

HUNTER SATISFACTION WITH TROPHY DALL SHEEP MANAGEMENT IN THE TOK MANAGEMENT AREA, ALASKA

ROBERT SUTHERLAND, Alaska Department of Fish and Game, 333 Raspberry Road, Anchorage, AK 99701

CRAIG GARDNER, Alaska Department of Fish and Game, Box 355, Tok, AK 99780

LUCIA ZACZKOWSKI, Alaska Department of Fish and Game, Box 355, Tok, AK 99780

Abstract: The Tok Management Area (TMA) was created in 1974 to provide a limited number of Dall sheep (*Ovis dalli*) hunters the opportunity to harvest large-horned, trophy rams. The chance of obtaining 1 of the 120 TMA drawing permits ranged from 4% to 12%. Hunter satisfaction with the TMA was not evaluated objectively nor was the willingness to accept alternative management options determined. We conducted a mail survey of randomly selected TMA applicants to assess satisfaction with trophy Dall sheep management goals and objectives and the hunt structure of the TMA. Over 90% of respondents supported the present TMA management objectives for maintaining a limited number of drawing permits, limiting harvest to benefit trophy ram management, and preventing hunter crowding. Less support existed (78%) for the current objective of maintaining the proportion of harvested rams with ≥ 40 -inch (1016 mm) horns at 7-10%. Our results indicated there were 4 distinct philosophies among respondents regarding how the TMA should be managed. Differences were due to how respondents defined a trophy ram, sheep hunting experience, and what was considered acceptable hunter opportunity. We describe management options that could satisfy 3 of the 4 groups (97% of the respondents). In the case of the TMA, using the hunt's popularity to measure acceptance may have perpetuated management that did not meet the original intent of a trophy sheep area or best fit sheep population and hunter use trends. We recommend that prior to developing other trophy or restrictive hunt areas, managers and the public work together to objectively define goals and objectives, so future management changes are justified.

Key words: Dall sheep, *Ovis dalli*, Alaska, Tok Management Area, trophy sheep management, hunter crowding management, public satisfaction, questionnaire.

The Tok Management Area (TMA) was created in 1974 with the goal of providing Dall sheep hunters the opportunity to harvest trophy rams in an uncrowded setting. In comparing horn growth qualities of Dall sheep rams inhabiting 7 mountain ranges in Alaska, rams in the TMA exhibit the second greatest horn length and the fourth greatest horn mass qualities (Heimer and Smith 1975). The TMA is the only sheep hunting area in Alaska specifically established for trophy ram management and is the most sought after sheep hunt permit in Alaska.

Each year 2,300-2,500 hunters apply for 120 permits to hunt in the TMA.

Four objectives have guided TMA management since its inception:

1. Maintain a population capable of supporting an annual harvest of 30-45 rams;
2. Maintain a mean horn length of 36-37 inches (914-940 mm) among harvested rams and a mean age of 8-9 years;
3. Maintain the proportion of harvested rams with ≥ 40 -inch (1016 mm) horns at 7-10%; and

4. Prevent unacceptable increases in hunter concentration and maintain the existing aesthetically pleasing qualities associated with sheep hunting in the TMA.

These objectives are met by controlling the number of sheep hunters through a drawing permit system. This system was designed to limit annual harvest and allow some rams to attain larger horn sizes. During 1974-1999, 120 permits were issued each year. Hunter satisfaction with the system was never measured objectively but hunter success, in terms of proportion of harvested rams with horns ≥ 40 inches (1016 mm, 7%-19% of the annual harvest, 1986-1999) indicated the system allowed rams to reach maximum horn size and hunters to be selective in taking a ram.

From 1995 to 1999, participation rate increased by 29%. An increasing number of hunter complaints and higher annual harvests prompted us to re-examine the TMA goals and objectives by assessing hunter satisfaction. We plan to use results of this survey to help design future TMA management.

Our goals were to develop a questionnaire assessing characteristics of hunters applying for the TMA, what their attraction to the area was, and what management direction is most acceptable to them. In a cover letter for the questionnaire we included sheep population and harvest data not known by most hunters who have applied for a TMA permit.

