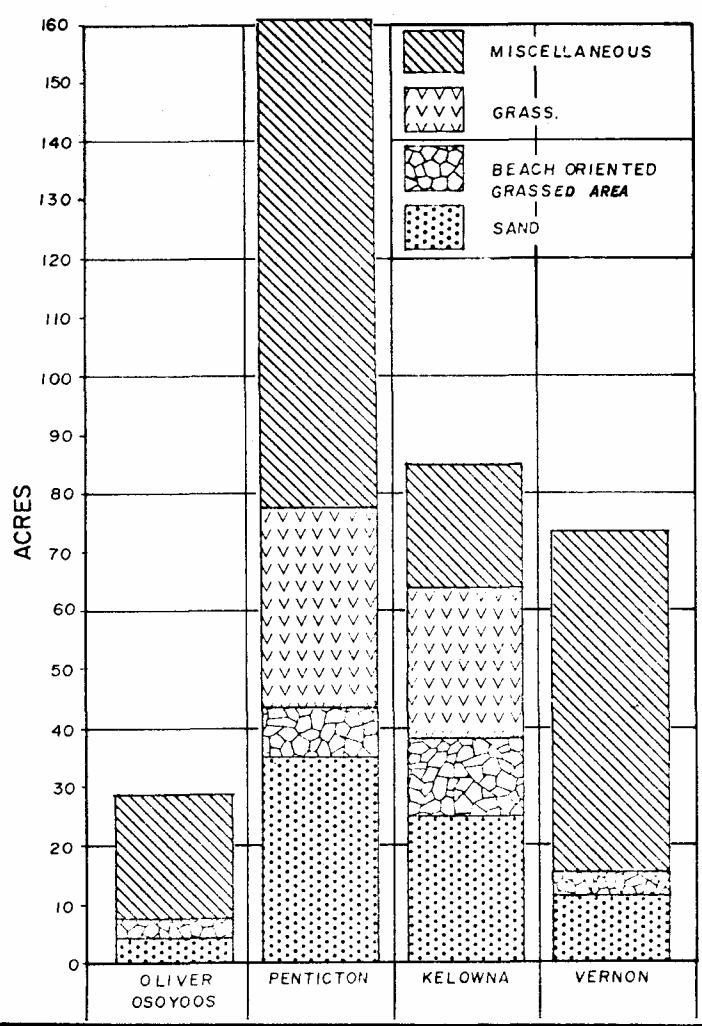
- PROVINCIAL
 5 Vaseux Prov. Park
 6 Christie Memorial Park
 11 Manitou Park
 12 Kickinee Picnic Ground
 13 Soorimpt Picnic Ground
 14 Pyramid Picnic Ground
 15 Sun-Oka Beach Park
 19 Okanagan Lake Prov. Park
 MUNICIPAL
 7 Kaleden Community Park
 8 Skaha Lake Park
 9 Okanagan Beach
 10 Third Beach
 16 Powell Beach
 17 Rotary Beach Summerland
 18 Kin Beach Summerland

OLIVER-OSOYOOS REGION

- PROVINCIAL
 1 Haynes Point Prov. Park
 MUNICIPAL
 2 Community Park (south of Causeway)
 3 Osoyoos Community
 4 Tugulnit Park

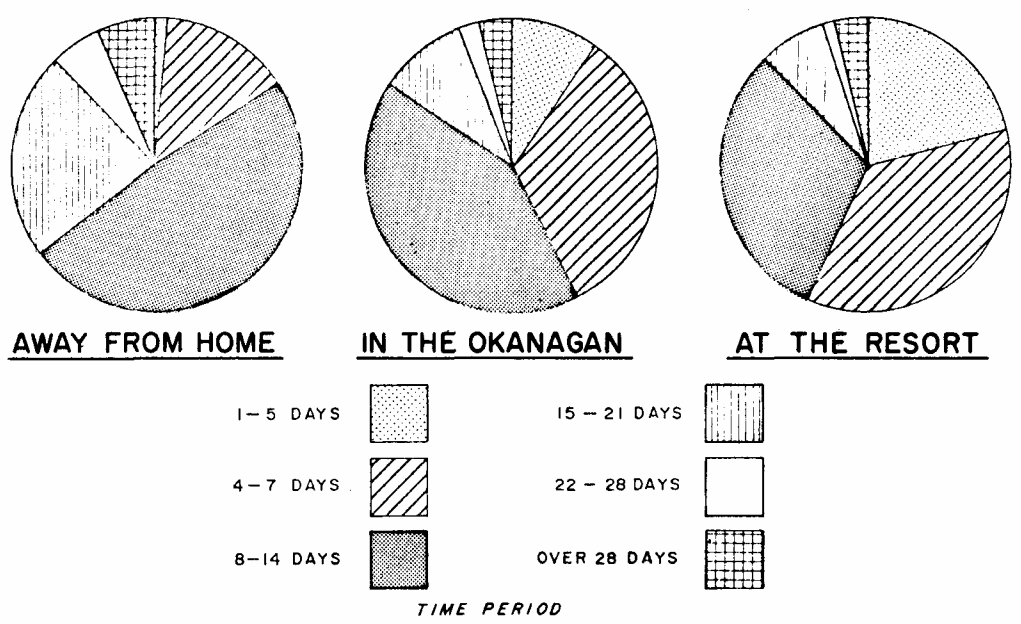
PUBLIC RECREATION SITES AROUND THE MAIN VALLEY LAKES.

Figure 7.1



CHARACTERISTICS OF PUBLIC RECREATION SITES AROUND THE OKANAGAN MAIN VALLEY LAKES.

Figure 7.2



THESE STATISTICS ARE CONSIDERED TO BE BIASED TOWARDS LONGER STAYING VISITORS BECAUSE OF THE GREATER LIKELIHOOD OF CONTACTING THEM IN THE TOURIST QUESTIONNAIRE SURVEY

LENGTHS OF STAY OF TOURIST GROUPS

Figure 7.3

7.3 TOURIST AND RESIDENT SHORELINE RECREATION PARTICIPATION AND CHARACTERISTICS OF TOURISTS

Of the 700,000 visitors estimated to have come to the Okanagan in 1972, 485,400 or 70% were summer holiday vacationers. The average tourist group consisted of 4.5 people who stayed in the valley for 6.5 days for a total of 3.1 million visitor days. During the summer of 1971, a questionnaire survey of a sample of 1055 summer holiday tourists was conducted to obtain general information on their visits to the basin. Not only did the majority of summer tourists spend most of their vacation in the Okanagan, but they also tended to settle in one part of the valley, rather than travel around (Figure 7.3). Three-quarters of those interviewed stated that they intended to stay at only one motel or campsite during their stay, and only 6% of tourists were en route to another destination. It should be noted that because of the greater opportunity to interview tourists who stay at one spot rather than the mobile visitor, the above statistics may be biased accordingly.

The Okanagan is popular among family group vacationers, nearly three-quarters of the recreational groups consisting of one or more families with children. It is estimated that 43% of all holiday visitors are children under the age of 16. Almost 86% of holiday visitors came from British Columbia or Alberta, particularly from the major urban centres of Greater Vancouver (35%), Calgary (17%) and Edmonton (12%) - (Figure 7.4). Less than 10% of holiday visitors came from the United States. Generally speaking, most visitors from the Lower Mainland stayed in the southern half of the valley, while almost half of the visitors in the Kelowna and Vernon regions were Albertans. Penticton was identified as the center most frequented by tourists.

Nearly 90% of tourists had previously visited the Okanagan and over one-quarter had returned to the valley every year in the past five years (Figure 7.5).

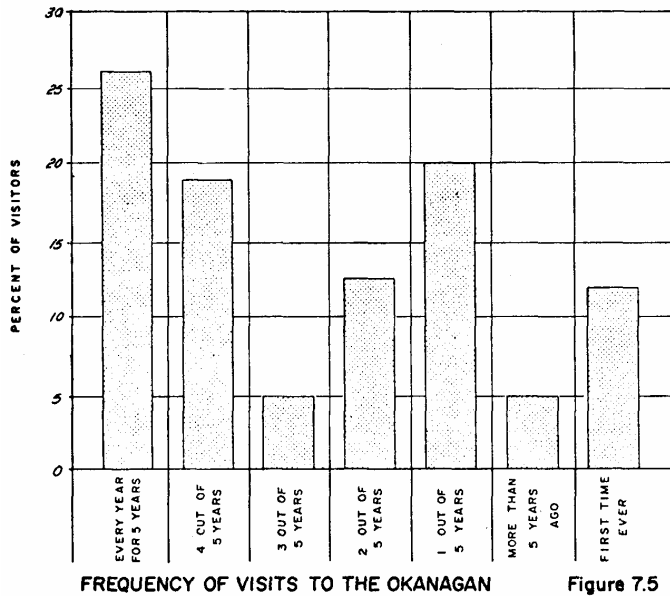
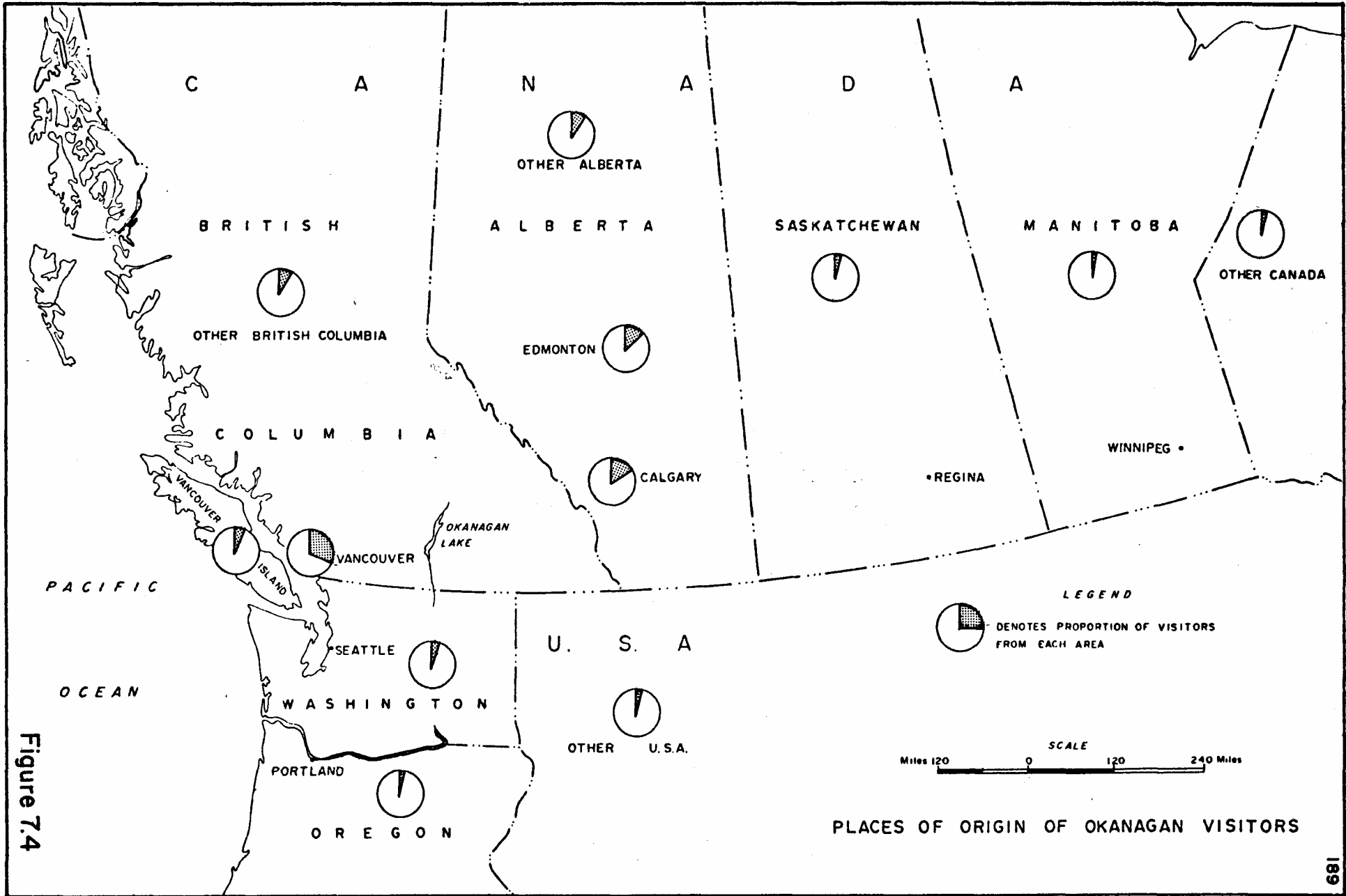


