Part B — continued from Part A

Chapter 2: Recreation and Tourism on the Chugach National Forest and Western Prince William Sound

The Chugach National Forest

We describe recreation and tourism use of the Chugach National Forest based on information from several key data sources maintained by the Forest Service. After listing our data sources, we discuss the limitations of the data. We next describe overall trends in recreation and tourism use. And finally, we look at the data in more detail, asking the questions, How do people get to the forest? and What do they do when they get there? We present information from two Chugach National Forest visitor surveys on the factors visitors reported as being important to the quality of their recreation experience.

Our analysis is based on the following data sources:

- Recreation information management (RIM) system reports for 1989 through 1996 and infrastructure system (Infra) reports for 1997 and 1998. These reports constitute the standard information flow generated by Chugach National Forest staff and transmitted to regional and national offices for use in annual planning and budgeting exercises (USDA Forest Service 1999b).[1]
- Raw data used as inputs to the RIM process, including trail registries, campground and cabin concessionaire reports, fishing and hunting license data, cruise ship passenger counts, and highway traffic counts (USDA Forest Service 1999c).
- Use reports from outfitters and guides and others operating under special use permits. We compiled these data from the permit files kept by the Seward, Glacier, and Cordova Ranger Districts (USDA Forest Service 1999d).
- The 1995 Chugach National Forest recreation survey (USDA Forest Service 1995a, 1995b).
- The Chugach National Forest portion of the 1992 Forest Service "CUSTOMER" nationwide recreation survey (USDA Forest Service 1992).

[1] The RIM/Infra data are based on passenger, traffic, and facilities use counts from many sources; they were adjusted following the 1995 survey. The RIM and Infra data are presented as recreation visitor days (RVDs). Each visitor is assigned a share of a day corresponding to that person's activity. For example, a hiker is assigned 0.325 RVDs corresponding to 3.9 hours for hiking.

Data Limitations

There are several data limitations in many areas that prevent us from drawing firm conclusions about recreation and tourism use patterns. Most important is the fact that from 1989 through 1998, there are only a few activities for which new raw data were collected each year as part of the RIM process. These are viewing scenery, camping, use of cabins, and number of visits to visitor centers. For other activities, there are significant periods during which no new data were available; in such cases the total from the previous year is carried forward in the reports. These periods show up in our figures as periods of no change.

Between 1995 and 1997, there were significant changes in RIM data collection and computation methods. The Forest Service adopted new recreation use conventions in 1996. In 1997, several activity definitions and methods for calculating specific activity levels were changed. For these reasons, we do not calculate trend growth rates or show trends that cross this period for the activities that were significantly affected by these changes.

Generally, the data tied to facilities use, fee collections, or special use permits are better than the data on dispersed and noncommercial use.

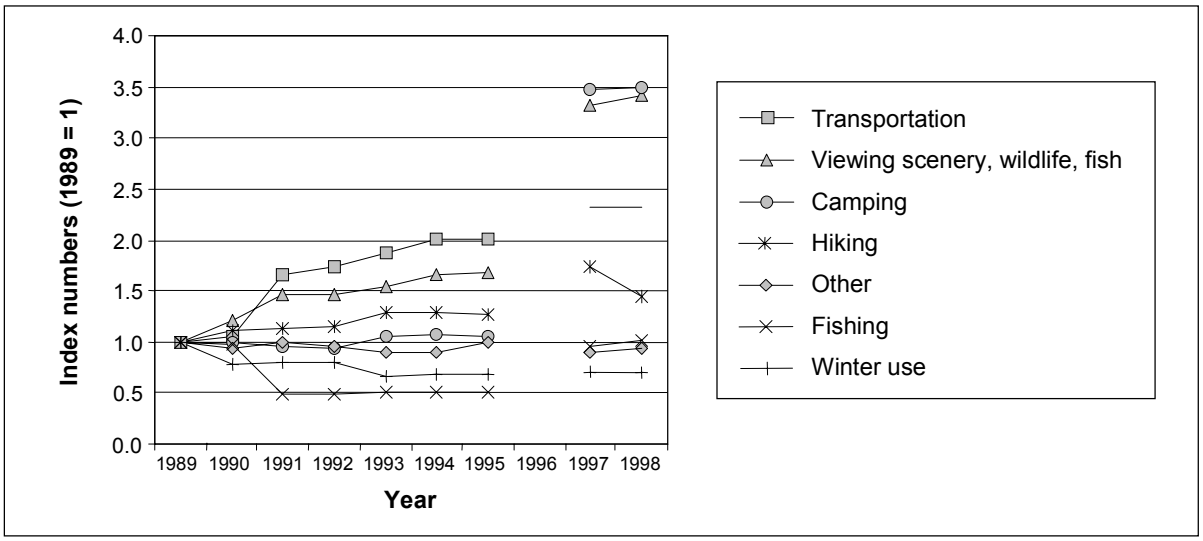

Figure 2—Trends in major activities on the Chugach National Forest, 1989–98 (USDA Forest Service 1999b).

Conclusions about multiple activities considered together are most reliable.

Special use permit data are likely to be incomplete. Because permit holders in the Glacier Ranger District do not report use by activity, we estimated clients in each activity based on total clients and length of stay estimates. Permit holders self-report revenue and use. Because permit fees are based on revenue, there may be some underreporting.

Finally, the 1992 and 1995 survey data are not directly comparable. Activity definitions and questions are different in the two surveys. Nonetheless, the results show some clear patterns.

Findings

Overall, the data confirm the findings reported by many on-the-ground observers: the Chugach National Forest is heavily used as a scenic resource by motorists and waterborne passengers and increasingly as a road-accessible playground for fishing, camping, and commercially mediated, motor-assisted recreation.

The RIM data summarized in figure 2 show that, excluding travel, more than half of the time (recreation visitor days) people spend on the Chugach National Forest is spent viewing scenery, wildlife, and fish. Viewing is the most popular activity in all ranger districts and has been increasing steadily since 1989. Hiking also seems to be growing, whereas camping is roughly flat, consistent with capacity constraints. Fishing and winter use are shown in figure 2, but many data problems make it difficult, if not impossible, to infer broad trends from these data. Active sports such as mountain biking and whitewater rafting seem to be growing fastest among summer activities. Extremely rapid growth is a common trend when the initial base is small, as is the case for these two activities.

The special use permit data show that commercially mediated recreation is occurring increasingly on the forest, but we do not know whether this growth outpaces the growth of dispersed, independent recreation. Figure 3 shows that although the overall numbers of clients in activities conducted under special use permits almost doubled between 1994 and 1998, the increase in camping, kayaking, and hiking grew much faster than the overall average. Much of the guided camping activity is linked to sea kayaking, and the small numbers of whitewater rafters are hidden in the rafting data by the large numbers of Kenai River floaters. Hence, the index numbers for some activities in figure 3 probably understate the actual growth in active adventure recreation.

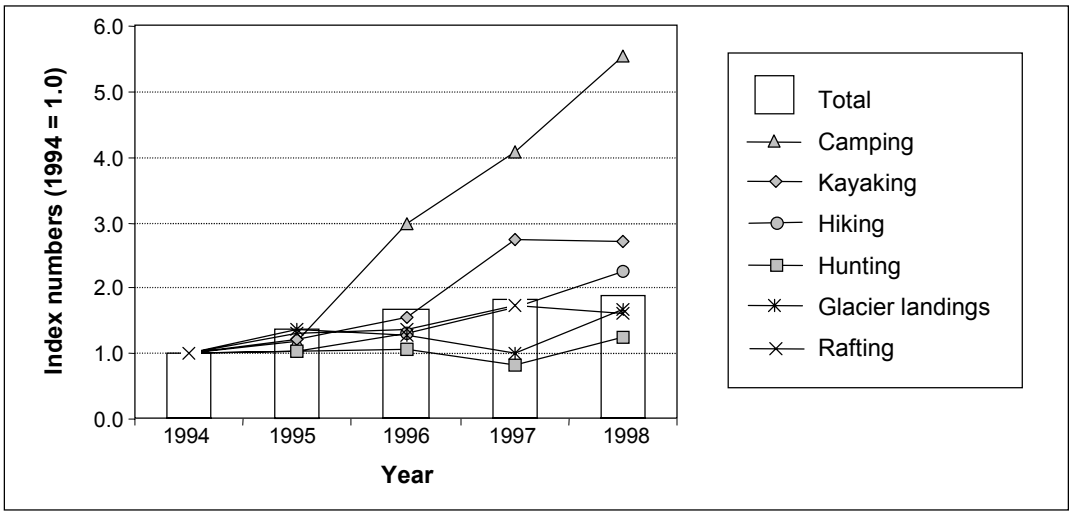

Figure 3—Trends in activities under special use permits (USDA Forest Service 1999d).

Evidence, particularly from hunting and fishing license numbers, indicates that use of the forest by nonresidents is rising faster than use by Alaska residents. These data are consistent with the perception that nonresidents are "discovering" the forest and spending some of their time on guided land tours.

It seems that facilities built and maintained by the Forest Service operate at, or near, capacity. Although there are some lulls in usage, the facilities are in excess demand during peak months.

Forest staff suggest that on some hiking trails and back-country areas, increased use is displacing users seeking a wilderness experience.

Quality of scenery is important to visitors. People surveyed in 1992 and 1995 overwhelmingly reported that they were satisfied with the quality of scenery and considered it essential for a high-quality recreation visit.

Forest Area and Capacity

As shown in table 1, the Chugach National Forest comprises more than 2.5 million hectares and has a total recreational capacity (people on the ground at one time) of more than 660,000 people—more than the current population of Alaska.

About 95 percent of the forest area is classified as primitive or semiprimitive according to the recreation opportunity spectrum (ROS) guidelines. Because of the low use densities associated with these classifications, however, only about 14 percent of the total recreational capacity is for primitive or semiprimitive activities. Only 2 percent of total capacity is classified as ROS-primitive (see table 2 and fig. 4). Thus, although the Chugach National Forest contains large amounts of total land area, certain types of recreational opportunities are currently, or are likely to become, "scarce" in an economic sense.

Total Recreation Use

Recreation on national forests is usually measured in terms of recreation visitor days. One RVD is generated by one person engaging in an activity for 12 hours—or by two people spending 6 hours each, four people spending 3 hours each, and so forth. Figure 5 shows the growth in total RVDs on the Chugach National Forest from 1989 to 1998. The total number of RVDs on the forest grew by 4.3 percent per year from 1989 through 1995. Annual growth slowed to 0.7 percent between 1997 and 1998. The pattern is similar in all ranger districts on the Chugach National Forest. Because of counting and computational changes, it is not possible to compute a defensible growth rate between 1995 and 1997.

Table 1—Land areas and recreational capacities on the Chugach National Forest

Area	ROS class[a]	Area	Capacity (PAOT)[b]
		Hectares	
Kenai Peninsula	Primitive	229 057	5,660
	Primitive II	17 402	430
	Semiprimitive nonmotorized	186 969	13,860
	Semiprimitive motorized	18 211	2,250
	Roaded natural	54 634	337,500
	Roaded modified	1 538	3,800
	Rural	2 469	18,300
	Urban	—	—
	Total	510 279	381,800
Prince William Sound	Primitive	993 525	4,910
	Primitive II	17 402	86
	Semiprimitive nonmotorized	162 687	40,200
	Semiprimitive motorized	11 331	224
	Roaded natural	688	2,550
	Roaded modified	44 516	110,000
	Rural	405	2,000
	Urban	607	15,000
	Total	1 231 161	174,970
Copper River Delta	Primitive	553 622	2,736
	Primitive II	152 975	756
	Semiprimitive nonmotorized	72 845	18,000
	Semiprimitive motorized	27 519	6,800
	Roaded natural	12 950	48,000
	Roaded modified	4 856	12,000
	Rural	1 214	6,000
	Urban	364	9,000
	Total	826 346	103,292
	Total	2 567 786	660,062

[a] ROS = recreation opportunity spectrum.

[b] PAOT = people at one time.

Source: USDA Forest Service (1998).

Table 2—Total land area and capacity by ROS class

ROS class[a]	Area (hectares)	Percentage of area	Capacity (PAOT)[b]	Percentage of capacity
Primitive	1 776 204	69	13,306	2
Primitive II	187 778	7	1,272	0
Semiprimitive nonmotorized	422 501	16	72,060	11
Semiprimitive motorized	57 062	2	9,274	1
Roaded natural	68 272	3	388,050	59
Roaded modified	50 911	2	125,800	19
Rural	4 087	0	26,300	4
Urban	971	0	24,000	4
Total	2 567 786	100	660,062	100

[a] ROS = recreation opportunity spectrum.

[b] PAOT = people at one time.

Source: USDA Forest Service (1998).

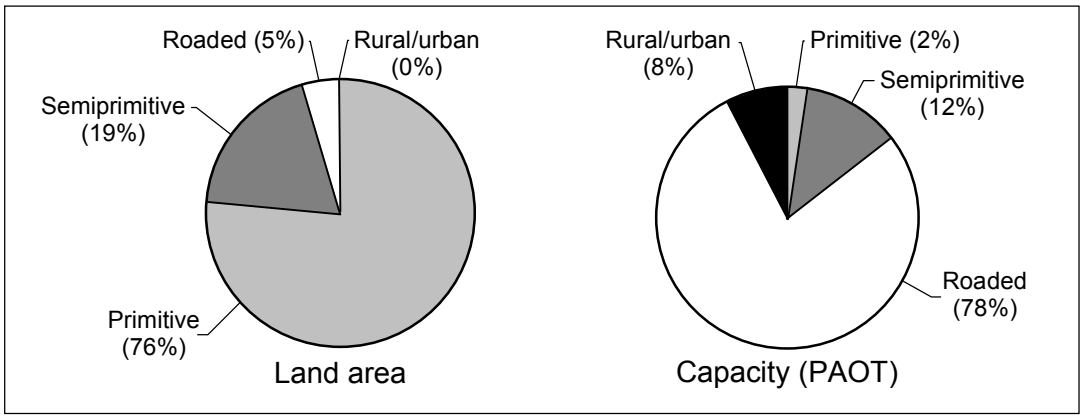

Figure 4—Distribution of Chugach National Forest area and recreational capacity by recreation opportunity spectrum classification. PAOT = people on the ground at one time.

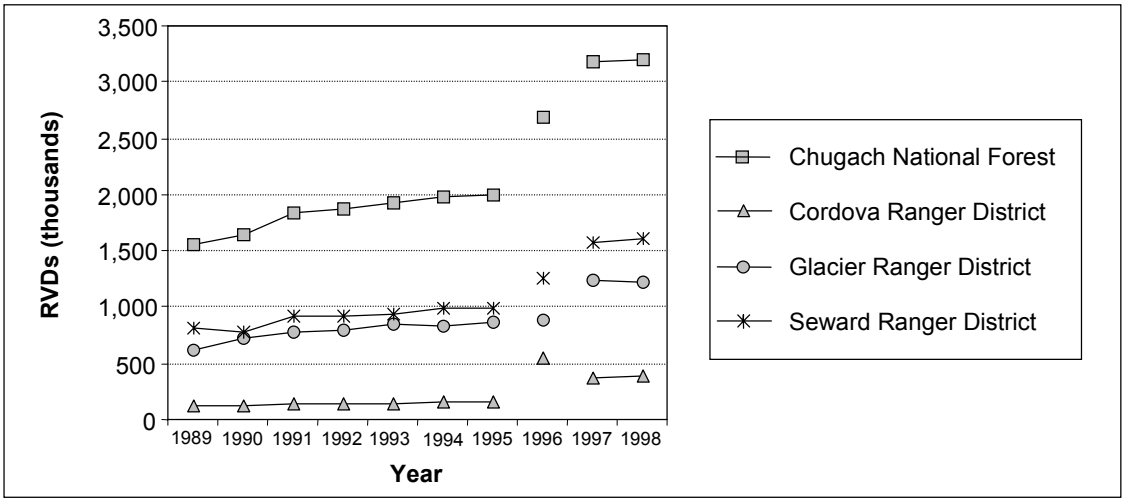

Figure 5—Total recreation visitor days (RVDs) in south-central Alaska, 1989–98.