METHODS

Survey design

We developed a survey consisting of 45 questions addressing 4 areas: hunter profiles, management options, trophy ram definition, and conditions affecting hunter crowding and enjoyment. The respondent profile section focused on sheep hunting experience in Alaska and the TMA. We wanted to

evaluate if sheep hunting experience or past success might affect respondents' views. For example, a hunter who had previously taken a large ram (horns ≥ 40 inches, 1016 mm) may have a different view on trophy management than someone who had taken a smaller ram (≤ 40 inch, 1016 mm) or no ram at all.

Questionnaire recipients were asked to respond on a Likert scale (Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree) to questions concerning support for current management objectives, trophy ram definitions, optimal hunting conditions, and management options. Hunters were also asked on a Likert scale (Strongly Enhances, Enhances, Neutral, Detracts, and Strongly Detracts) which conditions affect their enjoyment of the hunt. The conditions evaluated were harvest success, the availability of rams with different horn sizes, and the effects of hunter crowding.

Recipients were asked to rank 5 trophy management options and 6 hunter crowding management options from most supportable to least supportable. Options ranged from increasing hunting opportunity from current levels with little regard for trophy ram management and hunter crowding to reducing hunter opportunity in order to increase the number of trophy rams. Hunters could also choose management options currently in use.

We asked hunters to explain in their own words what constitutes a trophy ram and how they would manage the TMA. Responses were hand tabulated and used to index respondent understanding of survey questions and whether the survey covered the range of hunters' views and desires.

We mailed the survey to 575 hunters randomly chosen from all people who had applied for a TMA permit during 1995-1999. Expecting return rates for people who had never drawn a TMA permit to be less than those who had, the sample included 275

people who had been drawn and 300 people who had not. A second survey mailing was sent 2 weeks following the initial mail out. As a pretest for clarity and inherent biases, the survey was presented to 20 sheep hunters, 2 wildlife planners, 2 sheep biologists, and 2 non-hunters. Their suggestions were incorporated into the survey.

Statistical analyses

Data were analyzed using the SAS software package (SAS 1988). The FREQ procedure was used to generate frequency and cross tabulation tables. Statistical tests used the Pearson chi-square statistic for tables when the majority of cells had expected counts ≥ 5 and the Fisher exact test for smaller samples. A significance level of $p=0.10$ was used for testing. Because TMA permit applicants were drawn at a different rate than permit recipients responses were weighted using the inverse of the probability of being selected to receive the questionnaire. Weighting was carried out in all analyses.

Multiple comparisons based on ranking and selection was used to determine which management options were significantly different (Hsu 1996). Discriminant analysis was used to confirm groupings of philosophies and attitudes. The DISCRIM procedure was used with prior probabilities of group membership set proportional to the sample sizes. Various groupings of questions were created for use in the discriminant analysis and classification probabilities were used to judge which sets of questions provided the best confirmation. Question groups used were: current management objectives, hunter enjoyment, hunter crowding, trophy sheep hunting, crowding-management objectives, and trophy management objectives. Selection of question groups in the discriminant analysis also provided assistance labeling groups.

RESULTS

Respondent profile

Of 575 surveys sent, 383 were returned and 298 were used in analyses. Eighty-five of the surveys were unusable because they were returned undeliverable, incomplete, or late. The usable return rate was 61%.

Recipients who had drawn a TMA permit responded at a higher rate (70%), than those who had never drawn a permit (34%). Respondents who had drawn a permit comprised 64% of the sample and respondents who had never drawn comprised 36% of the sample. Of respondents who had drawn a permit, 91% had hunted the TMA and had a 55% harvest success rate. Mean participation and harvest success rates in the TMA during 1995-1999 were 84% and 51%, respectively. Ninety-six percent of respondents had hunted sheep in Alaska of which 80% had ≥ 3 years experience hunting sheep.