Figure 7.5



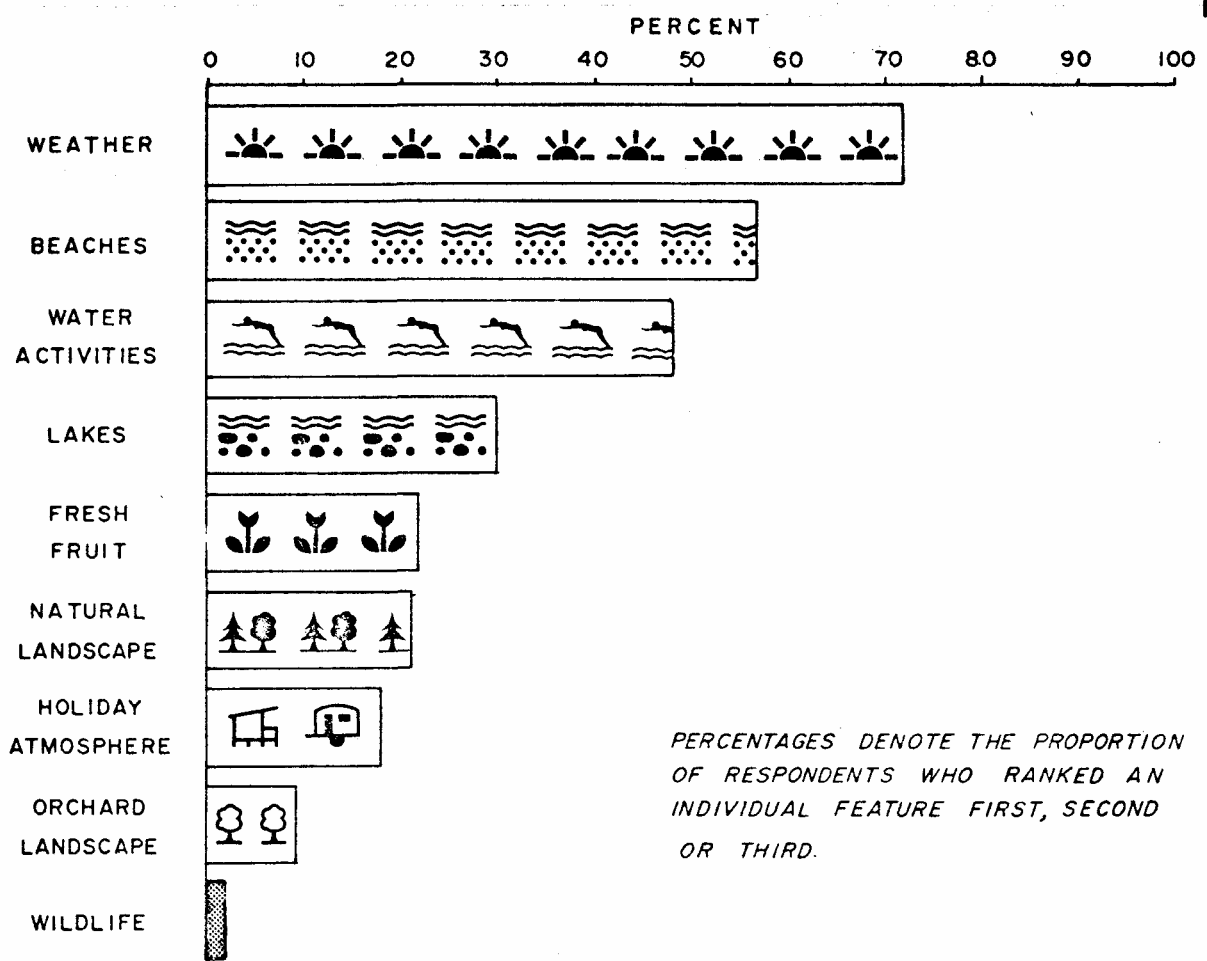
Over two-thirds (68%) of summer tourists cited previous enjoyable experiences in the Okanagan as their main reason for returning, and a further 14% came on the basis of recommendation from friends. Indeed, more than half of those visiting the Okanagan for the first time considered a friend's recommendation as their primary reason for coming. Most tourists interviewed were satisfied with their holiday experiences in the Okanagan, and 54% of them could not identify any unpleasant features associated with their stay.

Summer tourists were asked to rank the major attractions of the Okanagan in order to determine the main reason for their visits and the relative importance of the water resource. Figure 7.6 indicates the proportion of visitors who ranked an individual feature first, second or third out of nine possible rankings, thus indicating it was an important factor. The weather appears to be the most important single attraction of the Okanagan, followed by the opportunity to participate in water-based recreation as illustrated by the high ranking of such features as beaches, water-based activities and lakes. The relatively high ranking of the opportunity to obtain fresh fruit indicates the importance of agriculture to the tourist. No single feature emerged as a major attraction, and it appears that visitors come to the Okanagan to enjoy a holiday 'package' of fair weather, beaches, water activities and rural landscapes.

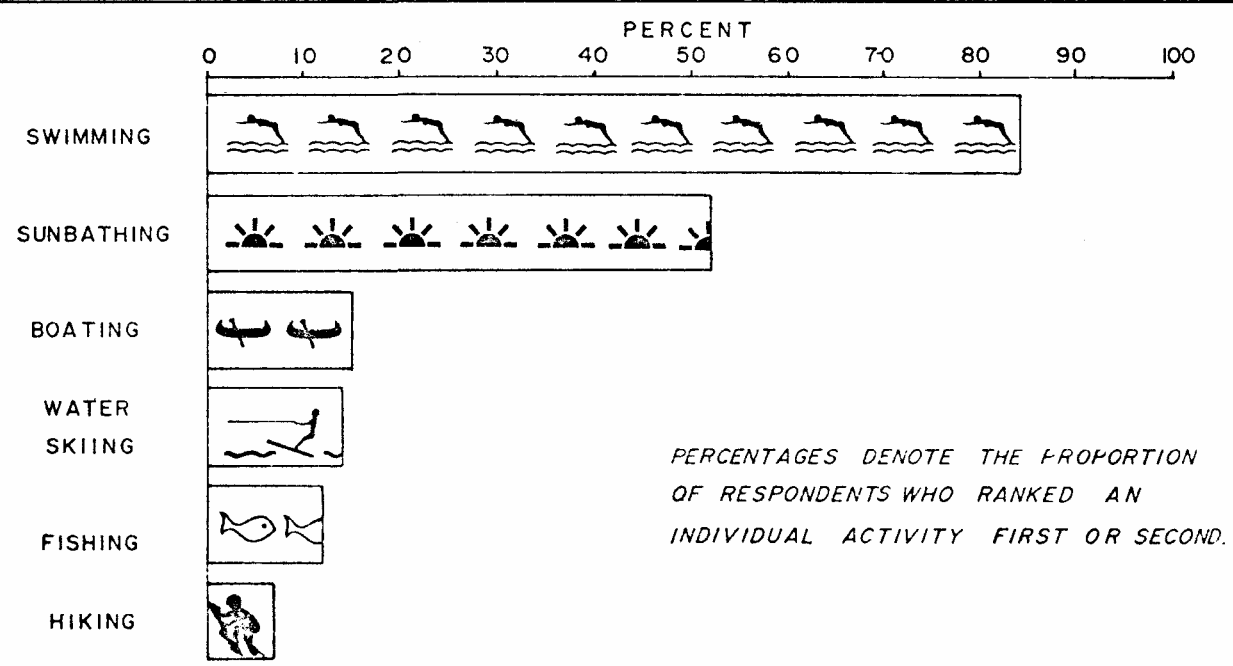
To probe more deeply into the relative importance of shoreline recreational activities in people's decisions to come to the Okanagan, tourists were asked to rank a number of water-based activities in order of importance to them as a group (Figure 7.7). Swimming was by far the greatest activity and was ranked highly important by 84% of the visitors, followed by sun-bathing, a complementary activity, by 52%. Fishing, boating and water-skiing were generally ranked of lesser importance. Consequently, shoreline recreational activities appear to be the major water-based activities enjoyed by the vast majority of summer holiday visitors.

Residents placed a similar emphasis on the importance of water-based recreation in their ranking of outdoor activities. Figure 7.8 indicates the proportion of Okanagan households in which at least one person had participated in selected outdoor activities. Almost three-quarters of all households contained persons who swam, while 68% contained fishermen and over 50% contained boaters.

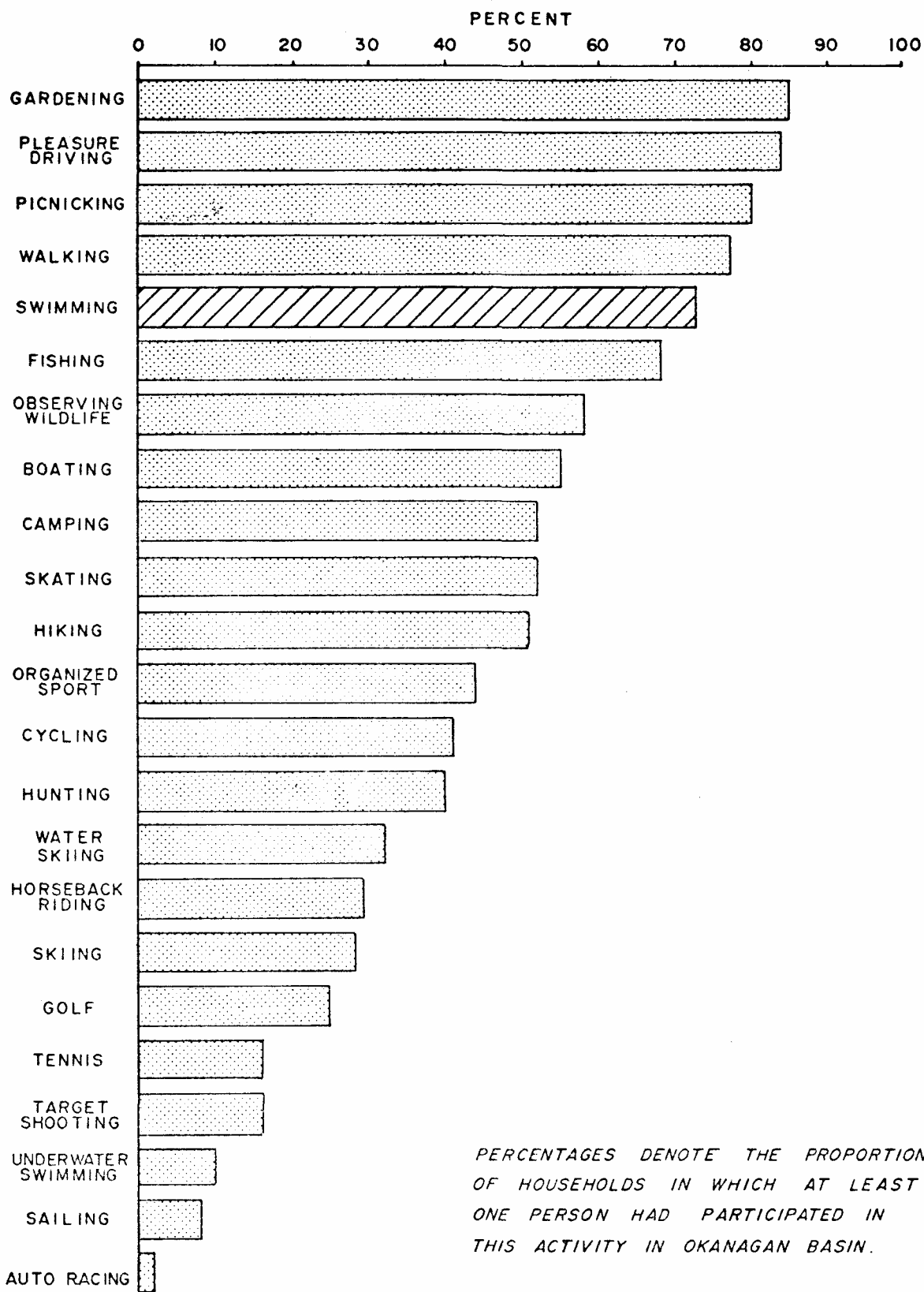
It is stressed that participation rates for both tourists and visitors may be over-estimated due to the tendency of respondents to exaggerate in replies to such questions.



RELATIVE IMPORTANCE OF THE ATTRACTIONS OF THE OKANAGAN Figure 7.6



RELATIVE IMPORTANCE OF VARIOUS RECREATIONAL ACTIVITIES FOR VISITORS Figure 7.7



PARTICIPATION IN SWIMMING COMPARED WITH OTHER FORMS OF OUTDOOR RECREATIONAL ACTIVITIES BY OKANAGAN RESIDENTS.

Figure 7.8

7.4 BOATING SURVEY

The main purpose of the boating survey was to determine the number, types and seasonal distribution of boating on the main valley and headquarters lakes. Information was gathered from a number of aerial surveys over the watershed during the summer of 1971, supported by ground interviews and boat counts. Details of survey methods and sampling procedures are contained in Technical Supplement IX.

A total of 314,000 boating days were recorded between May 1 and October 31 for all Okanagan Lakes. Approximately 256,000 boating days were spent on the main valley lakes and some 58,000 on the headwater lakes. While all boating activity on headwater lakes is related to sport fishing, a diversity of recreational boating occurs on the main lakes including power boats, sailing canoeing and rowboats.

Almost three-quarters of all boating "days" in the main valley lakes were spent on Okanagan Lake (Table 7.3). The next most popular lake was Kalamalka with 13%, followed by Osoyoos with 9%. Over 60% of all boating activity involved general power boating for water-skiing, pleasure boating or transportation to beaches inaccessible by land. Just over 25% of boating involved angling, though this may be an underestimate as anglers returning to shore could have been counted in the general run-about category.

Most boating activity occurs between early June and mid September, with 110,000 or 40% of the boating days recorded in the month of August.

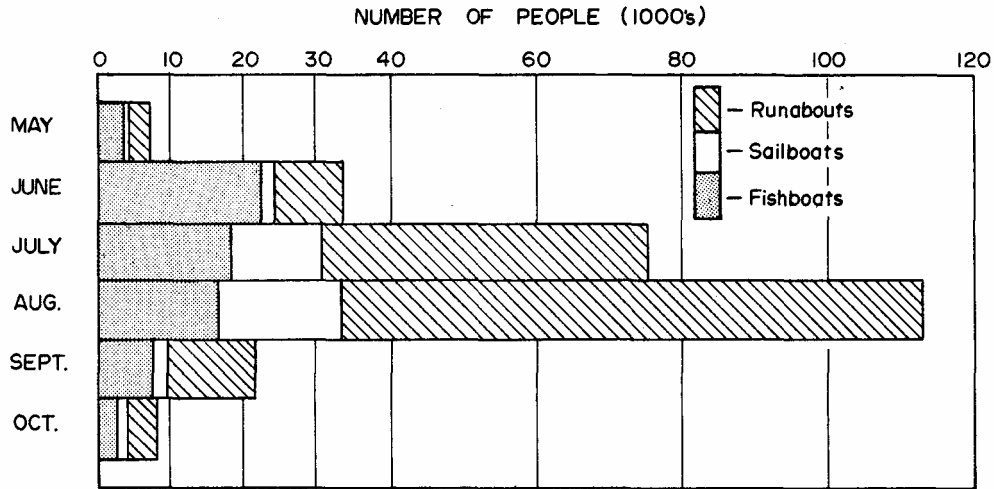
TABLE 7.3
BOATING-DAYS ON MAIN VALLEY LAKES
MAY 1 to OCTOBER 31, 1971

LAKE	FISHING	RUN-ABOUT	SAIL-BOATS	TOTAL	%
Okanagan	56,632	98,085	15,322	170,039	66.3
Skaha	5,446	11,476	2,108	18,930	7.4
Vaseux	458	0	1,352	1,810	0.7
Osoyoos	1,221	19,128	3,122	23,471	9.1
Kalamalka	2,083	19,937	12,268	34,288	13.4
Wood	2,307	5,109	498	7,914	3.1
TOTAL	68,147	153,735	34,570	256,452	100.0

NOTE: Power boats are banned on Vaseux Lake as the area is a waterfowl and bird sanctuary.