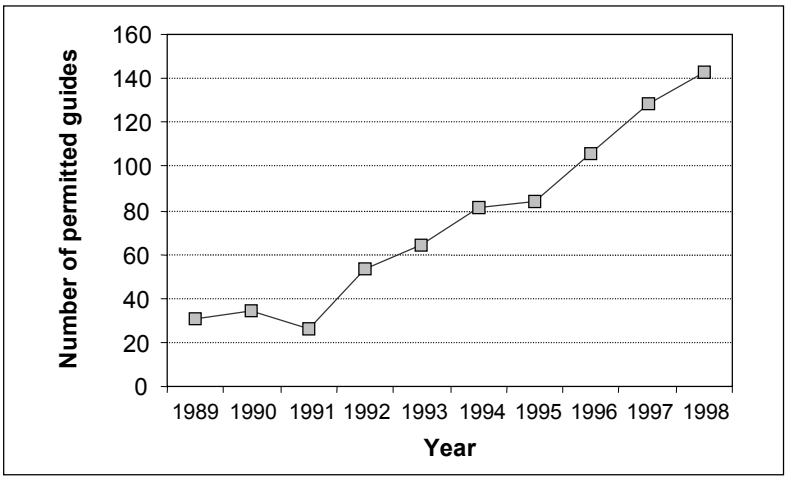

Figure 6—Number of operators under special use permit, 1989–98 (USDA Forest Service 1999d).

Commercially Mediated Recreation and Tourism Use

The special use permit data show that commercially mediated use of the forest has been rising rapidly over the past 10 years.[2] On the supply side of the market, the number of outfitter-guide permit holders has grown at an average annual rate of 18.5 percent between 1989 and 1998. Some of the growth may be due to "bandit" guides that have gotten permits. As figure 6 suggests, this growth of commercial recreation capacity will likely continue.

Our analysis of the raw permit data compiled from the ranger districts suggests that the demand for the activities offered by these outfitter-guides also has been growing, but at a slower rate. Figure 7 shows that although the number of outfitter-guide permittees jumped by 80 percent between 1994 and 1998, both the number of clients served and total revenue increased by only about 40 percent. The number of clients has risen from about 13,000 to about 19,000 during this period.

Interviews suggest that the increase in special use permit activities is related, in part, to increases in cruise ship passengers and the opening of the Kenai Princess Lodge. Some of the larger guide operations on the forest now draw much of their business from these passengers. The Kenai Princess Lodge "slows down" the flow of cruise passengers from the ship (in Seward) to the airport (in Anchorage) long enough for them to spend an evening or possibly a day engaged in activities on the forest.

Although it is risky to extrapolate from only 3 years of recent data, these numbers are consistent with the rapid growth observed in entrepreneurial activity (the number of permits) in response to perceived business opportunities. From the permits data, it is not possible to tell whether capacity growth has outstripped demand growth or whether the average size of the typical operation has simply gotten smaller as more small operators offer "boutique" recreation products. Other information, such as our interviews and the permits data for specific activities, suggests that the latter explanation is more plausible: Demand is growing, especially for the more active, adventure-based activities currently offered by small operators.

[2] Use reports from the Forest Service outfitter/guides. The permit data report the number of clients. Reporting is not always consistent. Some guides report both on- and off-forest use. Others report only on-forest use. Use may be underreported because fees paid to the forest are based on use. Not all guides submitted use reports every year. Use by clients of charter boat operators is not well represented. This category of use is covered in the Twardock database, but only for western Prince William Sound.

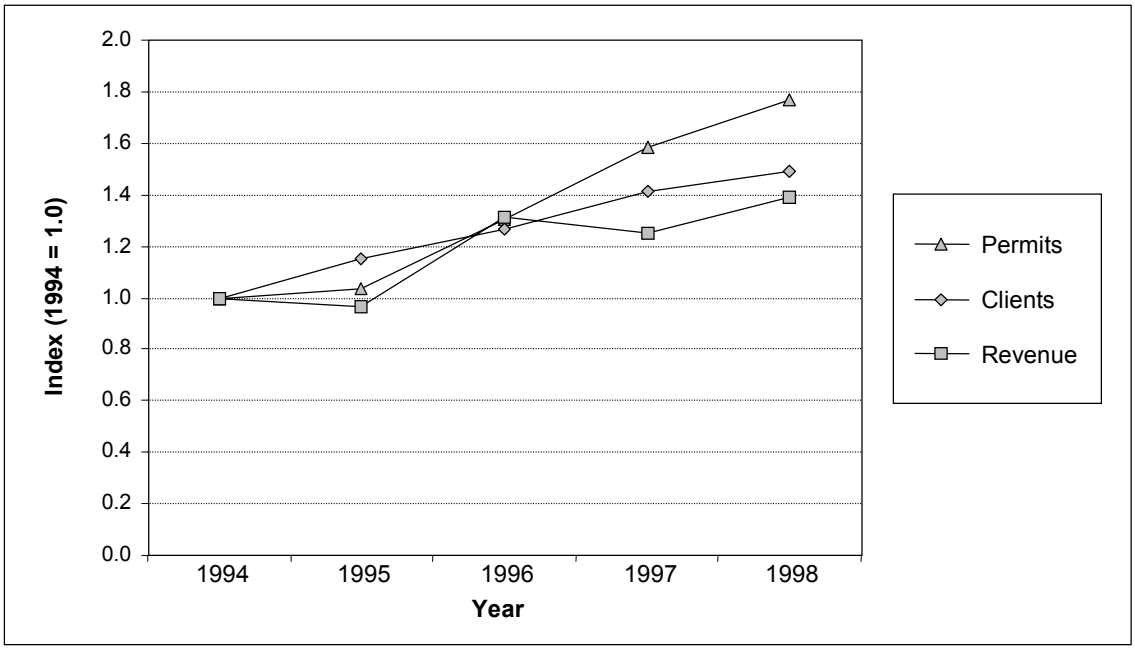

Figure 7—Outfitter-guide permits, clients, and total revenue (USDA Forest Service 1999d).

Transportation Through the Forest[3]

Figure 8 shows the trends in activities that are classified as mechanized travel on the forest. These activities are dominated by automobile and water travel. It is important to note that figures for tour boats, ships, and ferries do not include cruise ship passengers on cruise ships. These passengers do contribute to the "auto" category when they travel by bus from Seward to Anchorage.

The RIM data suggest that the number of RVDs from tour boat, cruise ship, and ferry passengers[4] is rising faster than that for automobile passengers. The interpretation of these travel data is problematic, however, because according to Chugach National Forest RIM documentation,[5] the growth of the waterborne travel category is based on changes in cruise ship passengers, but the actual amount of waterborne travel does not include such passengers. The increases in the RIM data for waterborne transportation are due to an increase in cruise ship traffic to Seward during the early 1990s. It is not clear what activities are included in this total—presumably day cruise tour boats and Alaska Marine Highway trips between Whittier, Valdez, and Cordova. The drop in automobile users in 1997 and the rise in waterborne passengers in 1996 are due to changes in computation methods.

Most automobile and bus RVDs are generated from travel on the Seward Highway, which extends for 95 miles on the forest. This is the only

[3] Updated by using traffic counts from the Alaska Department of Transportation. Train and bus touring is updated for Seward and Glacier Ranger Districts by using train passenger counts only. Cordova numbers are updated with information from a special use permit bus tour operation.

[4] Tour boat, ship, and ferry information are updated for Glacier and Cordova Ranger Districts by using cruise ship passenger information. No data are provided for Seward. Because cruise ship passengers disembarking in Seward are not on the Chugach National Forest when they disembark, they are not used in annual calculations of water transportation. They are counted instead in the "viewing scenery, wildlife, and fish" activity category based on their travel through Prince William Sound.

[5] Notes labeled "Methods we used in 1997 for tracking and reporting RVDs on the Chugach National Forest for FY97," provided by Chugach National Forest recreation staff. On file with authors: University of Alaska, Institute of Social and Economic Research, 3211 Providence Dr., Anchorage, AK 99508.

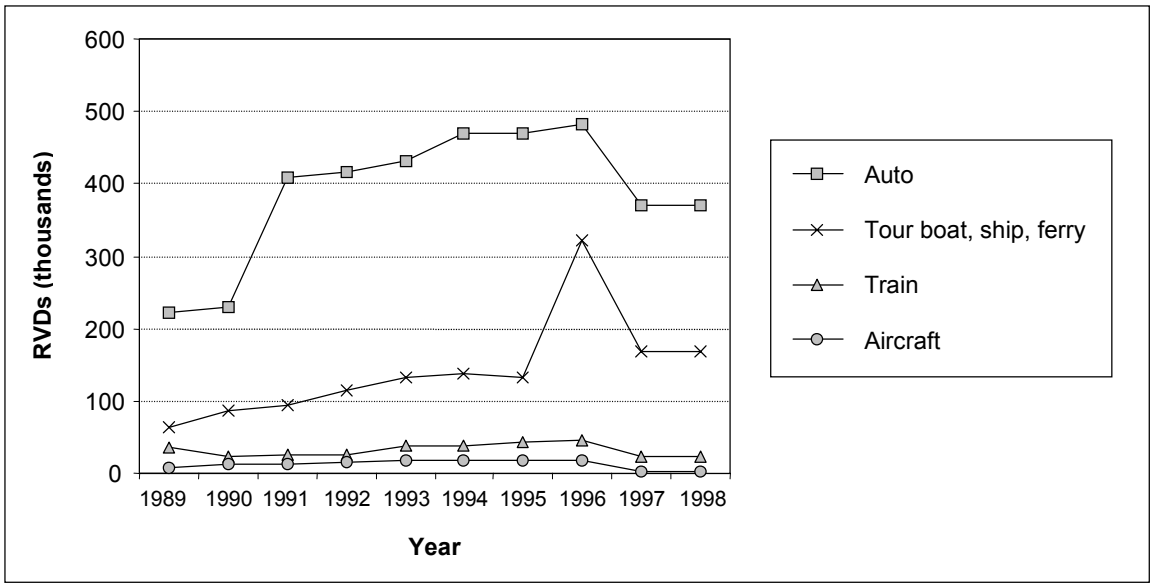

Figure 8—Transportation recreation visitor days (RVDs) through the forest (USDA Forest Service 1999b).

state highway on the forest. Although the functional capacity of this highway has been increased in recent years through lane additions and straightening, the amount of available state highway mileage has not changed. Thus, people are likely experiencing more traffic today than they were 10 years ago (table 3).

Activities

We discuss the remaining activities by grouping them into four broad categories: viewing scenery, wildlife, and fish; land-based, facilities-based activities, where people spend time "on the ground" and use facilities such as campgrounds; land-based, dispersed activities; and water-based activities.

Viewing scenery, wildlife, and fish—In 1998, more than half of the time people spent on the Chugach National Forest was used viewing scenery, wildlife, and fish (fig. 9). Nearly all people who engaged in this activity did so from cruise ships, tour boats, or automobiles.[6] Figure 10 shows that participation in this activity rose at an annual rate of about 9.0 percent between 1989 and 1995—about twice the rate for overall RVDs during this period. The RIM data indicate a further large jump between 1995 and 1996. This is because viewing by passengers on cruise ships began to be included in RIM data in 1996.

Viewing scenery was also the dominant activity in all ranger districts (figs. 11 through 13). This is particularly true in the Glacier and Cordova Ranger Districts, which lack significant road-accessible campground facilities near the large population center of Anchorage.

Land-based, facilities-based activities—Facilities-based activities involve the use of facilities and infrastructure provided and maintained by the Forest Service or concessionaires, such as campgrounds,[7] cabins, trails, visitor centers, interpretative sites, and boat launches. Dispersed activities are those that do not rely directly on infrastructure—fishing, hunting, and gathering forest products. Hiking is classified as a facilities-based activity because it depends on trail infrastructure.

[6] We estimated the 1998 shares of viewing from autos and cruise ships based on the 1995 shares calculated from survey data.

[7] Not all camping activity is in Forest Service campgrounds, but the campground share is much larger than the dispersed share, and the most reliable data are for campgrounds.

Table 3—Existing roads on the Chugach National Forest

Road type	Kenai Peninsula	Prince William Sound	Copper River Drainage	Total Forest
		Miles		
State highway	95	0	0	95
Forest highway	32	0	27	59
Development road, maintenance level 1	3	0	0	3
Development road, maintenance level 2	13	0	12	25
Development road, maintenance levels 3–5	53	0	13	66
Nonsystem Forest Service road	0	34	0	34
Total	196	34	52	282

Source: USDA Forest Service (1998).

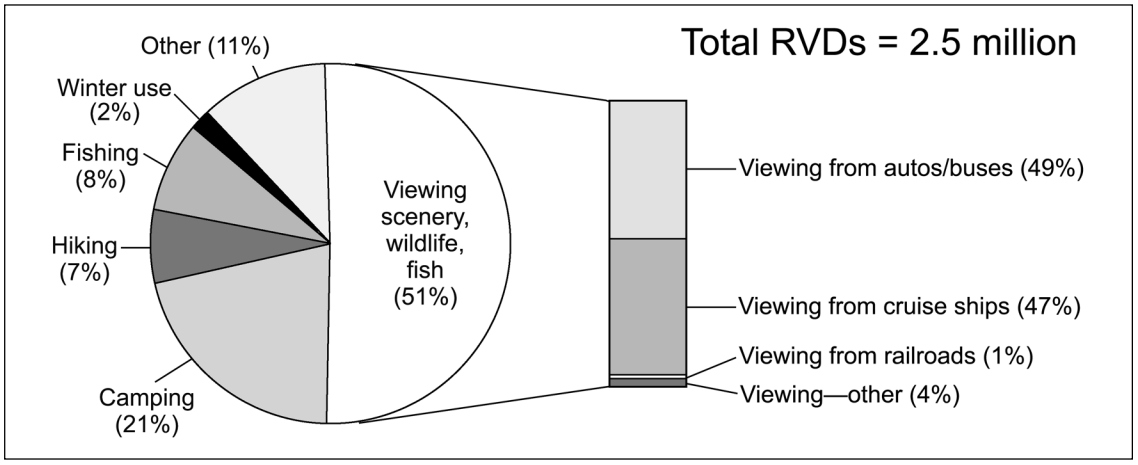

Figure 9—1998 forest activities, other than travel (USDA Forest Service 1995a, 1998). RVD = recreation visitor day.

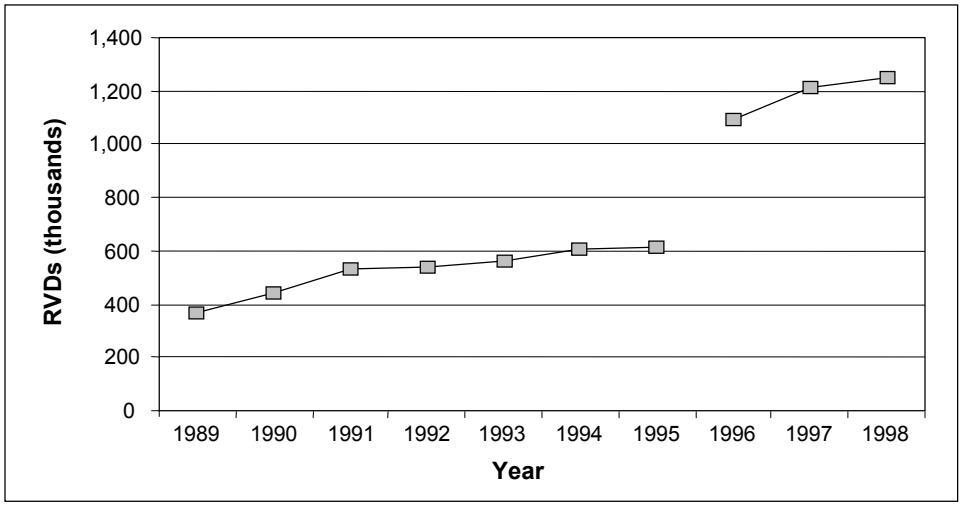

Figure 10—Recreation visitor days (RVDs) viewing scenery, wildlife, and fish (USDA Forest Service 1999b).

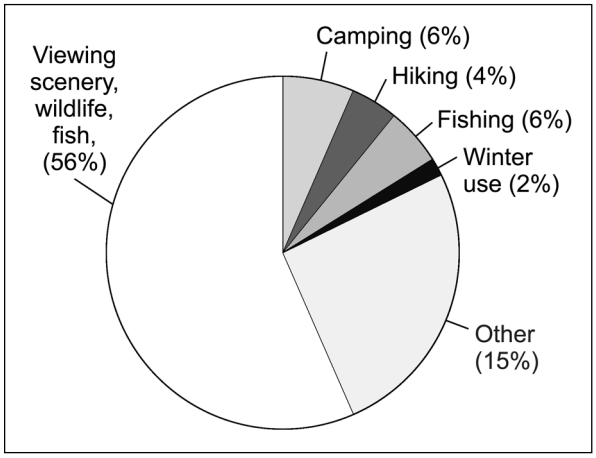

Figure 11—Activities in the Cordova Ranger District (USDA Forest Service 1999b).

