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**ANALYSIS OF THE 1985 NATIONAL SURVEY OF
FISHING, HUNTING AND WILDLIFE
ASSOCIATED RECREATION**

Report 85-3

**WILDLIFE RELATED RECREATION
ON PUBLIC LANDS, 1985**

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This paper is one of a series designed to complement the National and State reports of the 1985 National Survey of Fishing, Hunting and Wildlife Associated Recreation with investigations of particular fish and wildlife related trends and other topics of interest. They should not be construed as official U.S. Fish and Wildlife Service publications. The results presented and conclusions reached are not necessarily endorsed by the U.S. Fish and Wildlife Service.

I . Introduction

Land owned and managed by the government provides hunting and nonconsumptive wildlife related recreation opportunities for millions of Americans. This report summarizes and discusses the extent of use of public land for wildlife related recreation based on results of the 1985 National Survey of Fishing, Hunting and Wildlife-Associated Recreation.¹

The next section consists of estimates of hunting on public and private land for the nation as a whole and for each of the 50 states. The third section compares the 1985 results with those from earlier surveys. The fourth section consists of a discussion of the sociodemographic characteristics of those who use public land for hunting and comparisons with those who do not in order to determine if there are systematic differences between the two groups. The fifth section presents 1985 results for nonconsumptive wildlife related recreation on public lands, again both nationally and on a state by state basis, information that was not available from previous surveys. The final section provides a summary and some closing observations.

II. Hunting on Public Lands

Table 1 shows that nearly half, 47 percent, of all hunters did at least some of their hunting on publicly owned land in 1985, including 16 percent who hunted only on public lands compared to 51 percent of all hunters who hunted exclusively on privately owned land. The remainder, 31 percent, hunted on both public and private land. When broken down by type of hunting, more big game hunters used public land (47 percent) than did those seeking small game (34 percent), migratory birds (32 percent) or other animals (20 percent). In terms of days of hunting, public land accounted for 28 percent of hunting days compared to 77 percent of days for private land. The sum is greater than 100 percent because some respondents to the survey indicated that they spent parts of the same day hunting on both public and private land. Once again, a greater percentage of big game hunting days (34 percent) was spent on public lands than was the case for the other types of hunting. For small game, migratory bird and other hunting the sum of private and public days is less than 100 percent because some respondents did not report whether the land they hunted on was public or private for all of their 1985 hunting days.

Table 2 gives the number of hunters and days of hunting on public land owned by Federal, state and local governments as well as hunting that took place on public land whose ownership was not specified by the survey respondents. Of the 7,853,000 hunters who hunted on public land 44 percent hunted on Federal land compared to 31 percent who hunted state wildlife areas and 23 percent who hunted on other state owned areas. Eight percent of hunters hunted on land owned by local governments and 23 percent hunted on public land whose ownership they did not specify. The sum is greater than 100 percent because hunters often hunted on more than one type of public land during 1985. Among big game hunters, the largest percentage, 47 percent, hunted on Federal land

¹Many of the estimates presented here can be found in the 1985 Survey's national and state reports (USDI 1988).

TABLE 1. HUNTERS AND DAYS OF HUNTING ON PUBLIC AND PRIVATE LAND, BY TYPE OF HUNTING IN THE U.S.: 1985

(U.S. POPULATION 16 YEARS OLD AND OLDER. NUMBERS IN THOUSANDS)

HUNTERS AND DAYS OF HUNTING	- TOTAL,		TYPE OF HUNTING							
	- ALL HUNTING		- BIG GAME -		- SMALL GAME -		- MIGRATORY BIRD		- OTHER ANIMALS	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
HUNTERS										
TOTAL, ALL LAND	16,684	100	12,520	100	10,831	100	5,036	100	2,837	100
PUBLIC LAND, TOTAL.	7,853	47	5,855	47	3,629	34	1,593	32	566	20
PUBLIC LAND ONLY.	2,629	16	2,955	24	1,607	15	892	18	271	10
PUBLIC AND PRIVATE LAND	5,224	31	2,899	23	2,022	19	701	14	295	10
PRIVATE LAND, TOTAL	13,746	82	9,258	74	8,840	82	3,840	76	2,398	85
PRIVATE LAND ONLY	8,522	51	6,359	51	6,818	63	3,140	62	2,103	74
PUBLIC AND PRIVATE LAND	5,224	31	2,899	23	2,022	19	701	14	295	10
DAYS OF HUNTING										
TOTAL, ALL LAND	334,013	100	131,330	100	132,263	100	41,682	100	47,050	100
PUBLIC LAND (1)	94,388	28	44,972	34	30,235	23	11,827	28	7,354	16
PRIVATE LAND (2)	255,703	77	89,005	68	99,322	75	28,219	68	39,157	83

NOTE: DETAIL DOES NOT ADD TO TOTAL BECAUSE OF MULTIPLE RESPONSES AND NONRESPONSE.

(1) DAYS OF HUNTING ON PUBLIC LAND INCLUDES BOTH DAYS SPENT SOLELY ON PUBLIC LAND AND THOSE SPENT ON PUBLIC AND PRIVATE LAND.

(2) DAYS OF HUNTING ON PRIVATE LAND INCLUDES BOTH DAYS SPENT SOLELY ON PRIVATE LAND AND THOSE SPENT ON PRIVATE AND PUBLIC LAND.

TABLE 2. HUNTERS AND DAYS OF HUNTING ON PUBLIC LAND, BY TYPE OF HUNTING IN THE U.S.: 1985

(U.S. POPULATION 16 YEARS OLD AND OLDER. NUMBERS IN THOUSANDS)

HUNTERS AND DAYS OF HUNTING	- TOTAL, - ALL HUNTING		TYPE OF HUNTING							
	NUMBER	PERCENT	— BIG GAME —	NUMBER	PERCENT	- SMALL GAME -	NUMBER	PERCENT	MIGRATORY BIRD	OTHER ANIMAL
HUNTERS										
TOTAL, ALL PUBLIC LAND.	7,853	100	5,855	100	3,629	100	1,593	100	566	100
FEDERAL	3,451	44	2,750	47	1,176	32	544	34	217	38
STATE WILDLIFE AREA	2,455	31	1,428	24	1,129	31	574	36	136	24
OTHER STATE AREA.	1,839	23	1,311	22	762	21	231	14	107	19
LOCAL	635	8	343	6	272	8	139	9	35	6
UNSPECIFIED PUBLIC LAND (1) . .	1,842	23	987	17	861	24	391	25	93	16
DAYS OF HUNTING										
TOTAL, ALL PUBLIC LAND.	94,388	100	44,972	100	30,235	100	11,827	100	7,354	100
FEDERAL	34,294	36	19,885	44	8,367	28	3,446	29	2,596	35
STATE WILDLIFE AREA	21,751	23	9,099	20	7,516	25	3,680	31	1,457	20
OTHER STATE AREA.	16,623	18	8,247	18	5,790	19	1,164	10	1,421	19
LOCAL	5,519	6	1,814	4	2,314	8	783	7	608	8
UNSPECIFIED PUBLIC LAND (1) . .	16,201	17	5,927	13	6,247	21	2,754	23	1,273	17

NOTE: DETAIL DOES NOT ADD TO TOTAL BECAUSE OF MULTIPLE RESPONSES AND NONRESPONSE.

