

EFFECTS OF HORN SIZE AND HUNTER SUCCESS ON SATISFACTION WITH BROOKS RANGE SHEEP HUNTS

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Abstract: For many years, the Alaska Department of Fish and Game's goal for sheep (*Ovis dalli*) hunting in the Brooks Range was to provide for taking rams under aesthetically pleasing conditions, including opportunities to be selective about which rams to take. Seven-eighths-curl remained the minimum legal horn size after most of the rest of Alaska had gone to full-curl management. To determine whether hunters were satisfied with their Brooks Range experience, we sent questionnaires to 750 people who hunted from 1990 to 1992; 444 (62%) were filled out and returned. Fifty-four percent of the respondents were successful in taking a legal ram, and only 14% did not see a legal ram. Fifty-eight percent of all hunters saw legal rams they did not stalk, and 34% stalked rams they did not shoot. Hunters were evenly divided in their response to statements that any legal ram is a trophy or that only large, old rams >full-curl are true trophies; however, they generally agreed that full-curl rams are trophies. When asked to define "trophy" in their own words, 61% described rams that would be full-curl or larger while 25% specified any legal ram. Twenty-four percent added that the quality of the hunt should determine the value of the horns as a trophy. Successful hunters were more satisfied with their overall hunting experience than unsuccessful hunters, but successful hunters generally were satisfied with their rams as trophies regardless of horn size or how they defined a trophy.

By the early 1990s, general hunting regulations for Dall sheep in most of the interior and southcentral Alaska allowed the taking of full-curl rams only, with the legal definition of full-curl also including any rams over 8 years old or with both horns broomed. A less restrictive bag limit of 7/8-curl prevailed in the Brooks Range in northern Alaska, where the sheep management goal was to provide opportunities for taking rams under aesthetically pleasing conditions. Absence of crowding and the opportunity to be selective in choosing which ram to shoot were generally understood to be the primary components of hunting under "aesthetically pleasing conditions." Remoteness of the Brooks Range, abundant sheep populations, and generally low hunting pressure led the Alaska Department of Fish and Game (ADFG) to believe we were achieving our sheep management goal in spite of the less restrictive regulations. However, numbers of hunters using the Brooks Range increased steadily during most of the 1980s and, by 1992, sheep numbers were declining after a series of harsh winters. Hunters and managers became concerned that competition for reduced numbers of rams, along with a 7/8-curl bag limit, would soon compromise the Brooks Range hunting experience.

After 1989, management plans for the Brooks Range included an objective to maintain a harvest with a mean horn length exceeding 34 inches and a mean age exceeding 8 years (Nowlin and Heimer 1989, Golden 1990, Stephenson 1993). We were achieving this objective through 1991, but beginning to fall slightly short in some areas by 1992 (Goodwin 1993). However, we had little or no information on whether sheep hunters were selective in choosing which rams to shoot and, if so, what criteria they used for selection. Therefore, we decided to survey Brooks Range hunters to determine how ram horn size influenced their overall hunting experience and to solicit ideas for what we could do to provide continued or improved hunter satisfaction.

METHODS

In late 1992, we sent questionnaires to all people who reported hunting sheep in the northern and eastern Brooks Range during 1990 and 1991. A random sample of hunters from 1992 was added to raise the total number of contacts to 750. Hunter names were screened so that no one was sent >1 questionnaire, and hunters were instructed to base

their responses on their most recent Brooks Range hunt only. Questionnaires were sent to the address the hunter used when obtaining a Dall Sheep Hunter Report Card, which was required of all resident and nonresident sport hunters. We made no attempt to find hunters who had moved to new addresses, and no follow-up or reminder letters were sent. The survey asked questions about a number of aesthetic values, but only responses related to horn size and its effects on hunter satisfaction will be provided in this report.

RESULTS

Thirty-five questionnaires were not deliverable. Hunters returned 444 of the remaining questionnaires, a response rate of 62%. However, 1 respondent refused to answer any questions and 4 more had not hunted in the Brooks Range, yielding 439 questionnaires with usable data. Sample sizes for specific responses or analyses varied because some respondents did not answer all questions.

