

The Bering Sea and Western Interior Land Use Study

FINAL REPORT
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Any errors or omissions are solely the responsibility of the authors.

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List of Acronyms

ADF&G.....	Alaska Department of Fish and Game
BBM.....	Benefits Based Management
BLM.....	Bureau of Land Management
BSWI.....	Bering Sea and Western Interior
CDP.....	Census-Designated Place
GMU.....	Game Management Unit
INHT.....	Iditarod National Historic Trail
REP.....	Recreation Experience Preference
SNRAS.....	School of Natural Resources and Agricultural Sciences
UAF.....	University of Alaska Fairbanks
USDI.....	United States Department of the Interior

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Overview

The Bering Sea and Western Interior (BSWI) Land Use Study is a partnership between the United States Department of the Interior (USDI) Bureau of Land Management (BLM) and the University of Alaska Fairbanks (UAF). The goal of this study was to gather information from residents of the BSWI planning area about their use of subsistence resources and travel routes on BLM managed land, as well as to measure the importance of that land to individual households and villages. The survey also gathered data regarding residents' perceptions of the impacts of visitors on their village.

Methods

The BSWI planning area includes land south of the central Yukon watershed to the southern boundary of the Kuskokwim river watershed and lands west of Denali National Park and Preserve to the Bering Sea, seen in Map 1 on page 8. There are 25 villages and census-designated places (CDPs) in the vicinity of BLM managed land within or nearby the BSWI planning area. For the purposes of this study, we grouped these villages into six regions: Bering Sea, Yukon Delta, Lower Yukon, Lower Kuskokwim, Upper Kuskokwim and Western Interior, seen in Table 1 below. In total, the 2010 U.S. Census reported 2,050 occupied households in these villages and CDPs.

Table 1: Stratification of Villages and CDPs within the BSWI Land Use Planning Area

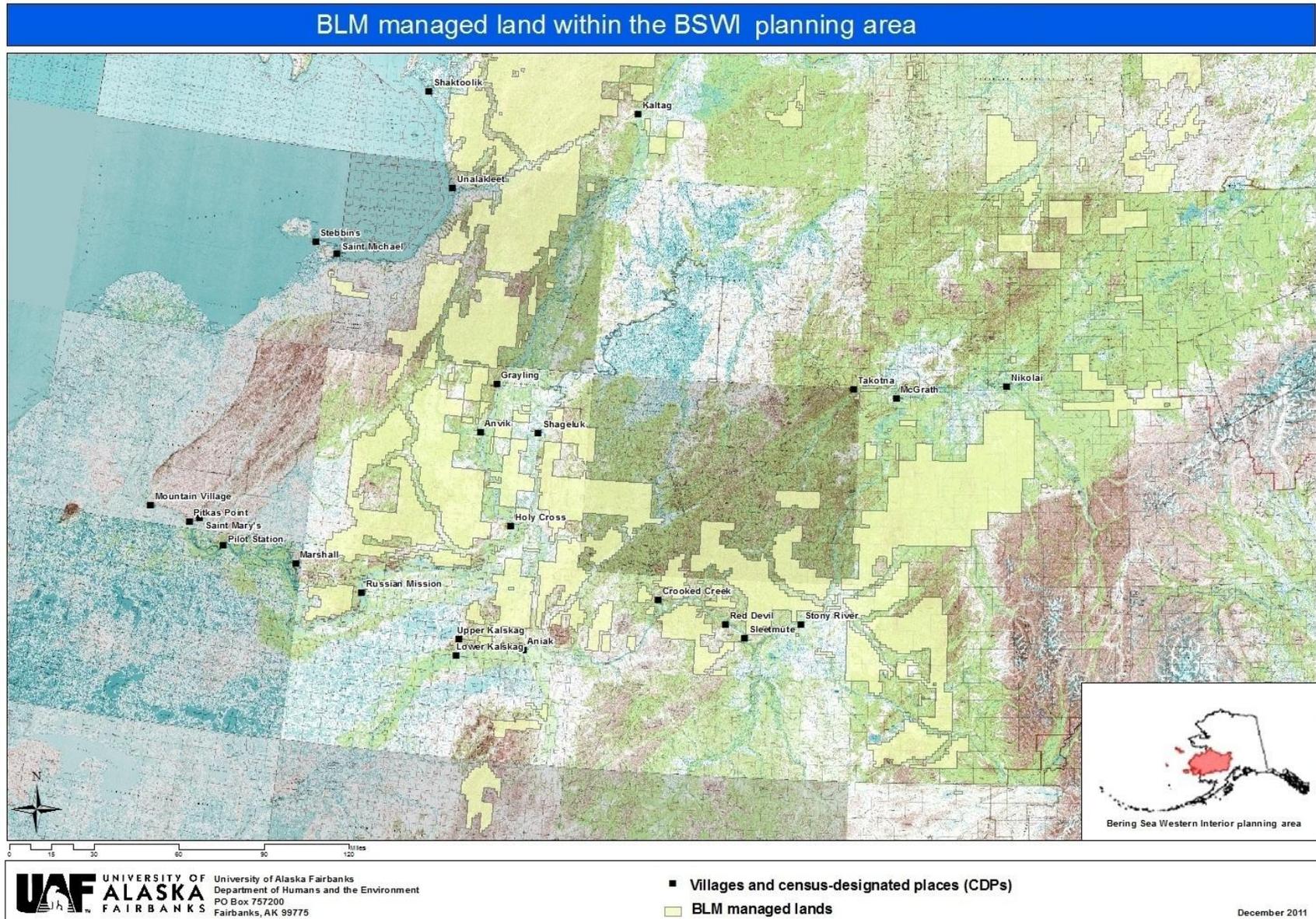
Bering Sea	Yukon Delta	Lower Yukon
Kaltag	Marshall	Anvik
Saint Michael	Mountain Village	Grayling
Shaktoolik	Pilot Station	Holy Cross
Stebbins	Pitkas Point ¹	Shageluk
Unalakleet	Russian Mission Saint Mary's	
Lower Kuskokwim	Upper Kuskokwim	Western Interior
Aniak	Crooked Creek ¹	McGrath
Lower Kalskag	Red Devil ¹	Nikolai
Upper Kalskag	Sleetmute ¹ Stony River ¹	Takotna ¹

¹CDPs

After discussions with the BLM, we decided that a survey would be the best method to gather the desired information. We developed a set of surveys and maps that divided each region (listed above) into four to six watersheds based on Alaska Department of Fish and Game (ADF&G) Game Management Units (GMUs) and sub-units. The maps showed villages, rivers, trails and other features, and indicated the land managed by the BLM.

We consulted with tribal and city councils regarding the best method to distribute the survey; some suggested we mail the survey to households, others recommended a local hire or methods such as including the survey with the water bill. We then attempted to survey each household in these 25 villages and CDPs. We used the Alaska voter registration database to identify potential households in the areas that we planned to

Map 1: BLM managed land within the BSWI planning area



survey by mail. The database reported 2,511 voters in these villages and CDPs. By eliminating voters with duplicate mailing addresses and those without valid mailing addresses, we identified 1,360 potential households in those villages and CDPs. We then sent a postcard announcing the survey would be arriving, followed by the survey and then a thank you/reminder postcard to each household. We then sent a second copy of the survey to households that did not respond. Ninety-six (96) surveys were undeliverable due to an incorrect address, a change of residence, or a death. We also worked with several city and tribal councils to distribute surveys with local hires and with the McGrath city council to send the survey with the city's water bills. Including surveys sent in the mail to valid addresses, surveys delivered by local hires¹ and surveys sent with water bills, we surveyed 1,548 households (75.5% of the households in the survey area) between October 2010 and March 2011. Unfortunately, due to difficult communication and poor timing, we did not survey the villages of Grayling, Marshall, Mountain Village and Shaktoolik, all places where we arranged to work with local hires. In these villages that we did not survey, the census reported 403 occupied households (19.7% of the households in the survey area).

We designed the survey to gather information regarding five topics: travel on the Iditarod National Historic Trail (INHT)², harvest of subsistence resources, travel routes, the importance of BLM managed land to households and villages and the impact of visitors on villages. Data regarding travel on the INHT also contains responses from villages outside the BSWI planning area. We will include that information in a separate report: Fix, P. J. (2011).

We sent two maps with each survey packet. The first map divided the area surrounding each village into watersheds; respondents used this map to answer questions about where they hunted and fished in the previous year and which species they hunted and fished for. The second map indicated land managed by the BLM. We asked respondents to use this map to indicate the travel routes that members of their household use. We asked respondents to mark their travel routes and to send the marked map back with their completed survey. We defined travel routes as "routes that are well known and have been regularly used for the past ten years."

Map 2 on page 10 and Map 3 on page 11 show the regional maps that we sent with the survey in relation to BLM managed land in the BSWI Land Use Planning Area. Please note there is some overlap between these regional maps.

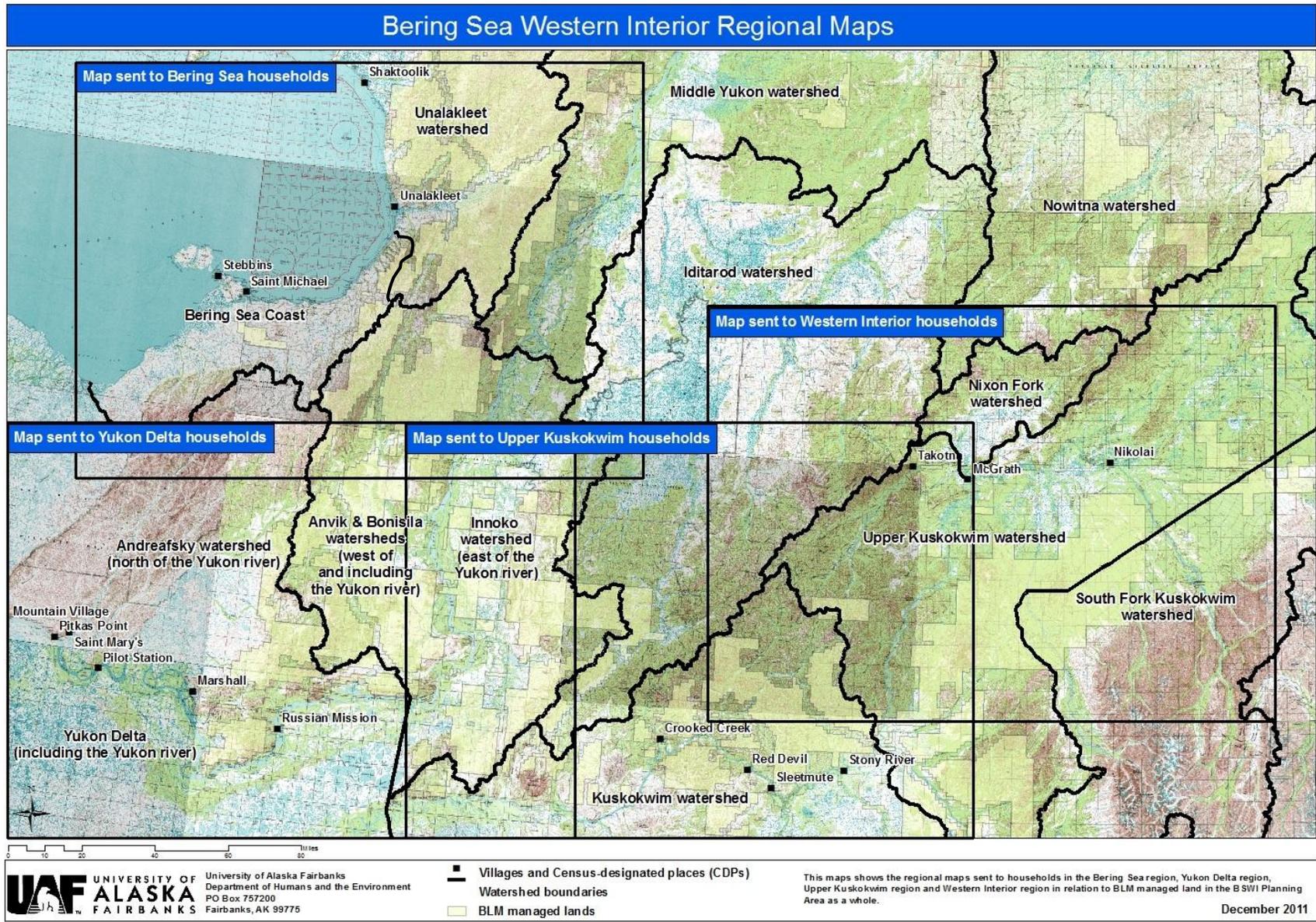
We then asked respondents to answer close-ended questions regarding which watersheds (from the specific regional map included with the survey) members of their household hunted and fished in during the previous year³, what species they hunted and fished for and how often they hunted and fished for each species. The survey listed four species in the hunting section: moose, caribou, black bear and brown bear and seven species in the fishing section: salmon, burbot, whitefish, lamprey (eels), Dolly Varden, Arctic grayling and Arctic char.

¹ We are assuming that the survey assistants we hired delivered a survey to each household in the village of Aniak.

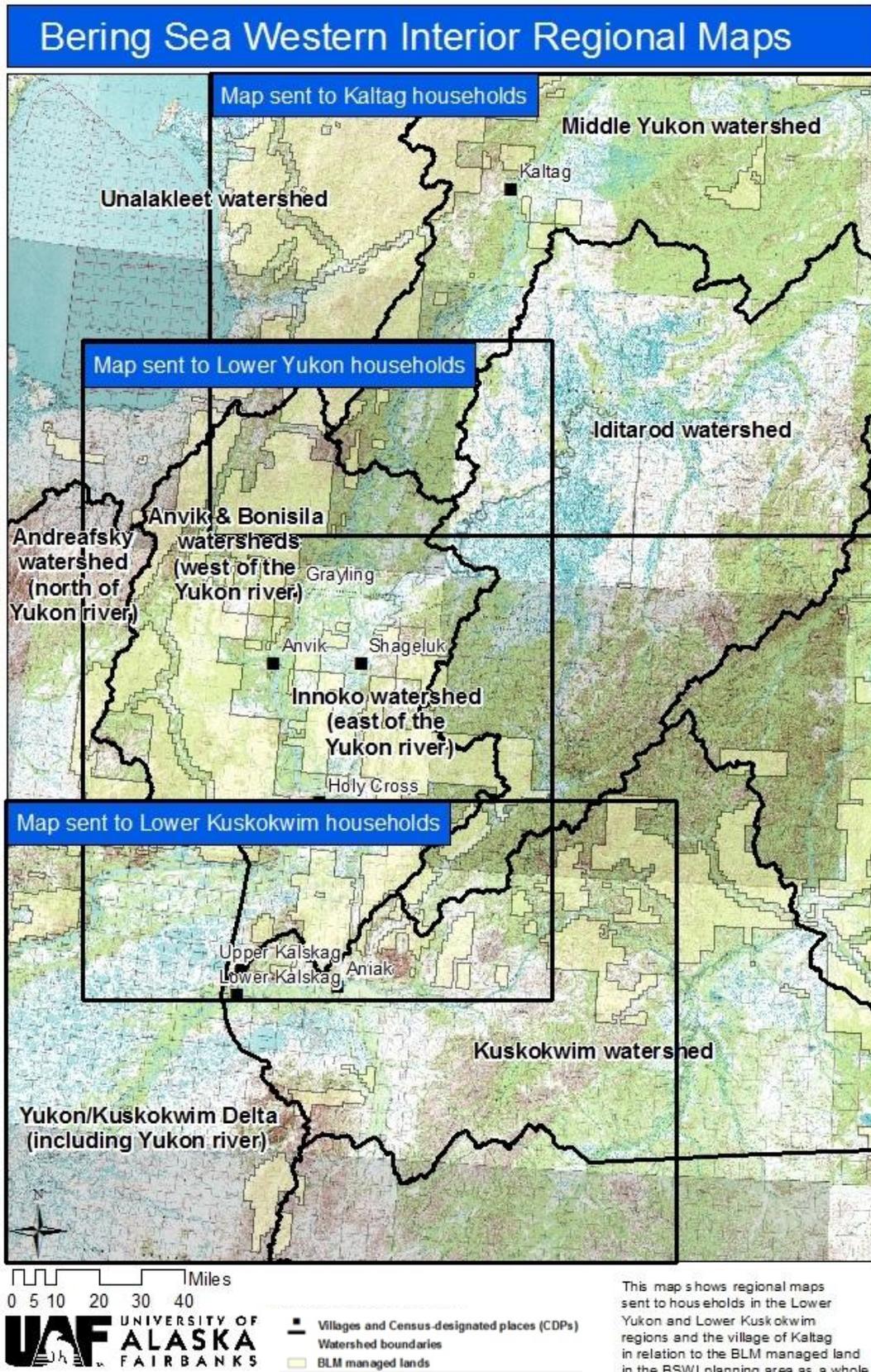
² Only villages and CDPs on or nearby the route of INHT received a survey that asked about travel on the Iditarod trail.

³ We included specific dates for this question in each set of surveys based on the date we sent the survey. Throughout the BSWI survey, dates for these questions ranged in one year periods between October 2009 and December 2010. For simplicity, we have labeled this as "in the previous year."

Map 2: Regional maps sent to the Bering Sea, Yukon Delta, Upper Kuskokwim and Western Interior households



Map 3: Regional maps sent to the Lower Yukon, Lower Kuskokwim, and Kaltag households



We asked respondents to check one of four choices regarding how often someone from their household hunted or fished for each species in each watershed:

- did not hunt or fish for each species in the previous year
- hunted or fished for each species 1-10 times in the previous year
- hunted or fished for each species 11-20 times in the previous year
- hunted or fished for each species more than 20 times in the previous year

The survey then asked respondents to indicate whether their household's subsistence needs were met for the resources listed in the previous year. The survey also asked them to list for which resources their household's needs were not met.

We designed the next section of the survey to gather data regarding the importance of lands managed by the BLM to individual households and villages. We developed the questions regarding the importance of BLM managed land to individual households to measure a concept analogous to a motivation, and we used a list of questions based loosely on the Recreation Experience Preference (REP) scales (Moore & Driver, 2005). We modified the wording of these questions so they would make more sense to rural Alaskan respondents. For example, we changed the phrase "keeping physically fit" to "keeping physically active" and we changed "getting exercise" to "having opportunities for physical activity." We changed "being close to nature" to "being close to the land," and we changed "experiencing new and different things" to "learning about a new area."

For the questions regarding the importance of BLM managed land to villages, we based the questions on previous Benefits Based Management (BBM) work conducted in Alaska that asked why BLM lands were important to individuals and communities (Harrington & Fix, 2009). We modified several questions (e.g., "increased physical fitness" to "maintain physical well-being," "increased sense of independence" to "preserve an independent way of life," and "increased economic contribution to the community" to "a source of jobs from mineral development" and "a source of income from non-local hunters and fishers") and we added several questions related to preserving and passing on traditions and subsistence skills. The survey asked respondents to rate on a 1-7 scale (where 1 is not at all important and 7 is extremely important) 17 reasons why the land surrounding their village might be important to their household and 14 reasons why it might be important to their village.

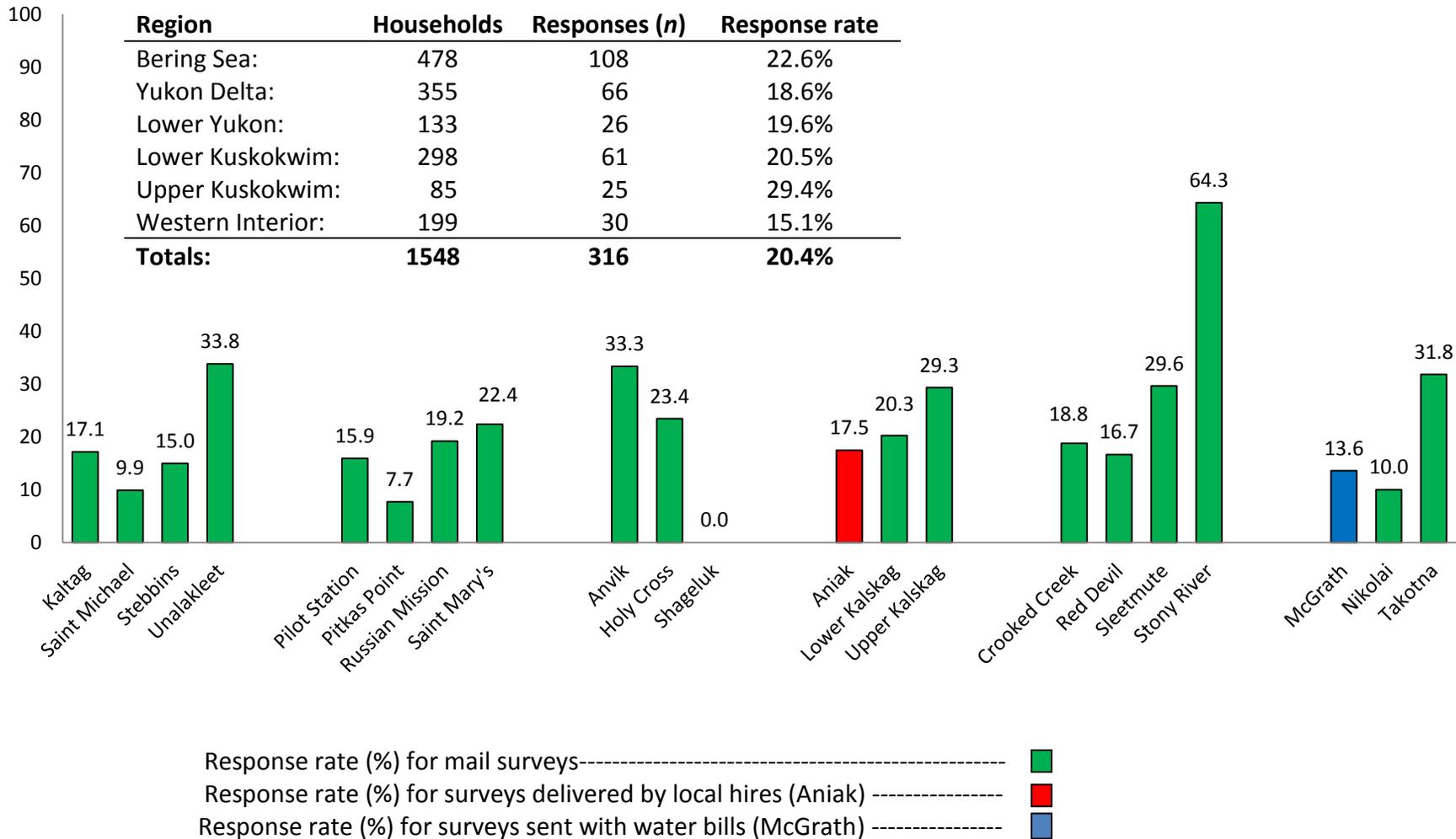
In the next section of the survey we asked respondents to rate on a 1 – 7 scale (where 1 is strongly disagree and 7 is strongly agree) whether they agreed or disagreed with a list of statements about the impacts of visitors on their village. The statements asked whether visitors provide a positive economic contribution to their village, whether visitors negatively affect the social fabric of their village, whether visitors have an overall positive impact on their village, and whether they enjoy interacting with visitors to their village. All households received a survey that asked about the impacts of visitors on their village while households in the Bering Sea, Lower Yukon, and Western Interior regions received surveys that distinguished between visitors that were associated with races (such as the Iditarod, Iron Dog and Iditasport) along the INHT as well as visitors that were not associated with races along the INHT.

Please see appendix A on page 121 for a sample copy of the Bering Sea and Western Interior Land Use Survey.

Results

Overall, we received 316 completed surveys, a response rate of 20.4%, seen in Figure 1 below.

Figure 1: BSWI Land Use Survey response rates



Notes: The McGrath city administrator mailed surveys to McGrath households in the water bill for October, 2010. Local hires surveyed Aniak households in 2010-2011. We sent all other surveys by mail between October 2010 and March 2011. We did not receive any completed mail surveys from the village of Shageluk.

In most regions, the proportion of returned surveys from each village or CDP was broadly similar to the proportional population of each village or CDP. However, due to their high response rates, the village of Unalakleet is over-represented in the Bering Sea region and the CDP of Stony River is slightly over-represented in the Upper Kuskokwim region. Please note that in the Bering Sea region, this over-representation skews the hunting and fishing results toward the Unalakleet watershed. In the Upper Kuskokwim Region, responses from Stony River do not skew the hunting or fishing results. There is also some overlap between the regional maps we developed. Please note that watersheds that do not seem to be important for residents in one region may be very important for residents in another region.

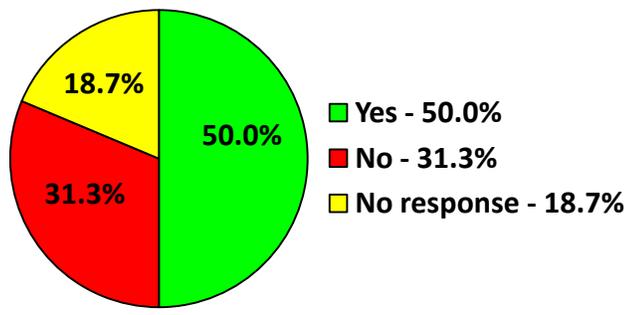
We analyzed the data from the survey by region and village. Each regional section contains maps that show the percentage of households⁴ that hunted and fished in each watershed for each species, as well as graphs that indicate what percentage of households met their subsistence needs in the previous year. We also compiled comments regarding for which resources household’s needs were not met. Each section also contains graphs that display the means and standard deviations from all respondents regarding the importance of BLM managed lands to their household and village as well as the impacts of visitors on their village.

Subsistence Needs Met

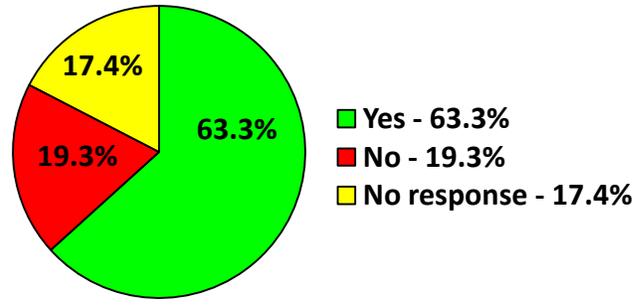
We asked all respondents if they met their household’s subsistence needs for moose, caribou, black bear and brown bear in the previous year. We also asked if they met their household’s subsistence needs for salmon, burbot, whitefish, lamprey, Dolly Varden, Arctic grayling and Arctic char. Across the BSWI region, one hundred and fifty eight (158) households (50.0%) indicated that they met their subsistence hunting needs for those species in the previous year. Two hundred (200) households (63.3%) indicated that they met their subsistence fishing needs for those species in the previous year, seen in Figure 2 below. Please note that some respondents returned a survey, but did not answer every question. Throughout the report, when calculating percentages for the subsistence needs met graphs, we included these non-responses and marked them as “no response”.

Figure 2: Percentage of households who met their subsistence needs in the previous year

Were your household's **hunting** subsistence needs met in the previous year?



Were your household's **fishing** subsistence needs met in the previous year?



Notes: Number of households - Kaltag: n = 12, Saint Michael: n = 9, Stebbins: n = 16, Unalakleet: n = 71, Pilot Station: n = 18, Pitkas Point: n = 2, Russian Mission: n = 14, Saint Mary's: n = 32, Anvik: n = 11, Holy Cross: n = 15, Aniak: n = 29, Lower Kalskag: n = 15, Upper Kalskag: n = 17, Crooked Creek: n = 6, Red Devil: n = 2, Sleetmute: n = 8, Stony River: n = 9, McGrath: n = 20, Nikolai: n = 3, Takotna: n = 7.

⁴ For the purpose of this report, we are defining “households” as “households that responded to the BSWI Land Use Study”. 14

Travel Routes

One hundred fifty seven (157) of the 316 respondents (49.7%) returned a copy of the map provided marked with their household’s travel routes. The travel routes maps in Appendix C show the routes that respondents marked on their returned surveys, as well as a description of what the route is used for (if indicated).

Reasons why BLM managed land might be important to your household

In the section of the survey that asked respondents to rate reasons BLM managed land might be important to their household, we listed pairs of reasons that were very similar and were intended to measure the same overall response (for instance “Keeping physically active” and “Having opportunities for physical activity” or “Being close to the land” and “Being on the land”). We listed these similar pairs to test for consistency within the survey. If paired reasons correlated highly, we condensed the pairs into single statements and one value to simplify the results. Table 2 below shows correlated pairs, the single statements that we condensed each pair into, their degree of correlation and the statistical level of significance to each correlation.

Table 2: Correlations among paired reasons why land managed by the BLM might be important to your household

Paired reasons why land managed by the BLM might be important to members of your household	Condensed reason	Region	<i>n</i>	Pearson correlation	Level of significance p (two tailed)
Learning about a new area Exploring the area	Exploring new areas	Bering Sea	96	.843	.01
		Yukon Delta	61	.601	.01
		Lower Yukon	22	.516	.05
		Lower Kuskokwim	60	.682	.01
		Upper Kuskokwim	21	.848	.01
		Western Interior	27	.613	.01
Keeping physically active Having opportunities for physical activity	Opportunities for physical activity	Bering Sea	97	.808	.01
		Yukon Delta	59	.735	.01
		Lower Yukon	22	.795	.01
		Lower Kuskokwim	60	.673	.01
		Upper Kuskokwim	22	.710	.01
		Western Interior	28	.914	.01
Being close to the land Being on the land	Being on the land	Bering Sea	98	.920	.01
		Yukon Delta	62	.660	.01
		Lower Yukon	25	.482	.05
		Lower Kuskokwim	60	.744	.01
		Upper Kuskokwim	21	.900	.01
		Western Interior	28	.282	.15
Sharing your skill and knowledge with others Teaching your skills to others	Sharing and teaching your skills	Bering Sea	99	.803	.01
		Yukon Delta	61	.941	.01
		Lower Yukon	24	.583	.01
		Lower Kuskokwim	57	.748	.01
		Upper Kuskokwim	21	.971	.01
		Western Interior	29	.939	.01

Impacts of visitors on your village

Mean responses from respondents from the Bering Sea, Lower Yukon and Western Interior regions (households that received a survey that distinguished between race affiliated visitors and non-race affiliated visitors) regarding the positively oriented questions (for example “individuals or groups who travel through my village for tourism contribute positively to my village, etc.”) ranged between 5.86 and 4.36 (on the 1-7 scale where 1 is strongly disagree and 7 is strongly agree). Mean responses regarding the negatively oriented question (“individuals or groups who travel through my village for tourism negatively impact the social fabric of my village”) ranged between 3.76 and 1.86.

Mean responses from respondents from the Yukon Delta, Upper and Lower Kuskokwim regions (households that received a survey that did not ask about race affiliated visitors) regarding those same positively oriented questions ranged between 4.21 and 2.55. Mean responses regarding the negatively oriented question ranged between 3.75 and 3.18.

The second set of questions on the survey sent to Bering Sea, Lower Yukon and Western Interior households asked about the impacts of race affiliated visitors (Iditarod, Iron Dog, and Iditasport) on their village. Mean responses regarding the positively oriented questions ranged between 6.17 and 4.64 and mean responses regarding the negatively oriented question ranged between 3.48 and 1.83.

Figure 3 on page 18 displays the means and standard deviations for the questions from all regions regarding their perceptions of the impacts of non-race affiliated visitors on their village. Figure 4 on page 19 displays the means and standard deviations for the questions from the Bering Sea, Lower Yukon and Western Interior regions regarding their perceptions of the impacts of race affiliated (Iditarod, Iron Dog, Iditasport) visitors on their village.

Additional comments

Finally, we asked respondents to list comments regarding why BLM managed land is important to their household and village and to add any additional comments they had at the end of the survey. After receiving completed surveys back, we sorted the comments based on themes that we discerned from the comments.

Eighty-three respondents wrote a comment regarding the question “Are there other reasons visiting BLM managed land is important to members of your household?” We organized these comments into eight themes: subsistence (50 comments), management (9 comments), nature (9 comments), family (7 comments), spiritual (4 comments), visitors (2 comments), mining (1 comment) and skills (one comment), seen in Table 3.

Sixty-seven respondents wrote a comment regarding the question “Are there other reasons visiting BLM managed land is important to your community?” We organized these comments into six themes: subsistence (19 comments), management (18 comments), conservation

Table 3: Additional household comments

Theme	Number of comments
Subsistence	50
Management	9
Nature	9
Family	7
Spiritual	4
Visitors	2
Mining	1
Skills	1
Total	83

(12 comments), community (10 comments), tourism (7 comments) and jobs (1 comment), seen in Table 4 on page 17.

Finally, ninety-two respondents wrote a comment regarding the question “Do you have any additional comments?” We organized these comments into seven themes: tourism (47 comments), management (15 comments), community (8 comments), subsistence (7 comments), travel (6 comments), races (5 comments) and positive/negative comments regarding the survey (4 comments), seen in Table 5 below.

Please see appendix B on page 130 for a complete list of comments.

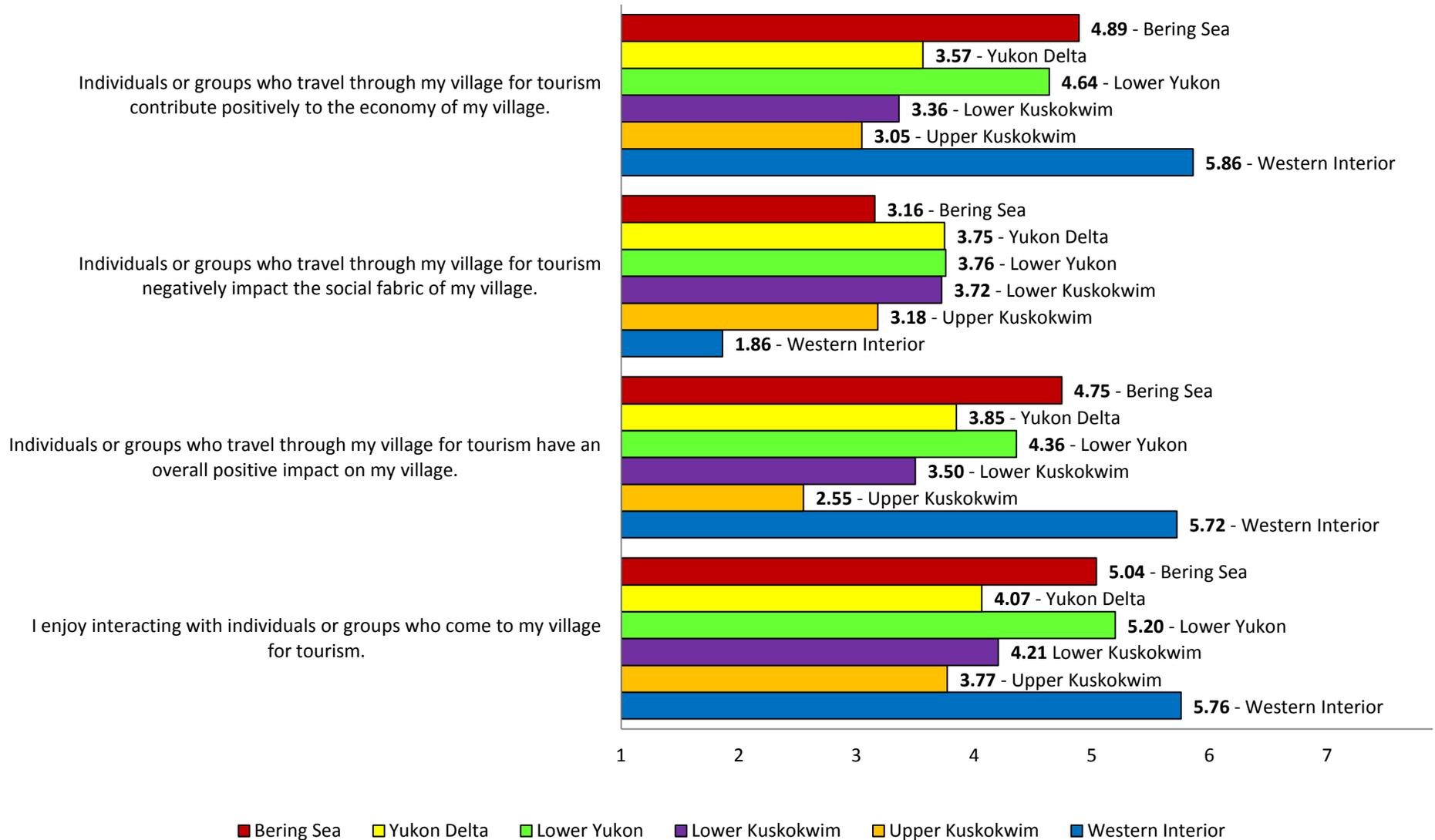
Table 4: Additional village comments

Theme	Number of comments
Subsistence	19
Management	18
Conservation	12
Community	10
Tourism	7
Jobs	1
Total	67

Table 5: All other additional comments

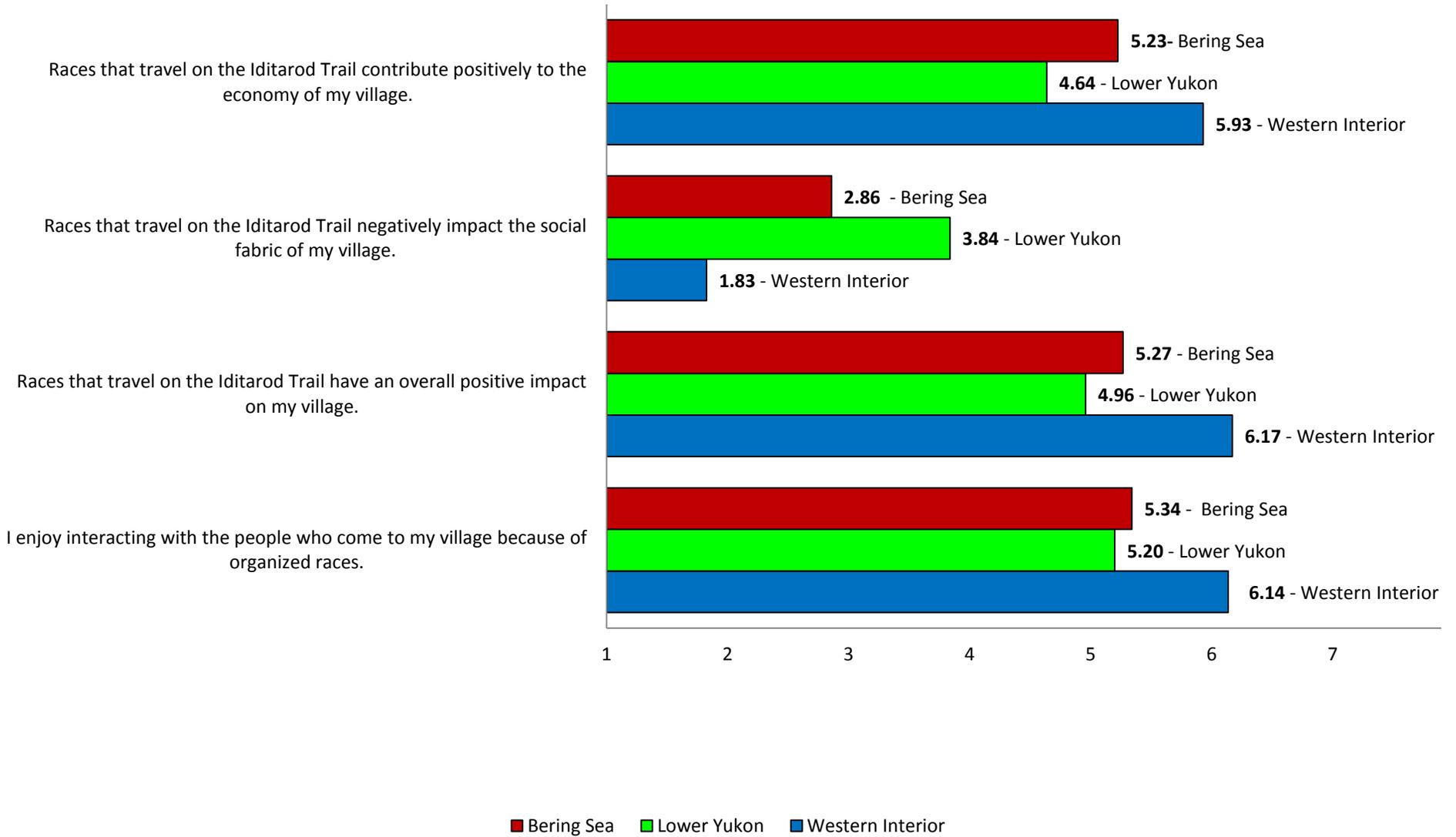
Theme	Number of comments
Tourism	47
Management	15
Community	8
Subsistence	7
Travel	6
Races	5
Positive/negative feedback	4
Total	92

Figure 3: Impact of non-race affiliated visitors on your village



Notes: Figures show mean of responses on a 7-point scale. 1 = strongly disagree and 7 = strongly agree. Bering Sea: *ns* ranged from 100 -102, Yukon Delta: *n* = 60, Lower Yukon: *n* = 25, Upper Kuskokwim: *ns* ranged from 20 to 22, Lower Kuskokwim: *n* = 58, Western Interior: *n* = 29. Households in the Bering Sea, Lower Yukon and Western Interior received surveys that discerned between race affiliated visitors (on the INHT) and non-race affiliated visitors.

Figure 4: Impact of race affiliated visitors on your village



Notes: Figures show mean of responses on a 7-point scale. 1 = strongly disagree and 7 = strongly agree. Bering Sea: *ns* ranged from 100 -102, Lower Yukon: *n* = 25, Western Interior: *n* = 29.

Bering Sea Region Results

Kaltag, Saint Michael, Stebbins and Unalakleet

Between December 2010 and February 2011 we surveyed the villages of Kaltag, Saint Michael, Stebbins and Unalakleet by mail. We also worked with the City of Shaktoolik to hire a resident to distribute the survey to the households in Shaktoolik. Unfortunately, due to difficult communication and timing, we did not survey the village of Shaktoolik.

The 2010 U.S. Census reported 70 occupied households in Kaltag, 96 occupied households in Saint Michael, 153 occupied households in Stebbins and 225 occupied households in Unalakleet. With the exception of households in the village of Shaktoolik, which we did not survey, we surveyed 478 households, 91.0% of households in the region.

In February and March 2011, we surveyed 70 households (100% of occupied households) in Kaltag by mail. We received 12 responses, a response rate of 17.1%. Between December 2010 and March 2011 we surveyed 91 households (94.8% of occupied households) in Saint Michael and 107 households (79.9% of occupied households) in Stebbins by mail. We received 9 responses from Saint Michael and 16 responses from Stebbins, response rates of 9.9% and 15.0%, respectively. Between December 2010 and March 2011 we surveyed 210 households in Unalakleet (93.3% of the occupied households) by mail. We received 71 responses, a response rate of 33.8%.

In the region as a whole, we received 108 completed surveys, a response rate of 22.6%, seen in Table 6 below.

Table 6: Bering Sea - Response Rates

Village	Number of households	Households surveyed	Households surveyed (%)	Returned surveys	Response rate (%)
Kaltag	70	70	100.0	12	17.1
Saint Michael	96	91	94.8	9	9.9
Stebbins	134	107	79.9	16	15.0
Unalakleet	225	210	93.3	71	33.8
Totals	525	478	91.1	108	22.6

While we surveyed the households in each village in approximate proportion to the size of each village, the number of surveys we received from each village was not proportional to the number of surveys we sent to each village. As seen in Table 7 on page 21, the villages of Saint Michael and Stebbins are under-represented, while the village of Unalakleet is over-represented in the sample. Please note that this over-representation skews the hunting and fishing results toward the Unalakleet watershed in Map 4 and Map 8, on pages 23 and 27. Please note that the results displayed in the rest of the Bering Sea regional maps are not skewed.

Table 7: Bering Sea - Proportion of returned surveys by each village

Village	Proportion of households in the region	Proportion of households Surveyed	Proportion of Returned Surveys
Kaltag	.13	.15	.11
Saint Michael	.18	.19	.08
Stebbins	.26	.22	.15
Unalakleet	.43	.44	.66
Totals	1.00	1.00	1.00

Due to the small number of surveys we received from the villages of Saint Michael and Stebbins, and their close geographical proximity, we combined these samples for the results presented. Of the surveys returned from Kaltag, the confidence interval is 25.9% at the 95% level. Of the surveys from Saint Michael, the confidence interval is 31.2% at the 95% level; from Stebbins, the confidence interval is 22.7% at the 95% level and from Unalakleet, the confidence interval is 9.5% at the 95% level. Of the surveys returned from the Bering Sea region as a whole, the confidence interval is 8.3% at the 95% level, seen in Table 8 below.

Table 8: Bering Sea - Confidence intervals at the 95% level

Village	Confidence level	Households surveyed	Returned surveys	Confidence Interval (%)
Kaltag	95%	70	12	25.9
Saint Michael	95%	91	9	31.2
Stebbins	95%	107	16	22.7
Unalakleet	95%	210	71	9.5
Totals	95%	478	108	8.3

Note: Confidence intervals are calculated assuming maximum variance in the population, i.e. 50% have a characteristic and 50% do not. For many questions on the survey it is likely the population had less than maximum variance. The 95% CI for the combined Saint Michael and Stebbins results is 18.4%.