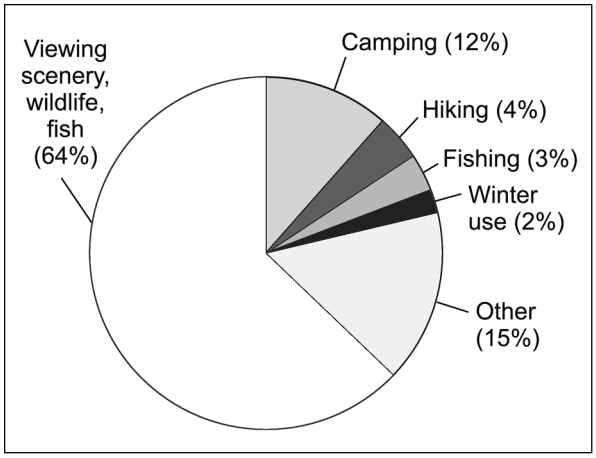

Figure 12—Activities in the Glacier Ranger District (USDA Forest Service 1999b).

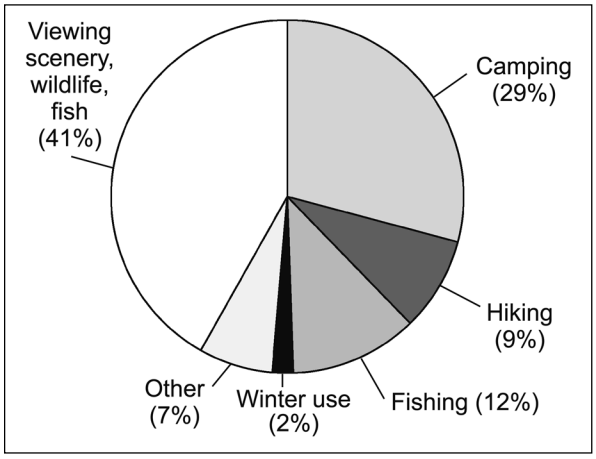

Figure 13—Activities in the Seward Ranger District (USDA Forest Service 1999b).

Facilities-based activities have remained relatively flat over the past 10 years (fig. 14). The steady levels of use shown in the RIM data suggest that facilities are operating at or near their capacity at peak times. This conclusion is consistent with anecdotal evidence from specific campgrounds[8] and with our interviews with campground hosts conducted during summer 1999.

Camping—Table 4 shows that the number of campgrounds has remained constant over the past 4 years. Figure 15, on the other hand, indicates a slight increase in demand between 1989 and 1996. Because of the change in RVD computation methods in 1997, only the data through 1996 are comparable.

Table 4—Chugach National Forest campgrounds

Ranger district	1995	1996	1997	1998
Glacier	4	4	4	4
Cordova	—	—	1	1
Seward	11	10	10	9
Total forest	15	14	15	14

Source: USDA Forest Service (1998).

Measured day use of campgrounds has apparently declined, whereas overnight camping increased during the early 1990s and then stabilized. These shifts in types of camping could be due to changes in reporting procedures, so it is best to focus on the camping activity totals.

Figures 16 through 18 show that most camping occurs in the Seward Ranger District, where most facilities are located. Without further analysis of the effect of the 1997 change in algorithms, it is difficult to say whether actual activity in the Seward and Glacier Ranger Districts has increased since 1993.

In table 5, we combine occupancy data from concessionaire reports with capacity data from the Forest Service. The data show that campgrounds

[8] As recalled by Chugach National Forest recreation staff.

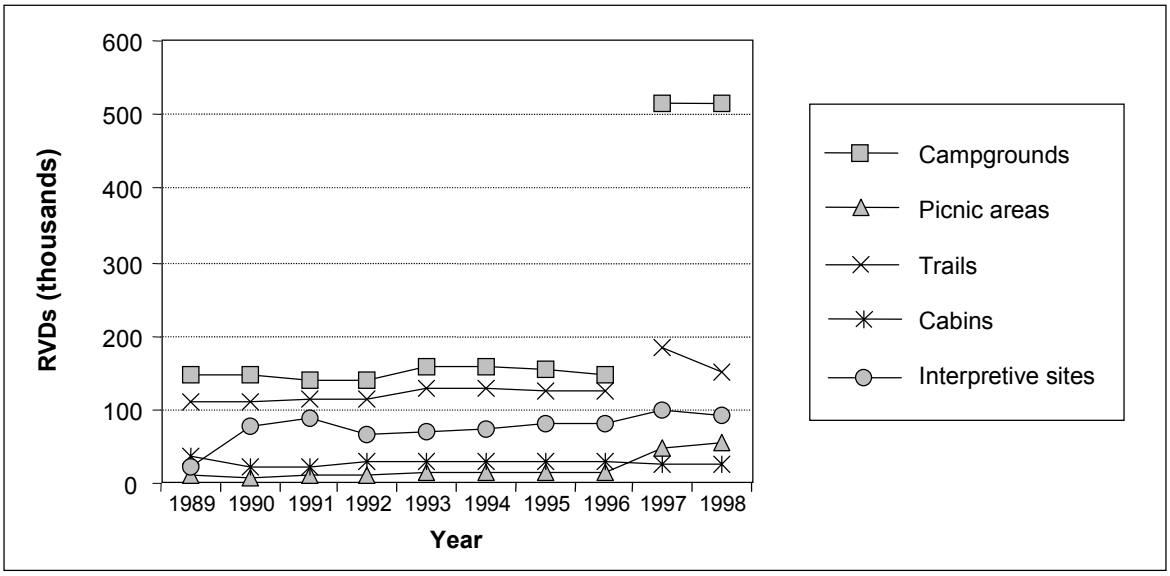

Figure 14—Facilities use for the entire forest (USDA Forest Service 1999b). Note: The sharp increase in campground recreation visitor days (RVDs) in 1997 is due to a change in computational methods.

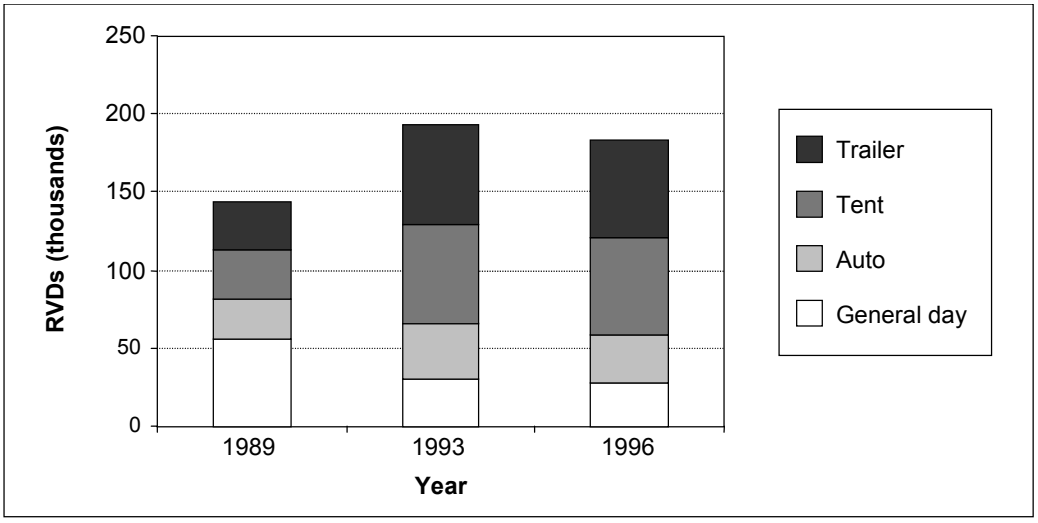

Figure 15—Changes in camping recreation visitor days (RVDs) on the Chugach National Forest (USDA Forest Service 1999b).

are operating at capacity[9], and the campgrounds used the most are in the Glacier Ranger District. In this ranger district, there are four campgrounds accessible directly off the Seward Highway or in Portage Valley. Easy access and proximity to Anchorage account for the higher rates of use.

The 1998 report done by the concessionaire for Russian River campground shows the campground full and campers in overflow areas. Information from Forest Service staff, however, suggests that there may have been a possible change in use patterns at the Russian River campground. Staff in the Anchorage office feel that occupancy has been fish-dependent, with little or no demand when there is no fishing.

[9] For planning purposes, the Forest Service considers 60 percent to be capacity.

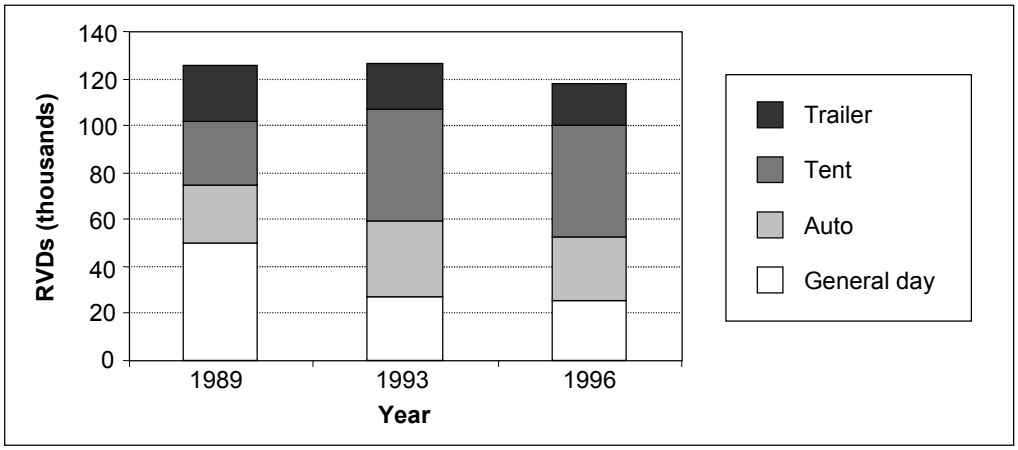

Figure 16—Camping in the Seward Ranger District (USDA Forest Service 1999b). RVD = recreation visitor day.

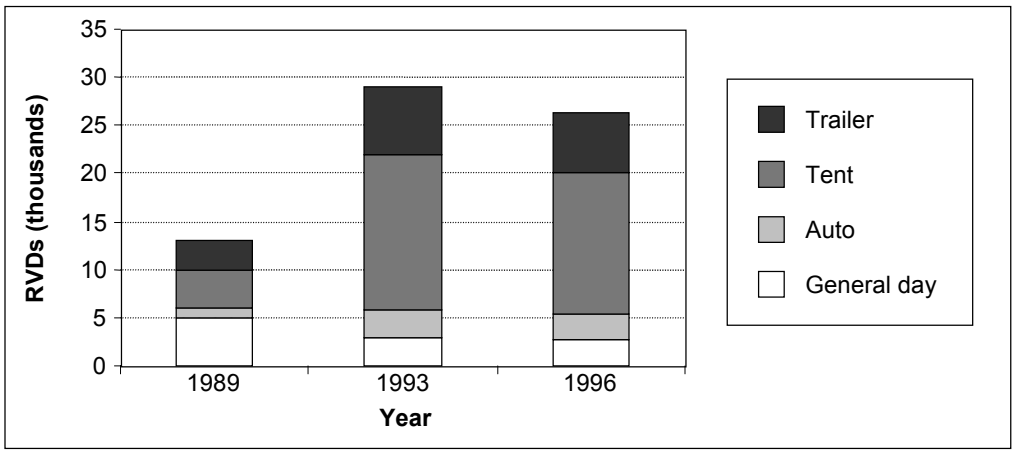

Figure 17—Camping in the Glacier Ranger District (USDA Forest Service 1999b). RVD = recreation visitor day.

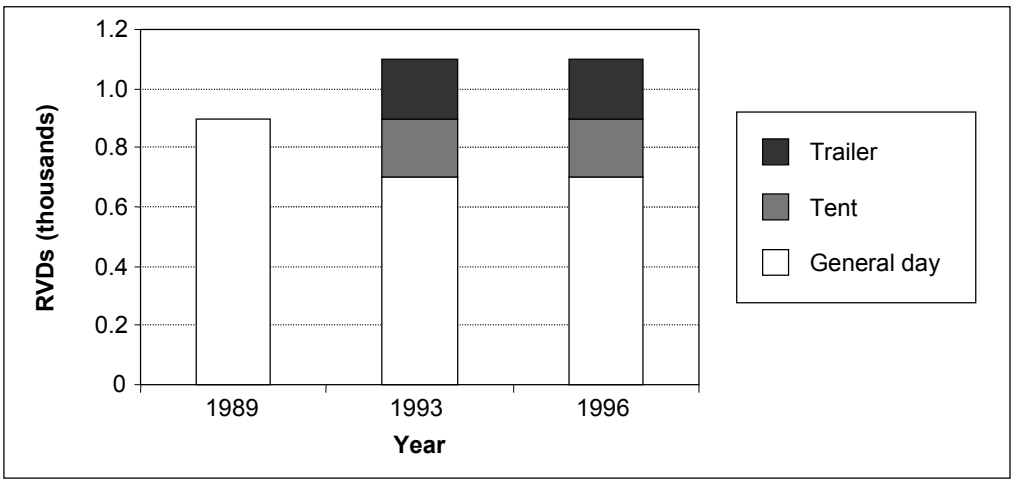

Figure 18—Camping in the Cordova Ranger District (USDA Forest Service 1999b). RVD = recreation visitor day.

Table 5—Campground capacities and occupancy, 1995–98

Ranger district	1995	1996	1997	1998
Campground capacity (PAOT):[a]				
Glacier	420	420	420	420
Cordova	—	—	—	—
Seward	1,815	1,705	1,705	1,530
Total forest	2,235	2,125	2,125	1,950
Camper days:				
Glacier	36,631	35,832	36,128	33,053
Cordova	—	—	—	—
Seward	117,689	111,509	110,825	99,812
Total forest	154,320	147,341	146,953	132,865
Average occupancy rate:				
			Percent	
Glacier	87	85	86	79
Cordova	—	—	—	—
Seward	65	65	65	65
Total forest	69	69	69	68

[a] PAOT = people at one time.

Source: USDA Forest Service (1998).

Note: Average occupancy calculations assume a 100-day season and 24-hour stay per camper day.

Others in the Seward Ranger District say they are now seeing an increase in demand from people who are not interested in fishing and go to the campground when fishing is closed to use the trail or view fish.

Forest Service staff in the Seward Ranger District said that campgrounds operate at capacity on the weekends. In 1998, campgrounds operating at the highest capacity in this district were Primrose and Ptarmigan. Both are overnight sites for people visiting Seward. In the Glacier Ranger District, in 1998, Granite Creek and Williwaw were the fullest. No comparable site-specific data were available for the Cordova Ranger District. The RIM data show that in the Cordova Ranger District, dispersed tent camping is the largest share of overnight camping.

Commercial or guided camping—From 1994 through 1998, there has been a large increase in camping with guides operating under special use permits. According to the permit use statements, in the Seward Ranger District, guided camping has increased from zero to 323 people. Nearly all the guided camping occurs in the Russian River area. In the Glacier Ranger District, the number of people who participated in guided camping rose from 158 people in 1994 to 683 in 1998.[10] Nearly all camping in this district is associated with sea kayaking. Camping activity is concentrated in "outfitter/guide camping sites" in western Prince William Sound. According to Chugach National Forest staff, campground use in areas near Anchorage is tied to weather and the opening and closing of fisheries.

[10] In the Glacier Ranger District, use reports do not list clients by specific activity. We estimated the number of campers based on permitted activities and average length of stay.

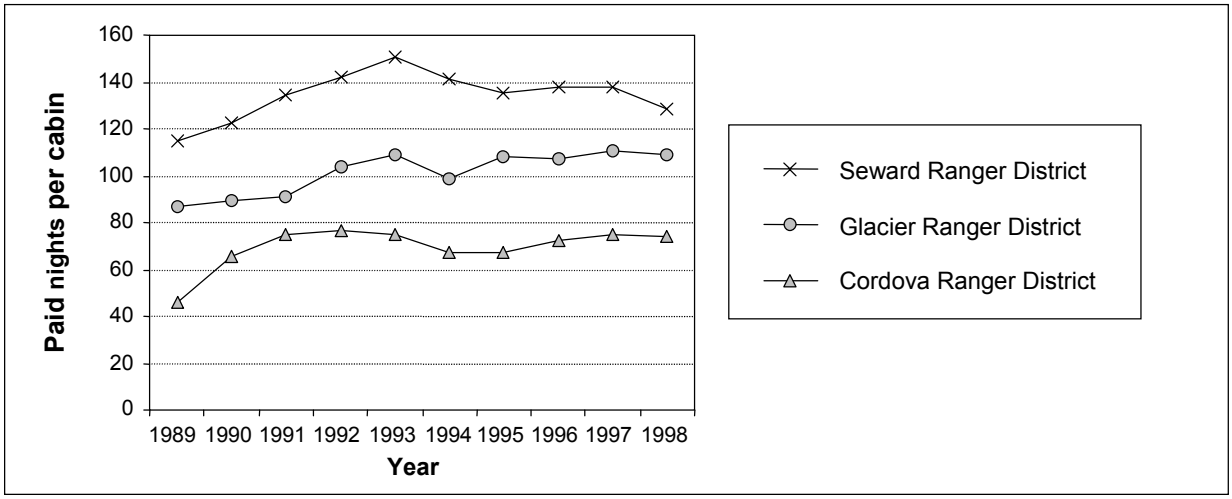

Figure 19—Cabin occupancy (USDA Forest Service 1999c).

