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National Visitor Use Monitoring Implementation in Alaska

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Abstract

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The USDA Forest Service implemented the National Visitor Use Monitoring (NVUM) program across the entire National Forest System (NFS) in calendar year 2000. The primary objective of the NVUM program is to develop reliable estimates of recreation use on NFS lands via a nationally consistent, statistically valid sampling approach. Secondary objectives of NVUM are to characterize recreation visits, collect data in support of regional economic analyses, and gauge national forest visitor satisfaction. We document and review the round 1 NVUM implementation in the USDA Forest Service Alaska Region (R-10) with examination of the R-10 prework, sample day implementation, survey completion rates, sampling at cabins, boat docks, and air carriers; and the NVUM expansion weights assigned to survey cases. Several opportunities to improve the implementation of the standard NVUM protocols in R-10 are identified.

Keywords: National Visitor Use Monitoring, Region 10, recreation visitor sampling.

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Introduction

National Visitor Use Monitoring (NVUM) program sampling was begun on U.S. Department of Agriculture, Forest Service national forests in the Alaska Region (Region 10 or R-10) in calendar year 2000. In the first year, NVUM sampling occurred on two Tongass National Forest (NF) ranger districts and the Admiralty Island National Monument (managed by the Tongass NF). In subsequent years, the Chugach NF and the remaining portions of the Tongass NF were sampled, with the first round of NVUM ending in September 2003 (table 1, fig. 1). Prior to and during NVUM implementation, R-10 personnel questioned whether the NVUM sampling protocols were appropriate for Alaska because of the perceived types and magnitude of recreation in R-10 national forests and challenges to recreation sampling in Alaska (e.g., weather conditions, dispersed recreation settings, etc.). On subsequent release of the recreation visit estimates for the first 2 years of round 1, R-10 personnel questioned the veracity of the recreation use estimates (Reed 2003). Region 10 personnel also expressed concerns about using the NVUM data for characterizing recreation visits for resource planning and management applications. One concern was whether the collected NVUM economic data suitably measured the spending patterns of the unique types of recreation visitors (e.g., cruise ship passengers, fly-in cabin users, visitors on guided hunting and fishing trips) to R-10 national forests.

After round 1 of NVUM was complete, R-10 initiated a research effort to identify modifications to the NVUM sampling protocols that might result in better measurement and characterization of R-10 recreation use. The first step in that research effort was to evaluate and review how the standard NVUM protocols were implemented in R-10 national forests in round 1. The objectives of this paper are to provide documentation of the round 1 NVUM implementation in R-10, provide

Table 1—Year of sampling in National Visitor Use Monitoring round 1, Region 10

Sample year	Sample forest	Ranger districts
Calendar year 2000	Tongass-Chatham	Juneau, ^a Sitka, Admiralty Island
Fiscal year 2001	Chugach	All districts
Fiscal year 2002	Tongass-Ketchikan	Ketchikan-Misty, ^a Thorne Bay, ^a Craig
Fiscal year 2003	Tongass-Stikine	Yakutat, Petersburg, ^a Wrangell, Hoonah ^a

^a Because they were deemed to represent exit points for multiple units, some sites on this ranger district are also included as sites of other Tongass sample forests.

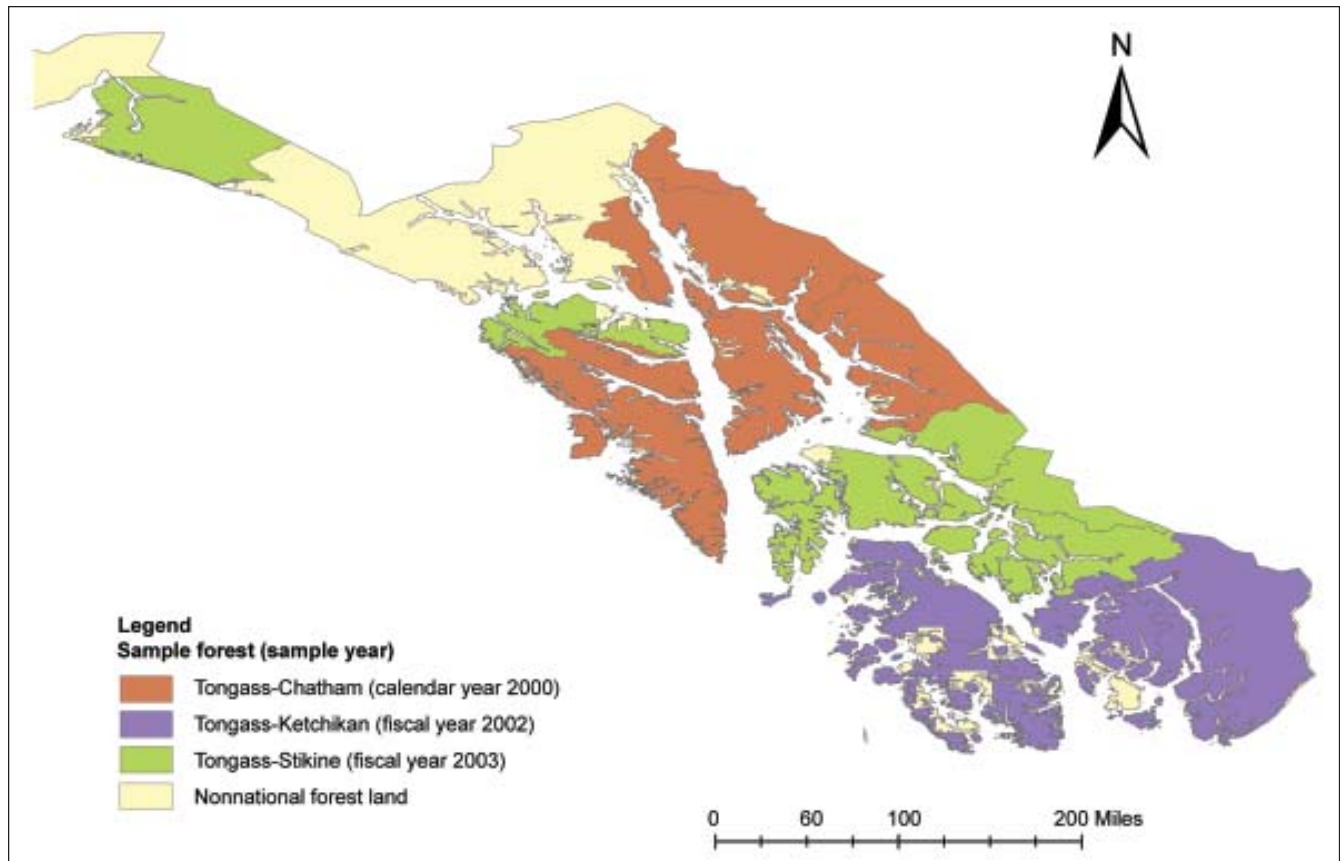


Figure 1—National Visitor Use Monitoring sample years, Tongass National Forest.

a framework for analyses of NVUM implementation in other National Forest System (NFS) regions and national forests, and serve as input to the development of recommendations for modification to subsequent NVUM sampling in R-10.

Region 10 Recreation Setting

The Chugach NF, in south-central Alaska, and the Tongass NF, in southeast Alaska, are the largest forests in the NFS (figs. 1 and 2). The Tongass NF includes nearly 17 million acres of land and ranges from sea level to more than 10,000 feet in elevation (USDA FS 2005). The Chugach NF comprises 5.6 million acres and extends more than 200 miles from its westernmost to easternmost point (USDA FS 1994). The R-10 national forests have limited road access, with the Tongass NF's road network being more limited than that found on the Chugach NF. The Chugach NF has slightly more than 3,500 miles of shoreline, mostly within Prince William Sound, and the Tongass NF has 17,500 miles of shoreline, much within Alaska's

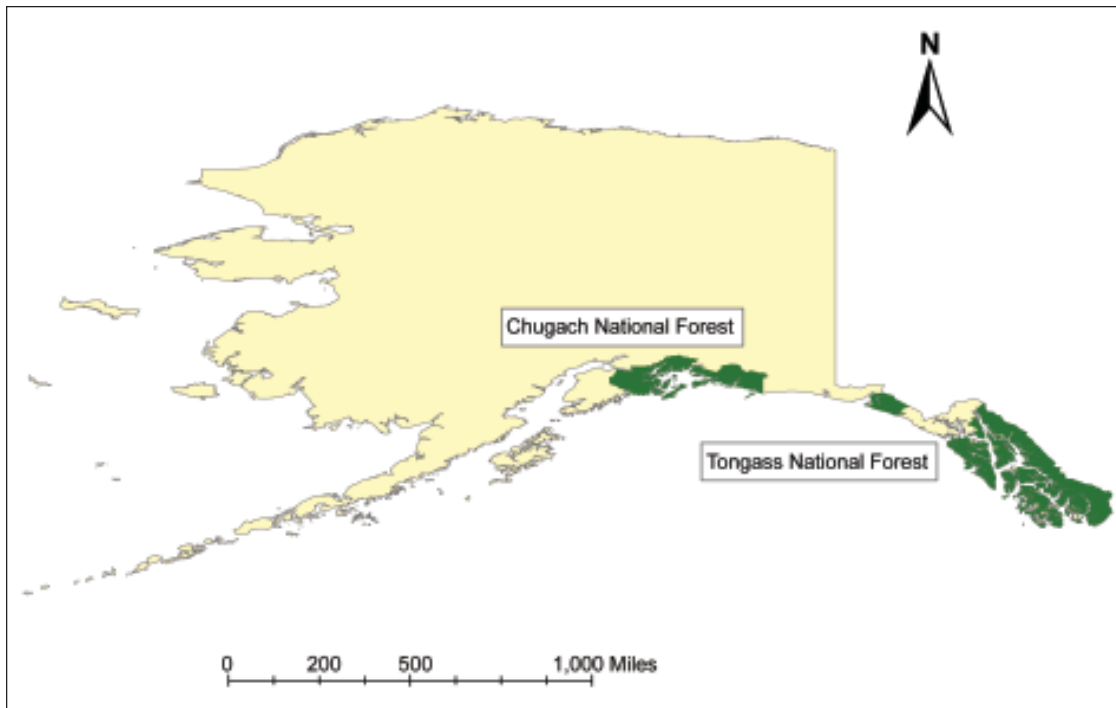


Figure 2—National forests in Alaska.

Inside Passage (USDA FS 1994, 2005). Travel by boat or air is required to reach much of the land area of both forests. Overland travel is made possible in some areas via hiking and backpacking trails, allowing for recreation experiences that range from short walks to multiple-day expeditions. Both forests are extremely popular tourist destinations (Cervený 2005, Colt et al. 2002) and offer visitors unique recreation experiences, such as the opportunities to visit glaciers, view brown bears, and stay overnight in remote recreation cabins accessible only by boat or plane.

National Visitor Use Monitoring Program

The foundations of the NVUM program were initiated in 1996 as a pilot project (Zarnoch et al. 2002) and officially implemented across the entire NFS starting in calendar year 2000 (English et al. 2002). During NVUM round 1 (lasting from January 2000 through September 2003), each national forest in the NFS underwent NVUM sampling. We include a brief description of the NVUM program and sampling approach; a more detailed description is available in English et al. (2002).

Under NVUM, recreation use is quantified in terms of “site visits” and “national forest visits.” A site visit is defined as “one person entering and exiting a

The NVUM sampling approach estimates recreation use by combining traffic counts with information gathered via surveys of national forest visitors.

recreation site or area on a national forest for the purpose of recreation,” and a national forest visit is defined as “one person entering and exiting a national forest for the purpose of recreation” (English et al. 2002). In the course of a single national forest visit, an individual may complete multiple site visits (e.g., an individual recreating at two day-use sites during a single national forest visit or an individual recreating in the undeveloped portion of a national forest and at a campground during a single national forest visit). Based on NVUM round 1, the NFS had 246 million site visits and 205 million national forest visits annually (USDA FS 2004).