Harvest of Subsistence Resources

We developed a map that divided the Bering Sea BSWI region into five watersheds: Unalakleet, Middle Yukon, Innoko, Anvik and the Bering Sea coast, seen on page 10. However, during the preliminary stages of the survey, the Kaltag City Council requested that we develop a map that more accurately matched the areas where residents from Kaltag hunt and fish. We developed a new map for Kaltag households that divided the region into four watersheds: the Middle Yukon, Innoko, Anvik and the Bering Sea coast (which corresponded with the Unalakleet watershed on maps sent to the other Bering Sea villages), seen on page 11. We included a copy of these maps with each survey packet that we sent to each household. Respondents used these maps to document which watersheds members of their households hunted and fished in during the previous year. Please note that some Bering Sea respondents returned a survey, but did not answer every question. When calculating percentages in the hunting and fishing maps, we treated non-responses as “did not hunt or fish in the area”.

Map 4 and Map 8 on pages 23 and 27 show the percentage of respondents from the Bering Sea region that hunted and fished for each species in each watershed during the previous year.

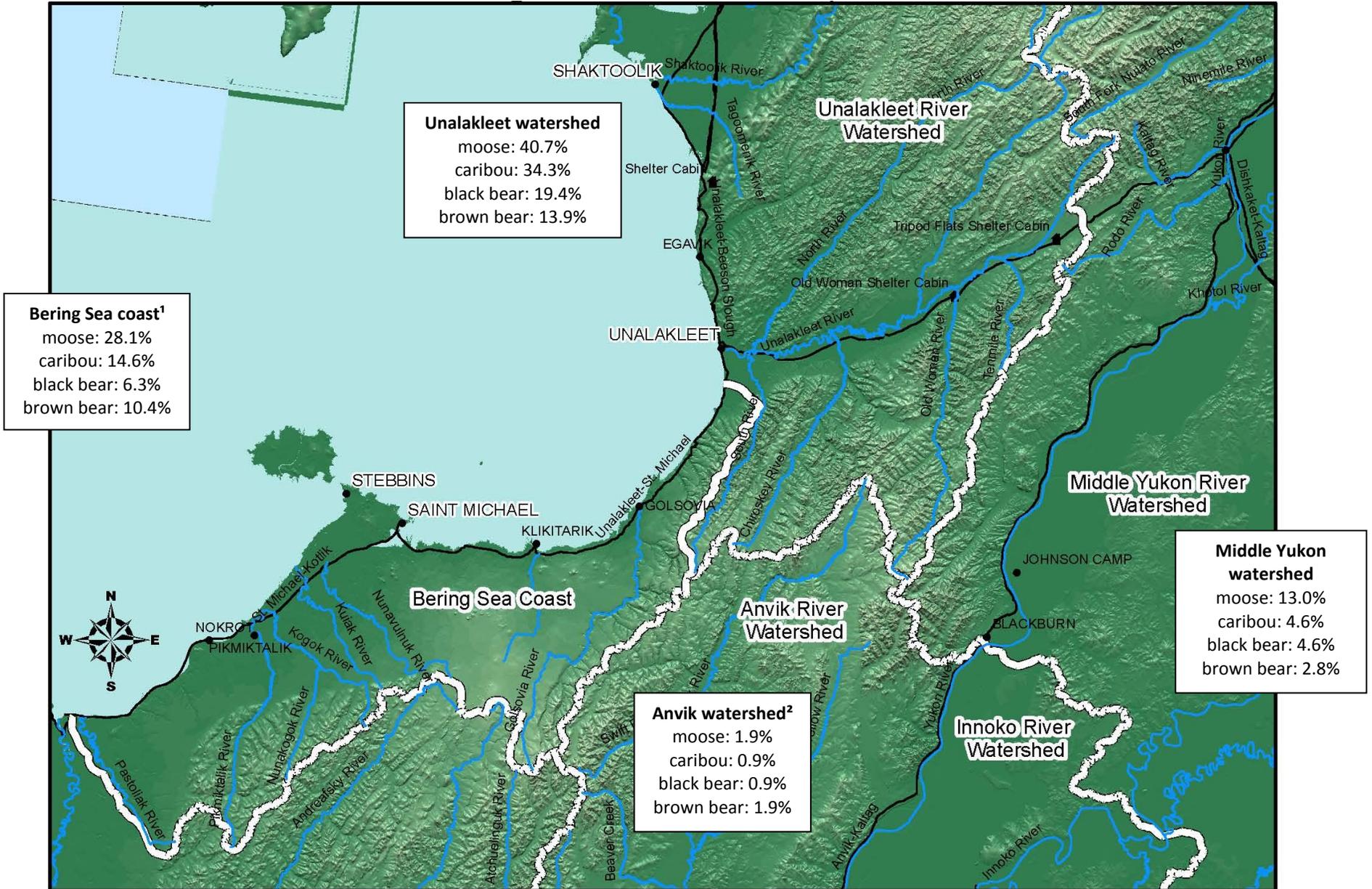
Ten of the twelve respondents from Kaltag (83.3%) indicated that, during the previous year, members of their household hunted in the Middle Yukon watershed. One household (8.3%) hunted in the Lower Yukon watershed. As well, ten households (83.3%) fished in the Middle Yukon watershed and one household (8.3%) fished in the Innoko watershed. No Kaltag households indicated that they hunted in the Innoko River watershed or in the Bering Sea coast during the previous year and no households indicated that they fished along the Bering Sea coast or in the Lower Yukon watershed. Map 5 and Map 9 on pages 24 and 28 show the percentage of Kaltag households that hunted and fished for each species in each watershed between January and December 2010.

Respondents from Saint Michael and Stebbins indicated that they primarily utilized the Bering Sea coast for hunting and fishing. Ten of the twenty five respondents from Saint Michael and Stebbins (40.0%) indicated that, during the previous year, members of their household hunted in the Bering Sea coast. Two households (8.0%) hunted in the Unalakleet watershed, and three households (12.0%) hunted in the Middle Yukon watershed. Thirteen households (52.0%) fished in the Bering Sea coast, two households (8.0%) fished in the Unalakleet watershed and one household (4.0%) fished in the Middle Yukon watershed. No Saint Michael or Stebbins respondents indicated that members of their households hunted or fished in the Anvik or Innoko watersheds during the previous year. Map 6 and Map 10 on pages 25 and 29 show the percentage of households from Saint Michael and Stebbins who hunted and fished for each species in each watershed between November 2009 and October 2010.

Respondents from Unalakleet indicated that members of their households primarily utilized the Unalakleet watershed and the Bering Sea coast for hunting and fishing. Fifty households (70.4%) hunted in the Unalakleet watershed, nineteen households (26.8%) hunted on the Bering Sea coast, two households (2.8%) hunted in the Middle Yukon watershed and two households (2.8%) hunted in the Anvik watershed. Sixty four households (90.1%) fished in the Unalakleet watershed, twenty three households (32.4%) fished in the Bering Sea coast, four households (5.6%) fished in the Middle Yukon watershed and one household (1.4%) fished in the Anvik watershed. No respondents from Unalakleet indicated that members of their household hunted or fished in the Innoko watershed in the previous year. Map 7 and Map 11 on pages 26 and 30 show the percentage of households from Unalakleet who hunted and fished for each species in each watershed between November 2009 and October 2010.

Map 4: Bering Sea hunting responses

Kaltag: $n = 12$ Unalakleet: $n = 71$
 Saint Michael: $n = 9$ Total $n = 108$
 Stebbins: $n = 16$

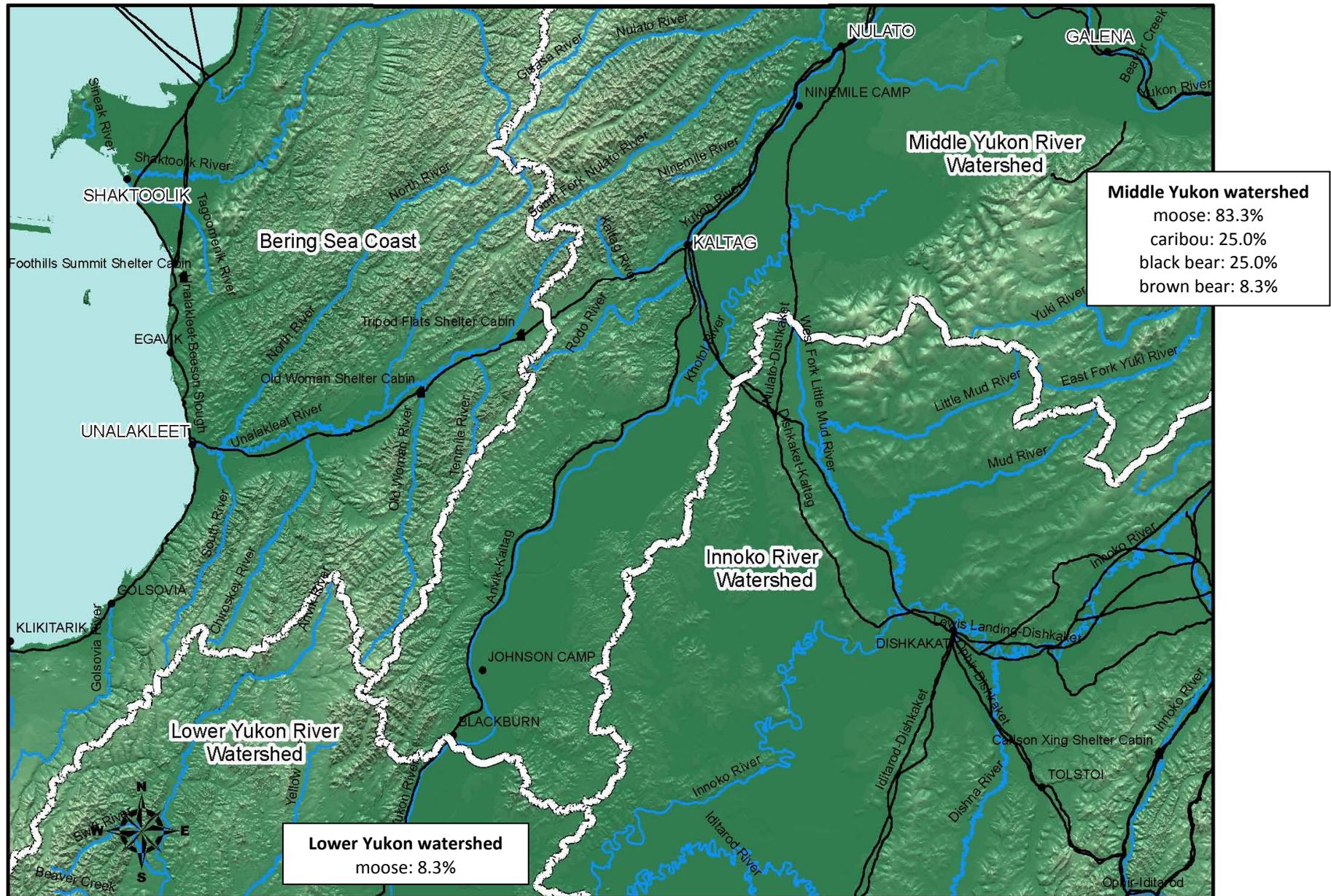


¹ Percentages from the “Bering Sea Coast” were calculated excluding Kaltag respondents. The survey sent to Kaltag residents did not ask about this watershed.

² The map sent to Kaltag respondents labeled this watershed as the “Lower Yukon River watershed”.

Map 5: Kaltag hunting responses

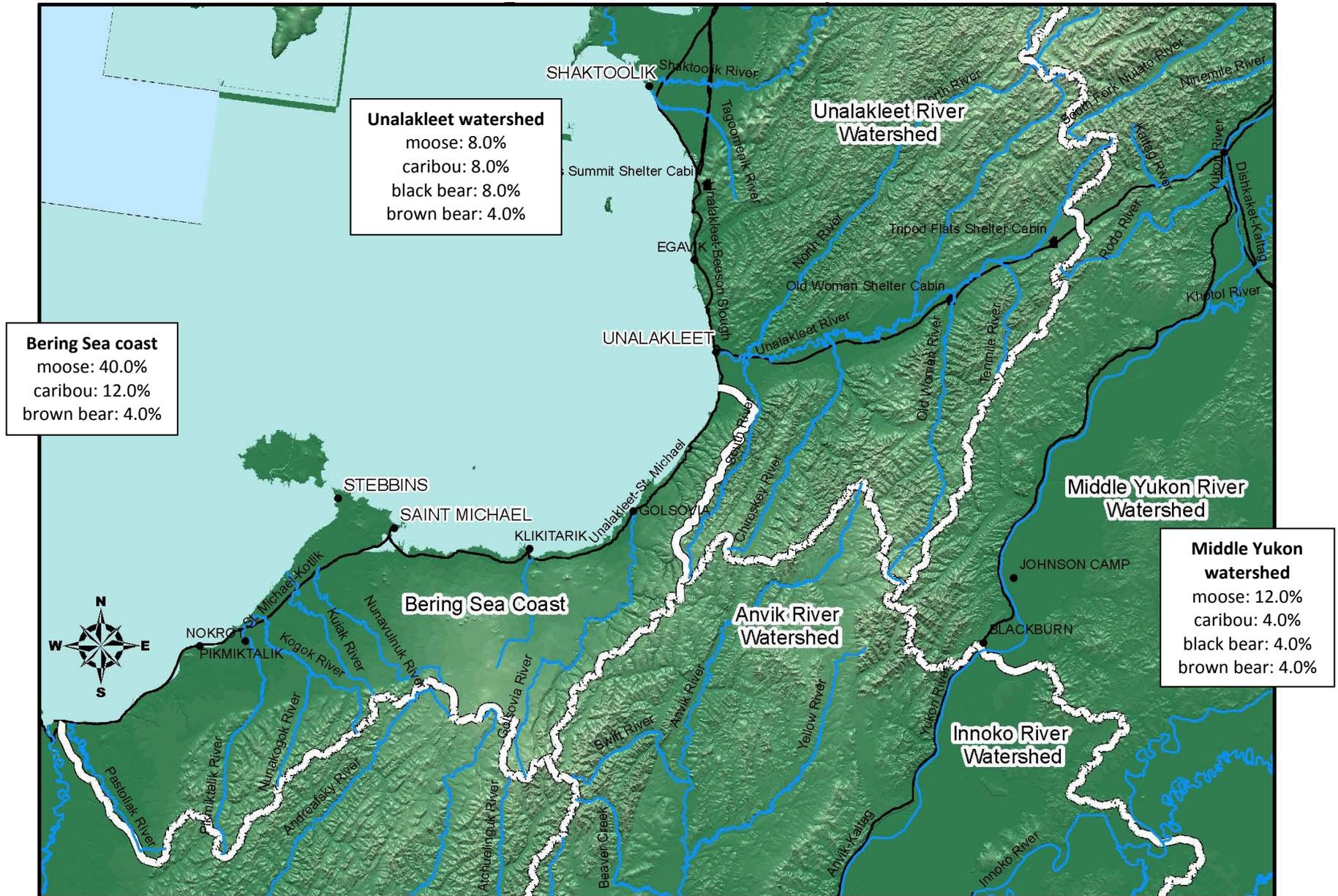
Kaltag: $n = 12$



Note: The map sent to Kaltag households did not distinguish between the “Bering Sea Coast” and the “Unalakleet watershed”.

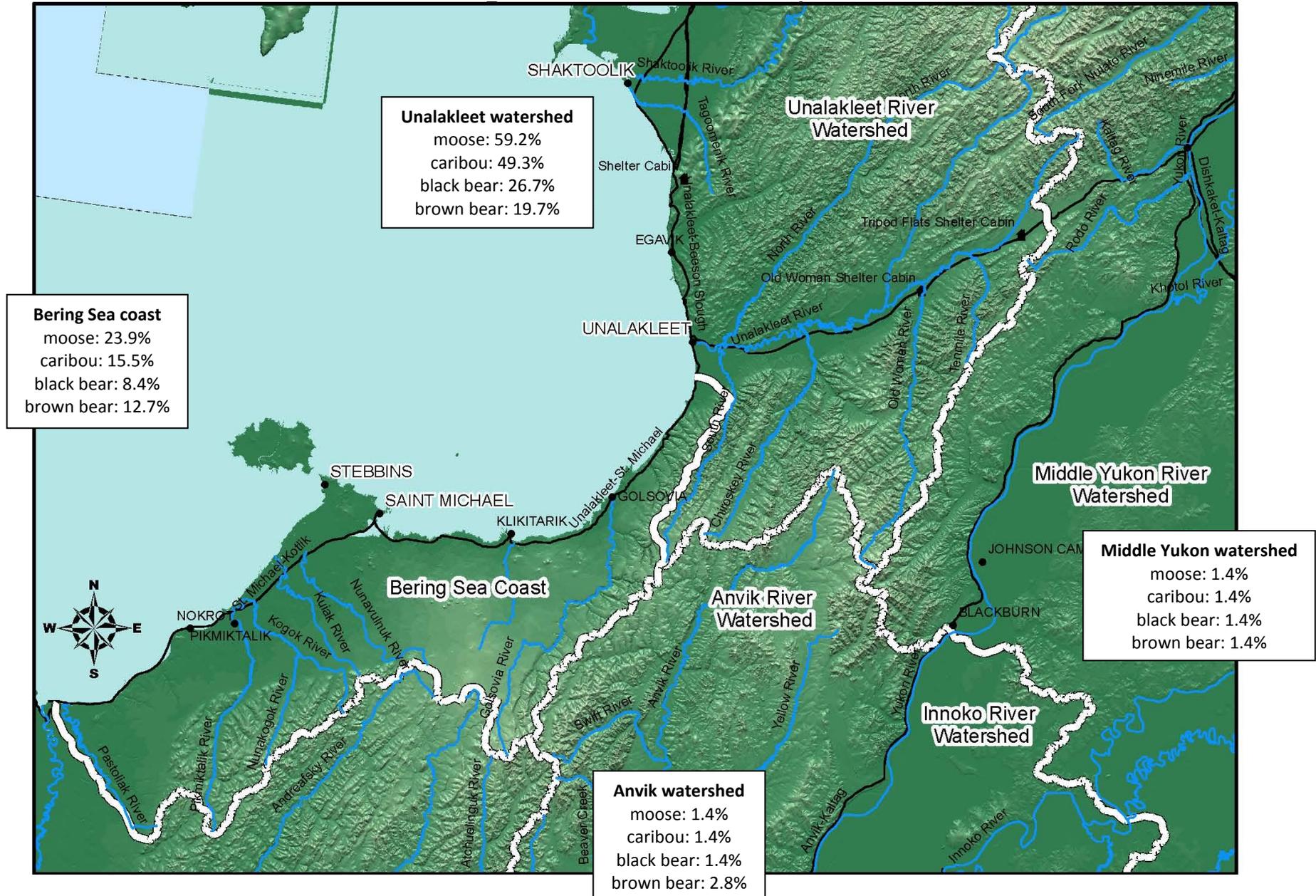
Map 6: Saint Michael & Stebbins hunting responses

Saint Michael: $n = 9$ Total $n = 25$
 Stebbins: $n = 16$



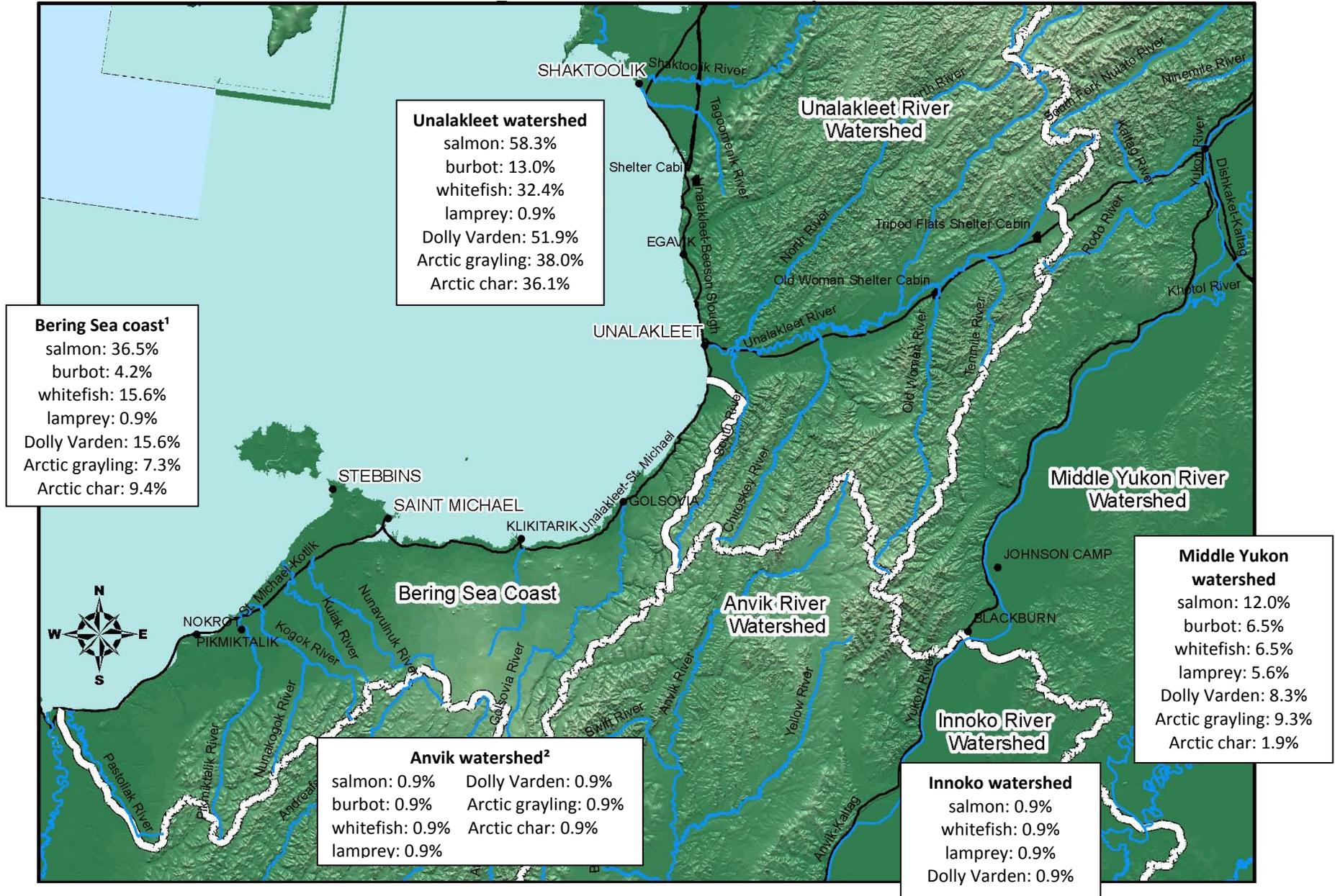
Map 7: Unalakleet hunting responses

Unalakleet: $n = 71$



Map 8: Bering Sea region fishing responses

Kaltag: $n = 12$ Unalakleet: $n = 71$
 Saint Michael: $n = 9$ Total $n = 108$
 Stebbins: $n = 16$

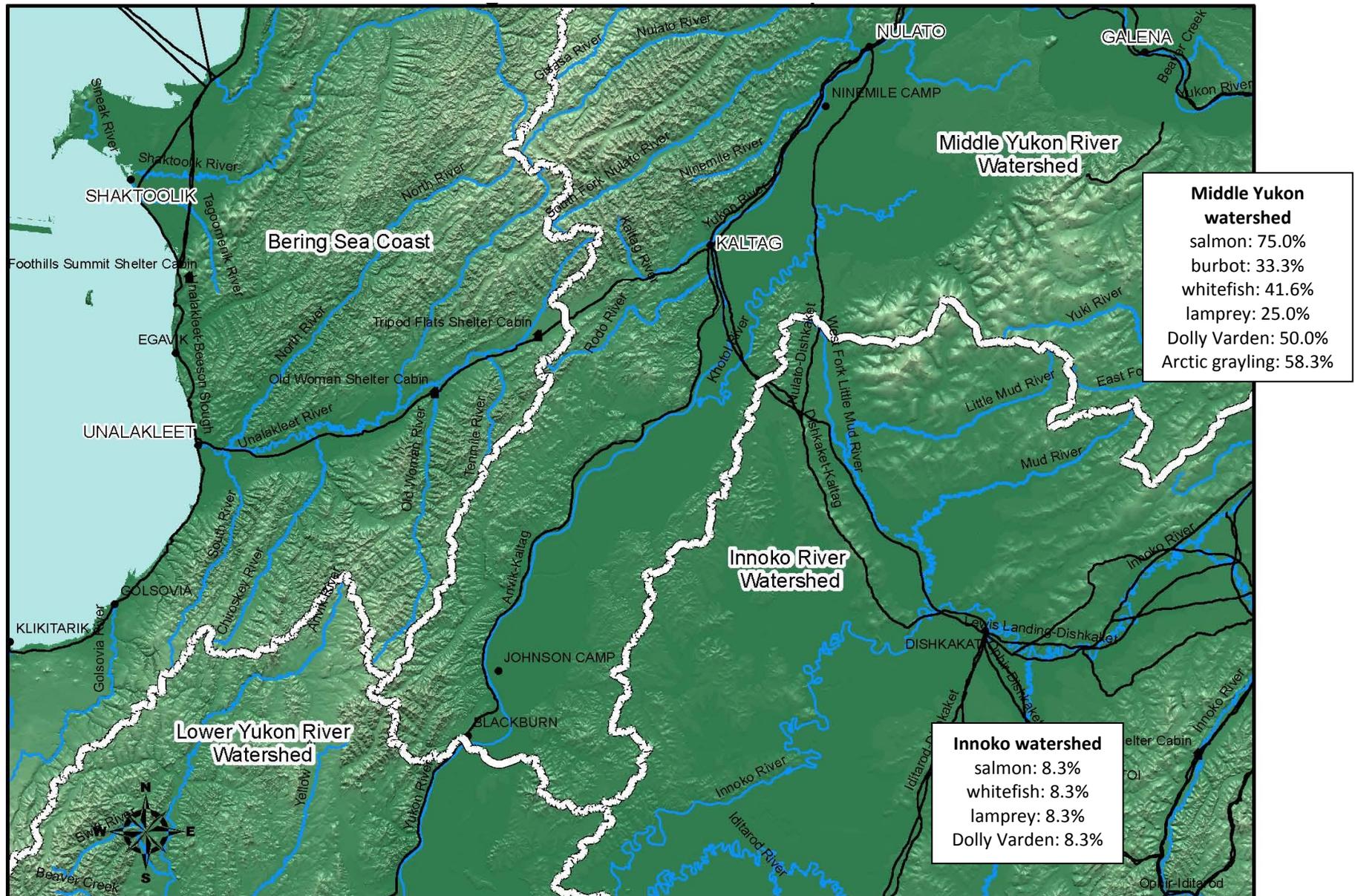


¹ Percentages from the “Bering Sea Coast” were calculated excluding Kaltag respondents. The survey sent to Kaltag residents did not ask about this watershed.

² The map sent to Kaltag respondents labeled this watershed as the “Lower Yukon River watershed”.

Map 9: Kaltag fishing responses

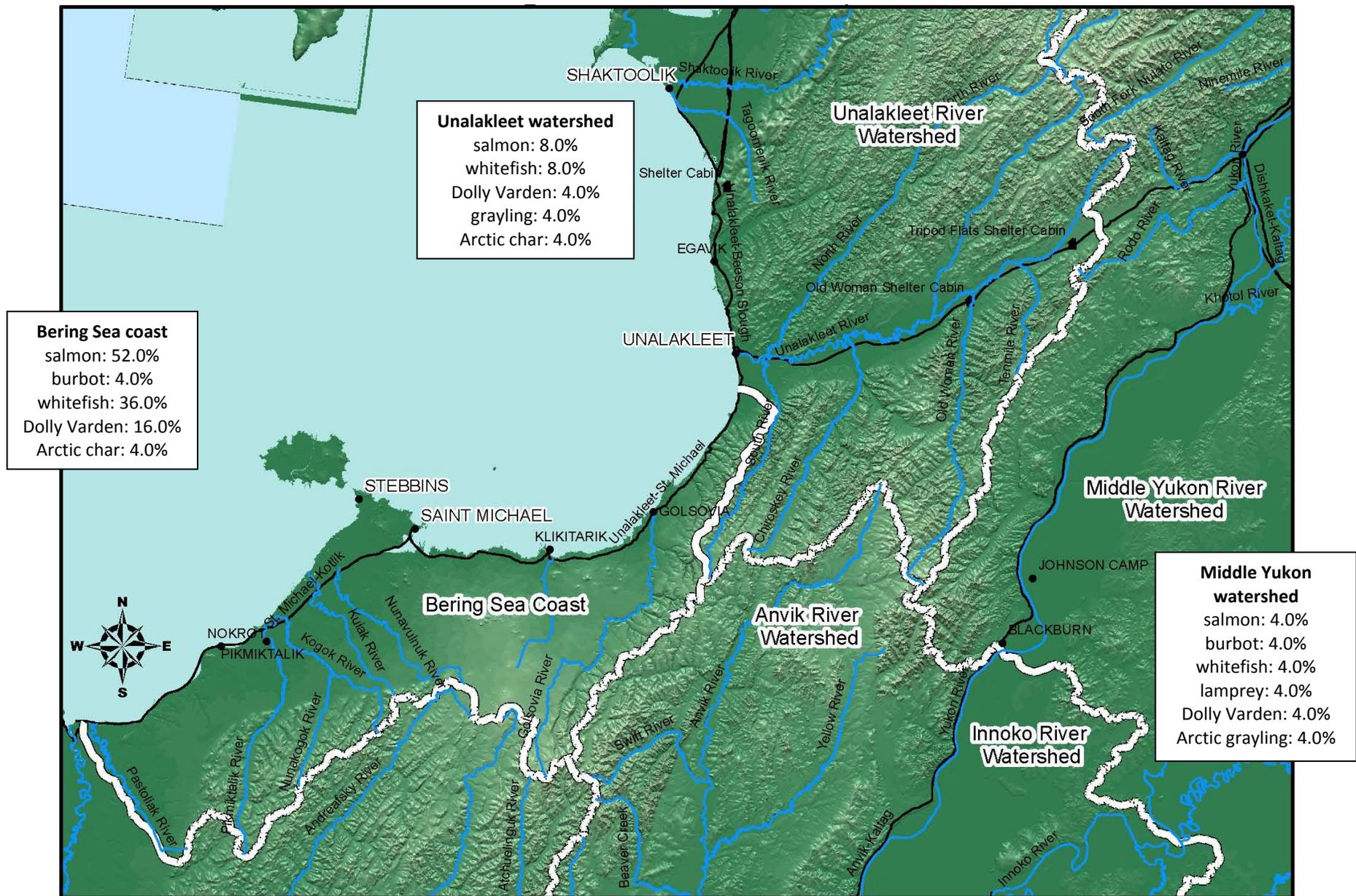
Kaltag: $n = 12$



Note: The map sent to Kaltag households did not distinguish between the “Bering Sea Coast” and the “Unalakleet watershed”.

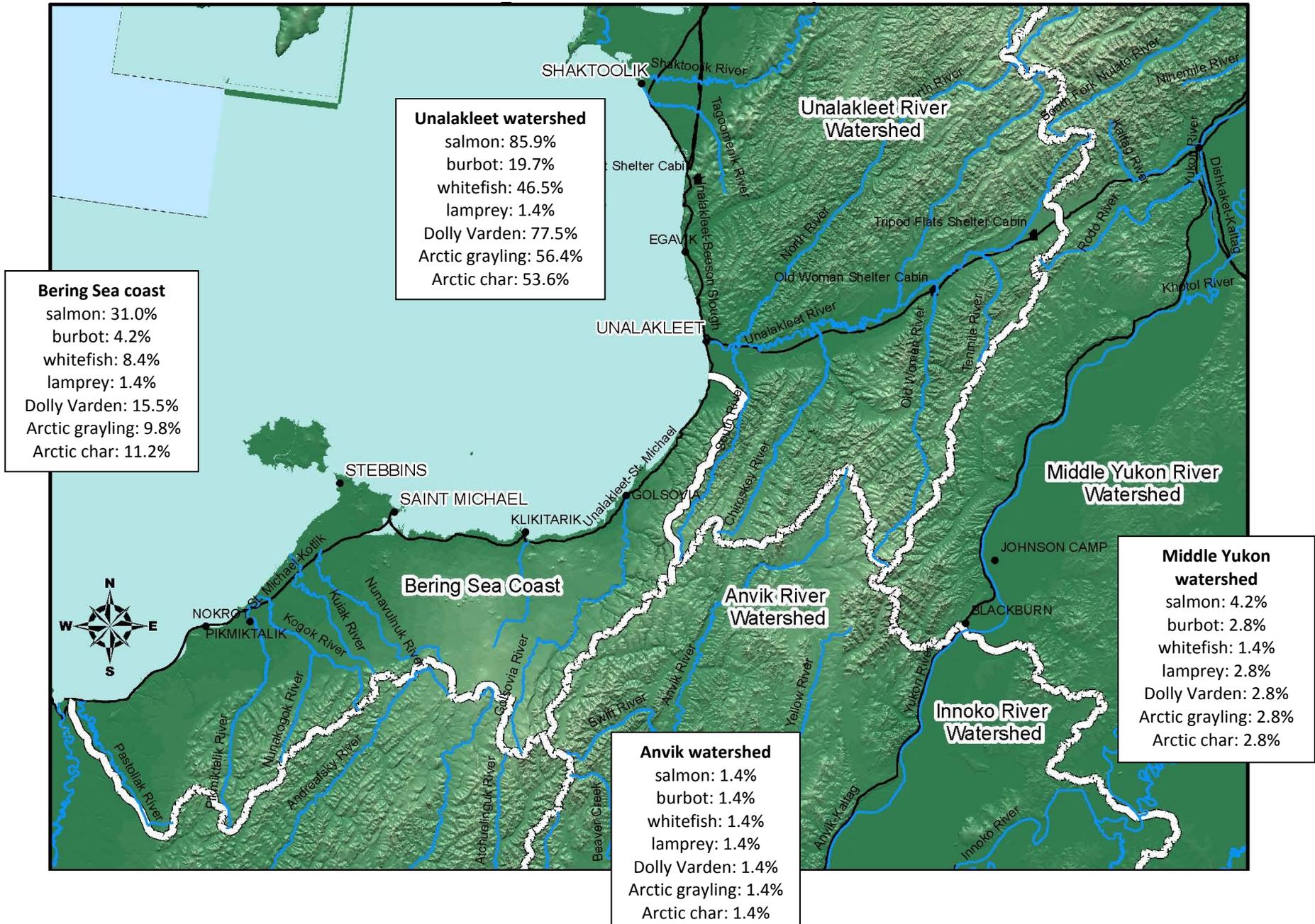
Map 10: Saint Michael & Stebbins fishing responses

Saint Michael: $n = 9$ Total $n = 25$
 Stebbins: $n = 16$



Map 11: Unalakleet fishing responses

Unalakleet: $n = 71$

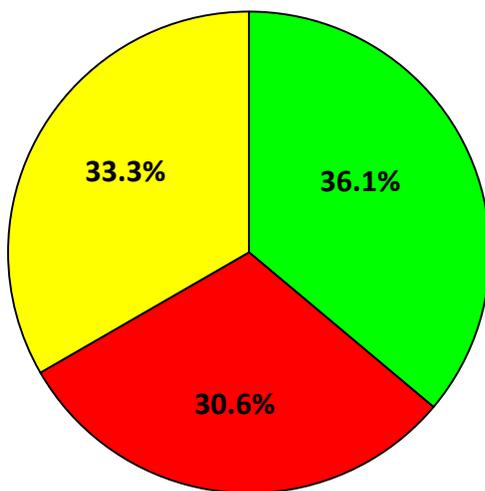


Subsistence Needs

Thirty nine households (36.1%) responded that they met their subsistence hunting needs for moose, caribou, black bear and brown bear in the previous year. Sixty four households (59.3%) responded that they met their subsistence fishing needs for salmon, burbot, whitefish, lamprey, Dolly Varden, Arctic grayling and Arctic char in the previous year, seen in Figure 5 below.

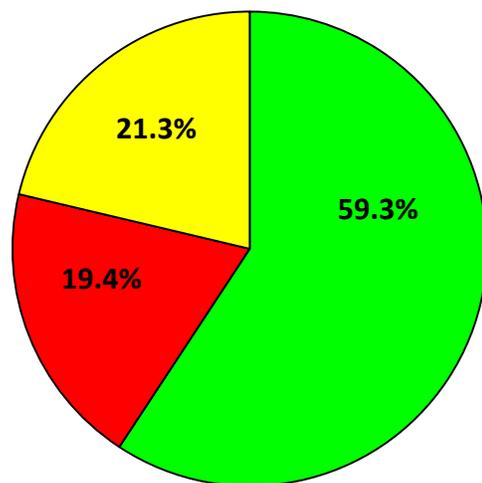
Figure 5: Bering Sea - Were your household's subsistence needs met in the previous year?

Were your household's subsistence **hunting** needs met in the previous year?



■ Yes - 36.1%
■ No - 30.6%
■ No response - 33.3%

Were your household's subsistence **fishing** needs met in the previous year?



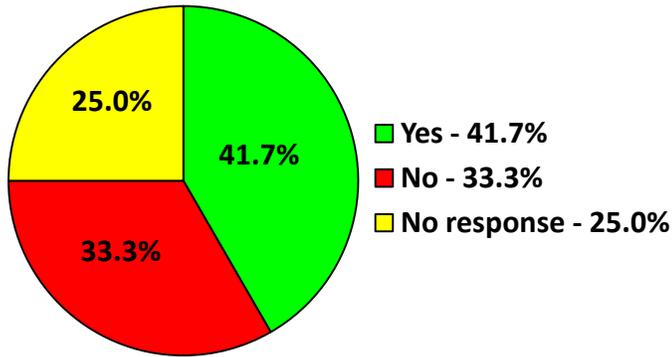
■ Yes - 59.3%
■ No - 19.4%
■ No response - 21.3%

Notes: Number of households, total: $n = 108$, Kaltag: $n = 12$, Saint Michael: $n = 9$, Stebbins: $n = 16$, Unalakleet: $n = 71$.

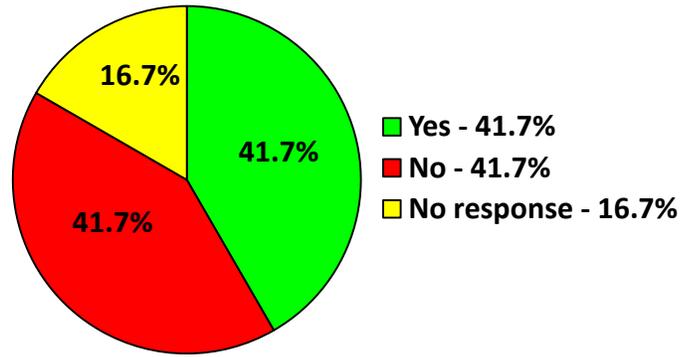
Five households from Kaltag (41.7%), eight households from Saint Michael and Stebbins (32.0%) and 26 households from Unalakleet (36.6%) responded that they met their subsistence hunting needs for those species in the previous year. Five households from Kaltag (41.7%) 13 households from Saint Michael and Stebbins (52.0%) and 46 households from Unalakleet (64.8%) responded that they met their subsistence fishing needs for those species in the previous year, seen in Figure 6 -Figure 8 on pages 32 and 33.

Figure 6: Kaltag - Were your household's subsistence needs met between January and December 2010?

Were your household's subsistence **hunting** needs met between January 2010 and December 2010?



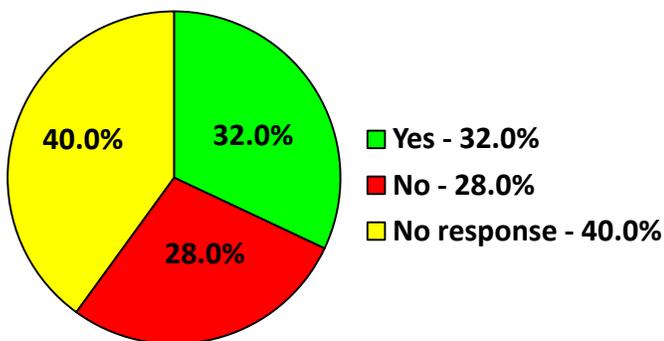
Were your household's subsistence **fishing** needs met between January 2010 and December 2010?



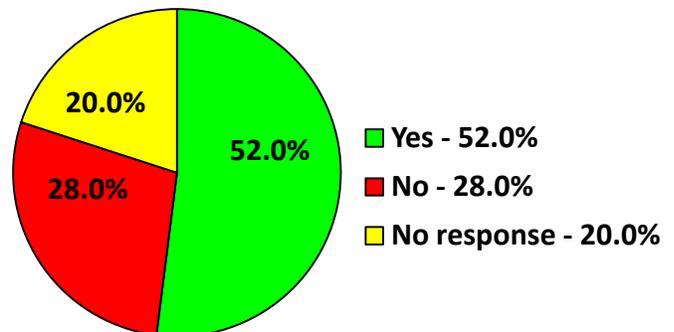
Notes: Number of households, Kaltag: $n = 12$.

Figure 7: Saint Michael & Stebbins - Were your household's subsistence needs met between November 2009 and October 2010?

Were your household's subsistence **hunting** needs met between November 2009 and October 2010?



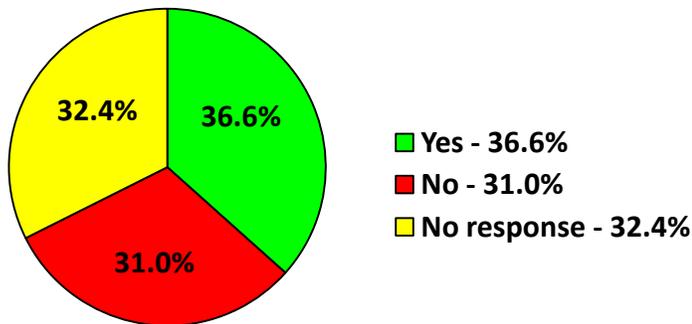
Were your household's subsistence **fishing** needs met between November 2009 and October 2010?



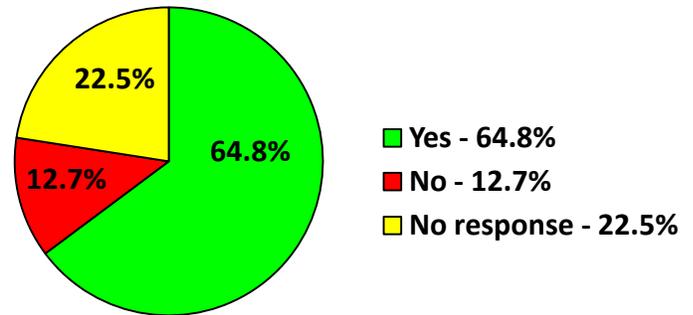
Notes: Number of households: total $n = 25$. Saint Michael: $n = 9$, Stebbins: $n = 16$.

Figure 8: Unalakleet - Were your household's subsistence needs met between November 2009 and October 2010?

Were your household's subsistence **hunting** needs met from November 2009 to October 2010?



Were your household's subsistence **fishing** needs met from November 2009 to October 2010?



Notes: Number of households, Unalakleet: $n = 71$.

We asked respondents to list for which resources their household's needs were not met. In the Bering Sea region, 17 respondents commented that their household's needs were not met for moose during the previous year. Nine respondents commented that their household's needs were not met for caribou. Two respondents commented that their needs were not met for bear. Six respondents commented that they did not hunt due to a lack of equipment or due to the high cost of fuel. One respondent commented that there was no duck hunting and one respondent commented that they did not meet their household's needs because there was no game available. Finally, one respondent commented that they did not meet their household's needs but other households shared food with them and two respondents commented that they did not meet their needs because nobody from their household hunted.

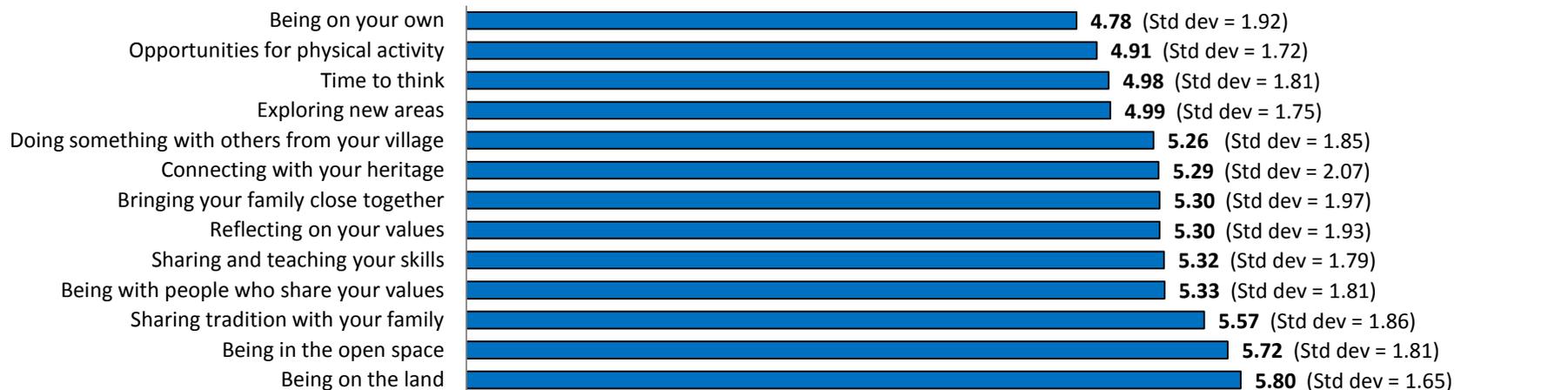
Seven respondents commented that they did not meet their household's subsistence needs for salmon in the previous year. Four respondents commented that they did not meet their household's subsistence fishing needs due to lack of equipment. As well, one respondent simply commented "bad fish season."