Fifty-four percent of the respondents ($n = 420$) were successful in taking a 7/8-curl or larger ram, compared to 37% of Dall sheep hunters statewide during the same time period ($n = 10,087$; D. Harkness, ADFG, unpubl.). Eighty-six percent of all hunters ($n = 439$) and 70% of the unsuccessful hunters ($n = 193$) saw at least 1 legal ram during their Brooks Range hunt. Unsuccessful hunters reported seeing a mean of 3.5 legal rams each, while successful hunters ($n = 227$) saw a mean of 7.3 each (Fig. 1). Fifty percent of the unsuccessful hunters ($n = 196$) passed up a mean of 4.4 legal rams each (i.e., decided not to stalk them), compared to 64% of the successful hunters ($n = 231$) passing up a mean of 5.7 rams each. Successful and unsuccessful hunters differed little in their reasons for passing up rams (Table 1). Thirty-eight percent of the unsuccessful hunters stalked rams they did not shoot ($\bar{x} = 2.2$ per hunter), compared to 30% of the successful hunters ($\bar{x} = 1.7$ per hunter).

Hunters were fairly evenly divided in their responses to statements that any legal ram is a trophy or that only exceptionally large, old rams are true trophies (Table 2). Hunters generally agreed with a statement that trophy rams are \geq full-curl, and this was particularly true for unsuccessful hunters. When asked to define "trophy" in their own words, both successful and unsuccessful hunters gave similar responses (Table 3). After adjusting for

double responses from some individuals, 61% of all hunters defined trophies as full-curl or larger rams (assuming that rams with 36-inch horns have reached full-curl). Successful hunters enjoyed their overall hunting experience more than unsuccessful hunters (Fig. 2). Successful hunters were generally satisfied with their rams as trophies (Fig. 3), even though horn length and age of rams varied greatly (Fig. 4). Mean horn length for all rams shot by hunters in this survey was 35.1 inches and mean age was 8.43 years. Horn length had to be <33 inches before hunters began to be less satisfied with their rams as trophies or >37 inches before they began to show increased satisfaction (Table 4).

Mean ram horn lengths and ages were essentially the same regardless of how hunters defined a trophy (Table 5). Most hunters who defined trophies as exceeding specific minimum horn lengths actually shot rams with smaller horns; most were still satisfied with their trophies, although a few were not (Table 6).

Hunters using highway vehicles for access reported only 32% success ($n = 75$), and 27% did not see a legal ram. Hunters using aircraft had a success rate of 60% ($n = 341$), and only 9% did not see a legal ram. Successful hunters were more satisfied than unsuccessful hunters regardless of the type of transportation used. Unsuccessful hunters using highway vehicles or charter aircraft reported the lowest satisfaction ratings (Table 7).

Unsuccessful hunters reported more years of prior sheep hunting experience than successful hunters in all categories except for hunting sheep outside Alaska (Table 8).

DISCUSSION

Several factors may explain why successful hunters tended to be satisfied with their rams regardless of horn length or age. Hunters often described trophy value in terms of horn curl, and some full-curl or $>$ full-curl rams had horns well below the mean horn lengths in this sample. Also, relatively short but heavily broomed horns meet the legal definition of full-curl and are very appealing to some hunters. Finally, almost 1 quarter of all hunters responded that a trophy is undefinable (or at least unquantifiable) because the quality of the hunt should determine the value of the horns as a reminder of the hunting experience, rather than the size of the horns determining the value of the hunt.