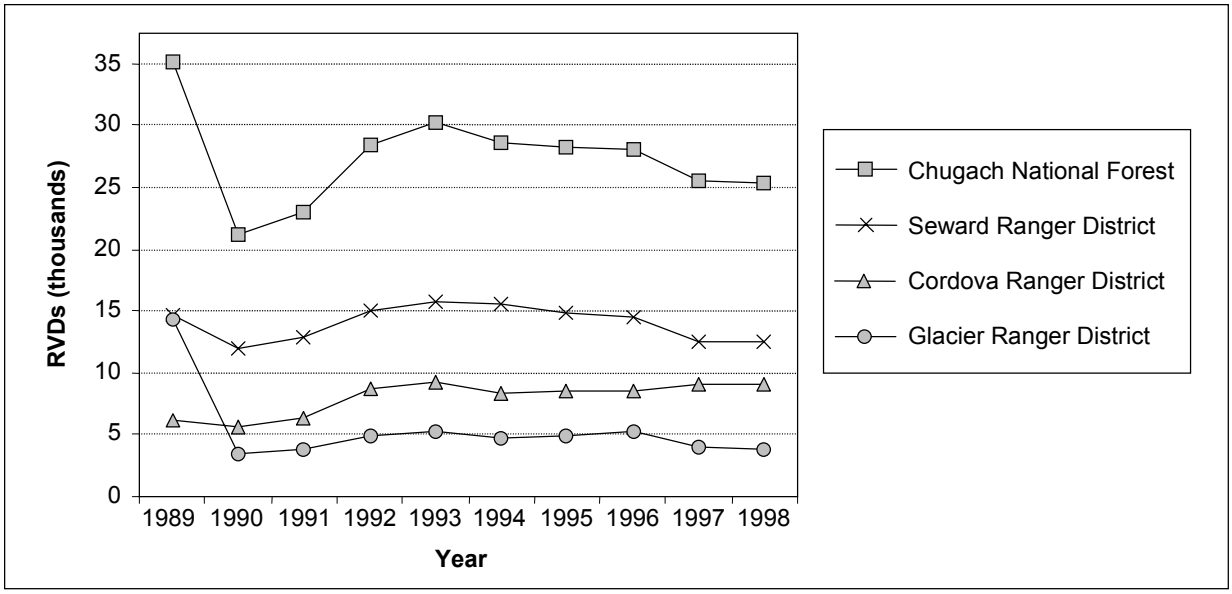

Figure 20—Cabin use (USDA Forest Service 1999b). RVD = recreation visitor day.

Cabins[11]—Figures 19 and 20 suggest that cabins are operating near capacity. Officials in the Seward Ranger District confirmed this, saying that cabin use cannot increase much more. They think cabin occupancy rates in the Seward Ranger District are higher than in other districts because most cabins in the Seward Ranger District are accessible from roads and trails, whereas the others require use of a boat or plane. There are 7 cabins in the Cordova Ranger District and 18 in each of the other ranger districts. The drop in RVDs (fig. 20) after 1996 is mostly because of cabin closures.

The 1992 and 1995 recreation surveys measured cabin use by residents and nonresidents. The results are consistent with growing use by

[11] The cabin registration system and campground concessionaires report the number of nights occupied. Cabin reservations also show the number in each party. This information is used for annual updates.

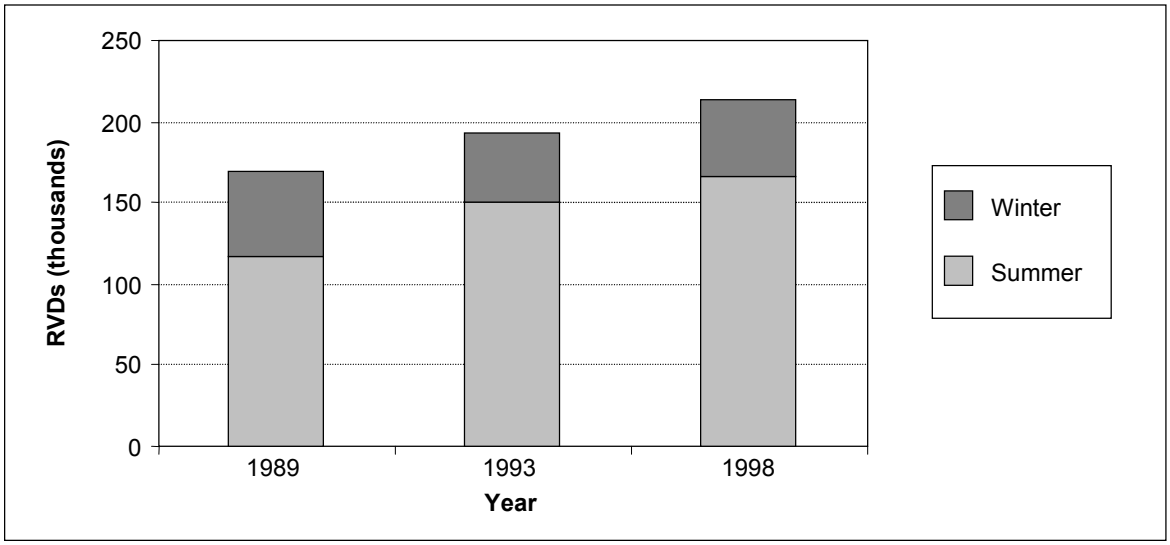

Figure 21—Trail use (USDA Forest Service 1999b). RVD = recreation visitor day.

nonresidents. In 1992, 64 percent of cabin users surveyed were Alaska residents. In 1995, 61 percent of the users were residents.[12]

Trails—We divided trail use into summer and winter activities (fig. 21). Summer use consists of hiking, guided and unguided walking, horseback riding, and bicycling. Winter use includes cross-country skiing and snowshoeing, and ice and snowcraft travel. Recreation visitor days for trailhead and snowpark activities were divided between summer and winter uses based on the winter and summer shares of total RVDs. Although summer trail use grew by 40 percent between 1989 and 1998, measured winter use remained constant or declined.

Winter trail use: snow machines and skiing—Data on winter use are not formally collected as part of the RIM process. The data presented in this section are therefore based on the 1992 customer survey. We present winter trail use estimates for completeness but suggest that they be used with caution when trying to draw inferences.[13]

According to RIM estimates presented in figure 22, ice and snow machine[14] and cross-country skiing and snowshoeing make up nearly equal shares of winter trail-based activity. The RIM estimates also show snow machine use decreasing and dipping below cross-country skiing, but this decrease is not supported by the perceptions reported by ranger district staff. Forest Service staff in both the Glacier and Seward Ranger Districts reported that snow machine use has risen rapidly. They also said snow machines are displacing skiers.

Data collected from March through early May 1999 as part of an environmental assessment (USDA Forest Service 1999a) show that at selected parking lots along the Seward Highway where vehicles were counted, vehicles pulling snow machines outnumbered those carrying skiers (table 6).

Survey data from the 1997 to 2002 Alaska statewide comprehensive outdoor recreation plan (Alaska Department of Natural Resources 1999) show that participation rates by Alaskans for snow machining increased from 26 to 36.4 percent between 1992 and 1997, whereas participation in cross-country and trail skiing fell from

[12] A chi-square test showed that these differences are not statistically significant.

[13] For activities where no new data are provided, the Chugach National Forest uses the count from the prior year.

[14] Note that not all snow machines use trails.

Table 6—Winter parking lot vehicle counts

Site	Chugach National Forest vehicle count		Consultant vehicle count	
	Snowmobile	X-C skier	Snowmobile	X-C skier
Twentymile	10	1	23	1
Placer River	13	1	16	1
Turnagain Pass	19	12	23	10

Note: X-C = cross country.

Source: Chugach National Forest (1999).

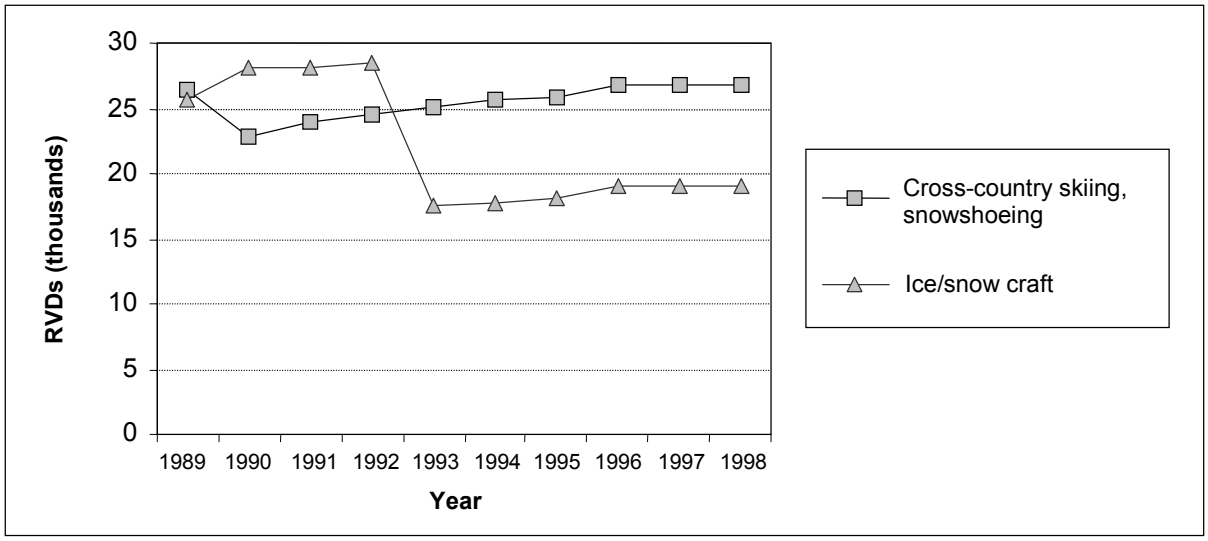

Figure 22—Estimated winter trail use (USDA Forest Service 1999b). RVD = recreation visitor day.

34 to 27.4 percent.[15] The surge in snow machine usage is also supported by vehicle registration data (Alaska Department of Public Safety 1989–98). These data show that the number of snow machines registered to Anchorage residents doubled between 1992 and 1997,[16] whereas the Anchorage population increased by only 4 percent. Officials in the Seward Ranger District report that parking is a constraint on snow machine activities. Parking lots were not built to accommodate trucks pulling trailers.

Permit data show a small number of special use permit snow machine tours—around 20 people per year—with no clear growth trend evident. Special use permit back-country skiers total less than 20 per year (this does not count the 1,100 per year associated with the Anchorage Nordic Ski Club's ski train special event permit).[17]

Summer trail use: hiking, biking, and horseback riding—There are 734 kilometers of trails on the Chugach National Forest. Sixty percent of the trails are in the Seward Ranger District,

[15] These data are for statewide participation and do not translate directly into use of the Chugach National Forest. We use them to show a time trend.

[16] Some of this increase is probably due to an increase in the share of the snowmachine fleet that is actually registered. Registration is required by law, but the law is not strictly enforced.

[17] We collected special event permit data for the Glacier Ranger District only.

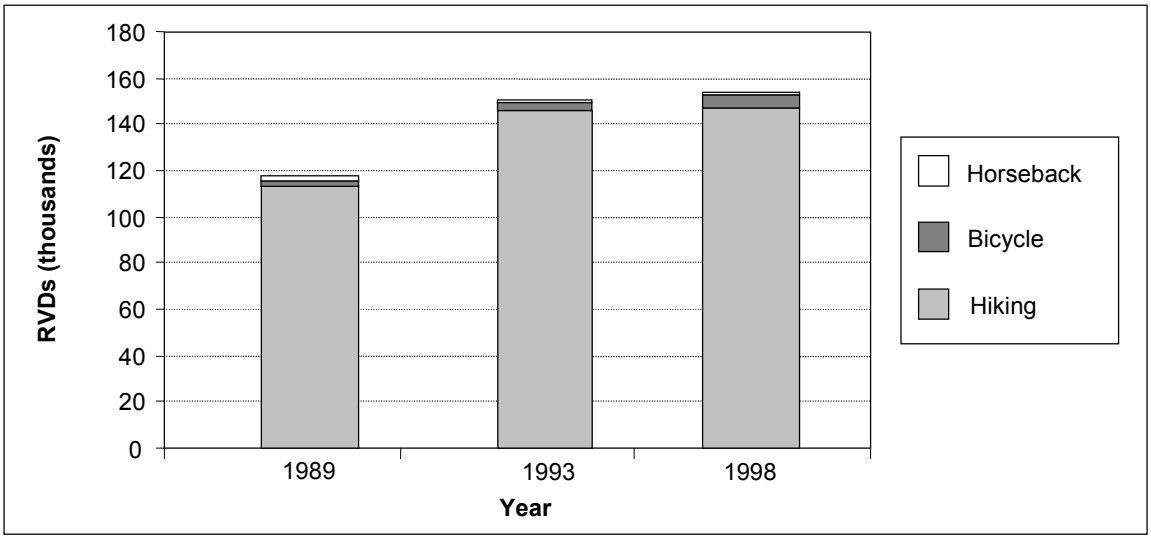

Figure 23—Summer trail use (USDA Forest Service 1999b). RVD = recreation visitor day.

26 percent in the Cordova Ranger District, and 13 percent in the Glacier Ranger District. Figure 23 shows that hiking[18] accounts for about 95 percent of all summer trail activities in the forest. The pattern is the same in all ranger districts.[19]

After rising 30 percent between 1989 and 1993, the level of hiking RVDs has remained essentially constant throughout the forest. Most hiking is done on the trails in the Seward Ranger District (fig. 24). Hiking activities increased fastest in the Glacier Ranger District, more than doubling between 1989 and 1993. They increased by about 20 percent in the other two districts during this period.

Permit data presented in figure 25 show that the number of people going on special use permit hikes has grown extremely rapidly during the 1994–98 period, albeit from a small base. During this period, special use permit hiking has doubled in the Glacier Ranger District and quadrupled in the Seward Ranger District.

Most of the special use permit hiking in the Seward Ranger District is on the Russian River and Ptarmigan Creek trails. Glacier Ranger District use reports do not specify areas for hikers, but the popular Crow Pass trailhead and Winner Gorge trails are likely the sources of much of this activity. Officials in the Seward Ranger District report that some trails are at capacity for their classification. They noted the Resurrection Pass trail—classified as semiprimitive, nonmotorized[20]—exceeds capacity for this classification on summer weekends. There are conflicts among users (bikers, hikers, and horseback riders) on this trail.

Biking is the fastest growing summer trail activity; it grew by almost 9 percent per year from 1989 to 1996.[21] Biking is increasing fastest in the Seward Ranger District, where it has risen by 10 percent per year from 1989 to 1996, according to RIM data.

Other data sources provide evidence of rapidly increasing use of trails by bicyclists. First, ranger district staff report increasing numbers

[18] Hiking and unguided and guided walking are grouped as hiking. Trailhead activities are not included here.

[19] The Seward Ranger District keeps trail registers and does periodic head counts at trailheads. The Cordova Ranger District uses traffic counts to update trail use. Data are not collected on trail use in the Glacier Ranger District. The Glacier Ranger District hiking use numbers are increased according to the increases in the other two districts.

[20] Areas of the forest are classified according to the ROS. Classifications range from primitive to urban.

[21] We calculated growth in biking from 1989 to 1996 because the Forest Service reporting methods changed in 1997.