National Visitor Use Monitoring Sampling Approach

The NVUM sampling approach estimates recreation use by combining traffic counts with information gathered via surveys of national forest visitors. Traffic counts are completed for a 24-hour period, and visitor questionnaires are administered at selected interview sites on selected days (termed **sample days**) (see “Glossary” for definition of terms in **bold**) within individual national forests. Sample days within a given national forest are selected via a stratified random sample from the population of all possible interview sites and days (termed **site days**) identified for that national forest.

Site days (and their subset sample days) are stratified by the type of recreation area (termed the **site type**) and by the expected level of last-exiting recreation traffic (termed the **use level**). Four site types are recognized in the NVUM sampling protocol: day use developed sites (DUDS), overnight use developed sites (OUDS), general forest area (GFA), and designated wilderness (WILD).¹ A detailed definition of the four site types can be found in English et al. (2002). In the first round of NVUM, each site day was classified into one of four use levels (high, medium, low, and closed) based on the expected level of last-exiting recreation traffic. The levels of last-exiting recreation traffic that define use level categories within specific site types are identified by recreation personnel for each national forest. The combinations of site type and use level (e.g., DUDS-medium) form the **strata** for the NVUM sample.

Visitation to some recreation sites (e.g., campgrounds, wilderness areas, etc.) requires users to pay a fee, obtain a permit, or both. For some of these sites and

¹ A fifth site type, viewing corridors, is also included in the NVUM sampling protocols. As recreation at these locations does not count as national forest recreation and the data collected at viewing corridors were not available, these sites are not included in this review.

areas, the amount of “traffic” at the site can be determined by a proxy such as fee or permit data that is adjusted for noncompliance, and an NVUM traffic count is not required. Under NVUM, these sites are termed **proxy sites**. At proxy sites, proxy counts are combined with data obtained via visitor questionnaires to estimate the recreation use. In NVUM round 1, proxy sites in R-10 included recreation cabins, developed sites with permanent traffic counters installed (e.g., Fish Creek Wildlife Observation Site), and campgrounds that require a fee (e.g., Russian River Campground), among others. Proxy sites are classified into strata based on site type (i.e., DUDS, OUDS, GFA, or WILD) and the type of proxy employed (e.g., a fee envelope, a permit, etc.). Counts of traffic for the 24-hour sample period are not required at proxy sites as the proxy provides a count of traffic at the site.

Estimates of recreation use in the various nonproxy and proxy strata (e.g., DUDS-medium, OUDS-fee envelope, etc.) are constructed from NVUM sampling on a given national forest within the respective strata. The NVUM recreation use estimate for that national forest is then developed by summing the estimates of use (site visits and national forest visits) for all the nonproxy and proxy strata of the forest. Regional and national estimates are computed, in turn, by aggregating the visitation estimates of forests within a region and all forests in the Nation, respectively. In R-10, the individual **sample forests** of the Tongass were treated separately. The forest-wide recreation use estimate for the Tongass NF was computed by summing the recreation use estimates for the individual Tongass sample forests.

Region 10 Interview Sites and Site Days

Personnel completing the NVUM prework on the sample forests in R-10 identified 621 interview sites. Thirty-seven of these interview sites were designated as “viewing corridors.” Under NVUM, recreation activity at viewing corridors is not considered national forest recreation use because the individuals are not on NFS land, so the remaining 584 sites are considered the population of survey sites for this review. Of these, 214 sites were proxy sites. Although the greatest number of interview sites was established for the Tongass-Chatham sample forest (197), the number of interview sites identified per sample forest was fairly uniform (table 2).

Nearly 40 percent (224) of the interview sites identified in R-10 (excluding viewing corridor sites) were classified as GFA sites (table 2). The Tongass-Chatham sample forest had the greatest number of sites classified as GFA (77), whereas the Tongass-Stikine sample forest had the least (39). The OUDS sites were the next

Table 2—Sites by sample forest and site type^a

Sample forest	DUDS	GFA	OUDS	WILD	Total
Tongass-Stikine	6	39	43	34	122
Tongass-Chatham	10	77	33	77	197
Tongass-Ketchikan	9	54	39	35	137
Chugach	16	54	58	0	128
Total	41	224	173	146	584

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

most common site type (173 sites). The majority of these OUDS sites were overnight cabins located within the GFA. The Tongass sample forests identified 146 WILD sites. No WILD sites were identified on the Chugach NF because the forest has no designated wilderness areas. The number of DUDS sites in R-10 is limited compared to other forests in the NFS system and, accordingly, DUDS sites were the least frequently identified site (41 sites).

Nearly 40,000 site days were classified into the high, moderate, and low use levels (i.e., “open”) for proxy interview sites (table 3). The vast majority of these open site days (32,330) were in the OUDS site type, which includes cabins located in the GFA and campgrounds. In table 3, cabins are associated with the “special use permit” proxy type. Because few of the proxy sites identified in R-10 were DUDS sites, these sites accounted for the fewest open proxy site days. The Tongass-Ketchikan and Chugach sample forests accounted for the greatest number of open proxy site days, 11,209 and 10,590, respectively.

The population of all possible site days for the 370 nonproxy sites in R-10 was slightly more than 135,000 (table 4). Approximately two-thirds of these site days (almost 89,000) were classified into the high, medium, and low use levels (i.e., open). The remaining approximately 46,000 site days were classified into the closed/no last-exiting use level. This ratio of open to closed site days for sample forests in R-10 implies that at least one last-exiting recreationist is expected on 66 percent of all possible nonproxy site days. The Tongass-Chatham sample forest had the greatest percentage of site days classified as open (78 percent), whereas the Tongass-Ketchikan and Chugach sample forests had the lowest (54 and 55 percent, respectively). The Tongass-Chatham sample forest classified 89 percent of site days within the GFA site type as open. More than half of all the open nonproxy site days in R-10 fall within the GFA low strata (47,496 site days) and more than half of

Table 3—Open site days for 214 proxy sites by sample forest, site type, and proxy type

Sample forest and site type ^a	Proxy type							
	Daily use record	Fee envelope	Fee receipts	Permanent traffic counter	Registration forms	Special use permit	Toll booth	Total
Tongass-Stikine:								
DUDS								0
OUDS		92				6,374		6,466
GFA					884			884
WILD					494	1,887		2,381
Total		92			1,378	8,261		9,731
Tongass-Chatham:								
DUDS								0
OUDS		348			7,816			8,164
GFA								0
WILD								0
Total		348			7,816			8,164
Tongass-Ketchikan:								
DUDS			99	122				221
OUDS		562				7,346		7,908
GFA								0
WILD						3,080		3,080
Total		562	99	122		10,426		11,209
Chugach:								
DUDS	101		114				368	583
OUDS	1,773	127			7,717	22	153	9,792
GFA							215	215
WILD								0
Total	1,874	127	114		7,717	22	736	10,590
Region 10:								
DUDS	101		213	122			368	804
OUDS	1,773	1,129			15,533	13,742	153	32,330
GFA					884		215	1,099
WILD					494	4,967		5,461
Total	1,874	1,129	213	122	16,911	18,709	736	39,694

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 4—Site days for 370 nonproxy sites by sample forest, site type, and use level

Sample forest and site type ^a	Use level			Total open	Total closed	Total	Percentage of open site days
	High	Med	Low				
Tongass-Stikine:							Percent
DUDS	170	152	891	1,213	977	2,190	55
OUDS	0	0	555	555	175	730	76
GFA	279	2,829	5,118	8,226	4,549	12,775	64
WILD	126	682	1,899	2,707	2,403	5,110	53
Total	575	3,663	8,463	12,701	8,104	20,805	61
Tongass-Chatham:							
DUDS	275	946	1,040	2,261	1,399	3,660	62
OUDS	0	0	127	127	239	366	35
GFA	238	595	24,174	25,007	3,175	28,182	89
WILD	0	292	19,208	19,500	8,682	28,182	69
Total	513	1,833	44,549	46,895	13,495	60,390	78
Tongass-Ketchikan:							
DUDS	47	277	1,263	1,587	968	2,555	62
OUDS	0	0	776	776	319	1,095	71
GFA	0	892	9,668	10,560	9,150	19,710	54
WILD	0	366	2,765	3,131	3,439	6,570	48
Total	47	1,535	14,472	16,054	13,876	29,930	54
Chugach:							
DUDS	107	190	1,767	2,064	2,316	4,380	47
OUDS	0	0	143	143	222	365	39
GFA	824	1,697	8,536	11,057	8,288	19,345	57
WILD	0	0	0	0	0	0	0
Total	931	1,887	10,446	13,264	10,826	24,090	55
Region 10:							
DUDS	599	1,565	4,961	7,125	5,660	12,785	56
OUDS	0	0	1,601	1,601	955	2,556	63
GFA	1,341	6,013	47,496	54,850	25,162	80,012	69
WILD	126	1,340	23,872	25,338	14,524	39,862	64
Total	2,066	8,918	77,930	88,914	46,301	135,215	66

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

these (24,174) were on with the Tongass-Chatham sample forest. In fact, the Tongass-Chatham sample forest accounted for nearly 47,000 of all open site days (52 percent) in R-10. There were slightly more than 13,000 open site days on the Chugach NF, the majority within the GFA low strata (table 4).

Region 10 Sample Days

Sample days (sites and days where NVUM sampling was to occur) were selected via a stratified random sample drawn by national-level NVUM personnel. A total of 631 sample days were chosen to be surveyed in the first round of NVUM sampling in R-10 (table 5). The number of sample days selected for each sample forest ranged from 145 (Tongass-Ketchikan) to 175 (Tongass-Stikine). Differences in the number of sample days selected for a given sample forest reflect the number of strata and the number of proxy locations of the sample forest, the available budget for that year, and the decisions of regional and national-level NVUM personnel. Sample days at proxy sites accounted for 111 of the sample days in R-10 (table 6). The majority of these (66) were selected for OUDS sites, many of which were associated with R-10 dispersed area recreation cabins.

Of the 520 sample days selected for nonproxy sites, nearly half (241) were for GFA sites (table 7). Slightly more than 50 nonproxy sample days were assigned to GFA sites on the Tongass-Ketchikan and Tongass-Stikine sample forests and nearly 75 were assigned to the Tongass-Chatham sample forest. Because the Chugach NF has no designated wilderness, those nonproxy sample days that would have been used in the WILD strata were distributed to the other strata, increasing the number of GFA sample days on the Chugach NF to 62. Because most of the OUDS sites were in the proxy strata, just 39 nonproxy sample days were assigned to OUDS strata—all within the “Low” use level.

A total of 631 sample days were chosen to be surveyed in the first round of NVUM sampling in R-10.

Table 5—Sample days by forest and site type,^a proxy and nonproxy sites

Sample forest	DUDS	OUDS	GFA	WILD	Total
Tongass-Stikine	39	24	58	54	175
Tongass-Chatham	41	20	75	29	165
Tongass-Ketchikan	41	23	51	30	145
Chugach	42	38	66	0	146
Total	163	105	250	113	631

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 6—Region 10 open proxy site days by sample forest, site type, and proxy type

Sample forest and site type ^a	Proxy type							Total
	Daily use record	Fee envelope	Fee receipts	Permanent traffic counter	Registration forms	Special use permit	Toll booth	
Tongass- Stikine:								
DUDS								
OUDS		4				8		12
GFA					5			5
WILD					5	8		13
Total		4			10	16		30
Tongass-Chatham:								
DUDS								
OUDS		4			7			11
GFA								
WILD								
Total		4			7			11
Tongass-Ketchikan:								
DUDS			4	4				8
OUDS		5				8		13
GFA								
WILD						3		3
Total		5	4	4		11		24
Chugach:								
DUDS	4		4				4	12
OUDS	8	4			8	6	4	30
GFA							4	4
WILD								
Total	12	4	4		8	6	12	46
Region 10:								
DUDS	4		8	4			4	20
OUDS	8	17			15	22	4	66
GFA					5		4	9
WILD					5	11		16
Total	12	17	8	4	25	33	12	111

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 7—Region 10 sample days at nonproxy sites by sample forest, site type, and use level

Sample forest and site type ^a	Use level			Total	Percentage of total
	High ^b	Med ^b	Low		
Tongass-Stikine:					Percent
DUDS	14	13	12	39	27
OUDS			12	12	8
GFA	14	25	14	53	37
WILD	13	15	13	41	28
Total	41	53	51	145	100
Tongass-Chatham:					
DUDS	13	19	9	41	27
OUDS			9	9	6
GFA	15	22	38	75	49
WILD		12	17	29	19
Total	28	53	73	154	100
Tongass-Ketchikan:					
DUDS	10	13	10	33	27
OUDS			10	10	8
GFA		25	26	51	42
WILD		13	14	27	22
Total	10	51	60	121	100
Chugach:					
DUDS	10	10	10	30	30
OUDS			8	8	8
GFA	23	23	16	62	62
WILD	n/a	n/a	n/a	n/a	n/a
Total	33	33	34	100	100
Region 10:					
DUDS	47	55	41	143	28
OUDS			39	39	8
GFA	52	95	94	241	46
WILD	13	40	44	97	19
Total	112	190	218	520	100

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

^b Cells that are blank indicate that no site days existed in the stratum.