(1) RESPONDENT WAS UNABLE TO SAY WHETHER THE PUBLICLY HELD AREA WAS OWNED BY FEDERAL, STATE OR LOCAL GOVERNMENT.

compared to 24 percent and 22 percent for state wildlife areas and other state owned areas, respectively. State owned areas were relatively more important for small game and migratory bird hunting. For all types of hunting, significant numbers of sportsmen hunted on public lands they were uncertain who owned.

The same pattern is shown for days of hunting with big game hunting dominated by Federal lands and the two state owned land categories relatively more important for small game and migratory bird hunting. For all hunting, Federal lands provided 36 percent of total public land hunting days compared to 41 percent for the two state owned categories combined and 6 percent for land owned by local governments.

Tables 3, 4 and 5 provide estimates of hunting on public lands on a state by state basis. These represent hunting in-state by residents and nonresidents combined. Sample sizes were too small in most states to permit separate estimates on a state by state basis for big game, small game and the other types of hunting discussed above.²

Not surprisingly, the largest percentages of hunters using public lands are found in Alaska and in those Western states where substantial portions of the total land area are owned by the Federal government. For example, Table 3 shows that 85 percent of hunters in New Mexico hunted on public land compared to only 9 percent in neighboring Texas where relatively little land is owned by any level of government.

The table shows that even in states where government land holdings are not a significant proportion of the total land area, public lands often provide hunting opportunities to large numbers of hunters. For example, in Massachusetts 67 percent of hunters did at least some of their hunting on public land and 23 percent hunted only on public land. In Michigan, 60 percent of that state's 943,000 hunters hunted on public land and 23 percent did all of their hunting in 1985 on public land. Clearly, public land is an important source of hunting opportunities for large numbers of hunters across the country.

Table 4 shows that the relative shares of hunting days on public and on private land follow the same pattern as the number of hunters with public lands' largest percentages of total hunting days occurring in those states where government land holdings are substantial, but with public lands providing important percentages of total hunting days in all but a few states. In most states the sum of the public land and private land percentages exceeds 100 percent because, as noted above, some respondents reported hunting on both public and private land on the same day. In a few cases, however, the sum is less than 100 percent; Nevada, with a sum of 61 percent, is by far the most extreme case. Such an anomaly is a result of respondents indicating the number of days they hunted but not whether those days were on public or private land. Hunting on land owned by the Federal, state and local governments in 1985 varied significantly between the states, as shown in Table 5. For the country as a whole, 44 percent of those who hunted on public land did so on land owned

²Estimates based on sample sizes of less than 10 observations were considered too unreliable to report and are indicated by ... in the tables.

TABLE 3: HUNTERS ON PUBLIC LAND IN-STATE, BY STATE: 1985
(U.S. POPULATION 16 YEARS OLD AND OLDER. NUMBERS IN THOUSANDS)

STATE	ALL HUNTERS	PUBLIC LAND TOTAL	%	PUBLIC LAND ONLY	%	PRIVATE LAND TOTAL	%	PRIVATE LAND ONLY	%	PUBLIC AND PRIVATE	%
U.S.	16,684	7,853	47	2,629	16	13,746	82	8,522	51	5,224	31
Alabama	444	113	25	29	7	405	91	322	73	84	19
Alaska	90	81	90	71	79	17	19	6	7	11	12
Arizona	259	237	92	195	75	59	23	16	6	42	16
Arkansas	417	161	39	27	6	388	93	254	61	134	32
California	633	342	54	151	24	436	69	245	39	191	30
Colorado	380	286	75	161	42	212	56	87	23	126	33
Connecticut	66	45	68	18	27	46	70	18	27	28	42
Delaware	29	12	41	5	17	24	83	17	59	7	24
Florida	294	178	61	101	34	191	65	114	39	77	26
Georgia	527	108	20	31	6	485	92	407	77	78	15
Hawaii	24	21	88	16	67	7	29	...		5	21
Idaho	213	180	85	92	43	115	54	27	13	88	41
Illinois	406	144	35	63	16	328	81	247	61	81	20
Indiana	361	119	33	36	10	322	89	240	66	82	23
Iowa	316	112	35	19	6	292	92	198	63	94	30
Kansas	274	66	24	15	5	251	92	201	73	51	19
Kentucky	376	82	22	38	10	332	88	289	77	44	12
Louisiana	538	217	40	70	13	447	83	299	56	148	28
Maine	202	42	21	15	7	181	90	154	76	27	13
Maryland	204	80	39	32	16	168	82	120	59	48	24
Massachusetts	132	89	67	31	23	98	74	41	31	57	43
Michigan	943	568	60	220	23	716	76	367	39	349	37
Minnesota	545	311	57	94	17	443	81	226	41	217	40
Mississippi	490	131	27	21	4	469	96	359	73	110	22
Missouri	668	265	40	73	11	584	87	391	59	193	29
Montana	210	153	73	48	23	157	75	53	25	105	50
Nebraska	189	62	33	6	3	181	96	126	67	55	29
Nevada	66	50	76	33	50	22	33	5	8	17	26
New Hampshire	82	37	45	13	16	64	78	40	49	24	29
New Jersey	167	92	55	42	25	123	74	73	44	51	31
New Mexico	150	127	85	78	52	70	47	21	14	49	33
New York	791	332	42	94	12	683	86	445	56	238	30
North Carolina	439	123	28	40	9	386	88	303	69	83	19
North Dakota	130	57	44	8	6	121	93	72	55	49	38
Ohio	515	180	35	45	9	465	90	330	64	135	26
Oklahoma	371	116	31	40	11	306	82	230	62	76	20
Oregon	351	292	83	160	46	182	52	51	15	132	38
Pennsylvania	1,148	810	71	256	22	877	76	323	28	555	48
Rhode Island	15	11	73	6	40	10	67	...		6	40
South Carolina	296	103	35	36	12	244	82	177	60	67	23
South Dakota	168	100	60	20	12	147	88	67	40	81	48
Tennessee	434	152	35	43	10	386	89	276	64	109	25
Texas	1,488	139	9	50	3	1,381	93	1,292	87	89	6
Utah	252	223	88	112	44	139	55	28	11	111	44
Vermont	106	42	40	9	8	93	88	60	57	33	31
Virginia	511	208	41	59	12	448	88	299	59	149	29
Washington	302	239	79	117	39	181	60	60	20	122	40
West Virginia	438	159	36	55	13	379	87	276	63	104	24
Wisconsin	723	397	55	109	15	607	84	320	44	288	40
Wyoming	179	121	68	52	29	125	70	55	31	69	39

... SAMPLE SIZE TOO SMALL TO REPORT DATA RELIABLY.