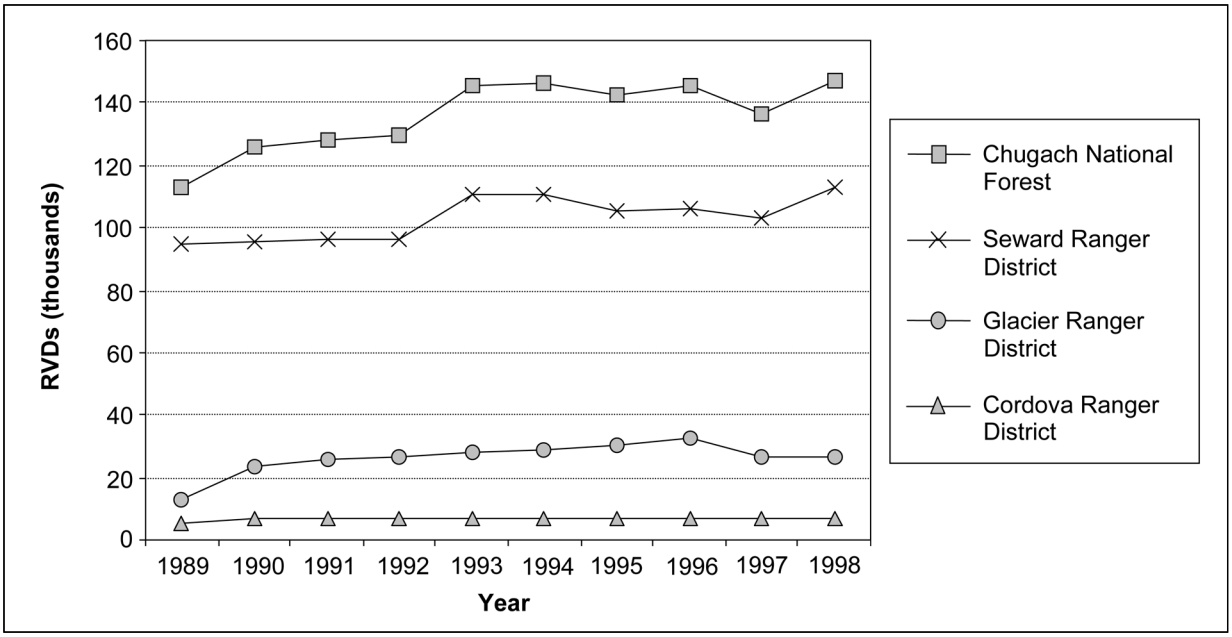

Figure 24—Hiking activity by district (USDA Forest Service 1999c). RVD = recreation visitor day.

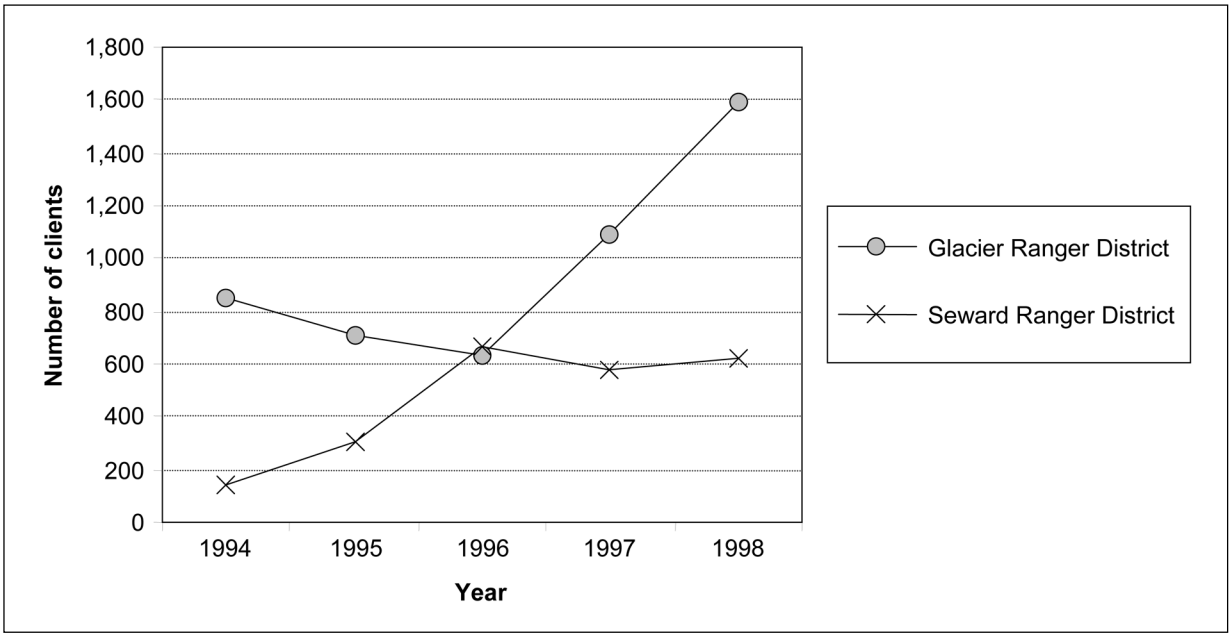

Figure 25—Hiking under special use permits (USDA Forest Service 1999d).

of bicyclists.[22] Reports from selected trailheads in the Seward Ranger District show a rise from 393 bicyclists in 1996 to 1,226 in 1997. According to these reports, the areas most frequented by bicyclists are Resurrection Pass, Johnson Pass, Crescent Lake Trail, and Upper Russian Lake Trail. Second, the permit data show a dramatic rise in the number of guided bike trips. All the bicycling trips reported in the permit data were in the Seward Ranger District. The number of people biking with commercial permittees rose from zero in 1994 to 97 in 1997, and 113 in 1998.

The RIM data show no change in the level of use by individual (nonguided) horseback riders, but this could be because of scant data. Permit data does show a rise in trail use by commercially supported horseback riders. All the special use permit activity is in the Seward Ranger District. Use is reported on the Old Sterling Highway, Johnson Pass, Resurrection Pass, Carter and Crescent Lakes, and Devil's Pass. The number of reported clients increased from 74 to 348 over the 5 years from 1994 to 1998. According to forest staff, there have been clashes between hikers and hunters and horseback riders on the Resurrection Pass trail because the horses churn up the trail.

If the number of hikers had risen faster than trail mileage, there could be increased crowding in some areas. This does not appear to be the case. Figure 26 combines summer trail use RVDs with trail mileage in each district and shows that RVDs per mile are nearly constant. Thus, it seems that trail usage rates have not changed much over the past 10 years. Trail use in the Glacier and Seward Ranger Districts is similar. Because of their remoteness from population centers, trails in Cordova have a lower level of use per mile of installed capacity.

Boat launches—Boat launches are not a significant source of RVDs. They totaled 1,000 in 1997 and dropped to 300 in 1998. Data on boat launches are scant. Numbers are only provided for 1997 and 1998.

Interpretative sites and visitor centers—The RIM/Infra data on visitor centers, interpretative exhibits, and signs show that RVDs have risen steadily over the past 10 years (fig. 27).[23] Most of these RVDs are generated at the Begich Boggs Visitor Center at Portage Glacier. Forest staff report that the automatic counters at this site had problems that were only recently rectified. This change in counting methods may explain the reported decline in Glacier Ranger District RVDs for this activity. In addition, Portage Glacier is no longer directly visible from the visitor center.

Other facilities—The RIM system does not maintain data on parking lot and restroom facilities. According to Seward Ranger District staff, snow machine use presents a parking problem in some areas including Lost Lake and Resurrection Pass. Parking lots overflow, and trucks hauling trailers are filling up parking areas and spilling over into residential and other areas. The shortage of restroom facilities along the highway has created a sanitation problem for the Forest Service.

Dispersed land-based activities—

Hunting—Figure 28 shows reported hunting RVDs. Because the Cordova Ranger District supports more hunting than either the Seward or Glacier Ranger Districts (at least since 1993) and has low levels of other activities, hunting composes a much larger share of the total RVDs in this ranger district. Our compilation of special use permit hunting (fig. 29) shows that in the Seward and Glacier Ranger Districts, the number of clients for special use permit hunting has dropped steadily since 1994. In contrast, guided hunting in the Cordova Ranger District has risen sharply over the past 5 years. Overall, hunting on the forest with special use permit guides has increased by about 20 percent during this time.[24]

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[22] A survey in the Seward Ranger District in 1992 and 1993 counting users at trailheads noted that no bicyclists signed the trail register. Bicycle shares are estimated based on head counts at trailheads.

[23] Visitor center data are updated with visitor counts.

[24] Hunting and fishing data are updated annually based on hunting and fishing licenses sold by the Alaska Department of Fish and Game.

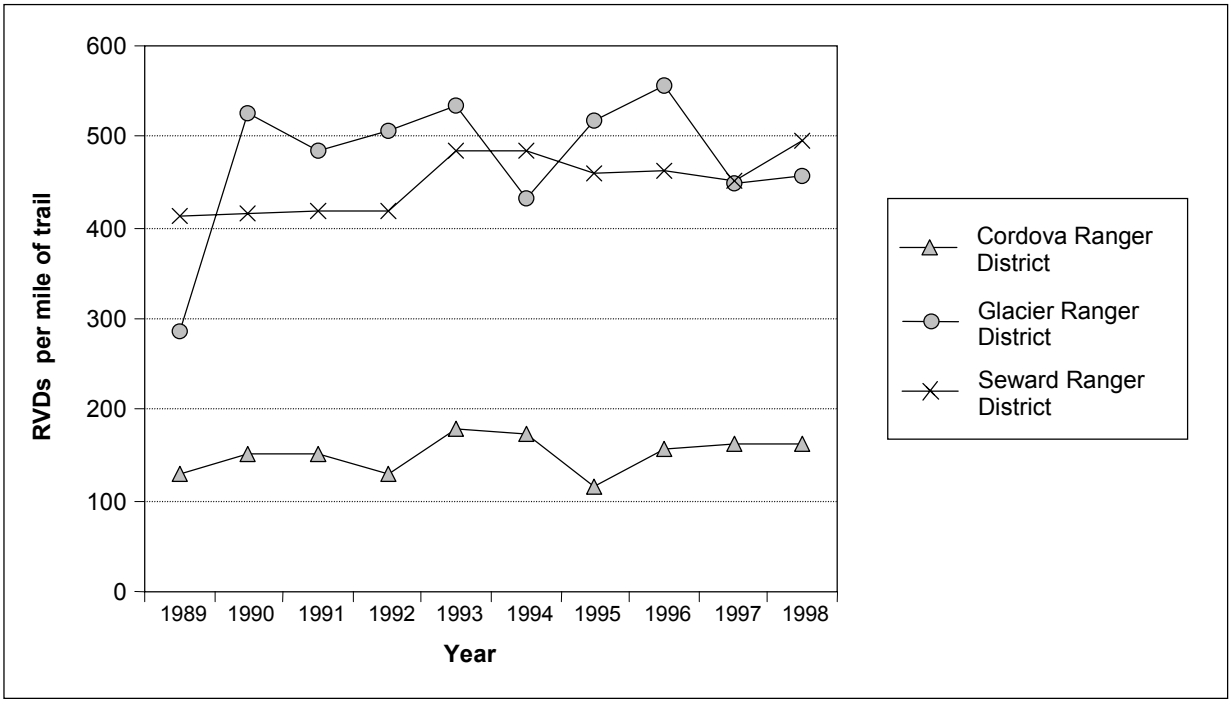

Figure 26—Capacity utilization rates for trails. RVD = recreation visitor day.

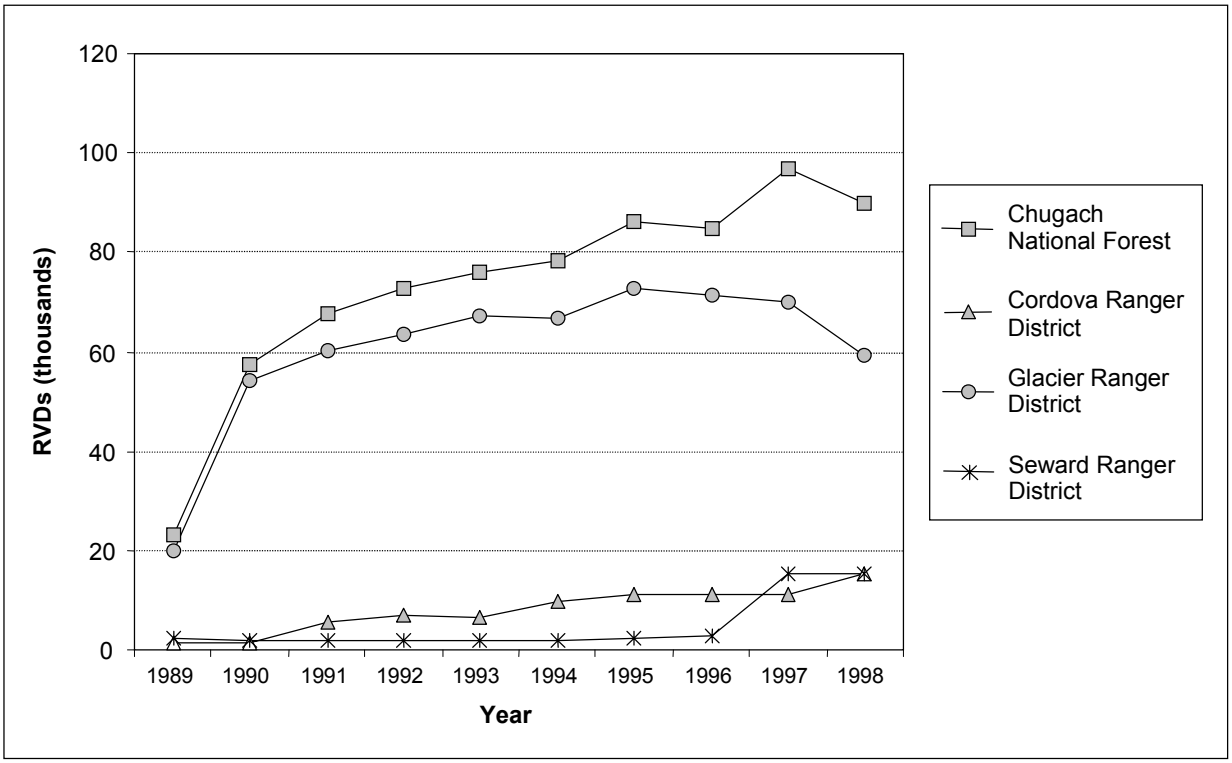

Figure 27—Use of visitor centers, exhibits, and signs (USDA Forest Service 1999b). RVD = recreation visitor day.

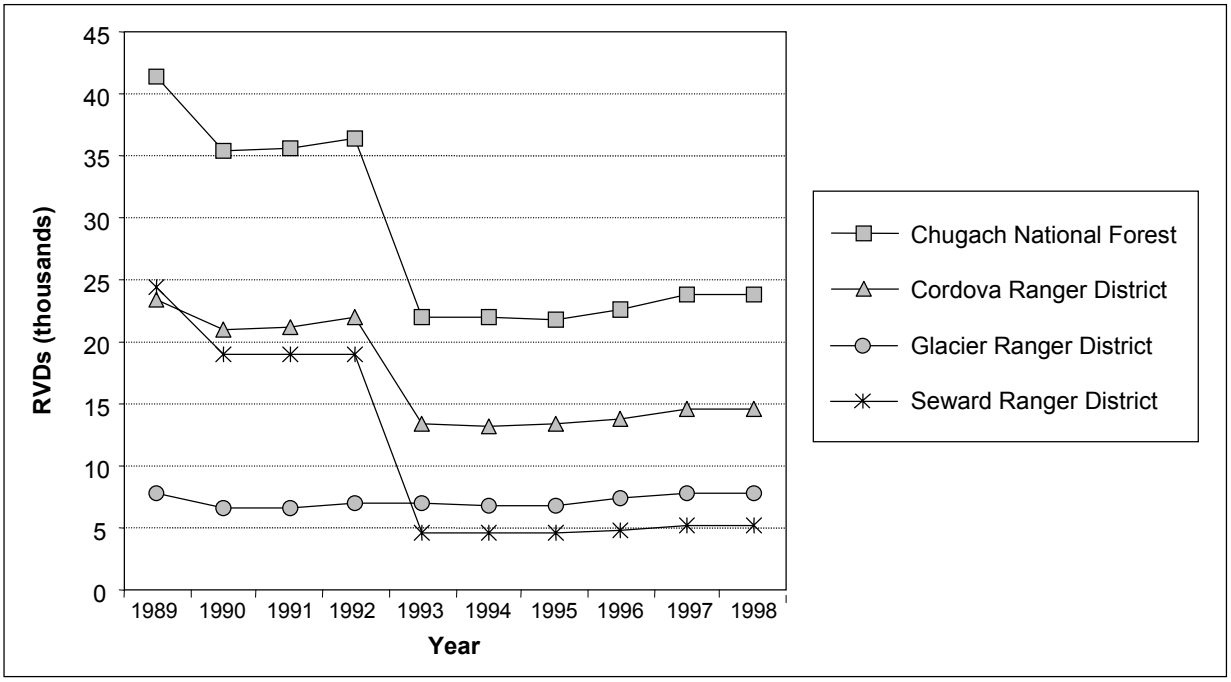

Figure 28—Hunting activity. RVD = recreation visitor day.