General power boating was particularly popular in the warm summer months of July and August, fishing being relatively more attractive in May and June. Although Okanagan Lake remained the most frequently utilized lake throughout the summer period, there were seasonal variations in use between lakes. For example, 13% of all boating activity was recorded on Wood Lake and 11% on

Skaha Lake during May, mainly due to sport fishing opportunities (Figure 7.9).



TYPES OF BOATERS USAGE ON OKANAGAN BASIN MAIN VALLEY LAKES
MONTHLY TOTALS MAY TO OCTOBER 1971. **Figure 7.9**

Using on-spot interviews and shoreline boat counts, it was estimated that there was an average of 1.88 persons per fishing boat, 3.25 persons in power boats and 2.0 people in sail boats. Thus, over 100,000 separate boat trips were made on the main valley lakes during 1971 involving over 500,000 hours of leisure time.

This significant time and financial investment provides some indication of the value placed on boating recreation by visitors and residents. Almost all boats are launched from public boat ramps, private docks or marina facilities, many of which are located on Okanagan and Osoyoos Lakes and may therefore be affected by extremely high or low lake levels as discussed in Chapter 4. Although such extreme fluctuations will likely create an inconvenience rather than a loss of opportunity, they could cause important environmental and social costs which will be included in the evaluation of water management alternatives described in Chapter 14.

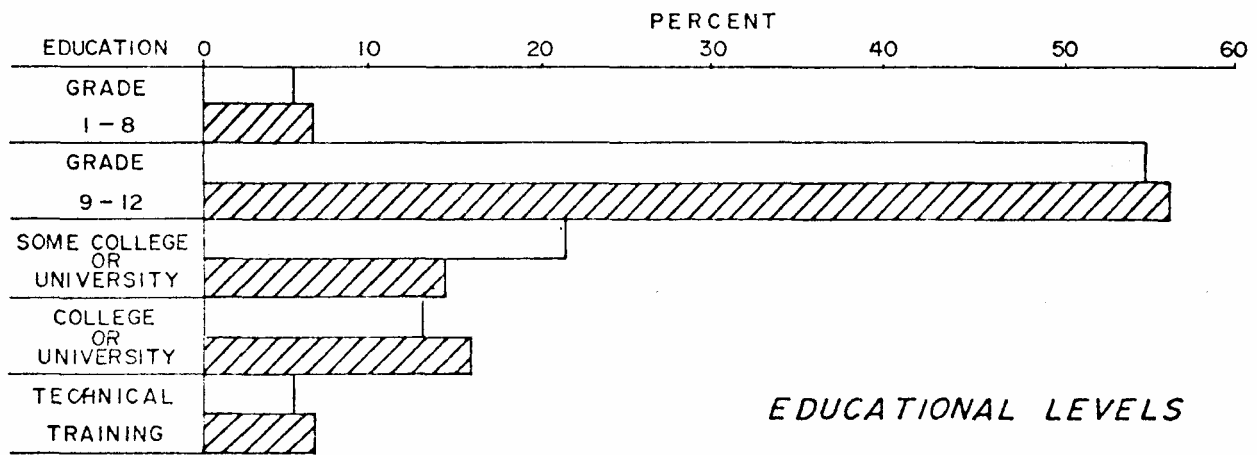
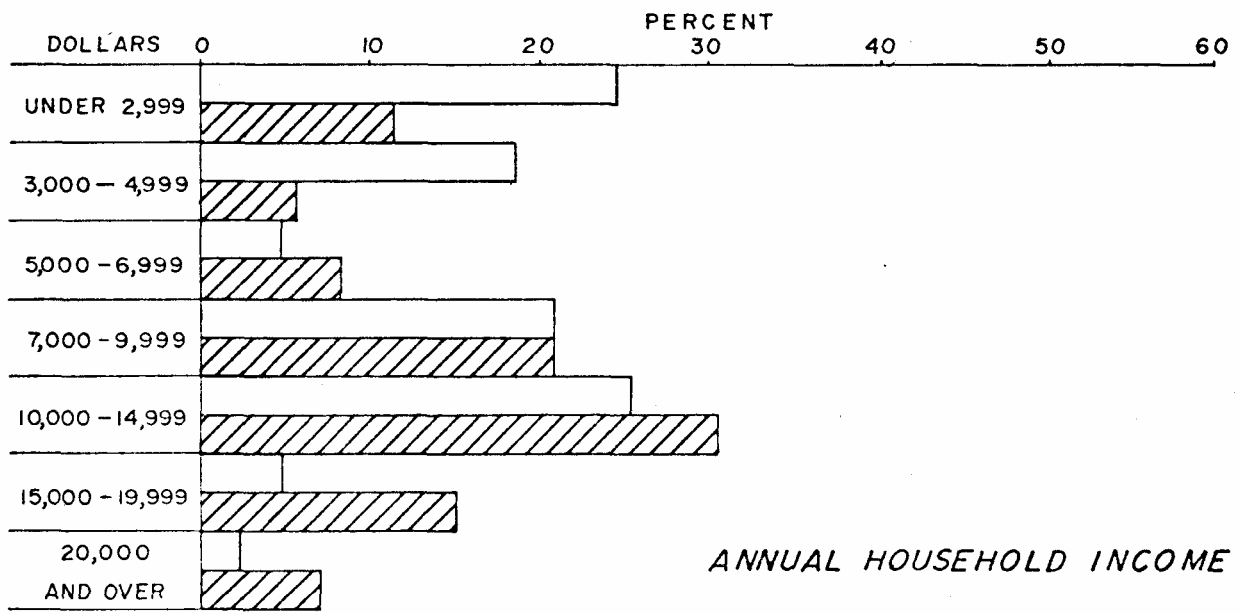
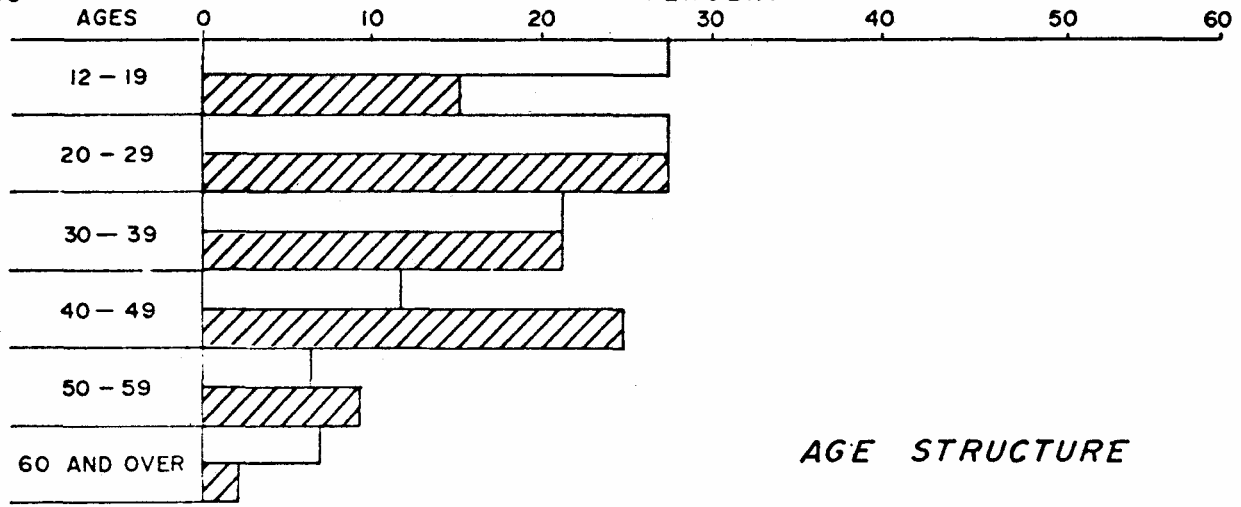
7.5 SHORELINE RECREATION STUDIES

In view of the importance of shoreline recreation (swimming, sunbathing) to both tourists and residents in the Okanagan, more detailed surveys of recreationists were undertaken in the summer of 1972. These surveys probed for participation rates, preferences, attitudes and values associated with shoreline recreation, and attempted to determine on the importance of water quality as a factor in the enjoyment of water-based recreation.

A total of 446 interviews were conducted, 344 with recreationists located at public beaches where the water quality was considered to be good and 102 on public beaches where relatively poor water quality conditions prevailed. The responses of this smaller sample will be analyzed in the following section. The sample of 344 respondents located at beaches with high water quality conditions consisted of 230 visitors and 144 residents which was in approximate proportion to the total population of beach users. The major socio-economic characteristics of visitors and residents contacted in both samples are presented in Figure 7.10 to illustrate any important differences that might affect behavioral patterns. More teenage residents than visitors were contacted, while slightly more visitors in the 40-60 age categories were interviewed. Visitors tended to enjoy a higher household income than their resident counterparts. There were few differences in the level of educational achievement attained by both groups of respondents. These differences were not considered important enough to influence the majority of responses, and occasional exceptions will be noted in the discussion.

As would be expected, visitors participate in shoreline recreational activities more frequently than residents over a comparable time span. Two-thirds of visitor beach users stated that they went to a beach every day of their stay in the Okanagan while three-quarters of resident beach users went at least once a week during July and August (Figure 7.11). Applying these statistics to the total population of summer tourists, and valley residents, respectively it was estimated that visitors and residents enjoyed 1.7 million and 2.2 million beach days respectively for a total of 3.9 million beach days in 1970. Nearly 80% of both visitors and residents spent more than two hours on the beach, and over one-quarter of the visitors spent all day at the beach (Figure 7.12). Although these statistics may be biased upwards due to the greater likelihood of contacting longer-staying and more frequent beach users, they do not indicate the considerable investment of both resident leisure and visitor holiday time in shoreline recreation.

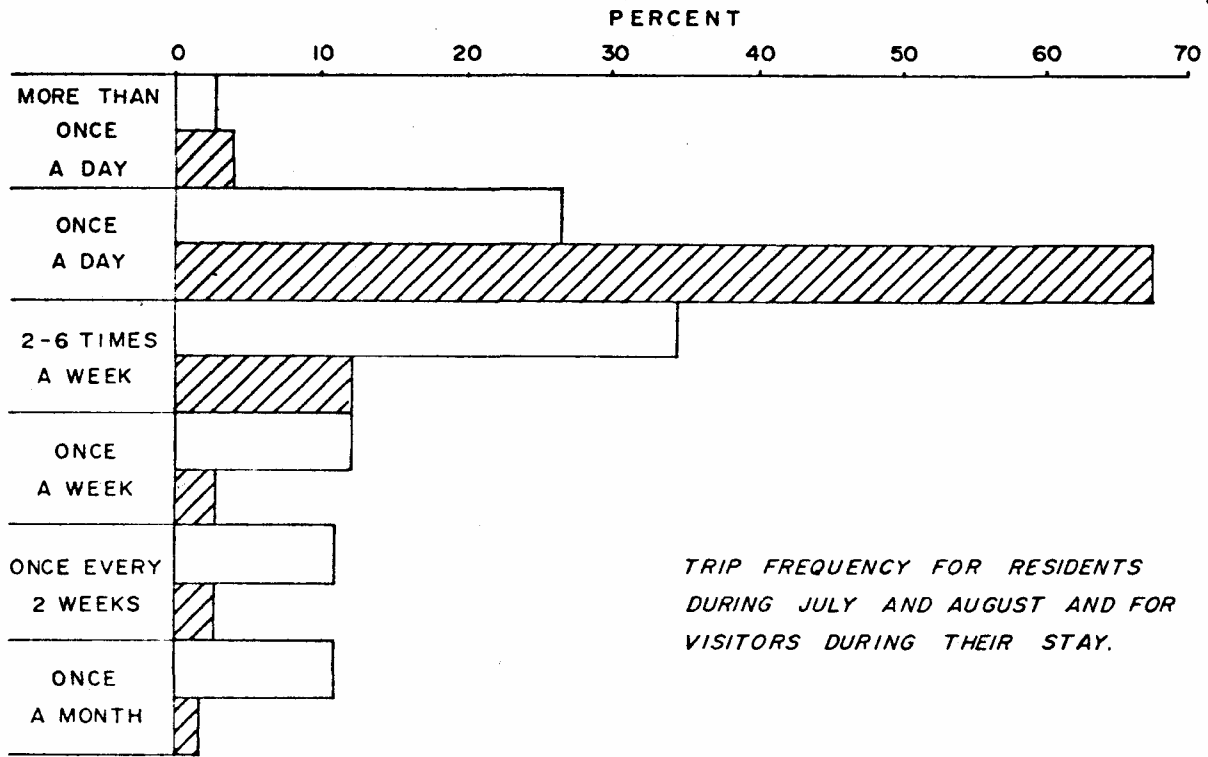
Beach users were asked to rank in order of importance the attractive features associated with beach recreation (Figure 7.13). Both visitors and residents agreed that high water quality was the most important single feature followed by clean beaches and safe conditions for children. A reciprocal question was asked about unattractive features of Okanagan beaches. Half of the visitors and over one-third of resident beach users had no dislikes, and those that did, were most concerned about crowded conditions and poor water quality. Figure 7.14 indicates that, in general, residents tended to be more critical of these aspects than visitors, perhaps because residents had more experience of crowded conditions and poor water quality -87% of residents stating they had previous experience of at least one of these problems, compared to 64% of tourists.