NUMBER OF LEGAL RAMS SEEN BY HUNTERS

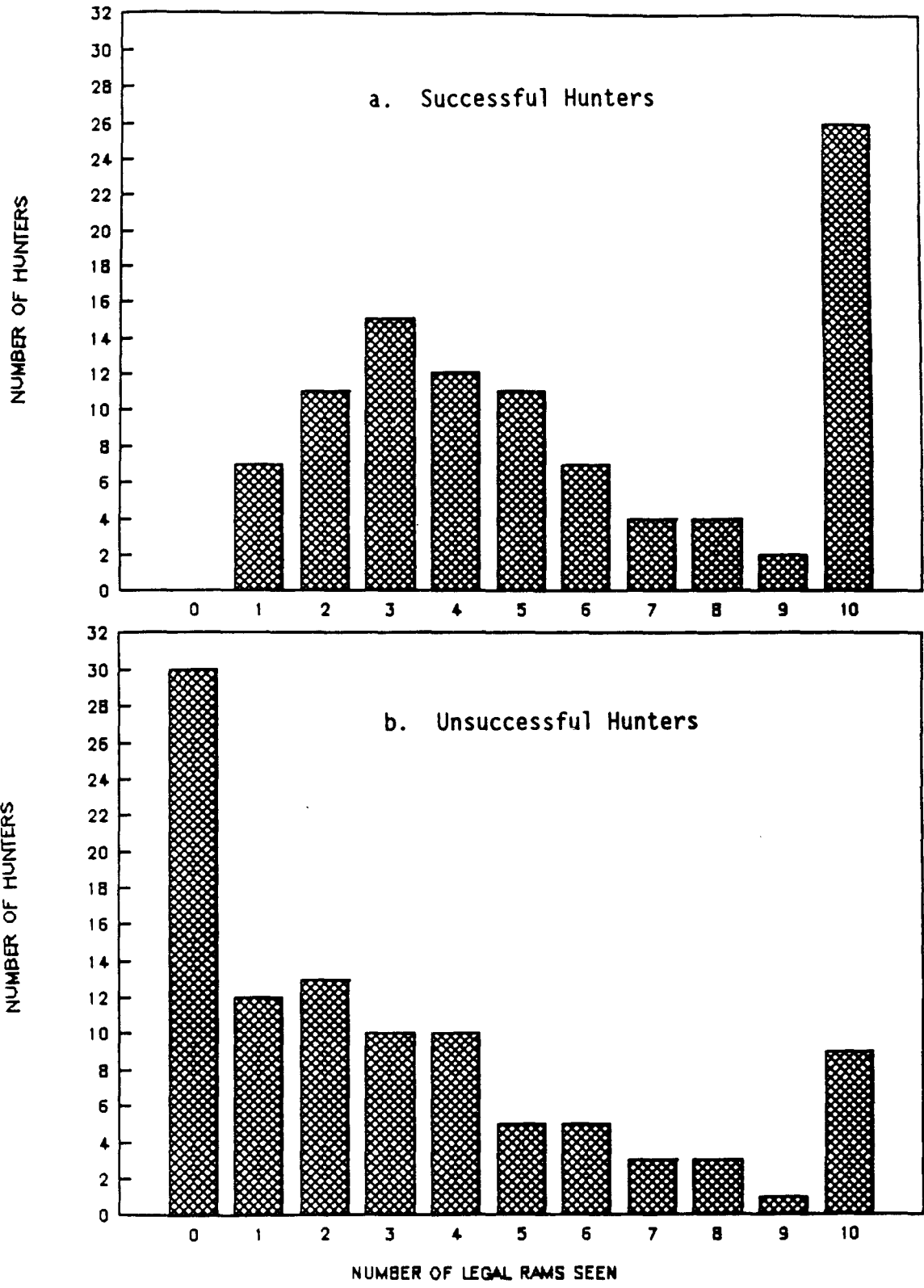


Fig. 1. Number of legal rams seen by successful and unsuccessful sheep hunters in the Brooks Range, 1990-1992.

Table 1. Reasons given by hunters for passing up legal rams in the Brooks Range, 1990-1992.

	Successful hunters (n = 153)	Unsuccessful hunters (n = 103)
Not as big as desired.	61 ^a	57
Not right kind of trophy.	15	17
Too early in the hunt.	31	21
Too far away.	24	18
Inaccessible.	20	24
Being stalked by someone else	5	7
Other	16	19

^aPercent of hunters. Totals add up to >100% because some hunters listed >1 reason.

Table 2. Responses of Brooks Range sheep hunters to statements on what defines a trophy ram.

	Strongly agree (%)	Moderately agree (%)	Moderately disagree (%)	Strongly disagree (%)	No opinion (%)
A. Any legal ram is a trophy.					
Successful (223) ^a	19	35	27	19	1
Unsuccessful (185)	18	33	28	19	2
All hunters (408)	18	34	27	19	1
B. Not all full curls are trophies; only rams near the end of their natural lifespans are true trophies.					
Successful (222)	18	29	29	20	4
Unsuccessful (179)	25	28	26	17	4
All hunters (402)	21	29	27	19	4
C. Only full-curl rams are true trophies.					
Successful (225)	27	32	29	11	2
Unsuccessful (185)	25	41	21	11	3
All hunters (410)	26	36	25	11	2

^a (Sample size)

Table 3. Definitions of "trophy ram" proposed by Brooks Range sheep hunters.