Missed sample days result in fewer completed surveys and traffic counts, decreasing the data available to characterize and estimate recreation use.

Region 10 Days Surveyed

Although the expectation is that all assigned NVUM sample days will be completed, just 564 (89 percent) of the assigned sample days were actually surveyed in R-10 in round 1 (table 8). Of the 67 sample days missed, 14 were at proxy sites and 53 at nonproxy sites (table 9). The Tongass-Chatham sample forest accounted for the greatest number of missed sample days (34) while the Tongass-Stikine sample forest had the least (4). The number of sample days missed in R-10 declined in the latter years of round 1. Sample days not completed because of weather conditions are not included in these missed sample day counts. When the weather precluded travel to the interview site, the affected sample day was taken as a “zero” traffic day per NVUM protocol. Missed sample days result in fewer completed surveys and traffic counts, decreasing the data available to characterize and estimate recreation use.

Table 8—Days surveyed by sample forest and site type^a

Sample forest	Site type				Total
	DUDS	OUDS	GFA	WILD	
Proxy sites:					
Tongass-Stikine	0	12	5	12	29
Tongass-Chatham	0	11	0	0	11
Tongass-Ketchikan	5	13	0	3	21
Chugach	9	23	4	0	36
Total	14	59	9	15	97
Nonproxy sites:					
Tongass-Stikine	39	12	50	41	142
Tongass-Chatham	37	8	54	21	120
Tongass-Ketchikan	33	10	48	26	117
Chugach	26	7	55	0	88
Total	135	37	207	88	467
Total	149	96	216	103	564

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 9—Missed sample days by sample forest and site type^a

Sample forest	Site type				Total
	DUDS	OUDS	GFA	WILD	
Proxy:					
Tongass-Stikine	0	0	0	1	1
Tongass-Chatham	0	0	0	0	0
Tongass-Ketchikan	3	0	0	0	3
Chugach	3	7	0	n/a	10
Total	6	7	0	1	14
Nonproxy:					
Tongass-Stikine	0	0	3	0	3
Tongass-Chatham	4	1	21	8	34
Tongass-Ketchikan	0	0	3	1	4
Chugach	4	1	7	n/a	12
Total	8	2	34	9	53
Total	14	9	34	10	67

n/a = not applicable.

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

In the available round 1 documentation, it is not possible to determine the reasons why individual assigned sample days were not completed.² Additionally, in aggregate, there is no definitive pattern in the distribution of missed sample days in R-10 by month. However, more days were missed between August and December than during other portions of the year (fig. 3).

The hours actually spent onsite counting traffic and conducting visitor interviews is key to adequate data collection and analysis. According to NVUM protocols, interviewers are to be onsite for 6 hours on each nonproxy sample day. No predefined sample period length is established for proxy sites as the focus at these sites is on conducting interviews and no traffic counts are completed. Of the 520 assigned nonproxy sample days, just 387 were sampled for the entire prescribed 6-hour sample period (table 10). Forty-nine sample days were sampled for less than the prescribed 6-hour period, and the length of time spent onsite was not recorded

² Several of the individuals assigned to complete NVUM surveying in R-10 had retired or moved to other positions and could not be contacted to provide information on why sample days were missed. Those individuals that could be contacted were generally unable to recall the reason individual sample days were missed.

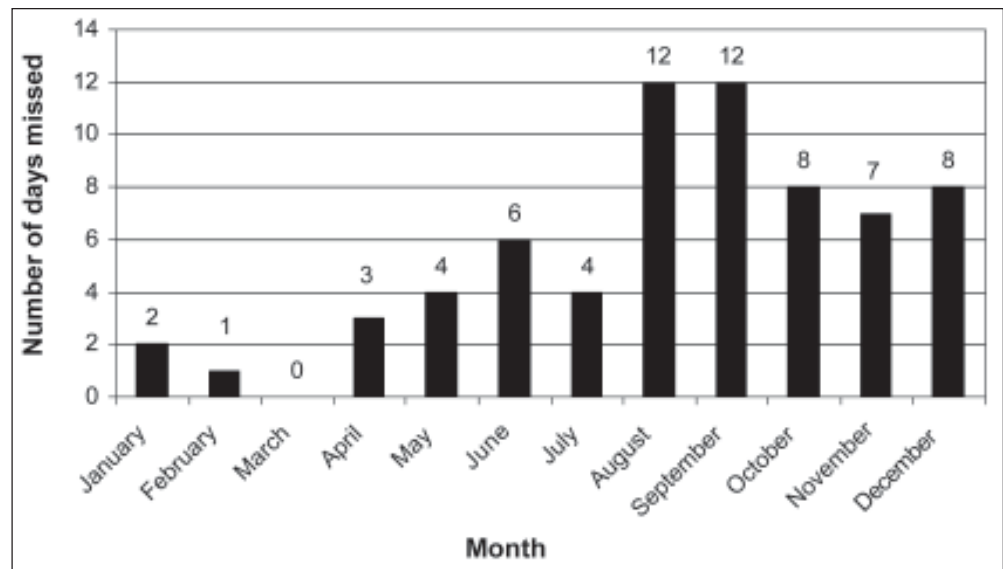


Figure 3—Number of assigned sample days per month in Region 10, round 1.

Table 10—Region 10 daily survey hours at nonproxy sites

Sample forest	6 hr	< 6 hr	Not reported	Missed
Tongass-Stikine:				
Days	133	5	4	3
Percent	92	3	3	2
Tongass-Chatham:				
Days	98	22	0	34
Percent	64	14	0	22
Tongass-Ketchikan:				
Days	76	17	23	4
Percent	63	14	19	3
Chugach:				
Days	80	5	4	12
Percent	79	5	4	12
Total:				
Days	387	49	31	53
Percent	75	9	6	10

for 31 sample days. Again, 53 nonproxy sample days in R-10 in round 1 were completely missed. There were no nonproxy sample days where more than 6 hours was spent onsite. As interviewers are allowed to adjust the prescribed start and stop times on a specific sample day to ensure that sampling is completed during daylight hours and to accommodate travel to the site, short day length and transportation issues should have had little influence on the ability to spend 6 hours onsite. On the shortest days of the year during NVUM round 1, the minimum number of hours between sunrise and sunset in Anchorage, Alaska, was approximately 5 ½ hours (U.S. Naval Observatory 2007). Short daylight periods likely had limited effect on completing sample days as very few sample days were actually assigned during the period of shortest daylight hours.

When assigned sample days were completed, the Chugach and Tongass-Stikine sample forests had the least number of sample days (five each) with less than 6 hours spent onsite (table 10). The other two sample forests in R-10 had a combined 39 nonproxy sample days with less than the prescribed 6-hour period spent onsite. The impacts on the ability to construct a reliable recreation use estimate and to characterize recreation visits from incomplete sample days will likely be greatest on these sample forests, although it is difficult to definitively determine these effects. The hours spent onsite by sample forest and site type are shown in appendix 1. Within strata, the greatest numbers of short sample days were at OUDS sites. This likely occurred because interviewers erroneously left campground sample sites after finding no campers at the site on the sample day.

Region 10 Response Rate and Completed Surveys

Under the NVUM protocols, every individual contacted and agreeing to be interviewed is asked a series of questions to ascertain if they are recreating at the site and leaving for the last time on that day. Those at the recreation site for some non-recreation purpose (e.g., “just passing through,” only using the restroom, etc.) and those not leaving the recreation site that day are ineligible to complete an NVUM survey. In all, 2,845 individuals were contacted during round 1 sampling in R-10. Of those, 2,609 agreed to be interviewed, resulting in a refusal rate of just 8 percent. This refusal rate is based only on those individuals contacted. There are no means via the round 1 data to definitively estimate the number of individuals who saw the onsite survey station and chose not to stop. Of those agreeing to be interviewed, 806 were deemed ineligible or did not complete the survey for some other reason. The total number of surveys completed by last-exiting recreation visitors in R-10 in round 1 was 1,803 (table 11).

Table 11—Number of surveys completed by site type^a and sample forest

Sample forest	DUDS	OUDS	GFA	WILD	Total
Tongass-Stikine	76	29	87	29	221
Tongass-Chatham	331	54	205	26	616
Tongass-Ketchikan	298	28	75	19	420
Chugach	271	56	219	n/a	546
Total	976	167	586	74	1,803

n/a = not applicable.

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

The greatest number of visitor surveys collected was on the Tongass-Chatham sample forest (616) while the least number of visitor surveys collected was on the Tongass-Stikine sample forest (221) (table 11). A total of 546 visitor surveys were obtained on the Chugach NF, and 420 surveys were obtained on the Tongass-Ketchikan sample forest. The average number of completed surveys per survey day within strata ranged from 0.5 (Tongass-Stikine WILD sites) to 8.9 (Tongass-Chatham DUDS sites) (table 12).

The fewest completed surveys by site type were obtained at WILD (74) and OUDS (167) sites (table 11), and the most from DUDS sites (976)—representing 54 percent of all completed surveys. The Tongass-Stikine was the only sample forest where the greatest number of surveys was not collected at DUDS sites. Region-wide, the number of completed surveys per survey day was lowest at WILD sites (0.7) and highest at DUDS sites (6.6) (table 12). The very low number of completed surveys per survey day at WILD sites indicates that those sites established in round 1 were not effective in capturing exiting wilderness recreation users. This may reflect the presence of few wilderness recreation users, wilderness interview sites that were not well located, systematic problems in NVUM data collection in R-10, or some combination.

The NVUM process involves three types of surveys, a “Basic” survey collecting standard visit information, a “Basic-Economics” survey collecting economics data including trip expenditures, and a “Basic Satisfaction” survey including questions about the satisfaction and perceived quality of Forest Service facilities and resources. The Basic-Economics and Basic-Satisfaction surveys also contain the questions in the Basic survey. When distributed to sample forests, the surveys are

Table 12—Average number of surveys collected per survey day by site type^a and sample forest

Sample forest	DUDS	OUDS	GFA	WILD
Tongass-Stikine	1.9	1.2	1.6	0.5
Tongass-Chatham	8.9	2.8	3.8	1.2
Tongass-Ketchikan	7.8	1.2	1.6	0.7
Chugach	7.7	1.9	3.7	n/a
Region 10	6.6	1.7	2.7	0.7

n/a = not applicable.

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

presorted to reduce the potential for bias in the distribution of the supplemental forms. Therefore, the forest has limited control in the numbers of each type of survey completed. Across R-10, approximately 45 percent of the surveys completed by respondents were “Basic” surveys (table 13), economic supplemental surveys were 29 percent, and satisfaction supplemental surveys 26 percent of the completed surveys.