TABLE 4: DAYS OF HUNTING ON PUBLIC AND PRIVATE LAND IN-STATE, BY STATE: 1985
(NUMBERS IN THOUSANDS)

STATE	ALL DAYS	DAYS ON PUBLIC LAND	%	DAYS ON PRIVATE LAND	%
U.S.	334,013	94,388	28	255,703	77
Alabama	9,618	1,488	15	8,452	88
Alaska	1,163	1,041	90	142	12
Arizona	3,434	3,240	94	519	15
Arkansas	9,125	2,079	23	7,406	81
California	10,848	4,761	44	6,318	58
Colorado	4,280	2,206	52	2,829	66
Connecticut	1,266	525	41	666	53
Delaware	693	134	19	637	92
Florida	7,174	2,912	41	4,613	64
Georgia	10,107	982	10	10,003	99
Hawaii	547	525	96	158	29
Idaho	3,340	2,288	69	1,611	48
Illinois	8,877	1,473	17	7,003	79
Indiana	8,144	1,564	19	7,033	86
Iowa	5,149	1,271	25	4,135	80
Kansas	3,732	529	14	3,326	89
Kentucky	7,751	537	7	6,910	89
Louisiana	12,975	3,786	29	9,142	70
Maine	3,278	367	11	3,082	94
Maryland	3,393	635	19	2,831	83
Massachusetts	2,477	945	38	1,661	67
Michigan	14,908	6,563	44	9,961	67
Minnesota	8,058	3,659	45	5,669	70
Mississippi	11,000	1,574	14	9,771	89
Missouri	12,367	2,271	18	10,120	82
Montana	2,915	1,639	56	1,805	62
Nebraska	3,330	925	28	2,974	89
Nevada	1,693	731	43	311	18
New Hampshire	1,667	485	29	1,111	67
New Jersey	3,420	1,480	43	2,075	61
New Mexico	1,387	987	71	677	49
New York	13,245	3,536	27	11,189	84
North Carolina	9,931	1,318	13	8,843	89
North Dakota	2,230	728	33	2,107	94
Ohio	14,223	1,892	13	11,202	79
Oklahoma	8,080	1,572	19	6,150	76
Oregon	4,030	2,822	70	1,993	49
Pennsylvania	20,081	6,484	32	13,564	68
Rhode Island	399	218	55	124	31
South Carolina	5,276	1,551	29	4,175	79
South Dakota	2,569	1,178	46	1,901	74
Tennessee	8,580	1,543	18	7,190	84
Texas	24,106	1,352	6	22,809	95
Utah	3,194	2,182	68	1,268	40
Vermont	2,014	420	21	1,639	81
Virginia	10,954	2,434	22	9,832	90
Washington	4,511	3,766	83	2,233	50
West Virginia	8,064	1,773	22	6,682	83
Wisconsin	11,830	4,298	36	8,665	73
Wyoming	2,094	1,550	74	940	45

NOTE: DETAIL MAY NOT ADD TO TOTAL BECAUSE OF MULTIPLE RESPONSE AND NONRESPONSE

TABLE 5: HUNTERS ON PUBLIC LAND IN-STATE, BY TYPE OF LAND AND STATE: 1985

(U.S. POPULATION 16 YEARS OLD AND OLDER. NUMBERS IN THOUSANDS)

STATE	ALL PUBLIC LAND		STATE FEDERAL LAND		STATE WILDLIFE REFUGES		OTHER STATE AREAS		LOCAL		UNSPECIFIED PUBLIC LAND ¹	
				%		%		%		%		%
U.S.	7,853	3,451	44		2,455	31	1,839	23	635	8	1,842	23
Alabama	113	51	45		49	43	17	15	...		19	17
Alaska	81	31	38		21	26	18	22	6	7	28	35
Arizona	237	142	60		25	11	38	16	...		87	37
Arkansas	161	102	63		45	28	10	6	...		25	16
California	342	247	72		57	17	38	11	...		132	39
Colorado	286	200	70		66	23	32	11	...		48	17
Connecticut	45	...			14	31	24	53	
Delaware	12	3	25		7	58	3	25	
Florida	178	97	54		58	33		47	26
Georgia	108	57	53		37	34	
Hawaii	21	7	33		6	29	9	43	
Idaho	180	144	80		23	13	24	13	8	4	51	28
Illinois	144	30	21		66	46	32	22	...		40	28
Indiana	119	33	28		46	39	30	25	...		25	21
Iowa	112	22	20		56	50	15	13	15	13	36	32
Kansas	66	18	27		45	68	9	14	...		12	18
Kentucky	82	29	36		33	40		17	21
Louisiana	217	77	35		110	51	...		17	8	56	26
Maine	42	8	19		5	12	6	14	9	21	24	57
Maryland	80	11	14		33	41	28	35	...		16	20
Massachusetts	89	15	17		44	49	31	35	12	13	20	22
Michigan	568	153	27		160	28	270	48	...		111	20
Minnesota	311	77	25		94	30	139	45	45	14	80	26
Mississippi	131	69	53		27	21	12	9	14	11	32	24
Missouri	265	160	60		90	34	39	15	10	4	26	10
Montana	153	130	85		27	18	18	12	6	4	23	15
Nebraska	62	21	34		35	56	11	18	5	8	11	18
Nevada	50	39	78		8	16	3	6	4	8	11	22
New Hampshire	37	8	22		7	19	10	27	6	16	17	46
New Jersey	92	14	15		46	50	45	49	
New Mexico	127	95	75		12	9	19	15	8	6	15	12
New York	332	27	8		141	42	150	45	29	9	58	17
North Carolina	123	75	61		35	28	15	12	...		16	13
North Dakota	57	32	56		27	47	5	9	...		13	23
Ohio	180	50	28		64	36	57	32	22	12	32	18
Oklahoma	116	37	32		52	45	30	26	7	6	22	19
Oregon	292	227	78		30	10	40	14	5	2	51	17
Pennsylvania	810	159	20		343	42	322	40	55	7	138	17
Rhode Island	11	...			6	55	4	36	
South Carolina	103	36	35		58	56		21	20
South Dakota	100	46	46		33	33	13	13	8	8	27	27
Tennessee	152	61	40		54	36	18	12	16	11	34	22
Texas	139	60	43			56	40
Utah	223	173	78		33	15	30	13	13	6	59	26
Vermont	42	14	33		6	14	15	36	4	10	14	33
Virginia	208	155	75		28	13	31	15	...		15	7
Washington	239	136	57		77	32	65	27	26	11	66	28
West Virginia	159	82	52		34	21	21	13	10	6	41	26
Wisconsin	397	86	22		117	29	62	16	113	28	140	35
Wyoming	121	89	74		73	60	13	11	7	6	27	22

NOTE: DETAIL MAY NOT ADD TO TOTAL BECAUSE OF MULTIPLE RESPONSE AND NONRESPONSE.

... SAMPLE SIZE TOO SMALL TO REPORT DATA RELIABLY.

1. ...

by the Federal government. On a state by state basis, the percentage of public land hunters who hunted on Federal land ranged from a high of 80 percent in Idaho to 8 percent in New York with Connecticut and Rhode Island having perhaps even lower percentages masked by small sample sizes. In general, the percentage of hunters hunting on Federal lands is highest in those Western states with extensive Federal land holdings, but there are some notable exceptions. In Virginia, North Carolina and Arkansas, none of which have particularly extensive acreage of Federal land, more than 60 percent of those who hunted on public land did so on land owned by the Federal government. Days of hunting on the different types of public land are given in Table 6 for each of the states.

III. Comparisons with Earlier Surveys

The 1965, 1970 and 1980 Surveys also gathered data on the use of public lands for hunting (USDI 1966, USDI 1972 and USDI 1982). The 1980 Survey results about use of public lands for hunting are discussed in Stoll, et al. (1984).

Table 7 shows that the percentage of hunters using public land increased slightly between 1980 and 1985. The 47 percent of hunters who hunted on public land in 1985 is significantly larger than 1980's corresponding 45 percent.³ However, when the percentage using public land is arrayed by type of hunting it is not apparent what that increase represents. It should be noted that the percent columns in Table 7 are somewhat different than those in earlier tables. For example, they show that 21 percent of all hunters hunted on Federal land in 1985, including 22 percent of big game hunters and 11 percent of small game hunters. The "state managed" category of 1980 was divided into two types of state ownership in 1985 making comparison with 1980 difficult, but there appears to be no significant difference in the use of state land between the two surveys. Use of locally owned land was lower in 1985, 4 percent compared to 13 percent in 1980, while a larger share of hunters was unsure of the ownership of public lands where they hunted in 1985 than in 1980: 11 percent compared to 7 percent in 1980.