RESIDENTS VISITORS

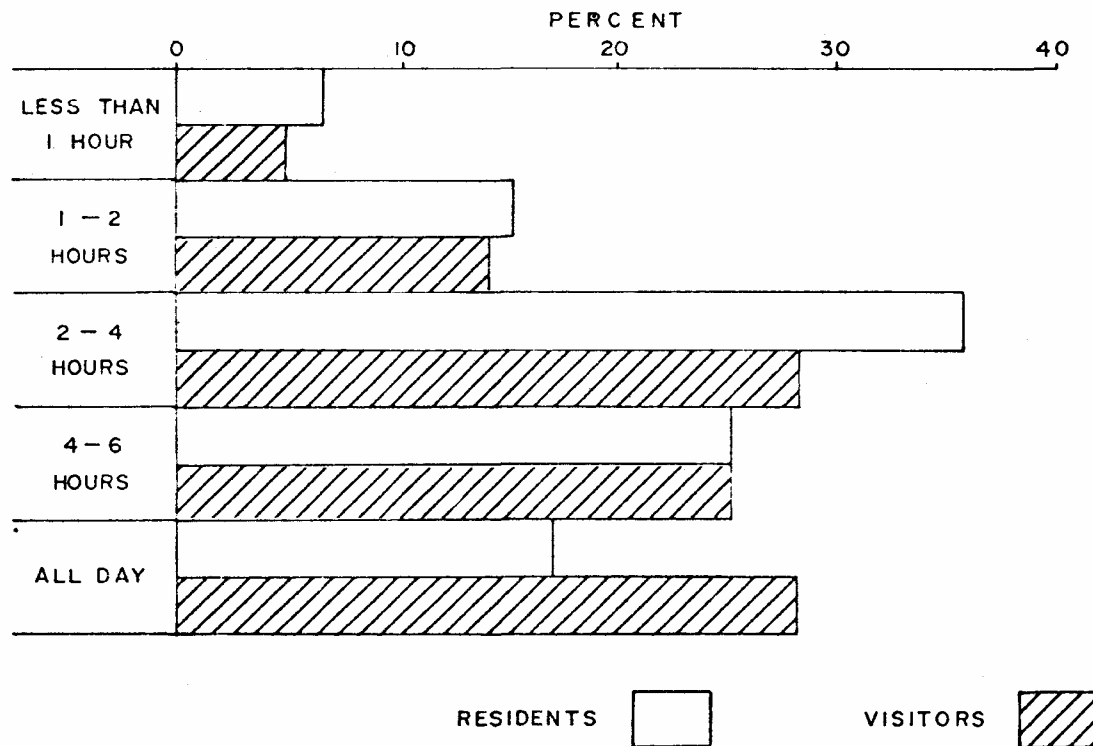
CHARACTERISTICS OF RESPONDENTS
IN THE BEACH USER QUESTIONNAIRE SURVEY.

Figure 7.10



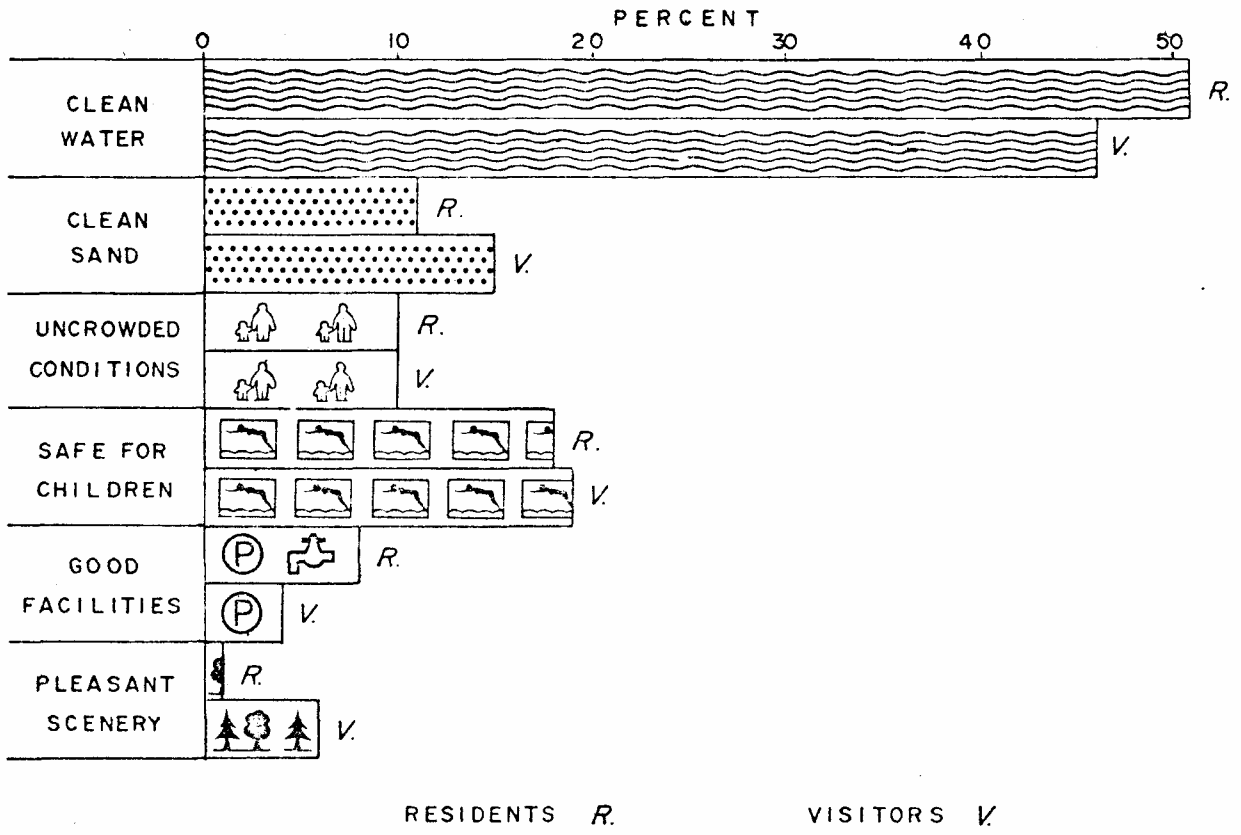
FREQUENCY OF VISITS TO THE BEACH

Figure 7.11

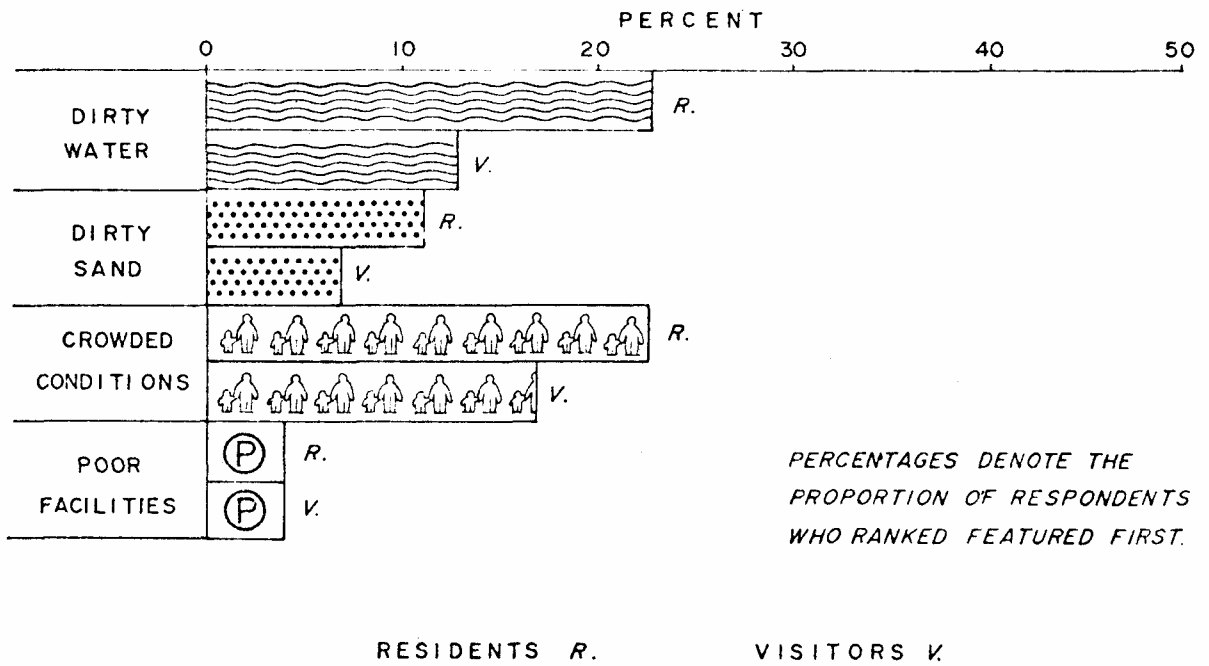


DURATION OF STAYS ON THE BEACH

Figure 7.12



ATTRACTIVE FEATURES OF OKANAGAN BEACHES IN GENERAL **Figure 7.13**



UNATTRACTIVE FEATURES OF OKANAGAN BEACHES IN GENERAL **Figure 7.14**

7.6 WATER QUALITY AND SHORELINE RECREATION

Clean water appears to be the major attraction of Okanagan beaches for both visitors and residents who participate in shoreline recreation.

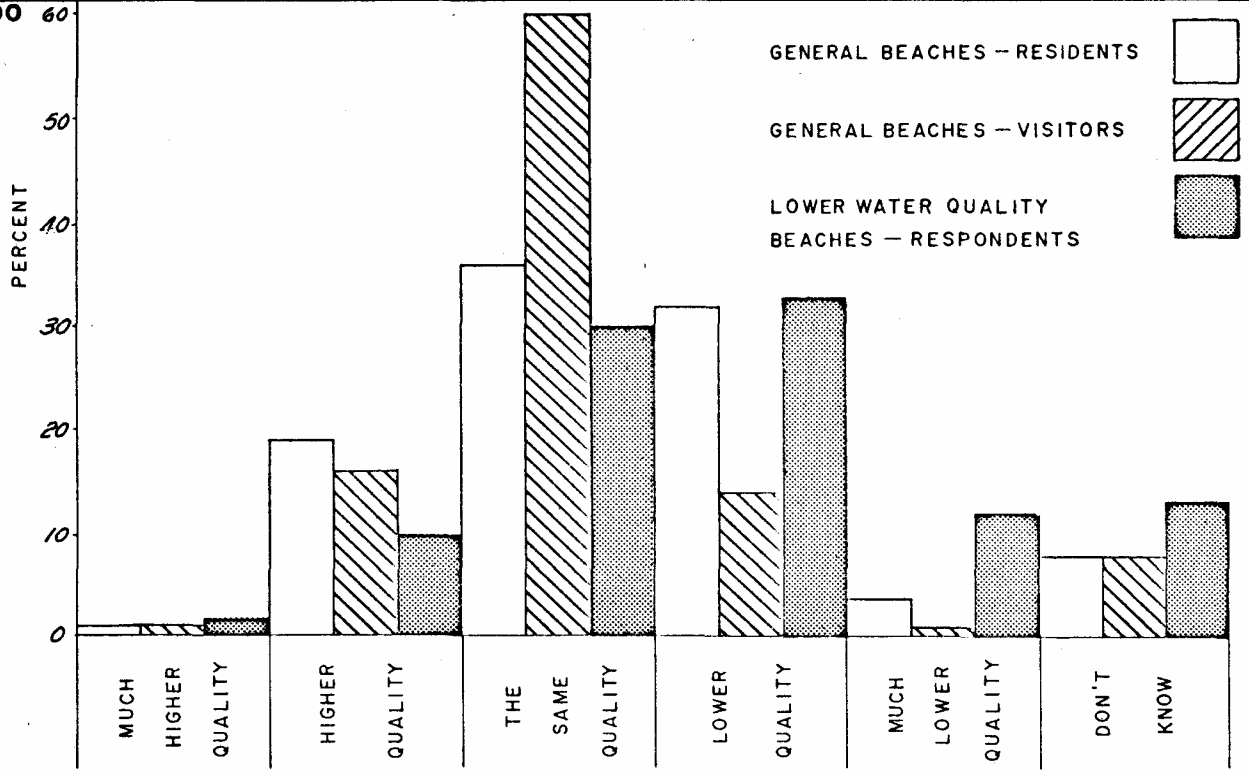
The chapter on Limnology indicated the range of water quality conditions prevailing in the main valley lakes. Okanagan and Kalamalka were classified as Oligotrophic, Skaha and Osoyoos as meso-eutrophic while Wood was considered to be eutrophic. A sample of 102 shoreline recreationists were interviewed at public and private beaches around Osoyoos and Wood Lakes and at the North Arm of Okanagan Lake where extensive weed growth flourished during the summer of 1972. Responses from this sample experiencing relatively poor water quality conditions were compared with responses from the sample of beach recreationists interviewed at sites where good water quality conditions prevailed. The two samples displayed similar socio-economic characteristics (age, sex, education and household income) which otherwise might have influenced the replies concerning water quality conditions.

Although considerable differences in the biological and chemical qualities of lake water prevailed between the sites where the two samples were obtained, there was little difference in criteria such as odour, murkiness, scum and weeds, which are more readily identified by the public as indications of poor water quality.