Sampling Review by Recreation Feature and Setting

The R-10 national forests have a number of special recreation features. Some of these features include DUDS sites that provide opportunities to explore glaciers, visit culturally significant sites, or view wildlife; overnight cabins located in remote areas of the forests offering once-in-a-lifetime recreation experiences for many users; and the great extent of dispersed recreation settings accessible only by air, boat, or foot travel. In some cases, it can be challenging to contact exiting visitors in a reasonable and efficient manner who are using these recreation features and settings. At some sites (e.g., recreation cabins or remote trailheads), it can be difficult or even infeasible to follow all of the standard NVUM protocols. In this section, we review round 1 sampling for a number of different categories of recreation sites and interview settings related to the recreation resources of R-10 to gauge the success of NVUM sampling at these sites and in capturing the dispersed recreation in R-10.

The round 1 NVUM interview sites were reclassified into the following designations: air, boat, cabin, campground, trailheads, DUDS-general, OUDS-general,

Table 13—Region 10 surveys collected by site and survey type^a

Sample forest	DUDS	GFA	OUDS	WILD	Total
Tongass-Stikine:					
Basic	3	11	1	0	15
Basic+Economics	53	51	15	17	136
Basic+Satisfaction	20	25	13	12	70
Tongass-Chatham:					
Basic	176	115	29	12	332
Basic+ Economics	77	46	14	6	143
Basic+ Satisfaction	78	44	11	8	141
Tongass-Ketchikan:					
Basic	108	34	8	3	153
Basic+ Economics	101	18	9	8	136
Basic+ Satisfaction	89	23	11	8	131
Chugach:					
Basic	141	126	29	0	296
Basic+ Economics	63	39	14	0	116
Basic+ Satisfaction	67	54	13	0	134
Region 10:					
Basic	428	286	67	15	796
Basic+ Economics	294	154	52	31	531
Basic+ Satisfaction	254	146	48	28	476

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Boat sites were the most common type of interview site reflecting the high number of boat sites identified as NVUM sites in R-10.

GFA-general, and WILD-general (table 14). Sites were placed into each designation according to the descriptive properties of the site name. For example, Wilson Narrows Cabin was designated as a “cabin,” and Auke Bay Boat Harbor was designated as “boat.” As stated previously, 584 sites were identified as R-10 NVUM sites and the randomly selected sample days occurred at 232 different sites. Boat sites were the most common type of interview site reflecting the high number of boat sites identified as NVUM sites in R-10 (table 15). Cabins and trailheads were the next most frequently selected sites in round 1—39 and 35 sites, respectively. Eighteen campground locations were sampled, with more campgrounds sampled on the Chugach NF than on any other sample forest in R-10. The Tongass NF contained the majority of air and boat sites sampled, 26 and 43, respectively. The number of air and boat sites sampled in round 1 was fairly similar among the Tongass sample forests. The Chugach NF had only two sites of each designation

Table 14—Definitions of site categories^a

Air	Fixed-base operators, float plane docks, concessionaire offices, and landing strips on nonnational forest land via which national forest visitors can access remote forest locations.
Boat	Site at which visitors can access remote forest locations via waterways. Includes docks as well as boat launches and parking areas. Not all boat sites are located on National Forest System (NFS) lands
Cabin	Enclosed structure on NFS lands where recreationists can stay overnight. Often in remote locations with no vehicle access.
Campground	Designated campground at which visitors reside overnight.
Trailhead	Site that serves as a starting point for hiking and backpacking trips.
DUDS-general	Day use developed sites not classified elsewhere at which visitors partake in a variety of activities. Can include, but is not limited to picnic areas, visitor centers, viewing areas, parking areas, and fishing areas.
OUDS-general	Overnight use developed sites not designated as a cabin or campground.
GFA-general	General forest area not classified elsewhere at which visitors can partake in a variety of activities (hiking, hunting, fishing, water sports, etc.).
WILD-general	Designated wilderness area not classified elsewhere at which visitors can partake in or access a variety of activities in wilderness.

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 15—Number of sites where NVUM sampling occurred by sample forest and site designation,^a proxy and nonproxy

Sample forest	Air	Boat	Cabin	Campground	Trailhead	DUDS-general	OUDS-general	GFA-general	WILD-general
Tongass-Stikine	7	15	13	3	1	6	0	14	2
Tongass-Chatham	8	17	6	4	12	7	0	2	0
Tongass-Ketchikan	11	11	12	3	5	9	2	9	1
Chugach	2	2	8	8	17	11	0	4	0
Total	28	45	39	18	35	33	2	29	3

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

sampled in round 1. Appendix 2 identifies the designation, number of surveys completed, and number of assigned sample days for every selected interview location in R-10.

The DUDS-general sites accounted for the greatest number of completed visitor surveys (976 surveys) (table 16). The next greatest number of surveys was completed at GFA-general sites (219 surveys). On average, approximately seven completed surveys were obtained on every DUDS-general survey day in R-10 in round 1—approximately double that collected per survey day at any other type of interview site (table 17). The GFA-general sites yielded slightly more than three surveys per survey day. Trailhead sites yielded approximately three completed surveys per survey day, and air sites and cabin sites yielded approximately 1.3 interviews per survey day. Wilderness sites not classified elsewhere, and boat sites were the least efficient sites in terms of numbers of surveys collected per survey day (0.6 and 1.1, respectively).

Surveys at Designated Cabin Sites

Thirty-nine cabins (28 in the OUDS site type and 11 in the WILD site type) were represented in the sample day random draws (table 18).³ The number of cabins surveyed on each sample forest was relatively uniform.⁴ In total, 59 surveys were collected from visitors to R-10 cabins (table 19). Of the 59 cabin surveys, 33 (56 percent) were obtained from OUDS cabin users and 26 (44 percent) from WILD cabin users. Attempts to complete surveys at 14 of the chosen cabin survey sites yielded no completed surveys. Most of the surveys completed by cabin users were either Basic-Economics or Basic-Satisfaction surveys (table 19). The distribution of survey type indicates that R-10 interviewers made efforts to have those few cabin users who were sampled complete the economic or satisfaction supplemental surveys. In this case, this nonrandom distribution of surveys allowed for more data to be collected from cabin users than may have otherwise been collected; this likely did not introduce significant bias because surveys were not necessarily distributed differentially within the cabin user population.

³ In the latter years of round 1, the standard NVUM protocols were modified to allow R-10 personnel to contact by phone individuals who had recreated at cabins other than those identified on the sample day.

⁴ In round 1, cabins located in the Admiralty Island National Monument (in the Tongass-Chatham sample forest), which is a wilderness area, were not listed as cabin proxy sites.

Table 16—Number of surveys collected by sample forest, survey type, and site designation,^a proxy and nonproxy

Sample forest and survey type	Air	Boat	Cabin	Camp-ground	Trailhead	DUDS-general	OUDS-general	GFA-general	WILD-general	Total
Tongass-Stikine:										
Basic	0	7	0	1	0	3	0	4	0	15
Basic+Economics	0	15	17	6	11	53	0	33	1	136
Basic+Satisfaction	0	5	15	6	5	20	0	17	2	70
Total	0	27	32	13	16	76	0	54	3	221
Tongass-Chatham:										
Basic	49	14	3	32	14	176	0	44	0	332
Basic+Economics	24	6	0	16	6	77	0	14	0	143
Basic+Satisfaction	24	8	0	13	6	78	0	12	0	141
Total	97	28	3	61	26	331	0	70	0	616
Tongass-Ketchikan:										
Basic	4	6	1	1	7	108	6	20	0	153
Basic+Economics	6	0	10	1	6	101	4	8	0	136
Basic+Satisfaction	9	0	8	0	7	89	6	11	0	130
Total	19	6	19	2	20	298	16	39	0	419
Chugach:										
Basic	0	25	3	26	70	141	0	31	0	296
Basic+Economics	0	7	1	13	21	63	0	11	0	116
Basic+Satisfaction	0	9	1	12	31	67	0	14	0	134
Total	0	41	5	51	122	271	0	56	0	546
Region 10:										
Basic	53	52	7	60	91	428	6	99	0	796
Basic+Economics	30	28	28	36	44	294	4	66	1	531
Basic+Satisfaction	33	22	24	31	49	254	6	54	2	475
Total	116	102	59	127	184	976	16	219	3	1,802

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 17—Number of survey days and surveys collected by site designation,^a proxy and nonproxy sites

	Air	Boat	Cabin	Campground	Trailhead	DUDS-general	OUDS-general	GFA-general	WILD-general
Survey days	86	89	43	61	61	149	5	65	5
Total surveys collected	116	102	59	127	184	976	16	219	3
Surveys per survey day	1.3	1.1	1.4	2.1	3.0	6.6	3.2	3.4	0.6

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 18—Number of sampled cabin sites by site type^a and sample forest

Sample forest	OUDS	WILD
Tongass-Stikine	7	6
Tongass-Chatham	6	0
Tongass-Ketchikan	7	5
Chugach	8	0
Total	28	11

^a OUDS = overnight use developed sites WILD = designated wilderness.

Table 19—Number of surveys collected at cabin sites by sample forest and survey type

Site type ^a and sample forest	Basic	Basic+ Economics	Basic+ Satisfaction	Total
OUDS:				
Tongass-Stikine	0	9	7	16
Tongass-Chatham	3	0	0	3
Tongass-Ketchikan	1	4	4	9
Chugach	3	1	1	5
Total	7	14	12	33
Wilderness:				
Tongass-Stikine	0	8	8	16
Tongass-Chatham	0	0	0	0
Tongass-Ketchikan	0	6	4	10
Chugach	n/a	n/a	n/a	n/a
Total	0	14	12	26
Total	7	28	24	59

n/a = not applicable.

^a OUDS = overnight use developed sites.

Surveys at Designated Air Sites

Interview sites were established at airstrips, float plane docks, and fixed-base operators (FBOs) located on nonnational forest land, air carriers offering back-country transport, and concessionaire air carriers offering flightseeing tours operated under NFS special use permit in an effort to capture visitors exiting the dispersed areas of the R-10 national forests. Twenty-eight air sites were included in the random draw of sample days (table 20). These air sites were evenly divided between the GFA and WILD site types. The Tongass-Ketchikan had the greatest number of air sites sampled (11), and the Chugach NF had the least (2). Five of the sampled air sites were proxy sites. Just six of the 28 air sites yielded completed visitor surveys—suggesting there are substantial problems with sampling national forest visitors at air travel locations. In all, 116 surveys were collected from these six air sites (table 21). The vast majority (97, or 84 percent) of these surveys were collected on the Tongass-Chatham sample forest (table 21). The remaining surveys (19, or 16 percent) were collected from Tongass-Ketchikan sample forest. No surveys were collected at air sites on the Tongass-Stikine sample forest or Chugach NF. Of the 116 surveys collected, 108 (93 percent) were collected at GFA air sites, and 8 (7 percent) at WILD air sites (table 21). All of the surveys collected at WILD air sites were from the Tongass-Ketchikan sample forest.

Surveys at Boat Sites

Believing that individuals returning by boat from recreating in the dispersed areas of the forest could be intercepted at harbors and boat ramps, individuals completing prework on sample forests in R-10 identified a number of these locations as GFA and WILD sites. Although some of these boat sites were located on NFS

Table 20—Number of sampled designated air sites by site type^a and sample forest

Sample forest	GFA	WILD
Tongass-Stikine	2	5
Tongass-Chatham	5	3
Tongass-Ketchikan	5	6
Chugach	2	n/a
Total	14	14

n/a = not applicable.

^a OUDS = overnight use developed sites, WILD = designated wilderness.

Table 21—Number of surveys collected at air sites by sample forest and survey type

Site type^a and sample forest	Basic	Basic+ Economics	Basic+ Satisfaction	Total
GFA:				
Tongass-Stikine	0	0	0	0
Tongass-Chatham	49	24	24	97
Tongass-Ketchikan	2	4	5	11
Chugach	0	0	0	0
Total	51	28	29	108
Wilderness:				
Tongass-Stikine	0	0	0	0
Tongass-Chatham	0	0	0	0
Tongass-Ketchikan	2	2	4	8
Chugach	n/a	n/a	n/a	n/a
Total	2	2	4	8
Total	53	30	33	116

n/a = not applicable.