Table 8 shows that 32 percent of hunting days in 1980 were spent at least in part on public land compared to 28 percent in 1985. In terms of days per hunter, in 1980 those hunting on public land averaged 13.2 days of hunting on public land compared to a 1985 average of 12.0 days. Thus, while a slightly larger percentage of hunters used public lands in 1985 than in 1980, they averaged fewer days of hunting on public lands and public land accounted for a lower percentage of total days hunted in 1985 than in 1980.

The 1965 and 1970 Surveys also provided national estimates of the use of public land for hunting, but comparison with later surveys is hampered by differences in survey coverage. Most notably, the 1965 and 1970 Surveys included sportsmen between 12 and 15 years of age, an age group that was excluded from the 1980 and 1985 Surveys, and were limited to the approximately 60 percent of sportsmen considered "substantial"; those who fished or hunted at least three days during

³This and other comparisons are based on tests of statistical significance at the 90% level of confidence.

TABLE 6: DAYS OF HUNTING ON PUBLIC LAND IN-STATE, BY TYPE OF LAND AND STATE
(NUMBERS IN THOUSANDS)

STATE	ALL PUBLIC LAND	FEDERAL LAND	%	STATE WILDLIFE REFUGES	%	OTHER STATE AREAS	%	LOCAL	%	UNSPECIFIED PUBLIC LAND ¹	%
U.S.	94,388	34,294	36	21,751	23	16,623	18	5,519	6	16,201	17
Alabama	1,488	493	33	657	44	90	6	...		154	10
Alaska	1,041	367	35	178	17	226	22	77	7	194	19
Arizona	3,240	1,815	56	170	5	191	6	...		977	30
Arkansas	2,079	1,357	65	435	21	51	2	...		163	8
California	4,761	2,974	62	505	11	602	13	...		544	11
Colorado	2,206	1,234	56	490	22	178	8	...		274	12
Connecticut	525		65	12	267	51	
Delaware	134	17	13	56	42	33	25	
Florida	2,912	1,135	39	679	23		773	27
Georgia	982	696	71	234	24	
Hawaii	525	41	8	138	26	298	57	
Idaho	2,288	1,496	65	155	7	175	8	42		418	18
Illinois	1,473	453	31	405	27	207	14	...		345	23
Indiana	1,564	225	14	469	30	441	28	...		410	26
Iowa	1,271	197	15	462	36	95	7	124	10	393	31
Kansas	529	95	18	301	57	36	7	...		84	16
Kentucky	537	162	30	184	34		164	31
Louisiana	3,786	849	22	1,718	45	...		461	12	605	16
Maine	367	45	12	27	7	56	15	42		197	54
Maryland	635	42	7	229	36	248	39	...		82	13
Massachusetts	945	78	8	388	41	256	27	94	10	128	14
Michigan	6,563	1,344	20	1,337	20	2,330	36	...		1,384	21
Minnesota	3,659	725	20	648	18	1,171	32	486	13	630	17
Mississippi	1,574	693	44	350	22	117	7	58	4	357	23
Missouri	2,271	1,298	57	531	23	313	14	29	1	100	4
Montana	1,639	1,145	70	157	10	99	6	68	4	170	10
Nebraska	925	144	16	328	35	180	19	55	6	218	24
Nevada	731	525	72	111	15	9		19	3	67	9
New Hampshire	485	69	14	39	8	85	18	37	8	255	53
New Jersey	1,480	136	9	605	41	561	38	
New Mexico	987	581	59	48	5	211	21	45	5	101	10
New York	3,536	179	5	1,208	34	1,514	43	289	8	346	10
North Carolina	1,318	677	51	332	25	155	12	...		126	10
North Dakota	728	370	51	194	27	29	4	...		119	16
Ohio	1,892	388	21	571	30	480	25	284	15	170	9
Oklahoma	1,572	389	25	596	38	258	16	106	7	224	14
Oregon	2,822	2,033	72	263	9	189	7	41	1	297	11
Pennsylvania	6,484	885	14	2,220	34	2,137	33	276	4	965	15
Rhode Island	218	...		101	46	39	18	
South Carolina	1,551	310	20	813	52		235	15
South Dakota	1,178	441	37	325	28	77	7	50	4	285	24
Tennessee	1,543	435	28	440	29	123	8	132	9	413	27
Texas	1,352	622	46		441	33
Utah	2,182	1,392	64	230	11	147	7	52	2	361	17
Vermont	420	92	22	46	11	113	27	28	7	143	34
Virginia	2,434	1,768	73	131	5	429	18	...		68	3
Washington	3,766	1,382	37	775	21	678	18	256	7	675	18
West Virginia	1,773	637	36	321	18	377	21	115	6	325	18
Wisconsin	4,298	780	18	812	19	571	13	973	23	1,162	27
Wyoming	1,550	1,023	66	78	5	167	11	98	6	185	

NOTE: DETAIL MAY NOT ADD TO TOTAL BECAUSE OF MULTIPLE RESPONSE AND NONRESPONSE.
... SAMPLE SIZE TOO SMALL TO REPORT DATA RELIABLY.

TABLE 7. HUNTERS ON PUBLIC LAND, BY TYPE OF HUNTING IN THE U.S.: 1980 AND 1985

(U.S. POPULATION 16 YEARS OLD AND OLDER. NUMBERS IN THOUSANDS)

	- TOTAL, - ALL HUNTING		TYPE OF HUNTING									
			- BIG GAME -		- SMALL GAME -		MIGRATORY BIRD		-OTHER ANIMALS-			
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
	OF ALL	HUNTERS	OF BIG	HUNTERS	OF SMALL	HUNTERS	OF MIGRA-	HUNTERS	OF OTHER	HUNTERS	ANIMAL	HUNTERS
							TORY BIRD					
1980												
TOTAL, ALL PUBLIC LAND.	7,879	45	5,545	47	4,088	33	1,682	32	558	21		
FEDERAL	3,284	19	2,530	21	1,281	10	474	9	171	6		
STATE MANAGED	3,950	23	2,701	23	2,026	16	779	15	186	7		
LOCAL	2,210	13	1,178	10	1,341	11	486	9	223	8		
UNSPECIFIED PUBLIC LAND ¹ . . .	1,241	7	725	6	607	5	260	5	66	2		
1985												
TOTAL, ALL PUBLIC LAND.	7,853	47	5,855	47	3,629	34	1,593	32	566	20		
FEDERAL	3,451	21	2,750	22	1,176	11	544	11	217	8		
STATE WILDLIFE AREA	2,455	15	1,428	11	1,129	10	574	11	136	5		
OTHER STATE AREA.	1,839	11	1,311	10	762	7	231	5	107	4		
LOCAL	635	4	343	3	272	3	139	3	35	1		
UNSPECIFIED PUBLIC LAND ¹ . . .	1,842	11	987	8	861	8	391	8	93	3		

NOTE: DETAIL DOES NOT ADD TO TOTAL BECAUSE OF MULTIPLE RESPONSES AND NONRESPONSE.

¹RESPONDENT WAS UNABLE TO SAY WHETHER THE PUBLICLY HELD AREA WAS OWNED BY FEDERAL, STATE OR LOCAL GOVERNMENT.