Reasons land managed by the BLM might be important to your household and village

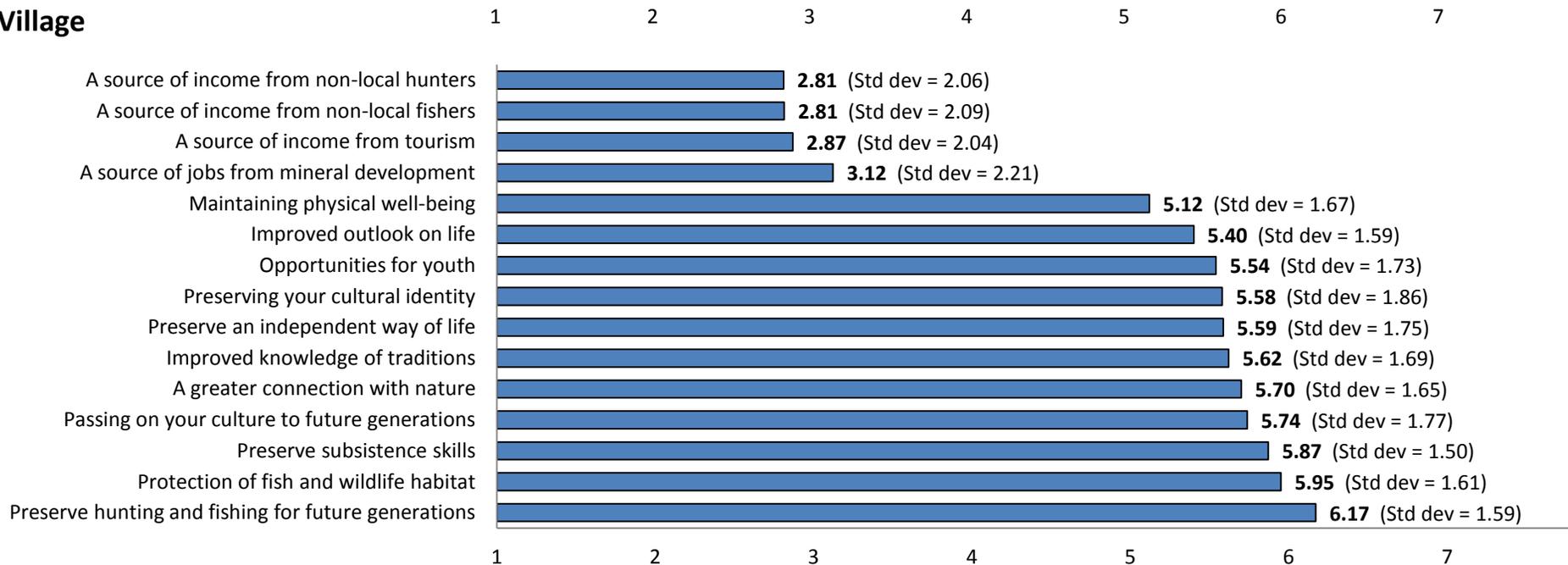
Figure 9 on page 34 shows the responses from Bering Sea respondents regarding reasons why BLM managed land might be important to their household and village. The first chart shows responses regarding why land managed by the BLM might be important to the **household**; the second chart displays responses regarding why land managed by the BLM might be important to the **village**. Figure 10 on page 35 shows the results from respondents from Kaltag, Figure 11 on page 36 shows the results from respondents from Saint Michael and Stebbins, and Figure 12 on page 37 shows results from respondents from Unalakleet. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (not at all important) to 7 (extremely important).

Figure 9: Bering Sea - Reasons land managed by the BLM might be important to your household and village

Household



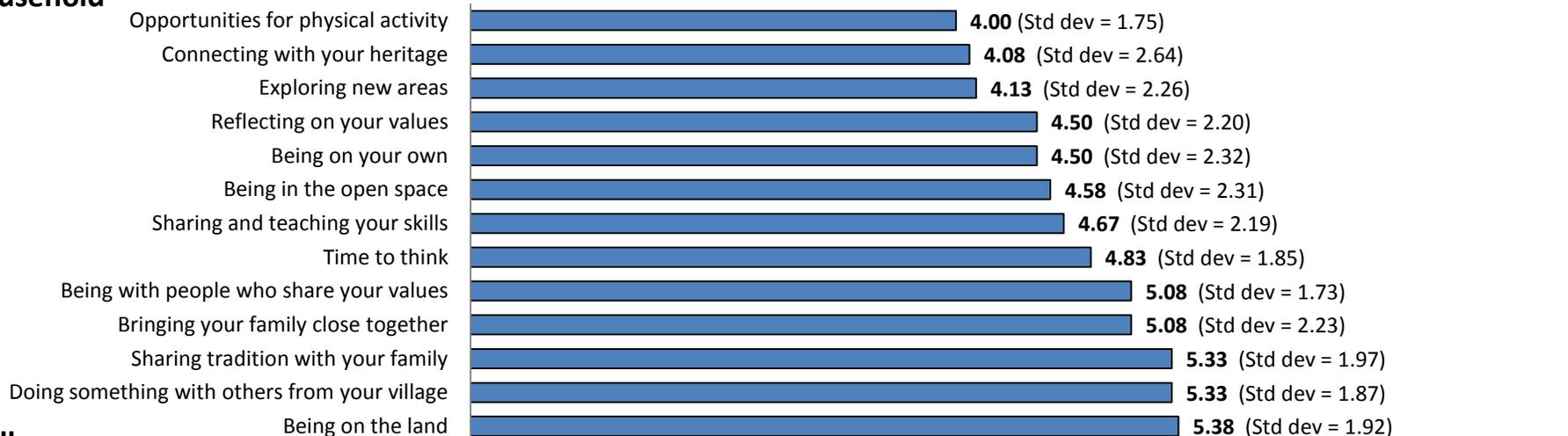
Village



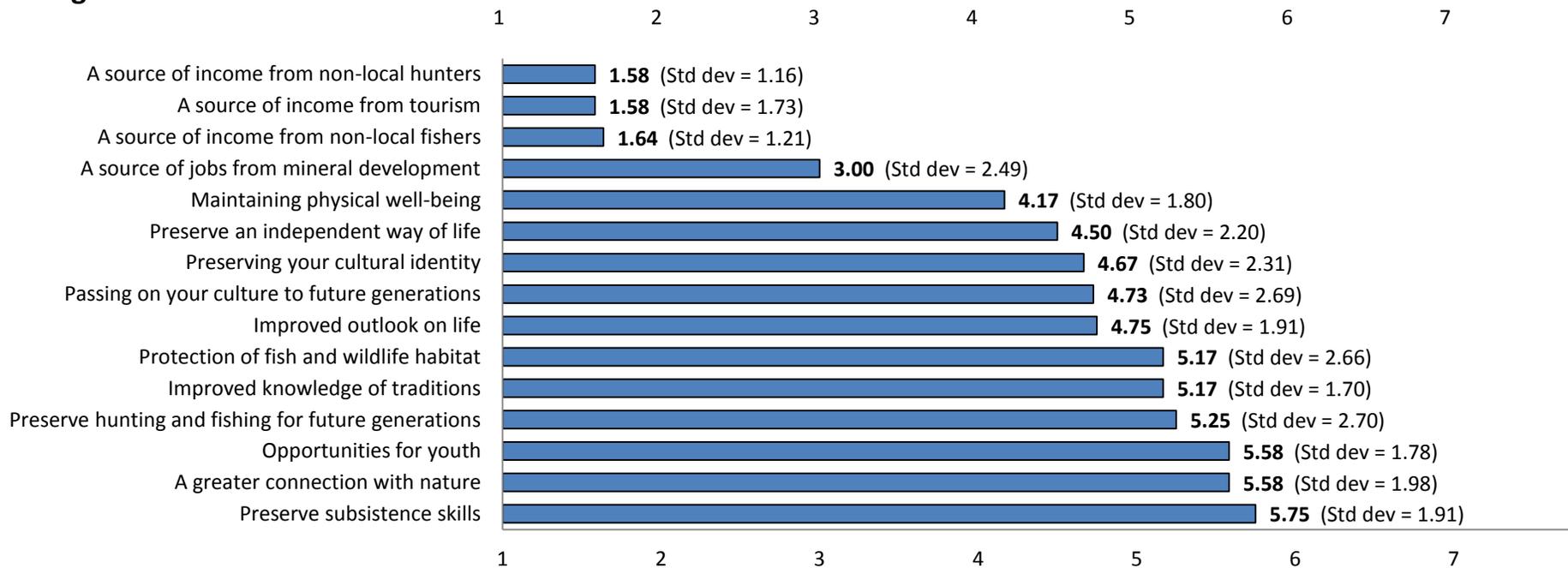
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 95 to 100. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 10: Kaltag - Reasons land managed by the BLM might be important to your household and village

Household



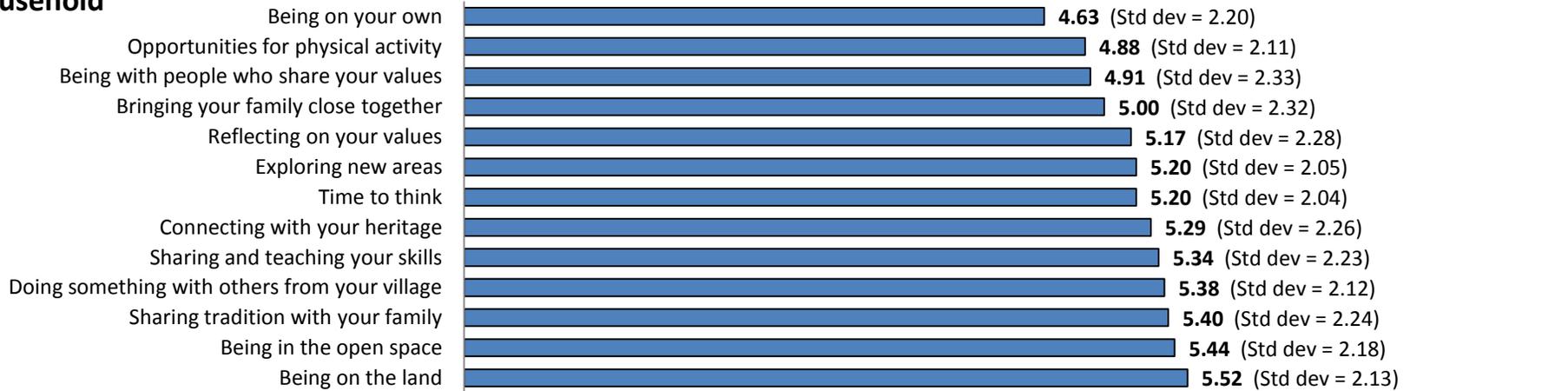
Village



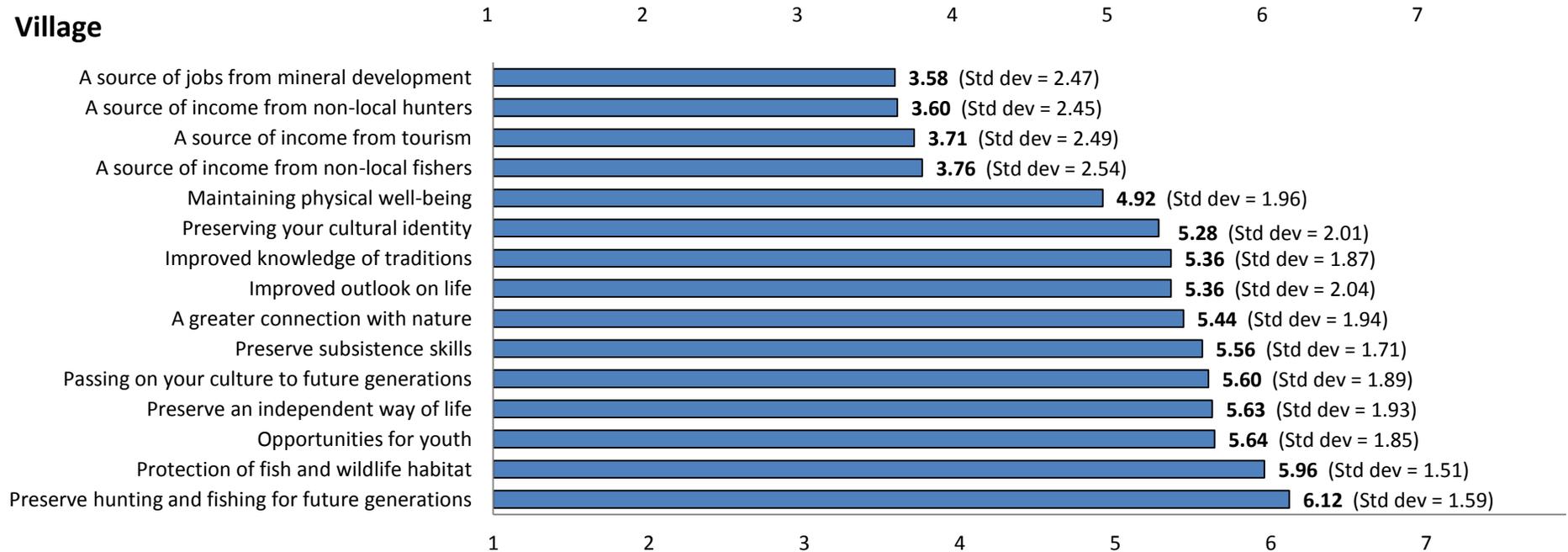
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* range between 11 and 12. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 11: Saint Michael & Stebbins - Reasons land managed by the BLM might be important to your household and village

Household



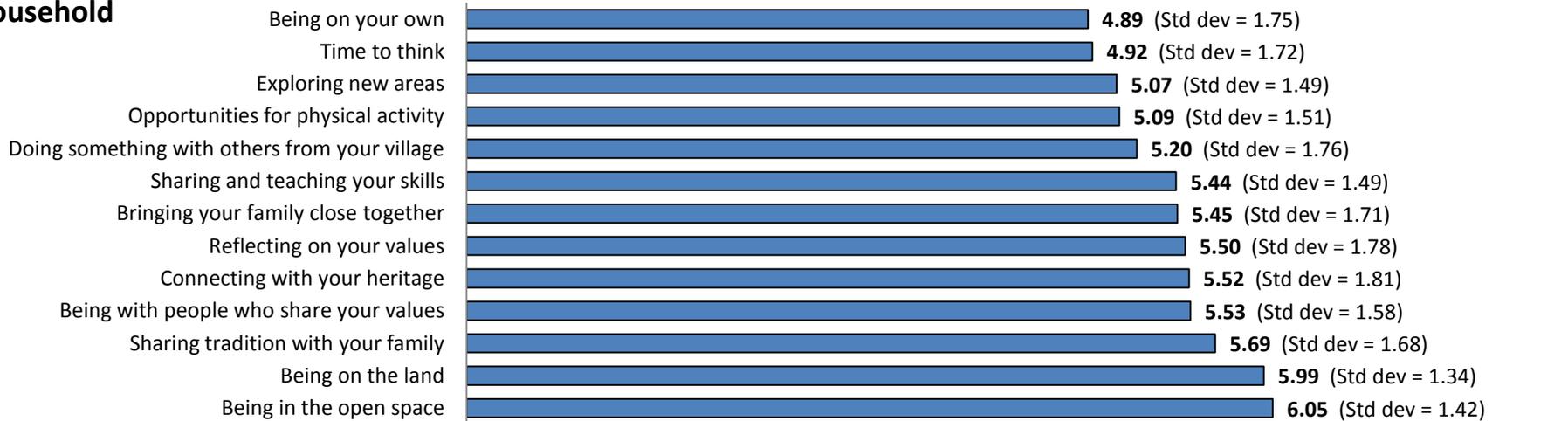
Village



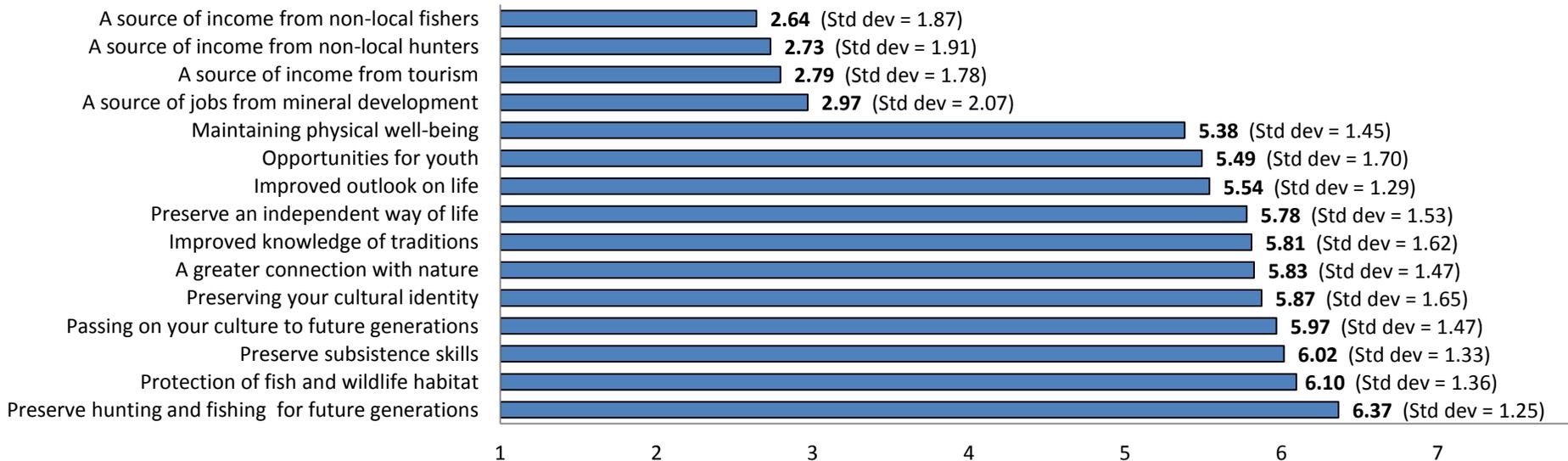
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* range between 23 and 25. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 12: Unalakleet - Reasons land managed by the BLM might be important to your household and village

Household



Village

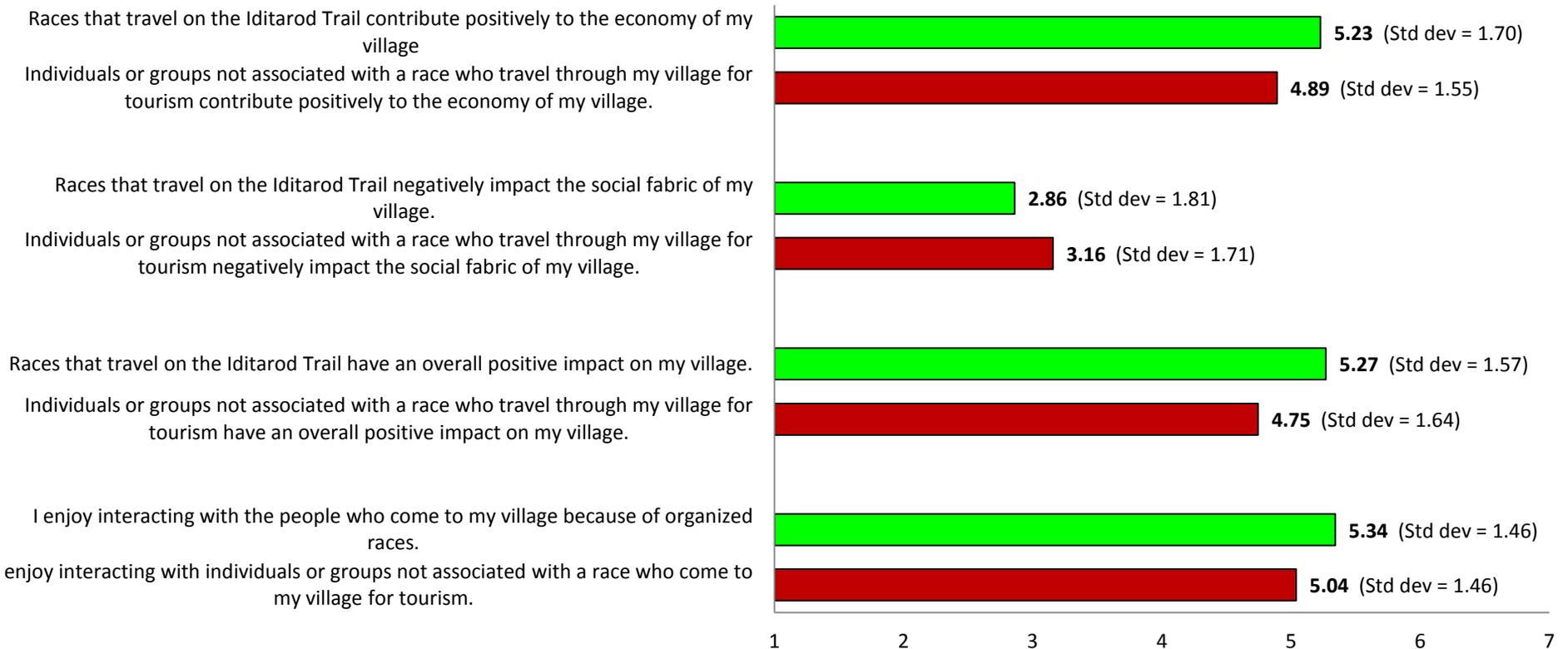


Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* range between 60 and 64. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Impact of visitors on your village

The survey asked households in the Bering Sea region to rate whether they agreed or disagreed with a list of statements about the impacts of visitors on their village. The surveys sent to households in the Bering Sea region distinguished between visitors associated with races along the INHT and visitors not associated with races along the INHT. Figure 13 below displays responses from all Bering Sea respondents. Figure 14 on page 39 shows responses from Kaltag. Figure 15 on page 40 shows responses from Saint Michael and Stebbins and Figure 16 on page 41 shows responses from Unalakleet. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranged from 1 (strongly disagree) to 7 (strongly agree).

Figure 13: Bering Sea - Impact of visitors on your village



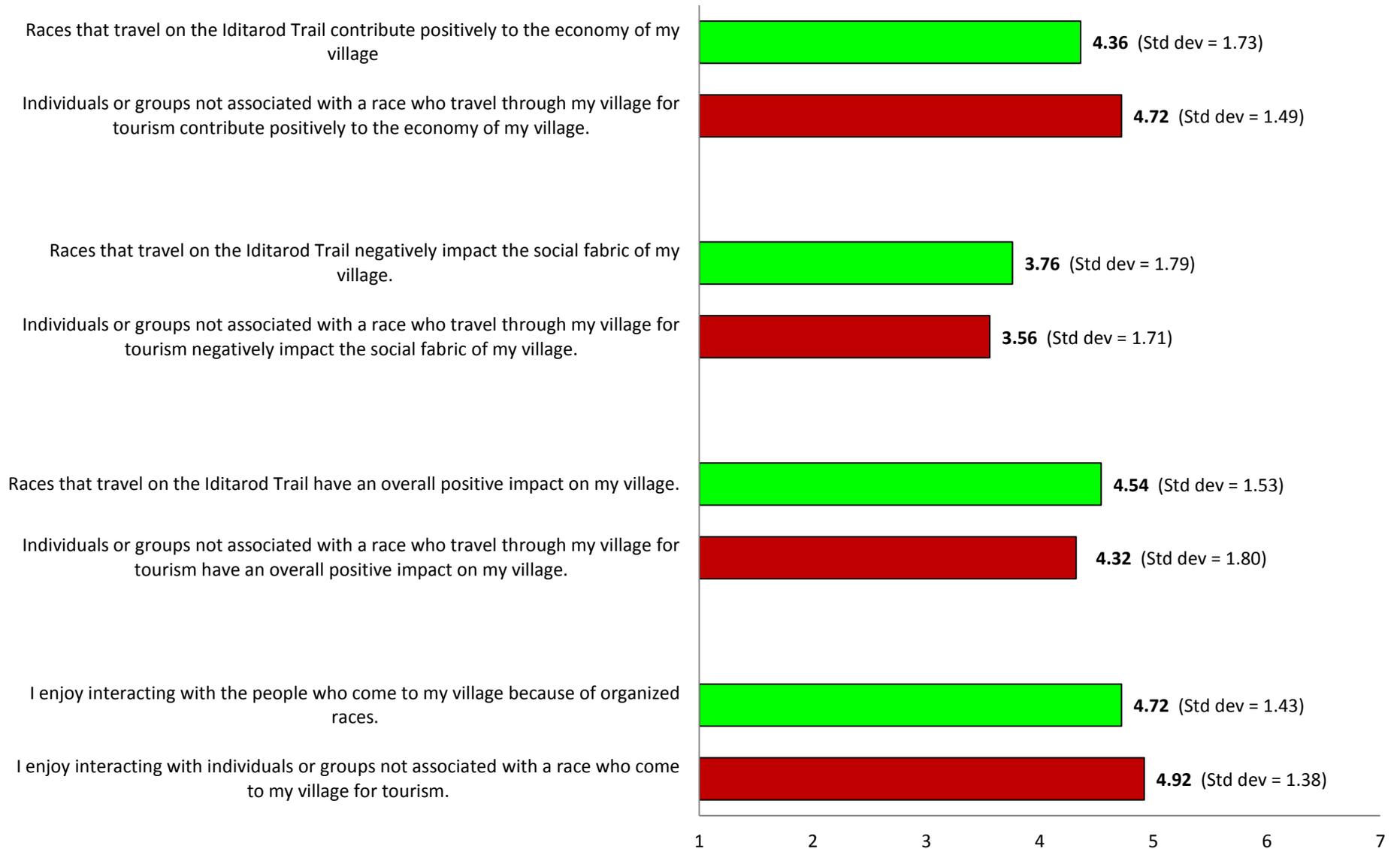
Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. *ns* ranged from 100 to 102. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 14: Kaltag - Impact of visitors on your village



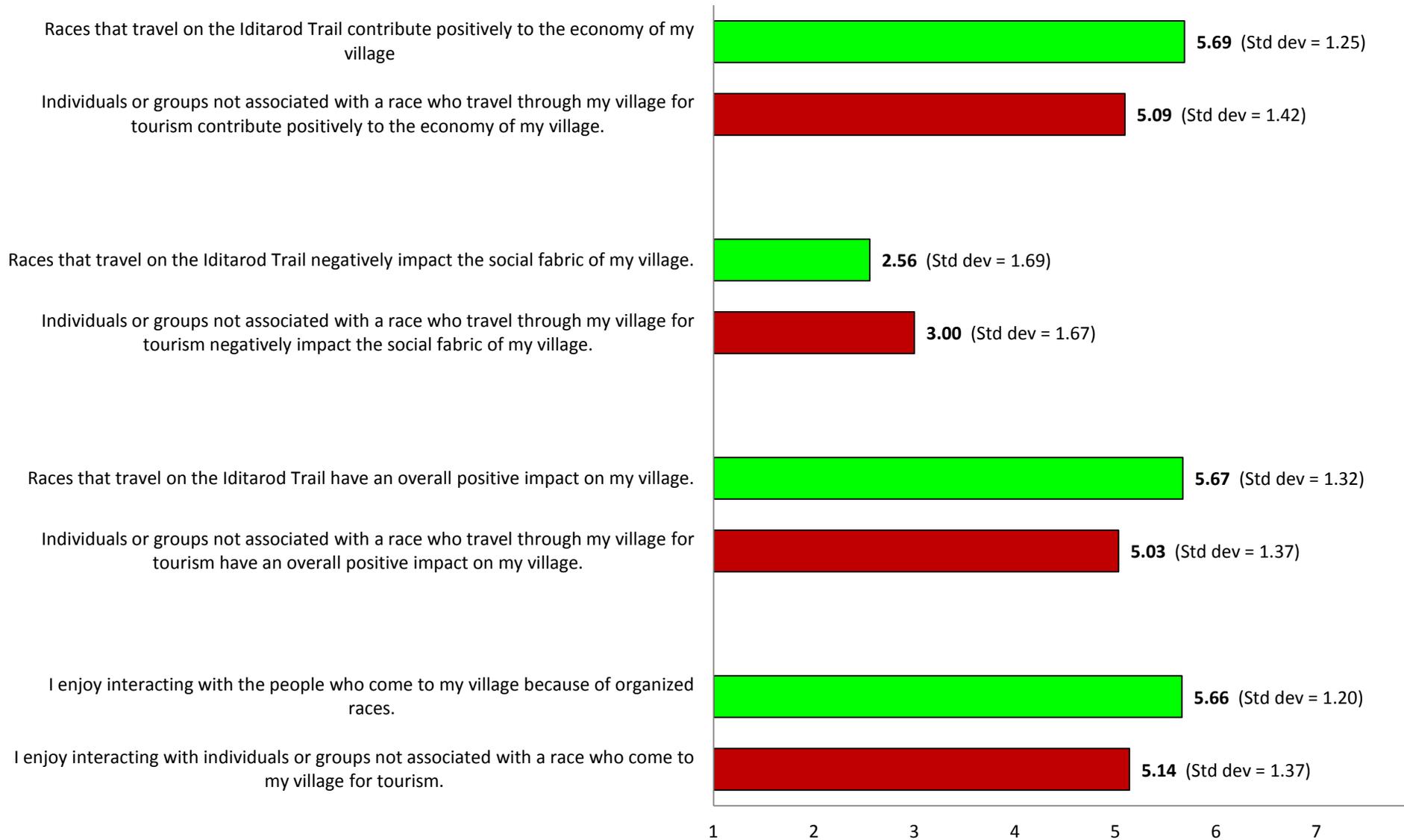
Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. $n = 12$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 15: Saint Michael & Stebbins - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. *ns* range between 24 and 25. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 16: Unalakleet - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. *ns* range between 63 and 65. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Yukon Delta Region Results

Pilot Station, Pitkas Point, Russian Mission and Saint Mary's

Between November 2010 and March 2011 we surveyed the villages of Pilot Station, Russian Mission and Saint Mary's and the CDP Pitkas Point by mail. We also worked with the City of Marshall and the Mountain Village Tribal Council to hire local residents to survey Marshall and Mountain Village. Unfortunately, due to difficult communication and timing, we did not survey those villages.

The 2010 U.S. Census reported 121 occupied households in Pilot Station, 31 occupied households in Pitkas Point, 73 occupied households in Russian Mission and 151 occupied households in Saint Mary's.

We surveyed 355 of the 376 households in Pilot Station, Russian Mission, Saint Mary's and Pitkas Point (94.4% of occupied households). We surveyed 113 households (93.4% of occupied households) in Pilot Station, 26 households in Pitkas Point (83.9% of occupied households), 73 households (100% of occupied households) in Russian Mission and 143 households (94.7% of occupied households) in Saint Mary's. We received 18 surveys back from Pilot Station, a 15.9% response rate; 2 surveys from Pitkas Point, a 7.7% response rate; 14 surveys from Russian Mission, a 19.2% response rate; and 32 surveys from Saint Mary's a 22.4% response rate. In the region as a whole, we received 66 completed surveys, a response rate of 18.6%, seen in Table 9 below.

Table 9: Yukon Delta - Response Rates

Village	Number of households	Households surveyed	Households surveyed (%)	Returned surveys	Response rate (%)
Pilot Station	121	113	93.4	18	15.9
Pitkas Point	31	26	83.9	2	7.7
Russian Mission	73	73	100.0	14	19.2
Saint Mary's	151	143	94.7	32	22.4
Totals	376	355	94.4	66	18.6

We surveyed the households in each village in approximate proportion to the size of each village. As well, the number of completed surveys we received back from each village was approximately proportional to number of surveys we sent to each village, seen in Table 10 below.

Table 10: Yukon Delta - Proportion of returned surveys by each village

Village	Proportion of households in the region	Proportion of households Surveyed	Proportion of Returned Surveys
Pilot Station	0.32	0.32	0.27
Pitkas Point	0.08	0.07	0.03
Russian Mission	0.19	0.21	0.21
Saint Mary's	0.40	0.40	0.48
Totals	1.00	1.00	1.00

Due to the small number of completed surveys we received from Pitkas Point, and the close geographical proximity to Saint Mary’s, we included the surveys from Pitkas Point with the results from Saint Mary’s. Of the surveys returned from Pilot Station, the confidence interval is 21.3% at the 95% level. Of the surveys from Russian Mission, the confidence interval is 23.7% at the 95% level, and from Saint Mary’s and Pitkas Point, the confidence interval is 15.1% at the 95% level. Of the surveys returned from the Yukon Delta region as a whole, the confidence interval is 10.9% at the 95% level, seen in Table 11 below.

Table 11: Yukon Delta - Confidence intervals at the 95% level

Village	Confidence level	Households surveyed	Returned surveys	Confidence Interval (%)
Pilot Station	95%	113	18	21.3
Russian Mission	95%	73	14	23.7
Saint Mary's & Pitkas Point	95%	143	34	15.1
Totals	95%	355	66	10.9

Note: Confidence intervals are calculated assuming maximum variance in the population, i.e. 50% have a characteristic and 50% do not. For many questions on the survey it is likely the population had less than maximum variance.

Harvest of Subsistence Resources

We developed a map that divided the Yukon Delta BSWI region into five watersheds: the Yukon Delta, Andreafsky, Anvik & Bonisila, Innoko and the Kuskokwim watersheds, seen on page 10. We included a copy of this map with each survey packet sent to each household. Respondents used these maps to document which watersheds members of their households hunted and fished in during the previous year. Please note that some Yukon Delta respondents returned a survey, but did not answer every question. When calculating percentages in the hunting and fishing maps, we treated non-responses as “did not hunt or fish in the area”.

Map 12 and Map 16 on pages 44 and 48 show the percentage of respondents from the Yukon Delta region that hunted and fished for each species in each watershed during the previous year.

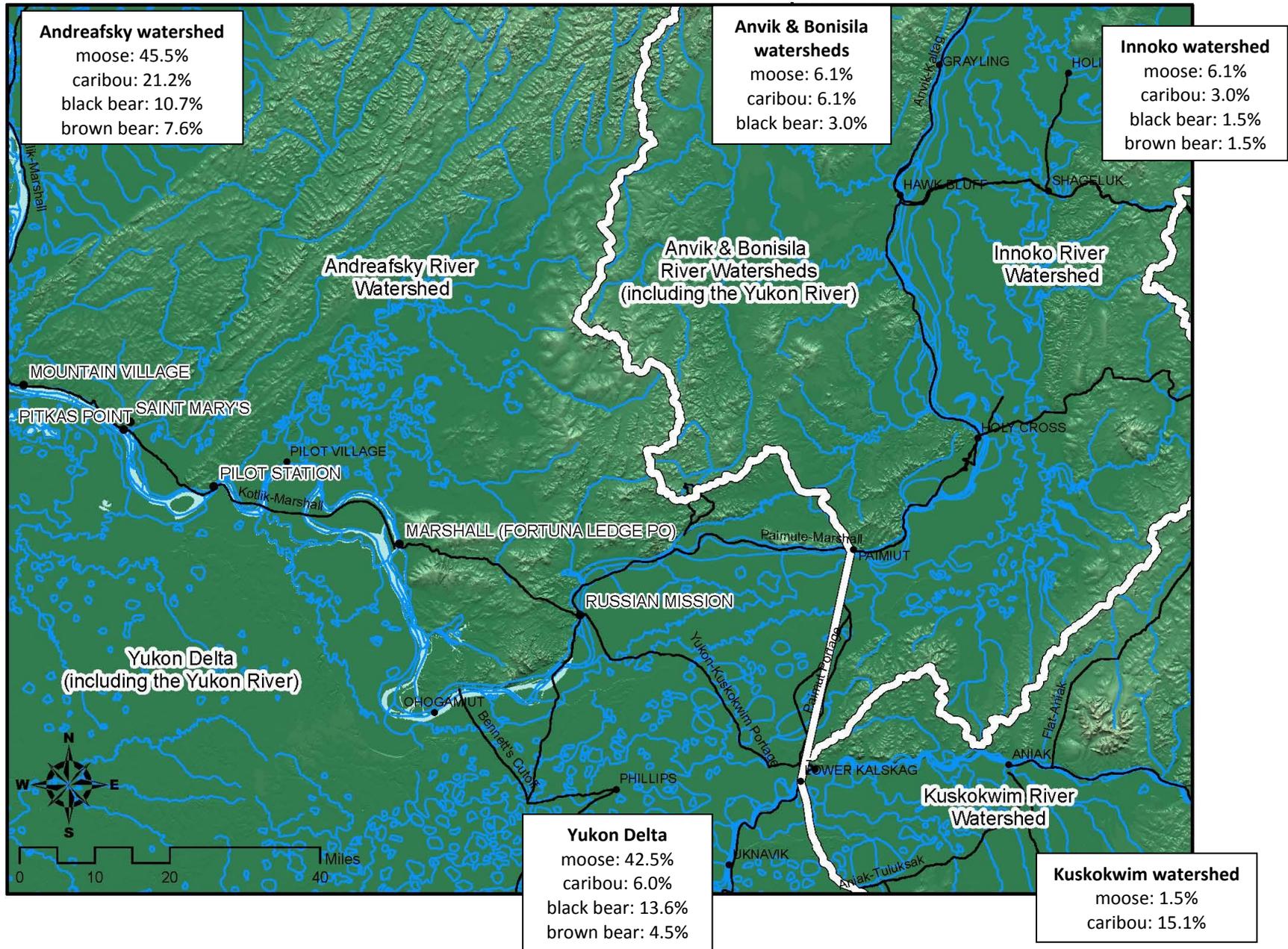
Of the respondents from Pilot Station, eleven households (61.1%) hunted in the Yukon Delta. Three households (16.7%) hunted in the Kuskokwim watershed, one household (5.6%) hunted in the Andreafsky watershed and one household (5.6%) hunted in the Innoko watershed, seen in Map 13 on page 45. Thirteen households (72.2%) fished in the Yukon Delta and two households (11.1%) fished in the Andreafsky watershed, seen in Map 17 on page 49.

Respondents from Russian Mission also primarily utilized the Yukon Delta, Andreafsky and Kuskokwim watersheds for their household’s hunting needs during the previous year. Seven households (50.0%) hunted in the Yukon Delta and four households (28.6%) hunted in the Andreafsky and Kuskokwim watersheds. Two households (14.3%) hunted in the Innoko watershed and one household (7.1%) hunted in the Anvik & Bonisila watershed, seen in Map 14 on page 46. Ten households (71.4%) fished in the Yukon Delta and one household (7.1%) fished in the Andreafsky watershed seen in Map 18 on page 50.

Respondents from Saint Mary’s and Pitkas Point also indicated that the Andreafsky watershed and the Yukon Delta were important areas for hunting in the previous year. Twenty-six households (76.4%) hunted in the Andreafsky watershed and 11 households (32.4%) hunted in the Yukon Delta.

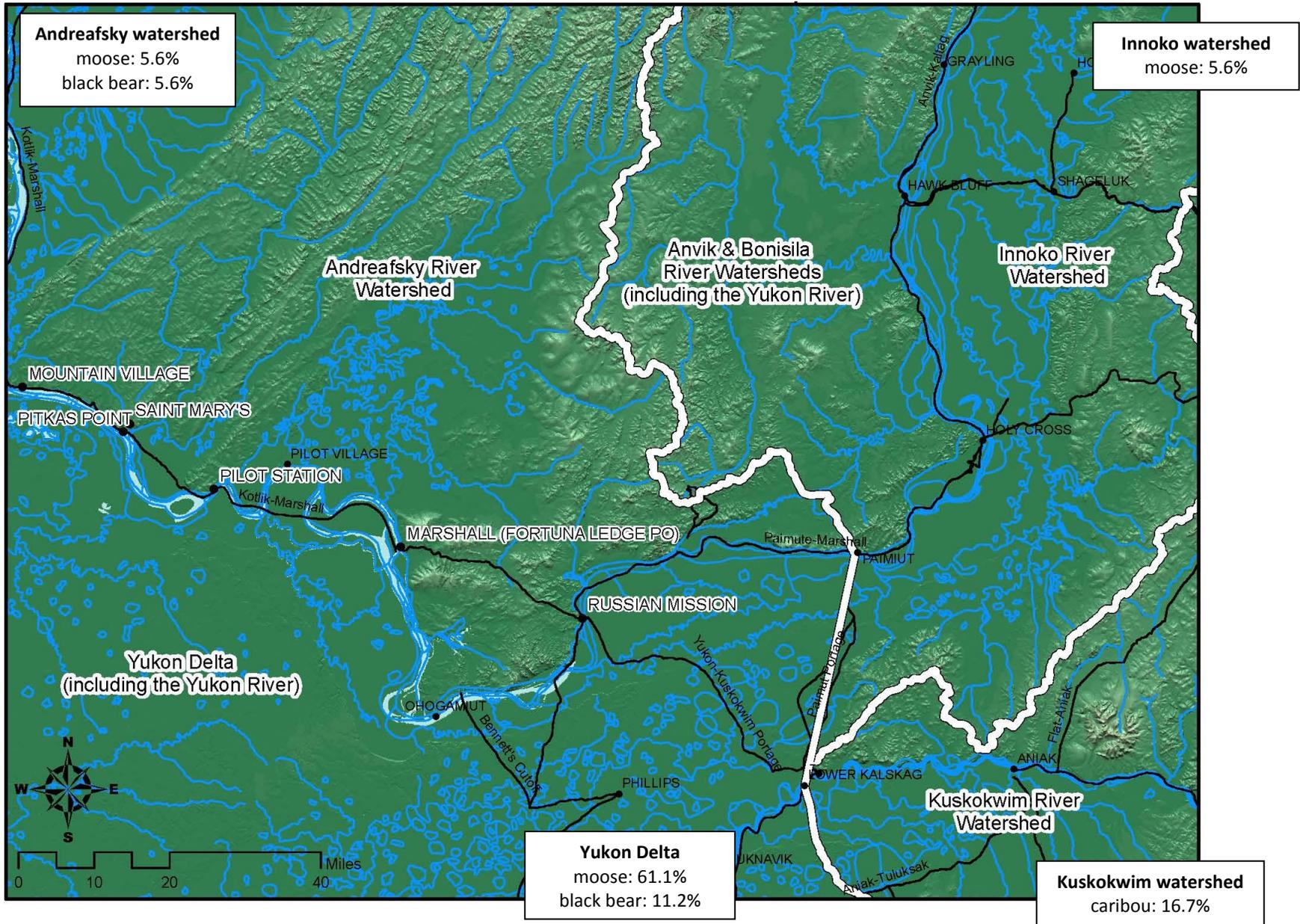
Map 12: Yukon Delta hunting responses

Pilot Station: $n = 18$ Saint Mary's: $n = 32$ Total: $n = 66$
 Russian Mission: $n = 14$ Pitkas Point: $n = 2$