^a GFA = general forest area.

lands, most were not. Boat sites represented 21 percent of all sites and a little more than one-third of the nonproxy sites in R-10 in round 1. Because they represent a significant component of the sites in round 1, the efficacy of the boat sites will impact the reliability of the R-10 sample forest use estimates and the utility of the visitor survey data obtained in round 1.

In total, 89 round 1 sample days were completed at 45 boat sites. These sample days resulted in 494 contacts. Fifty-two (11 percent) of the individuals contacted refused to be interviewed. Of those agreeing to be interviewed, just 23 percent (102) reported themselves as last-exiting national forest recreationists—making them eligible to fully complete an NVUM survey (table 22). More than one-third of the completed surveys (38) resulted from contacts made at a single boat ramp, Eyak boat ramp, located on NFS land on the Chugach NF. Excluding the Eyak boat ramp sample days, the 85 remaining sample days at boat sites yielded 64 complete visitor surveys from last-exiting recreationists from 450 contacts. This last-exiting visitor percentage of 14 percent is quite low compared to the 69 percent last-exiting visitor percentage (total contacts to completed surveys) found across R-10 in round 1.

Table 22—Surveys completed at boat sites

Sample forest	GFA ^a	Wilderness	Total
Tongass-Stikine	20	6	26
Tongass-Chatham	2	26	28
Tongass-Ketchikan	6	1	7
Chugach	41	n/a	41
Total	69	33	102

n/a = not applicable.

^a GFA = general forest area.

Table 23—Reported primary activities of Region 10 boat site respondents

Primary activity	Number of respondents
Camping	2
Resort (cabin use)	1
Viewing wildlife	2
Viewing nature	11
General/relaxing	6
Fishing	32
Hunting	2
Snowmobile use	1
Hiking	5
Biking	1
Nonmotorized water recreation	4
Gathering ^a	1

^a Subsistence gatherers contacted in the course of NVUM sampling self-reported whether they were “recreating” or “working.” Some subsistence hunters will not be counted as recreation visits.

As the boat sites in R-10 were typically not located on NFS land, interviewers were dependent on respondents to self-identify whether they were indeed a national forest visitor (i.e., if the respondent entered national forest land for the purpose of recreation). Of those fully completing NVUM surveys at boat sites (i.e., those that were presumably national forest visitors) and reporting a primary activity, nearly half reported that their primary recreation activity was fishing (table 23). Only three of these fishing respondents also reported participating in an activity during their recreation trip that is typically land-based (e.g., hiking, camping, hunting,

backpacking, gathering, etc.). Short of these fishing respondents boating through ocean areas to fish inland lakes and streams on NFS land, it is not definitive that they were truly national forest recreation visitors. Of the nonfishing boat site respondents, 10 reported a land-based primary recreation activity that would clearly represent a national forest visit—assuming the activity was on NFS land. Five of the respondents reported hiking, two reported camping, and single respondents reported cabin use, biking, and gathering. The remaining boat site respondents reported primary activities such as nonmotorized water recreation, viewing nature, viewing wildlife, and general/relaxing—recreation activities that would not necessarily occur on land.

Sampling by Month

Although highly seasonal in the number of travelers (Cervený 2005, Colt et al. 2002), Alaska national forests offer recreation opportunities year-round. Examination of the seasonal distribution of the NVUM sample allows for assessment of the extent to which the sample may be representative of recreation use throughout the year. The pattern of sample days by month is normally distributed with the greatest number of sample days chosen in the summer months of June, July, and August (fig. 4). This is fairly reasonable considering Alaska's climate, the traditional summer tourist season, and the resulting stratification of site days in the prework. Slightly more than 100 sample days occurred each month during June, July, and August. Both proxy and nonproxy locations follow a similar distribution with the majority of sample days completed in the summer months. The fewest numbers of sample days occurred in January, February, and March—with just more than 10 sample days selected in each month.

The number of surveys collected by month is consistent with the distribution of sample days by month (fig. 5). The majority of surveys were collected during the traditional tourist summer season—with more than 300 surveys collected in each month from May through August. More than 400 surveys were collected in July. A very limited number of surveys were collected in November and December. Individuals recreating on the forest in the winter months are more likely to be Alaska residents than nonresidents. The limited numbers of completed surveys in these months likely decrease the sample size from which one could estimate the characteristics of local resident visitor groups. The number of surveys collected by sample forest and survey type on a monthly basis is available in appendix 3.

Slightly more than 100 sample days occurred each month during June, July, and August.

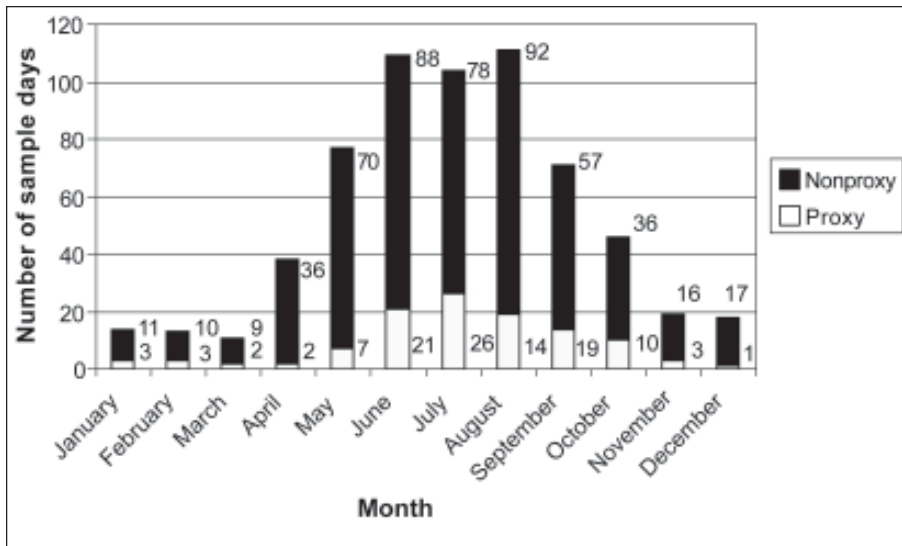


Figure 4—Region 10 missed sample days by month, proxy and nonproxy sites, round 1.

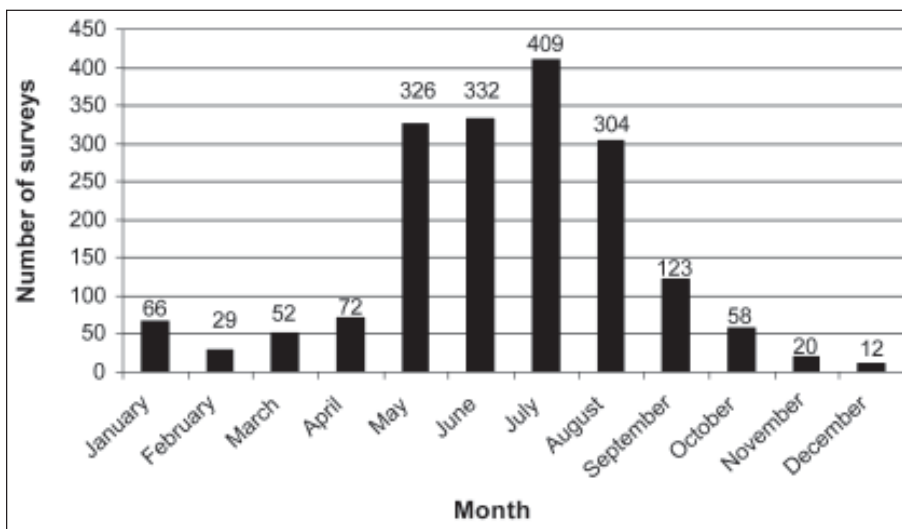


Figure 5—Number of surveys collected by month at proxy and nonproxy sites in Region 10, round 1.

Analysis of Expansion Weights

The NVUM national forest expansion weights assigned to individual survey cases allow for estimation of the recreation visit characteristics.⁵

⁵ The spending characteristics of recreation visitors are estimated via “exposure weights” rather than the NVUM national forest expansion weights. The NVUM national forest expansion weights are used in describing such things as activity participation, demographics, and visitor origin.

These expansion weights reflect the amount of recreation use that each individual survey case represents. For example, if a survey case has a national forest expansion weight of 250, the characteristics of that interviewed user will represent the characteristics of 250 national forest visits. Examination of these weights allows for identification of groups of individual survey cases interviewed at particular sites that have disproportionate influence on the estimation of recreation visit characteristics (e.g., activity participation, demographics, etc.).

Individuals sampled at GFA sites have the greatest collective sum of expansion weights in R-10 (1.5 million) (tables 24–27). High total GFA expansion weights are common throughout the NFS as the total annual visit estimates for the GFA strata are generally greater than other strata. Within the GFA site type in R-10, boat site survey cases had the greatest collective expansion weight (approximately 587,000) (table 24). This high collective weight reflects the high volume of traffic at these sites and the high number of site days classified as open for boat sites in round 1. The collective expansion weight of individuals sampled at DUDS sites is also greater than 1 million, with the majority of this collective weight being associated with DUDS-general sites (table 24). Individuals sampled at WILD sites had a collective sum of weights of slightly more than 211,000 while OUDS sites have a collective expansion weight of approximately 68,000 (tables 26 and 27).

Because very few recreating individuals were sampled at boat sites, the average national forest expansion weight for individual GFA boat site respondents is approximately 7,300 (table 25). This average individual expansion weight means that each GFA boat case (and the characteristics of that visit) represents 7,300 recreation visits, on average. Only respondents sampled at WILD trailheads have a similarly high average expansion weight. For comparison, most other respondents have individual case weights in the hundreds. As such, those recreationists sampled at GFA boat sites and WILD trailheads have a greater influence over the estimated characteristics of R-10 national forest recreation than individuals sampled at other sites. This is cause for concern as the estimated visit characteristics for the Alaska national forests could be influenced by the inclusion or exclusion of a handful of cases sampled at these two types of sites.

Table 24—Descriptive statistics of national forest visit expansion weights for day use developed sites (DUDS) by site designation

	Trailheads	DUDS-general	DUDS-all
Sum of weights	24,444	1,178,437	1,202,881
Sample size	41	939	980
Mean	596	1,260	1,232
Median	560	799	799
Mode	560	118	118
Standard deviation	368	1,335	1,316
Minimum	25	29	25
Maximum	1,249	7,556	7,556

Table 25—Descriptive statistics of national forest visit expansion weights for general forest area (GFA) sites by site designation

	Air	Boat	Trailheads	GFA-general	GFA-all
Sum of weights	202,515	587,777	226,329	520,217	1,536,839
Sample size	112	80	170	215	577
Mean	1,808	7,347	1,331	2,420	2,663
Median	17	1,726	919	980	919
Mode	17	919	463	980	919
Standard deviation	6,191	9,541	1,712	4,572	5,677
Minimum	4	556	46	131	4
Maximum	25,636	25,636	6,391	25,636	25,636

Table 26—Descriptive statistics of national forest visit expansion weights for overnight use developed sites (OUDS) by site designation

	Cabin	Campground	OUDS-general	OUDS-all
Sum of weights	21,281	40,988	6,295	68,564
Sample size	78	72	17	167
Mean	276	569	370	413
Median	168	355	323	168
Mode	168	473	323	168
Standard deviation	446	784	172	615
Minimum	3	1	29	1
Maximum	2,403	2,426	638	2,426

Table 27—Descriptive statistics of national forest visit expansion weights for designated wilderness (WILD) sites by site designation

	Air	Boat	Cabin	Trailheads	WILD-general	WILD-all
Sum of weights	2,617	2,611	27,579	177,545	1,208	211,561
Sample size	8	9	27	25	3	72
Mean	327	290	1,021	7,102	403	2,938
Median	434	177	47	1,556	483	338
Mode	434	89	47	1,556	483	47
Standard deviation	198	288	5,021	9,543	139	7,033
Minimum	6	59	7	195	242	6
Maximum	434	922	26,144	26,144	483	26,144

Selected Recommendations for National Visitor Use Monitoring Implementation

Several recommendations for subsequent NVUM implementation that arose from this review of R-10 round 1 are described below. A complete set of recommendations for subsequent NVUM implementation in R-10 is documented in a separate report available from the authors.