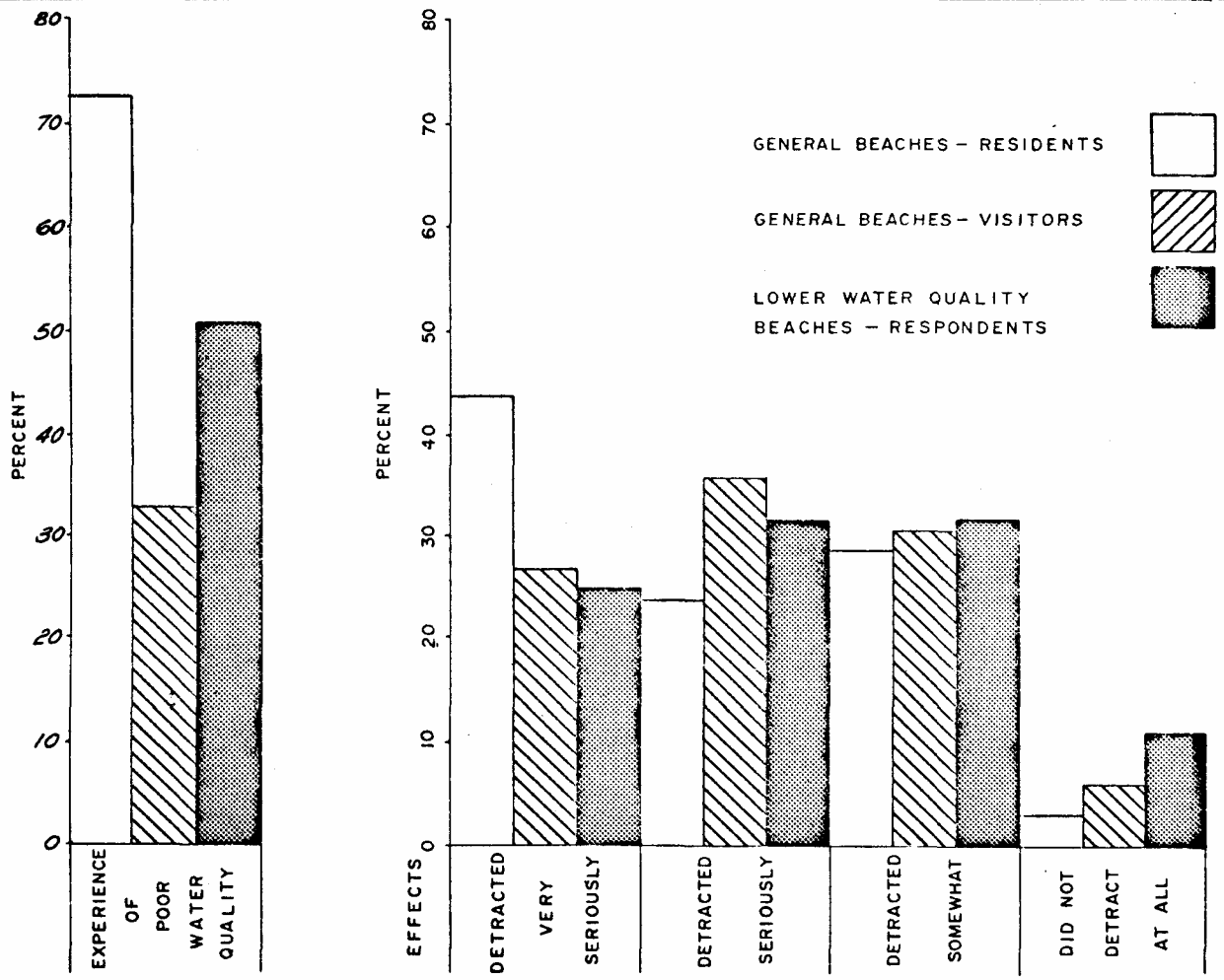
People at most beaches in the Okanagan appeared to have been generally satisfied with the water quality conditions which prevailed during the summer of 1972. Only 3% of the sample located at good water quality sites rated the water quality as low or very low compared to 24% of those located at the poor water quality beaches. Residents were more perceptive of a gradual deterioration in lake water quality (Figure 7.15). At the better water quality sites, 30% of residents noted a decline in water quality compared to 15% of visitors, while 45% of all respondents at the lower quality beaches were aware of such changes.

Residents were more likely than visitors to have had previous experience of poor water quality conditions at Okanagan beaches (Figure 7.16). Nearly three-quarters of residents and one-third of visitors interviewed at the better water quality sites had experienced such conditions compared with about half of the respondents at the lower water quality sites. Residents tended to be more concerned about these conditions as 44% of those with experience of water quality problems stated that these conditions had detracted very seriously from their recreational enjoyment, compared to 27% of visitors. All respondents at the lower water quality sites tended to be less sensitive to these problems than their counterparts at the other beaches.

Generally speaking, the actions of both samples of respondents complied with their responses. Nearly half of the residents interviewed in the good water quality sites indicated they actively avoided poor water quality conditions



ASSESSMENTS OF TRENDS IN WATER QUALITY Figure 7.15



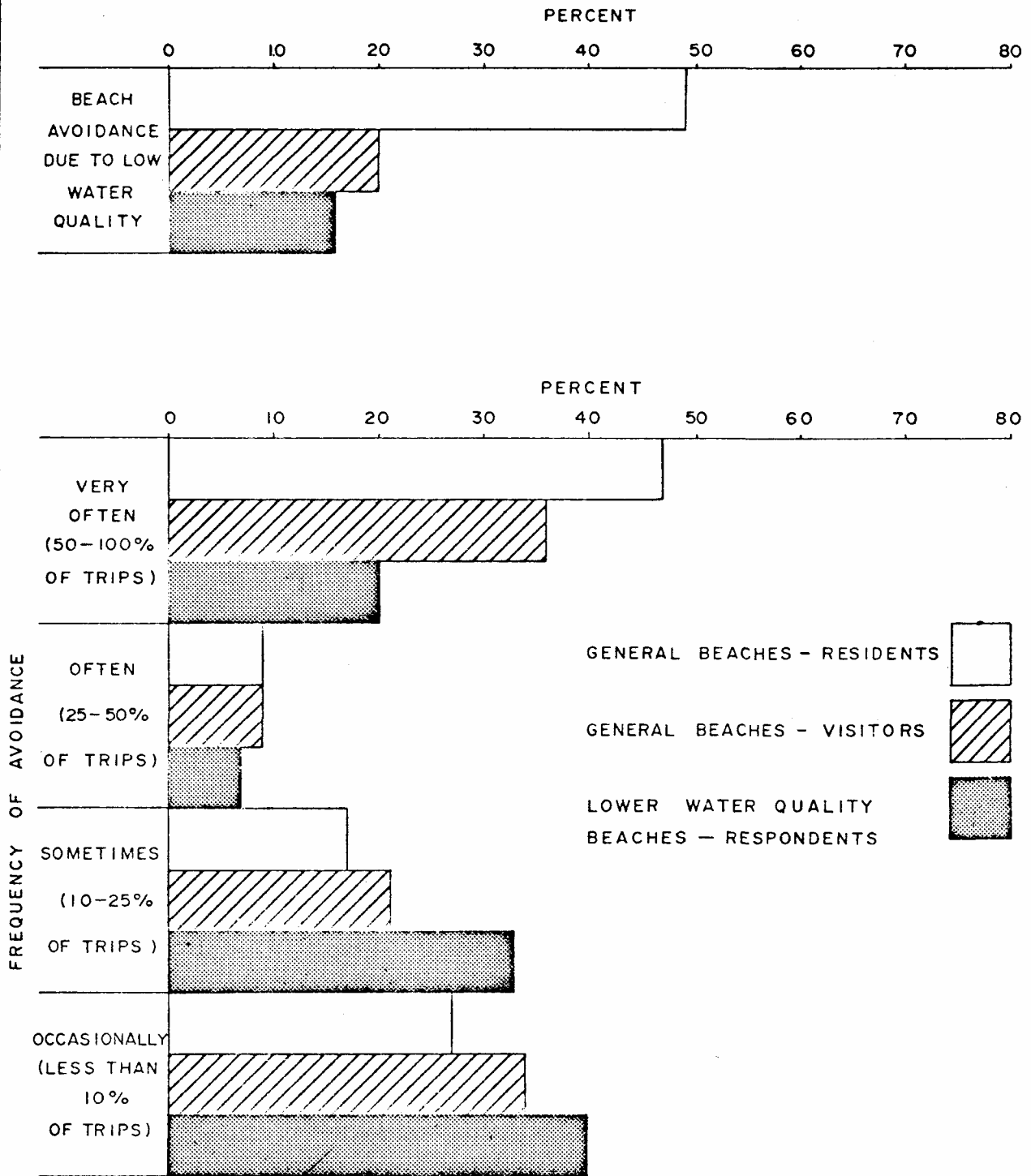
EXPERIENCE OF POOR WATER QUALITY AND ITS EFFECTS ON THE ENJOYMENT OF BEACHES Figure 7.16

compared to 21% of visitors and 16% of respondents at the lower water quality sites. In general, residents tended to avoid poor conditions more frequently than visitors (Figure 7.17).

The differences between the responses of resident and visitor beach users to questions on water quality are probably due in part to the greater familiarity and experience of Okanagan beaches gained by valley residents. The results do suggest, however, that resident beach users are somewhat more sensitive to water quality problems than visitors and that beach users at poorer water quality sites had generally developed more tolerant attitudes to these conditions. Certainly, many residents and visitors with some previous experience in the Okanagan, reacted by simply avoiding areas where weeds or other nuisance conditions prevailed. It is interesting to note that 62% of all respondents at Wood Lake and 53% at Kin Beach on Vernon Arm, where the most obvious water quality problems existed, were visiting these beaches for the first time. It may be concluded that Okanagan beach users display a range of attitudes towards water quality problems and that, taking other factors such as proximity to home or crowding into account, they tend to migrate to beaches where water quality conditions are in harmony with these attitudes.

The vast majority of beach users indicated their satisfaction with water quality levels in the main valley lakes despite the range of water quality conditions existing during the summer of 1972. Only 1% and 6% of those sampled at good and poor water quality sites respectively mentioned poor water quality conditions as a reason for not swimming. Furthermore, very few people indicated they would not return to any beach because of poor water quality conditions and the vast majority were sufficiently satisfied with their total experience at Okanagan beaches to recommend them to friends.

Beach users were asked how much they would be willing to pay for additional sewage treatment facilities to improve or maintain high lake water quality. To aid their answers, respondents were provided with general information on the existing (1970) contributions of municipal wastes to total nutrient loadings into the Okanagan lakes. This question was hypothetical, but responses were considered as possible indicators of the value placed on maintaining good water quality. Respondents were presented with a list of average monthly and annual expenditures of a typical household for a range of utilities and services in order to place the current costs of secondary treatment of sewage into perspective (Table 7.4). The vast majority of respondents indicated they would be willing to pay at least double the existing sewage tax of \$60 per year. While this figure does not necessarily mean that all Okanagan residents and tourists would actually be willing to pay the extra cost, these values are in keeping with projected costs for providing tertiary sewage treatment for the major Okanagan municipalities.



EXTENT AND FREQUENCY OF BEACH AVOIDANCE
DUE TO POOR WATER QUALITY

Figure 7.17

TABLE 7.4
MONTHLY AND ANNUAL EXPENDITURES OF A TYPICAL
OKANAGAN HOUSEHOLD ON SELECTED UTILITIES AND SERVICES IN 1972

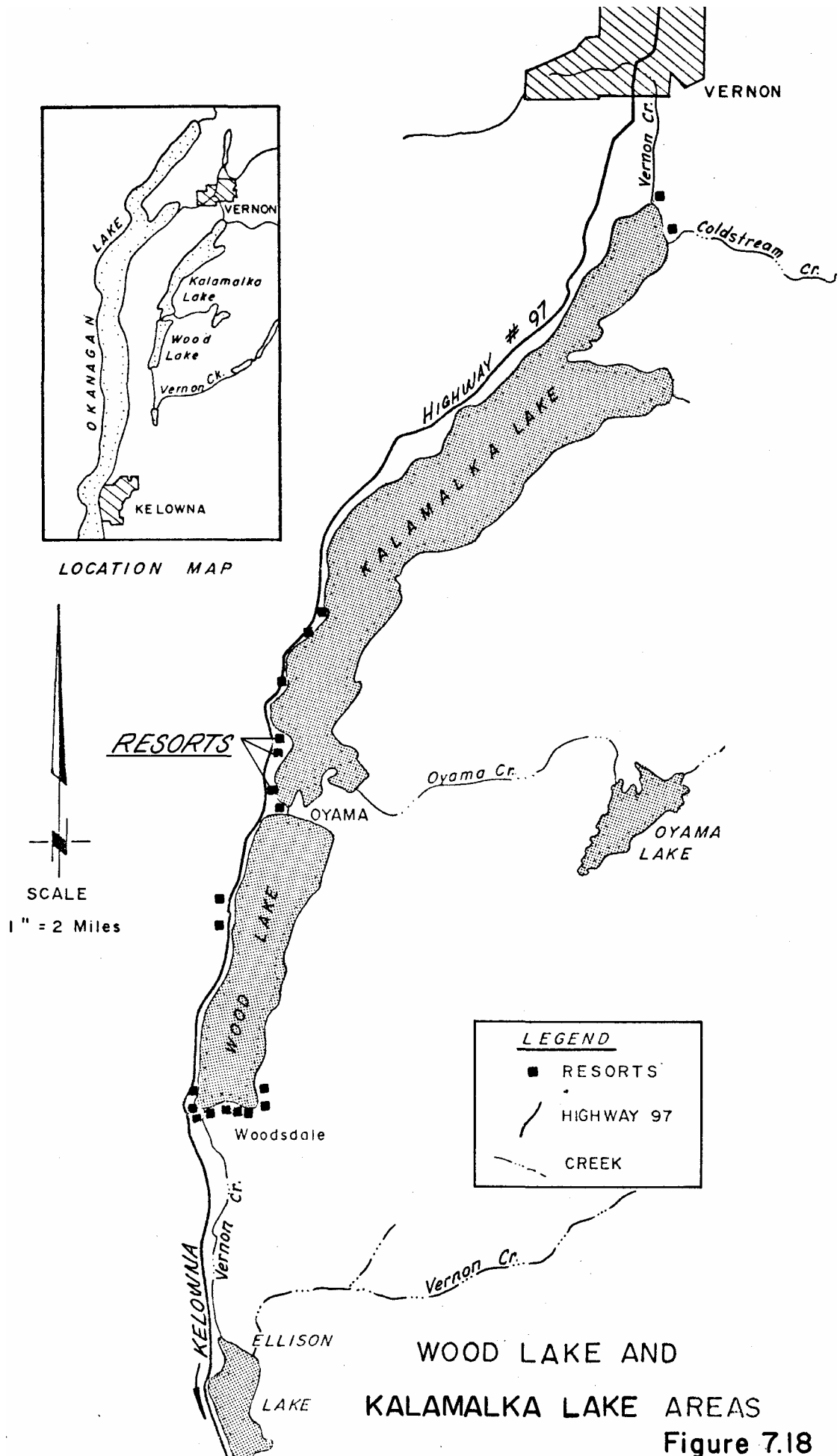
	PER MONTH (\$)	PER YEAR (\$)
Natural Gas	\$ 11.50	\$ 138.00
Electricity	8.50	102.00
Telephone	5.50	66.00
Water	5.00	60.00
Sewage Treatment	5.00	60.00
Cablevision	5.00	60.00
Fire Protection	3.00	36.00
Garbage Collection	1.25	15.00