TABLE 8. DAYS OF HUNTING ON PUBLIC LAND, BY TYPE OF HUNTING IN THE U.S.: 1980 AND 1985
(U.S. POPULATION 16 YEARS OLD AND OLDER. NUMBERS IN THOUSANDS)

	- TOTAL, - ALL HUNTING		TYPE OF HUNTING									
			- BIG GAME -		- SMALL GAME -		MIGRATORY BIRD		-OTHER ANIMALS-			
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
		OF ALL DAYS		OF BIG GAME DAYS		OF SMALL GAME DAYS		OF MIGRA- TORY BIRD DAYS		OF OTH ANIMAL DAYS		
1980												
TOTAL, ALL PUBLIC LAND.	104,375	32	45,881	41	39,118	26	12,321	29	7,055	18		
FEDERAL	30,736	9	17,400	15	8,981	6	2,589	6	1,766	5		
STATE MANAGED	34,524	10	14,954	13	13,286	9	4,351	10	1,663	4		
LOCAL	28,054	8	9,113	8	12,396	8	3,778	9	2,767	7		
UNSPECIFIED PUBLIC LAND ¹	11,331	3	4,415	4	4,456	3	1,602	4	858	2		
1985												
TOTAL, ALL PUBLIC LAND.	94,388	28	44,972	34	30,235	23	11,827	28	7,354	16		
FEDERAL	34,294	10	19,885	15	8,367	6	3,446	8	2,596	6		
STATE WILDLIFE AREA	21,751	7	9,099	7	7,516	6	3,680	9	1,457	3		
OTHER STATE AREA.	16,623	5	8,247	6	5,790	4	1,164	3	1,421	2		
LOCAL	5,519	2	1,814	1	2,314	2	783	2	608	1		
UNSPECIFIED PUBLIC LAND ¹	16,201	5	5,927	5	6,247	5	2,754	7	1,273	2		

NOTE: DETAIL DOES NOT ADD TO TOTAL BECAUSE OF MULTIPLE RESPONSES AND NONRESPONSE.

¹RESPONDENT WAS UNABLE TO SAY WHETHER THE PUBLICLY HELD AREA WAS OWNED BY FEDERAL, STATE OR LOCAL GOVERNMENT.

the year or spent more than \$5 (\$7.50 in 1970).

With these qualifications, Table 9 shows considerably more use of public land for hunting in 1985 than in earlier years and a corresponding decrease in the percentage of hunters hunting only on private land. Such an increase in use of public land is consistent with the additional posting of privately owned land and other changes during that twenty year period that made finding a place to hunt more difficult (Decker et al. 1977).

TABLE 9: HUNTING ON PUBLIC LAND, 1965, 1970, 1985

(PERCENT OF ALL HUNTERS)

YEAR	HUNTED PUBLIC LAND	PUBLIC LAND ONLY	PUBLIC AND PRIVATE	PRIVATE ONLY
1965	32%	11%	22%	68%
1970	34	9	25	66
1980	45	*	*	*
1985	47	16	31	51

NOTE: DETAIL MAY NOT ADD TO TOTAL BECAUSE OF NONRESPONSE.

* NOT AVAILABLE FOR 1980.

IV Characteristics of Public Land Hunters

Table 10 shows the number and percent of hunters who used public lands for hunting in 1985 and the number of days they hunted there according to a range of sociodemographic characteristics and geographic identifiers. The table shows, for example, that 52 percent of hunters living in urban areas hunted on publicly owned land, comprising 50 percent of all public land hunters. They hunted 36 percent of their total days of hunting on public lands and accounted for 48 percent of all days hunted on public lands in 1985.

There are a number of interesting differences in the proportions of hunters using public lands in the various categories represented. For example, the percentages are considerably higher in the Pacific and Mountain regions than in the rest of the country, as suggested above, and rural hunters and blacks are less likely to hunt on public lands than are urban hunters and whites. There are also differences in percentages using public land among the different age, income and education categories, with the highest rates of participation in the middle range for all three variables.

TABLE 10. HUNTERS AND DAYS OF HUNTING ON PUBLIC LAND IN THE U.S., BY SELECTED CHARACTERISTIC: 1985
(U.S. POPULATION 16 YEARS OLD AND OLDER. NUMBERS IN THOUSANDS)

CHARACTERISTIC	HUNTERS				DAYS OF HUNTING (2)			
	- HUNTERS ON PUBLIC LAND (1) -				- DAYS ON PUBLIC LAND -			
	TOTAL HUNTERS, PUBLIC AND PRIVATE LAND	NUMBER	PERCENT OF TOTAL HUNTERS	PERCENT HUNTERS USING PUBLIC LAND	TOTAL DAYS, PUBLIC AND PRIVATE LAND	NUMBER	PERCENT OF TOTAL DAYS	PERCENT OF DAYS ON PUBLIC LAND
TOTAL PERSONS.	16,684	7,853	47	100	334,013	94,388	28	100
POPULATION DENSITY OF RESIDENCE								
URBAN.	7,555	3,943	52	50	127,038	45,197	36	48
RURAL.	9,129	3,910	43	50	206,975	49,191	24	52
POPULATION SIZE OF RESIDENCE								
SMSA	7,874	4,064	52	52	133,743	44,303	33	47
1,000,000 OR MORE. . .	3,303	1,695	51	22	47,466	16,956	36	18
250,000 - 999,999. . .	3,103	1,710	55	22	57,957	18,831	32	20
50,000 - 249,999. . .	1,468	659	45	8	28,320	8,516	30	9
OUTSIDE SMSA	8,810	3,788	43	48	200,270	50,085	25	53
CENSUS GEOGRAPHIC DIVISION (3)								
NEW ENGLAND.	557	253	45	3	11,350	3,034	27	3
MIDDLE ATLANTIC.	1,976	1,203	61	15	36,662	11,851	32	13
EAST NORTH CENTRAL. . . .	2,831	1,411	50	18	57,899	16,264	28	17
WEST NORTH CENTRAL. . . .	1,988	903	45	11	36,754	10,655	29	11
SOUTH ATLANTIC.	2,465	915	37	12	56,937	12,025	21	13
EAST SOUTH CENTRAL. . . .	1,502	442	29	6	36,413	4,988	14	5
WEST SOUTH CENTRAL. . . .	2,675	661	25	8	56,261	9,238	16	10
MOUNTAIN.	1,316	1,090	83	14	20,640	13,160	64	14
PACIFIC.	1,373	975	71	12	21,096	13,174	62	14
SEX AND AGE GROUP								
BOTH SEXES, TOTAL. . . .	16,684	7,853	47	100	334,013	94,388	28	100
16 - 17 YEARS.	1,056	454	43	6	26,188	5,488	21	6
18 - 24 YEARS.	2,896	1,453	50	18	68,564	19,188	28	20
25 - 34 YEARS.	4,588	2,351	51	30	96,838	29,098	30	31
35 - 44 YEARS.	3,597	1,748	49	22	71,986	21,293	30	23
45 - 54 YEARS.	2,152	941	44	12	33,272	10,609	32	11
55 - 64 YEARS.	1,498	611	41	8	22,198	5,525	25	6
65 YEARS AND OLDER. . .	897	295	33	4	14,967	3,188	21	3
MALE	15,195	7,288	48	93	313,341	88,876	28	94
FEMALE	1,489	564	38	7	20,672	5,512	27	6
RACE								
WHITE.	16,014	7,583	47	97	322,136	90,311	28	96
BLACK.	457	143	31	2	7,964	1,573	20	2
ALL OTHERS	213	127	59	2	3,913	2,505	64	3