Use Level Classification

Region 10 forests identified a very large number of site days as open (calendar days with use levels classified as low, medium, or high) in round 1 compared to other similar forests (White and Wilson 2007). Many of these open sample days may have been more appropriately classified into the “no last exiting use/closed” use level. Classifying days as open that should be classified as closed (because the site is inaccessible or recreation use is negligible) in round 1 likely increased the number of survey days when no exiting traffic was intercepted and inflated the variance of the resulting recreation use estimates. When completing the NVUM prework in subsequent years, forest personnel should place greater emphasis on classifying site days into the no exiting use/closed use level when appropriate. Those individuals completing the prework should consider whether one would reasonably expect at least one last-exiting recreationist at the specific interview location on the calendar day under consideration. When the reasonable answer is “no,” these days should be classified as no exiting use/closed. In addition, days when the site is administratively closed or typically inaccessible should also be classified as no exiting use/closed.

Forest personnel should place greater emphasis on classifying site days into the no exiting use/closed use level when appropriate.

Incomplete Sample Days

In round 1, R-10 sample forests missed 67 assigned sample days. These missed sample days do not include assigned sample days when weather conditions precluded interviewers from traveling to the NVUM site. In addition, 49 nonproxy sample days were surveyed for less than the prescribed 6 hours. In subsequent years, R-10 interviewers could work to minimize the number of sample days missed or not surveyed for the prescribed length of time. If sample days are missed in subsequent NVUM sample years, it would be useful to document the reasons for missed sample days. This would aid in future reviews of NVUM implementation and in the identification of systematic issues leading to missed sample days and any potential bias introduced in the sample as a result of missed sample days. A number of the nonproxy sample days not surveyed for the entire length of time occurred at OUDS sites. Interviewers may have left these sites when they found no campers recreating at the site. However, as interviewers should contact anyone exiting the recreation site (recreationists and nonrecreationists) and should interview recreationists that may exit the campground even after taking part only in day-use activities, interviewers should remain onsite at OUDS nonproxy locations for the entire prescribed 6-hour period.

Air and Boat Sites

Air and boat sites were identified in the NVUM round 1 implementation in R-10 to intercept national forest recreation visitors that had recreated in the dispersed recreation settings of the forest. However, ultimately these sites yielded very few completed surveys from last-exiting recreationists. The effectiveness of boat sites was particularly poor as traffic volumes were very high but few contacted individuals actually reported that they were national forest recreationists. Of those claiming to have recreated on NFS land, a limited number actually reported a recreation activity that was definitively land-based—indicating that many of these presumed national forest recreationists may have **not** actually recreated on NFS lands.

In subsequent NVUM sampling years, sample forests should largely discontinue identifying boat harbors and docks on nonnational forest lands as NVUM sites. Boat docks on or adjacent to NFS land should continue to be identified as NVUM sites, as recreating individuals on NFS boat docks are clearly NFS recreation visitors and those using ramps near NFS land are more likely to be national forest recreationists. Although air sites also yielded a limited number of national forest recreationists, sampling at these sites is not complicated by the same factors

as boat site sampling (e.g., high traffic volumes from individuals not recreating on the national forest). In subsequent years, R-10 sample forests should continue sampling at air sites. This sampling could be made more effective by establishing agreements on interviewer access with the air carriers, FBOs, and concessionaires prior to the start of the sample year.

Tongass National Forest Sampling Units

Owing to its size, the Tongass NF was split into three units for NVUM sampling in round 1. There were no findings in the review of round 1 to indicate that the split of the Tongass NF resulted in poor data collection, recreation use estimation, or visit characterization. However, the round 1 Tongass sample forest boundaries are not intuitive, particularly the Tongass-Stikine sample forest, which includes ranger districts in both the southern and northern portions of the national forest (table 1, fig. 1). For logistical convenience and ease of interpretation, it is likely advantageous to split the forest into just two sample forests, north and south, in subsequent years, with the dividing line north of the Petersburg Ranger District.

In round 1 there was an average of 162 sample days per Tongass sample forest. Splitting the Tongass NF into just two sample forests would likely require an increase in the number of sample days occurring in a given sample year to maintain the relatively high sampling rates that occurred in R-10 in round 1. This would likely increase the annual cost of NVUM sampling in the Tongass NF sample years. However, the actual cost of NVUM sampling is difficult to determine until the prework calendar is developed and the sample is drawn. Although the annual costs of NVUM implementation may increase in NVUM sampling years, there would be no costs for a third year of Tongass sampling that would no longer be required.

Establishment of Additional Proxy Sites

Because a traffic count already exists for proxy sites, sampling is needed only to characterize the visits to these sites and to gather information to convert the proxy count to a visit estimate. Proxy sites reduce the number of sample days required to estimate a given component of recreation use and result in more certainty in the visit estimate, all else being equal. In completing NVUM prework, forests should ensure that they have classified all locations with an NVUM-acceptable known traffic count as proxy sites. In addition, Begich, Boggs Visitor Center on the Chugach NF and the Mendenhall Glacier Visitor Center “complex” (visitor center, parking lot, and approach road) on the Tongass NF should be converted from

nonproxy to proxy sites via installation of permanent traffic counters. Because in round 1 these sites were frequently the only locations on the sample forest classified as DUDS-high use, 37 sample days were required to estimate the recreation use associated with these sites. The conversion of these sites to proxy sites will reduce the number of sample days required for these sites.

Framework for Future National Visitor Use Monitoring Reviews

Formal review of the implementation of NVUM sampling in specific NFS regions or national forests has been limited. Such reviews can be used to improve subsequent forest implementations and identify potential opportunities to revise the standard NVUM protocols. The review conducted here can serve as a framework for the completion of such reviews. Initial review steps should examine NVUM prework implementation such as site identification and site day classification. Although not available for this review, spatial analyses of NVUM interview sites and site days may provide some insight into the spatial distribution of the NVUM population. The implementation of NVUM sample days themselves can be reviewed with particular focus on identifying within NVUM strata any missed sample days or short nonproxy sample days not surveyed for the prescribed NVUM survey period. Traffic counts, the numbers of contacts and completed visitor surveys, the response rate, number of completed surveys per sample day, and the distribution of survey types can also be reviewed within strata. The seasonal and spatial distribution of assigned sample days and visitor interviews can assist in gauging the degree to which the NVUM sample is likely representative of the population.

Moving below the level of the NVUM sampling strata, NVUM implementation (e.g., site day classification, completion of sample days, traffic counts, number of visitor surveys, etc.) at individual sites can be reviewed to examine site-specific sampling issues. Comparison of expected levels of exiting traffic (as identified by the use-level designation) with the observed traffic and completed interview counts can help in site day classification for subsequent NVUM sampling. In examining NVUM implementation at specific sites, recall that recreation use estimates and visit characteristics are not intended to be reliable at the individual site level and should not be examined at this fine level. Although not completed in this review, interviews with forest NVUM coordinators and interviewers can also provide additional insight into specific issues related to NVUM implementation on the forest or

in the region. At the forest level, the personnel responsible for NVUM implementation often change between sampling rounds; documenting these observations can be useful for subsequent sampling.

Conclusions

This review of the round 1 NVUM implementation in R-10 documents the implementation and serves as input to the development of recommendations for subsequent NVUM sampling in R-10. It also provides a framework for reviewing NVUM implementation in other forests and regions and comparing NVUM implementation across forests or regions. Based on this review, there are a number of opportunities to increase the extent to which the standard NVUM protocols are followed in R-10. Additionally, some changes to the standard NVUM protocols (e.g., establishing a third daily sampling period to accommodate extended daylight periods in summer in Alaska) are warranted in R-10. Despite challenges to measuring recreation use in R-10, the recommendations for subsequent NVUM sampling in Alaska as a result of this review and other analyses will likely improve the utility and increase the confidence of users in the effectiveness of NVUM sampling in R-10.

Glossary

prework—The activities conducted by personnel on the sample forests prior to actual survey sampling, including site identification and development of the site day calendar.

sample day—A site and date selected by stratified random sample when NVUM sampling should occur. Not all sample days were completed in R-10 (see also “survey day”).

sample forest—The individual forests or forest units within Region 10 (R-10) that were sampled separately. The four sample forests in R-10 in round 1 were the Chugach, Tongass-Stikine, Tongass-Chatham and Tongass-Ketchikan.

site—A location at which surveys and traffic counts may be conducted.

site days—The population of all possible sites and days on a national forest.

strata—The combination of site type and use level for nonproxy sites and site type and proxy type for proxy sites.

site type—Site type designations are day use developed sites (DUDS), overnight use developed sites (OUDS), wilderness (WILD), general forest areas (GFA), and viewing corridors.

survey day—The subset of sample days when NVUM surveys were actually administered at a specific recreation site on a specific day (see also “sample day”).

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Metric Equivalents

When you know:	Multiply by:	To find:
Feet (ft)	0.305	Meters
Miles (mi)	1.609	Kilometers
Acres (ac)	.405	Hectares

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Appendix 1: Nonproxy Site Survey Hours by Sample Forest, Site Type, and Use Level

Table 28—Tongass-Stikine nonproxy sample days by onsite hours, site type,^a and use level

Site type and site hours	Use level			Total	Percentage of total
	High	Med	Low		Percent
DUDS:					
6 hr	14	13	11	38	97
< 6 hr	0	0	1	1	3
Not reported	0	0	0	0	0
Missed	0	0	0	0	0
GFA:					
6 hr	14	20	11	45	84
< 6 hr	0	1	1	2	4
Not reported	0	2	1	3	6
Missed	0	2	1	3	6
OUDS:					
6 hr	0	0	12	12	92
< 6 hr	0	0	1	1	8
Not reported	0	0	0	0	0
Missed	0	0	0	0	0
WILD:					
6 hr	12	15	12	39	94
< 6 hr	1	0	0	1	2
Not reported	0	0	1	1	2
Missed	0	0	0	0	0

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 29—Tongass-Chatham nonproxy sample days by onsite hours, site type,^a and use level

Site type and site hours	Use level			Total	Percentage of total
	High	Med	Low		
					<i>Percent</i>
DUDS:					
6 hr	10	14	7	31	75
< 6 hr	2	3	1	6	15
Not reported	0	0	0	0	0
Missed	1	2	1	4	10
GFA:					
6 hr	9	15	22	46	60
< 6 hr	5	1	3	9	12
Not reported	0	0	0	0	0
Missed	1	6	14	21	28
OUDS:					
6 hr	0	0	6	6	67
< 6 hr	0	0	2	2	22
Not reported	0	0	0	0	0
Missed	0	0	1	1	11
WILD:					
6 hr	0	7	8	15	53
< 6 hr	0	2	3	5	18
Not reported	0	0	0	0	0
Missed	0	3	5	8	29

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 30—Tongass-Ketchikan nonproxy sample days by onsite hours, site type,^a and use level

Site type and site hours	Use level			Total	Percentage of total
	High	Med	Low		<i>Percent</i>
DUDS:					
6 hr	10	11	9	30	91
< 6 hr	0	1	1	2	6
Not reported	0	1	0	1	3
Missed	0	0	0	0	0
GFA:					
6 hr	0	9	21	30	60
< 6 hr	0	3	1	4	8
Not reported	0	11	2	13	26
Missed	0	2	1	3	6
OUDS:					
6 hr	0	0	4	4	40
< 6 hr	0	0	5	5	50
Not reported	0	0	1	1	10
Missed	0	0	0	0	0
WILD:					
6 hr	0	5	7	12	44
< 6 hr	0	3	3	6	22
Not reported	0	5	3	8	30
Missed	0	0	1	1	4