	Successful hunters (%; n = 213)	Unsuccessful hunters (%; n = 155)	All hunters (%; n = 373)
>Full-curl ^a	31	30	31
Any legal ram	27	24	25
Undefinable ^b	25	23	24
Full-curl	22	21	21
Broomed	4	14	9
>40 inches	8	12	9
>38 inches	4	6	5
>36 inches	6	3	5
Unbroomed	7	3	5
Other	4	5	4

^a A ram that would be larger and/or older than a typical full-curl sheep.

^b The hunting experience determines the value of the trophy, rather than vice versa.

SUCCESS VS OVERALL SATISFACTION

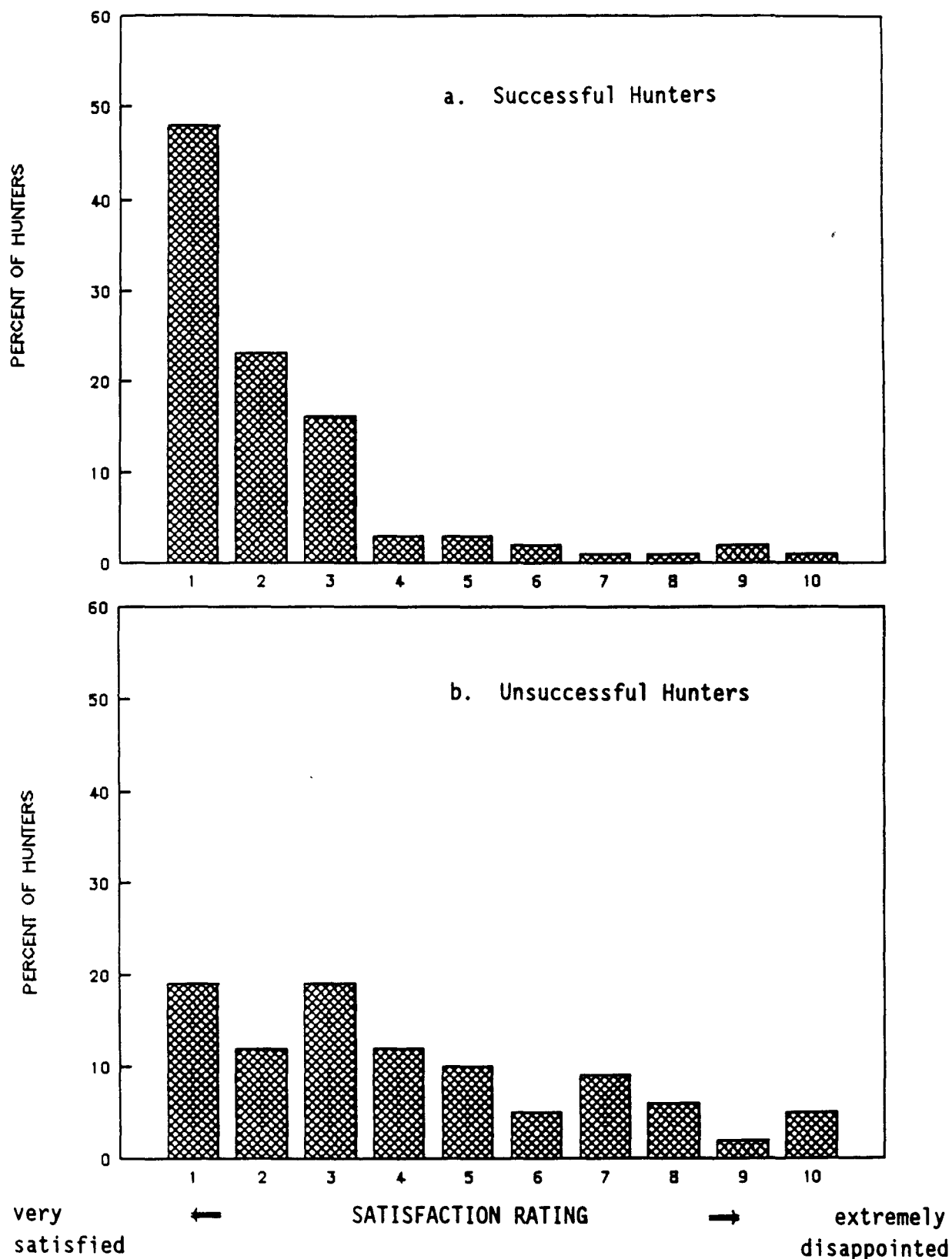


Fig. 2. Satisfaction with the overall hunting experience for successful and unsuccessful sheep hunters in the Brooks Range, 1990-1992.