(CONTINUED ON NEXT PAGE)

TABLE 10. HUNTERS AND DAYS OF HUNTING ON PUBLIC LAND IN THE U.S., BY SELECTED CHARACTERISTIC: 1985 (cont.)
(U.S. POPULATION 16 YEARS OLD AND OLDER. NUMBERS IN THOUSANDS)

CHARACTERISTIC	HUNTERS				DAYS OF HUNTING (2)			
	- HUNTERS ON PUBLIC LAND (1) -				- DAYS ON PUBLIC LAND -			
	TOTAL HUNTERS, PUBLIC AND PRIVATE LAND	NUMBER	PERCENT OF TOTAL HUNTERS	PERCENT USING PUBLIC LAND	TOTAL DAYS, PUBLIC AND PRIVATE LAND	NUMBER	PERCENT OF TOTAL DAYS	PERCENT OF DAYS ON PUBLIC LAND
ANNUAL HOUSEHOLD INCOME								
UNDER \$10,000.	1,605	687	43	9	37,309	9,865	26	10
\$10,000 TO \$19,999 . . .	3,735	1,740	47	22	81,766	21,696	27	23
\$20,000 TO \$24,999 . . .	1,746	837	48	11	34,502	10,441	30	11
\$25,000 TO \$29,999 . . .	2,662	1,342	50	17	54,275	14,912	27	16
\$30,000 TO \$49,999 . . .	4,353	2,145	49	27	81,939	24,453	30	26
\$50,000 TO \$74,999 . . .	1,335	616	46	8	22,458	7,467	33	8
\$75,000 OR MORE.	688	253	37	3	10,822	2,811	26	3
NOT REPORTED	560	233	42	3	10,941	2,743	25	3
EDUCATION								
8 YEARS OR LESS.	1,245	466	37	6	23,184	5,194	22	6
9 - 11 YEARS	2,870	1,297	45	17	66,996	16,926	25	18
12 YEARS	6,805	3,293	48	42	141,969	40,535	29	43
1 - 3 YEARS COLLEGE. . .	3,233	1,656	51	21	62,196	20,022	32	21
4 YEARS COLLEGE.	1,378	652	47	8	22,179	6,478	29	7
5 OR MORE YEARS COLLEGE.	1,152	490	42	6	17,490	5,234	30	6

NOTE: PERCENT OF TOTAL HUNTERS AND PERCENT OF TOTAL DAYS ARE BASED ON THE TOTAL HUNTERS AND TOTAL DAYS COLUMNS FOR EACH ROW. PERCENT OF HUNTERS USING PUBLIC LAND AND PERCENT OF DAYS ON PUBLIC LAND ARE BASED ON THE TOTAL NUMBER OF HUNTERS ON PUBLIC LAND AND TOTAL NUMBER OF DAYS ON PUBLIC LAND.

(1) HUNTERS ON PUBLIC LAND INCLUDE THOSE WHO HUNTED ON BOTH PUBLIC AND PRIVATE LAND.

(2) INCLUDES BOTH DAYS SPENT SOLELY ON PUBLIC LAND AND THOSE SPENT ON PUBLIC AND PRIVATE LAND.

(3) NEW ENGLAND: CONNECTICUT, MAINE, MASSACHUSETTS, NEW HAMPSHIRE, RHODE ISLAND, VERMONT.

MIDDLE ATLANTIC: DELAWARE, NEW YORK, PENNSYLVANIA, NEW JERSEY. SOUTH ATLANTIC: FLORIDA, GEORGIA, MARYLAND, NORTH CAROLINA, SOUTH CAROLINA, VIRGINIA, WEST VIRGINIA. EAST NORTH CENTRAL: ILLINOIS, INDIANA, MICHIGAN, OHIO, WISCONSIN. SOUTH CENTRAL: ALABAMA, KENTUCKY, MISSISSIPPI, TENNESSEE. WEST NORTH CENTRAL: IOWA, KANSAS, MINNESOTA, MISSOURI, NEBRASKA, NORTH DAKOTA, SOUTH DAKOTA. WEST SOUTH CENTRAL: ARKANSAS, LOUISIANA, OKLAHOMA, TEXAS. MOUNTAIN: ARIZONA, COLORADO, IDAHO, MONTANA, NEVADA, NEW MEXICO, UTAH, WYOMING. PACIFIC: CALIFORNIA, OREGON, WASHINGTON.

These kinds of descriptive characterizations of hunters who use public land show that they are different from hunters who do not, but such descriptions have limitations. First, without conducting the appropriate statistical tests, it is not possible to determine whether what may appear to be differences between the groups are, in fact, statistically significant.⁴ Second, concluding that a difference in percentages of a given group that hunted on public land is significant is not sufficient to measure the individual effects of such characteristics on a hunter's decision whether or not to hunt on public land. For example, are white hunters more likely to hunt on public land because of their race or because they are more likely than are hunters of other races to come from urban areas and from households in the middle income categories, two factors with which race is correlated and which are also associated with higher than average rates of hunting on public land.

Probability of participation models have been used in several studies to analyze decision situations involving hunters' choices as a means of evaluating the effects of sociodemographic and other factors in an "other things being equal" framework. They include analyses of an individual hunter's decision to pay a fee to hunt (Langner 1987), or to hunt waterfowl (Miller and Hay 1981). In this instance, a probability of hunting on public land model was estimated as a means of predicting what sort of hunter is most likely to hunt on public lands and evaluating the individual effects of sociodemographic and other factors on that decision.

The model hypothesizes that a hunter's decision whether or not to hunt on public land, given that he has already decided to hunt, depends on his sociodemographic characteristics and the region of the country in which he lives, as a rough measure of the availability of public land hunting sites. The dependent variable is binary, either 1 or 0, because the individual either hunts on public land or does not.

Equation 1 is a logit model for the probability of hunting on public land, P_i .

$$(1) \quad \ln \frac{P_i}{(1 - P_i)} = \alpha + \beta X_i$$

The left hand side of equation 1 is the logit, or logarithm of the odds that the i^{th} individual hunts on public land, X_i is a vector of explanatory variables, and β is a vector of coefficients to be estimated. The non-linear logistic function is S-shaped with the estimated probability ranging from zero to one. The effect on the probability of a change in an explanatory variable is greatest in the middle

⁴The 1985 Survey reports provide formulas for calculating the standard errors necessary for such tests, but that soon becomes a laborious process. However, because of the large sample sizes upon which the national estimates are based, relatively small differences in the table are statistically significant. As a general rule, any difference in Table 10 that is 2 percent or larger will be significant at the 90 percent confidence level.

of that range and smallest near the probability extremes of zero and one.⁵

The explanatory variables in the estimated probability model, selected from those in Table 10, are a combination of binary and continuous variables. Table 11 gives their names, definitions and means.

Table 11. Independent Variables in the Probability Model.

Variable	Measurement	Mean
INC	Annual household income, thousands of \$	31.2
AGE	Age of respondent, years	36.3
URBAN	1 if respondent lived in urban area, 0 otherwise	.49
RACE	1 if nonwhite, 0 otherwise	.04
SEX	1 if female, 0 if male	.09
EAST ¹	1 if respondent lived in the East, 0 otherwise	.32
WEST ¹	1 if respondent lived in the West, 0 otherwise	.15

¹ EAST includes the New England, Middle Atlantic and South Atlantic regions from Table 10. WEST includes the Mountain and Pacific regions from that table.