Recipients were asked the horn length of the largest ram they had killed in Alaska. Of 190 who responded to this question, 8% reported horn lengths ≤ 34 inches (864 mm), 56% reported horn lengths 34 to 38 inches (864-965 mm), and 36% reported horn lengths ≥ 38 inches (965 mm). Twenty percent of respondents reported taking a ram with horns ≥ 40 inches (1016 mm). Average horn size reported by respondents that harvested a ram in the TMA was 37.9 inches (963 mm). Based on mandatory reporting, mean horn length of all rams taken in the TMA during 1995-1999 was 36.5 inches (927 mm).

Management options

Over 90% of the respondents supported the present TMA management objectives for maintaining the drawing permit, limiting harvest to benefit trophy ram management, and preventing hunter crowding (Table 1). When asked about support of the current management objective using a specific range

of horn sizes in the harvest as a measure of management success, 78% were in agreement (Table 1). There was no significant difference between respondents who had received a TMA permit and those who had not ($p=0.245$), between experienced and inexperienced hunters ($p=0.864$) or between hunters who had harvested a TMA ram and those who had not ($p=0.615$).

We asked 6 questions about possible management changes that would affect hunter opportunity, hunter crowding and trophy hunting (Table 2). There was no support for increasing permit numbers to allow more hunter opportunity (93% against) at the expense of hunter crowding or trophy ram production (91%). There was support (79% agree) for reducing permits if crowding became apparent. There was no preference for or against reducing permit numbers to restrict harvest and increase the number of rams with ≥ 40 -inch (1016 mm) horns. Of 295 respondents, 43% agreed and 41% disagreed with this proposal. Respondents ranked potential options for trophy (5 alternatives) and crowd

management (6 alternatives). For crowd management, maintaining the current hunt structure was preferred by most (85%) respondents ($p \leq 0.009$, Table 3). Support for no-change declined to 77% when respondents considered a range of trophy ram management options ($p \leq 0.001$, Table 4). Reducing permit numbers for either trophy management or hunter crowding became one of the least preferred options.

Multiple comparisons between trophy management options found 3 similar and 2 differing options (Table 5). Similar options include continuing the current hunt structure; maintaining 120 permits, subdividing the TMA, and periodically closing some areas to enhance trophy sheep; and subdividing and managing the TMA as separate areas. Reducing the number of permits to enhance ≥ 40 -inch (1016 mm) rams and increasing the number of permits from 120 received lower preference. Maintaining the current hunt structure was chosen by most respondents (39%, $p < 0.01$) as their preferred choice.

Table 1. Ranking of support for current TMA management objectives, determined from responses of 298 TMA permit applicants.

Management Objective	% Strongly Agree (n)	% Moderately Agree (n)	% Neutral (n)	% Moderately Disagree (n)	% Strongly Disagree (n)
Remain drawing hunt	85.1 (251)	9.2 (27)	3.7 (11)	1.7 (5)	0.3 (1)
Maintain harvest below sustainable to benefit trophy ram management	66.0 (194)	23.5 (69)	5.1 (15)	3.1 (9)	2.4 (7)
Maintain 7-10% of harvested rams with horn length ≥ 40 "	47.1 (138)	30.7 (90)	17.4 (51)	2.7 (8)	2.0 (6)
Manage for maximum opportunity to harvest and/or observe large-horned rams	69.5 (205)	20.7 (61)	5.1 (15)	2.0 (6)	2.7 (8)
Manage to prevent overcrowding	70.5 (208)	22.7 (67)	3.1 (9)	2.7 (8)	1.0 (3)

Table 2. Ranking of management options affecting opportunity, crowding and trophy ram production in the TMA, determined from responses of 298 TMA permit applicants.