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Table 31—Chugach nonproxy sample days by onsite hours, site type,^a and use level

Site type and site hours	Use level			Total	Percentage of total
	High	Med	Low		
					<i>Percent</i>
DUDS:					
6 hr	10	6	10	26	87
< 6 hr	0	0	0	0	0
Not reported	0	0	0	0	0
Missed	0	4	0	4	13
GFA:					
6 hr	21	21	9	51	81
< 6 hr	1	1	1	3	5
Not reported	0	1	1	2	3
Missed	1	1	5	7	11
OUDS:					
6 hr	0	0	4	4	45
< 6 hr	0	0	2	2	22
Not reported	0	0	2	2	22
Missed	0	0	1	1	11
WILD:					
6 hr	0	0	0	0	0
< 6 hr	0	0	0	0	0
Not reported	0	0	0	0	0
Missed	0	0	0	0	0

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

Appendix 2: Region 10 Sample Day Interview Locations

Table 32—National Visitor Use Monitoring (NVUM) sites selected in sample days in NVUM round 1, Region 10

Sample forest	Assigned NVUM site name	Site type ^a	Designation	Proxy code	Completed surveys	Economic surveys	Completed sample days ^b
Chugach	CRD Cabin Lake Trailhead	GFA	Trailhead		0	0	1
	CRD Childs Glacier Campground	OU DS	Campground	FE4	0	0	0
	CRD Childs Glacier/Million \$\$ Bridg	DUDS	DUDS-other		10	3	1
	CRD Cordova Air Office	GFA	Air		0	0	3
	CRD Eyak Boat Launch	GFA	Boat		38	7	4
	CRD Eyak River Trailhead	GFA	Trailhead		0	0	1
	CRD Green Island Cabin	OU DS	Cabin	RE4	0	0	1
	CRD Mile 10 Copper River Hwy	GFA	GFA-general		22	5	1
	CRD Mile 22	DUDS	DUDS-general		3	1	2
	CRD One Eyed Pond	DUDS	DUDS-general		2	1	2
	GRD Alder Pond Fishing Area	DUDS	DUDS-general		10	2	2
	GRD Alpine Air	GFA	Air		0	0	0
	GRD Begich, Boggs Visitor Center Si	DUDS	DUDS-general		161	39	12
	GRD Black Bear Campground	OU DS	Campground	DUR4	0	0	0
	GRD Byron Glacier Trailhead	GFA	Trailhead		5	0	1
	GRD Chugach Powder Guides	GFA	GFA-general		0	0	0
	GRD Coghill Recreation Cabin	OU DS	Cabin	RE4	0	0	0
	GRD Johnson Pass North Trailhead	GFA	Trailhead		10	2	4
	GRD Moose Flats Day Use Area	DUDS	DUDS-general		5	1	2
	GRD Portage Glacier Cruises	DUDS	DUDS-general	FR2	5	0	1
	GRD Turnagain Pass Motorized	GFA	GFA-general		27	5	6
	GRD Turnagain Pass Non-Motorized	GFA	GFA-general		7	1	4
	GRD Williwaw Campground	OU DS	Campground	DUR4	2	0	1

Table 32—National Visitor Use Monitoring (NVUM) sites selected in sample days in NVUM round 1, Region 10 (continued)

Sample forest	Assigned NVUM site name	Site type ^a	Designation	Proxy code	Completed surveys	Economic surveys	Completed sample days ^b
	GRD Williwaw Fish Viewing Platform	DUDS	DUDS-general		34	7	5
	GRD Winner Creek Trailhead	GFA	Trailhead		17	3	2
	SRD Caribou Creek Cabin	OU DS	Cabin	RE4	0	0	0
	SRD Carter Lake Trailhead	GFA	Trailhead		9	1	3
	SRD Coeur d'Alene Campground	OU DS	Campground		2	1	7
	SRD Cooper Creek Campground	OU DS	Campground	DUR4	6	2	3
	SRD Cooper/Russian Lake TH	GFA	Trailhead		0	0	0
	SRD Crescent Creek Trailhead	GFA	Trailhead		5	0	2
	SRD Crescent Saddle Cabin	OU DS	Cabin	RE4	0	0	0
	SRD Dale Clemens Cabin	OU DS	Cabin	RE4	0	0	0
	SRD Devil's Pass Trailhead	GFA	Trailhead		2	1	3
	SRD Footprint Archaeological Site	DUDS	DUDS-general	DUR4	1	0	1
	SRD Grayling Day Use Parking	DUDS	DUDS-general	TB3	35	8	3
	SRD Grayling Lake Trailhead	GFA	Trailhead		3	1	3
	SRD Johnson Pass South TH	GFA	Trailhead		7	1	5
	SRD Lost Lake Trailhead	GFA	Trailhead		2	1	1
	SRD Manitoba Mountain Cabin	OU DS	Cabin	SUP2	1	0	2
	SRD Pink Salmon Day Use Parking	DUDS	DUDS-general	TB3	5	1	1
	SRD Porcupine Campground	OU DS	Campground	DUR4	1	0	2
	SRD Primrose Boat Ramp & Trailhead	GFA	Boat		3	0	2
	SRD Rainbow Lake Trailhead	GFA	Trailhead		2	0	1
	SRD Resurrection Pass North TH	GFA	Trailhead		6	1	2
	SRD Resurrection Pass South TH	GFA	Trailhead		14	3	4
	SRD Resurrection River Trailhead	GFA	Trailhead		6	2	3

Table 32—National Visitor Use Monitoring (NVUM) sites selected in sample days in NVUM round 1, Region 10 (continued)

Sample forest	Assigned NVUM site name	Site type ^a	Designation	Proxy code	Completed surveys	Economic surveys	Completed sample days ^b
Tongass-Chatham	SRD Russian Lakes Trailhead	GFA	Trailhead	TB3	34	5	4
	SRD Russian River Campground	OU DS	Campground	TB3	35	9	4
	SRD Swan Lake Cabin	OU DS	Cabin	RE4	1	0	0
	SRD Tenderfoot Campground	OU DS	Campground	DUR4	5	1	1
	SRD Trout Lake Cabin	OU DS	Cabin	RE4	3	1	0
	AMALGA HARBOR BOAT RAMP	GFA	Boat		0	0	2
	AMALGA HARBOR BOAT RAMP—WILD	WILD	Boat		0	0	1
	Angoon boat harbor-WILD	WILD	Boat		8	2	1
	Appleton Cove Cabin	OU DS	Cabin	RF4	0	0	1
	Auk Village CG	OU DS	Campground	FE4	1	0	1
	AUKE BAY BOAT HARBOR	GFA	Boat		0	0	2
	AUKE BAY BOAT HARBOR-WILD	WILD	Boat		17	4	12
	Auke Rec. Picnic Area	DUDS	DUDS-general		19	4	4
	Bessie Creek TH	GFA	Trailhead		0	0	2
	Blue Lake63oad	GFA	GFA-general		10	2	2
	Bridge Parking TH-Dredge Lk	GFA	Trailhead		3	1	1
	COASTAL HELI.	GFA	Air		2	1	4
	Crescent Shelter Ramps (2)/BL-WLD	WILD	Boat		0	0	1
	Eagle Beach PG	DUDS	DUDS-general		35	9	6
	East Glacier Trhead-South	GFA	Trailhead		5	1	2
	East Turner Cabin	OU DS	Cabin	RF4	1	0	1
	ECHO COVE BOAT RAMP	GFA	Boat		0	0	1
	ERA HELI.	GFA	Air		40	11	9
	FISHERMAN'S BEND DOCK	GFA	Boat		0	0	1
	FISHERMAN'S BEND DOCK-WILD	WILD	Boat		1	0	1
	FLOAT POND	GFA	Air		7	1	1
	FLOAT POND—WILD	WILD	Air		0	0	1
	Gavan Hill Trailhead	GFA	Trailhead		3	1	2
	Harbor Mt. Rec Area	DUDS	DUDS-general		16	2	1

Table 32—National Visitor Use Monitoring (NVUM) sites selected in sample days in NVUM round 1, Region 10 (continued)

Sample forest	Assigned NVUM site name	Site type ^a	Designation	Proxy code	Completed surveys	Economic surveys	Completed sample days ^b
	Harbor Mt. Rec Area	DUDS	DUDS-general		16	2	1
	Harris Air-WLD	WILD	Air		0	0	2
	Herbert Glacier TH	GFA	Trailhead		0	0	1
	Kook Lake Cabin	OUDS	Cabin	RF4	1	0	1
	Lake Creek TH	GFA	Trailhead		0	0	1
	Laughton Glacier Cabin	OUDS	Cabin	RF4	0	0	1
	Lena Beach PG	DUDS	DUDS-general		3	1	3
	Loken Air	GFA	Air		0	0	2
	Mendenall CG Gate/Skaters	GFA	Campground		10	2	1
	Mendenhall Glacier Visitor Center	DUDS	DUDS-general		169	38	16
	Mendenhall Lake CG	OUDS	Campground	FE4	6	2	3
	Mendenhall VC Parking Lot	GFA	GFA-general		60	12	9
	N.DOUGLAS BOAT RAMP	GFA	Boat		0	0	1
	N.DOUGLAS BOAT RAMP-WILD	WILD	Boat		0	0	1
	North Harbor-Petersburg	GFA	Boat		0	0	1
	Old Sitka Boat Ramp-WLD	WILD	Boat		0	0	1
	Peterson Lake Cabin	OUDS	Cabin	RF4	0	0	1
	Peterson Lake Trailhead	GFA	Trailhead		1	0	1
	Port Alexander boat harbor	GFA	Boat		2	0	1
	Samsing Cabin	OUDS	Cabin	RF4	1	0	2
	Sawmill Creek CG	OUDS	Campground		44	12	8
	Sealing Ramp #2-WLD	WILD	Boat		0	0	2
	South DOUGLAS HWY-Dan Moeller TH	GFA	Trailhead		0	0	2
	Spaulding-Auke Nu TH	GFA	Trailhead		0	0	1
	Starrigavan Bird Viewing Shelter	DUDS	DUDS-general		57	14	5
	Starrigavan PG	DUDS	DUDS-general		32	9	2
	Tal Air—WILD	WILD	Air		0	0	1
	TEE HARBOR 1	GFA	Boat		0	0	1
	TEE HARBOR 1—WILD	WILD	Boat		0	0	1
	TEMSCO HELI.	GFA	Air		48	11	7
	Sealing Ramp #2-WLD	WILD	Boat		0	0	2
	South DOUGLAS HWY-Dan Moeller TH	GFA	Trailhead		0	0	2

Table 32—National Visitor Use Monitoring (NVUM) sites selected in sample days in NVUM round 1, Region 10 (continued)