The means of the binary variables provide some indication of the nature of the sample of hunters used in the estimation. They show that 49 percent of the hunters are from urban areas, 4 percent are nonwhite and 9 percent are female. The regional variables show that 32 percent are from the East and 15 percent are from Western states, meaning that the remainder, 53 percent, are from the Central regions.

⁵In addition to these plausible characteristics, logit has desirable statistical properties compared to linear probability functions estimated with ordinary least squares regression. See Miller and Hay (1981).

The model shown below was estimated with a nationwide sample of 6,087 hunters, 47 percent of whom used public land in 1985.⁶

$$\ln \frac{P_i}{(1 - P_i)} = -0.031 - .006INC - .001AGE + .393URBAN - .535RACE \\ (3.86) \quad (5.72) \quad (7.17) \quad (3.80) \\ - .659SEX + .531EAST + 1.45WEST \\ (6.61) \quad (8.98) \quad (17.0)$$

likelihood ratio index = .06
 $\chi^2 = 515.1$ (7 degrees of freedom)

The t ratios in parentheses below the coefficients indicate that all of the variables are significant at the 1 percent level. The likelihood ratio index for the equation of .06 indicates that it explains a relatively small portion of the variation in the dependent variable, typical of recreation participation models.⁷

The estimate shows that the probability of hunting on public land decreases as age and income go up and that it is higher for those living in urban areas but lower for nonwhites and females, other things being equal. Hunters living in the East or the West are more likely to hunt on public lands than are hunters in the Central part of the country. Overall, the estimated model correctly predicted 73 percent of the sample's hunters who had hunted on public land.

The estimated coefficients do not provide a direct measure of the marginal effect of a change in the independent variables on the probability that a hunter will hunt on public land because the logit model is nonlinear. The partial derivatives of the estimated equation evaluated at the means of the independent variables are as follows:

INC	-.0014	SEX	-.1468
AGE	-.0027	EAST	.1328
URBAN	.0982	WEST	.3629
RACE	-.1337		

As examples of the derivatives' interpretation, being female will decrease the probability by .15 and living in the West will increase it by a substantial .36,

⁶The model was estimated with LIMDEP's maximum likelihood, weighted logit.

⁷The likelihood ratio index is a logit analogue of the multiple correlation coefficient in least squares regression. See Miller and Hay (1981).

other things being equal. It is important to remember, however, that the magnitude of the derivative depends on the size of the predicted probability with the marginal effect being greatest when the prediction is near .50 and smallest when it is near the probability limits of zero and one.⁸

V. Nonconsumptive Wildlife Use on Public Lands

The 1985 Survey gathered extensive information on wildlife observation and photography, and other nonconsumptive uses of wildlife in the United States including the use of public lands for such purposes. The Survey categorized different types of nonconsumptive use according to level of interest, primary and secondary, and location of the activity, residential and nonresidential (see USDI 1988).

Table 12 shows that large majorities of nonconsumptive participants visited public lands to observe, photograph or feed wildlife in 1985. "Primary" participants are those for whom such activities were the primary purpose of the trip or visit, and "secondary" participants are those who were on a trip or visit for another purpose, a picnic or camping trip perhaps, but who reported enjoying seeing or hearing wildlife on the same occasion. In both cases the activities are "nonresidential" meaning that they involved a trip of a mile or more from the respondent's home.

Among all participants, 73 percent visited public lands for such purposes at least once during 1985; 86 percent of primary participants and 68 percent of the much larger number of secondary participants. Since an individual could be counted in each of the two groups, the numbers of primary and secondary participants are not additive. In terms of the type of public land, "other state areas", such as state forests and parks, were visited most often by both groups, followed by Federal areas.

Table 13 gives for each state the number of primary nonresidential participants in 1985 and how many of them visited public lands. The percentages visiting public lands are substantial in all cases, ranging from a low of 63 percent in North Dakota to 98 percent in Rhode Island. Table 14 gives the breakdown of those visits in terms of ownership of the public land visited. In this table the two types of state owned land have been combined into one. With a few exceptions, primarily Western states where Federal lands are plentiful, state owned land was visited more often than Federal land, with locally owned land generally a distant third. Once again as with hunting, substantial numbers of nonconsumptive participants did not know which level of government owned the land they had visited.

⁸This is evident in the formula for the logit partial derivatives.

$$\partial P / \partial X_1 = P_1(1 - P_1)\beta_1$$

As P_1 approaches zero or one the value of the derivative goes to zero.

TABLE 12. NONRESIDENTIAL PARTICIPANTS VISITING PUBLIC AREAS IN THE U.S., BY LEVEL OF INTEREST: 1985

(U.S. POPULATION 16 YEARS OLD AND OLDER. NUMBERS IN THOUSANDS)

PARTICIPANTS	TOTAL		LEVEL OF INTEREST			
	NUMBER	PERCENT	PRIMARY		SECONDARY	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
NONRESIDENTIAL PARTICIPANTS	94,812	100	29,347	100	89,532	100
VISITED PUBLIC AREAS	69,155	73	25,199	86	60,892	68
DID NOT VISIT PUBLIC AREAS	25,656	27	4,148	14	28,640	32
PARTICIPANTS VISITING PUBLIC AREAS						
TOTAL, ALL PUBLIC AREAS	69,155	100	25,199	100	60,892	100
FEDERAL AREAS	27,388	40	9,550	38	22,474	37
STATE WILDLIFE AREAS	20,524	30	8,254	33	15,572	26
OTHER STATE AREAS	37,142	54	10,429	41	32,162	53
LOCAL GOVERNMENT AREAS	17,446	25	6,526	26	13,283	22
UNSPECIFIED PUBLIC AREAS ¹	17,398	25	6,425	25	13,349	22

NOTE: DETAIL DOES NOT ADD TO TOTAL BECAUSE OF MULTIPLE RESPONSES.

¹RESPONDENT WAS UNABLE TO SAY WHETHER THE PUBLICLY HELD AREA WAS OWNED BY FEDERAL, STATE OR LOCAL GOVERNMENT.

TABLE 13: NONRESIDENTIAL PARTICIPANTS VISITING PUBLIC AREAS IN-STATE, BY STATE
(U.S. POPULATION 16 YEARS OLD OR OLDER, IN THOUSANDS)

STATE	VISITED		%
	TOTAL	PUBLIC LAND	
U.S.	29,347	25,199	86
Alabama	312	216	69
Alaska	190	180	95
Arizona	886	857	97
Arkansas	318	212	67
California	2,919	2,750	94
Colorado	948	852	90
Connecticut	373	327	88
Delaware	120	101	84
Florida	2,261	2,173	96
Georgia	635	525	83
Hawaii	150	140	93
Idaho	381	311	82
Illinois	1,289	1,144	89
Indiana	694	573	83
Iowa	605	555	92
Kansas	233	143	61
Kentucky	488	349	72
Louisiana	359	271	75
Maine	446	330	74
Maryland	605	515	85
Massachusetts	931	825	89
Michigan	1,607	1,338	83
Minnesota	727	588	81
Mississippi	242	157	65
Missouri	836	656	78
Montana	435	418	96
Nebraska	338	243	72
Nevada	232	218	94
New Hampshire	380	293	77
New Jersey	836	775	93
New Mexico	377	290	77
New York	1,864	1,572	84
North Carolina	667	586	88
North Dakota	150	95	63
Ohio	1,403	1,126	80
Oklahoma	556	441	79
Oregon	722	679	94
Pennsylvania	2,167	1,647	76
Rhode Island	373	364	98
South Carolina	249	204	82
South Dakota	292	274	94
Tennessee	830	706	85
Texas	1,421	995	70
Utah	435	412	95
Vermont	254	196	77
Virginia	929	794	85
Washington	749	680	91
West Virginia	330	232	70
Wisconsin	1,278	1,056	83
Wyoming	551	528	96