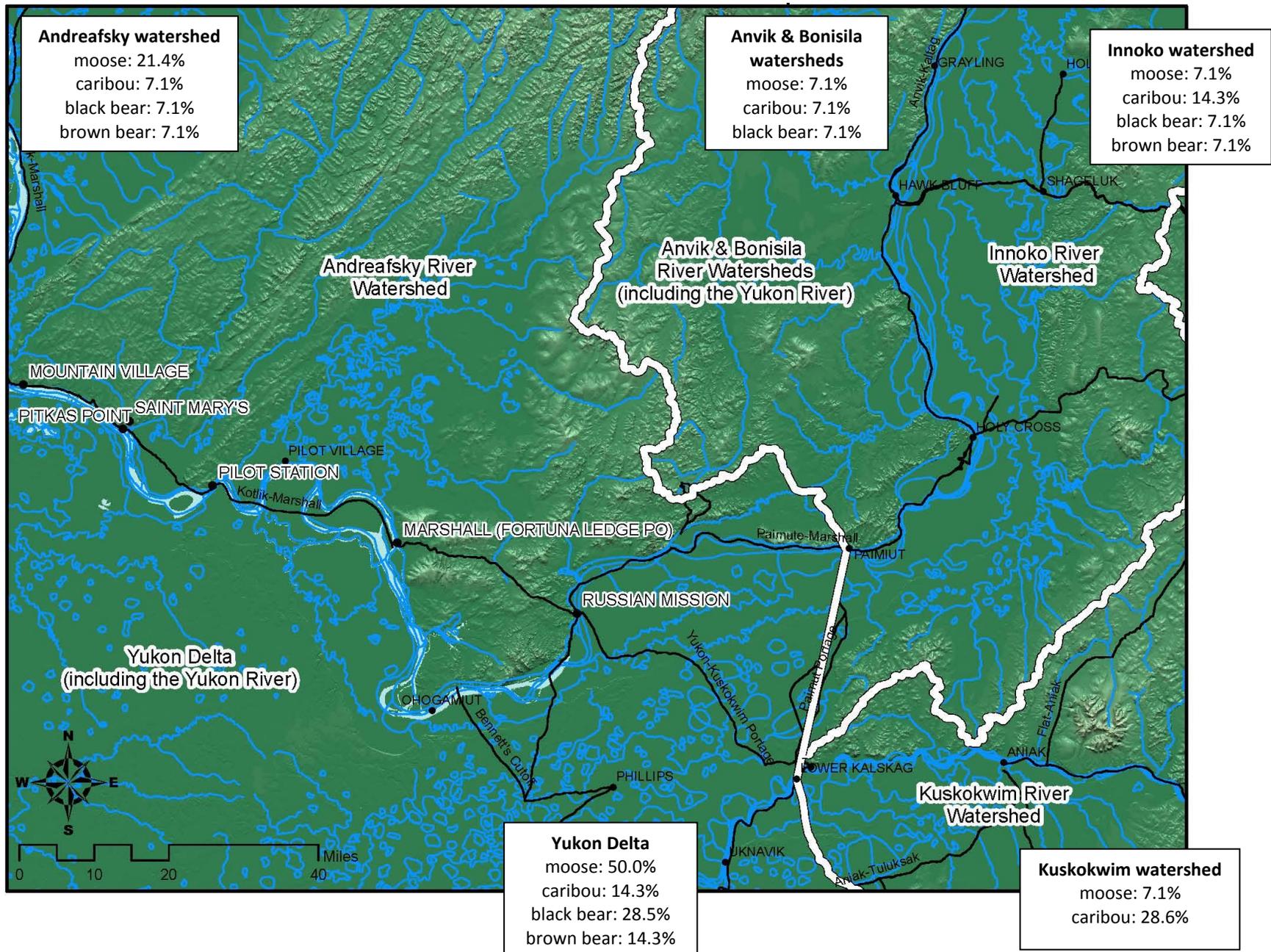
Map 13: Pilot Station hunting responses

Pilot Station: $n = 18$



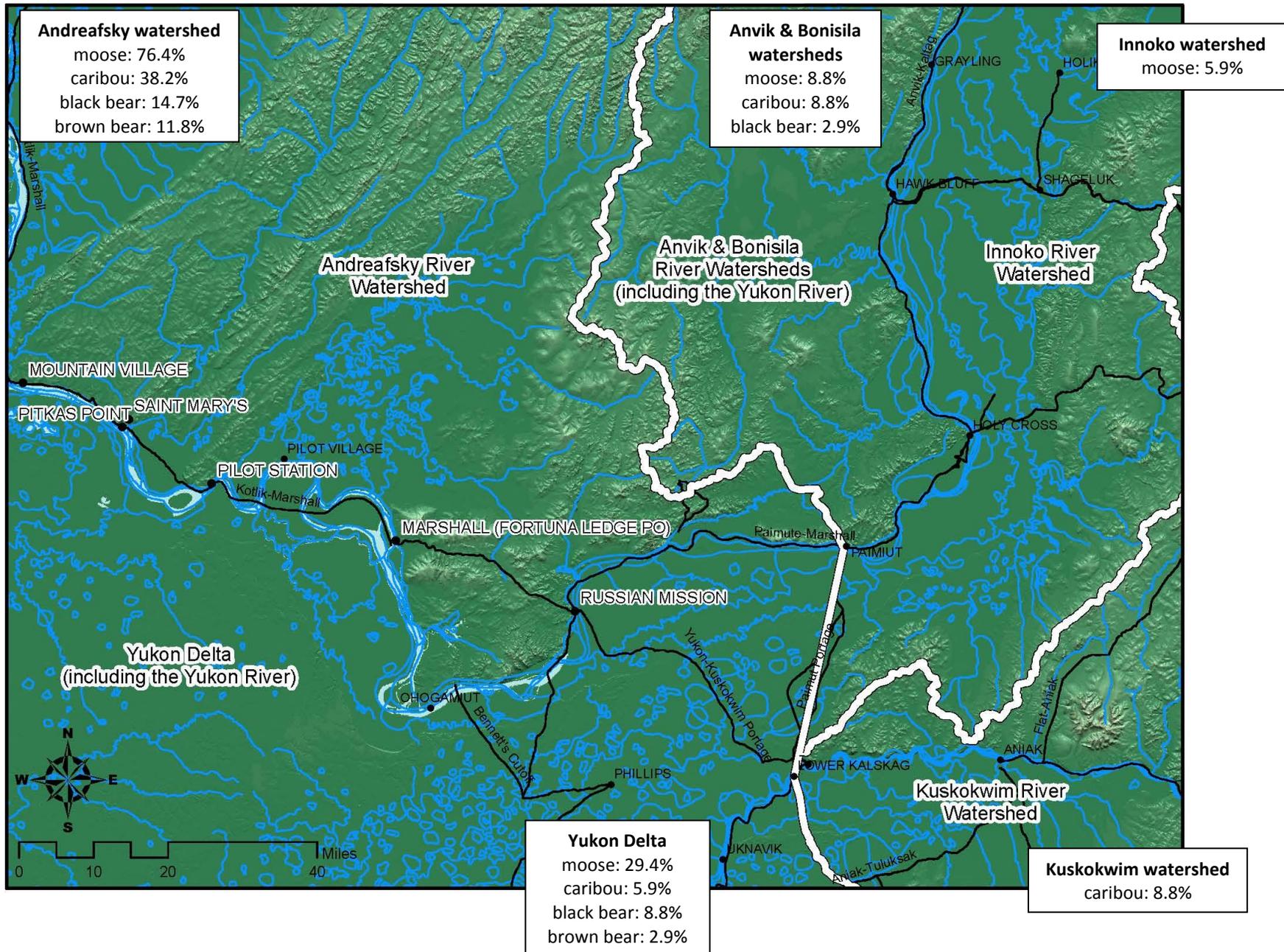
Map 14: Russian Mission hunting responses

Russian Mission: $n = 14$



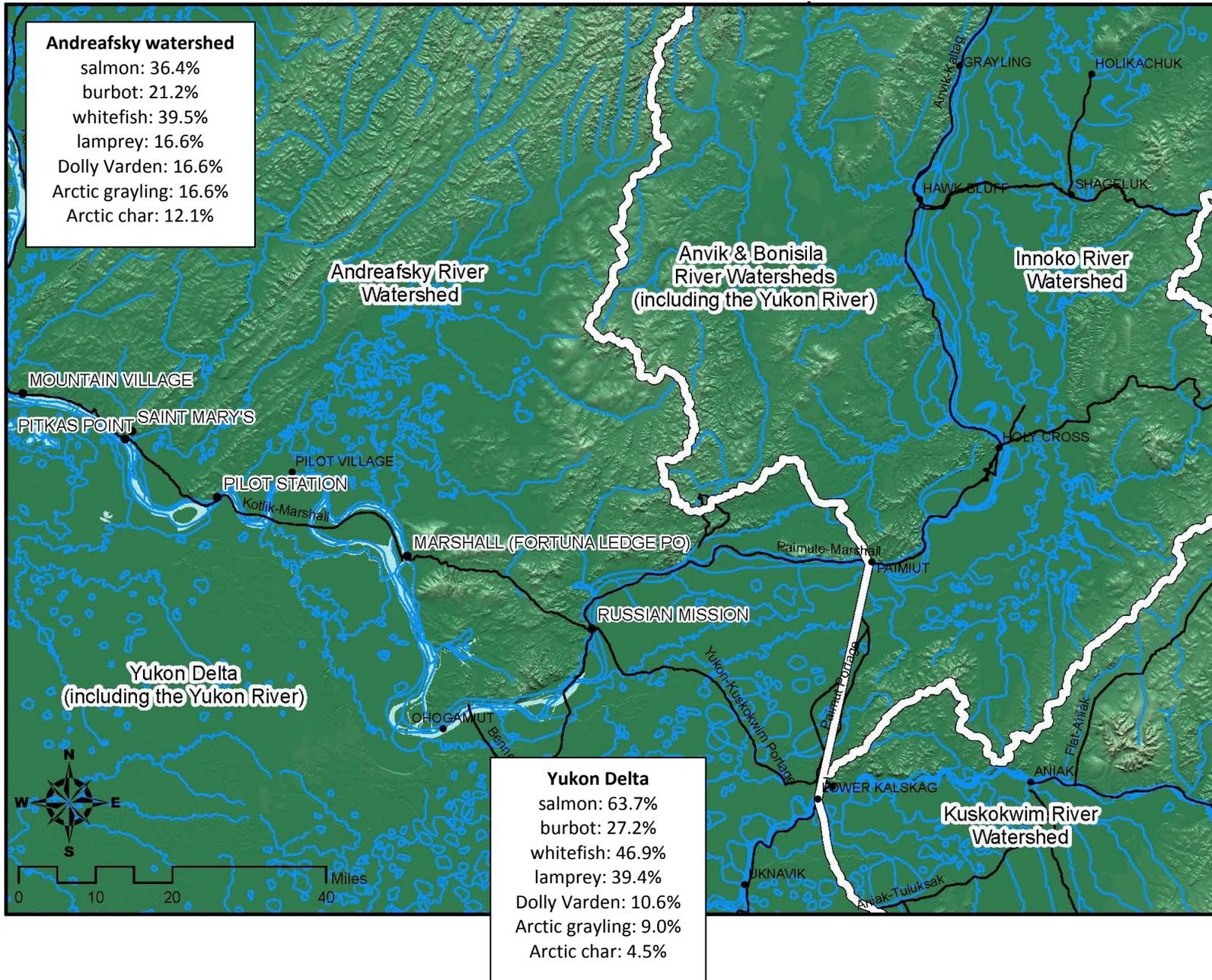
Map 15: Saint Mary's & Pitkas Point hunting responses

Saint Mary's: $n = 32$
 Pitkas Point: $n = 2$
 Total: $n = 34$



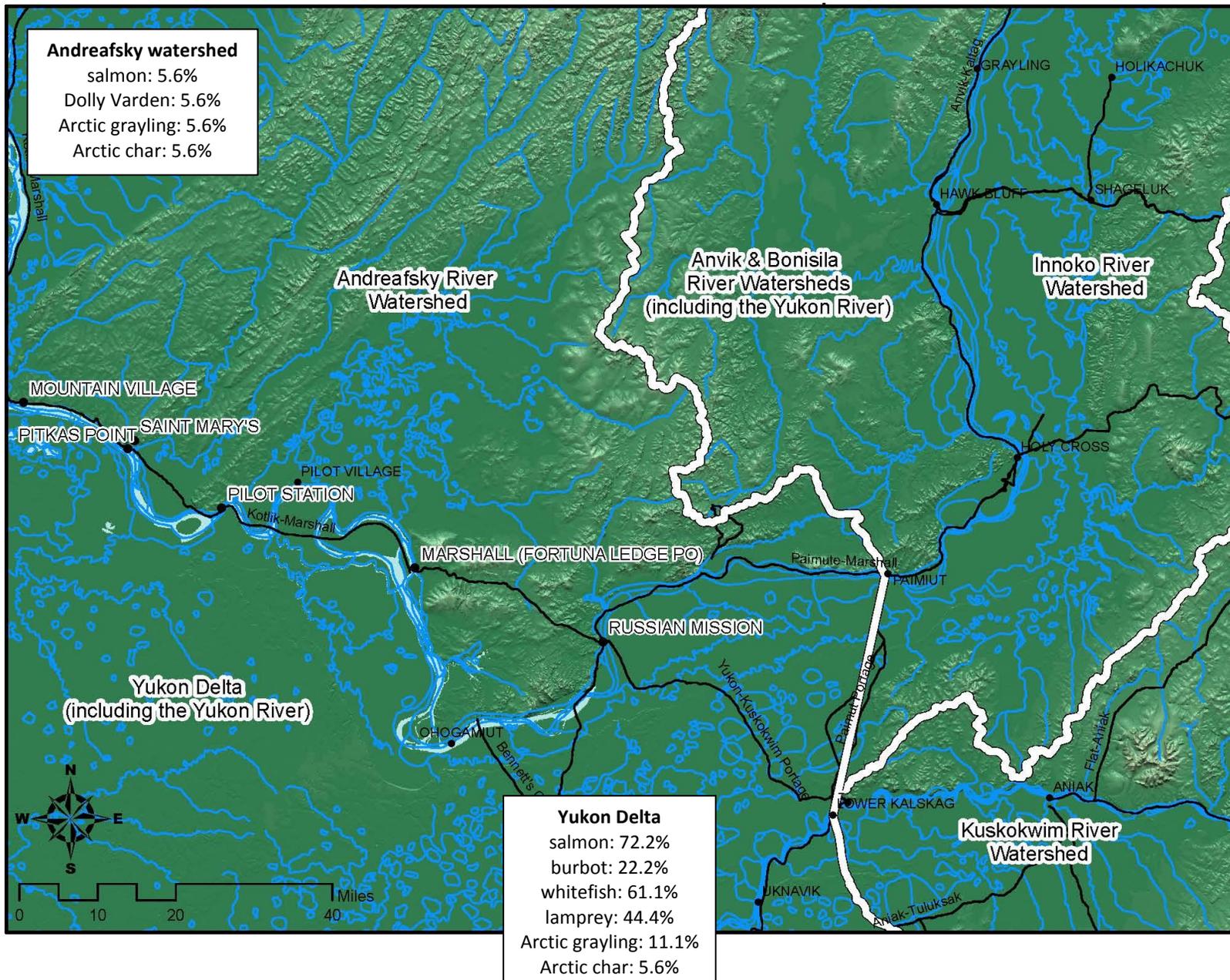
Map 16: Yukon Delta fishing responses

Pilot Station: *n* = 18 Saint Mary's: *n* = 32 Total: *n* = 66
 Russian Mission: *n* = 14 Pitkas Point: *n* = 2



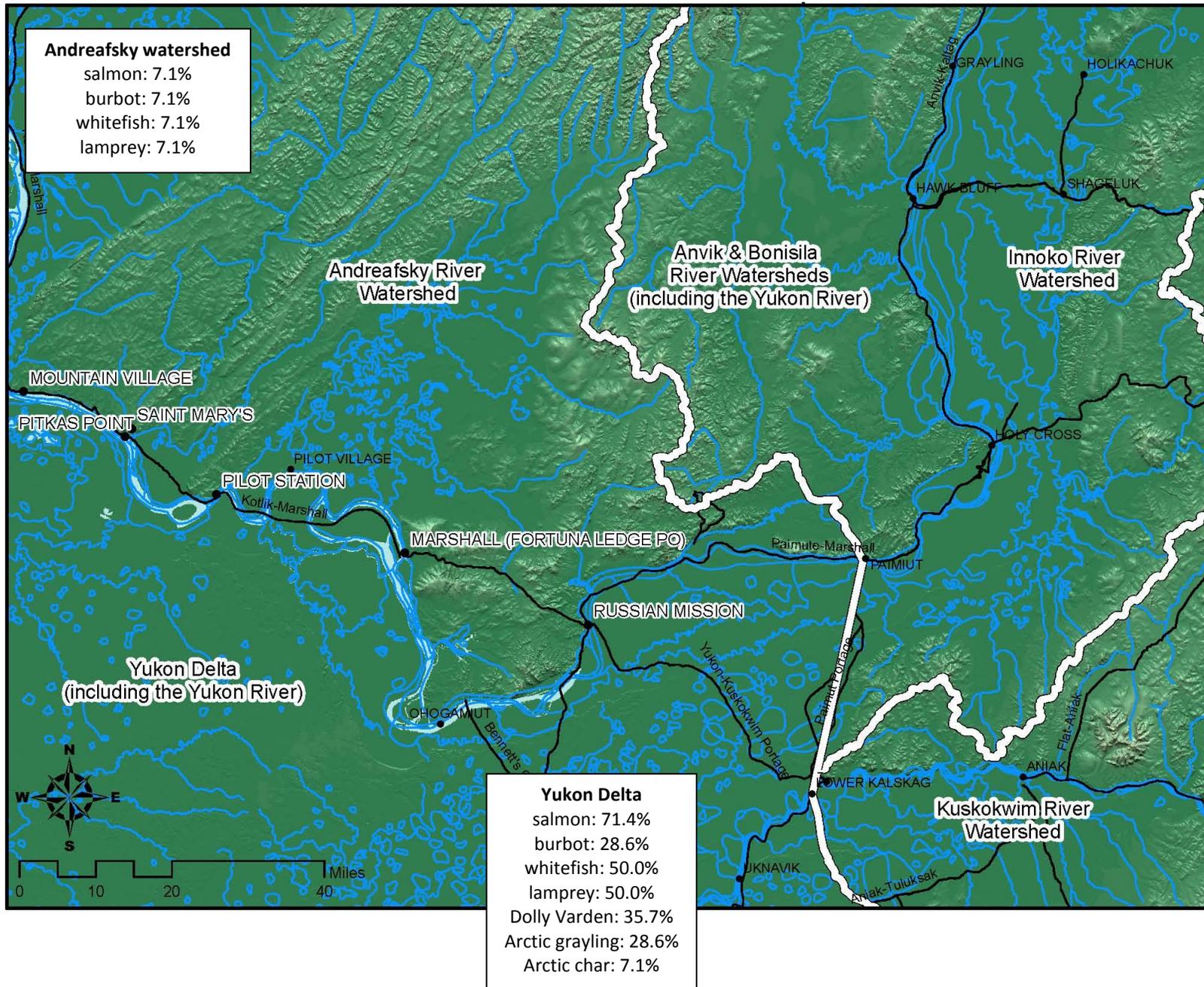
Map 17: Pilot Station fishing responses

Pilot Station: $n = 18$



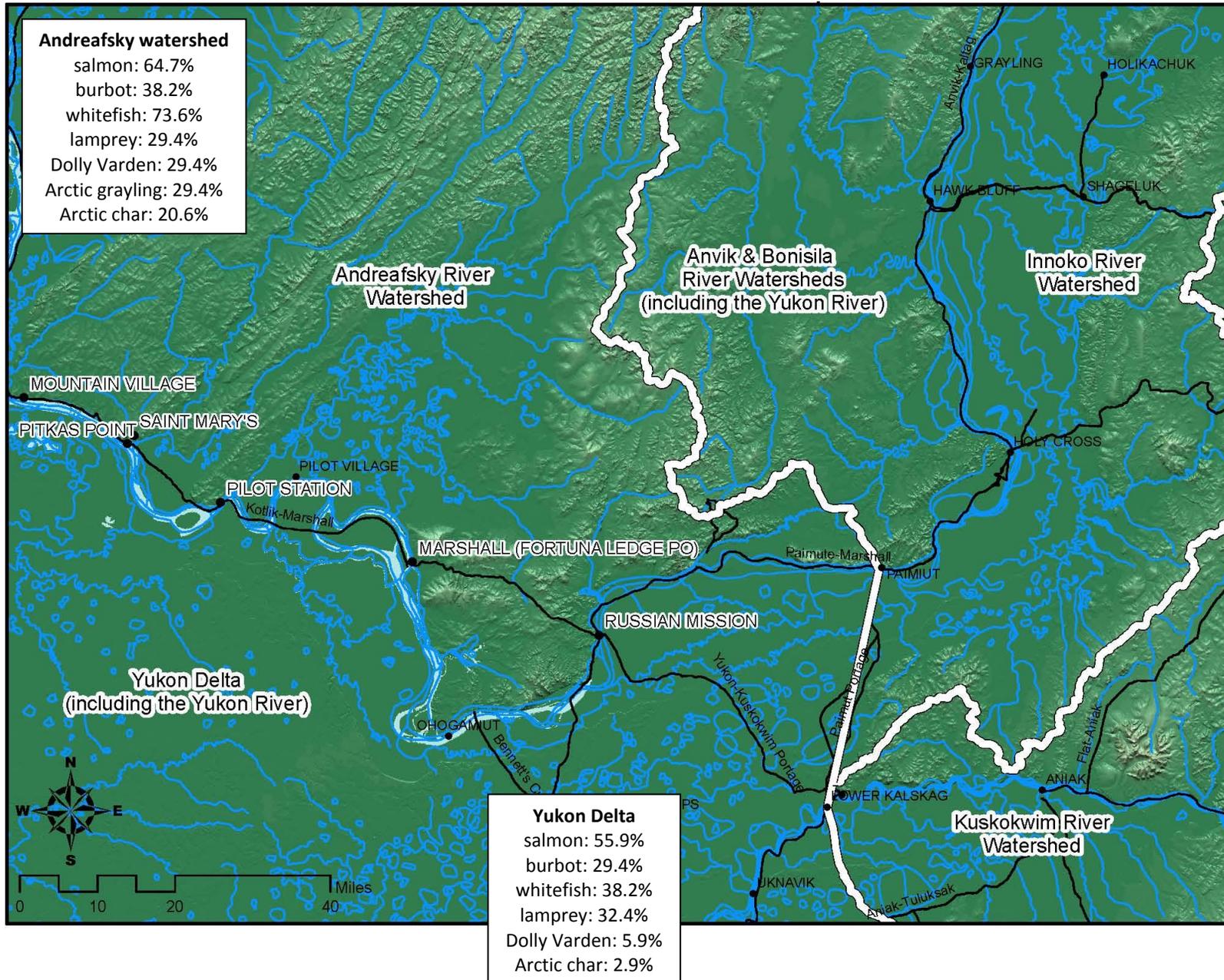
Map 18: Russian Mission fishing responses

Russian Mission: $n = 14$



Map 19: Saint Mary's & Pitkas Point fishing responses

Saint Mary's: $n = 32$
 Pitkas Point: $n = 2$
 Total: $n = 34$



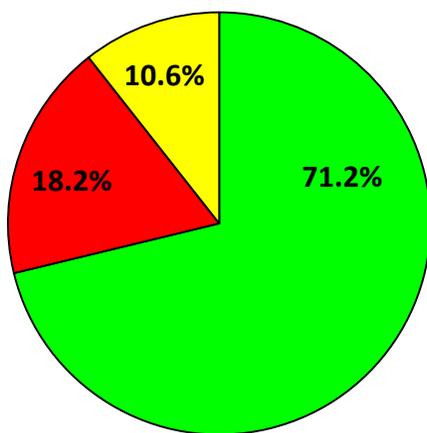
Four households (11.8%) hunted in the Anvik & Bonisila watersheds, three households (8.8%) hunted in the Kuskokwim watershed and two households (5.9%) hunted in the Innoko watershed, seen in Map 15 on page 47. Twenty households (58.8%) from Saint Mary's and Pitkas Point fished in the Yukon Delta and 28 households (82.4%) fished in the Andreafsky watershed, seen in Map 19 on page 51. No households in the Yukon Delta region indicated that they fished in the Anvik & Bonisila, Innoko or Kuskokwim watersheds during the previous year.

Subsistence Needs

Forty seven households (71.2%) responded that they met their subsistence hunting needs for moose, caribou, black bear and brown bear in the previous year. Fifty one households (77.3%) responded that they met their subsistence fishing needs for salmon, burbot, whitefish, lamprey, Dolly Varden, Arctic grayling and Arctic char in the previous year, seen in Figure 17 below.

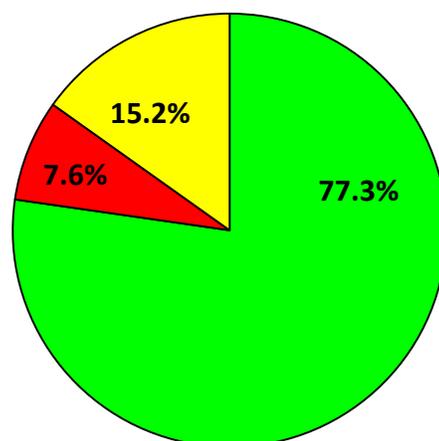
Figure 17: Yukon Delta - Were your household's subsistence needs met in the previous year?

Were your household's subsistence **hunting** needs met in the previous year?



■ Yes - 71.2%
■ No - 18.2%
■ No response - 10.6%

Were your household's subsistence **fishing** needs met in the previous year?



■ Yes - 77.3%
■ No - 7.6%
■ No response - 15.2%

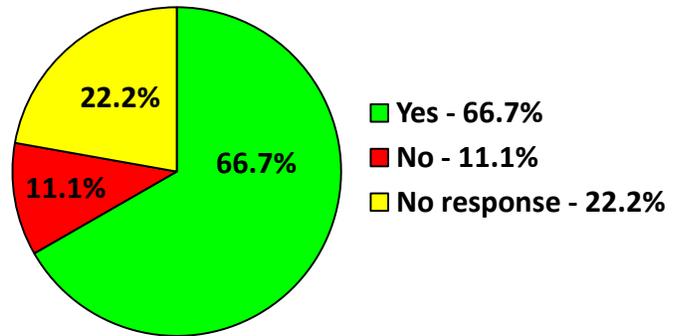
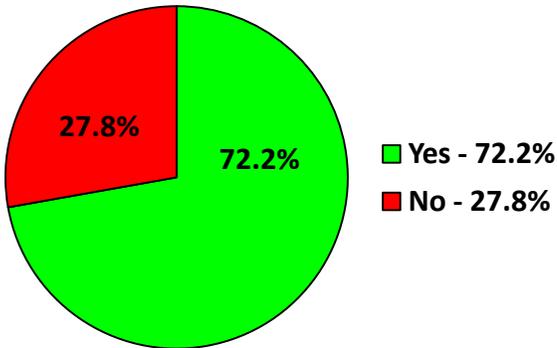
Notes: Number of households, total: $n = 66$. Pilot Station: $n = 18$, Pitkas Point: $n = 2$, Russian Mission: $n = 14$, Saint Mary's: $n = 32$.

Thirteen households from Pilot Station (72.2%), thirteen households from Russian Mission (92.9%) and 21 households from Saint Mary's and Pitkas Point (61.8%) responded that they met their subsistence hunting needs for the species listed in the previous year. Twelve households from Pilot Station (66.7%) 14 households from Russian Mission (100%) and 25 households from Saint Mary's and Pitkas Point (73.5%) responded that they met their subsistence fishing needs for the species listed in the previous year, seen in Figure 18-Figure 20 on pages 53 and 54.

Figure 18: Pilot Station - Were your household's subsistence needs met between December 2009 & November 2010?

Were your household's subsistence **hunting** needs met between December 2009 and November 2010?

Were your household's subsistence **fishing** needs met between December 2009 and November 2010?

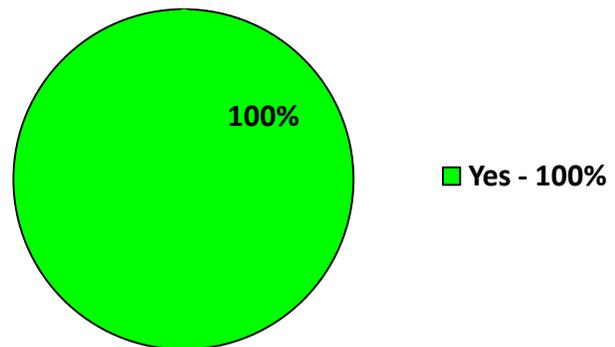
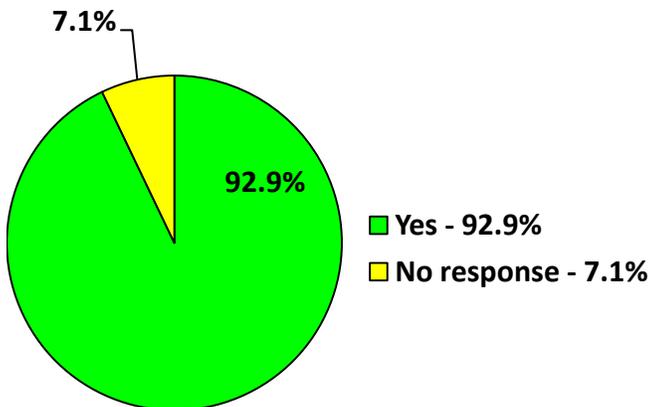


Notes: Number of households: Pilot Station, $n = 18$.

Figure 19: Russian Mission - Were your household's subsistence needs met between October 2009 and September 2010?

Were your household's subsistence **hunting** needs met between November 2009 and October 2010?

Were your household's subsistence **fishing** needs met between November 2009 and October 2010?

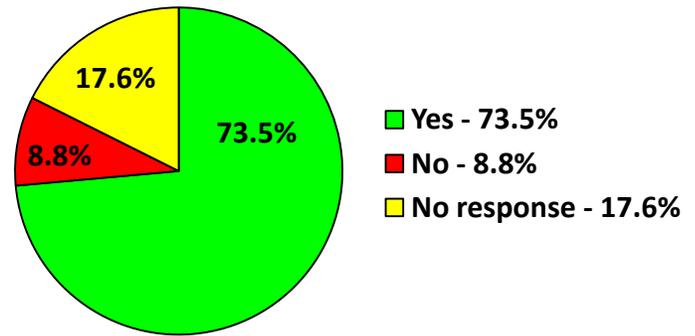
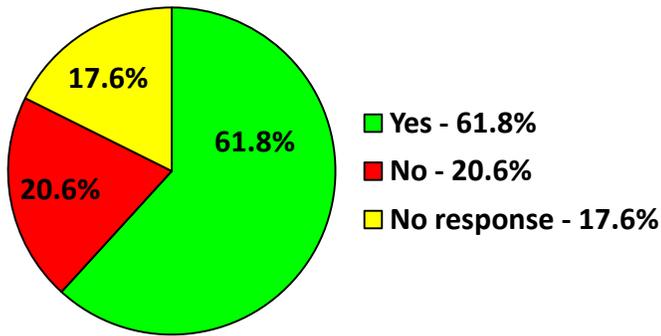


Notes: Number of households: Russian Mission, $n = 14$.

Figure 20: Saint Mary's & Pitkas Point -Were your household's subsistence needs met between November 2009 & October 2010?

Were your household's subsistence **hunting** needs met between November 2009 and October 2010?

Were your household's subsistence **fishing** needs met between November 2009 and October 2010?



Notes: Number of households, total: $n = 34$: Saint Mary's, $n = 32$; Pitkas Point, $n = 2$.

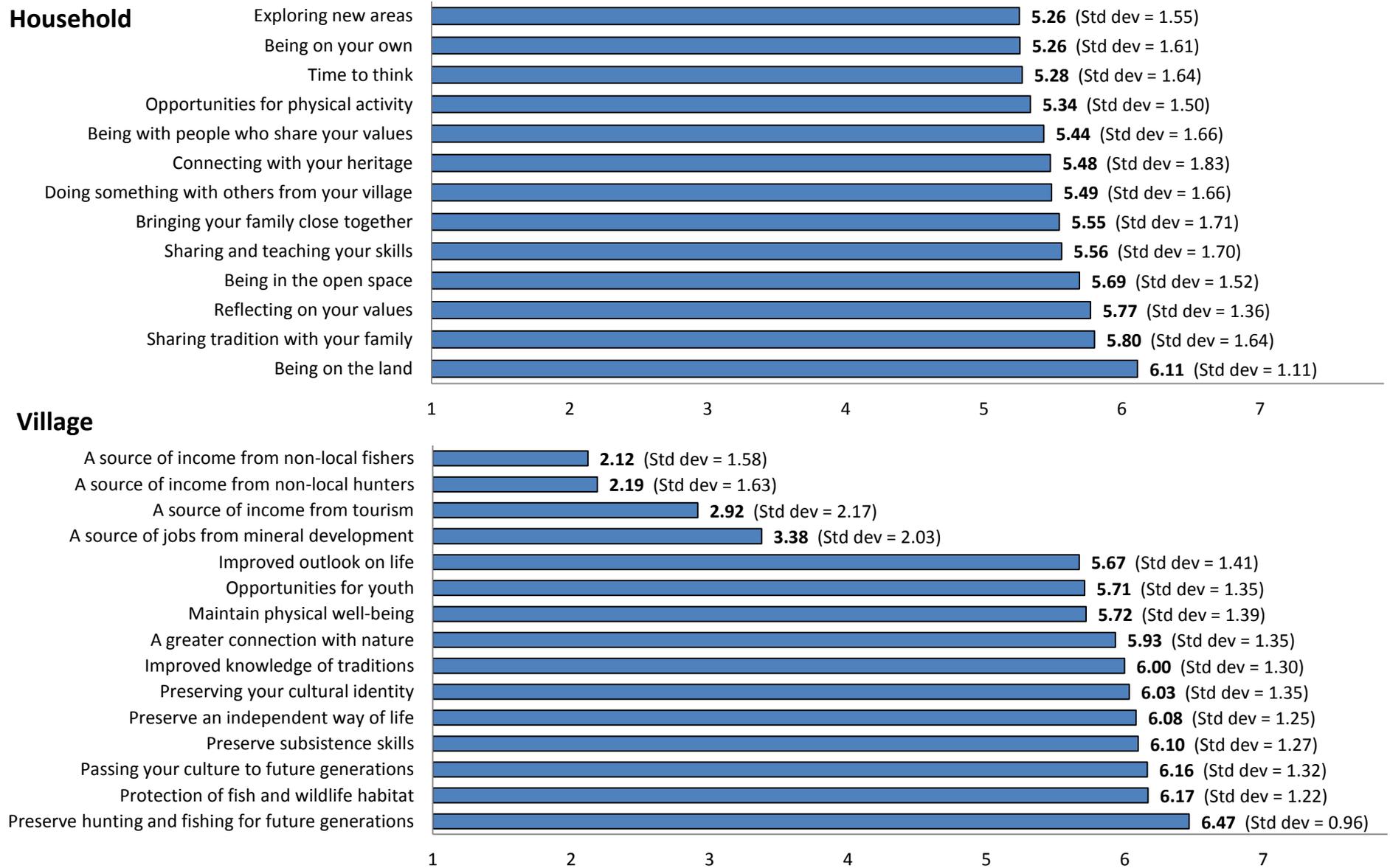
We asked respondents to list for which resources their household's needs were not met. Five respondents commented that their needs were not met for caribou, three respondents commented that they did not meet their household's needs for moose, and one respondent commented that their needs were not met for black or brown bear. As well, two respondents commented that they did not meet their household's needs but other households shared meat with them, one respondent commented that they had no transportation to hunt and one respondent commented that he was an elder who no longer traveled or hunted.

Three respondents indicated that they did not meet their household's needs for salmon and two respondents commented that they did not meet their subsistence fishing needs because of physical disability or hardship. One respondent commented that they didn't meet their household's subsistence fishing needs but other households shared fish with them and one respondent commented that they barely met their household's needs due to the late subsistence opening.

Reasons land managed by the BLM might be important to your household and village

Figure 21 on page 55 shows the responses for Yukon Delta respondents regarding why BLM managed land might be important to their household and village. The first chart shows responses regarding why land managed by the BLM might be important to the **household**; the second chart displays responses regarding why land managed by the BLM might be important to the **village**. Figure 22 on page 56 shows the results from Pilot Station, Figure 23 on page 57 shows the results from Russian Mission, and Figure 24 on page 58 shows results from Saint Mary's and Pitkas Point. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (not at all important) to 7 (extremely important).

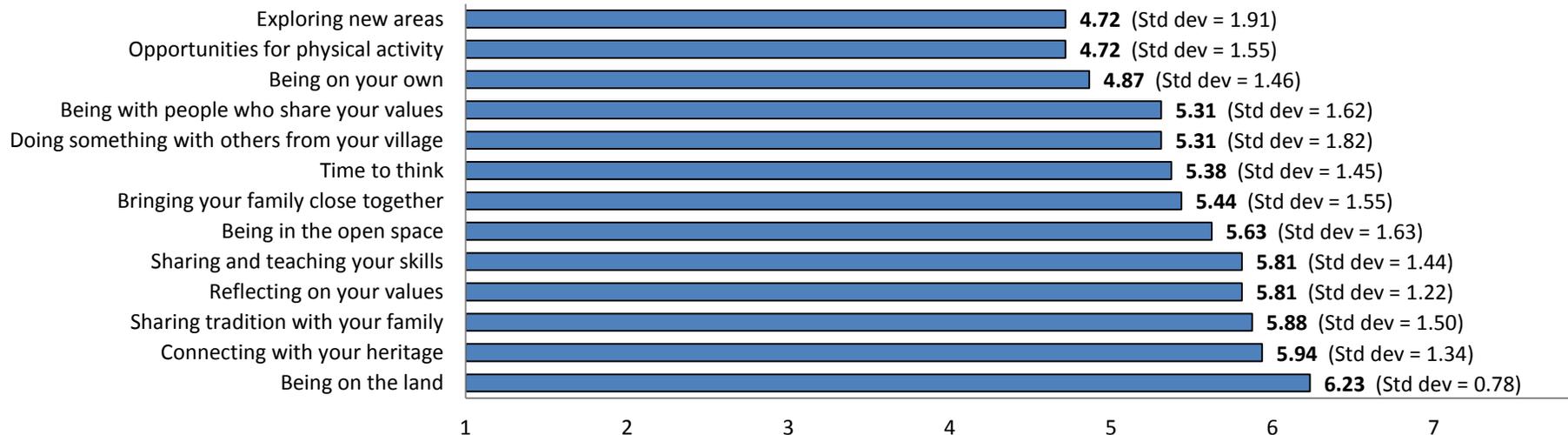
Figure 21: Yukon Delta - Reasons land managed by the BLM might be important to your household and village



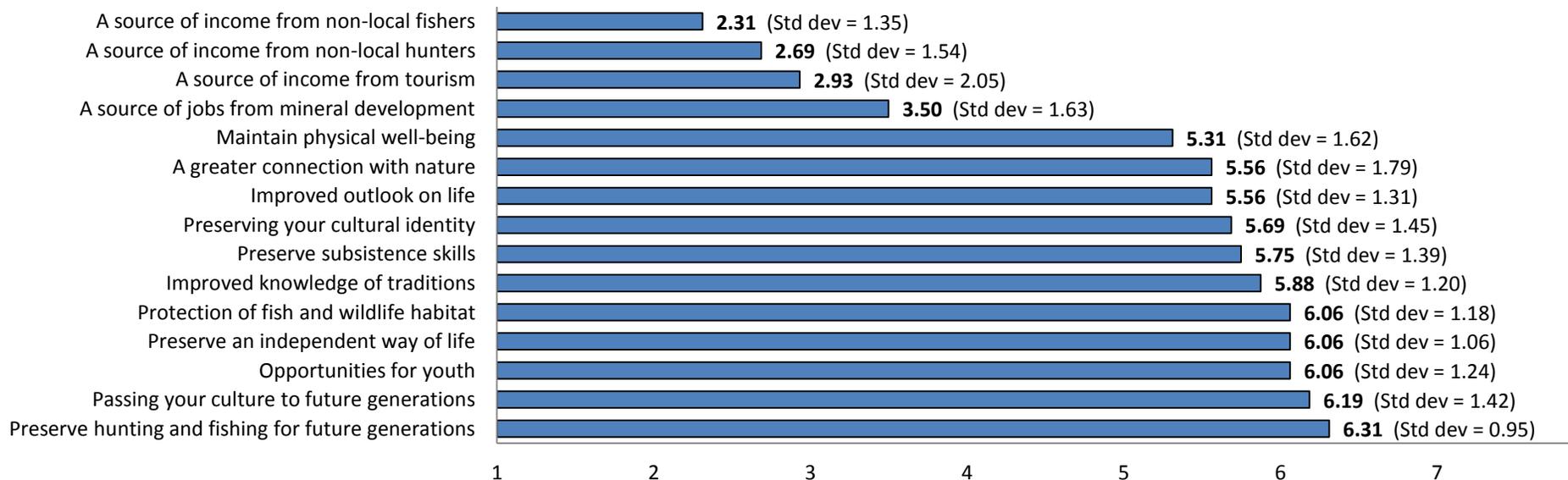
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 58-62. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 22: Pilot Station - Reasons land managed by the BLM might be important to your household and village

Household



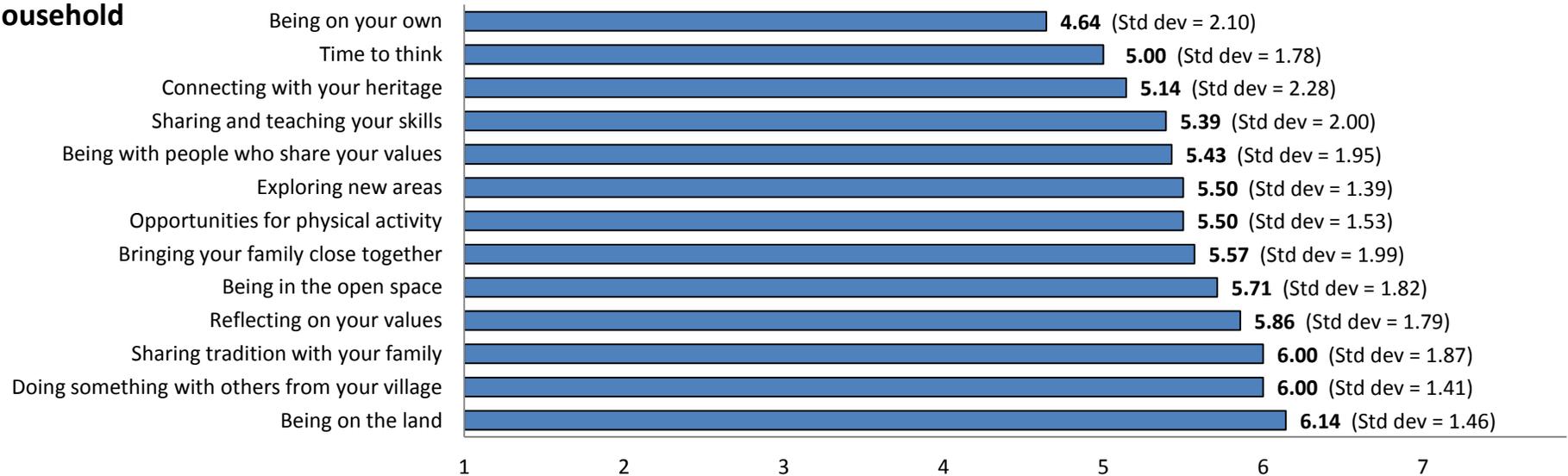
Village



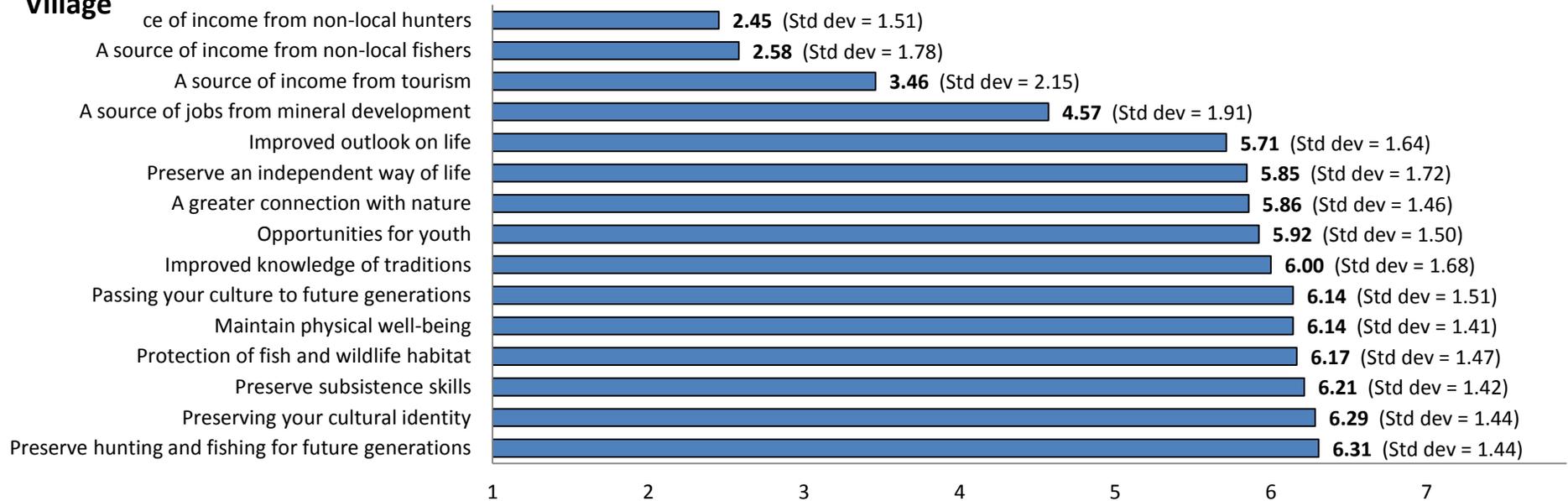
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* range between 15 and 16. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 23: Russian Mission - Reasons land managed by the BLM might be important to your household and village

Household



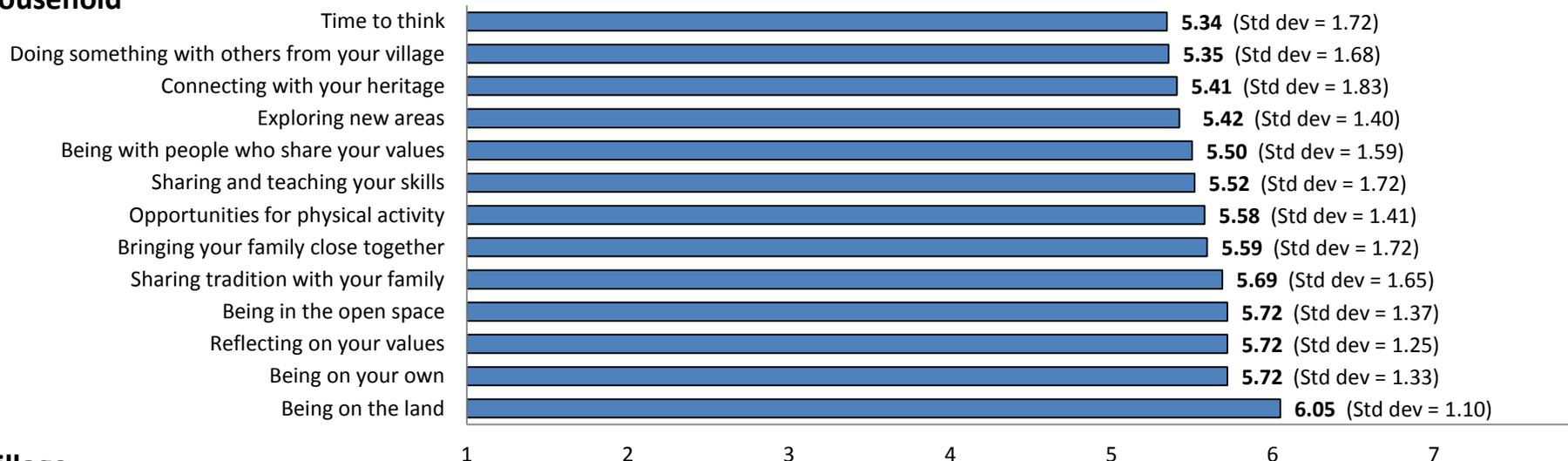
Village



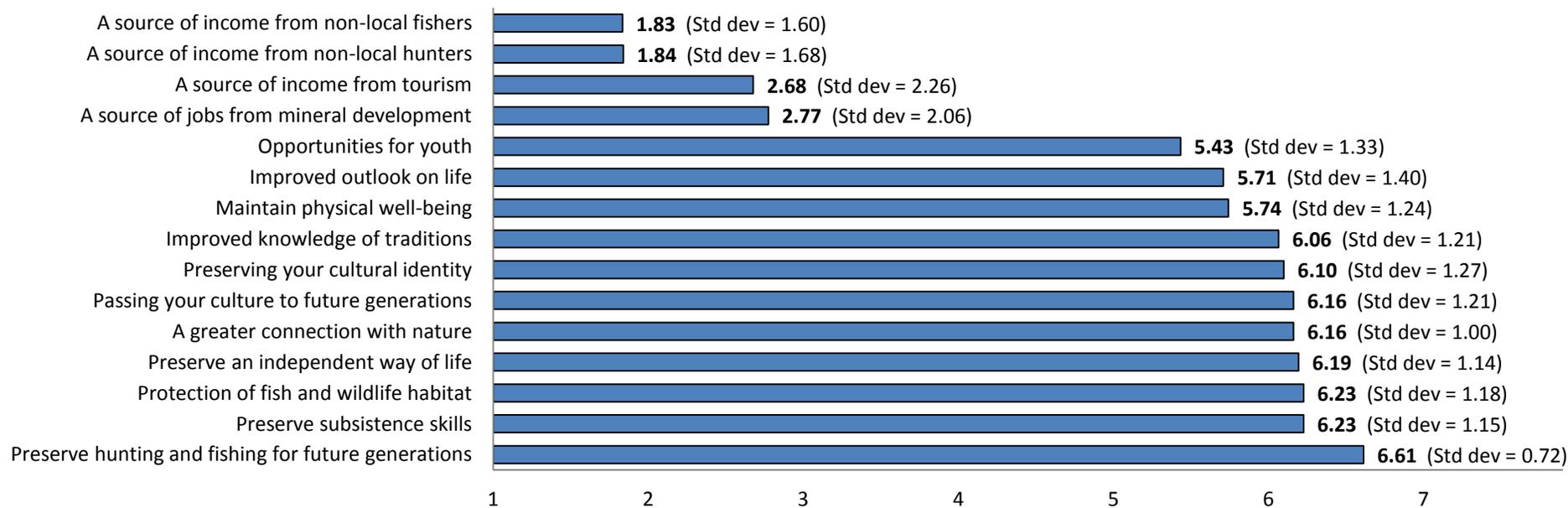
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* range between 11 and 14. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 24: Saint Mary's & Pitkas Point - Reasons land managed by the BLM might be important to your household and village

Household



Village



Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* range between 30 and 32. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Impact of visitors on your village

The survey asked Yukon Delta households to rate whether they agreed or disagreed with a list of statements about the impacts of visitors on their village. Figure 25 below displays responses from all Yukon Delta respondents and Figure 26 shows responses from Pilot Station. Figure 27 and Figure 28 on page 60 shows mean responses from Russian Mission and from Saint Mary's and Pitkas Point. The mean for each response is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (strongly disagree) to 7 (strongly agree).