HUNTER SATISFACTION WITH TROPHIES

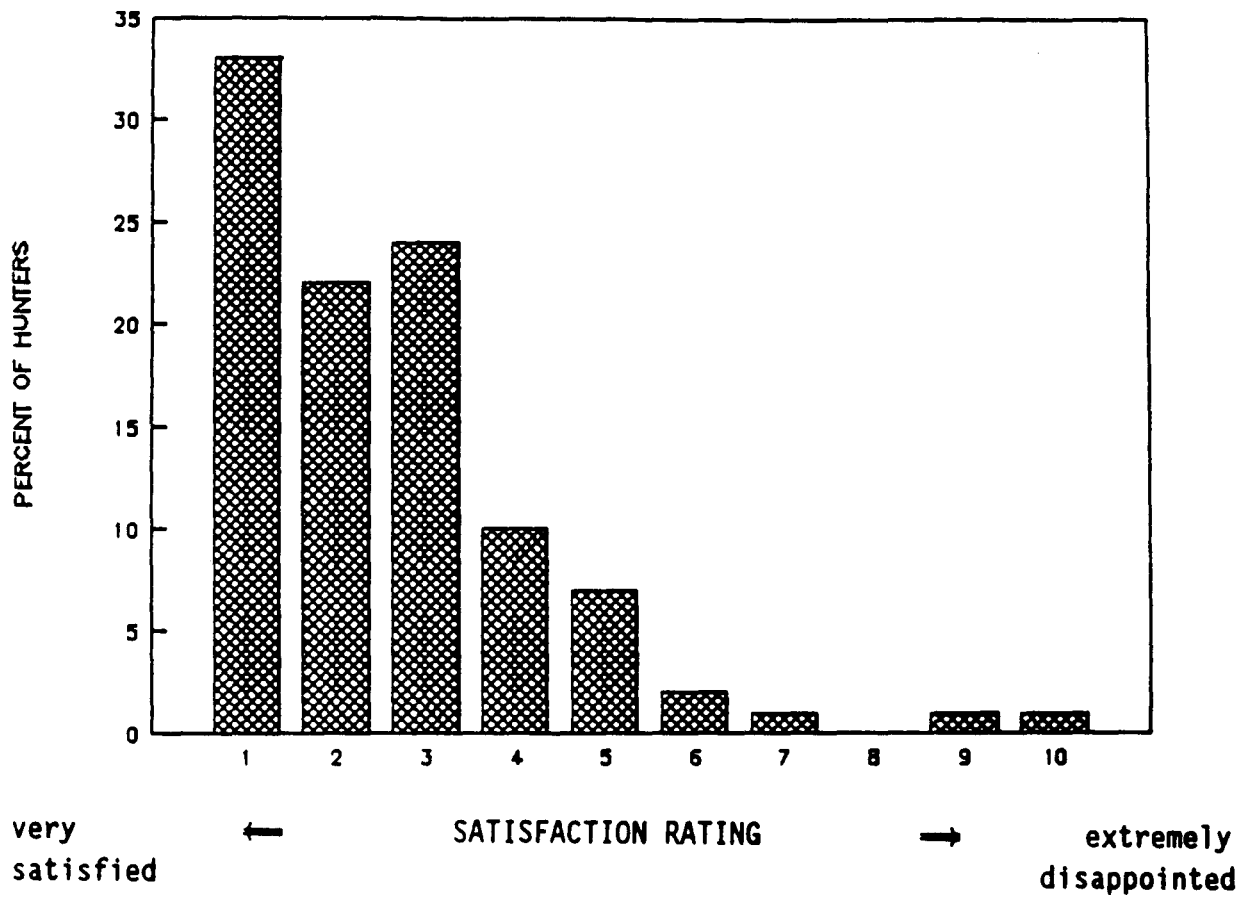


Fig. 3. Satisfaction with trophy value of rams taken by Brooks Range sheep hunters, 1990-1992.