Statement	% Strongly Agree (n)	% Moderately Agree (n)	% Neutral (n)	% Moderately Disagree (n)	% Strongly Disagree (n)
Increase # of permits	3.7 (11)	7.1 (21)	8.2 (24)	27.6 (81)	53.4 (157)
Allow more hunters regardless of effects on crowding	1.7 (5)	3.4 (10)	2.0 (6)	22.5 (66)	70.3 (206)
Allow more hunters regardless of effects on trophy ram management	2.0 (6)	3.7 (11)	3.1 (9)	24.1 (71)	67.1 (198)
Reduce # of permits if crowding becomes apparent	36.4 (106)	34.0 (99)	8.9 (26)	11.0 (32)	9.6 (28)
Reduce # of permits to increase number of rams with horns ≥ 40 "	18.0 (53)	25.1 (74)	15.9 (47)	25.8 (76)	15.3 (45)
Do not reduce # of permits to reduce crowding	21.9 (64)	26.7 (78)	18.8 (55)	17.5 (51)	15.1 (44)

Table 3. Ranking of options for managing hunter crowding in the TMA, determined from responses of 298 TMA permit applicants.

Management option	Ranking ¹ percentage (n)					
	1	2	3	4	5	6
Retain drawing permit but increase # of permits	4.1 (12)	5.5 (16)	9.3 (27)	16.6 (48)	37.2 (108)	27.2 (79)
Take TMA off drawing permit	2.7 (8)	1.4 (4)	2.4 (7)	6.2 (18)	14.4 (42)	72.9 (212)
Increase # of permits but maintain uncrowded hunting by dividing season each w/ its own permit	16.1 (47)	17.8 (52)	26.0 (76)	20.9 (61)	7.9 (23)	11.3 (33)
Make no change to current TMA hunt	39.4 (115)	21.9 (64)	23.6 (69)	7.9 (23)	3.1 (9)	4.1 (12)
Reduce # of permits	9.6 (28)	15.4 (45)	16.8 (49)	20.5 (60)	16.4 (48)	21.2 (62)
Maintain current # of permits and reduce crowding by subdividing TMA with each area having its own permit	26.4 (77)	25.3 (74)	18.5 (54)	8.9 (26)	6.2 (18)	14.7 (43)

¹ 1 being the option most supported and 6 being the option least supported

Table 4. Ranking of management options for trophy ram production in the TMA, determined from responses of 298 TMA permit applicants

Management option	Ranking ¹ percentage (n)				
	1	2	3	4	5
Increase # of permits w/ no regard to effects on #'s of large-horned rams	2.4 (7)	2.4 (7)	2.4 (7)	4.5 (13)	87.8 (253)
Maintain current # of permits, subdivide TMA and manage each area to produce more large-horned rams	23.5 (67)	34.4 (98)	22.8 (65)	9.5 (27)	9.5 (27)
Maintain current # of permits; subdivide TMA and periodically close individual areas to hunting to produce more large-horned rams	22.5 (64)	23.2 (66)	34.0 (97)	10.5 (30)	9.8 (28)
Reduce # of permits to produce more large-horned rams	14.0 (40)	12.2 (35)	18.2 (52)	39.9 (114)	15.7 (45)
Make no changes to current TMA hunt	38.7 (111)	18.5 (53)	19.2 (55)	19.2 (55)	4.5 (13)

¹ 1 being the option most supported and 6 being the option least supported

Table 5. Ranking and selection of 5 possible management options that would affect trophy ram production in the TMA, determined from responses of 298 TMA permit applicants.

Management options	Sample mean	Standard error
Maintain current hunt structure	2.324 ^{a1}	0.076
Maintain # of permits at 120, subdivide TMA and individually manage each area	2.478 ^a	0.073
Maintain # of permits at 120, subdivide TMA and periodically close areas to enhance trophy ram production	2.618 ^a	0.072
Reduce # of permits to enhance production of rams with horns \geq 40"	3.308 ^b	0.075
Increase # of permits	4.73 ^c	0.049

¹ Same superscript letter indicates means did not differ ($p > 0.10$)

Hunter philosophies

Our analyses initially suggested there were 3 distinct philosophies among questionnaire respondents regarding how the area should be managed. Differences were due to how respondents defined a trophy ram, their sheep hunting experience, and what they considered acceptable hunter opportunity. We labeled the 3 groups "Contents", "Trophies", and "Opportunities".