Figure 25: Yukon Delta - Impact of visitors on your village

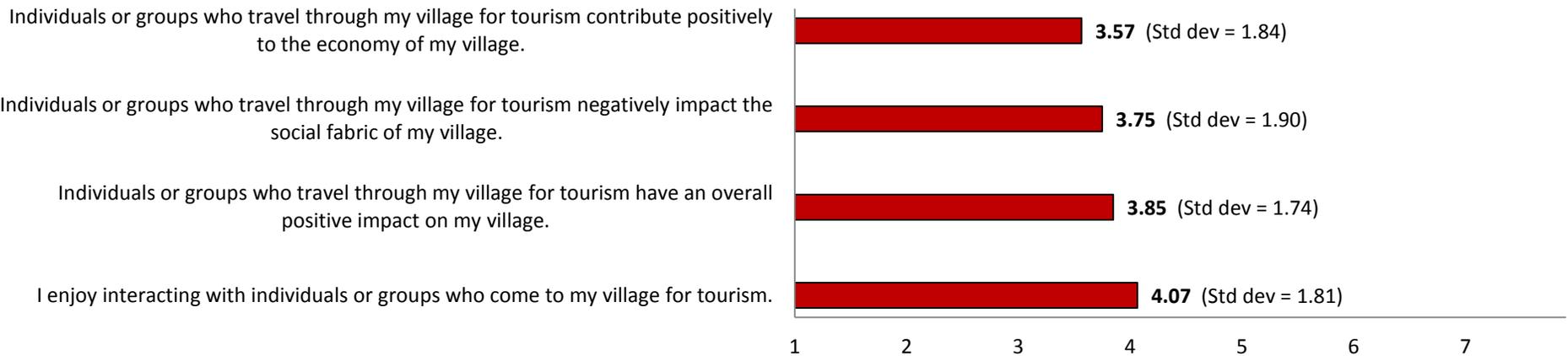
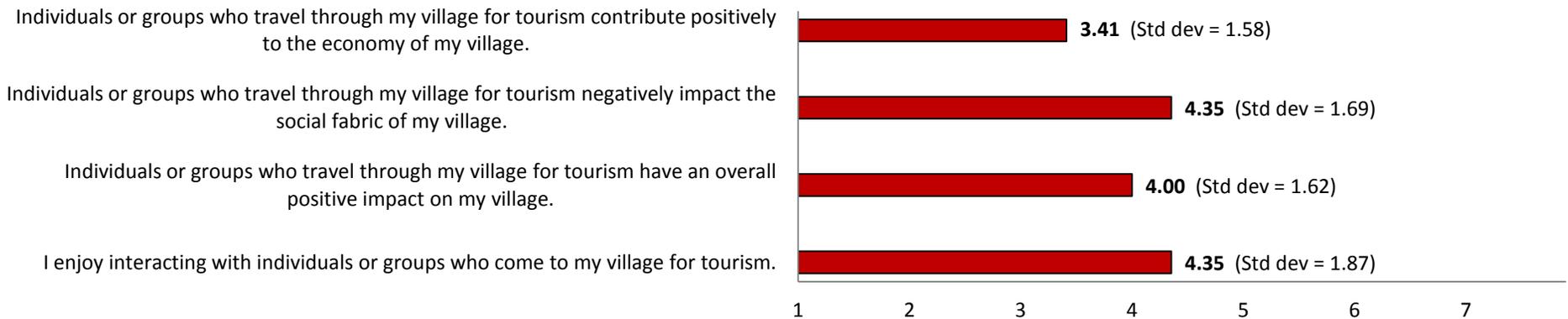


Figure 26: Pilot Station - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. Yukon Delta: $n = 60$, Pilot Station: $n = 17$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 27: Russian Mission - Impact of visitors on your village

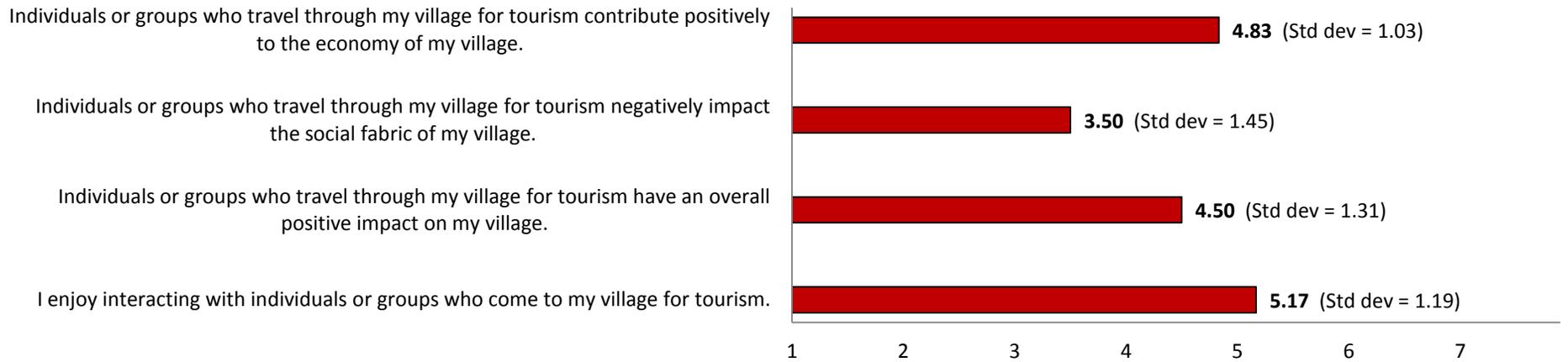
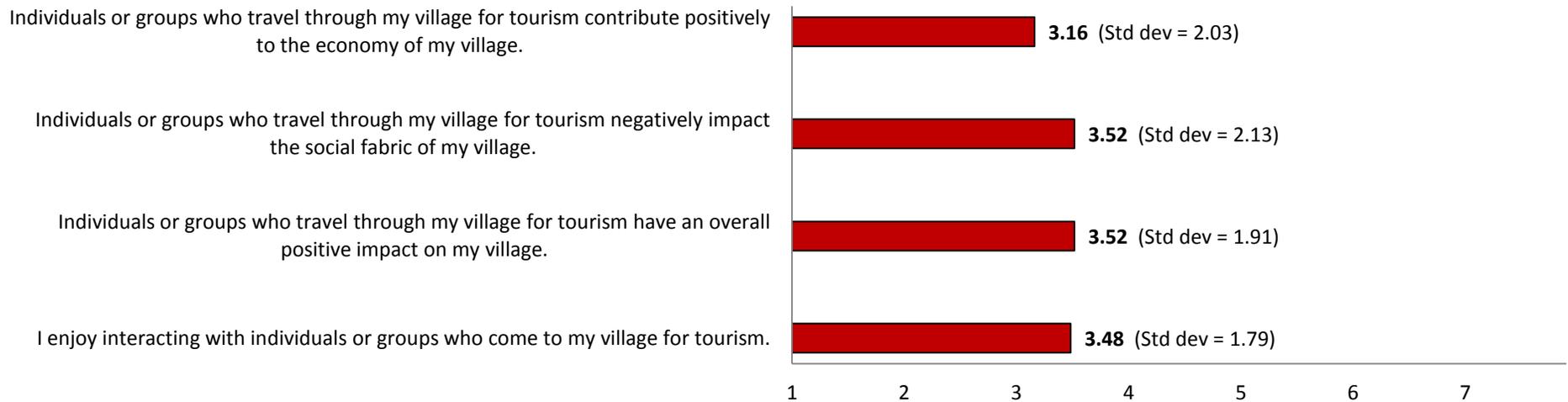


Figure 28: Saint Mary's & Pitkas Point - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. Russian Mission: $n = 12$, Saint Mary's and Pitkas Point: $n = 31$. Means are printed in bold. The standard deviation appears in parentheses after each mean.

Lower Yukon Region Results

Anvik, Holy Cross and Shageluk

Between November 2010 and March 2011 we surveyed the villages of Anvik, Holy Cross and Shageluk by mail. We also worked with the village of Grayling to hire a resident to distribute the survey to the households in Grayling. Unfortunately, due to difficult communication and timing, we did not survey Grayling.

The 2010 U.S. Census reported 33 occupied households in Anvik, 64 occupied households in Holy Cross and 36 occupied households in Shageluk.

We surveyed 133 households in Anvik, Holy Cross and Shageluk. We surveyed 33 households (100% of occupied households) in Anvik, 64 households (100% of occupied households) in Holy Cross and 36 households (100% of occupied households) in Shageluk. We received 11 surveys from Anvik, a 33.3% response rate and 15 surveys from Holy Cross, a 23.4% response rate. We did not receive any surveys from Shageluk. In the region as a whole, we received 26 completed surveys, a response rate of 19.6%, seen in Table 12 below.

Table 12: Lower Yukon - Response Rates

Village	Number of households	Households surveyed	Households surveyed (%)	Returned surveys	Response rate (%)
Anvik	33	33	100	11	33.3
Holy Cross	64	64	100	15	23.4
Shageluk	36	36	100	0	0.0
Totals	133	133	100	26	19.6

While we surveyed the households in each village in approximate proportion to the size of each village, the number of surveys we received from each village was not proportional to the number of surveys sent to each village. Seen in Table 13 below, the village of Anvik is over-represented in this sample while the village of Shageluk is not represented at all.

Table 13: Lower Yukon - Proportion of returned surveys by each village

Village	Proportion of households in the region	Proportion of households Surveyed	Proportion of Returned Surveys
Anvik	0.25	0.25	0.42
Holy Cross	0.48	0.48	0.58
Shageluk	0.27	0.27	0.00
Totals	1.00	1.00	1.00

Of the surveys returned from Anvik, the confidence interval is 24.5% at the 95% level. Of the surveys from Holy Cross, the confidence interval is 22.3% at the 95% level. Of the surveys returned from the Lower Yukon region as a whole, the confidence interval is 17.3% at the 95% level, seen in Table 14, on page 62.

Table 14: Lower Yukon - Confidence intervals at the 95% level

Village	Confidence level	Households surveyed	Returned surveys	Confidence Interval (%)
Anvik	95%	33	11	24.5
Holy Cross	95%	64	15	22.3
Shageluk	95%	36	0	N/A
Totals	95%	133	26	17.3

Note: Confidence intervals are calculated assuming maximum variance in the population, i.e. 50% have a characteristic and 50% do not. For many questions on the survey it is likely the population had less than maximum variance.

Harvest of Subsistence Resources

We developed a map that divided the Lower Yukon BSWI region into six watersheds: Anvik & Bonisila, Innoko, Middle Yukon, Lower Yukon, Iditarod and Kuskokwim watersheds. We included a copy of this map with each survey packet that we sent to each household. Respondents used these maps to indicate which watersheds members of their household hunted and fished in during the previous year. Please note that some Lower Yukon respondents returned a survey, but did not answer every question. When calculating percentages in the hunting and fishing maps, we treated non-responses as “did not hunt or fish in the area”.

Respondents from both Anvik and Holy Cross indicated that the Anvik & Bonisila, Innoko, Middle Yukon, Lower Yukon and Iditarod watersheds were all very important areas for both hunting and fishing during the previous year. Map 20 and Map 23 on pages 63 and 66 show the percentage of households from Holy Cross and Anvik who hunted and fished for each species in each watershed during the previous year.

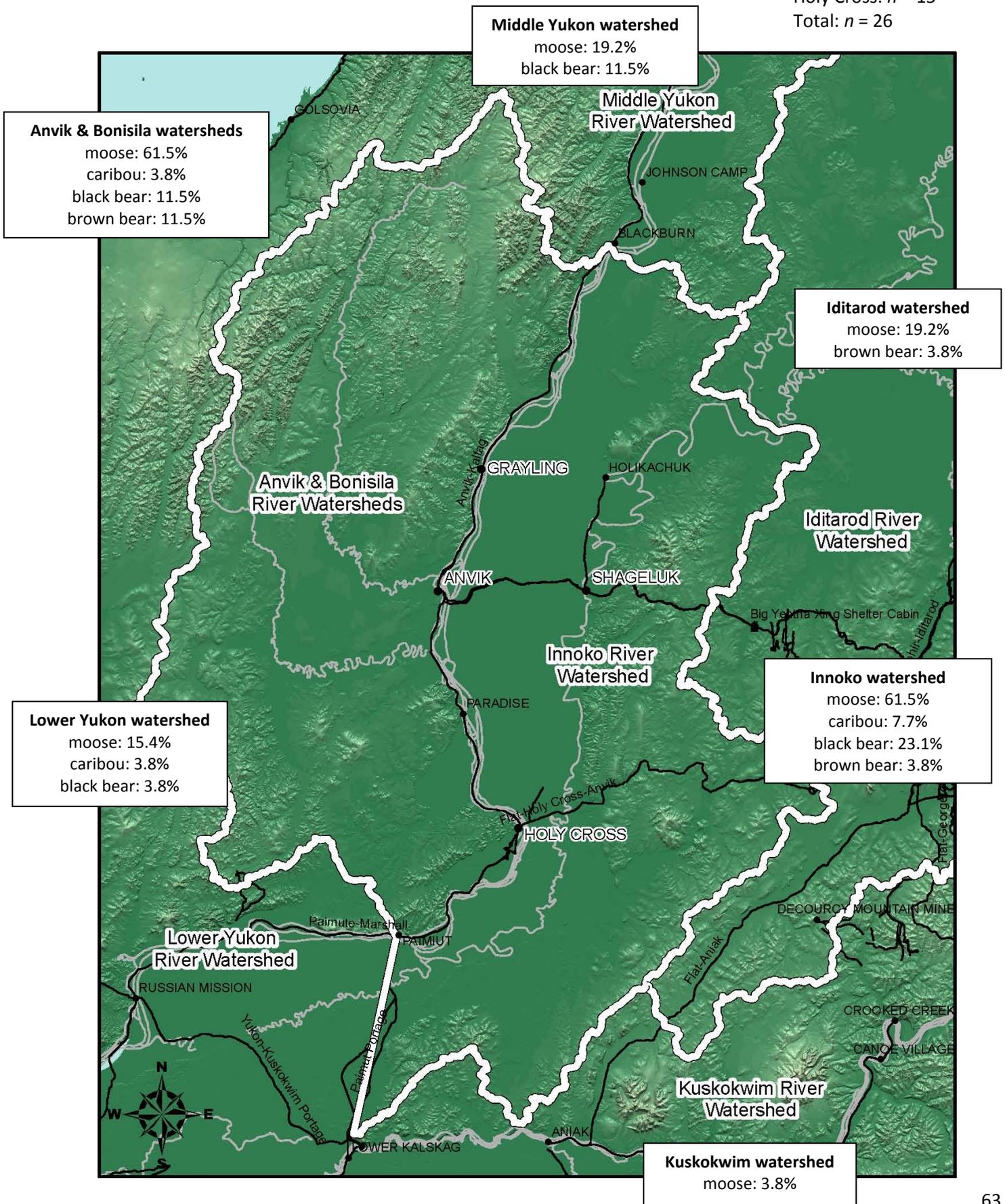
Of the respondents from Anvik, eleven households (100%) hunted in the Anvik & Bonisila watersheds. Four households (36.4%) hunted in the Innoko watershed, three households (27.3%) hunted in the Middle Yukon watershed, two households (18.2%) hunted in the Iditarod watershed and one household (9.1%) hunted in the Lower Yukon and Kuskokwim watersheds. Ten households (90.9%) fished in the Anvik & Bonisila watersheds. Two households (18.2%) fished in the Innoko watershed and Middle Yukon watersheds and one household (9.1%) fished in the Lower Yukon and Iditarod watersheds, seen in Map 21 and Map 24 on pages 64 and 67.

Of the respondents from Holy Cross, twelve households (80.0%) hunted in the Innoko watershed, five households (33.3%) hunted in the Anvik & Bonisila watersheds, three households (20.0%) hunted in the Iditarod and Lower Yukon watersheds and two households (13.3%) hunted in the Middle Yukon watershed. No Holy Cross respondents indicated that members of their household hunted in the Kuskokwim watershed. Nine households (60.0%) fished in the Innoko watershed, six households (40.0%) fished in the Anvik & Bonisila watersheds, four households (26.7%) fished in the Lower Yukon watershed and three households (20.0%) fished in the Middle Yukon watershed, seen in Map 22 and Map 25 on pages 65 and 68. No Holy Cross households fished in the Iditarod watershed during the previous year.

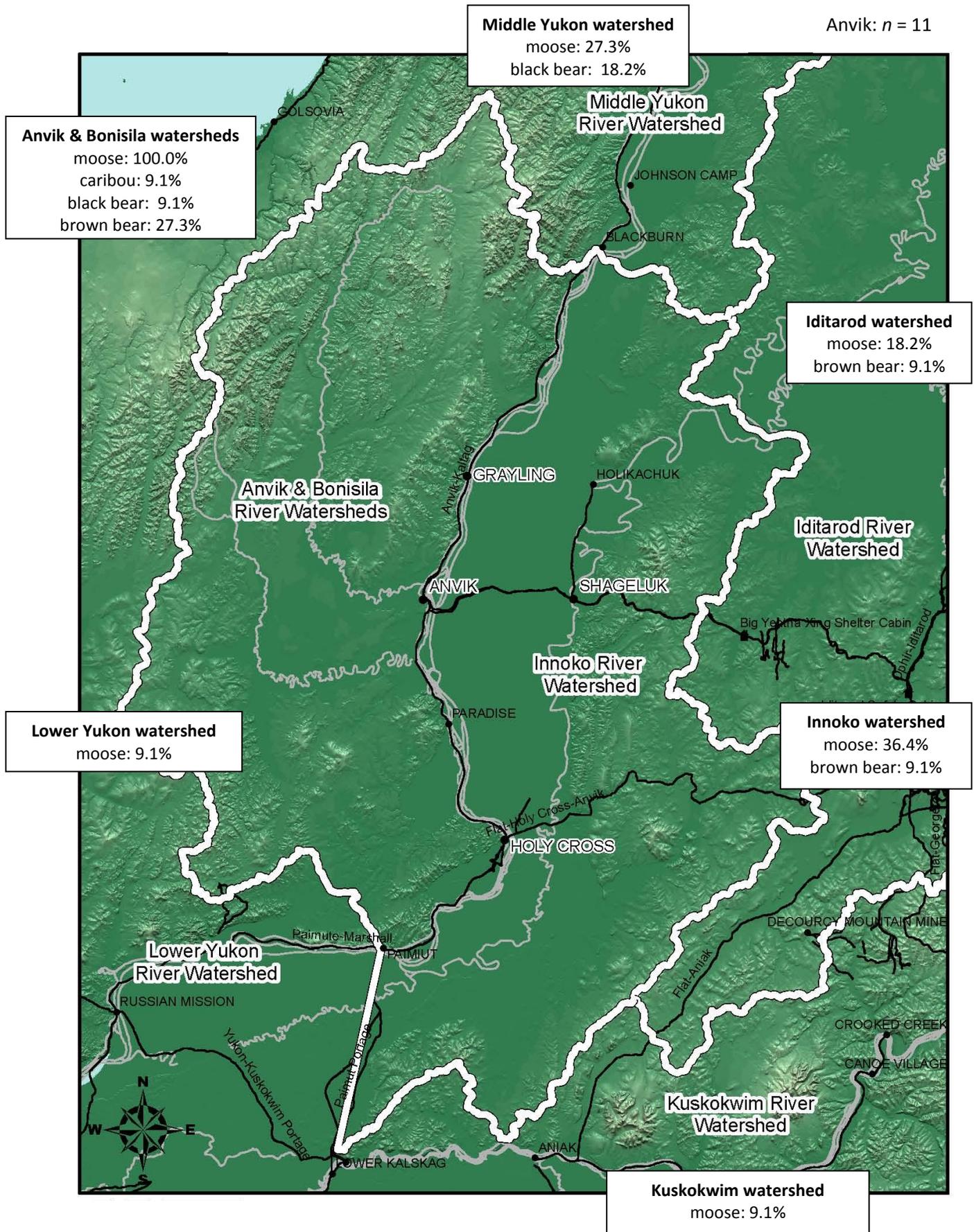
No Lower Yukon households indicated that they fished in the Kuskokwim watershed during the previous year.

Map 20: Lower Yukon hunting responses

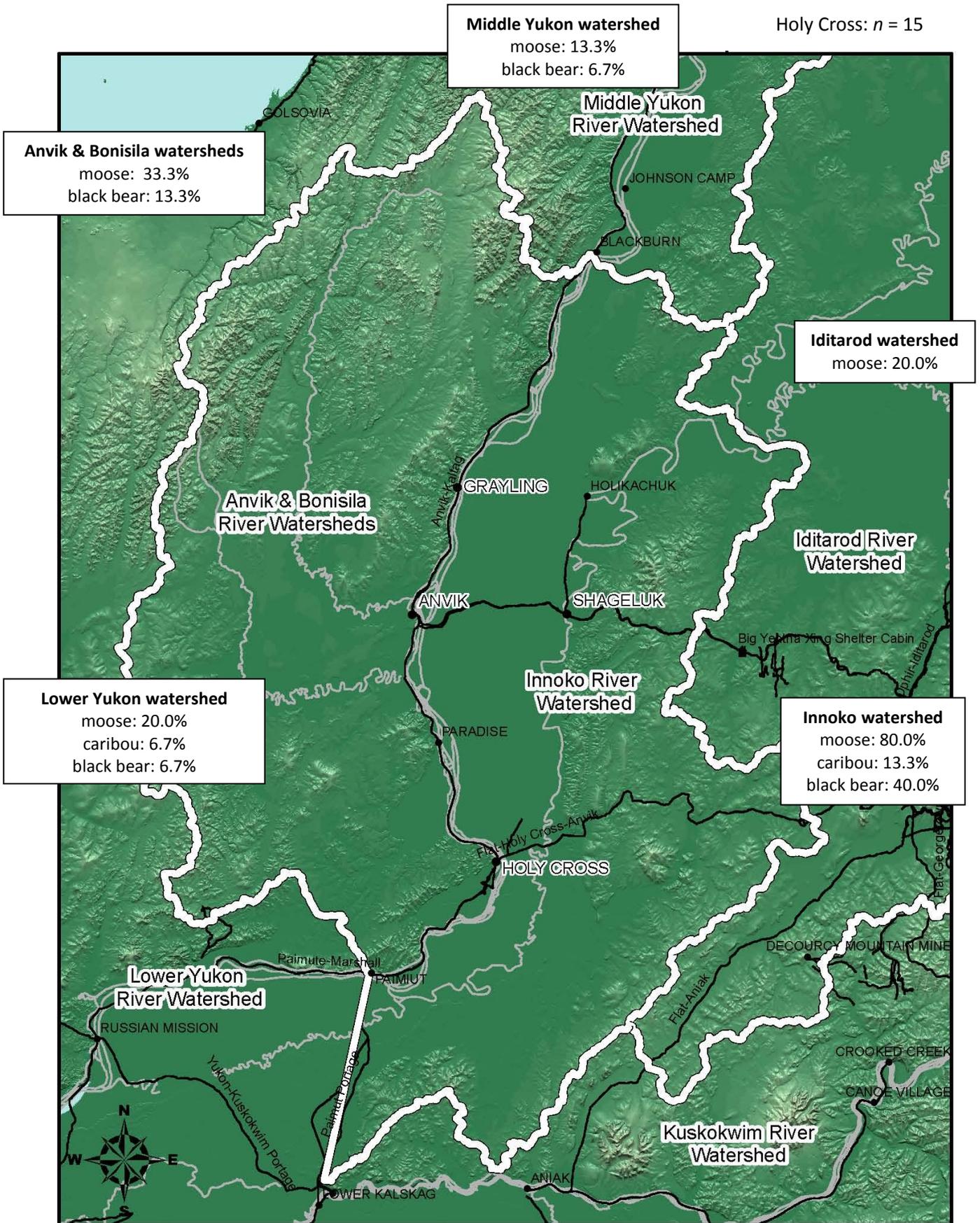
Anvik: $n = 11$
 Holy Cross: $n = 15$
 Total: $n = 26$



Map 21: Anvik hunting responses

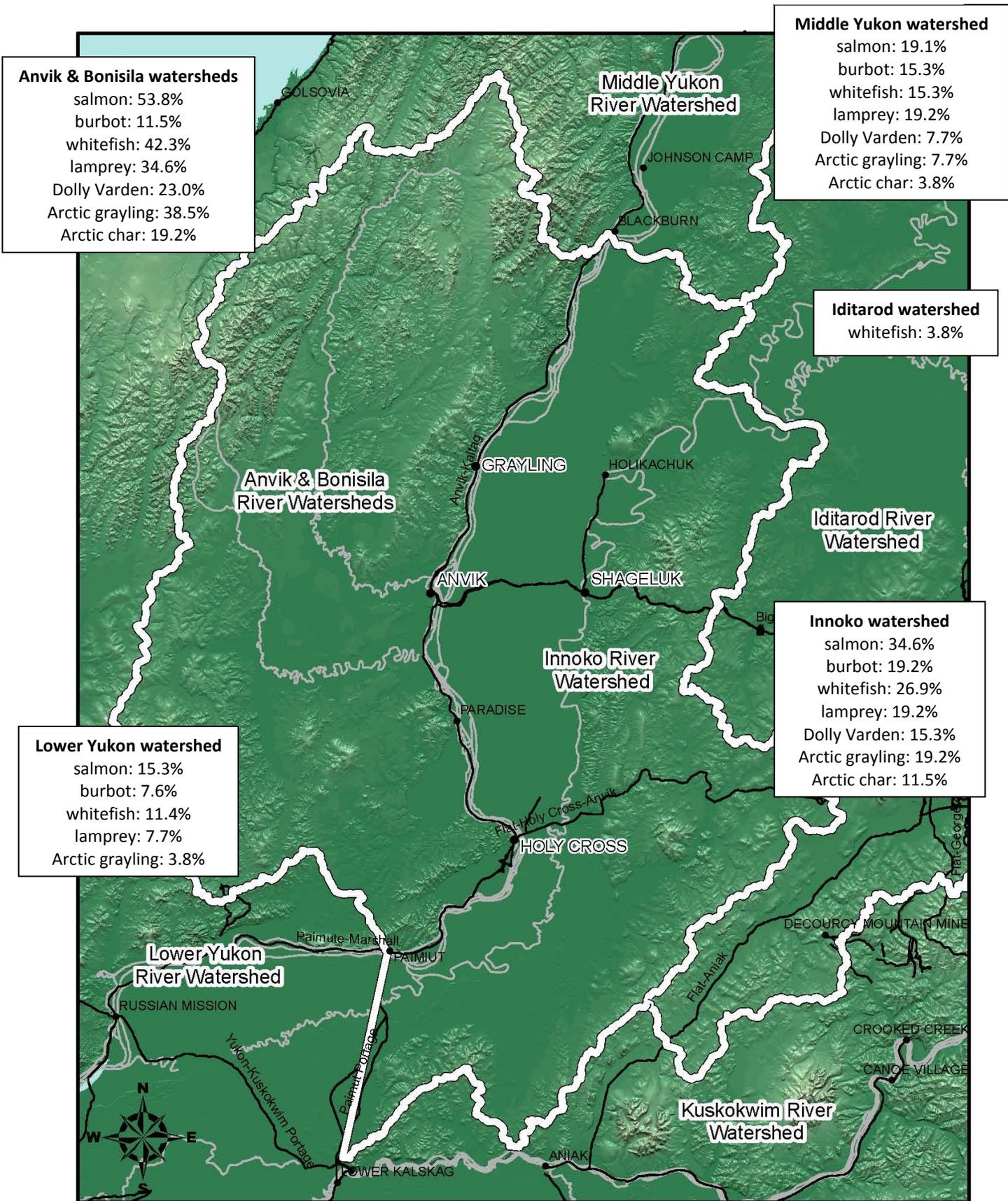


Map 22: Holy Cross hunting responses



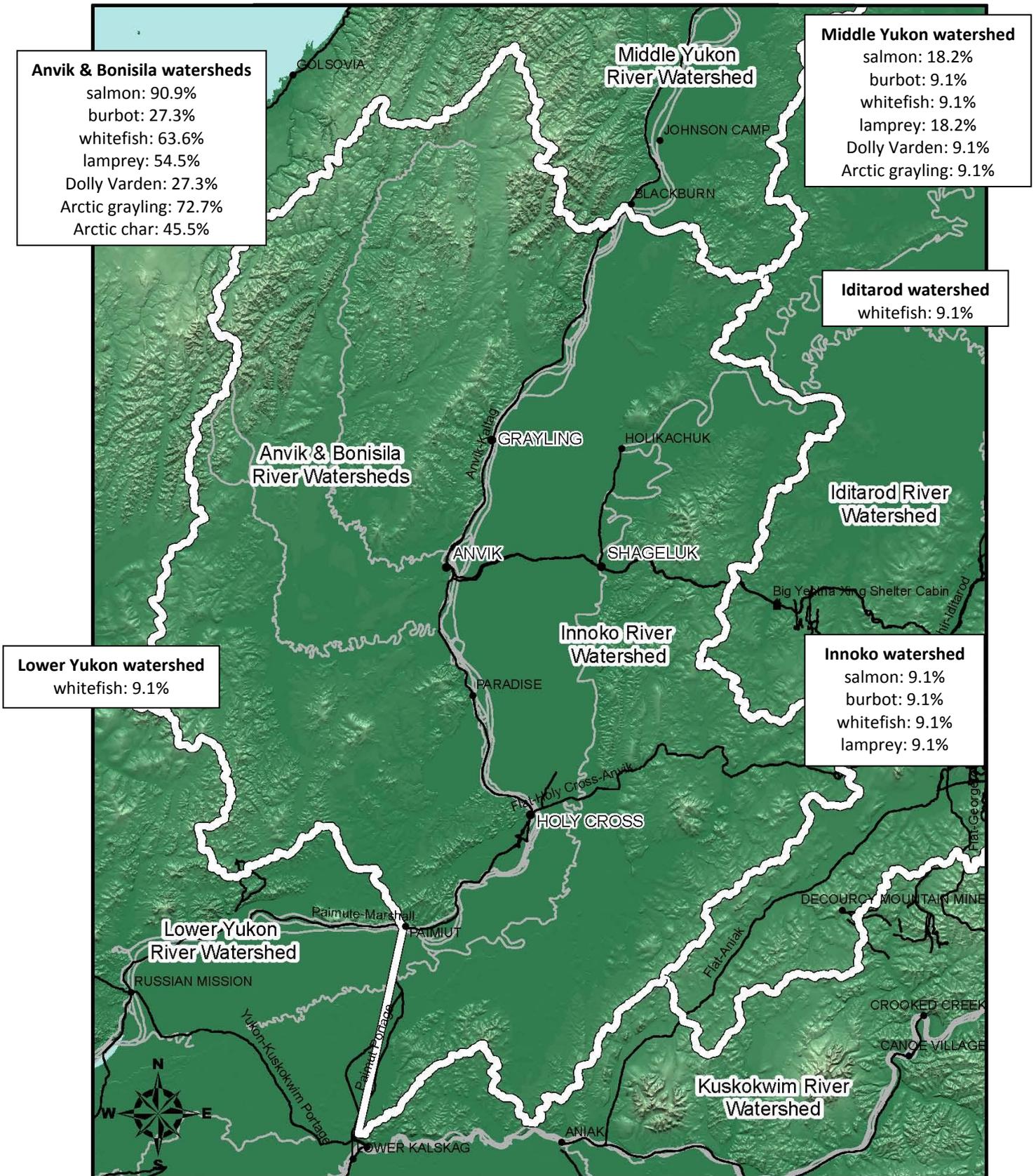
Map 23: Lower Yukon fishing responses

Anvik: $n = 11$
 Holy Cross: $n = 15$
 Total: $n = 26$



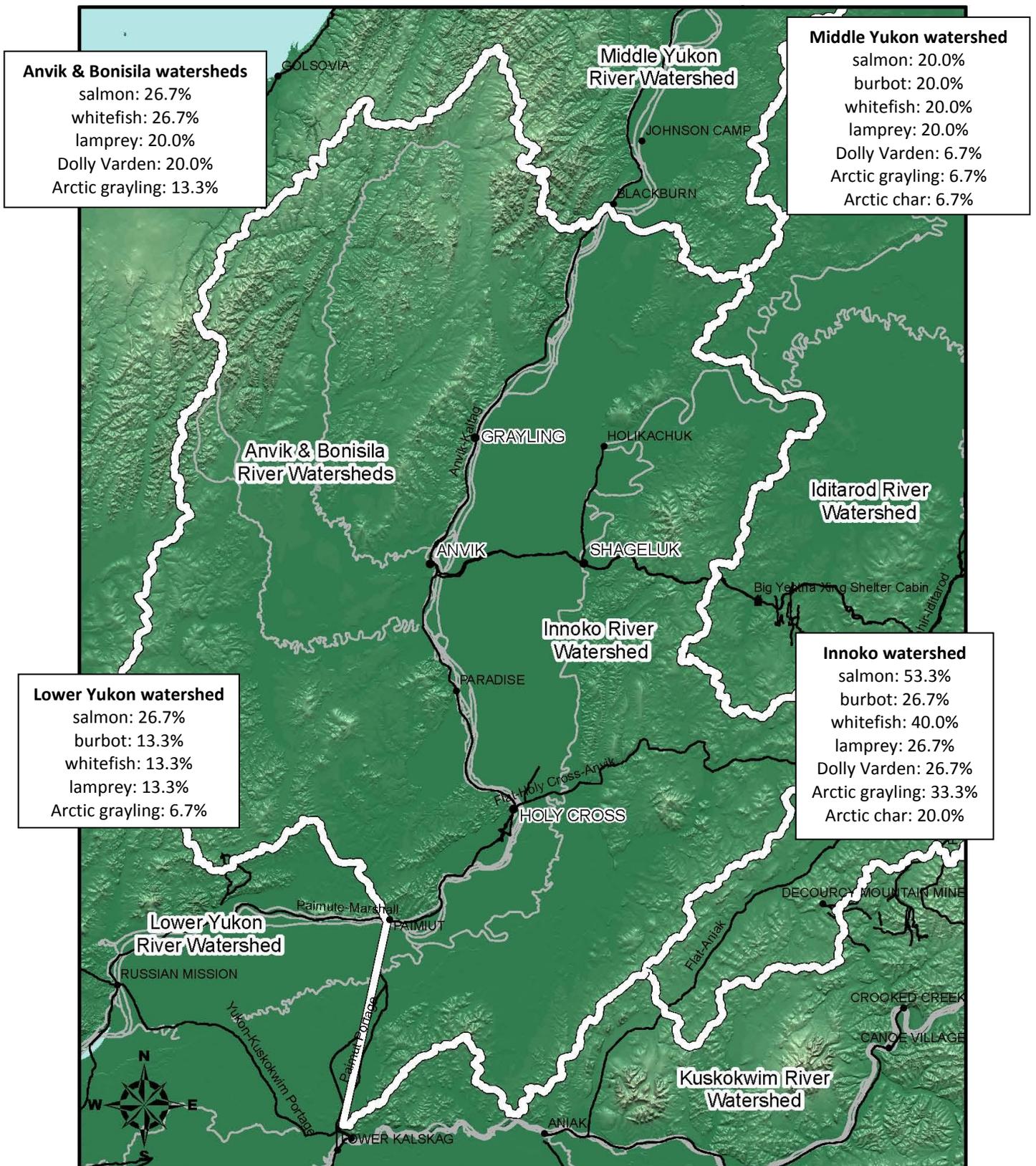
Map 24: Anvik fishing responses

Anvik: $n = 11$



Map 25: Holy Cross fishing responses

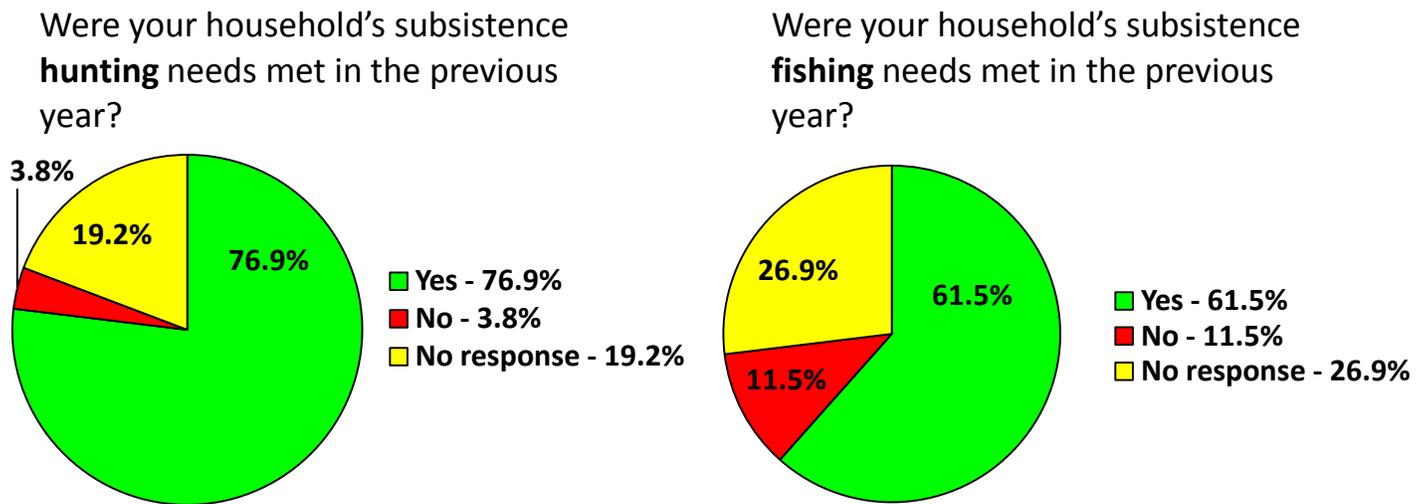
Holy Cross: $n = 15$



Subsistence Needs

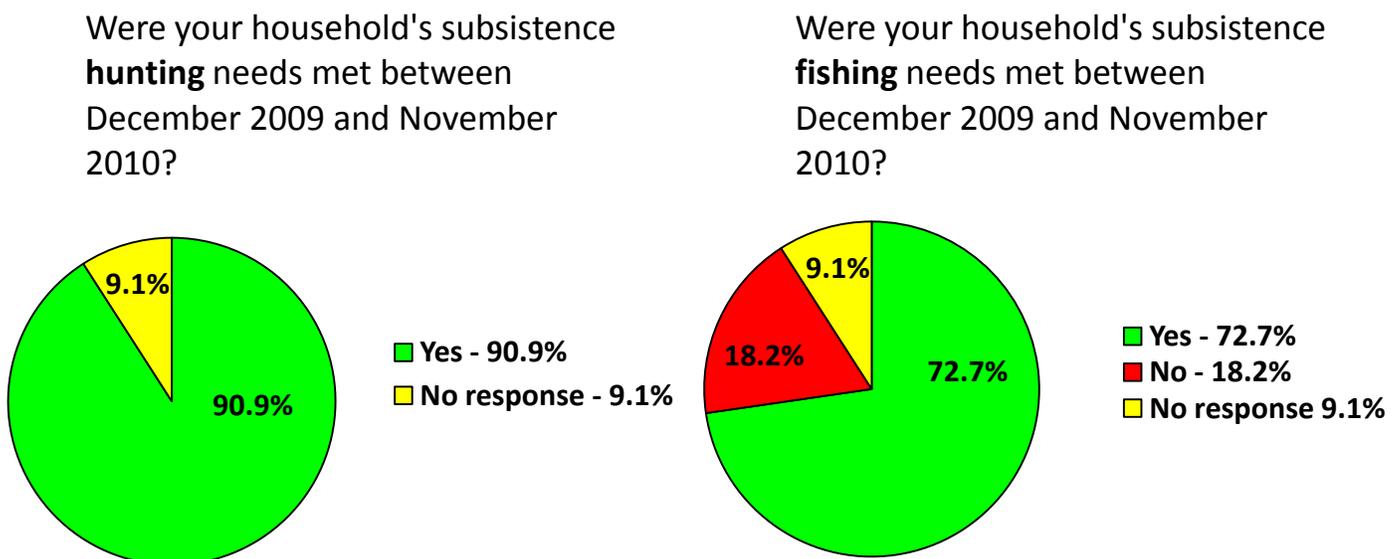
In the region as a whole, twenty respondents (76.9%) agreed that they met their household's subsistence hunting needs for moose, caribou, black bear and brown bear and 16 respondents (61.5%) agreed that they met their household's subsistence fishing needs for salmon, burbot, whitefish, lamprey, Dolly Varden, Arctic grayling and Arctic char in the previous year, seen in Figure 29 below. Ten households in Anvik (90.9%) and ten households in Holy Cross (66.7%) responded that they met their subsistence hunting needs for the species listed. Eight households in Anvik (72.7%) and eight households in Holy Cross (53.3%) responded that they met their subsistence fishing needs for the species listed in the previous year, seen in Figure 30 and Figure 31 on pages 69 and 70.

Figure 29: Lower Yukon - Were your household's subsistence needs met in the previous year?



Notes: Number of households, Total: $n = 26$. Anvik: $n = 11$; Holy Cross: $n = 15$.

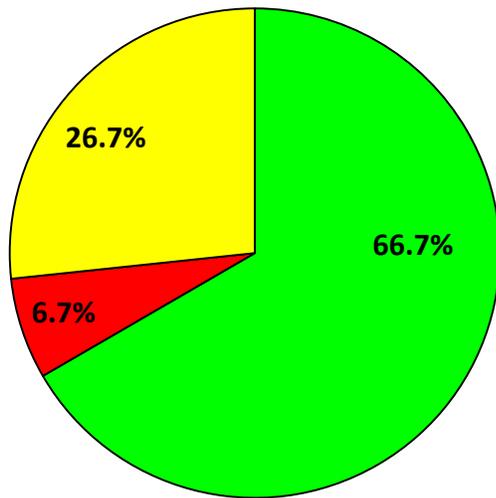
Figure 30: Anvik - Were your household's subsistence needs met between December 2009 and November 2010?



Notes: Number of households, Anvik: $n = 11$.

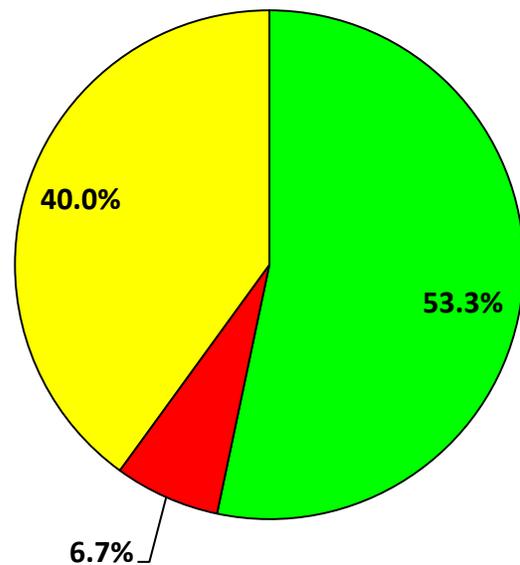
Figure 31: Holy Cross - Were your household's subsistence needs met between December 2009 and November 2010?