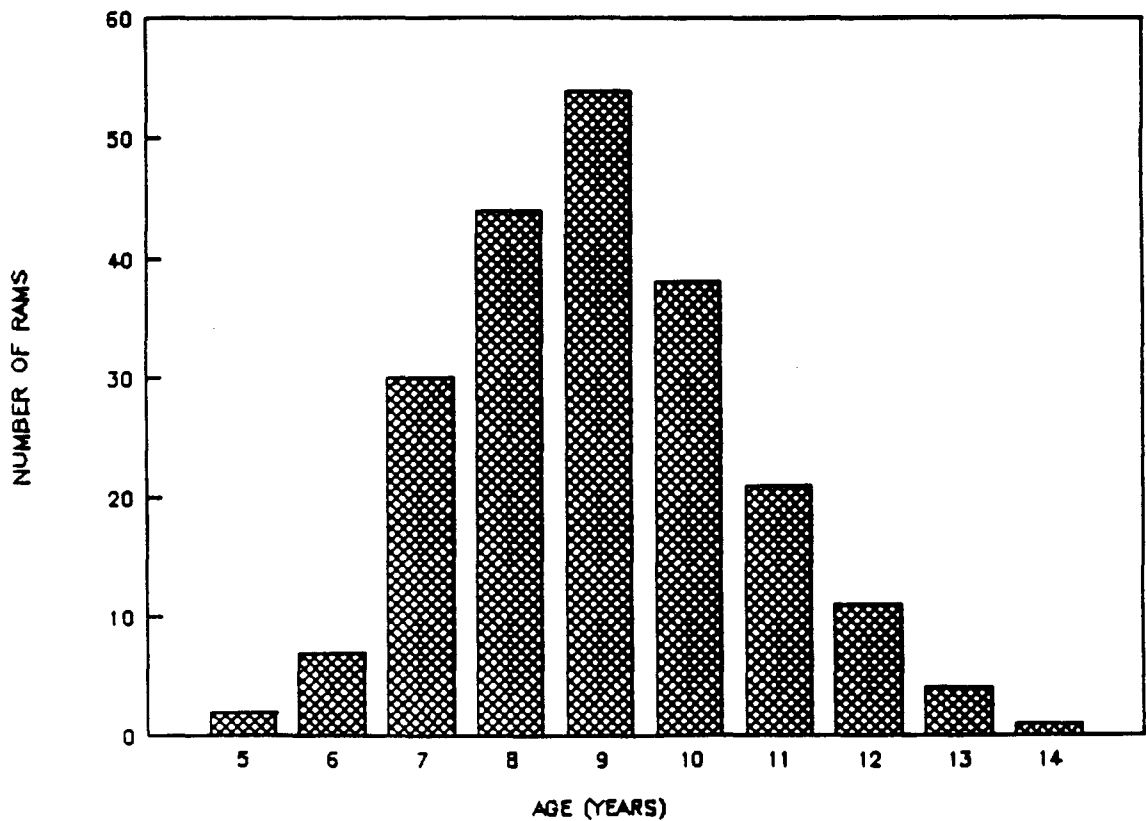
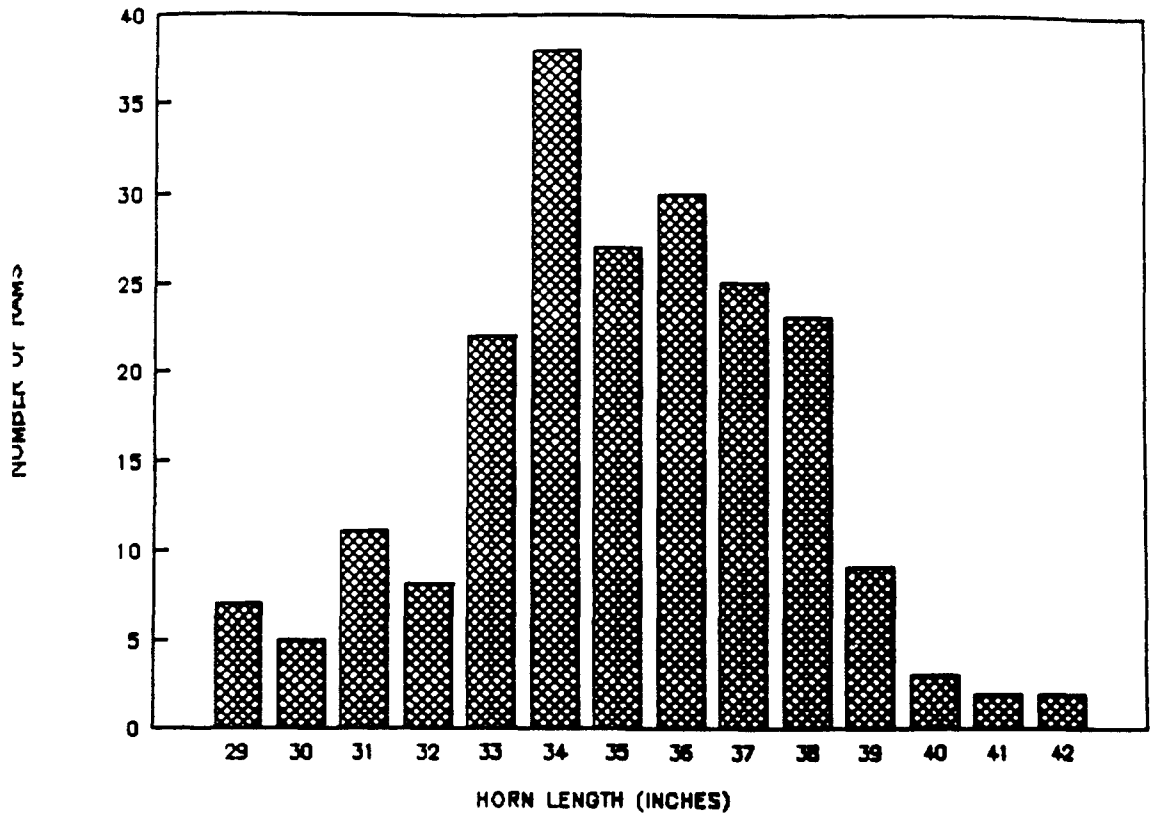