The Contents was the largest group, (77% of respondents), and was most satisfied with the current trophy

management strategy. This group was primarily interested in maintaining hunter opportunity without causing hunter crowding. The Trophies (20% of respondents) favored additional management to enhance trophy ram production. The Opportunities group (3% of respondents) desired increased opportunity regardless of the effects on abundance of trophy rams or overcrowding.

Discriminant analysis was carried out to confirm the Contents and Trophies groupings. We did not include the Opportunities group because it represented

only 3% of respondents. Using trophy definition and trophy management questions, all members of the Contents were classified correctly. Eighty percent of the Trophies were classified correctly. We examined the 20% misclassified (3% of the total response) and concluded they were neither Trophies nor Contents, but a 4th group, which we then labeled “Purists”. This group was most interested in protecting uncrowded hunting conditions and increasing harvest success rates in the TMA and was willing to reduce opportunity to do so.

Trophies and Contents differed statistically on preferred management options for both trophy and hunter management. Opportunities and Purists were excluded from group comparisons because group sizes were too small for valid chi-square analysis. For trophy management, Trophies preferred maintaining current permit numbers, subdividing the TMA and closing some of the areas as needed to enhance trophy ram production ($p=0.014$, 63% accept, 7% reject for Trophies, vs. 41% accept, 23% reject for Contents). Trophies supported reducing permits to increase the number of rams with horns ≥ 40 inches while the Contents did not ($p=0.001$, 54% accept, 7% reject vs. 20% accept; 67% reject). Both groups agreed there should be areas in Alaska that are managed to enhance production of large-horned rams but the Trophies showed stronger agreement than the Contents ($p=0.015$, 91% accept, 6% reject vs. 81% accept, 12% reject). Correspondingly, although both groups agreed areas should be managed to increase the chances of harvesting a Boone and Crockett ram, Trophies showed more support than Contents ($p=0.001$, 84% agree, 5% reject vs. 56% agree, 25% reject).

These 2 groups also differed in management philosophies regarding reduction of permits to lessen hunter

crowding. Trophies supported reducing the permit numbers ($p=0.001$, 59% accept, 14% reject) while Contents tended to reject the idea (17% accept, 42% reject).

Trophy Definition

Overall, 72% of respondents agreed that any legal (i.e. full curl) ram was a trophy (Table 6). However, when asked whether all full curl rams were trophies, 42% of respondents agreed that only some full curl rams were trophies compared to 46% who felt that all full curl rams were trophies. Narrative answers from 24% of respondents indicated subjective factors such as how hard the hunter worked, the scenery, solitude, and horn uniqueness in combination with horn size defined a trophy ram. The Trophies group also did not accept that any legal ram was a trophy ($p=0.051$), because horn size was an important component of their definition.

Defining a trophy ram using quantifiable standards (horn lengths of ≥ 40 inches (1016 mm) and rams scoring ≥ 170 Boone and Crockett points) was rejected by 56% and 61% of all respondents, for length and score respectively. Respondents who had not harvested a TMA ram were more likely to agree that only rams with horns ≥ 40 inches are a trophy ($p=0.007$, 37% agree, 45% disagree vs. 27% agree, 66% disagree). Respondents who had not harvested a TMA ram were also more likely to agree with using ≥ 170 Boone and Crockett points to define a trophy ram ($p=0.009$, 21% agree, 49% disagree vs. 12% agree, 75% disagree). Thirty-three percent of respondents who defined a trophy ram in their own words used length of horn. Of these respondents, a trophy was defined as a ram with horns ≥ 40 , ≥ 38 , and ≥ 36 inches by 54, 28, and 18%, respectively.

Table 6. Definition of trophy ram, determined from responses of 298 TMA permit applicants.