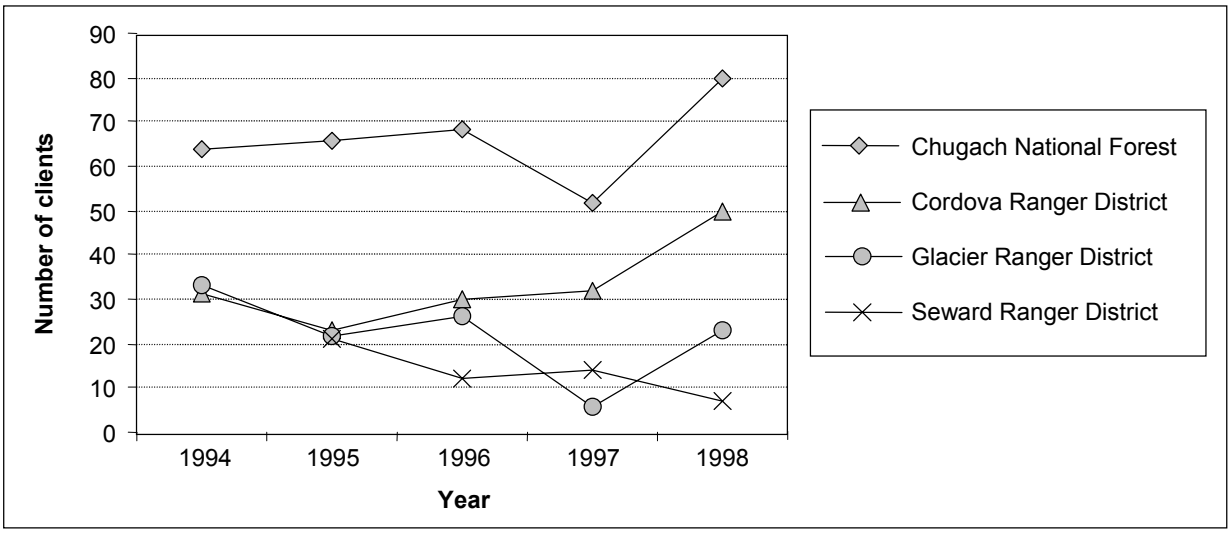

Figure 29—Hunting clients served under special use permits (USDA Forest Service 1999d).

Little is known about the demographic makeup of these hunters, but statewide data on hunting license sales from Alaska Department of Fish and Game show that the number of Alaska resident hunting licenses has declined during the past decade, whereas the number of nonresident licenses has risen from 10,000 in 1989 to nearly 14,000 in 1998. The nonresident share of all licenses increased from 12 to 17 percent during this period.

Figure 30 shows the number of animals killed by recreational hunters on the forest from 1994 to 1998.[25] The data show low numbers of caribou and sheep taken and little change over the 5 years. The numbers of moose and goats killed have dropped by half during the period.

[25] Bears killed were also part of the data set, but the number of reported kills was zero.

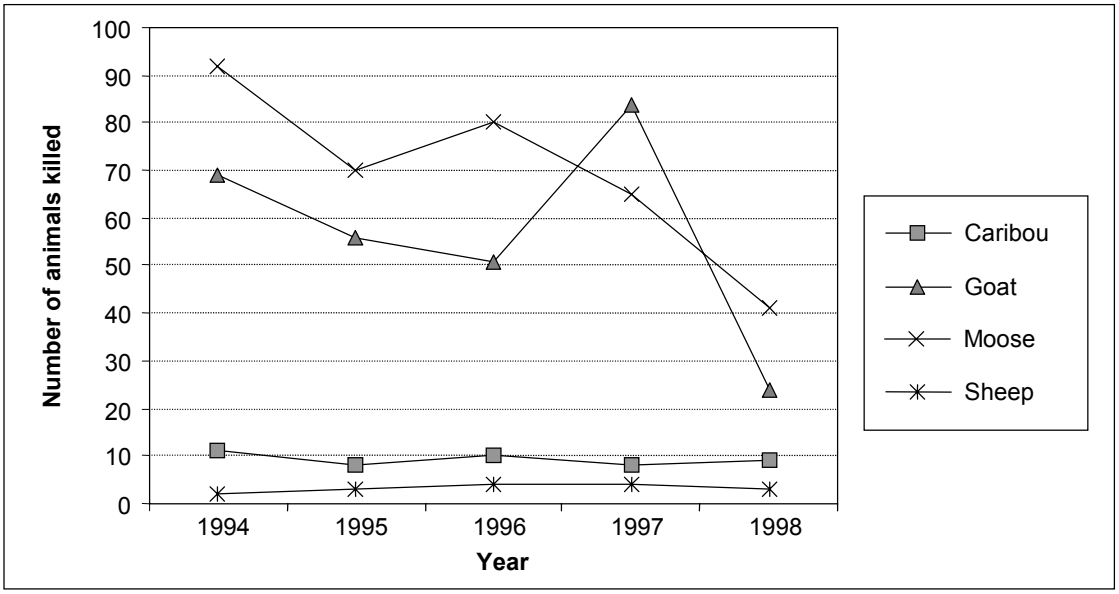

Figure 30—Animals taken by recreational hunters on the Chugach National Forest (Alaska Department of Fish and Game 1999).

These hunting success data, which are for all parties, cannot be directly compared to the hunting effort data shown in figure 29, which are for guided parties under permit. Nonetheless, the combination of the increased [guided] hunting effort and reduced [overall] hunting harvests, together with the statewide increase in nonresident hunting effort, indicates that hunting activity on the forest may be shifting away from independent residents seeking moose for food and toward guided nonresidents seeking other species for sport.

Fishing—The RIM fishing RVDs presented in figure 31 are based on statewide fishing license sales reported by the Alaska Department of Fish and Game. The dip in Seward Ranger District fishing RVDs is an artifact of a change in duration factors or allocation procedures. Later in this paper we present data on actual angler effort from the Alaska Department of Fish and Game sport-fish survey. These data are location-specific and contain actual reported effort levels.

Special use permit fishing—The special use permit data shown in figure 32 are for guided fishing and are only available for the Seward Ranger District. They show significant but flat (or even declining) activity levels from 1995 to 1998.

Figure 33 shows the Alaska Department of Fish and Game statewide fishing license data that drives the changes in reported RIM numbers. The data show that during the past decade, the number of nonresident fishing licenses grew steadily at 5.2 percent per year, whereas the number of resident licenses dropped slightly.[26]

Gathering forest products—Forest products include such things as berries, moss, shells, and medicinal plants. Recreation information management data (fig. 34) show a large increase in gathering of forest products in the Glacier Ranger District beginning in 1995. Presumably this is due to the new information on participation rates provided by the 1995 Chugach National Forest recreation survey.[27]

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[26] The number of resident and nonresident fishing licenses is not indicative of fishing effort by each group. That is, a resident buys a license and may fish many times, whereas most of the nonresident licenses are for a single day or limited period.

[27] There have been no new direct data on participation rates collected since the 1995 survey. The change in activity level from 1995 to 1996 is based on observed growth in other activities.

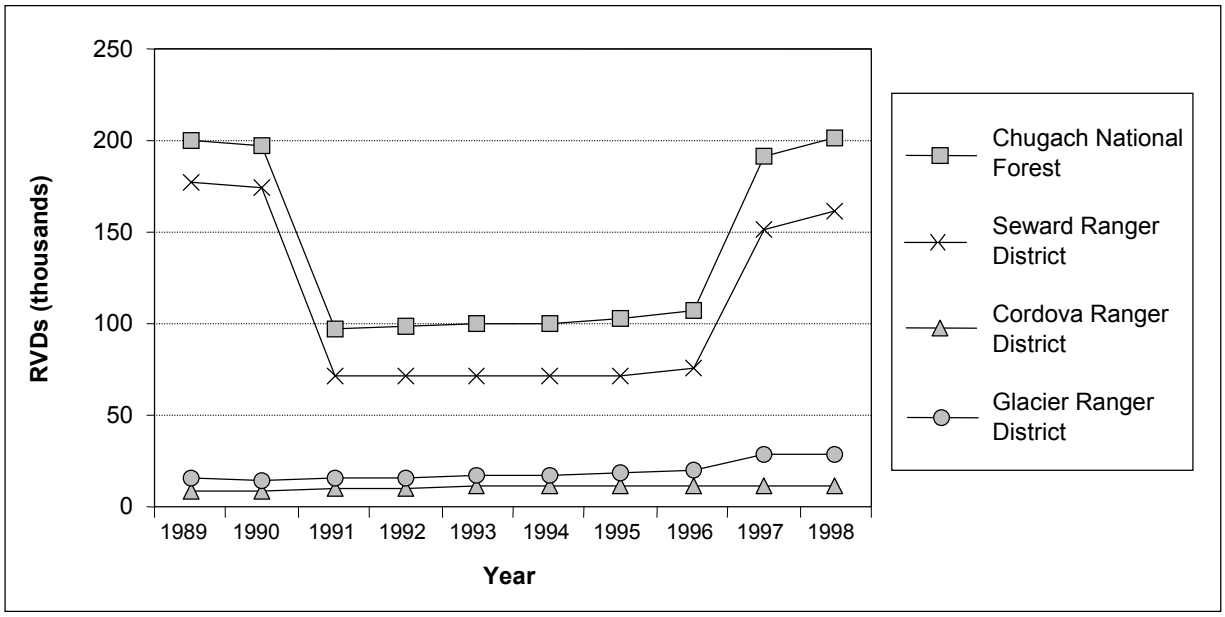

Figure 31—Fishing activity from recreation information management data (USDA Forest Service 1999b). RVD = recreation visitor day.

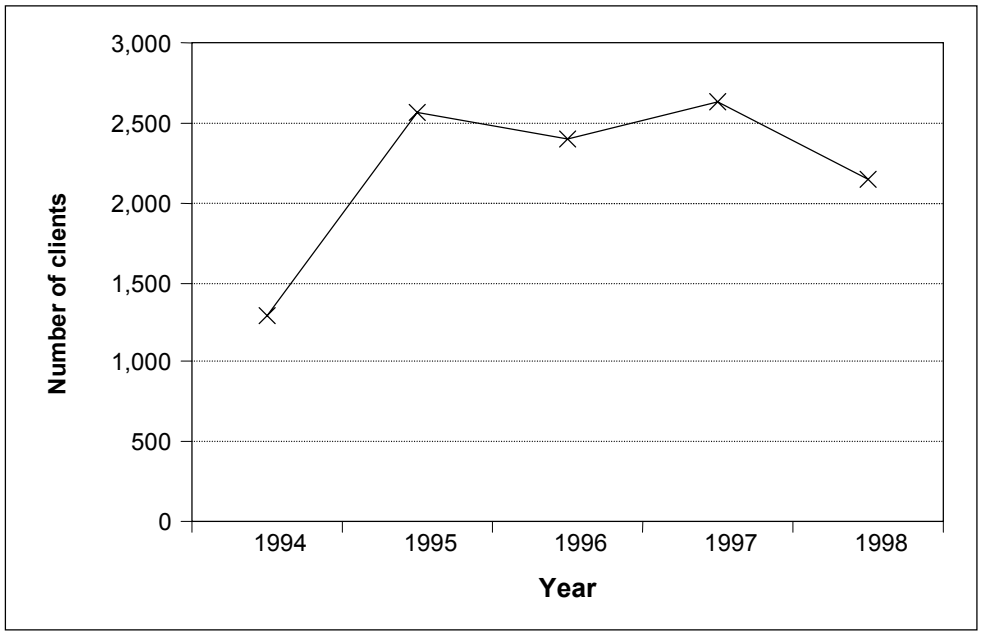

Figure 32—Special use permit fishing (USDA Forest Service 1999d). Note: all data are from Seward Ranger District.

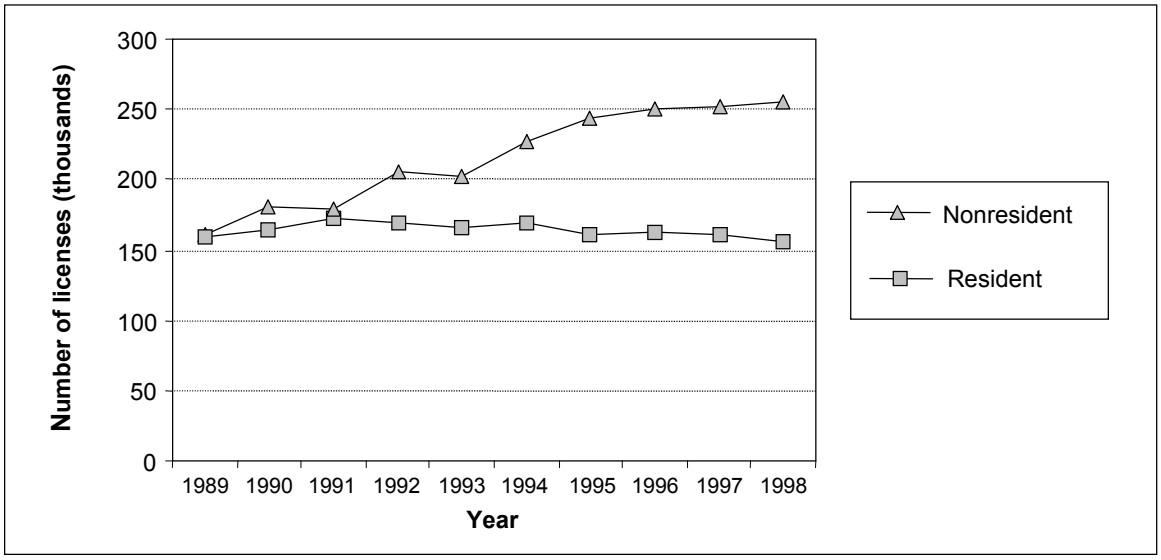

Figure 33—Statewide trend in fishing license sales. Chugach National Forest calculations based on data from Alaska Department of Fish and Game (1989–98).

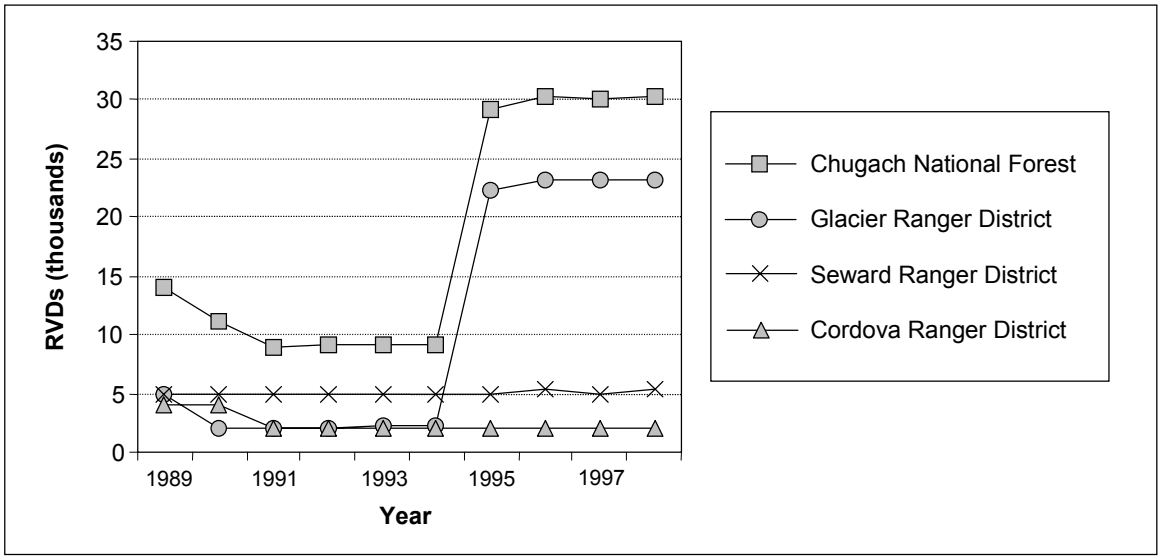

Figure 34—Gathering forest products (USDA Forest Service 1999b).

Helicopters and fixed-wing aircraft[28]— Relatively few RVDs are generated by these activities, which must include a landing on the forest property to qualify for inclusion in the RIM and Infra data.[29] The sharp drop in reported activity in 1997 is due to a change in estimation methods (fig. 35).

The RIM system does not produce separate totals for fixed-wing and helicopter use on the Chugach National Forest. Special use permits are only needed for commercial aircraft landings with an outfitter-guide. Air taxis, private pilots, and aircraft hired to drop off and pick up people do not need permits. The permit data cannot be used to assess unguided activities or strictly airborne

[28] The original source and baseline year for these data are uncertain.

[29] Information on motorized aircraft is updated by using information from one permittee.