Fig. 4. Length of horns and ages of rams taken by Brooks Range sheep hunters, 1990-1992.

Table 4. Effects of horn length on Brooks Range sheep hunters' satisfaction with trophy value of their rams.

	Satisfaction rating	Horn length (inches)											
		<30"	<31"	<32"	<33"	<34"	<35"	≥35"	>36"	>37"	>38"	>39"	>40"
Very satisfied	1	14 ^a	31	26	29	35	35	34	37	41	46	63	83
	2	57	31	26	23	19	17	22	26	25	24	19	17
	3	14	23	22	23	19	20	26	24	21	14	6	0
	4	0	15	4	3	6	10	10	11	10	14	13	0
	5	14	0	9	6	10	10	6	2	2	3	0	0
	6	0	0	9	0	8	6	0	0	0	0	0	0
	7	0	0	0	1	2	1	1	1	2	0	0	0
	8	0	0	0	0	0	0	0	0	0	0	0	0
Extremely disappointed	9	0	0	1	0	2	1	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0
	<i>n</i>	7	13	23	31	52	89	117	89	61	37	16	6

^a Percent of rams assigned by hunters to each satisfaction rating.

Table 5. Brooks Range sheep hunter definitions of trophy ram relative to mean horn length and age of rams they shot.

Definition	<i>n</i>	Mean horn length (inches)	Mean age (years)
Any legal ram	45 ^a	34.90	8.43
Full-curl	41	34.56	8.46
>Full-curl ^b	64	34.88	8.55
>36 in.	36	34.46	8.39
>38 in.	24	35.00	8.29
>40 in.	16	35.42	8.81
Undefinable ^c	52	34.61	8.71

^a Number of hunters. Some hunters listed >1 definition.

^b A ram that would be larger and/or older than a typical full-curl sheep.

^c Hunting experience determines value of the trophy, rather than vice versa.

Table 6. Horn lengths (inches) and satisfaction ratings of rams shot by Brooks Range sheep hunters who defined trophy horns as >36 inches, >38 inches, or >40 inches.

>36"		>38"		>40"	
Length	Rating ^a	Length	Rating	Length	Rating
31	9	30	3	32	1
31.5	6	34	3	33	4
32	7	34	4	33	7
33	4	35	3	34	1
34	4	35	4	34	1
34.5	1	37	2	34	4
35	1	37	3	34	4
35	1	38	1	34	5
36	3			34	5
36	4			35	5
36.5	3			36	4
39	1			37	3
				37.3	4
				39	3
				40	1
				40.5	2

^a 1 = very satisfied to 10 = extremely disappointed.