Were your household's subsistence **hunting** needs met between December 2009 and November 2010?



■ Yes - 66.7%
■ No - 6.7%
■ No response 26.7%

Were your household's subsistence **fishing** needs met between December 2009 and November 2010?



■ Yes - 53.3%
■ No - 6.7%
■ No response 40.0%

Notes: Number of households, Holy Cross: $n = 15$.

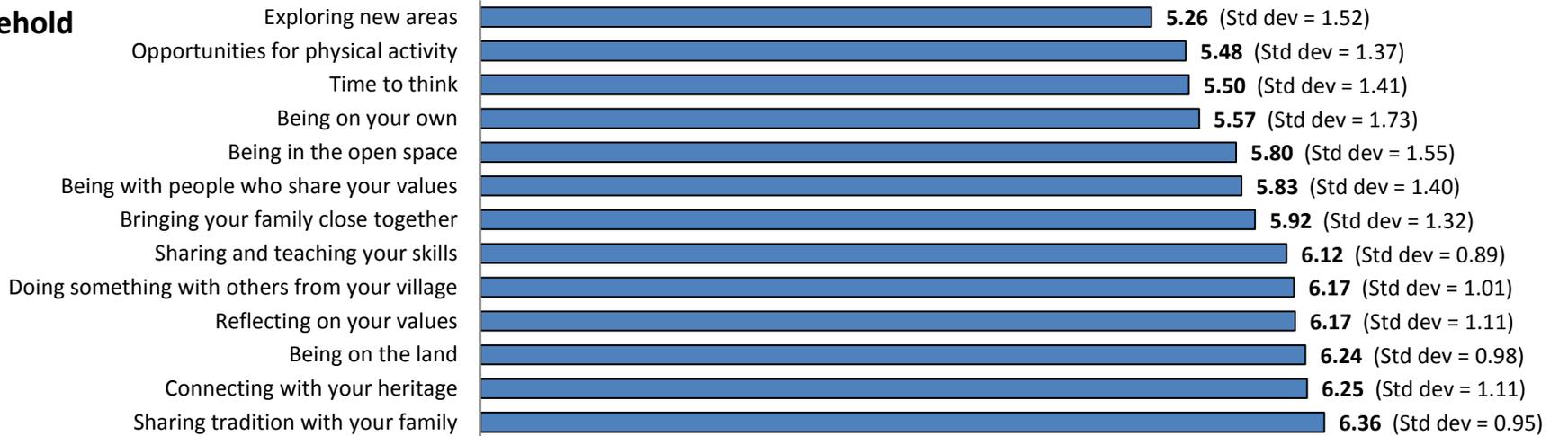
In the Lower Yukon region, respondents listed “river channel changes and poor ice conditions” and “not long enough fishing periods” as reasons why their household’s subsistence fishing needs were not met. No respondents commented regarding their subsistence hunting needs.

Reasons land managed by the BLM might be important to your household and village

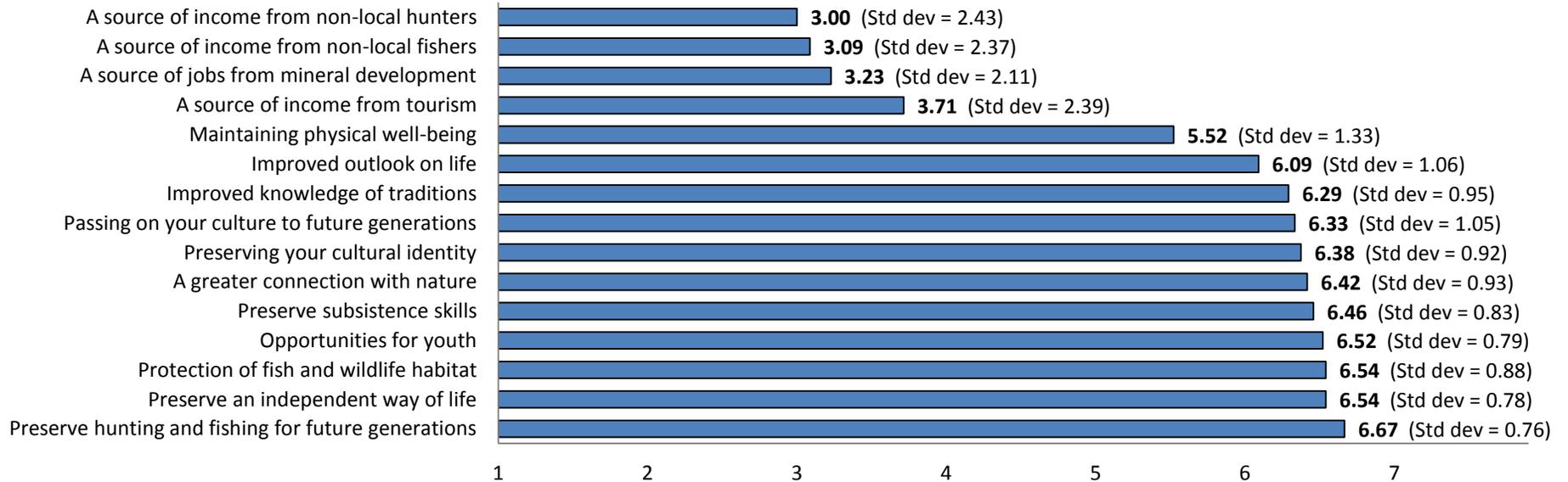
Figure 32 on page 71 shows the responses from Lower Yukon respondents regarding why BLM managed land might be important to their household and village. The first chart shows responses regarding why land managed by the BLM might be important to the **household**; the second chart displays responses regarding why land managed by the BLM might be important to the **village**. Figure 33 on page 72 shows the results from Anvik and Figure 34 on page 73 shows the results from Holy Cross. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (not at all important) to 7 (extremely important).

Figure 32: Lower Yukon - Reasons land managed by the BLM might be important to your household and village

Household



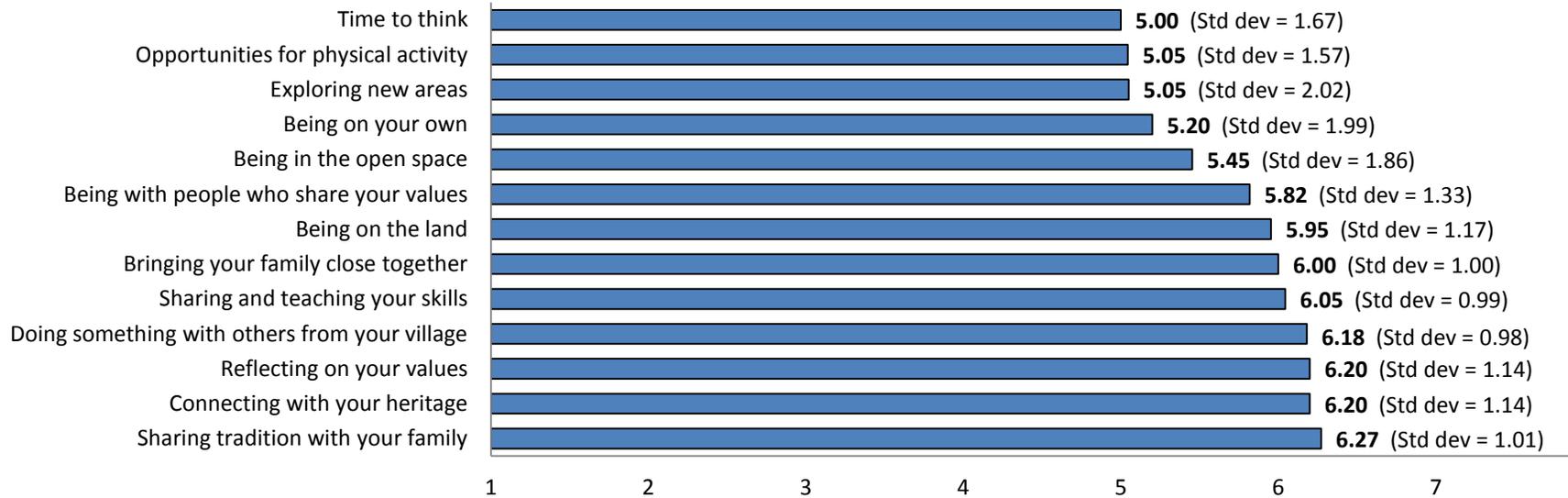
Village



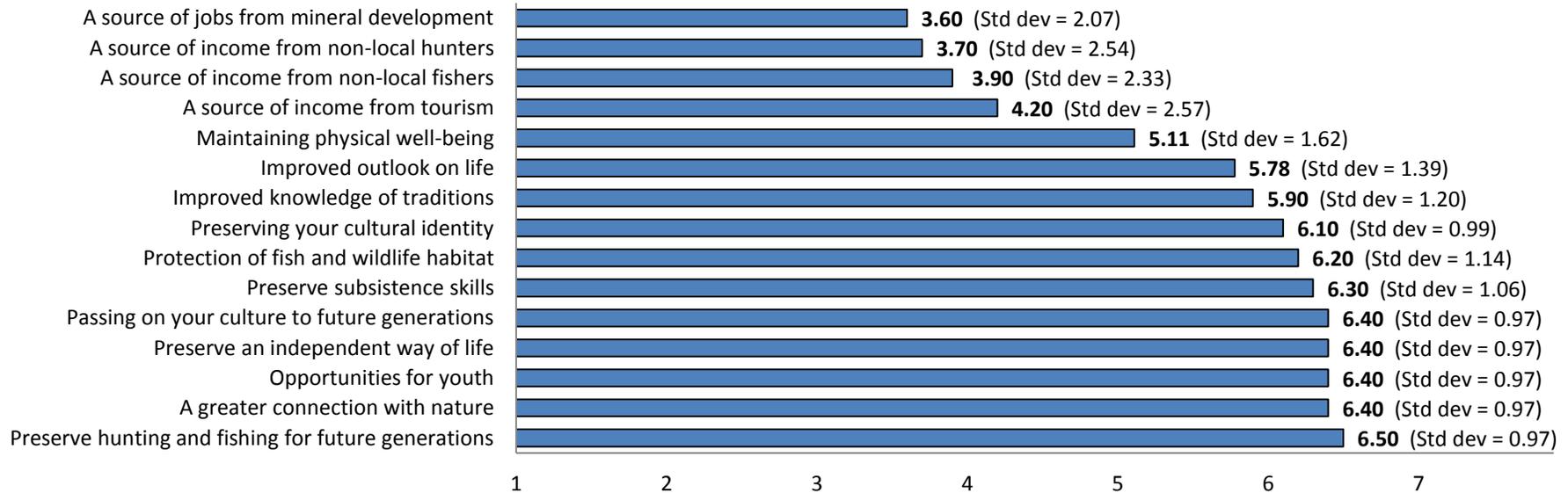
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *n*s ranged from 23 to 25. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 33: Anvik - Reasons land managed by the BLM might be important to your household and village

Household



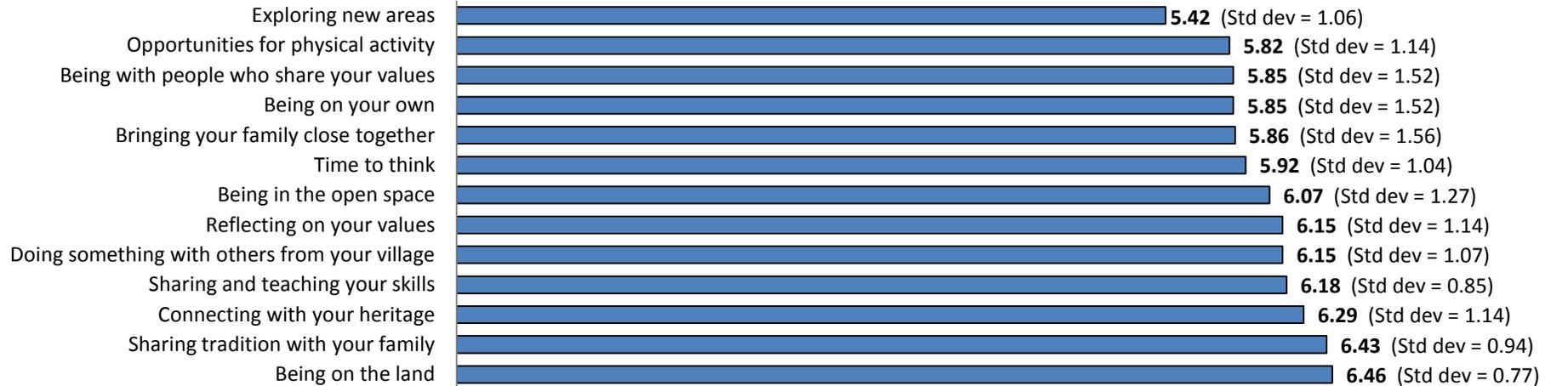
Village



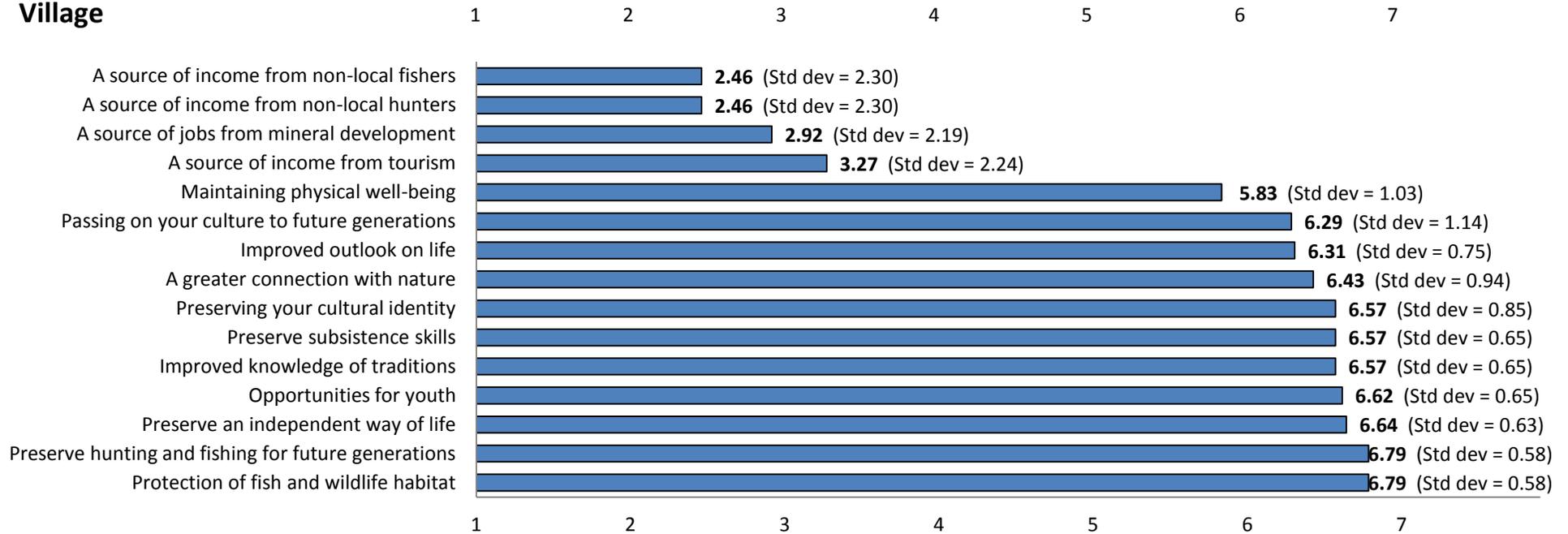
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 10 to 11. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 34: Holy Cross - Reasons land managed by the BLM might be important to your household and village

Household



Village

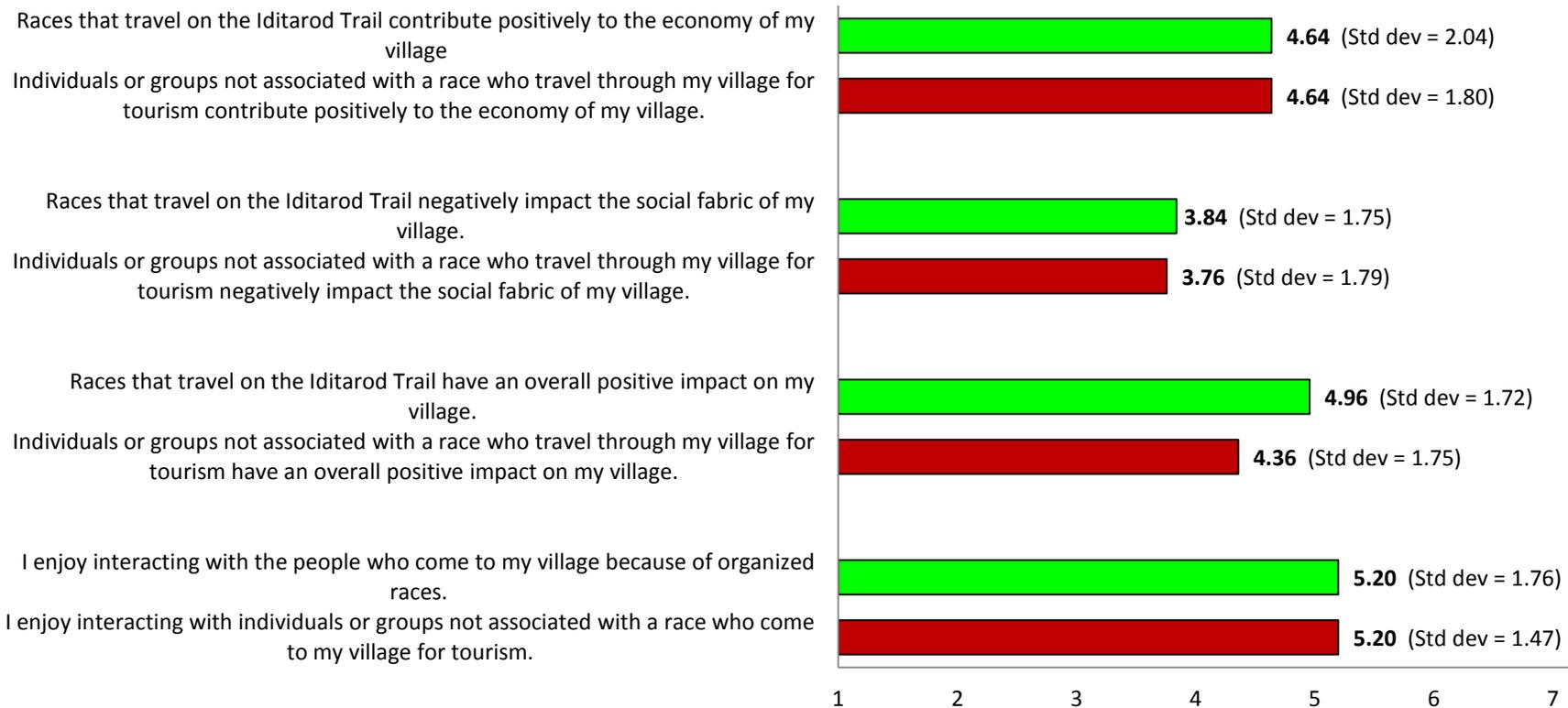


Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 13 to 14. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Impact of visitors on your village

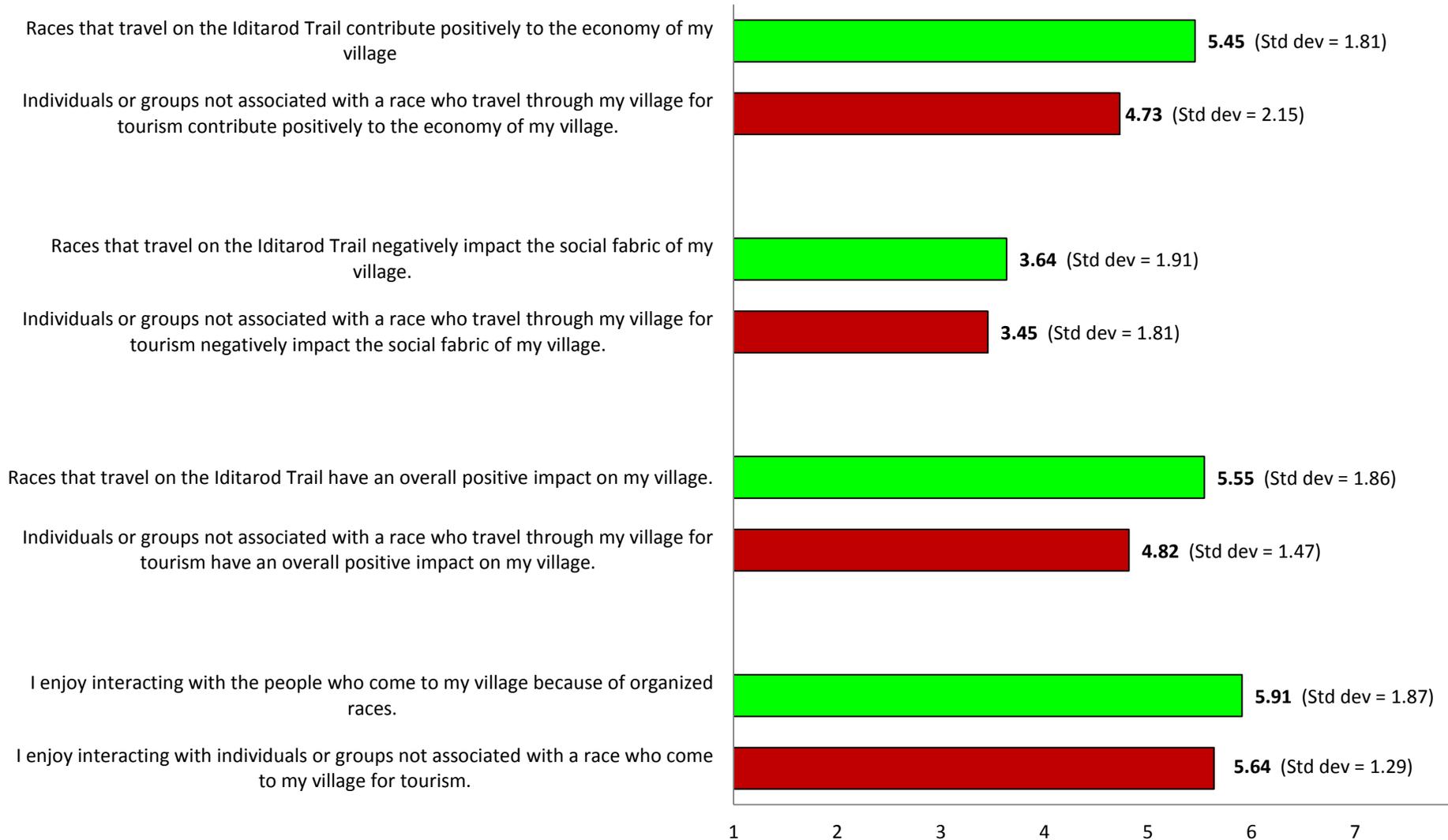
The survey asked Lower Yukon households to rate whether they agreed or disagreed with a list of statements about the impacts of visitors on their village. The surveys we sent to the households in the Lower Yukon region distinguished between visitors that were associated with races along the INHT and visitors that were not associated with races along the INHT. Figure 35 -Figure 37 on pages 74 - 76 display the responses from the Lower Yukon region, Anvik and Holy Cross. The mean for each response is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (strongly disagree) to 7 (strongly agree).

Figure 35: Lower Yukon - Impact of visitors on your village



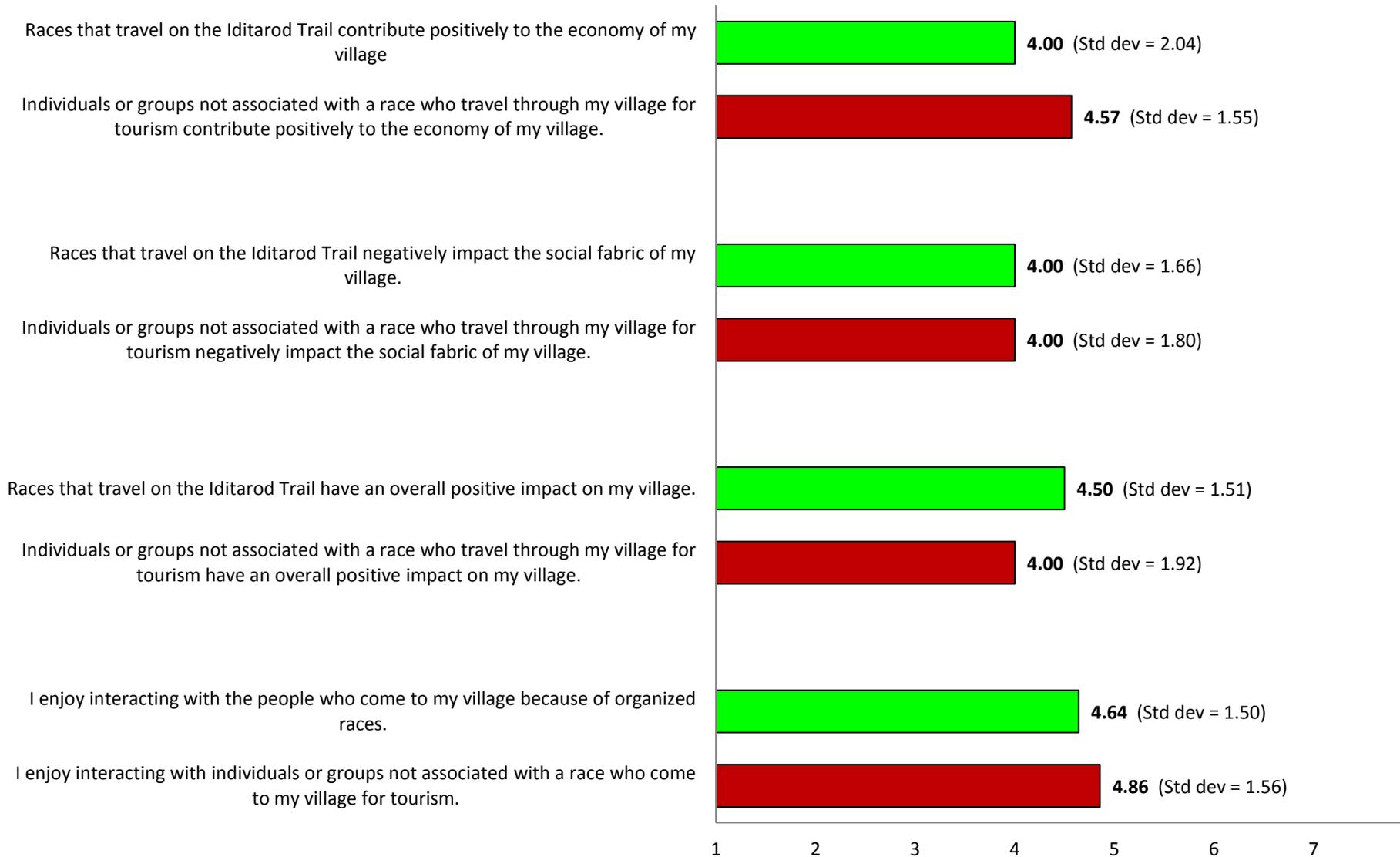
Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. $n = 25$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 36: Anvik - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. $n = 11$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 37: Holy Cross - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. $n = 14$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Lower Kuskokwim Region Results

Aniak, Lower Kalskag and Upper Kalskag

Between October 2010 and March 2011 we worked with the Village of Aniak to hire a resident to distribute the BSWI survey to the households in Aniak. We also surveyed the villages of Lower Kalskag and Upper Kalskag by mail.

The 2010 U.S. Census reported 166 occupied households in Aniak, 75 occupied households in Lower Kalskag and 60 occupied households in Upper Kalskag.

We surveyed 166 households in Aniak (100% of occupied households), 74 households in Lower Kalskag (98.7% of occupied households) and 58 households in Upper Kalskag (96.7% of occupied households). We received 29 surveys back from Aniak, a 17.5% response rate; 15 surveys from Lower Kalskag, a 20.3% response rate and 17 surveys from Upper Kalskag, a 29.3% response rate, seen in Table 15 below.

Table 15: Lower Kuskokwim - Response Rates

Village	Number of households	Households surveyed	Households surveyed (%)	Returned surveys	Response rate (%)
Aniak	166	166	100.0	29	17.5
Lower Kalskag	75	74	98.7	15	20.3
Upper Kalskag	60	58	96.7	17	29.3
Totals	301	298	99.0	61	20.5

We surveyed the households in each village in approximate proportion to the size of each village. As well, the number of surveys we received from each village was approximately proportional to the number of surveys we sent to each village, seen in Table 16 below.

Table 16: Lower Kuskokwim - Proportion of returned surveys by each village

Village	Proportion of households in the region	Proportion of households Surveyed	Proportion of Returned Surveys
Aniak	.55	.56	.48
Lower Kalskag	.25	.25	.25
Upper Kalskag	.20	.19	.28
Totals	1.00	1.00	1.00

Of the surveys returned from Aniak, the confidence interval is 16.6% at the 95% level. Of the surveys from Lower Kalskag, the confidence interval is 22.8% at the 95% level. Of the surveys from Upper Kalskag, the confidence interval is 20.2% at the 95% level. Of the surveys returned from the Lower Kuskokwim region as a whole, the confidence interval is 11.2% at the 95% level, seen in Table 17 on page 78.

Table 17: Lower Kuskokwim - Confidence intervals at the 95% level

Village	Confidence level	Households surveyed	Returned surveys	Confidence Interval (%)
Aniak	95%	166	29	16.6
Lower Kalskag	95%	74	15	22.8
Upper Kalskag	95%	58	17	20.2
Totals	95%	298	61	11.2

Note: Confidence intervals are calculated assuming maximum variance in the population, i.e. 50% have a characteristic and 50% do not. For many questions on the survey it is likely the population had less than maximum variance.

Harvest of Subsistence Resources

We developed a map that divided the Lower Kuskokwim BSWI region into five watersheds: the Kuskokwim, Kuskokwim Delta, Lower Yukon, Iditarod, and the Kuyukutuk watersheds, seen on page 11. We included a copy of this map with each survey packet that we sent to each household. Respondents used this map to document which watersheds they hunted and fished in during the previous year. Please note that some Lower Kuskokwim respondents returned a survey, but did not answer every question. When calculating percentages in the hunting and fishing maps, we treated non-responses as “did not hunt or fish in the area”. As well, the Kuyukutuk watershed corresponds with the Andreafsky watershed in the maps we sent to households in the Yukon Delta region.

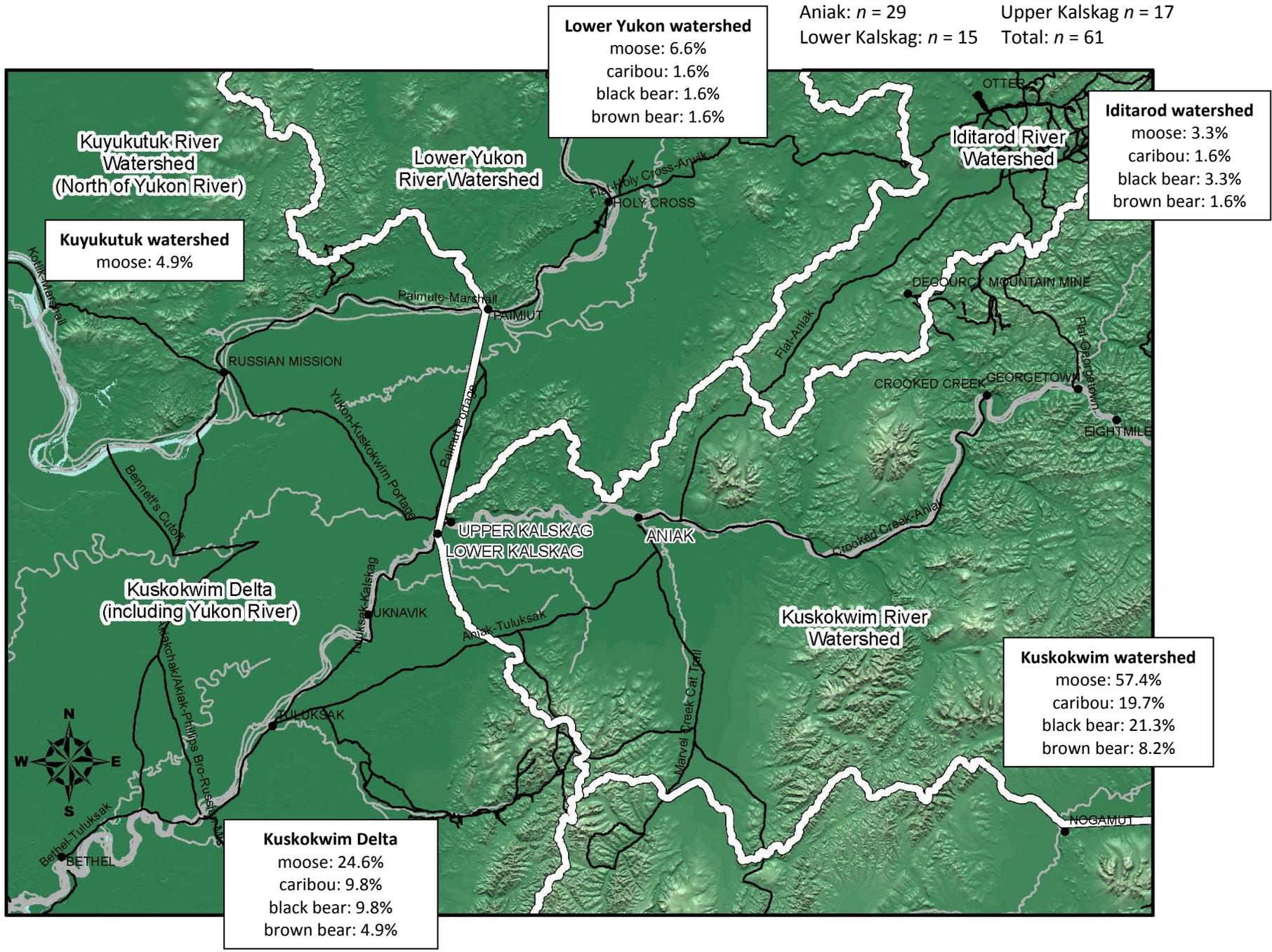
Respondents from all three villages indicated that the Kuskokwim and the Kuskokwim Delta were very important areas for hunting and fishing in the previous year. Some respondents also utilized the Kuyukutuk, Lower Yukon and Iditarod watersheds in the previous year, seen in Map 26 and Map 30 on pages 79 and 83.

Of the respondents from Aniak, seventeen households (58.6%) hunted in the Kuskokwim watershed, five households (17.2%) hunted in the Kuskokwim Delta and one household (3.4%) hunted in the Lower Yukon watershed. Twenty households (69.0%) fished in the Kuskokwim watershed; two households (6.9%) fished in the Kuskokwim Delta and one household (3.4%) fished in the Iditarod watershed and Lower Yukon watershed, seen in Map 27 and Map 31 on pages 80 and 84.

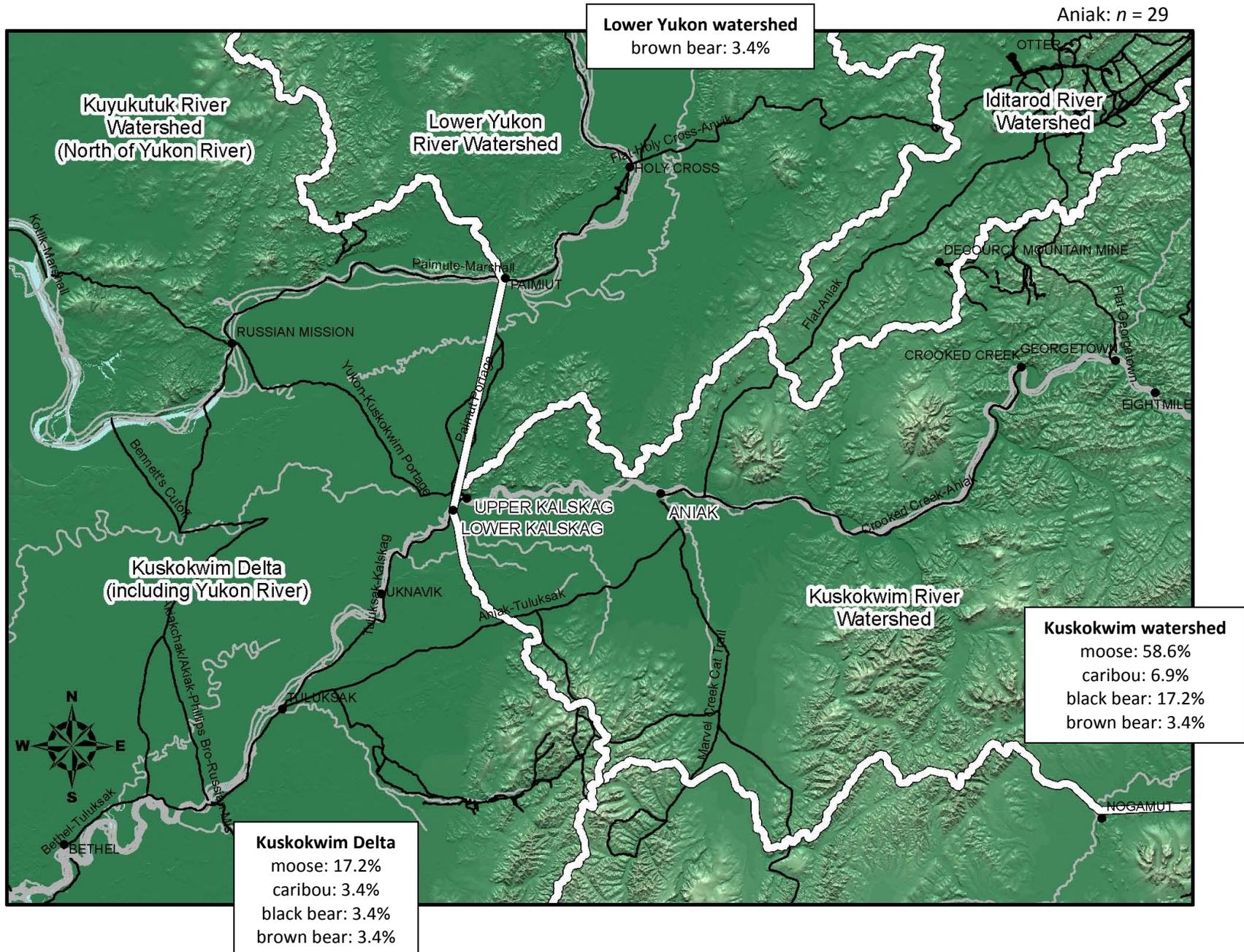
Of the respondents from Lower Kalskag, twelve households (80.0%) hunted in the Kuskokwim watershed and seven households (46.7%) hunted in the Kuskokwim Delta. In addition, one household (6.7%) hunted in the Kuyukutuk, Lower Yukon and Iditarod watersheds. Thirteen households (86.7%) fished in the Kuskokwim watershed and five households (33.3%) fished in the Kuskokwim Delta. One household (6.7%) fished in the Kuyukutuk and Lower Yukon watersheds and no households fished in the Iditarod watershed, seen in Map 26 and Map 32 on pages 81 and 85.

Of the respondents from Upper Kalskag, nine households (52.9%) hunted in the Kuskokwim watershed and five households (29.4%) hunted in the Kuskokwim Delta. Three households (17.6%) hunted in the Lower Yukon watershed and two households (11.8%) hunted in the Kuyukutuk and Iditarod watersheds. Twelve households (70.6%) fished in the Kuskokwim watershed and nine households (52.9%) fished in the Kuskokwim Delta. Three households (17.6%) fished in the Lower Yukon watershed, two households (11.8%) fished in the Kuyukutuk watershed and one household (5.9%) fished in the Iditarod watershed, seen in Map 29 and Map 33 on pages 82 and 86.