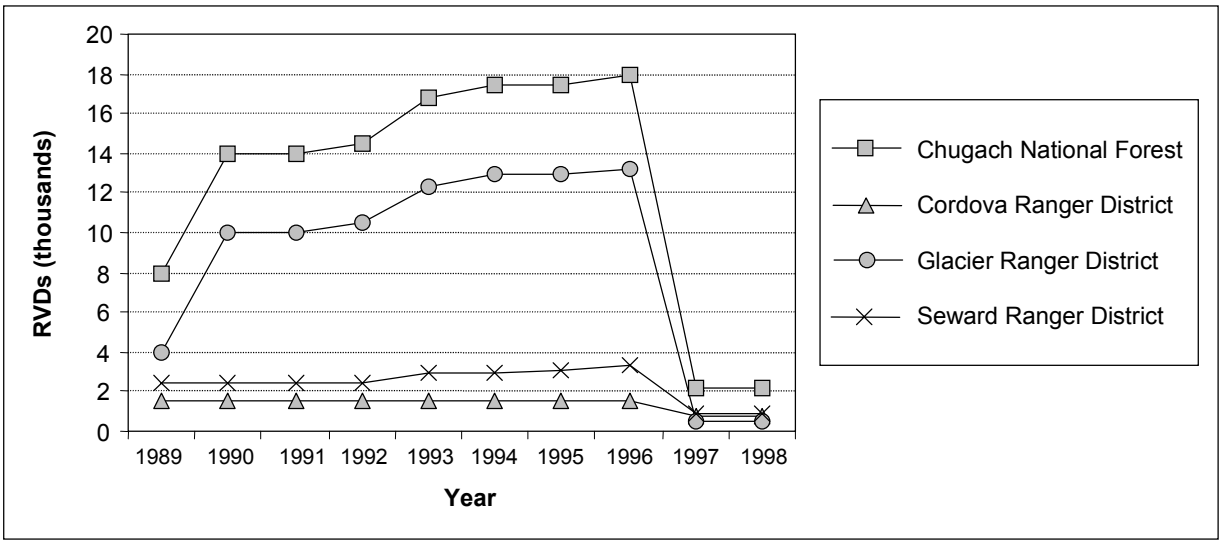

Figure 35—Aircraft travel. RVD = recreation visitor day.

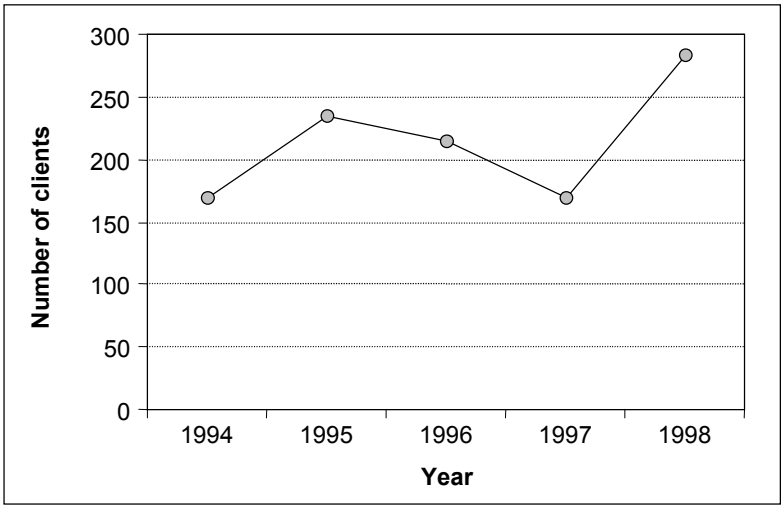

Figure 36—Fixed-wing glacier landings in the Glacier Ranger District under special use permit (USDA Forest Service 1999d).

activities such as "flight-seeing." Permit data indicate that fixed-wing glacier landings increased by almost 70 percent between 1994 and 1998 (fig. 36). All such operations occur in the Glacier Ranger District.

Helicopters— The number of helicopter skiing clients, as reported in the permit use data, rose dramatically—from 290 in 1996 to 419 in 1997 (see footnote 2). No use report was on file for 1998. As part of a 1999 environmental assessment, the Forest Service reported a total of 542 heliskiing client days in 1999 (USDA Forest Service 1999a). Both the environmental assessment and the associated administrative appeals filed in relation to recent heliskiing permit requests suggest that there appear to be growing use conflicts between heliskiers and back-country skiers. The proposed action in this environmental assessment would have limited the number of client days to 800, at least during the 2000 ski season.

Our review of the permits database indicates little summer helicopter landing activity through 1998. Fewer than 100 clients landed on the Eagle Glacier. Of course there is no Forest Service data on helicopter flight-seeing activity that does not involve landings. Our interviews with helicopter operators indicated that Anchorage is not currently viable as a heli-hiking or landing-oriented flight-seeing base because visitors in Anchorage do not consider destinations such as the Chugach National Forest worth the money for this activity. Heli-hiking, however, was reported to be "exploding" on the south side of Denali National Park, having tripled between 1997 and 1999.

Water-based activities—

Floating and rafting—Recreation information management data are collected for "other watercraft." These data show similar levels of RVDs in the Seward and Cordova Ranger Districts and much higher and faster rising levels in the Glacier Ranger District. For recent periods, however, the RIM data are tied directly to changes in special permit use,[30] so it is more revealing to simply look directly at the special use permits data.

Figure 37 shows that special use permit whitewater rafting is growing on the Seward Ranger district, home of the challenging Sixmile Creek whitewater route. Client days on Sixmile Creek have grown at an average rate of 40 percent per year from 1994 to 1998, although the data appear to level off in 1998. In contrast, rafting on the more placid Kenai River is stable, although it might be capacity-constrained.

Kayaking and canoeing—The RIM system groups kayaking and canoeing. The data indicated there was an adjustment made in 1993 (fig. 38). The RIM and Infra data show a further decline of kayaking and canoeing RVDs in 1997. The special use permit data for guided kayaking, however, present different information than the RIM and Infra numbers (fig. 39). The number of guided kayakers is growing rapidly. Most of the kayak activity is in the special use permit areas of western Prince William Sound. It is possible to reconcile these two trends by noting that conceptually, the RIM and Infra systems do not count sea kayakers while they are on the water; instead, these systems count them as campers or cabin users or hikers, depending on how they use forest land. Permittees, however, generally specify sea kayaking as a principal business activity.

The data shown here for the Glacier Ranger District are probably not complete in that they may not reflect the activities of some larger entities that provide several different activities under the same permit.Comprehensive data on sea kayaking activities for western Prince William Sound are presented later in this report.

Visitor Attitudes and Satisfaction

Recreational visitors (both Alaska residents and nonresidents) to the Chugach National Forest were surveyed in 1992 and 1995. Respondents were asked what they consider essential for a high-quality visit, whether they were satisfied with services, and what conditions might diminish the scenic quality of the forest. Respondents in 1992 ranked quality of scenery as most important and cleanliness of restrooms as second in importance. Ninety-seven percent of Alaska residents and 98 percent of nonresidents surveyed in 1995 agreed that maintenance of scenic beauty is essential for a high-quality recreation visit to the Chugach National Forest. Other management actions and visitor services deemed essential by 1995 respondents were:

- Natural resources are well managed and impacts are controlled (about 95 percent of Alaskans and 97 percent of nonresidents).
- Facilities, grounds, and equipment are clean and well maintained (about 94 percent of Alaskans and 95 percent of nonresidents).
- Inappropriate behavior and criminal activity are controlled.

[30] Notes labeled "Methods we used in 1997 for tracking and reporting RVDs on the Chugach National Forest for FY97," provided by Chugach National Forest recreation staff. On file with the authors.

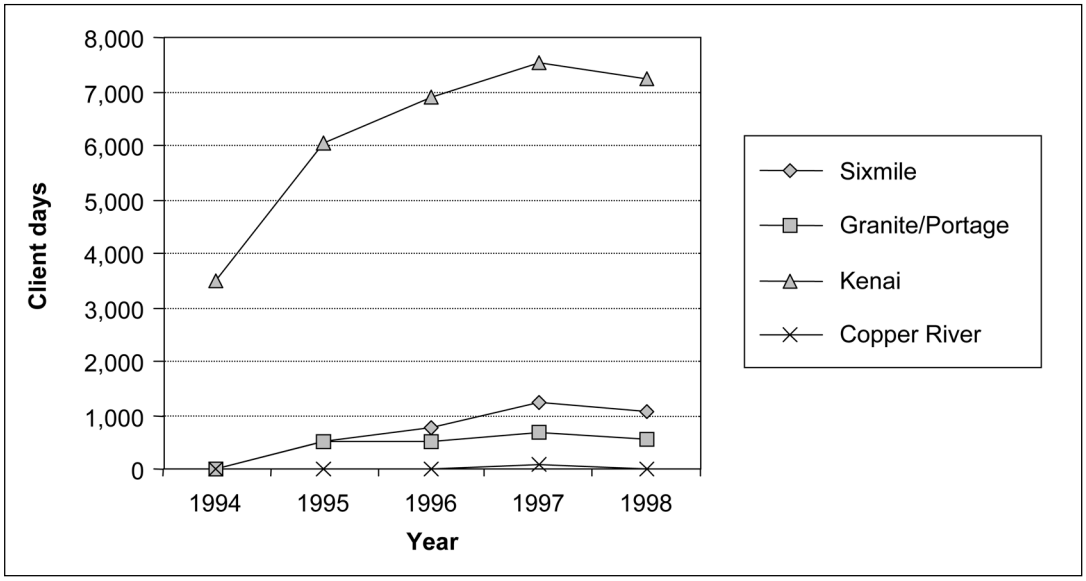

Figure 37—Rafting and floating client days under special use permit (USDA Forest Service 1999d).

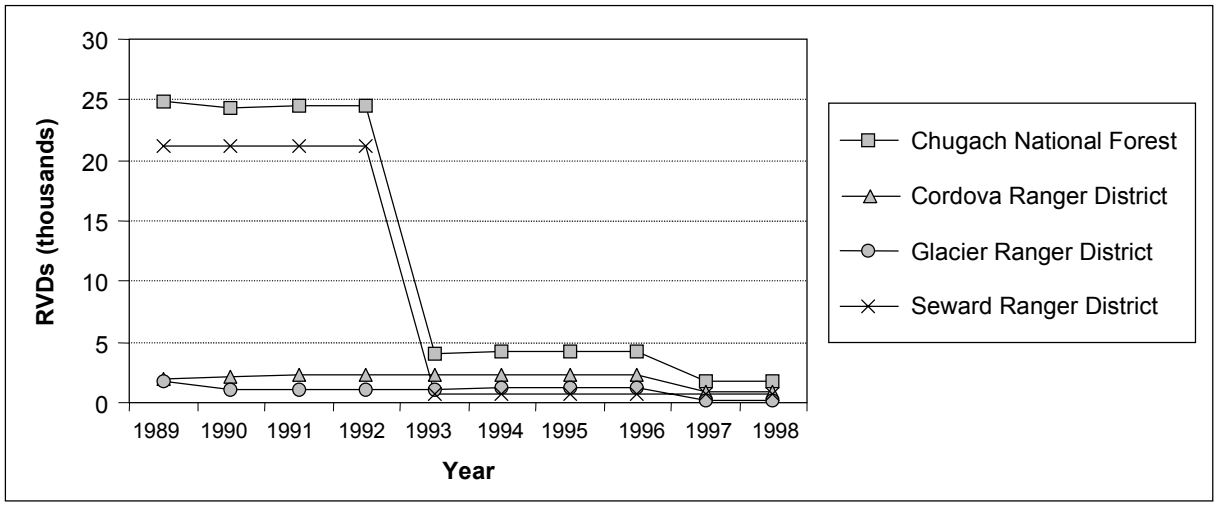

Figure 38—Canoeing and kayaking activity (USDA Forest Service 1999b). RVD = recreation visitor day.

About 97 percent of both Alaskans and nonresidents surveyed in 1995 were satisfied with scenic quality. About 96 percent of both groups said they were satisfied with the way natural resources are managed and impacts are controlled. About 92 percent of residents and 95 percent of nonresidents said they were satisfied with the wildlife viewing opportunities.

From the pool of 1995 respondents, repeat visitors were more likely than first-time visitors to notice conditions that diminish scenic quality. Resident repeat visitors noticed the effects of fire or insect infestation (22 percent), the number or activities of tourists (21 percent), and the appearance of landscapes with human modifications (17 percent). To a lesser degree, nonresidents also noticed the effects of fire or insect infestation (17 percent), the number or activities of tourists

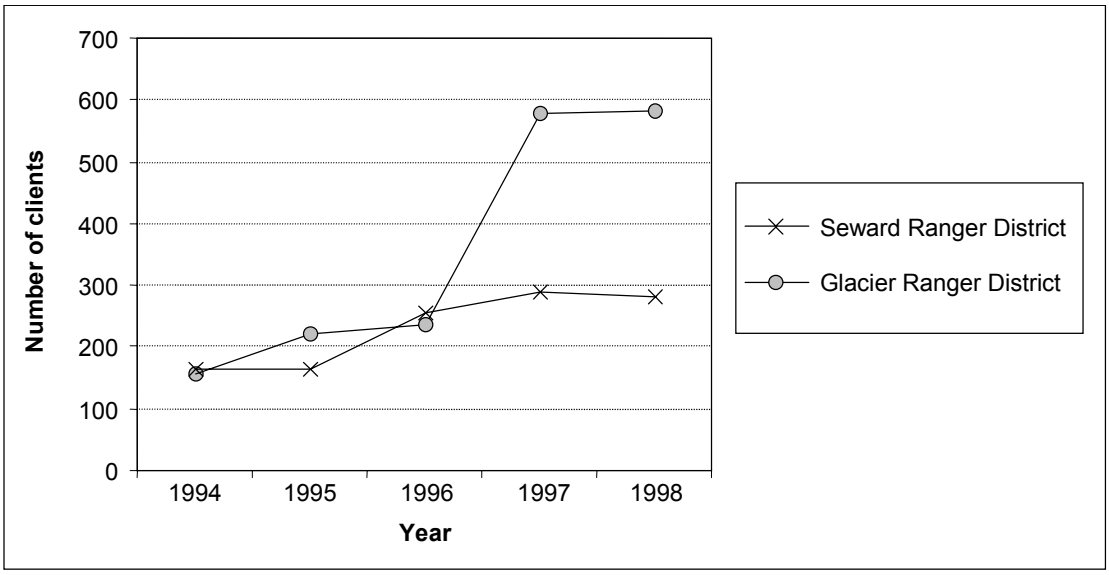

Figure 39—Kayaking under special use permit (USDA Forest Service 1999d).

(2 percent), and the appearance of landscapes with human modifications (19 percent) (USDA Forest Service 1995b).[31]

The 1979 Alaska Public Survey (APS) asked a large random sample of Alaska residents several questions about land use, values, and attitudes toward tourism (Alves 1980). The survey results for the south-central Alaska sample produced 1,258 usable responses. The APS results cannot be used here for a rigorous comparison with the 1992 and 1995 Chugach National Forest recreation surveys, largely because the APS did not differentiate between the use of the Chugach and Tongass National Forests. In addition, the APS did not ask about specific activities on Forest Service lands other than use of facilities and trails, and the raw data from the 1995 Chugach National Forest survey were unavailable for further analysis. In spite of these and other limitations, the APS survey results suggest some interesting comparisons with the more recent survey data from the Forest Service and with data from the Alaska statewide comprehensive outdoor recreation plan (SCORP) (Alaska Department of Natural Resources 1999). Equally interesting are the changes in management concerns as revealed by the types of questions asked.

First, all the surveys show Alaskans have a persistent desire for fishing, camping, and scenery viewing opportunities. The APS revealed these desires on a general basis, without regard for specific geographic locations. Because of the APS design, it is not possible to tell whether people in 1979 felt their desires were being fulfilled.

Second, the problem of crowding and conflicts between competing recreational users and activities seems to be increasingly important. The APS asked about crowding in recreation areas statewide, not just on the national forests. The results showed that in 1979, only about half of the respondents said that they had "already noticed" "more recreationists" in their self-reported "favorite place." More than 95 percent of people using facilities on the two national forests reported that there were no conflicts with any other activities. The most frequently listed conflicts were between recreational use and logging or wildlife.

[31] This document provides tabulations rather than raw data. Consequently, we do not have actual counts and cannot determine whether differences between residents and nonresidents are statistically significant. For the 1992 survey, we do not have the questionnaire.

By 1997, however, a summary of findings from the SCORP surveys noted that "Since the last survey in 1992, the number of people who are dissatisfied with their park experience because of crowding is significantly up. Alaskans want more motorized and nonmotorized trails" (Alaska Department of Natural Resources 1999). Concern over crowding and conflicts between competing recreational uses also are mentioned in much of the data reviewed for this study.

This comparison shows that recreation has become more motorized since 1979. Helicopter tours and heliskiing were not mentioned in the 1979 APS. The APS results showed that more people went tent camping than camping with a recreational vehicle (RV). "Snow machine use" was not explicitly listed as a response category in the APS. It was included in "winter off-road travel" or more generally in "off-road travel." And conflicts between motorized and nonmotorized recreation activities were mentioned by none of the 1,258 APS respondents in the south-central Alaska sample.