Definition	% Strongly Agree (n)	% Moderately Agree (n)	% Neutral (n)	% Moderately Disagree (n)	% Strongly Disagree (n)
Any legal ram is a trophy	33.3 (98)	38.8 (114)	10.2 (30)	8.2 (24)	9.5 (28)
Only rams with horns $\geq 40''$ are trophies	11.6 (34)	19.1 (56)	13.7 (40)	25.6 (75)	30.0 (88)
Only rams that meet Boone & Crockett qualifications are trophies	5.1 (15)	12.3 (36)	21.6 (63)	21.6 (63)	39.4 (115)
Not all full curl rams are trophies	12.2 (36)	29.6 (87)	12.2 (36)	22.4 (66)	23.5 (69)

Hunter Enjoyment

The 3 factors respondents identified as enhancing hunting enjoyment in the TMA were: not seeing other hunters, not hearing other hunters, and taking a ≥ 40 inch (1016 mm) ram ($p=0.001$, 89% enhance, Table 7). Seeing many sheep but few legal rams detracted from the hunt experience for 60%

of respondents. Observing few rams with horns ≥ 40 inches (1016 mm) but many legal rams diminished the quality of the hunt experience for 28% of respondents but 51% of respondents reported this condition would enhance their hunt. Failure to harvest a ram detracted from the experience for 51% of the respondents but 47% said it had no effect.

Table 7. Ranking of conditions that affect sheep hunting experience, determined from responses of 298 TMA permit applicants.

Condition	% Strongly Detracts (n)	% Moderately Detracts (n)	% No Effect (n)	% Moderately Enhances (n)	% Strongly Enhances (n)
Seeing many sheep but few legal rams	22.9 (67)	37.2 (109)	160 (47)	21.2 (62)	2.7 (8)
See many legal rams but few or no rams with horns $\geq 40''$	5.2 (15)	22.3 (65)	21.6 (63)	34.0 (99)	16.8 (49)
Taking a ram with horns $\geq 40''$	0.7 (2)	1.7 (7)	8.3 (24)	12.8 (37)	76.4 (220)
Not harvesting a ram	11.8 (34)	39.4 (114)	47.4 (137)	0.3 (1)	1.0 (3)
Hearing other hunters during hunt	41.4 (122)	48.1 (128)	9.8 (29)	0.3 (1)	0.3 (1)
Seeing other hunters during hunt	46.1 (136)	43.7 (129)	9.8 (29)	0.3 (1)	---

Conditions affecting hunter enjoyment differed according to hunter experience, TMA experience, and harvest success. We found failure to harvest a ram lessened hunter enjoyment significantly more ($p=0.023$) for inexperienced hunters (63%)

than experienced hunters (47%). Respondents harvesting a TMA ram were more satisfied seeing many legal rams but few ≥ 40 inches (1016 mm) ($p=0.017$) compared to non-harvesters.

Not harvesting a ram had little effect on hunt enjoyment for the Trophy group but detracted from the experience for Contents ($p=0.013$, Trophies: 39% detract, 60% no effect vs. Contents: 54% detract, 44% no effect). The Trophy group believed seeing many sheep but few legal rams detracted more from hunt quality than did the Contents group ($p=0.015$, Trophies: 71% detract, 15% enhance vs. Contents: 57% detract, 26% enhance). Negative effects of seeing many legal rams but few rams ≥ 40 inches (1016 mm) were greater for the Trophies than for the Contents ($p=0.075$, Trophies: 37% detract, 45% enhance vs. Contents: 25% detract; 52% enhance).

DISCUSSION

Since establishment of the TMA, public acceptance of our management strategy has been measured informally by the number of complaints received, number of proposals submitted by the public to change TMA regulations, and by the number of applicants for a TMA permit. Based on these criteria, the TMA and its management are well accepted by hunters. Most people who apply have done so for multiple years, some for over 20 years. Since 1974, Alaska Department of Fish and Game (ADF&G) has received few complaints. Most criticisms concerned hunter crowding and were received since 1995. From 1990-1999, there was only 1 proposal for change in TMA management and that was to increase opportunity for bow hunters. The Alaska Board of Game, after reviewing the intent of the TMA and public and agency comments, did not adopt this proposal into regulation.