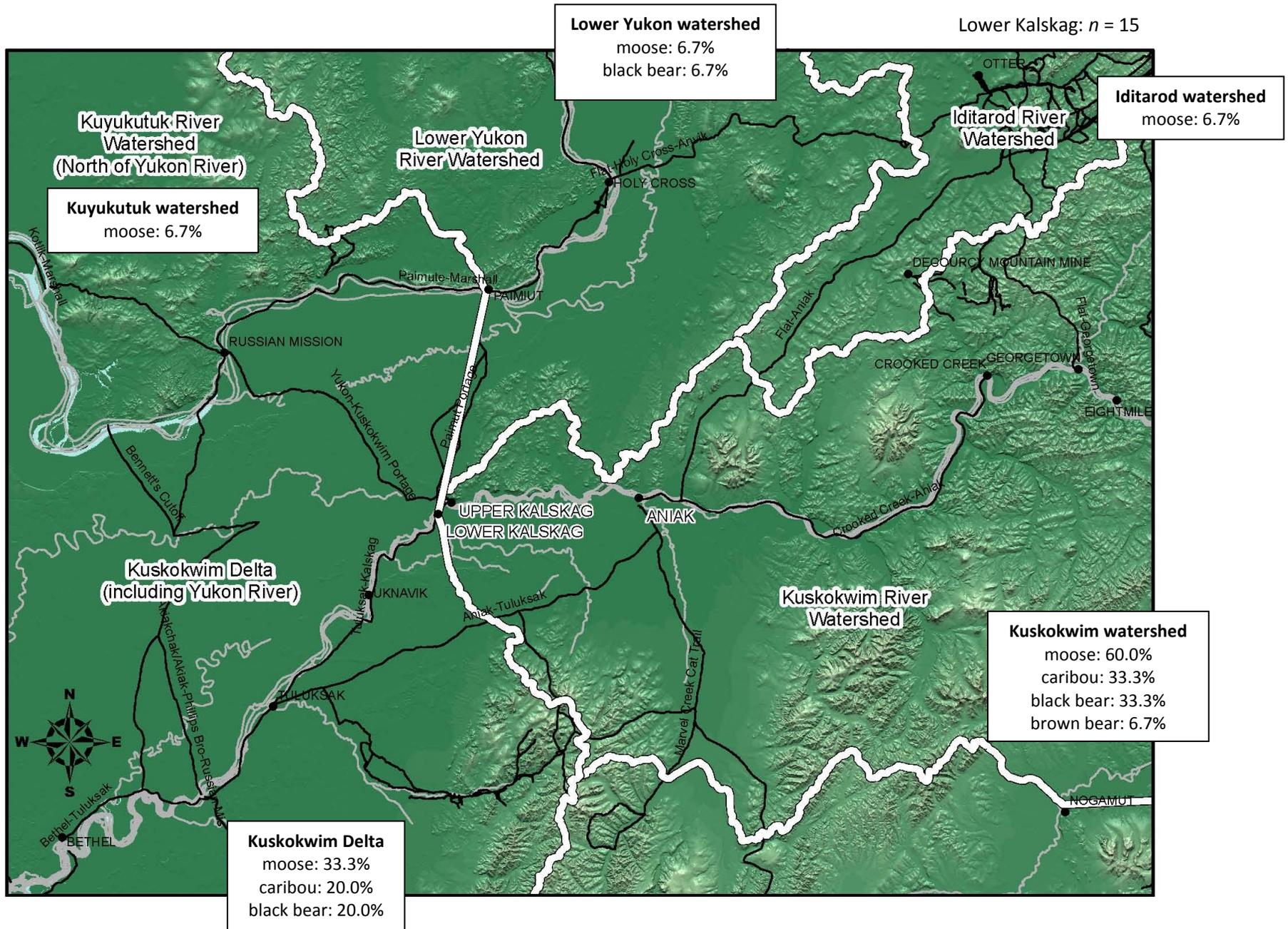
Map 26: Lower Kuskokwim hunting responses



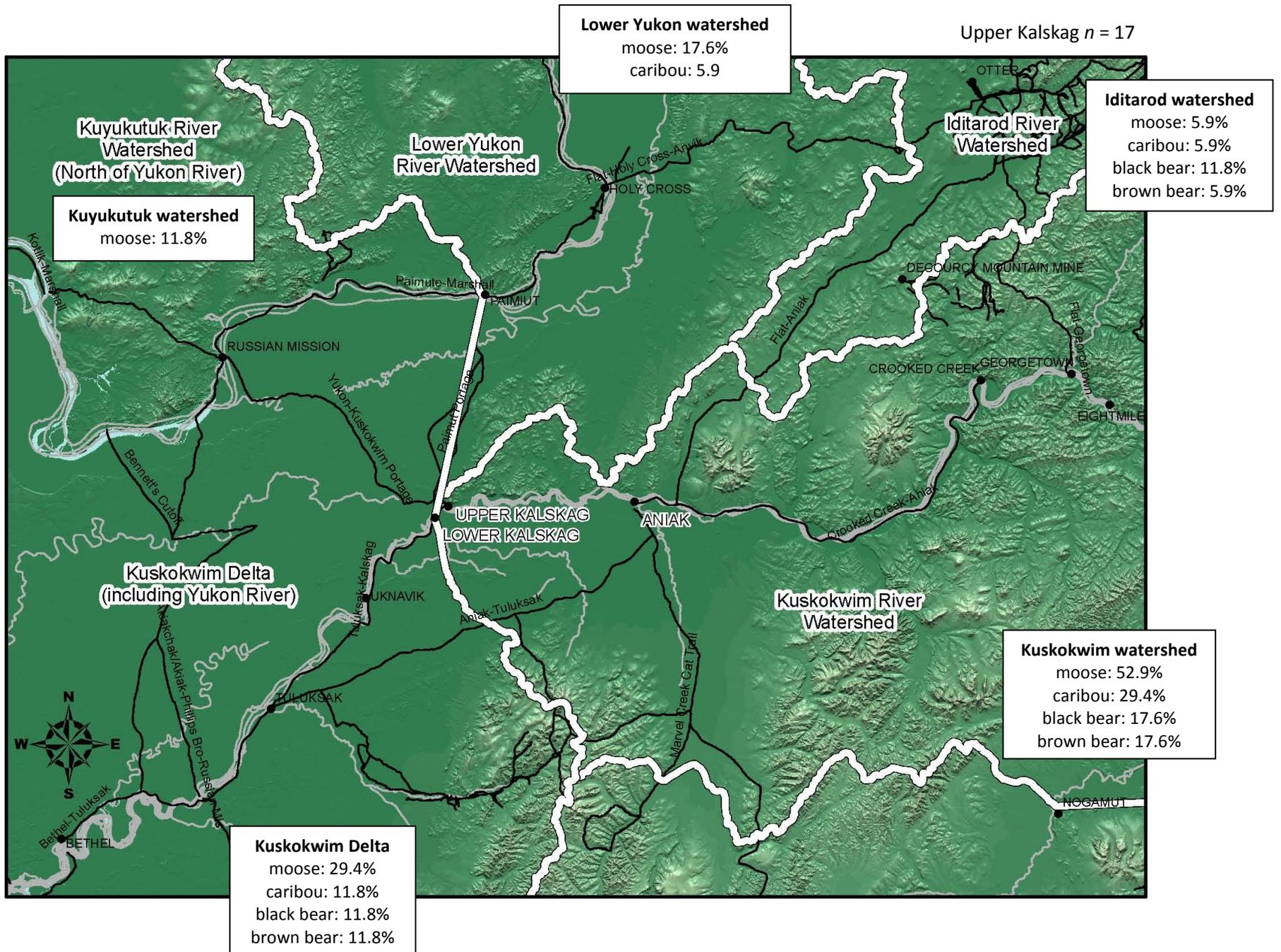
Map 27: Aniak hunting responses



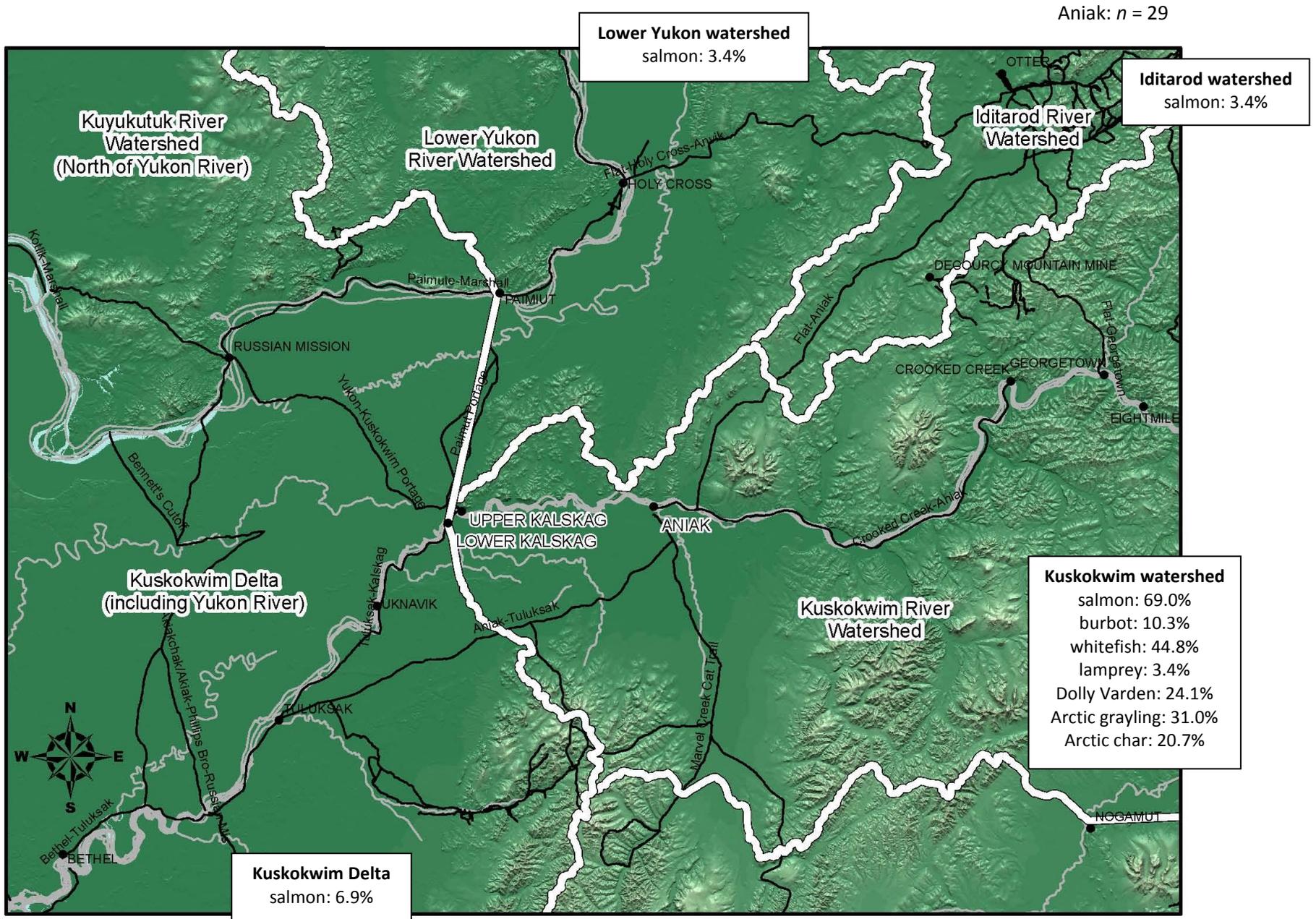
Map 28: Lower Kalskag hunting responses



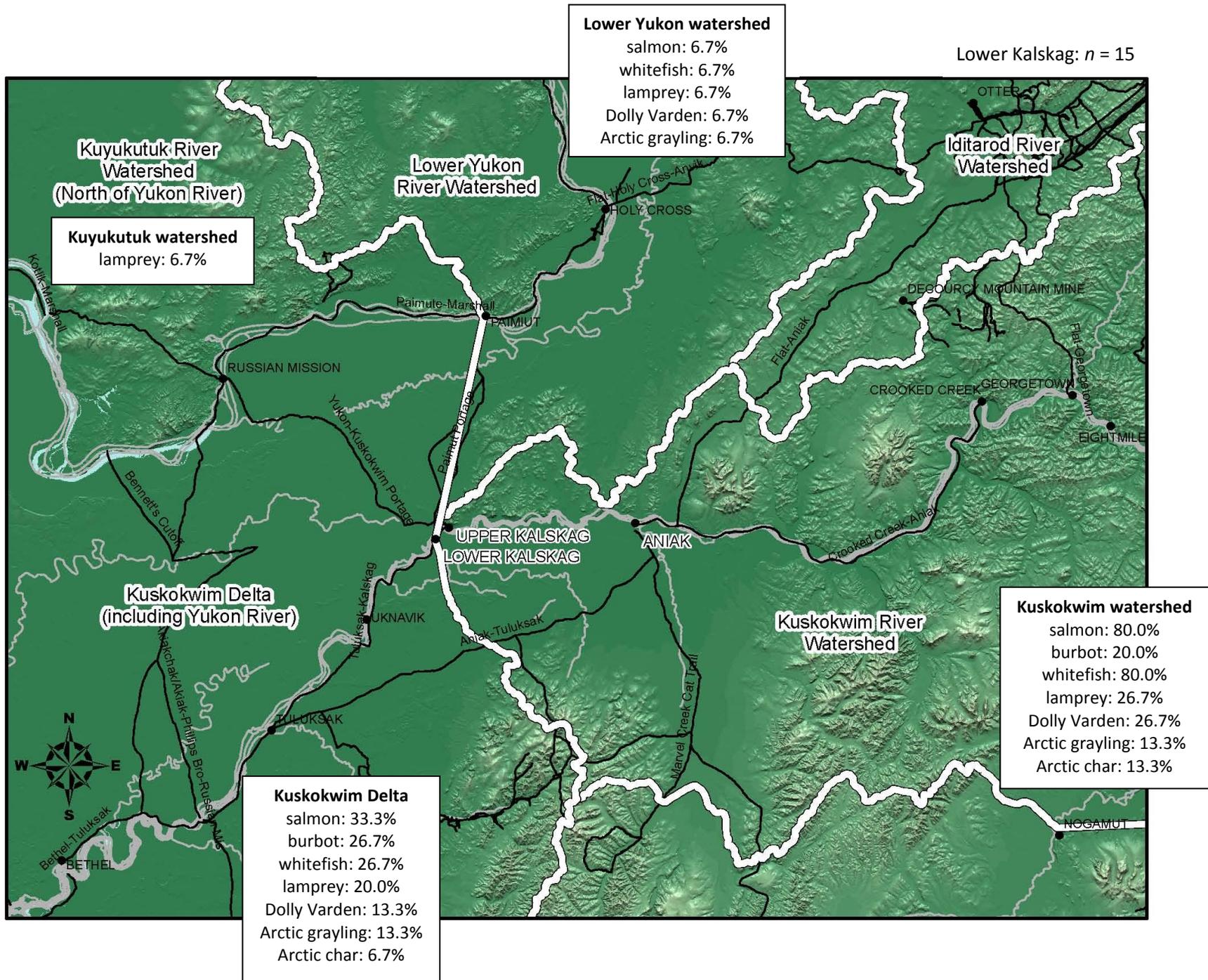
Map 29: Upper Kalskag hunting responses



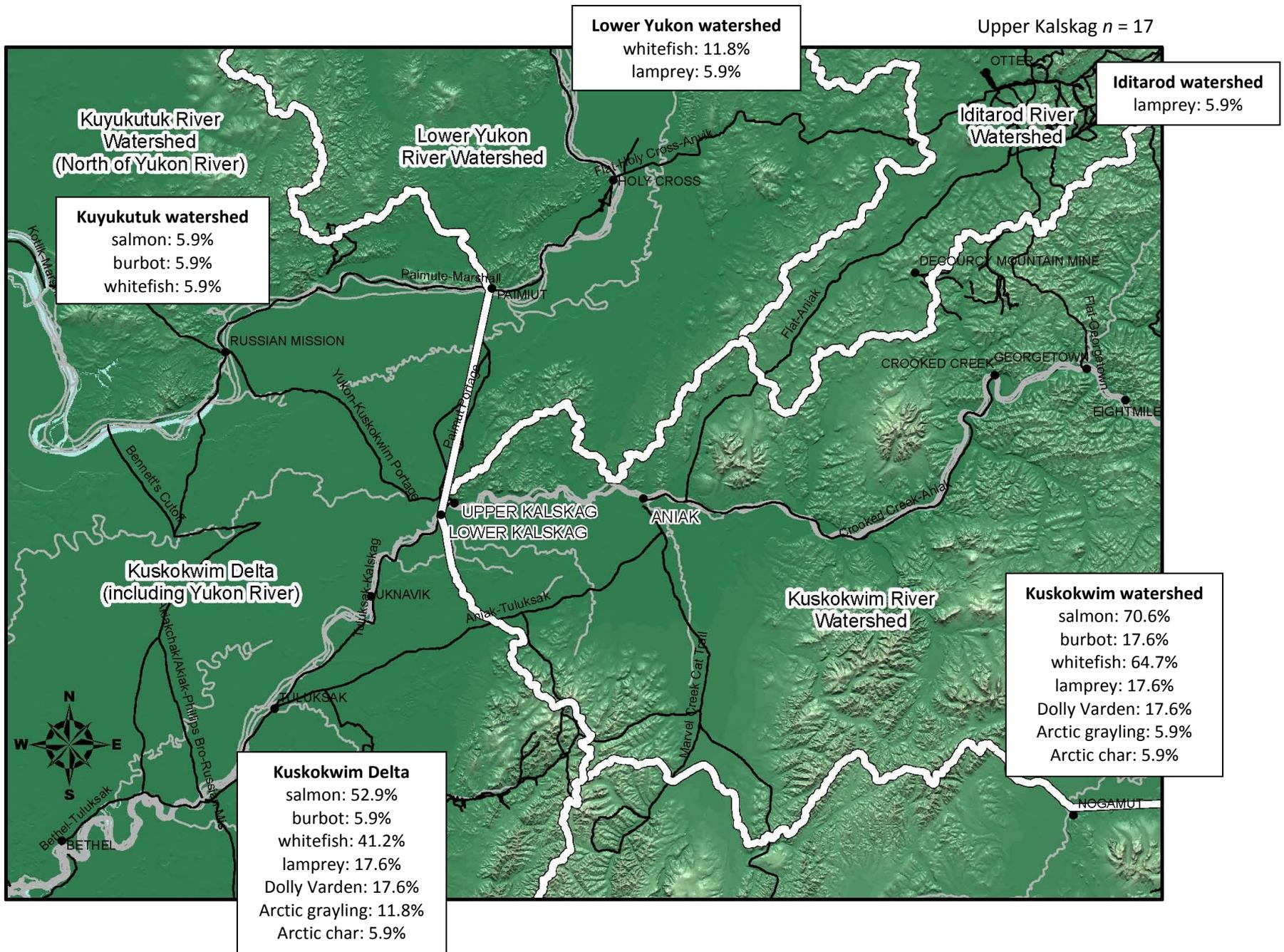
Map 31: Aniak fishing responses



Map 32: Lower Kalskag fishing responses



Map 33: Upper Kalskag fishing responses

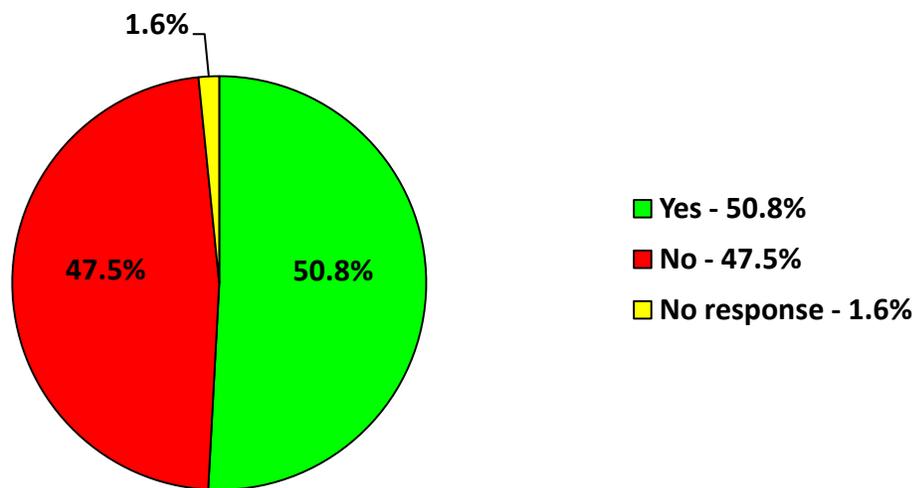


Subsistence Needs

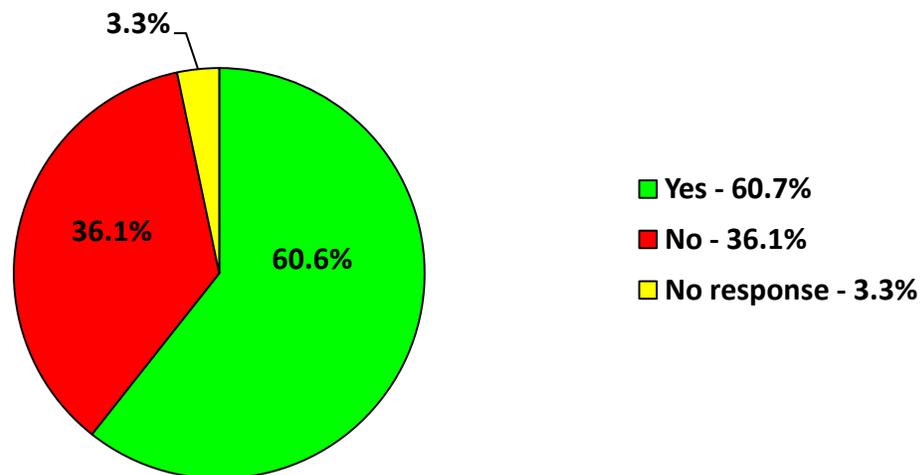
In the region as a whole, 31 respondents (50.8%) agreed that they met their household's subsistence hunting needs for moose, caribou, black bear and brown bear and 37 respondents (60.6%) agreed that they met their household's subsistence fishing needs for salmon, burbot, whitefish, lamprey, Dolly Varden, Arctic grayling and Arctic char in the previous year, seen in Figure 38 below. Eleven households in Aniak (37.9%), ten households in Lower Kalskag (66.7%) and ten households in Upper Kalskag (58.8%) responded that they met their subsistence hunting needs. Twenty-one households in Aniak (72.4%), nine households in Lower Kalskag (60.0%) and seven households in Upper Kalskag (41.2%) responded that they met their subsistence fishing needs in the previous year, seen in Figure 38 -Figure 41 on pages 87 - 89.

Figure 38: Lower Kuskokwim - Were your household's subsistence needs met in the previous year?

Were your household's subsistence **hunting** needs met in the previous year?



Were your household's subsistence **fishing** needs met in the previous year?

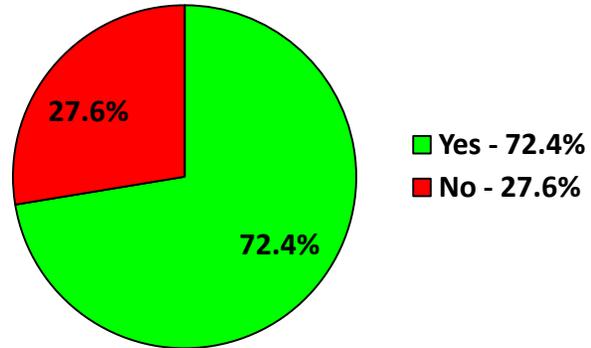
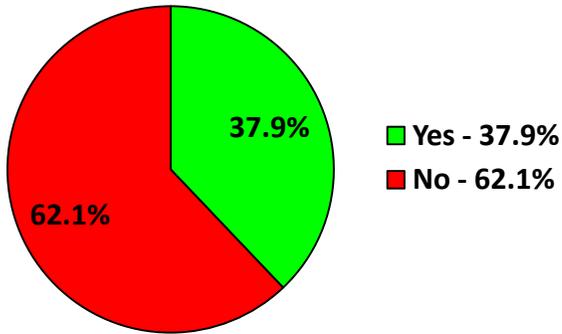


Notes: Number of households, Total: $n = 61$. Aniak: $n = 29$; Lower Kalskag: $n = 15$; Upper Kalskag: $n = 17$.

Figure 39: Aniak - Were your household's subsistence needs met between October 2009 and September 2010?

Were your household's subsistence **hunting** needs met between October 2009 and September 2010?

Were your household's subsistence **fishing** needs met between October 2009 and September 2010?

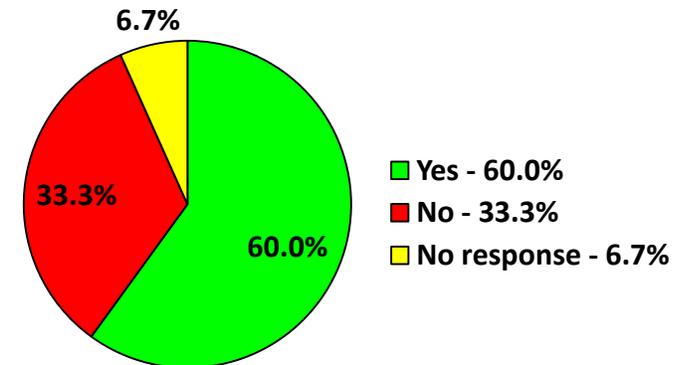
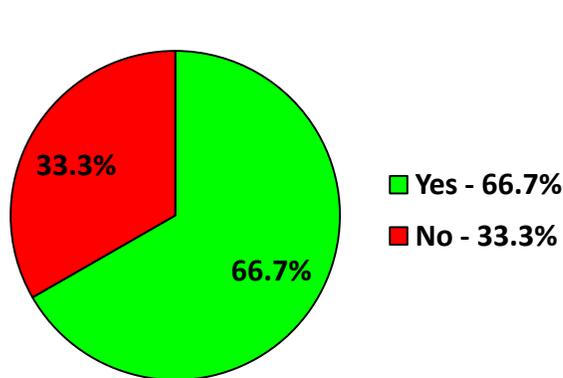


Notes: Number of households, Aniak: $n = 29$.

Figure 40: Lower Kalskag - Were your household's subsistence needs met between October 2009 and September 2010?

Were your household's subsistence **hunting** needs met between October 2009 and September 2010?

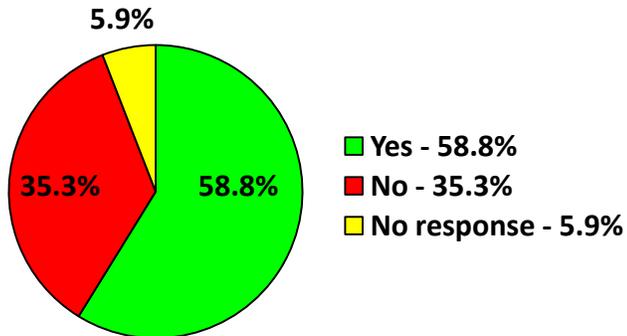
Were your household's subsistence **fishing** needs met between October 2009 and September 2010?



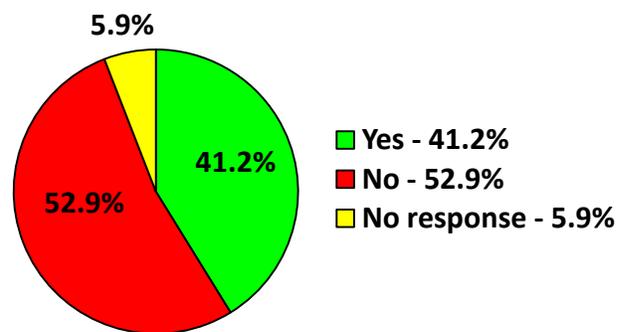
Notes: Number of households; Lower Kalskag: $n = 15$.

Figure 41: Upper Kalskag - Were your household's subsistence needs met between October 2009 and September 2010?

Were your household's subsistence **hunting** needs met between October 2009 and September 2010?



Were your household's subsistence **fishing** needs met between October 2009 and September 2010?



Notes: Number of households, Upper Kalskag: $n = 17$.

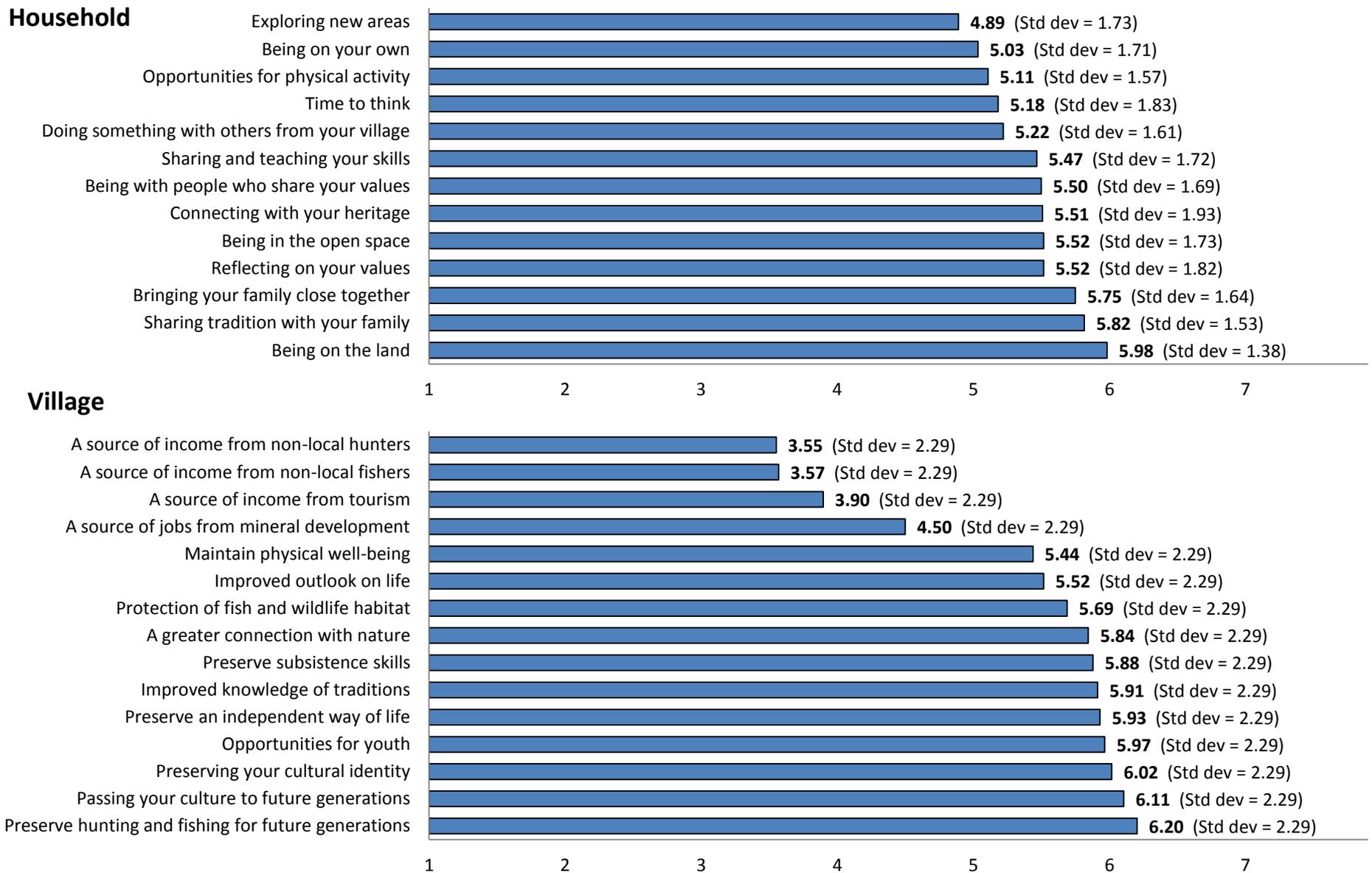
We asked respondents to list for which resources their household's needs were not met. In the Lower Kuskokwim region, twelve respondents commented that their household's needs were not met for moose, two commented that their household's needs were not met for caribou, two for black bear and one respondent commented that they did not meet their household's needs for brown bear. One respondent mentioned musk ox, and small game and bird species. As well, one respondent commented that the hunting season was changing due to climate change and one respondent did not hunt due to lack of transportation. Several respondents also commented that they did not meet their household's subsistence needs, but other families shared meat with them.

Six respondents commented that their fishing needs were not met due to lack of equipment (nets, outboard motors, etc.) Four respondents commented that they did not catch enough salmon, two respondents did not catch enough whitefish and one respondent mentioned other species, such as sheefish and smelts as well as various types of berries.

Reasons land managed by the BLM might be important to your household and village

Figure 42 on page 90 shows responses for Lower Kuskokwim respondents regarding why BLM managed land might be important to their household and village. The first chart shows responses regarding why land managed by the BLM might be important to the **household**; the second chart displays responses regarding why land managed by the BLM might be important to the **village**. Figure 43 on page 91 shows the results from Aniak, Figure 44 on page 92 shows the results from Lower Kalskag and Figure 45 on page 93 shows results from Upper Kalskag. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (not at all important) to 7 (extremely important).

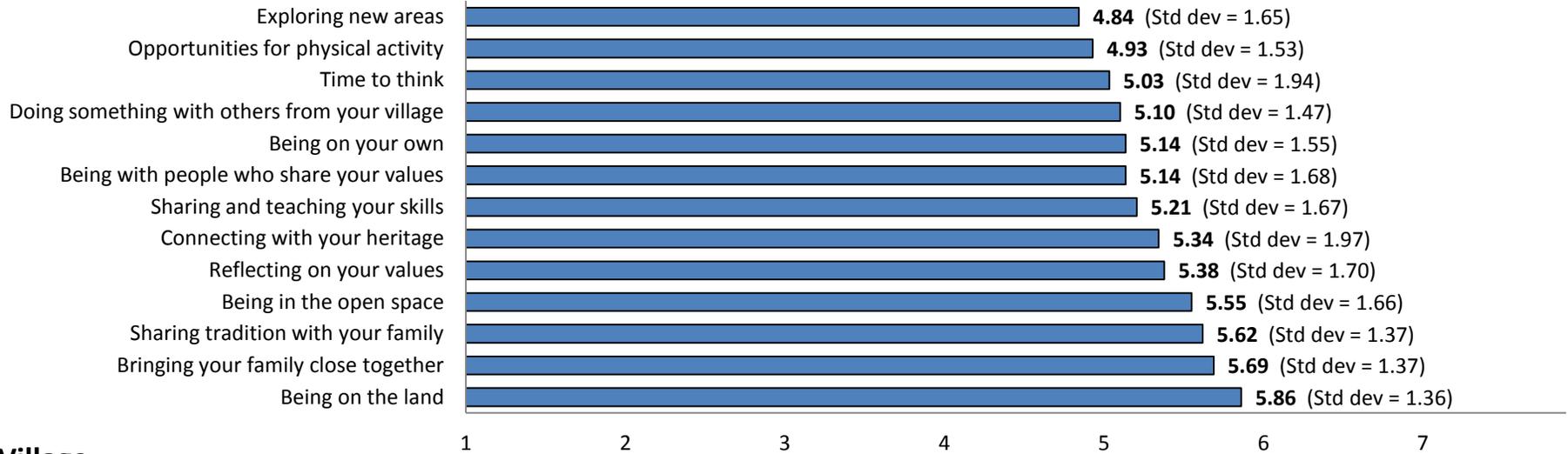
Figure 42: Lower Kuskokwim - Reasons land managed by the BLM might be important to your household and village



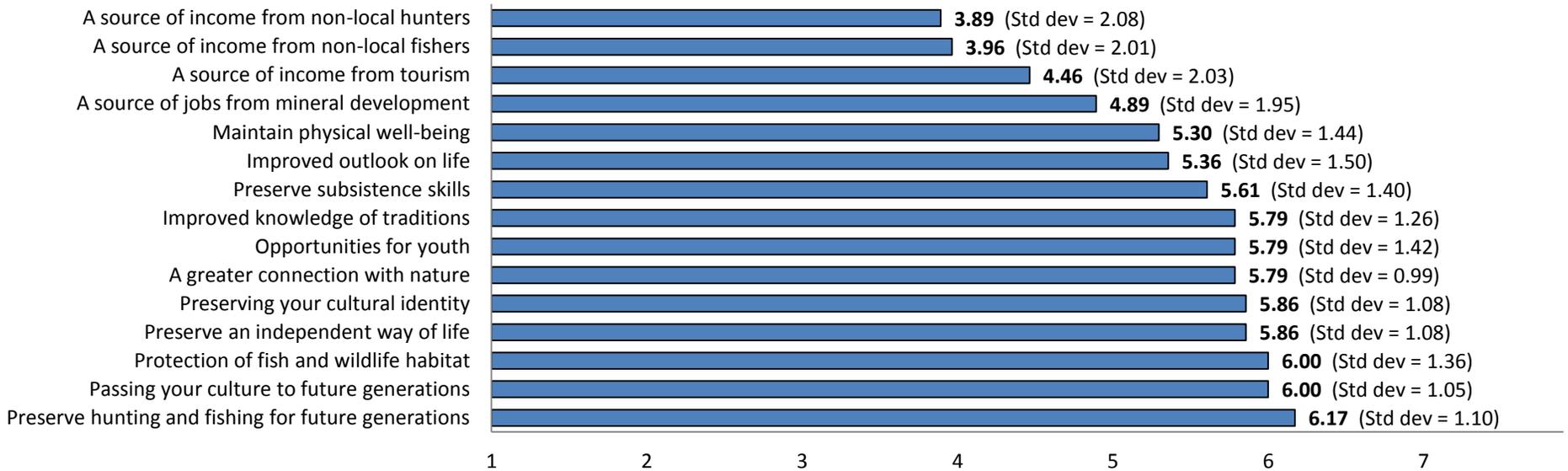
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 57 to 60. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 43: Aniak - Reasons land managed by the BLM might be important to your household and village

Household



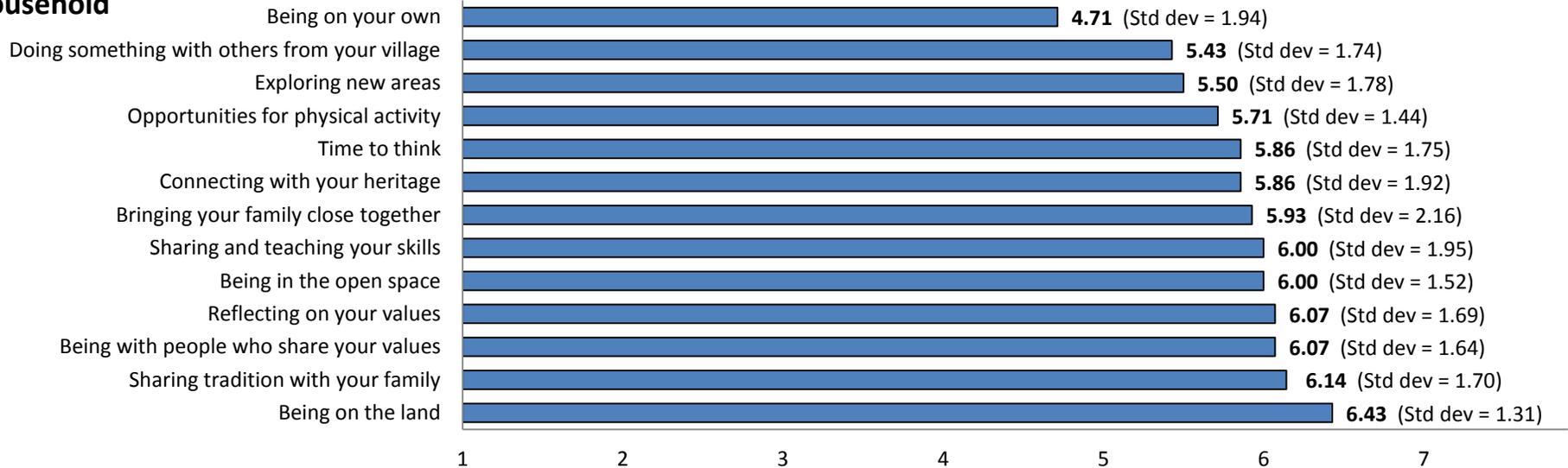
Village



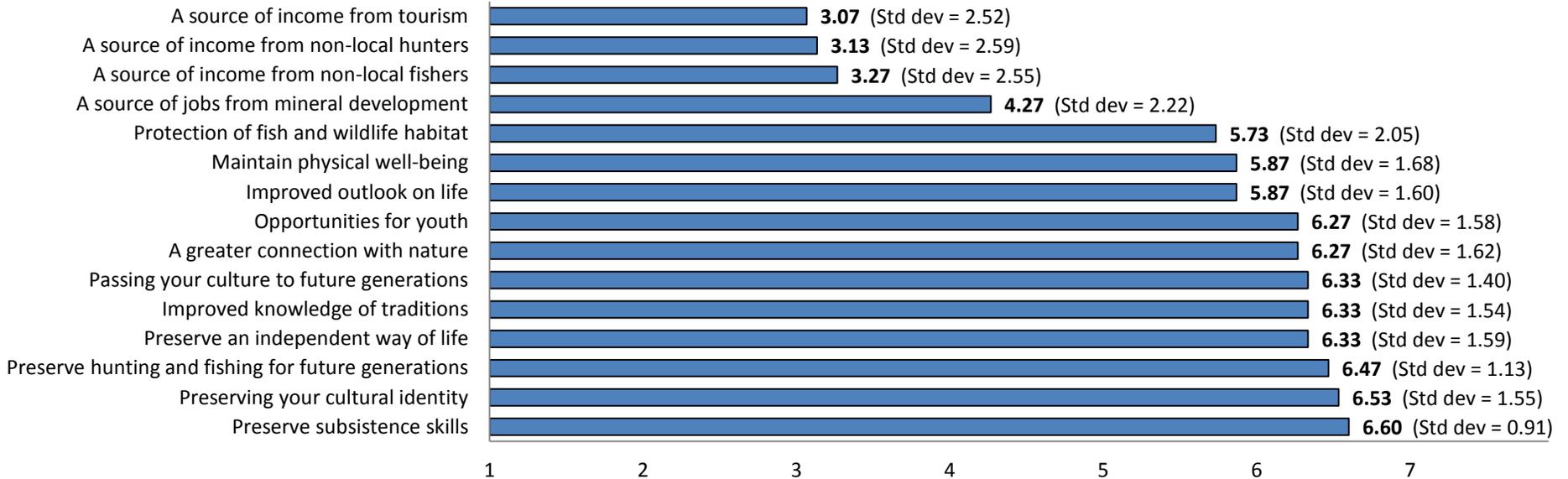
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 27 to 29. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 44: Lower Kalskag - Reasons land managed by the BLM might be important to your household and village

Household



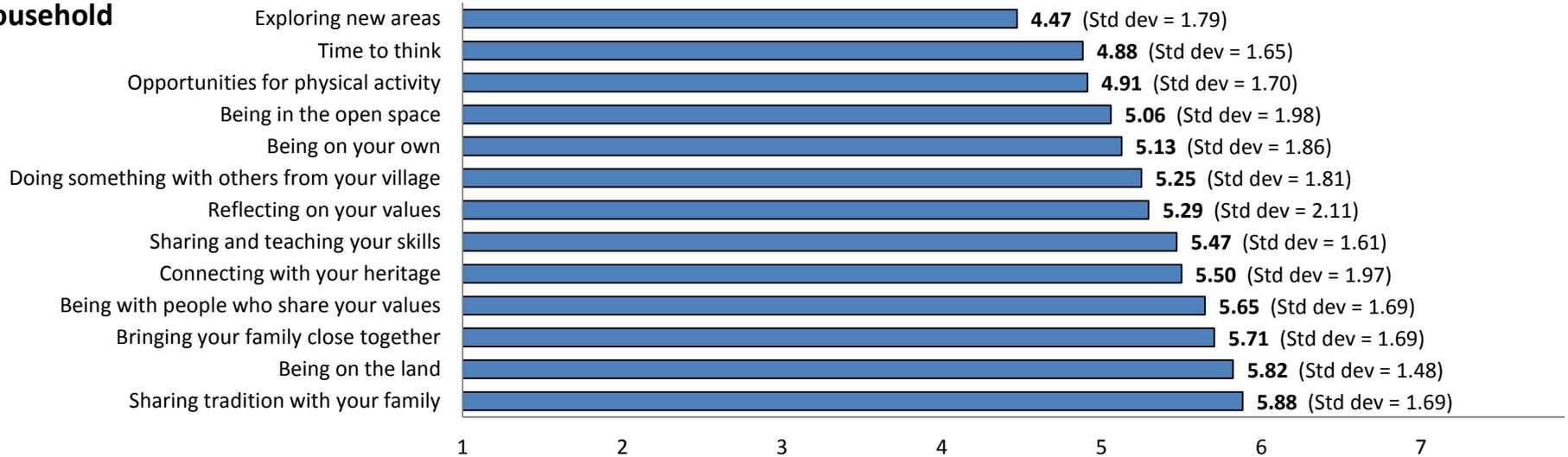
Village



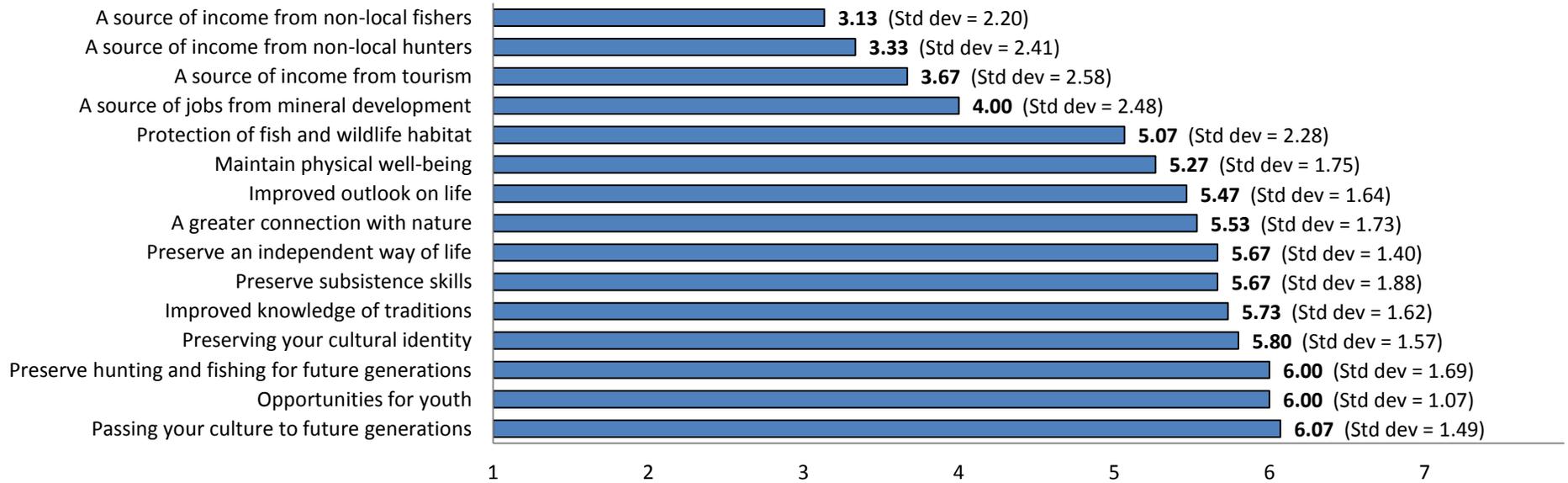
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 14 to 15. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 45: Upper Kalskag - Reasons land managed by the BLM might be important to your household and village

Household



Village



Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest total mean. *ns* ranged from 14 to 17. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Impact of visitors on your village

The survey asked Yukon Delta households to rate whether they agreed or disagreed with a list of statements about the impacts of visitors on their village. Figure 46 below displays responses from Lower Kuskokwim respondents. Figure 47 below shows responses from Aniak. Figure 48 and Figure 49 on page 95 shows responses from Lower Kalskag and Upper Kalskag. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (strongly disagree) to 7 (strongly agree).