7.7 WOOD AND KALAMALKA LAKE STUDIES

A number of special studies on the impact of water quality problems on beach recreation and the tourist industry were undertaken around Wood and Kalamalka Lakes during the summers of 1971 and 1972. In view of the close proximity of these two lakes (Figure 7.18) and the sharp difference in water quality conditions - Kalamalka having the highest levels of water quality, while Wood Lake experienced, in 1971 the poorest conditions - it was considered possible that contrasts in beach user behaviour and attitudes towards water quality in these two lakes would be highlighted. Furthermore, the succession of algae blooms which occurred in Wood Lake during the summer of 1971 resulted in considerable publicity in British Columbian and Albertan newspapers. This presented an opportunity to evaluate the impact of adverse publicity on the tourist industry around Wood Lake. These studies contributed to the evaluation of the social and economic consequences of possible water quality deterioration in other lakes against which the costs of controlling waste loadings to maintain high water quality could be compared.

There are eleven resorts situated around Wood Lake, seven around Kalamalka Lake and two on the narrow strip of land that separates the lakes. Most resorts contain cabin and motel units while two cater exclusively to campers. The total maximum number of tourists residing in the area at any one time is approximately 1300. Although some of the Wood Lake resorts are situated close to the major highway and cater to the 'passing tourists', most of them rely heavily upon the repeat trade of regular family customers.

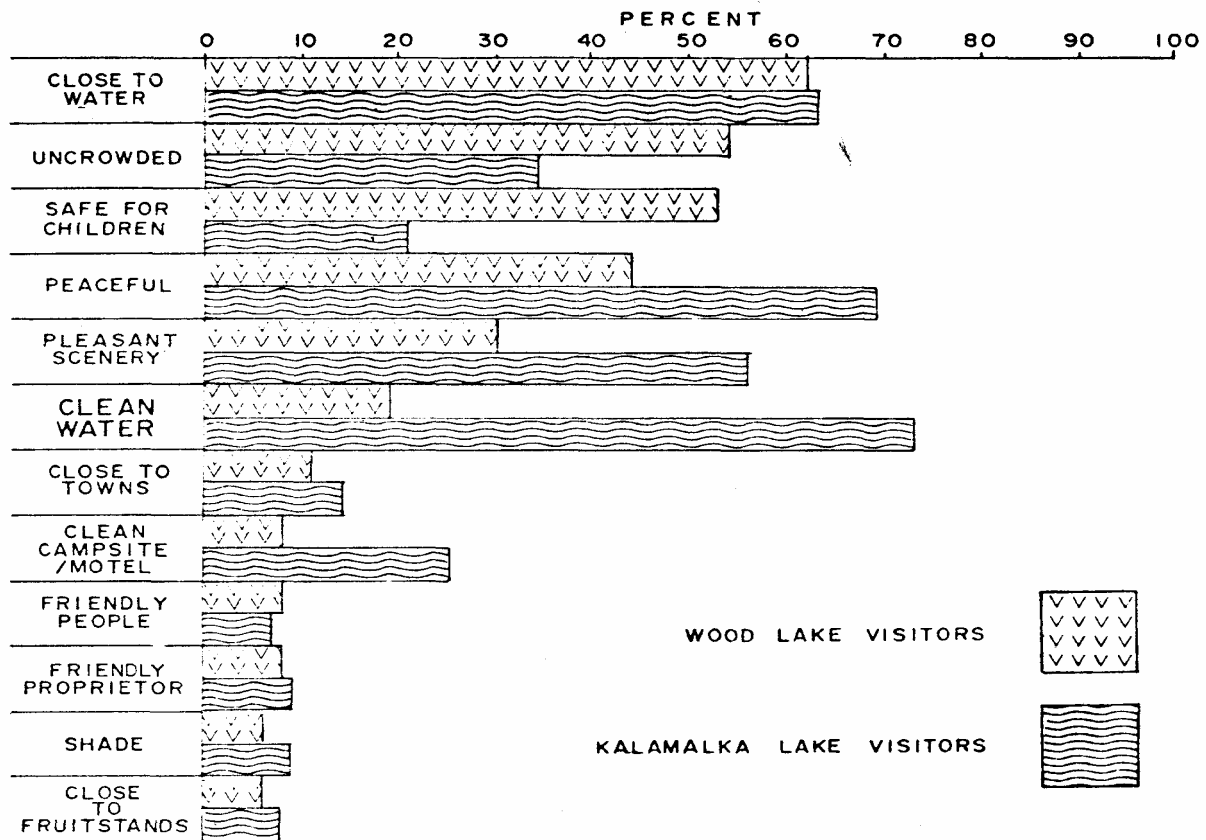
Two surveys were undertaken during the summers of 1971 and 1972. In late July and August, 1971, immediately following the major algae bloom on Wood Lake 115 tourists were contacted, (69 around Wood Lake and 52 around Kalamalka) to gain some immediate reactions to the bloom on Wood Lake and compare these reactions with those of Kalamalka resort customers. In July-August, 1972, 35



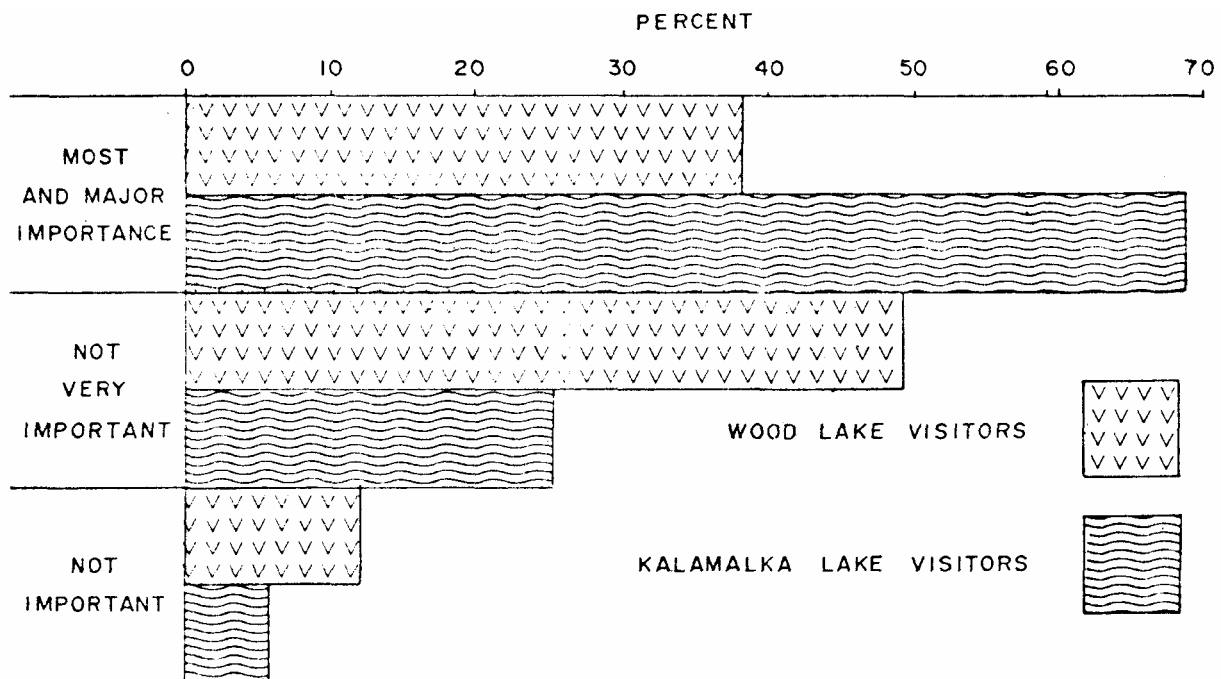
tourists were interviewed around Wood Lake as part of the sub-sample located at poor water quality sites. In addition to providing more information on the reaction of tourists to water quality problems, the responses allowed an assessment of possible changes in the characteristics of the Wood Lake resort customers due to the blooms of the previous summer. Finally, a detailed accounting was made of the revenues received at all Wood Lake resorts to determine any changes in net returns for the summers of 1971 and 1972 compared with those of previous summers before the algae blooms gained widespread publicity. All Wood Lake resort owners were also interviewed to assess the effect of water quality on the economics of their businesses. These three surveys provided a comprehensive information base for evaluation purposes and are discussed more fully in Technical Supplement VIII.

In 1971, respondents at both lakes were asked to identify features that attracted them to the respective lakes. Wood Lake tourists placed most emphasis on the proximity of the resorts to the lake, safe beaches and quiet conditions. Only 18% mentioned water quality while almost 70% of Kalamalka Lake respondents mentioned clean water (Figure 7.19). Following further probing 69% of Kalamalka tourists stated that water quality was the most important factor in their decision to return compared with only 38% of Wood Lake respondents (Figure 7.20). The 1972 survey confirmed the 1971 findings, indicating that Wood Lake tourists, particularly those with previous experience of the lake, appear to be less sensitive to water quality problems than their Kalamalka counterparts. The Wood Lake tourists appeared generally satisfied with water quality conditions prevailing in 1972. In fact, the vast majority of tourists at both lakes indicated their desire to return and to recommend the resorts to friends. Only during the early testing of the 1971 questionnaire, when Wood Lake was still experiencing algae blooms did a significant number of respondents (44%) indicate dissatisfaction with conditions and stated they would not return unless the water quality substantially improved.

As a check on whether Wood Lake tourists did in fact return in 1972 after the blooms of 1971, the responses to questions on the frequency of return to the lake were compared (Table 7.5). Most of the respondents in both surveys had previous holiday experience in the Okanagan. Only 22% and 14% of visitors in 1971 and 1972 respectively were visiting the valley for the first time. In 1972, 62% of tourists were newcomers to Wood Lake area, compared with 27% in 1971. Although some of this difference may be due to slight changes in wording of the question, the results do lead to the conclusion that a large number of regular tourists to Wood Lake had not returned in 1972 and that these had been replaced, at least in part, by newcomers.



ATTRACTIVE FEATURES OF THE WOOD LAKE AND KALAMALKA LAKE AREAS Figure 7.19



IMPORTANCE OF WATER QUALITY IN DECISIONS TO RETURN TO WOOD LAKE AND KALAMALKA LAKE Figure 7.20

TABLE 7.5
PREVIOUS VISITS TO THE OKANAGAN VALLEY
BY WOOD LAKE VISITORS

1971 SURVEY			1972 SURVEY		
YEAR		% VISITORS	YEAR		% VISITORS
Before	1966	48	Before	1967	59
The Year	1966	35			
"	"	1967			
"	"	1968	1967 -	1969	70
"	"	1969			
"	"	1970	1970 -	1971	70
1st time	1971	22	1st time	1972	14

PREVIOUS VISITS TO WOOD LAKE BY HOOD LAKE RESPONDENTS

1971 SURVEY			1972 SURVEY		
YEAR		% VISITORS	YEAR		% VISITORS
Before	1966	21			
The Year	1966	17	Before	1967	13
"	"	1967			
"	"	1968	1967 -	1969	28
"	"	1969			
"	"	1970	1970 -	1971	36
1st time	1971	27	1st time	1972	62

This conclusion was supported by a survey of Wood Lake resort operators. Many of these operators stated that their enquiry rates, advance bookings and number of return customers had declined in 1972 over previous years. They tended to blame publicity in newspapers for this rather than direct experience by tourists. Actual income losses were quite small however, because the return visitor was replaced by 'passing trade'. These are customers who only stay one or two nights while en route to other destinations, the 'overflow' from tourists who could not find accommodation at Kelowna during the annual Regatta, or tourists who were unable to stay at campsites around Mara and Shuswap Lakes due to flooding of such sites during June and July.

Operators of eleven Wood Lake resorts estimated that they had lost \$7,440 or 8% of their normal July and August revenues in 1971 as a result of poor water quality conditions and adverse publicity. In July and August 1972, the six resorts for which comparative information was available lost \$10,500 or 14% of their expected revenues. Losses varied considerably between resorts, with some sustaining greater losses in 1972 than in 1971, even though water quality conditions had improved substantially in 1972. In contrast, the Kalamalka Lake resorts showed increases in revenue from 1970 to 1972 averaging 7% per year.