TABLE 14: PRIMARY NONRESIDENTIAL PARTICIPANTS VISITING PUBLIC AREAS, BY TYPE AND STATE.
(POPULATION 16 YEARS OLD OR OLDER, IN THOUSANDS)

STATE	ALL PUB- LIC LAND	FEDERAL LAND	%	STATE LAND	%	LOCAL LAND	%	UNSPECIFIED LAND	%
U.S.	25,199	9,550	38	18,093	72	6,526	26	6,425	25
Alabama	216	81	38	142	66	29	13	49	23
Alaska	180	128	71	118	66	41	23	80	44
Arizona	857	544	63	439	51	104	12	182	21
Arkansas	212	113	53	125	59	17	8	53	25
California	2,750	1,268	46	1,325	48	660	24	1,024	37
Colorado	852	589	69	393	46	151	18	226	27
Connecticut	327	...		220	67	101	31	66	20
Delaware	101	39	39	83	82	8	8	16	16
Florida	2,173	762	35	1,224	56	576	27	586	27
Georgia	525	164	31	375	71	...		81	15
Hawaii	140	49	35	116	83	37	26	61	44
Idaho	311	164	53	119	38	50	16	176	57
Illinois	1,144	297	26	409	36	509	44	195	17
Indiana	573	118	21	428	75	104	18	139	24
Iowa	555	135	24	312	56	141	25	169	30
Kansas	143	30	21	104	73	26	18	40	28
Kentucky	349	155	44	235	67	52	15	67	19
Louisiana	271	87	32	124	46	92	34	50	18
Maine	330	122	37	210	64	80	24	90	27
Maryland	515	225	44	287	56	113	22	85	17
Massachusetts	825	246	30	440	53	270	33	251	30
Michigan	1,338	288	22	1,019	76	382	29	218	16
Minnesota	588	112	19	420	71	208	35	179	30
Mississippi	157	39	25	129	82	...		16	10
Missouri	656	224	34	494	75	158	24	57	9
Montana	418	364	87	175	42	27	6	64	15
Nebraska	243	68	28	171	70	36	15	49	20
Nevada	218	123	56	124	57	27	12	61	28
New Hampshire	293	115	39	197	67	85	29	99	34
New Jersey	775	188	24	418	54	307	40	207	27
New Mexico	290	214	74	112	39	22	8	52	18
New York	1,572	253	16	986	63	387	25	354	23
North Carolina	586	292	50	325	55	75	13	126	22
North Dakota	95	64	67	44	46	19	20	26	27
Ohio	1,126	134	12	738	66	435	39	185	16
Oklahoma	441	109	25	238	54	105	24	66	15
Oregon	679	317	47	439	65	99	15	259	38
Pennsylvania	1,647	315	19	1,246	76	380	23	310	19
Rhode Island	364	10	3	331	91	24	7	39	11
South Carolina	204	57	28	156	76	30	15	62	30
South Dakota	274	165	60	172	63	29	11	57	21
Tennessee	706	399	57	383	54	97	14	104	15
Texas	995	389	39	441	44	165	17	203	20
Utah	412	304	74	199	48	23	6	121	29
Vermont	196	85	43	127	65	33	17	80	41
Virginia	794	445	56	412	52	105	13	110	14
Washington	680	322	47	305	45	145	21	233	34
West Virginia	232	110	47	150	65	...		46	20
Wisconsin	1,056	262	25	688	65	349	33	265	25
Wyoming	528	479	91	219	41	50	9	100	19

NOTE: DETAIL MAY NOT ADD TO TOTAL BECAUSE OF MULTIPLE RESPONSE AND NONRESPONSE.
... SAMPLE SIZE TOO SMALL TO REPORT DATA RELIABLY.

VI. Summary

The 1985 National Survey of Fishing, Hunting and Wildlife Associated Recreation confirmed what previous surveys had shown, namely that publicly owned lands provide a place to hunt for a significant number of hunters of all kinds. Comparisons with surveys conducted in 1965 and 1970 suggested that the percent of hunters using public lands had increased considerably during that 20 year period. While use of public lands is highest in Alaska and Western states with large Federal holdings, public land is widely used for hunting in virtually all regions of the country.

Comparisons of the sociodemographic characteristics of those hunters who use public land with those who do not revealed some interesting differences between the two groups. In general, hunters who are from an urban area, have a household income in the middle of the income range, and come from a Western or Pacific state are more likely to use public land than are hunters in general. Estimates of a probability of hunting on public land model provided an alternative statistical method of assessing these relationships.

The 1985 Survey also showed that public lands are widely used by wildlife observers and photographers, and other nonconsumptive users of wildlife. For the nation as a whole, 86 percent of primary nonresidential participants used public land for such purposes at least once during 1985, a rate of public land use that is nearly twice that of hunters.

These findings of the 1985 Survey underscore the importance of public land for millions of wildlife users, hunters and nonconsumptive users alike, as well as the need by managers of those lands for information about who those users are and what policies and management actions can be taken to enhance the value of those activities. The survey provides general information about who public land users are and what kinds of activities they engage in on a nationwide and state level. This paper has used only those summary level statistics. Further analysis of the data file on a more narrowly defined basis, waterfowl hunters on Federal land for example, could be combined with analysis of data from other sources to provide more specific information for policy and management purposes.

REFERENCES

- Decker, D.J., C.P. Dawson and T.L. Brown. 1979. "Expanding Hunters' Access to Private Lands: Potentials, Problem, and Research Need." in Transactions of the Northeast Section of the Wildlife Society. pp. 160-168.
- Langner, L.L. 1987. "Hunter Participation in Fee Access Hunting." in Transactions of the 52nd North American Wildlife and Natural Resources Conference, pp.475-482. Wildlife Management Institute. Washington, DC.
- Miller, J.R., and M.J. Hay. 1981. "Determinants of Hunter Participation: Duck Hunting in the Mississippi Flyway." American Journal of Agricultural Economics. November 1981. pp. 677-684.
- Stoll, J.R., C. Stellar, and R. Ziemer. 1984. Recreational Use of Public vs. Privately Owned Lands for Hunting. Report No. 4 Analysis of the 1980 National Survey of Fishing, Hunting and Wildlife-Associated Recreation. U.S. Fish and Wildlife Service. Washington, DC.
- U.S. Department of the Interior, Fish and Wildlife Service. 1967. The 1965 National Survey of Fishing and Hunting.. Washington, DC:U.S. Government Printing Office.
- U.S. Department of the Interior, Fish and Wildlife Service. 1972. The 1970 National Survey of Fishing and Hunting.. Washington, DC:U.S. Government Printing Office.
- U.S. Department of the Interior, Fish and Wildlife Service. 1982. The 1980 National Survey of Fishing, Hunting and Wildlife Associated Recreation. Washington, DC:U.S. Government Printing Office.
- U.S. Department of the Interior, Fish and Wildlife Service. 1988. The 1985 National Survey of Fishing, Hunting and Wildlife Associated Recreation. Washington, DC.