Incorporating public views has become an important step in effective wildlife management. Ignoring these views discounts the strong interest of the public concerning wildlife and has led to political backlash. In Alaska, most exchange of information between the public and the ADF&G occurs

in the Board of Game process. The Alaskan public has never been shy in expressing views concerning wildlife management.

There is an important difference between the TMA and most other areas in Alaska when it comes to incorporating public views in management decisions. Because the TMA is managed by a permit that is difficult to obtain, only a few sheep hunters are familiar with the area and knowledgeable about sheep population and harvest trends. In general harvest areas, many hunters hunt annually and become more attuned to wildlife population trends, hunter impacts, and needed management changes. Our barometer of satisfaction with TMA management is hunters with little or no experience in the area and with views based on limited perceptions. With little first hand knowledge there is little basis for the public to recommend changes to the hunt management. By interpreting the scarcity of complaints and recommendations as public acceptance, we may have perpetuated a management regime the public would not have supported had they had more experience in the TMA.

Our sheep population and harvest data indicated ram numbers and hunter behavior were changing in ways that might conflict with the intent of the TMA. There are management options that might enhance production of large horned rams in the TMA but those options would require regulatory changes. Prior to this survey, we did not know if hunters would desire changes in TMA hunt management strategies.

What does the public think about TMA management?

Overall, respondents overwhelmingly supported the current TMA objectives designed to enhance and maintain trophy sheep hunting and uncrowded hunting conditions. Most respondents believed very restrictive participation standards (the

chance of drawing a TMA permit is <5%) should be continued in order to maintain these conditions. Most hunters believe hunting the TMA is a once-in-a-lifetime experience and quality of the hunt should not be compromised by increasing opportunity. This substantiated the past Alaska Board of Game decision not to adopt the proposal to increase hunting opportunity.

The largest respondent group, the Contents, is satisfied with current TMA hunt management. Based on hunter profiles and narrative answers from the questionnaire, this group includes the greatest variety of views on TMA management. The majority of this group view any full curl ram as a trophy, are not disappointed if they do not see a ≥ 40 inch ram and are more disappointed if they do not harvest a ram. By comparing answers to a series of questions, this group includes some hunters who are the most ardent trophy hunters.

The common ground between the contrasting harvest philosophies within the Contents group was maintaining hunting opportunity. Basically, a hunter who wants a TMA ram with exceptional horns requires 2 conditions, an opportunity to hunt and the availability of exceptional rams. Increased hunter participation and harvest combined with reduced trophy ram production due to poor lamb survival during the early 1990s have caused some decline in the number of large rams. However, the TMA still produces a relatively high number of rams with horns ≥ 40 inches when compared to most areas of Alaska. The most difficult aspect of hunting the TMA for these highly experienced hunters is obtaining permits, resulting in little support for further reducing opportunity. For the remainder of the Contents group, having the opportunity to hunt Dall sheep in pristine conditions and having a high probability of success are the primary attributes of the TMA. They believe those qualities are currently met under the

present system and opportunity should not be reduced.

The Trophies have the strongest support for managing for trophy rams. They are willing to reduce opportunity to enhance trophy ram production. As a group, they are more discerning about what constitutes a trophy ram and more strongly support management based on horn length. Even considering how difficult it is to get a TMA permit they are willing to forego harvesting a ram if they do not see what they want.

The other 2 groups, Purists and Opportunities, represent a small number of the respondents. The wishes of the Opportunities group conflict with the intent of the TMA; thus these desires cannot be met without changing TMA management goals. Furthermore, their desires are currently met in the general Dall sheep hunts that occur in most Alaska sheep habitat excluding National Parks. The management direction preferred by the Purists, reducing the number of people who currently use the TMA to further protect its integrity, does fit the intent of the TMA. This group would side with the Trophies in supporting regulatory changes that would reduce opportunity but for a different reason.

MANAGEMENT IMPLICATIONS

Different views by different groups concerning trophy management direction in the TMA poses a dilemma. Do we manage to satisfy minority groups supporting hunter opportunity restrictions to increase production of large horned rams and/or reduce the chance of hunter crowding or do we follow the majority and maintain current regulations and hunter opportunity? Maintaining the current harvest management would satisfy the majority of the respondents, but for only 1 of the 4 user groups.