Table 7. Effect of transportation method on overall hunt satisfaction of Brooks Range sheep hunters, 1990-1992.

	Successful hunters		Unsuccessful hunters	
	Mean satisfaction rating	n	Mean satisfaction rating	n
Aircraft				
Private	1.93 ^a	54	3.63	59
Guides	2.19	53	3.12	8
Charter	2.41	100	4.34	70
Highway Vehicle	2.18	22	4.74	46

^a 1 = very satisfied to 10 = extremely disappointed.

Table 8. Years of prior sheep hunting experience for successful and unsuccessful hunters Brooks Range sheep hunters, 1990-1992.

	Successful hunters		Unsuccessful hunters	
	years	n	years	n
Same area	0.84	203	1.38	177
Elsewhere in the Brooks Range	0.51	195	1.10	156
Elsewhere in Alaska	2.54	201	3.45	170
Outside Alaska	0.83	192	0.40	144

This may explain how some hunters were very satisfied with even the smallest legal rams.

Nevertheless, hunters did generally agree with full-curl-only management, and satisfaction with the trophy value of rams increased somewhat at moderately greater horn lengths (i.e., greater than about 37 inches). A few hunters apparently had such strict personal standards for trophy quality that they registered dissatisfaction with some of the largest rams in the sample.

Success in taking a ram appeared to be the most important factor influencing overall hunt satisfaction. For example, hunters using highway vehicles or charter aircraft often complained of overcrowding and competition. Taking a ram tended to override these negative factors, however, and successful road hunters still reported high satisfaction. Nevertheless, unsuccessful road and charter aircraft hunters reported the lowest overall hunt satisfaction ratings, suggesting that unfavorable experiences such as crowding did adversely affect hunter satisfaction when coupled with lack of success.

Successful hunters saw more legal rams and elected to pass up more legal rams, but made fewer stalks than did unsuccessful hunters. This could indicate that successful hunters tended to choose areas with more legal rams, or that they were more experienced and skillful. Unsuccessful hunters actually reported more years of sheep hunting experience, but nonresident sheep hunters in Alaska (with a few exceptions) must hire the services of professional guide/outfitters. Thus inexperienced, but successful, hunters may have benefitted from the experience of their guides. Another confusing factor may be that resident sheep hunters using the Dalton Highway had previous experience either there or in other road accessible areas which are not necessarily the best places to hone one's sheep hunting skills. Finally, some unsuccessful hunters may have been very skilled and experienced, yet terminated stalks voluntarily because they were more discriminating and, at close range, elected not to take legal rams that were smaller than desired.

MANAGEMENT IMPLICATIONS

The key to hunter satisfaction seems to be maintaining a high rate of success. Hunters may be most satisfied with large rams but they remain very satisfied with virtually any legal ram they take. Beginning with the 1993 hunting season, minimum

horn size for the Brooks Range was increased to full-curl. Under the previous 7/8-curl regulation, most hunters saw more than 1 legal ram and were able to be selective in choosing which rams to stalk and shoot. Eighty-two percent of the rams shot were ≥ 8 years old and would still be legal under the new regulations. At least a few of the younger rams could also have been legal based on horn curl. This fits well with experience elsewhere in Alaska where increasing the horn size standard has had only a minor or short-term effect on harvest success. At the very least, the harvest should remain comparable with only slightly increased hunter effort.

Currently, factors other than horn-curl regulations are having a much greater short-term effect on Brooks Range sheep harvests. In conjunction with a series of severe winters, sheep populations in some areas may have fallen as much as 50% over the past few years (F. J. Mauer, U.S. Fish and Wildl. Serv., unpubl. data), and harvest also has dropped nearly 50% (ADFG unpubl. files). However, word of reduced sheep numbers must have spread rapidly among sheep hunters. By 1992, fewer hunters were going afield, and thus the success rate fell proportionately less than the absolute drop in the harvest.

The ultimate benefits of full-curl management, in terms of hunter satisfaction, may be subtle. Those hunters who seek really large rams will have a better chance of fulfilling their desire when the minimum standard is set higher, and fewer rams are taken while still small. Hunters who are presently satisfied with any ram they can take should be even more satisfied if they happen to take larger rams under the new regulations.

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