These data were confirmed by statistics obtained from the B.C. Consumer Taxation Board which taxes revenues from resorts with motels and cabin accommodation, but not campground units. Table 7.6 indicates revenue trends for Wood Lake and Kalamalka Lake resorts for 1971 and 1972 and confirms that Wood Lake resorts did suffer revenue losses while Kalamalka Lake resorts maintained their income. The addition of campsite revenues at the Kalamalka Lake resorts would undoubtedly have changed the small deficit shown in the table into a gain. It could not be determined whether some of the losses around Wood Lake were made up by gains elsewhere in the Okanagan, in which case there would be no net economic loss to the Okanagan as a whole. Nevertheless, there was considerable social inconvenience to Wood Lake resort operators and this should be accounted under the social well-being goal.

Of the eleven resorts around Wood Lake, six were sold between 1970 and 1972. Three of the operators who sold in 1972 stated that the occurrence of algae blooms of 1971 had been a major factor in their decision to sell. They estimated a combined loss over \$80,000, or 20% below their anticipated selling price if good water quality conditions had prevailed in Wood Lake. In addition several of the other resort owners had contemplated extensions or renovations to their properties but had decided to delay these projects indefinitely or until some efforts are made to improve lake quality.

In summary, it appears that the present localised lake water quality problems of weed growth and occasional algae blooms did not seriously affect the enjoyment of shoreline recreation by visitors and residents in 1972. Most beach users are able to locate satisfactory water quality sites or are willing to put up with relatively poor water quality conditions in favour of other benefits such as quiet, uncrowded facilities and safe beaches for children. There are indications that there was considerable dissatisfaction during and immediately after the algae blooms on Skaha Lake in 1967 and Wood Lake in 1971, resulting in the loss of a number of regular tourists to the Okanagan.

TABLE 7.6
REVENUE TRENDS AT WOOD AND KALAMALKA LAKE RESORTS

	SEVEN WOOD LAKE RESORTS	FOUR KALAMALKA LAKE RESORTS
Total Revenue July and August 1971 (\$)	51,363	43,041
Total Revenue July and August 1972 (\$)	43,702	42,438
TREND	-7,661	-603
Average Revenue July & August 1971 (\$)	7,338	10,760
Average Revenue July & August 1972 (\$)	6,243	10,610
TREND (\$)	-1,095	-150
TREND (%)	-14.9	-1.4

Source: Consumer Taxation Branch, B.C. Department of Finance.

The short term localized algae blooms on Wood Lake during 1971 appear to have resulted in limited direct economic impacts on the resort owners, but created significant social costs due to the greater uncertainty associated with catering to 'passing trade' rather than regular customers and in preparing future plans for their businesses. It seems reasonable to assume however, that if widespread problems of deteriorating water quality were to develop in other lakes in the future, the social and economic consequences on the tourist trade, as well as the well-being of valley residents could be compounded greatly as there would be few of the mitigating factors which apparently offset the potential losses around Wood Lake.

7.8 CROWDING AND SHORELINE LANDUSE CAPABILITY

In addition to water quality, one of the other potentially distracting features of Okanagan beaches appeared to be crowded conditions. Studies of beach users perception and attitudes toward crowding at public beaches were undertaken to assess the adequacy of the existing supply of beach area with current demands. These data were also used to evaluate the capability of shoreline land resources to satisfy projections of beach recreation demands over the next 50 years.

Table 7.7 compares existing demands for shoreline recreation with availability of recreational facilities for each of the four major regions in the Okanagan. In 1970, the estimated 485,400 summer visitors spent 1.7 million visitor days on Okanagan beaches, and residents enjoyed an additional 2.2 million beach days, for a total of 3.9 million beach days. Approximately 35% of this total participation occurred in the Kelowna region, 30% in the Penticton region and 25% and 10% in the Vernon and Oliver-Osoyoos regions respectively. In contrast, the Penticton region contains the largest share (42%) of beach area, followed by the Kelowna region with 37%, the Vernon region (14%) and Oliver-Osoyoos region (7%). Although there is some apparent divergence between the regional distribution of supply of beach area and beach use, particularly in the Penticton and Vernon regions, participation varies considerably at different locations and different times so that inferences about beach crowding cannot be readily drawn from these findings. An assessment of beach users reactions to crowding was therefore undertaken as part of the 1972 questionnaire survey.

The total sample of 446 beach users contacted during the summer of 1972 were asked to rate the degree of crowding at the location of interview. Approximately two-thirds of both visitors and residents considered the level of crowding to be low or very low. The sample of respondents were interviewed under the range of conditions normally experienced by the observed population of beach users. However, about half of both residents and visitors noted that beaches were generally becoming more crowded during the period of their experience in the Okanagan.

TABLE 7.7

RESIDENT AND TOURIST BEACH DAYS BY REGION, 1970

REGION	COMMERCIAL ¹ VISITORS	NON-COMMERCIAL ² VISITORS	RESIDENTS	TOTAL	PERCENTAGE
Oliver-Osoyoos	167,000	31,000	180,800	378,800	9.6
Penticton	578,100	93,200	542,400	1,213,700	30.9
Kelowna	282,600	159,200	926,600	1,368,400	34.8
Vernon	256,900	104,800	610,200	971,900	24.7
TOTALS	1,284,600	388,200	2,260,000	3,932,800	
PERCENTAGE	32.7	9.9	57.4		

AVAILABILITY OF PUBLIC RECREATION SITES BY REGION, 1970

Area in Acres

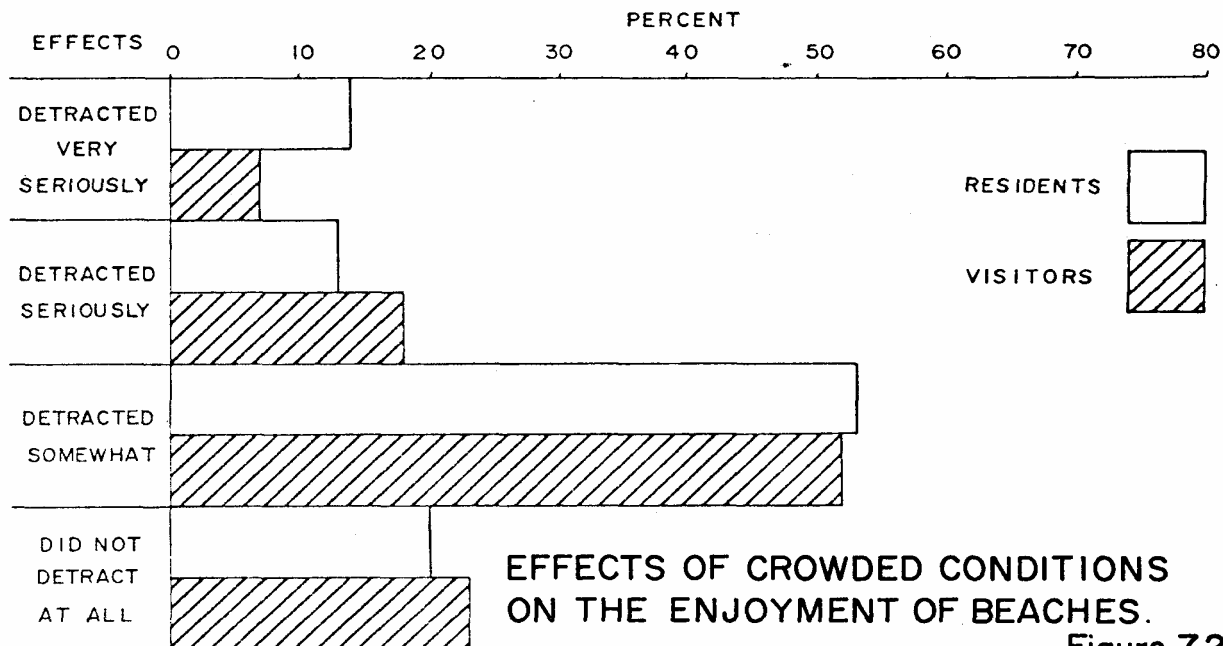
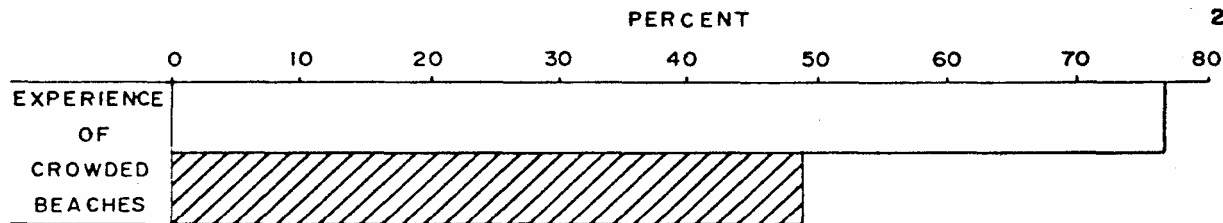
REGION	SAND	GRASS	OTHER ³ GRASS	MISCELLANEOUS ⁴	TOTAL	PERCENTAGE
Oliver-Osoyoos	4.0	3.4	0	22.1	29.5	8.5
Penticton	35.4	8.9	33.5	83.3	161.1	45.9
Kelowna	25.3	13.2	26.3	21.9	86.7	24.7
Vernon	11.3	3.7	0	58.4	73.4	20.9
TOTALS	76.0	29.2	59.8	185.7	350.7	
PERCENTAGE	21.7	8.3	17.0	53.0		

¹ Visitors staying at hotels, motels, campsites² Visitors staying with friends³ Grass not used for shoreline recreation - parks, etc.⁴ Parking areas, access points

Source: 1. Economic Survey of Holiday - Accommodation
2. Tourist and Resident Surveys

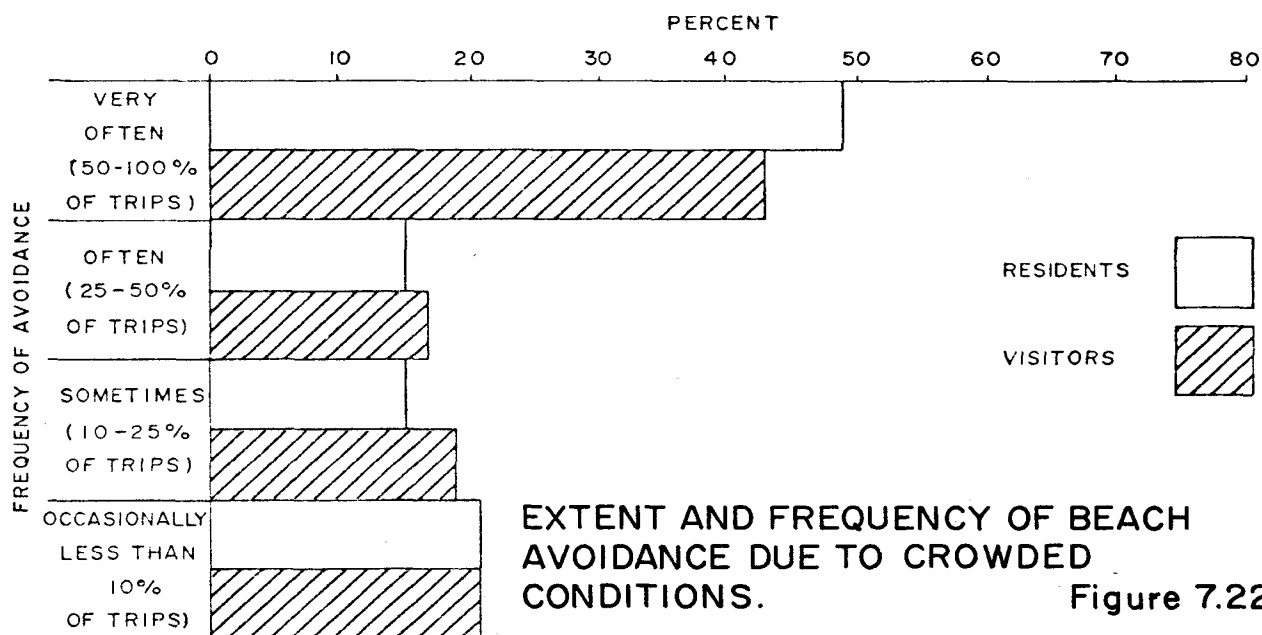
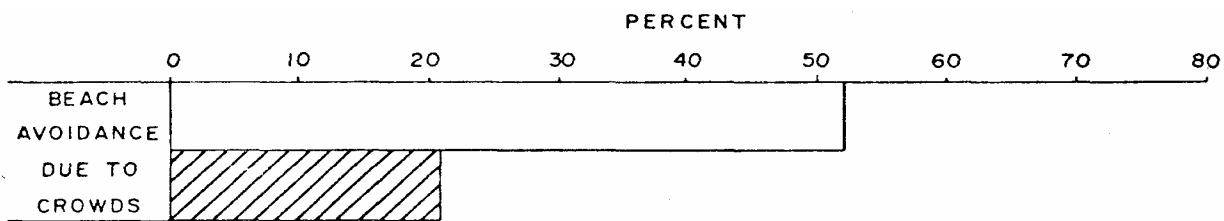
Although approximately three-quarters of the residents and over half the visitors stated they had experienced crowded conditions on Okanagan beaches, only 27% and 25% of these respondents respectively considered this seriously detracted from their recreational enjoyment (Figure 7.21). In fact, some respondents (mainly under 25) commented that crowds were an attractive feature of certain beaches.

A much higher proportion of residents as compared to visitors actively avoided going to beaches that they considered crowded. Over half the residents avoided crowded beaches, and only 20% of visitors did so (Figure 7.22), though most of both groups stated they frequently sought quieter beaches. Skaha Beach, Okanagan Beach at Penticton and City Beach at Kelowna were avoided



EFFECTS OF CROWDED CONDITIONS ON THE ENJOYMENT OF BEACHES.