The key to hunter satisfaction in the TMA is preserving the opportunity to hunt

trophy rams in uncrowded hunting conditions. There was disagreement on how to achieve those conditions among the 4 identified groups because of the range of trophy ram definitions, what is acceptable crowding, and what is adequate opportunity. However, based on rankings of possible management options, there seems to be some common ground between the Trophies, Contents, and Purists. The 1st or 2nd preferred option for all groups was to maintain the current number of permits but subdivide the TMA into smaller areas with permit drawings. Under this option, trophy ram production could be enhanced, uncrowded hunting conditions could be maintained and overall opportunity would be maintained. An additional permit allowing the recipient to hunt anywhere in the TMA would satisfy hunters wanting the greatest flexibility to hunt. From the manager's standpoint, hunt management could also be designed to better match sheep distribution and hunter access, thereby enhancing trophy ram production.

These results suggest changes should be made in TMA regulations. However, we suspect major changes in TMA's hunt structure will cause turmoil among hunters if the new regulations are believed to diminish their chances of being drawn or the new regulation reduces hunt quality or diminish their chances of being drawn. Again, because the TMA permit has become so hard to get, the arguments raised against any new management will be based on their perceptions of the past. The question to managers becomes: Will changes in management direction help to achieve management objectives?

Expected arguments against change would stem from the fact that current goals and objectives of the TMA are being met. Because most respondents would be satisfied by harvesting a full curl ram, changes to the TMA hunt structure to

increase ram size could cause conflict. However changing the hunt structure by following the results of this questionnaire would be a benefit. Instead of meeting the desires of only one group (77% of the hunters) we might satisfy the desires of 3 groups (97% of the hunters).

Public opinion is important to wildlife management and should be part of the decision making process. However, in the case of drawing permit hunts, few hunters are knowledgeable about the area and the wildlife population. We believe lack of knowledge inhibits the public from recommending or possibly supporting regulatory changes until major changes in the hunted population or hunter use have occurred. In areas with this type of management, we believe questionnaires like this are invaluable for identifying who is using the area and what they desire. It is then the responsibility of the managing agency to use these results in combination with biological and harvest data to design the best management direction.

We recommend when other special hunt areas are established that goals, objectives, and any special terms are well defined at the onset. Some of the management dilemmas we are facing with the TMA could have been averted if terms like trophy ram and uncrowded hunting were better defined. By having better-defined goals and objectives the managing agency will have an easier time making timely changes based on population and hunter use data.

ACKNOWLEDGMENTS

We thank S. Arthur, S. Schwartz, and K. Whitten of the Alaska Department of Fish and Game. This study was supported by funds from Federal Aid in Wildlife Restoration, Alaska Department of Fish and Game.

LITERATURE CITED

- CHRISTENSEN, R. 1997. Log-Linear Models and Logistic Regression. Second Edition. Springer-Verlag, New York, New York, USA.
- CONVERSE, J.M., AND S. PRESSER. 1986. Survey Questions: Handcrafting the Standardized Questionnaire. Sage Publications, Newbury Park, California, USA.
- FOWLER, F.J., JR. 1995. Improving Survey Questions: Design and Evaluation. Sage Publications, Newbury Park, California, USA.
- HEIMER, W.E. AND A.C. SMITH, III. 1975. Ram horn growth and population quality – their significance to Dall sheep management in Alaska. Alaska Department of Fish and Game. Technical Bulletin 5. Juneau, Alaska, USA.
- HSU, J.C. 1996. Multiple Comparisons: Theory and Practice. Chapman and Hall, London, UK.

NORTHERN WILD SHEEP AND GOAT COUNCIL

**PROCEEDINGS OF THE TWELFTH BIENNIAL
SYMPOSIUM**

**May 31 – June 4, 2000
Whitehorse, Yukon**

Hosted by Yukon Department of Renewable Resources

Editor: Jean Carey