Sample forest	Assigned NVUM site name	Site type ^a	Designation	Proxy code	Completed surveys	Economic surveys	Completed sample days ^b
Tongass-Ketchikan	Thunder Mountain TH-valley	GFA	Trailhead		3	1	2
	West Glacier TH	GFA	Trailhead		11	2	1
	Big Goat Lake Cabin-OU DS	OU DS	Cabin		0	0	0
	Big Goat Lake Cabin-WILD	WILD	Cabin	SUP4	1	0	0
	Checats Lake Cabin	WILD	Cabin	SUP4	3	2	0
	Hugh Smith Cabin	WILD	Cabin	SUP4	2	1	0
	K Bar Harbor Ramp #4 (Highliner)	GFA	Boat		0	0	1
	K Bar Harbor Ramp 1 (K-MFRD)	GFA	Boat		0	0	1
	K Bar Harbor Ramp 4 (Highliner)	WILD	Boat		1	0	2
	K City Float	GFA	Air		0	0	1
	K City Float	WILD	Air		0	0	2
	K Fish Ck Wildlife Viewing (Hyder)	DUDS	DUDS-general	PTC1	7	1	1
	K Island Wings	WILD	Air		7	2	5
	K Jordan Lake Cabin	OU DS	Cabin	SUP4	0	0	1
	K Knudson Cove Boat Ramp	WILD	Boat		0	0	2
	K Lukin Air	WILD	Air		0	0	0
	K Margaret Ck Wildlife Viewing	DUDS	DUDS-general		17	6	2
	K Misty Fiords Air	WILD	Air		0	0	0
	K Mountain Point Boat Dock	GFA	Boat		0	0	1
	K Pacific Air	GFA	Air		0	0	0
	K Patching Lake Cabin	OU DS	Cabin	SUP4	4	2	0
	K Perseverance Trailhead	GFA	Trailhead		18	6	2
	K Pro Mech Air	GFA	Air		0	0	0
	K Pro Mech Air	WILD	Air		0	0	5
	K S. E. Heckman Lake Cabin	OU DS	Cabin	SUP4	0	0	1
	K Scott Air	GFA	Air		0	0	0
	K Signal Creek (fee)	OU DS	OU DS-general	FE4	4	2	2
	K Signal Creek (no fee)	OU DS	OU DS-general		12	2	2
	K Taquan Air	GFA	Air		11	4	2
	K Taquan Air	WILD	Air		1	0	0
	K Thomas Basin	WILD	WILD-general		0	0	1

Table 32—National Visitor Use Monitoring (NVUM) sites selected in sample days in NVUM round 1, Region 10 (continued)

Sample forest	Assigned NVUM site name	Site type ^a	Designation	Proxy code	Completed surveys	Economic surveys	Completed sample days ^b
	K Ward Lake Complex - Road	DUDS	DUDS-general		241	86	17
	K Ward Lake-Trail (Frog Pond)	DUDS	DUDS-general		8	3	1
	Manzanita Cabin	WILD	Cabin	SUP4	2	1	0
	P 20-Mile Spur Trailhead	GFA	Trailhead		2	0	2
	P Balls Lake Day Use	DUDS	DUDS-general		1	0	1
	P Cable Creek fish Pass	GFA	GFA-general		0	0	1
	P Coffman Cove Boat Harbor	GFA	Boat		0	0	1
	P Coffman Cove Sweetwater Road	GFA	GFA-general		5	2	2
	P Control Lake Cabin	OU DS	Cabin	SUP4	0	0	0
	P Control Lake South	GFA	GFA-general		21	4	3
	P Craig False Island Boat Launch	GFA	Boat		4	0	1
	P Eagle's Nest CG No Fee	OU DS	Campground		0	0	4
	P El Capitan Cave	DUDS	DUDS-general	FR1	4	1	4
	P Harris River CG Fee	OU DS	Campground	FE4	2	1	3
	P Harris River CG No Fee	OU DS	Campground		0	0	3
	P Harris River Day Use	DUDS	DUDS-general		7	2	3
	P Hollis Boat Harbor	WILD	Boat		0	0	1
	P Kasaan Boat Harbor	GFA	Boat		0	0	1
	P Maybeso road #2	GFA	GFA-general		0	0	1
	P Memorial Beach day Use	DUDS	DUDS-general		2	1	1
	P One Duck Trailhead	GFA	Trailhead		0	0	1
	P Polk Road	GFA	GFA-general		0	0	1
	P Red Bay Cabin	OU DS	Cabin	SUP4	1	0	1
	P Salmon Bay Cabin	OU DS	Cabin	SUP4	4	2	1
	P Sandy Beach	DUDS	DUDS-general		11	1	7
	P Soda Lake Trailhead	GFA	Trailhead		0	0	1
	P Thorne Bay Boat Harbor	GFA	Boat		1	0	1
	P Thorne Bay Gravelly Cr Rd	GFA	GFA-general		11	2	6
	P Thorne Bay Sandy Beach Rd	GFA	GFA-general		1	0	1
	P Trocadero Trailhead	GFA	Trailhead		0	0	1
	P Whale Pass Boat Harbor	GFA	Boat		0	0	1
	P Whale Pass Cavern Lake Road	GFA	GFA-general		1	0	2

Table 32—National Visitor Use Monitoring (NVUM) sites selected in sample days in NVUM round 1, Region 10 (continued)

Sample forest	Assigned NVUM site name	Site type ^a	Designation	Proxy code	Completed surveys	Economic surveys	Completed sample days ^b
Tongass-Stikine	P Whale Pass Exchange Cove Road	GFA	GFA-general		0	0	1
	Wilson Narrows Cabin	WILD	Cabin	SUP4	2	2	0
	3 Lakes Loop Rd-North #125	GFA	GFA-general		4	3	1
	3 Lakes Loop Rd-South #126	GFA	GFA-general		5	4	1
	Anan Wildlife Obser THD #151	DUDS	DUDS-general		33	20	8
	Banana Pt Boat Launch Site #140	WILD	Boat		1	1	4
	Beach Road East #15	GFA	GFA-general		0	0	2
	Beach Road West #16	GFA	GFA-general		0	0	2
	Berg Bay Cabin #160	OU DS	Cabin	SUP4	3	3	0
	Blind River Rapids Thd #131	GFA	GFA-general		18	12	4
	Blind Slough Picnic Area #101	DUDS	DUDS-general		21	18	6
	Breiland Slough Cabin #107	OU DS	Cabin	SUP4	1	0	0
	Cabin Crk Rd (FR6204) #123	GFA	GFA-general		1	0	1
	Cannon Beach #1	DUDS	DUDS-general		9	7	15
	Castle Flats Cabin #109	OU DS	Cabin	SUP4	0	0	0
	Dangerous River Bridge #24	WILD	WILD-general		3	1	2
	Float Plane Dock #144	WILD	Air	RE4	0	0	0
	Forest Highway 10 #14	GFA	GFA-general		3	2	2
	Forest Highway 16 #173	GFA	GFA-general		3	2	1
	Freshwater Road #52	GFA	GFA-general		5	0	1
	Frosty Bay Cabin #164	OU DS	Cabin	SUP4	5	3	0
	Gustavus Dock #56	GFA	Boat		6	0	1
	Gut Island #2 Cabin #188	WILD	Cabin	SUP4	4	0	0
	Harding River Cabin #165	OU DS	Cabin	SUP4	5	3	0
	Hoonah Boat Harbor #53	GFA	Boat		0	0	1
	Kake 6040 Road #129	GFA	GFA-general		0	0	0
	Kake Portage Boatramp #133	GFA	Boat		0	0	0
	Koknuk Cabin #192	WILD	Cabin	SUP4	1	0	0
	Little Dry Island Cabin #187	WILD	Cabin	SUP4	4	3	0
	Lost River Road #18	GFA	GFA-general		9	6	6
	Mallard Slough Cabin #186	WILD	Cabin	SUP4	2	2	0
	Man Made Hole Picnic Area #102	DUDS	DUDS-general		7	5	1
	Middle Harbor #136	GFA	Boat		9	5	3

Table 32—National Visitor Use Monitoring (NVUM) sites selected in sample days in NVUM round 1, Region 10 (continued)

Sample forest	Assigned NVUM site name	Site type ^a	Designation	Proxy code	Completed surveys	Economic surveys	Completed sample days ^b
	Middle Harbor #143	WILD	Boat		0	0	1
	Nemo CG Host Interp Site #152	DUDS	DUDS-general		2	1	2
	Nordic Air (airport) #146	WILD	Air	RE4	0	0	0
	Ohmer Creek Camp-ground #104	OUDS	Campground	FE4	6	2	4
	Ohmer Creek Camp-ground #150	OUDS	Campground		6	3	4
	Pacific Wing (airport) #145	WILD	Air	RE4	0	0	0
	Pelican Harbor #62	WILD	Boat		1	1	2
	Rainbow Falls Trailhead #172	GFA	Trailhead		16	11	4
	Rifle Range #21	GFA	GFA-general		0	0	1
	Russell Fiord/East Gate Jct #25	WILD	WILD-general		0	0	2
	Ryman's Italio Sport Camp #13	OUDS	Campground		1	1	8
	S Harb Park Lot (northend) #134	GFA	Boat		1	1	1
	Salt Lake Bay Cabin #58	OUDS	Cabin	SUP4	1	0	1
	Shakes Slough #1 Cabin #182	WILD	Cabin	SUP4	5	3	0
	Shoemaker Bay Dock-Wild #179	WILD	Boat		0	0	1
	Situk Lake Cabin #22	WILD	Cabin	SUP4	0	0	1
	South Harb Park Lot (north) #141	WILD	Boat		0	0	2
	South Harb Park Lot (south) #142	WILD	Boat		2	2	3
	Spurt Cove Cabin #119	OUDS	Cabin	SUP4	1	0	0
	Sunrise Aviation-Wild #180	WILD	Air	RE4	0	0	0
	Swan Observatory #103	DUDS	DUDS-general		4	2	7
	Twin Crk Rd (FR 6209) #124	GFA	GFA-general		0	0	1
	Wdpecker Cove Rd(6245) #128	GFA	GFA-general		6	4	2
	Wrangell Harb-F&G Float #168	GFA	Air		0	0	4
	Wrangell Harb-Inner Harb #169	GFA	Boat		1	1	3

Table 32—National Visitor Use Monitoring (NVUM) sites selected in sample days in NVUM round 1, Region 10 (continued)

Sample forest	Assigned NVUM site name	Site type^a	Designation	Proxy code	Completed surveys	Economic surveys	Completed sample days^b
	Wrangell Harb-Reliance Dk #167	GFA	Boat		0	0	5
	Wrangell Harb-F&GFloat (W) #177	WILD	Air		0	0	9
	Wrangell Harb-InnerHarb (W) #178	WILD	Boat		1	1	9
	Wrangell Harb-Reliance Dk (W) #176	WILD	Boat		5	3	5
	YAK Airport FBO #17	GFA	Air	RE1	0	0	4

^a DUDS = day use developed sites, OUDS = overnight use developed sites, GFA = general forest area, and WILD = designated wilderness.

^b Sample days of “0” indicate that although sample days were assigned to the site, they were not completed.

Appendix 3: Number of Surveys Collected by Month, Sample Forest, and Survey Type

Table 33—Number of surveys collected by month and survey type, Tongass-Stikine

Month	Basic	Basic+ Economics	Basic+ Satisfaction	Total
January	0	0	1	1
February	0	0	0	0
March	0	0	0	0
April	1	20	10	31
May	0	16	6	22
June	0	11	10	21
July	1	31	16	48
August	7	25	15	47
September	3	14	3	20
October	0	13	6	19
November	3	6	3	12
December	0	0	0	0

Table 34—Number of surveys collected by month and survey type, Tongass-Chatham

Month	Basic	Basic+ Economics	Basic+ Satisfaction	Total
January	48	7	7	62
February	9	6	4	19
March	10	2	4	16
April	22	7	7	36
May	57	33	28	118
June	72	35	35	142
July	45	23	23	91
August	46	21	21	88
September	21	9	11	41
October	2	0	1	3
November	0	0	0	0
December	0	0	0	0

Table 35—Number of surveys collected by month and survey type, Tongass-Ketchikan

Month	Basic	Basic+ Economics	Basic+ Satisfaction	Total
January	0	0	0	0
February	3	1	0	4
March	10	9	8	27
April	1	1	1	3
May	40	36	36	112
June	18	22	19	59
July	37	38	34	109
August	12	15	16	43
September	14	11	11	36
October	17	3	5	25
November	1	0	1	2
December	0	0	0	0

Table 36—Number of surveys collected by month and survey type, Chugach National Forest

Month	Basic	Basic+ Economics	Basic+ Satisfaction	Total
January	3	0	0	3
February	3	2	1	6
March	5	1	3	9
April	1	1	0	2
May	36	17	21	74
June	60	26	24	110
July	87	32	42	161
August	71	24	31	126
September	15	5	6	26
October	6	3	2	11
November	3	2	1	6
December	6	3	3	12

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