Figure 7.21



EXTENT AND FREQUENCY OF BEACH AVOIDANCE DUE TO CROWDED CONDITIONS.

Figure 7.22

most frequently. People who are particularly sensitive to crowding may have avoided certain beaches where interviews were conducted, with the result that the seriousness of this issue, like the problems of water quality, may be under-estimated.

A limited number of direct observations of density patterns provided additional information on crowding at Okanagan beaches. These observations were obtained by actual counts during afternoons from aerial photographs taken on holiday weekends. The following figures provide an approximate indication of the maximum number of people observed on the sand and grass or in the water at the major public beaches at any one time during the summer of 1972:

Osoyoos Community Park	- 300
Skaha Lake Beach, Penticton	- 3,500
Okanagan Lake Beach, Penticton	- 1,000
Sun-oka Beach, Summerland	- 800
Kelowna City Beach	- 800
Kalamalka Lake Beach, Vernon	- 1,500

7.9 THE VALUE OF SHORELINE RECREATION

Shoreline recreational activities place demands on both water and land resources in the Okanagan. The preceding discussion has indicated the desire of most recreationists for high quality water and to some extent there is also an implicit demand for maintaining lake levels suitable for swimming and paddling. In addition, shoreline recreation places demands on the limited shoreline resources around the main lakes. Other resource uses also compete for the same water and land resources. For example, waste discharges from municipal and industrial sources may reduce the quality of water desired for body contact recreation. Water for irrigation, domestic and municipal use and to support fishery resources in Okanagan River may create drawdowns of Okanagan Lake in drought years (Chapter 4). Increasing demands for private development of shorelines is reducing the available land base for shoreline recreation management.

As these conflicts could increase in the future, some basis for allocating the limited water and shoreline land resources must be devised. Allocation decisions have been traditionally resolved through monetary values with resources being allocated so that the greatest net economic gain will result. Unfortunately, values associated with shoreline recreation cannot readily be put into monetary terms. Recreationists have free access to all public beaches in the valley and the value of a day at the beach through payment of a fee cannot be used as a measure. Thus no data were available to compare the economic and social values of shoreline recreation with the values of other competing uses of shoreline land and water resources. In view of the increasing importance of shoreline recreation to both tourists and visitors, there is now a need to understand some of the values associated with this activity so that allocation decisions on water and land resources can be made as part of the comprehensive framework plan.

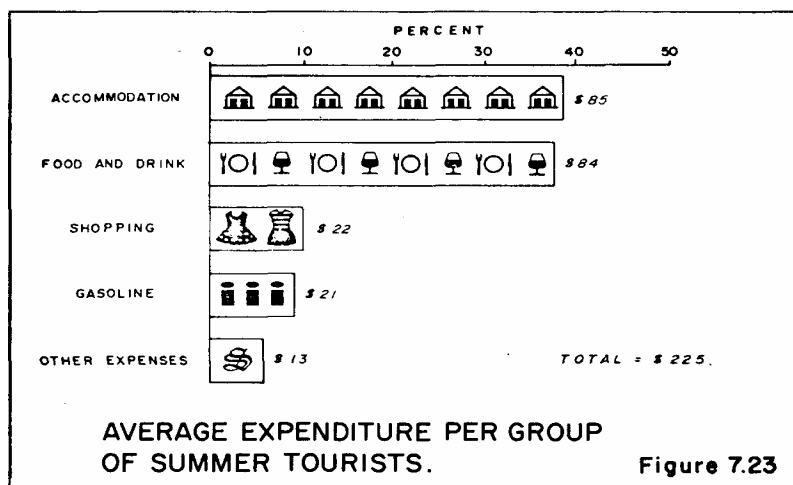
As the viewpoint for economic analysis in this study was related to the Okanagan basin, different methods were used to place values on shoreline recreation for residents and tourists. The value of tourist participation was related to their direct expenditures while in the basin. More specifically, these values were related to the expenditures lost through the reduction in visitor days should shoreline recreation resources not be available in the Okanagan. To obtain the appropriate estimate of net economic value, total costs to the valley residents for providing goods and services to tourists were deducted from gross expenditures. It is worth stressing that net expenditures obtained by this procedure reflected the value of demand and not the beach values per se, but in lieu of any direct measure of the worth of recreational activities, expenditures were used as substitute data.

Resident participation in shoreline recreation contributes to both the economic and social betterment goals of the Okanagan Study. Economic values include expenditures on travel, rentals and equipment. As shoreline recreation is a unique recreational experience in the Okanagan, it seems a reasonable assumption that in the absence of such opportunities in the valley, residents would spend a portion of their recreational budget pursuing such experiences in other regions outside the Okanagan.

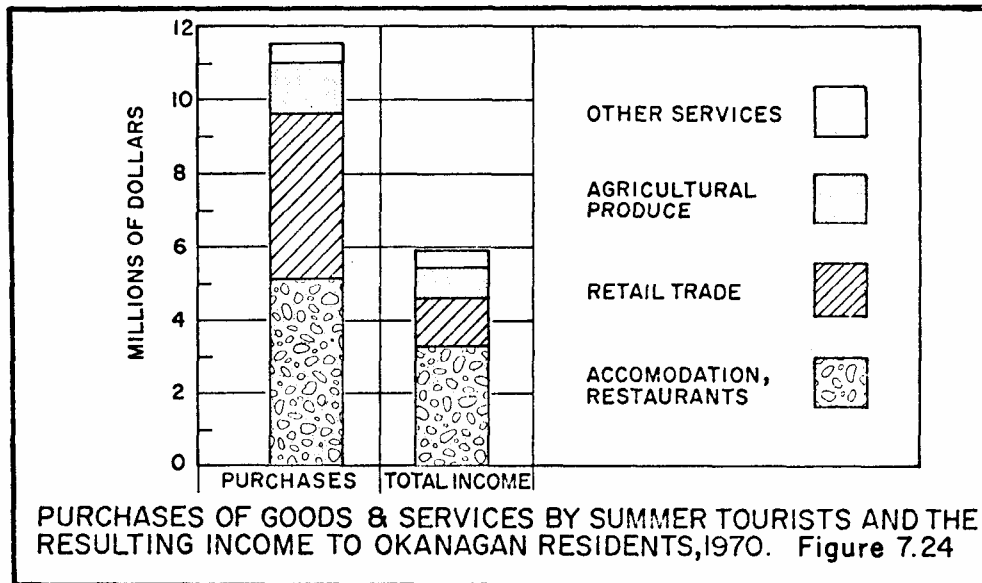
In addition to these economic values there are also social or aesthetic benefits associated with beach recreation. Attempts were made to assess these benefits in dollar terms through the questionnaire survey by asking residents to compare the satisfaction gained by all or part of a day at the beach with other recreational experiences for which they are required to pay a fee, such as golf, skiing or skating. These comparisons are discussed more fully in Technical Supplement VIII.

7.9.1 Tourist Expenditures

Average gross expenditures per group of summer tourists amounted to \$225, the major items being accommodation at \$85, with food and drink \$84, (Figure 7.23).



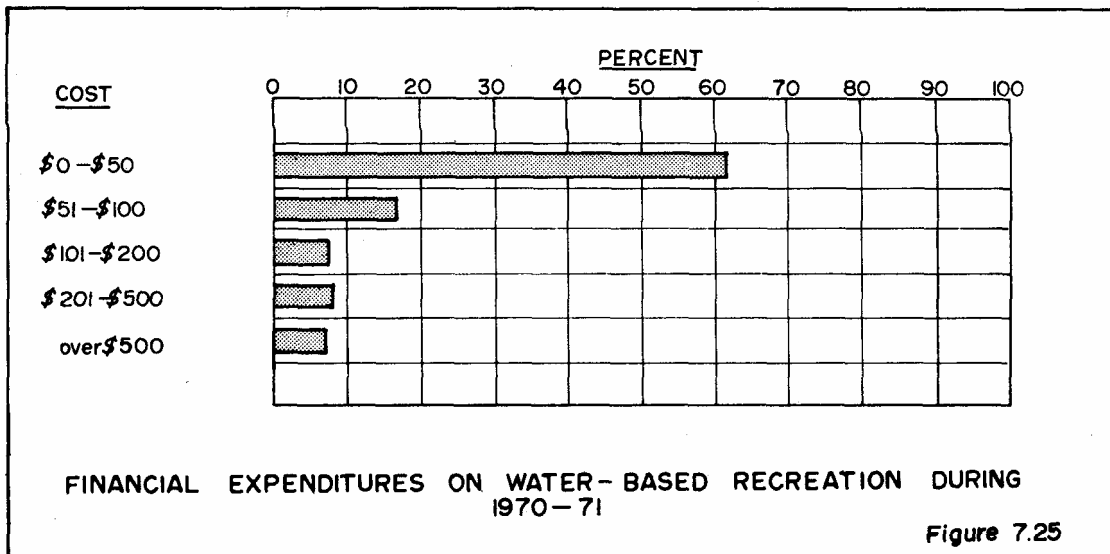
The variation in lengths of stay results in a considerable variation in gross expenditures from group to group. A more useful statistic is the average expenditure per visitor day, which amounted to \$4.50. Total spending by summer holiday tourists in 1970 was estimated at \$11.5 million (Figure 7.24). Subtracting the costs of providing goods and services to satisfy tourist demands, the net value of this expenditure to the Okanagan residents amounted to \$5.9 million. As expected, over half (53%) of this total income was received by accommodation units and restaurants, while nearly a quarter (24%) was claimed by retail outlets. Almost \$1 million was earned directly and indirectly through the sale of tree fruits, grapes and other agricultural products at road-side stands, again illustrating the important relationship between tourism and agriculture in the Okanagan. While not all of this economic return can be claimed as representing the value tourists place on enjoying shoreline recreation experiences, it appears that a considerable portion of it was linked to these activities. The fact that more than 60% of summer tourists spend all or part of every day on Okanagan beaches during their stay, emphasized the importance of this component in their total holiday experience in the Okanagan.



7.9.2

Resident Values

As a result of the close proximity of a variety of water-based recreational resources, residents do not spend much money on such recreational opportunities. Figure 7.25 indicates that over 60% of residents spent less than \$50 in 1970 in pursuit of the whole range of water-based recreation activities and almost 80% spent less than \$100. During 1970, total gross expenditures by residents were estimated at \$2.8 million, of which \$1.1 million was spent by resident fishermen (Chapter 8). Of the remaining \$1.7 million, approximately \$600,000 was returned as net income to the Okanagan economy after deducting the costs of supplying recreational services, mainly travel and equipment purchases.



Because there is no fee attached to enjoyment of beach recreation, net expenditures by tourists and residents cannot be equated with the total value of such activities. Both residents and tourist beach users were asked how much a day at the beach was worth over and above their estimated expenditures. Because most recreationists do not easily associate economic values with non-priced recreational activities, considerable difficulty was encountered in gaining meaningful responses to this question. About 20% of respondents could not translate their satisfaction into financial terms and an additional 7% could not stipulate specific amounts. Many of these respondents considered their experiences to be 'priceless'. The median value for resident beach users who could provide some estimate was \$5.50 per beach day, while the median value by tourists was approximately \$5.00 per beach day.

Applying these values to the total number of resident and visitor beach days provided an estimate of the total social value of shoreline recreation in the Okanagan in 1970. The number of beach days enjoyed by residents and tourists respectively in 1970 was estimated from participation rates obtained from the questionnaire surveys and amounted to 1.6 million for visitors and 2.2 million for residents. Thus, the social value of resident participation in shoreline recreation was estimated at \$11.1 million and \$8.5 million for residents and visitors respectively totalling \$19.6 million for 1970. This figure represents the additional social value shoreline recreationists place on their activities in the Okanagan over and above their direct expenditures. This total gives some expression of the recreationists' willingness to pay for their enjoyment of beach recreation. However, as no actual payments are involved, these values should be accounted under the social well-being goal and separated from the expenditure dollars which accrue to the economic growth goal of the Okanagan Study.

7.10 SUMMARY

The opportunity to enjoy shoreline recreation in the hot, dry summers of the Okanagan is undoubtedly a major attraction for tourists and visitors. On average, visitors are estimated to frequent beaches on 60% of the days spent in the Okanagan, while residents are estimated to visit beaches on 20 days between the beginning of June and the end of September. It appears that the existing availability of public and private beaches around the main valley lakes can presently accommodate the 3.8 million beach days enjoyed by residents and tourists during 1970.

Residents tended to be more familiar and more critical of shoreline recreational resources than tourists. Residents had visited more beaches, were more aware of water quality and beach crowding problems and generally took more action to avoid these conditions than visitors, who appeared content to frequent the beach nearest to their place of stay. In general, beach users displayed a relatively wide range of tolerance to water quality and crowding and though there were definite complaints when either problem became prominent, as indicated by the Wood Lake algae blooms in 1971. It appeared that most beach recreationists were generally satisfied with the range of water quality and crowding conditions which existed during the summer of 1972.

Although only a small proportion of the shoreline around the main lakes is actually developed for recreational activities, much of this area is high quality recreational land. Most residents and visitors appeared to be able to find a satisfactory location within a short travel time of their place of stay. As for the future, indications are that high quality recreation sites are potentially available on undeveloped shoreline, provided that appropriate measures are undertaken to protect these from private development.

The net economic value of expenditures by summer holiday visitors totaled about \$6 million in 1970. Although this total represents the net value of all goods and services purchased by tourists while in the Okanagan, it does provide some indication of the economic worth of beach recreation to tourists in the absence of any other direct evidence. In addition, there is an unpaid value of beach recreation to residents and tourists estimated at \$11.1 million and \$8.5 million respectively which is the best estimate of the social and environmental values associated with shoreline resources. Projected values and management alternatives concerning these resources over the next 50 years are presented in Chapter 16.