In summary, this limited comparison of admittedly dissimilar surveys suggests that the underlying preferences of Alaskans for activities and scenic quality have not changed. What has changed is the number of people and their use of motorized technology. As a result, conflicts between specific recreational activities appear to have become more important than conflicts between recreation and other economic uses of forest lands.

The Western Prince William Sound

For the past 12 years (1987 to 1998), data have been collected on back-country use patterns in western Prince William Sound.[32] All known sea kayak guides, outfitters, charter boats, lodges, and rental businesses operating in western Prince William Sound were surveyed about their detailed travel patterns. Public use cabin occupancy data were obtained from the Forest Service for the six cabins in the study area. With this information, a detailed database was compiled of use on specific beaches over time. This database is equivalent to a census of all known kayak-related travel using charter boats for pickup and dropoff or using organized guide, outfitter, and instructor services.

As part of the same research, a one-time random sample survey was taken of all kayak activity—including independent, nonguided, and nonchartered travel—by measuring disembarking passengers at the Whittier end of the Alaska Railroad shuttle during summer 1998. This made it possible to estimate a multiplier to apply to the panel data on guided and chartered use. Using the multiplier, we can estimate total back-country overnight use of the western Prince William Sound.

The following discussion is based on our analysis of the raw data as well as that of Twardock and Monz (2000). The use covered by these data is measured in terms of user nights. We have made no attempt to normalize user nights to conform to a particular number of hours or to convert them into the RVD scales used by the Forest Service to measure other activities. Also, because of the inherent complexity of travel patterns and the lack of diary-based data, it is impossible to avoid some double-counting and undercounting of visitor nights. It is best, therefore, to focus on changes over time and the distribution of activity across beaches rather than absolute levels.

Total Measured Use

Total measured use increased at an annual rate of 6.1 percent; it grew from 6,575 visitor days in 1987 to about 12,626 visitor days per season in 1998. This total, however, includes the dramatic growth of nights in lodges that began in 1996.[33] Excluding these visitor nights, the adjusted number of overnights in 1998 drops to 11,121, and the annual growth rate is reduced to 5 percent.

Table 7 shows that the number of chartered independent travelers increased most dramatically, growing more than tenfold during the past decade.

[32] Data collected by Paul Twardock, professor of outdoor studies, Alaska Pacific University, 4101 University Drive, Anchorage, AK 99508.

[33] Much of this use is on Growler Island, on private land.

Table 7—Back-country overnights in western Prince William Sound

Year	Guided	Chartered	Cabin	Lodge	Total	Total without lodge
1987	3,874	222	2,479	—	6,575	6,575
1988	3,521	360	2,173	—	6,053	6,053
1989	1,915	465	2,104	—	4,484	4,484
1990	3,486	875	2,233	—	6,593	6,593
1991	4,505	1,037	2,579	—	8,121	8,121
1992	5,037	954	2,504	—	8,494	8,494
1993	3,196	1,100	2,932	—	7,227	7,227
1994	3,227	1,740	2,681	—	7,648	7,648
1995	3,511	1,767	3,078	—	8,356	8,356
1996	2,747	1,771	3,403	400	8,321	7,921
1997	4,497	2,660	1,835	1,200	10,192	8,992
1998	6,097	2,874	2,150	1,505	12,626	11,121
Total	45,614	15,824	30,151	3,105	94,693	91,588
Average annual growth, 1987–98:						
			Percent			
	4.2	26.2	-1.3	—	6.1	4.9

Guided use (including educational courses) has increased by about 50 percent, whereas Forest Service cabin use has remained flat, consistent with capacity constraints (fig. 40).

Geography of Activity Patterns

The growth in charter (water taxi) use could indicate that people are attempting to get away from familiar or crowded areas by substituting charter boat time for paddling time. We tested this hypothesis by comparing the 1987 pattern of use vs. distance from Whittier to the 1998 pattern. We found that, in fact, the use is not radiating out from Whittier. Instead, it seems to be continuing to increase most rapidly in areas that are relatively nearby (fig. 41). Further support for this can be seen by looking at changes in use within specific management areas. Figure 42 shows that some of the greatest growth in use has occurred in Blackstone Bay and Harriman Fiord—two spectacular areas near Whittier.

Responding to the demand, the water taxi industry also has expanded. Barriers to entry are relatively low, and the business is competitive. Recent interviews indicate that a third charter provider is trying to enter the market previously dominated by two long-established water taxis serving kayakers in western Prince William Sound.

Overall, the data on beach usage are consistent with a "life cycle" model of back-country use. Individuals first take up the activity by starting out on day trips or short-duration overnights on beaches near Whittier. With increasing experience, they move on to more distant destinations. This movement creates a pattern of increasing use over time at all distances from Whittier. It is not possible to make a direct conclusion from these data whether people who used to paddle out of or back to Whittier are now substituting a water taxi ride to save time or extend their time near the glaciers. Given the distance to Harriman Fiord (about 129 kilometers round trip), however, the growth in visitation there is consistent with increased use of a water taxi service. Also, most users do not seem to consider highly used areas such as Harriman Fiord or Blackstone Bay as saturated. As figure 43 shows, the growth in use of these areas does not seem to be leveling off. This does not mean, however, that some people are not choosing to go elsewhere because of perceived crowding.

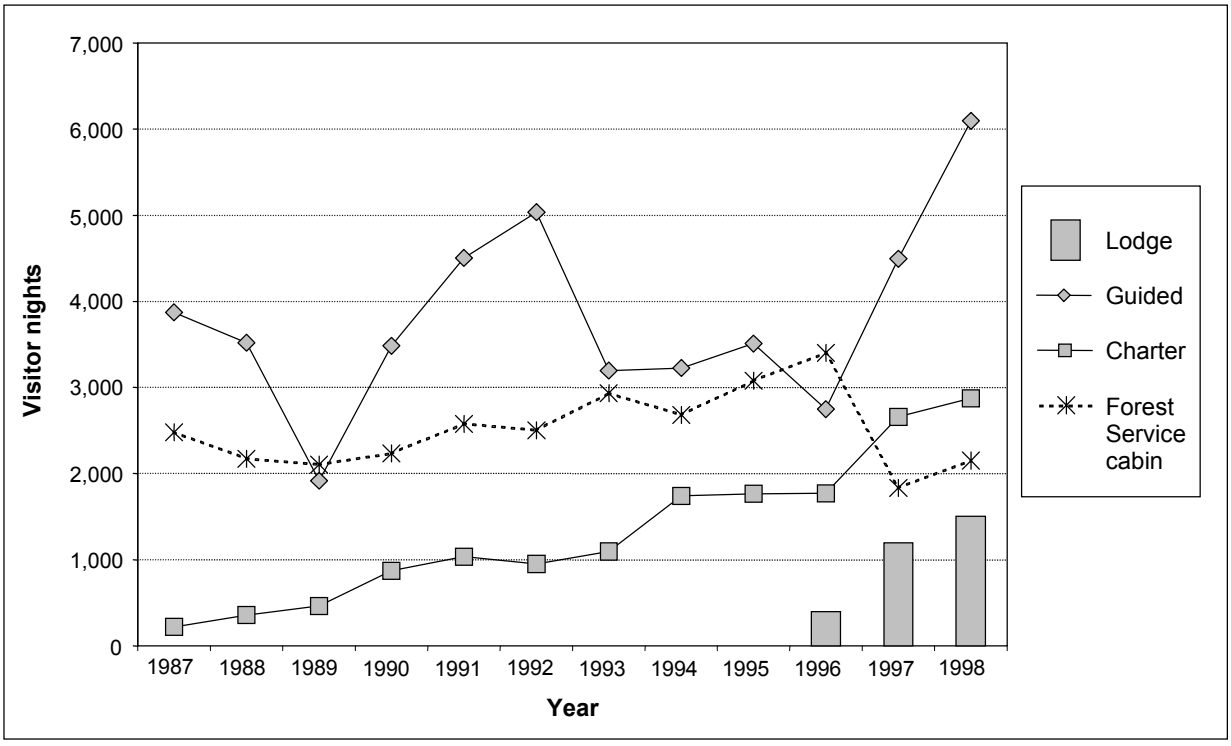

Figure 40—Back-country use trends in Prince William Sound.

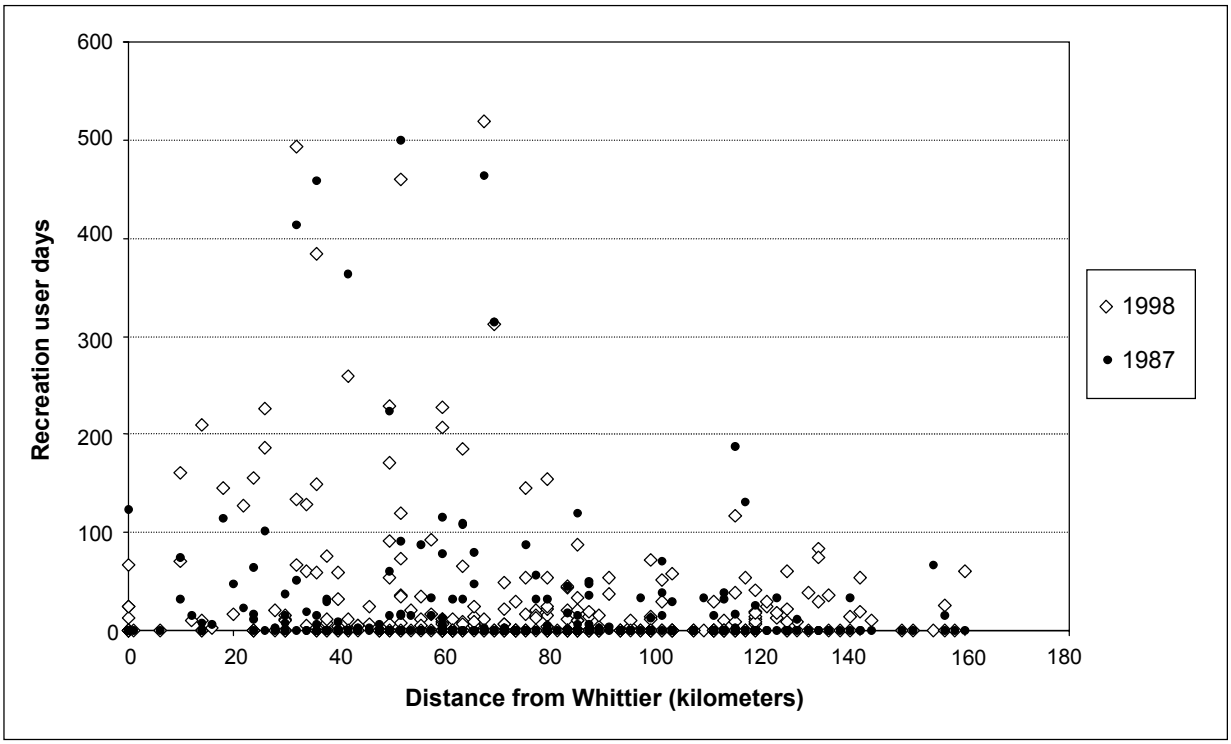

Figure 41—Back-country overnights vs. distance from Whittier, 1987 and 1998.

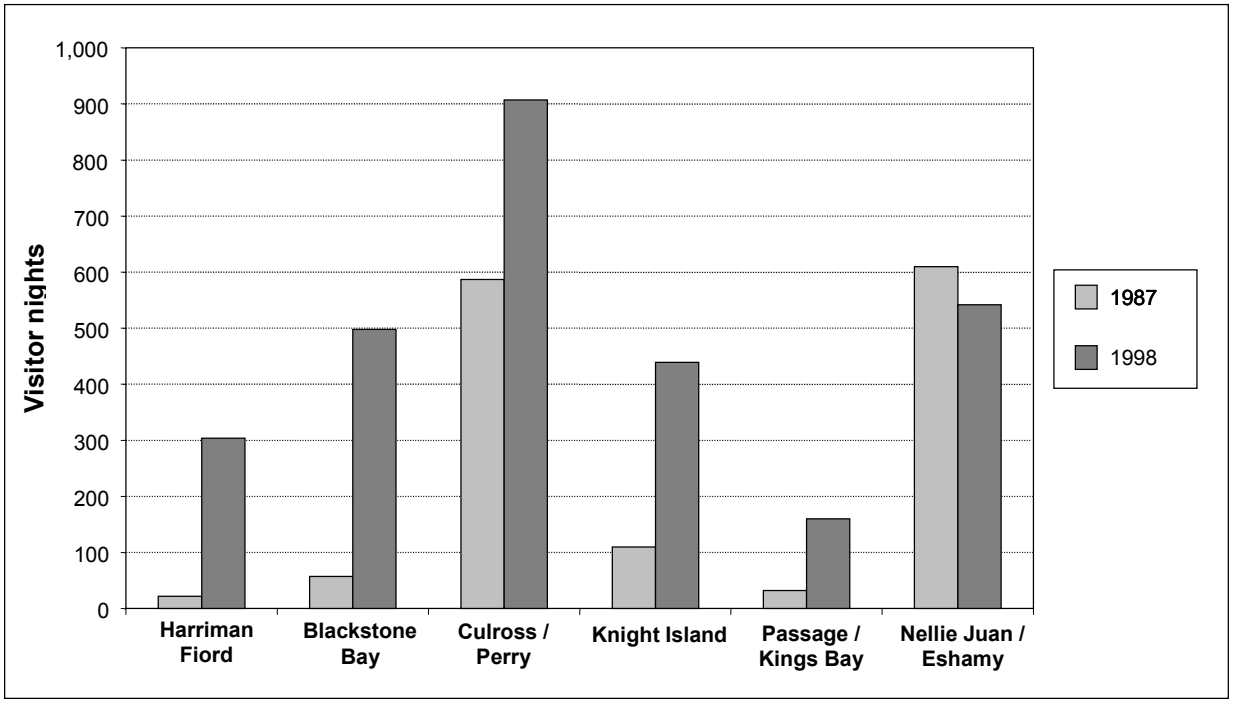

Figure 42—Use in selected management areas.

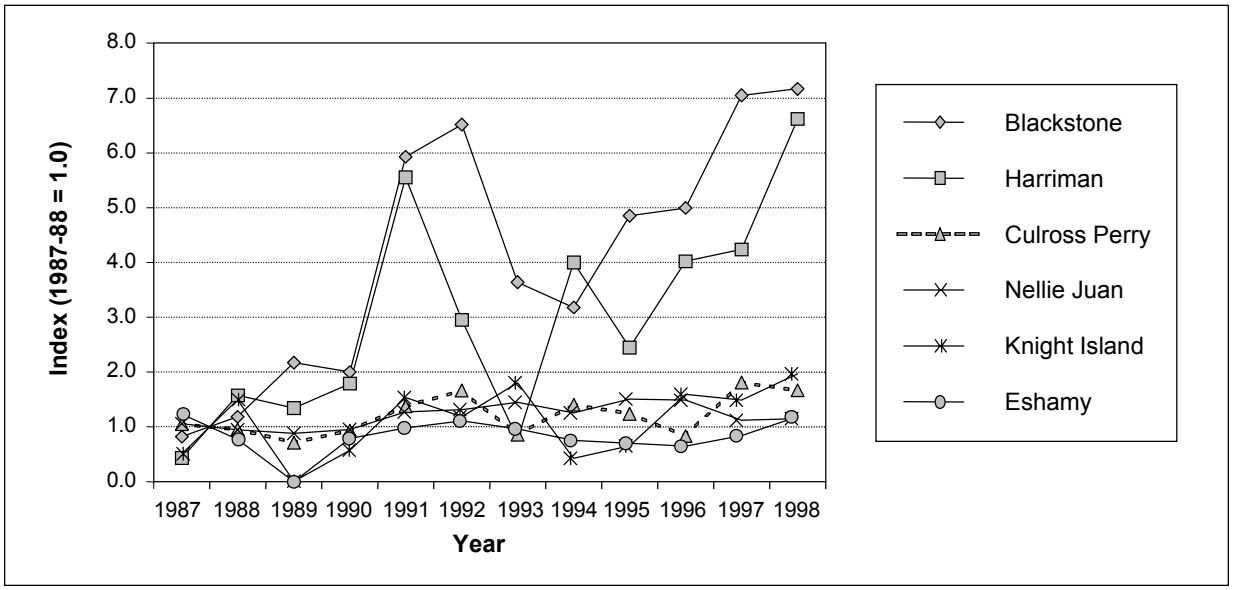

Figure 43—Growth in back-country use in selected management areas.

End of Part B. Click here for Part C.