Figure 46: Lower Kuskokwim - Impact of visitors on your village

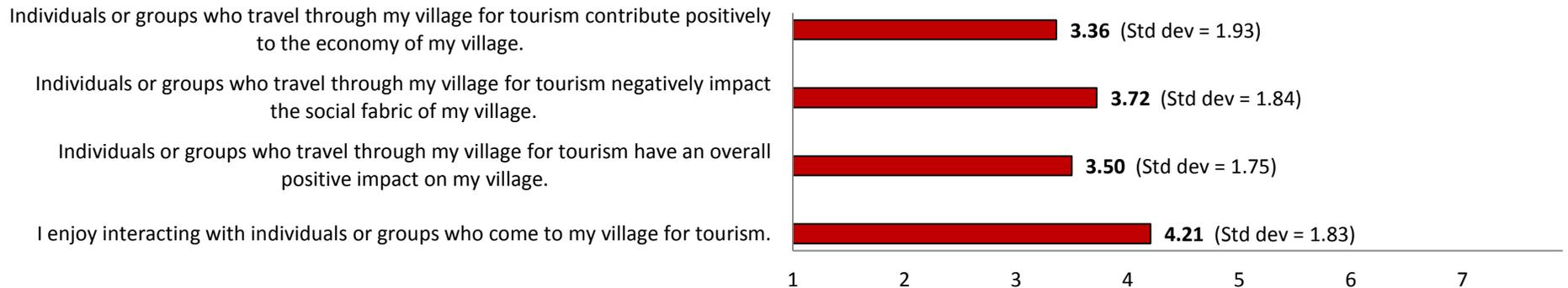
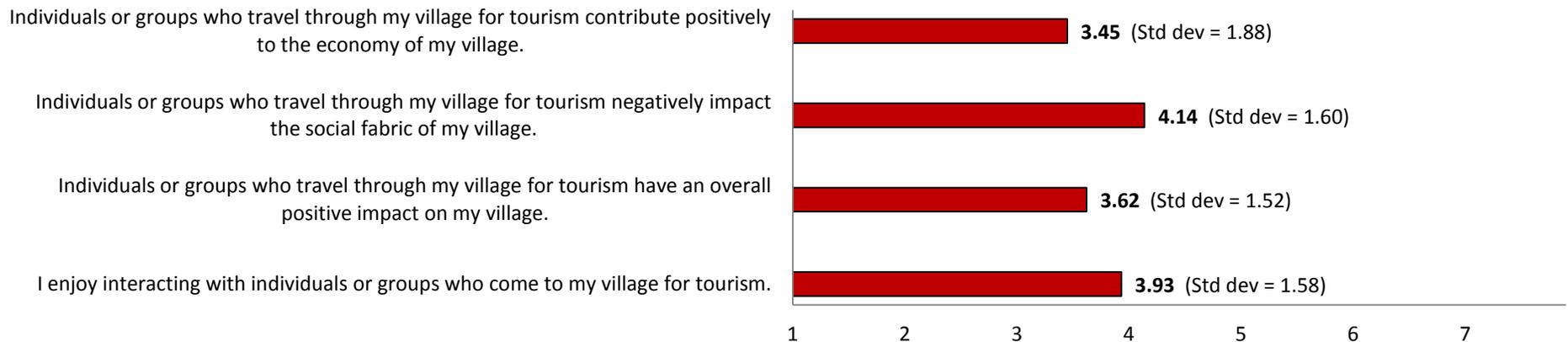


Figure 47: Aniak - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. Lower Kuskokwim: $n = 58$, Aniak: $n = 29$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 48: Lower Kalskag - Impact of visitors on your village

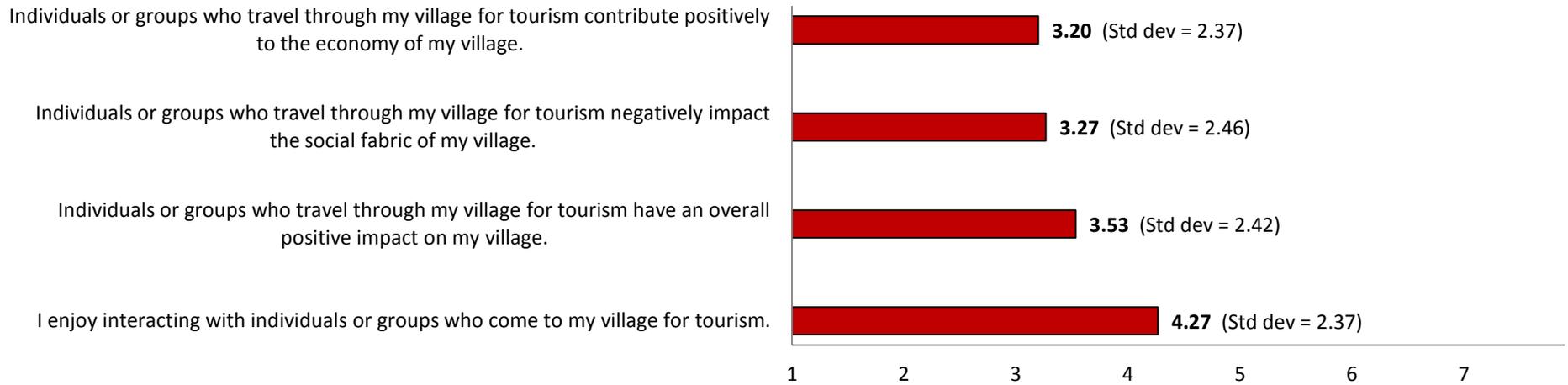
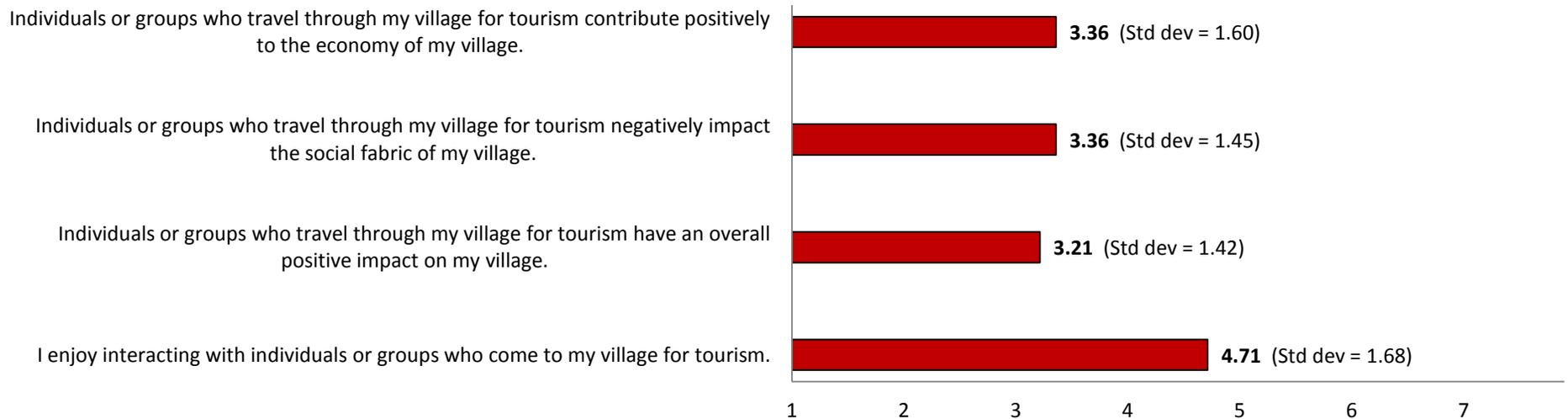


Figure 49: Upper Kalskag - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. Lower Kalskag: $n = 15$, Upper Kalskag: $n = 14$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Upper Kuskokwim Region Results

Crooked Creek, Red Devil, Sleetmute and Stony River

Between November 2010 and March 2011 we surveyed the CDPs of Crooked Creek, Red Devil, Sleetmute and Stony River by mail.

The 2010 U.S. Census reported 38 occupied households in Crooked Creek, 12 occupied households in Red Devil, 36 occupied households in Sleetmute and 20 occupied households in Stony River.

We surveyed 85 of the 106 households in the region (80.2% of occupied households). We surveyed 32 households (84.2% of occupied households) in Crooked Creek, 12 households in Red Devil (100% of occupied households), 27 households (75.0% of occupied households) in Sleetmute and 14 households (70.0% of occupied households) in Stony River. We received 6 surveys back from Crooked Creek, an 18.8% response rate; 2 surveys from Red Devil, a 16.7% response rate; 8 surveys from Sleetmute, a 29.6% response rate; and 9 surveys from Stony River, a 64.3% response rate. In the region as a whole, we received 25 completed surveys, a response rate of 29.4%, seen in Table 18 below.

Table 18: Upper Kuskokwim - Response Rates

Village	Number of households	Households surveyed	Households surveyed (%)	Returned surveys	Response rate (%)
Crooked Creek	38	32	84.2	6	18.8
Red Devil	12	12	100.0	2	16.7
Sleetmute	36	27	75.0	8	29.6
Stony River	20	14	70.0	9	64.3
Totals	106	85	80.2	25	29.4

We surveyed the households in each village in approximate proportion to the size of each village. Please note that the CDP of Stony River is over-represented in this sample and the CDPs Crooked Creek and Red Devil are slightly under-represented in this sample, seen in Table 19 below. However, this does not skew the results in the hunting and fishing section.

Table 19: Upper Kuskokwim - Proportion of returned surveys by each village

Village	Proportion of households in the region	Proportion of households Surveyed	Proportion of Returned Surveys
Crooked Creek	0.36	0.38	0.24
Red Devil	0.11	0.14	0.08
Sleetmute	0.34	0.32	0.32
Stony River	0.19	0.16	0.36
Totals	1.00	1.00	1.00

Due to the small sample sizes from this region, we combined the survey data from all four CDPs into one sample. Of the surveys returned from Crooked Creek, the confidence interval is 36.6% at the 95% level. Of the surveys from Red Devil, the confidence interval is 66.1% at the 95% level; from Sleetmute, the confidence interval is 29.6% at the 95% level and from Stony River, the confidence interval is 20.3% at the 95% level. Of the surveys returned from the Upper Kuskokwim region as a whole, the confidence interval is 16.6% at the 95% level, seen in Table 20 below.

Table 20: Upper Kuskokwim - Confidence intervals at the 95% level

Village	Confidence level	Households surveyed	Returned surveys	Confidence Interval (%)
Crooked Creek	95%	32	6	36.6
Red Devil	95%	12	2	66.1
Sleetmute	95%	27	8	29.6
Stony River	95%	14	9	20.3
Totals	95%	85	25	16.6

Note: Confidence intervals are calculated assuming maximum variance in the population, i.e. 50% have a characteristic and 50% do not. For many questions on the survey it is likely the population had less than maximum variance.

Harvest of Subsistence Resources

We developed a map that divided the Upper Kuskokwim BSWI region into four watersheds: the Kuskokwim, Upper Kuskokwim, Yukon and the Iditarod watersheds. We included a copy of this map with each survey packet that we sent to each household. Respondents used these maps to document which watersheds they hunted and fished in during the previous year. Please note that some Upper Kuskokwim respondents returned a survey, but did not answer every question. When calculating percentages in the hunting and fishing maps, we treated non-responses as “did not hunt or fish in the area”.

Map 34 and Map 35 on pages 98 and 99 show the percentage of households from the Upper Kuskokwim region that hunted and fished for each species in each watershed during the previous year.

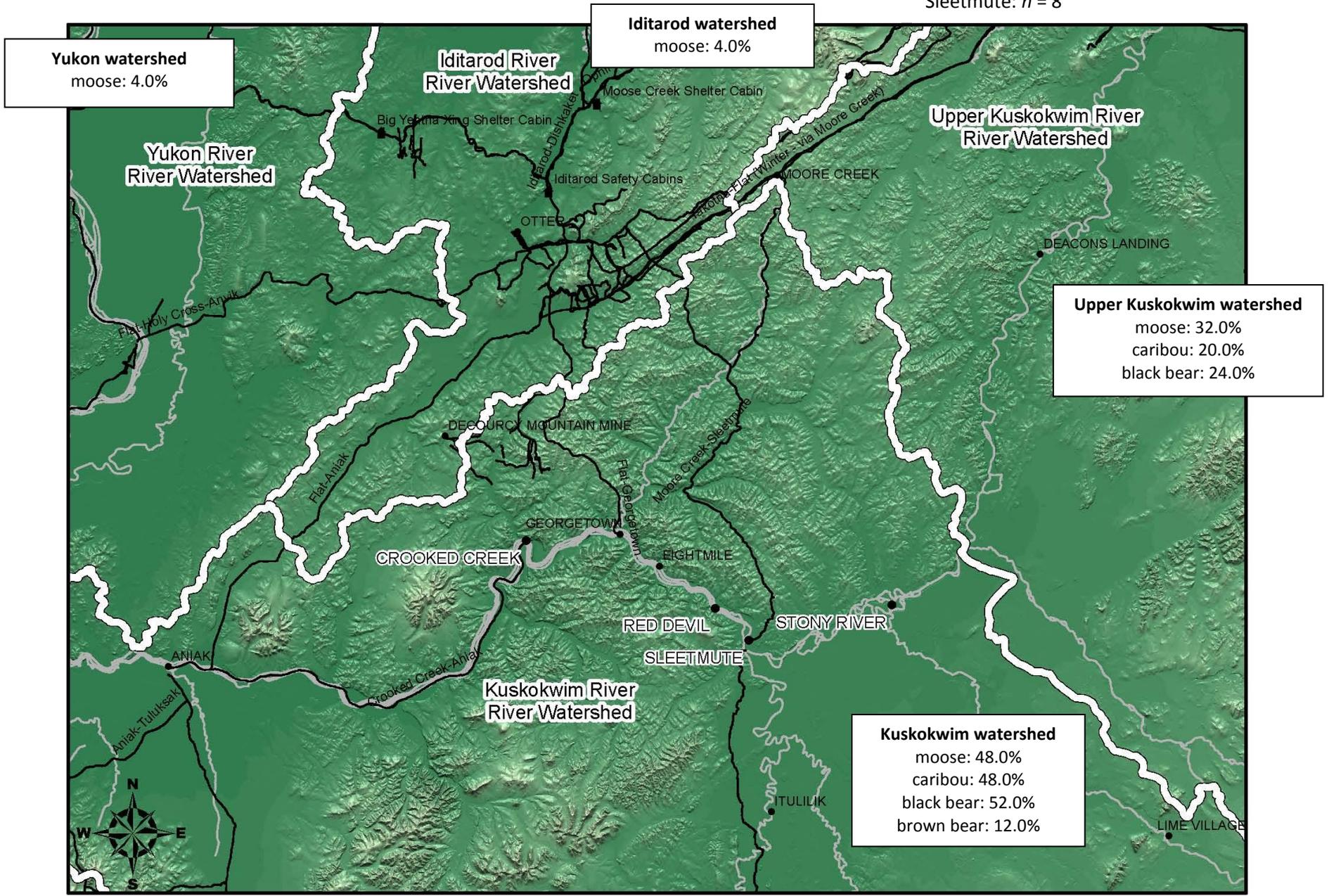
Respondents from all four CDPs indicated that the Kuskokwim and Upper Kuskokwim watersheds were very important areas for hunting and fishing in the previous year. Thirteen households (52.0%) hunted in the Kuskokwim watershed and eight households (32.0%) hunted in the Upper Kuskokwim watershed. As well, one household (4.0%) hunted in the Lower Yukon and Iditarod watersheds. Sixteen households (64.0%) fished in the Kuskokwim watershed and ten households (40.0%) fished in the Upper Kuskokwim watershed. No Upper Kuskokwim respondents indicated that members of their households fished in the Yukon or Iditarod watersheds during the previous year.

Subsistence Needs

In the Upper Kuskokwim region as a whole, eight households (32.0%) responded that they met their subsistence hunting needs moose, caribou, black bear and brown bear in the previous year. Seventeen households (68.0%) responded that they met their subsistence fishing needs for salmon, burbot, whitefish, lamprey, Dolly Varden, Arctic grayling and Arctic char in the previous year, seen in Figure 50 on page 100.

Map 34: Upper Kuskokwim hunting responses

Crooked Creek: $n = 6$ Stony River: $n = 9$
 Red Devil: $n = 2$ Total: $n = 25$
 Sleetmute: $n = 8$



Map 35: Upper Kuskokwim fishing responses

Crooked Creek: $n = 6$ Stony River: $n = 9$
 Red Devil: $n = 2$ Total: $n = 25$
 Sleetmute: $n = 8$

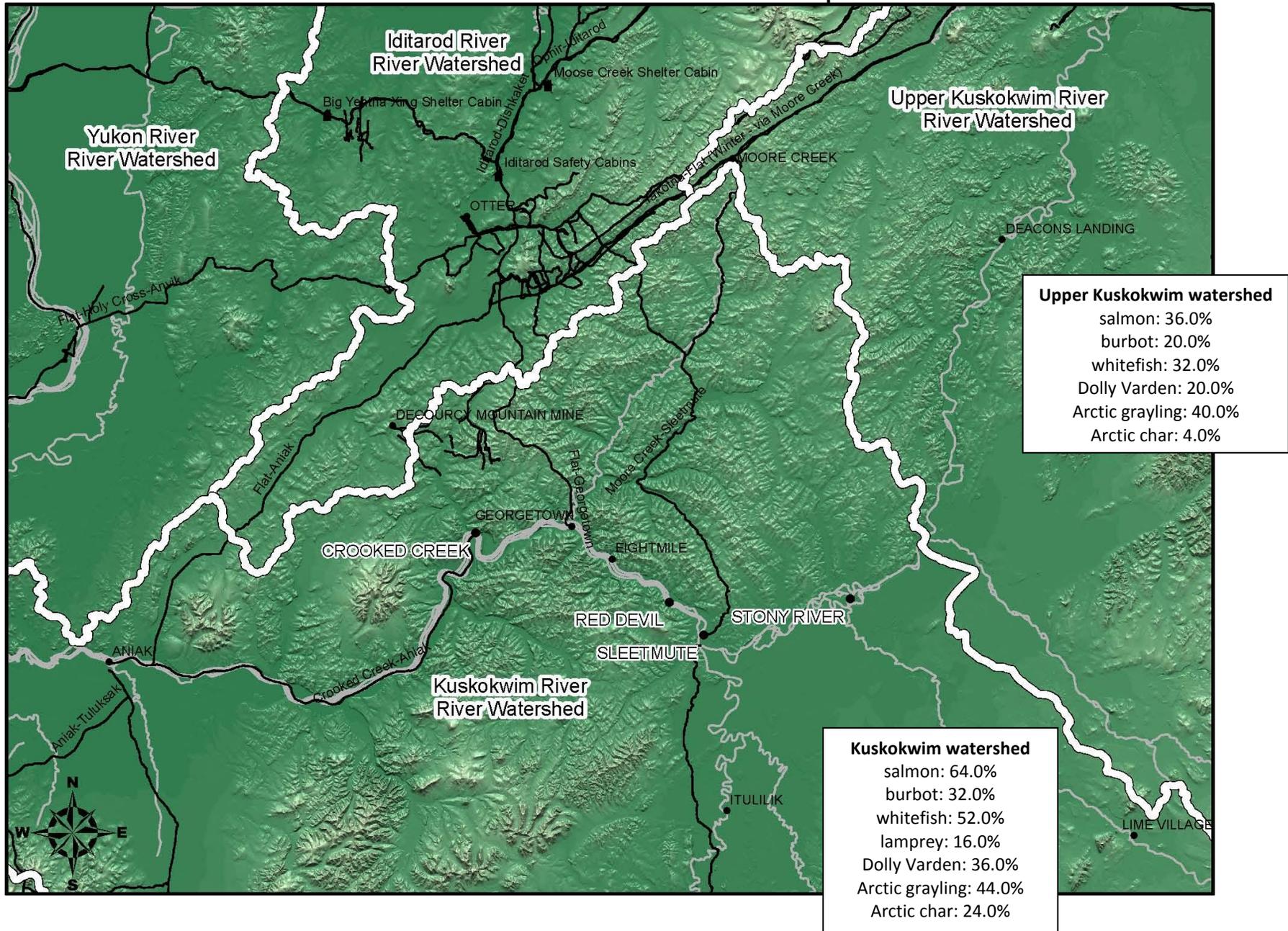
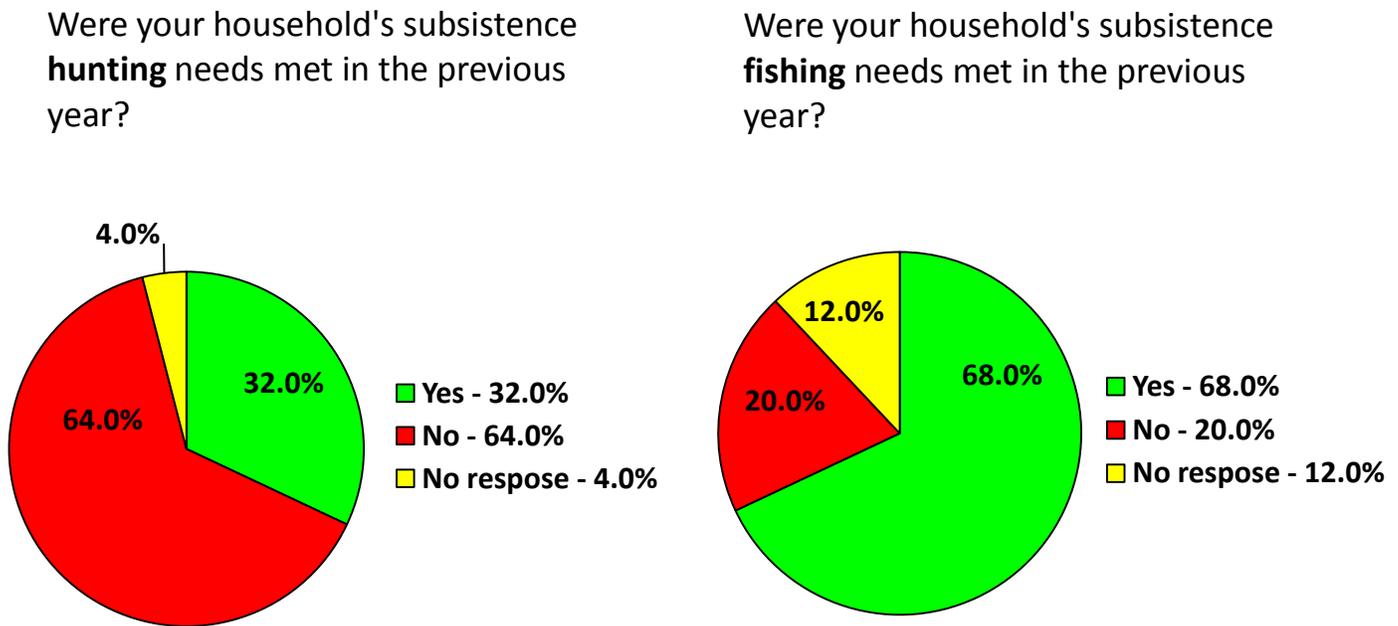


Figure 50: Upper Kuskokwim - Were your household's subsistence needs met in the previous year?



Notes: Number of households, total: $n = 25$. Crooked Creek: $n = 6$, Red Devil: $n = 2$, Sleetmute: $n = 8$, Stony River: $n = 9$.

In the Upper Kuskokwim region, nine respondents commented that their household's needs were not met in the previous year for moose and five respondents commented that their household's needs were not met for caribou. Two respondents commented that they did not meet their household's needs for all resources the survey asked about. Four respondents commented that their areas were closed to hunting, and two respondents commented that there were too many downriver hunters and sport hunters in the area.

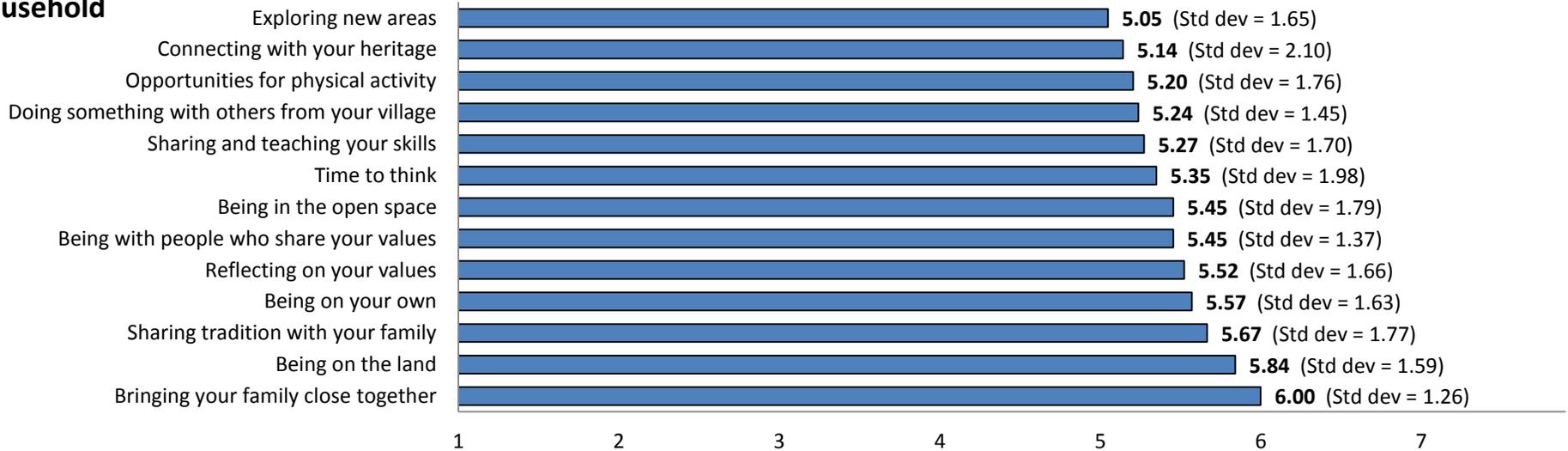
Two respondents commented that their household's needs were not met for king salmon in the previous year. Two respondents also commented that their household's needs were not met because of a lack of equipment. One respondent commented that none of their household's subsistence fishing needs were met, one respondent commented that their household's subsistence needs were not met because ADF&G opened the commercial season during salmon runs and one respondent commented that members of their household fish throughout the open water season and they never travel to fish because they live on the Kuskokwim river.

Reasons land managed by the BLM might be important to your household and village

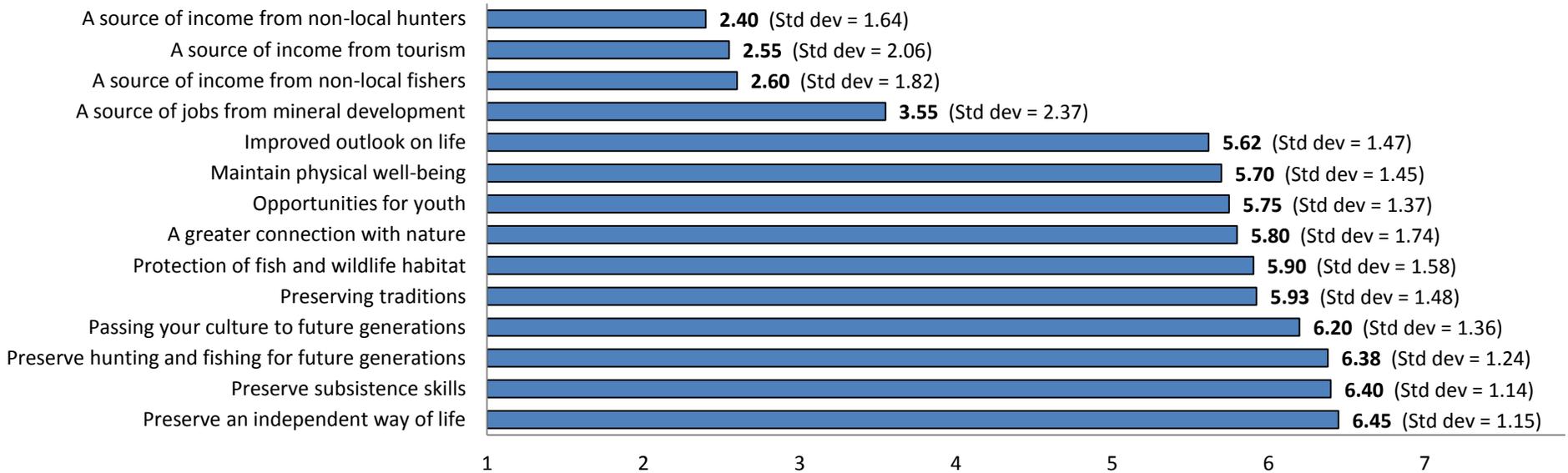
Figure 51 on page 101 shows the responses from Upper Kuskokwim respondents regarding why BLM managed land might be important to their household and village. The first chart shows responses regarding why land managed by the BLM might be important to the **household**; the second chart displays responses regarding why land managed by the BLM might be important to the **village**. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (not at all important) to 7 (extremely important).

Figure 51: Upper Kuskokwim - Reasons land managed by the BLM might be important to your household and village

Household



Village

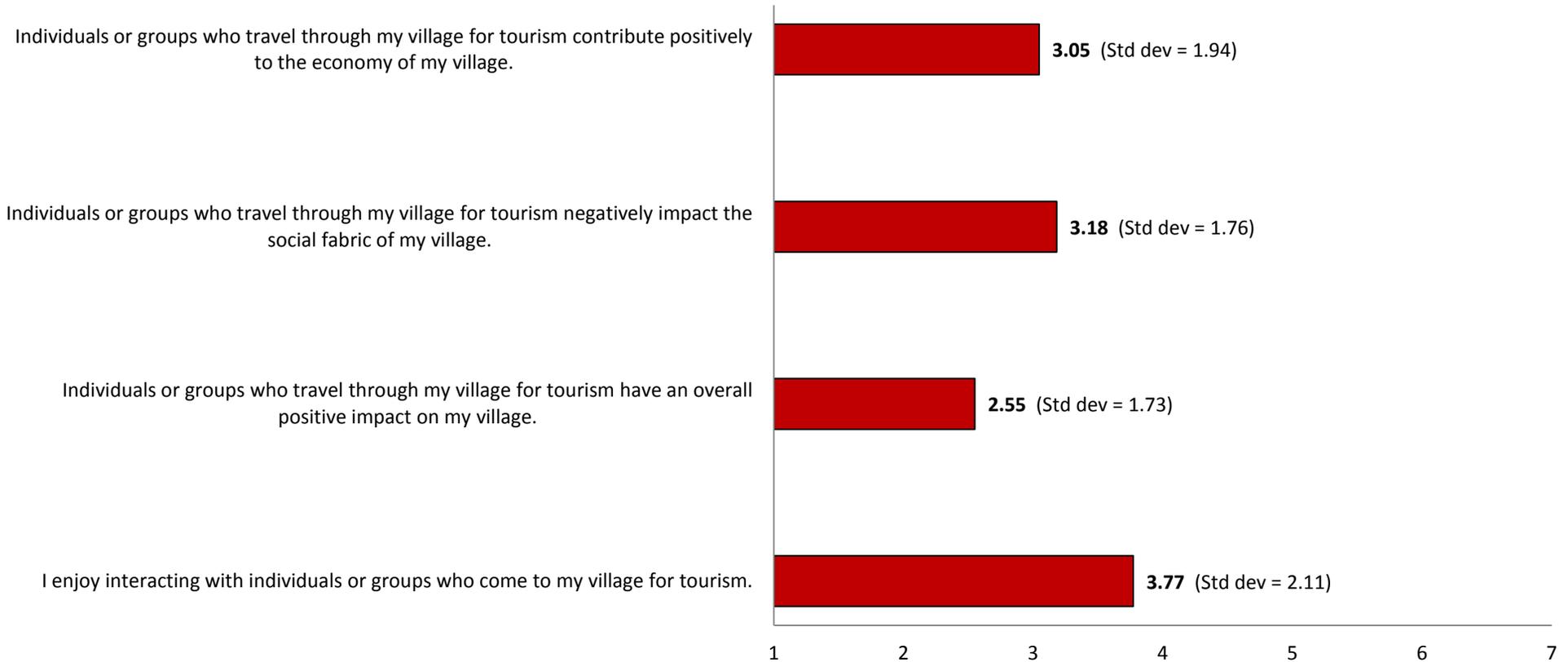


Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 20-22. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Impact of visitors on your village

The survey asked Upper Kuskokwim households to rate whether they agreed or disagreed with a list of statements about the impacts of visitors on their village. Figure 52 below displays the responses from all Upper Kuskokwim respondents. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (strongly disagree) to 7 (strongly agree).

Figure 52: Upper Kuskokwim - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. *ns* ranged from 20-22. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Western Interior Region Results

McGrath, Nikolai and Takotna

In October 2010 we worked with the City of McGrath to include the BSWI survey with the city's water bills. We also surveyed the village of Nikolai and the CDP of Takotna by mail between November 2010 and March 2011.

The 2010 U.S. Census reported 147 occupied households in McGrath, 37 occupied households in Nikolai and 22 occupied households in Takotna.

We surveyed 147 households (100% of occupied households) in McGrath, 30 households (81.1% of occupied households) in Nikolai and 22 households (100% of occupied households) in Takotna. We received 20 surveys back from McGrath, a 13.6% response rate; 3 surveys from Nikolai, a 10.0% response rate and 7 surveys from Takotna, a 31.8% response rate. From the Western Interior region as a whole, we received 30 surveys, a response rate of 15.1%, seen in Table 21 below.

Table 21: Western Interior - Response Rates

Village	Number of households	Households surveyed	Households surveyed (%)	Returned surveys	Response rate (%)
McGrath	147	147	100.0	20	13.6
Nikolai	37	30	81.1	3	10.0
Takotna	22	22	100.0	7	31.8
Totals	206	199	96.6	30	15.1

We surveyed the households in each village in approximate proportion to the size of each village and the number of surveys we received from each village was approximately proportional to the number of surveys we sent to each village, seen in Table 22 below.

Table 22: Western Interior - Proportion of returned surveys by each village

Village	Proportion of households in the region	Proportion of households Surveyed	Proportion of Returned Surveys
McGrath	.71	.74	.67
Nikolai	.18	.15	.10
Takotna	.11	.11	.23
Totals	1.00	1.00	1.00

Due to the small number of surveys returned from Nikolai and Takotna, we combined the results from these villages. Of the surveys returned from McGrath, the confidence interval is 20.4% at the 95% level; of the surveys from Nikolai and Takotna, the confidence interval is 28.1% at the 95% level. Of the surveys returned from the Western Interior region as a whole, the confidence interval is 16.5% at the 95% level, seen in Table 23 on page 104.

Table 23: Western Interior - Confidence intervals at the 95% level

Village	Confidence level	Households surveyed	Returned surveys	Confidence Interval (%)
McGrath	95%	147	20	20.4
Nikolai & Takotna	95%	52	10	28.1
Totals	95%	199	30	16.5

Note: Confidence intervals are calculated assuming maximum variance in the population, i.e. 50% have a characteristic and 50% do not. For many questions on the survey it is likely the population had less than maximum variance.

Harvest of Subsistence Resources

We developed a map that divided the Western Interior BSWI region into six watersheds: the Upper Kuskokwim, Middle Kuskokwim, South Fork Kuskokwim, Nixon Fork, Innoko and Nowitna watersheds, seen on page 10. We included a copy of this map with each survey packet sent to each household. Respondents used this map to document which watersheds they hunted and fished in during the previous year. Please note that some Western Interior respondents returned a survey, but did not answer every question. When calculating percentages in the hunting and fishing maps, we treated non-responses as “did not hunt or fish in the area”.

Respondents from all three villages utilized the Upper, South Fork and Middle Kuskokwim watersheds, as well as the Nixon Fork and Innoko watersheds for both hunting and fishing in the previous year, seen in Map 36 and Map 39 on pages 105 and 108.

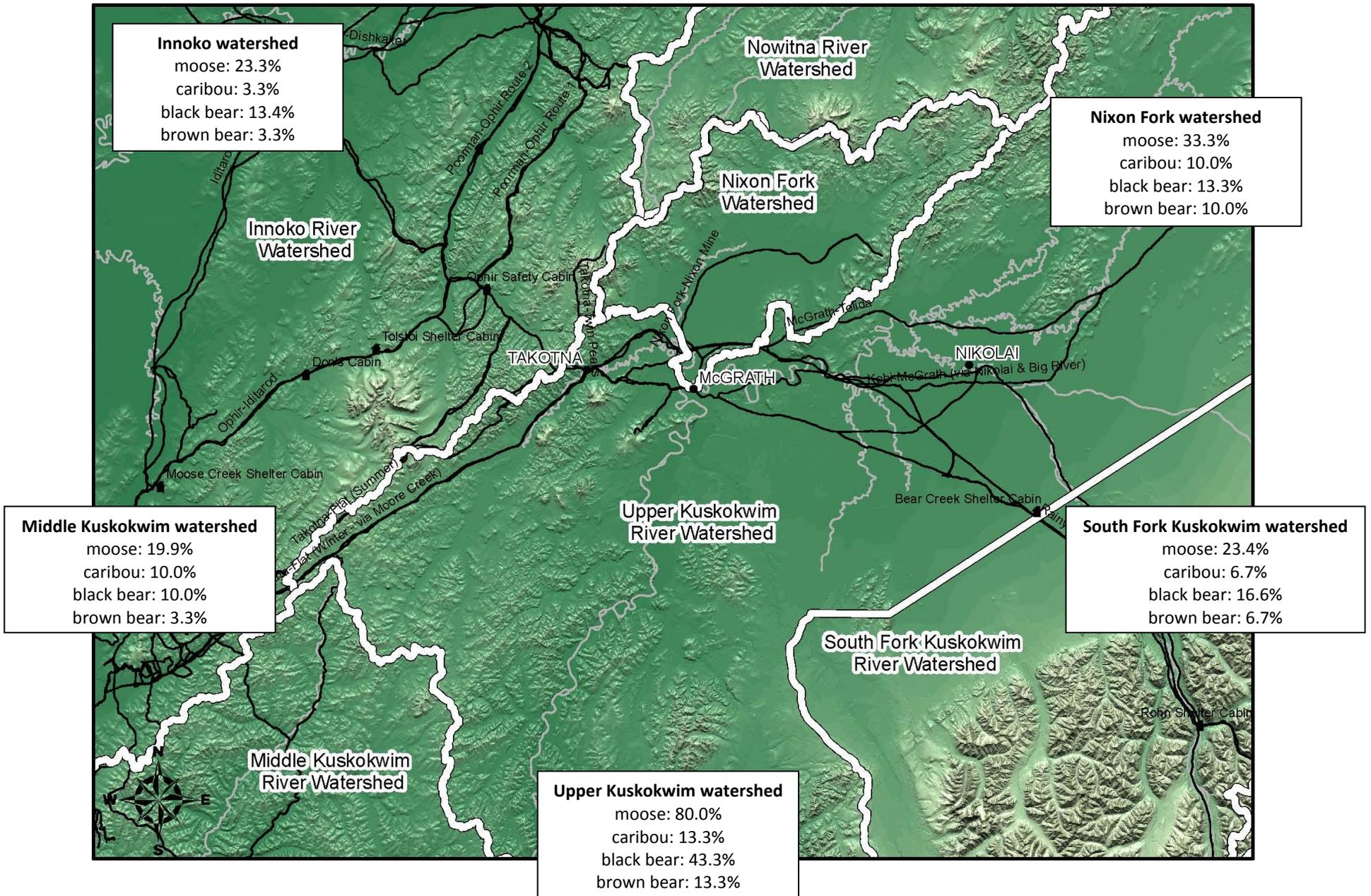
Of the respondents from McGrath, fifteen households (75.0%) hunted in the Upper Kuskokwim watershed and 12 households (60.0%) hunted in the Nixon Fork watershed. Five households (25.0%) hunted in the Middle Kuskokwim watershed, four households (20.0%) hunted in the South Fork Kuskokwim watershed and two households (10.0%) hunted in the Innoko watershed. No households hunted in the Nowitna watershed during the previous year. Seven households (35.0%) fished in the Middle Kuskokwim and Nixon Fork watersheds. Six households (30%) fished in the Upper Kuskokwim watershed and four households (20.0%) fished in the South Fork Kuskokwim watershed. No households fished in the Innoko watershed during the previous year. Map 37 and Map 40 on pages 106 and 109 display the hunting and fishing results from McGrath.

Ten households (100%) from Nikolai and Takotna hunted in the Upper Kuskokwim watershed and six households (60.0%) hunted in the Innoko watershed. Three households (30.0%) hunted in the South Fork Kuskokwim and two households (20.0%) hunted in the Middle Kuskokwim watershed. No households from Nikolai or Takotna hunted or fished in the Nixon Fork watershed. Six households (60.0%) fished in the Upper Kuskokwim watershed and three households (30.0%) fished in the Innoko watershed. Two households (20.0%) fished in the South Fork and Middle Kuskokwim watersheds. Map 38 and Map 41 on pages 107 and 110 display the hunting and fishing results from Nikolai and Takotna.

No respondents from the Western Interior region indicated that members of their household hunted or fished in the Nowitna watershed during the previous year.

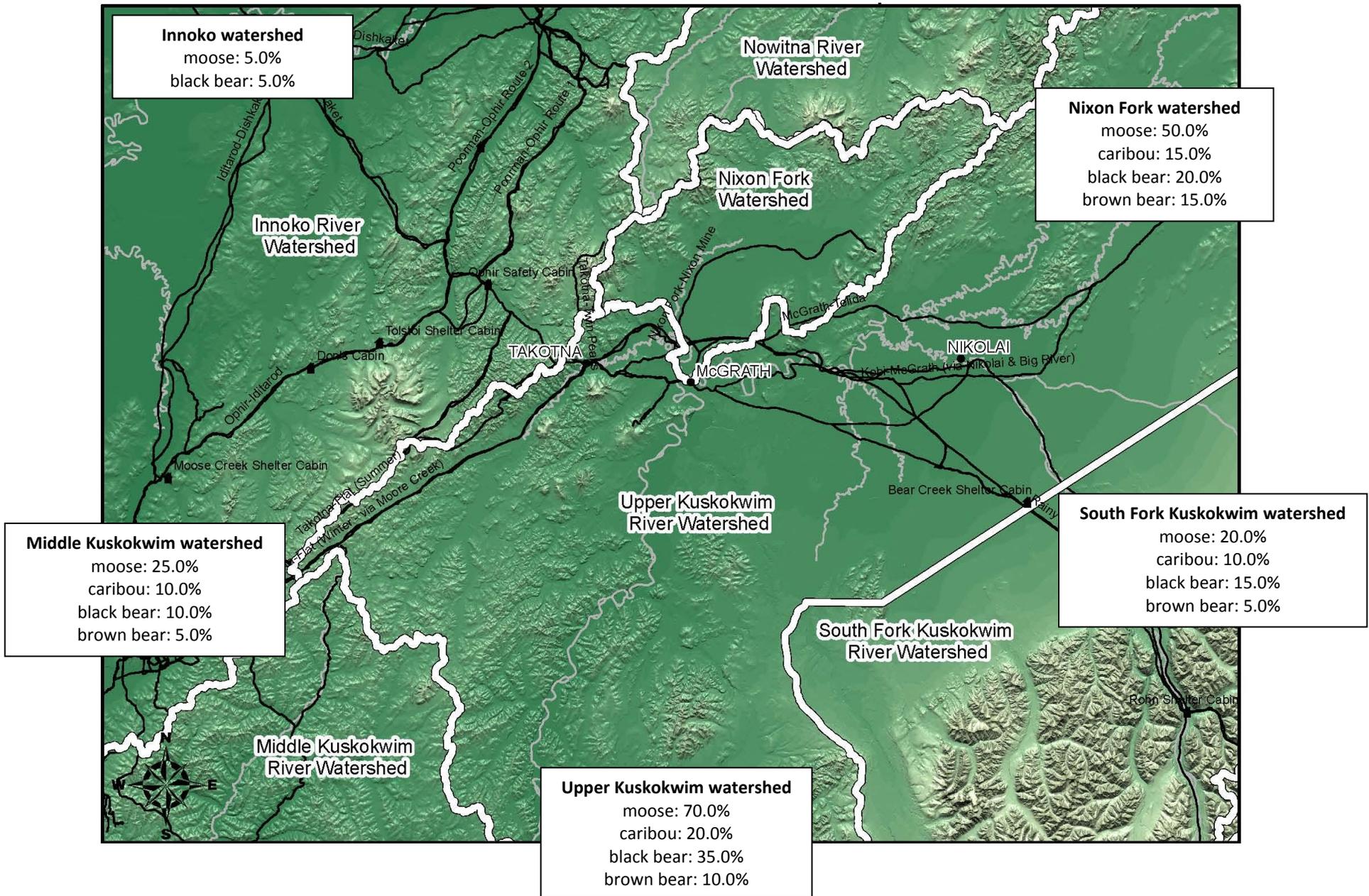
Map 36: Western Interior hunting responses

McGrath: $n = 20$ Takotna: $n = 7$
 Nikolai: $n = 3$ Total: $n = 30$



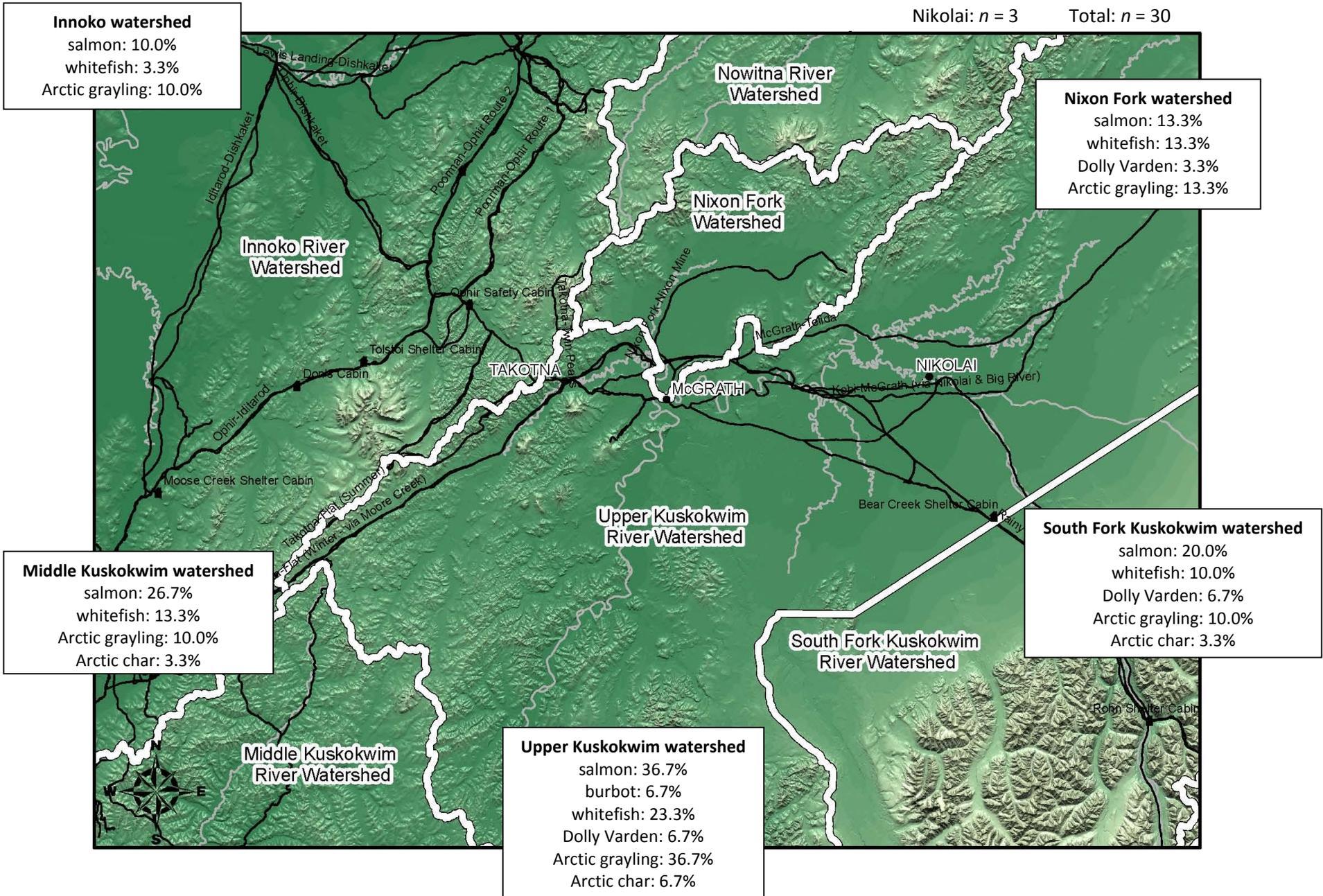
Map 37: McGrath hunting responses

McGrath: $n = 20$



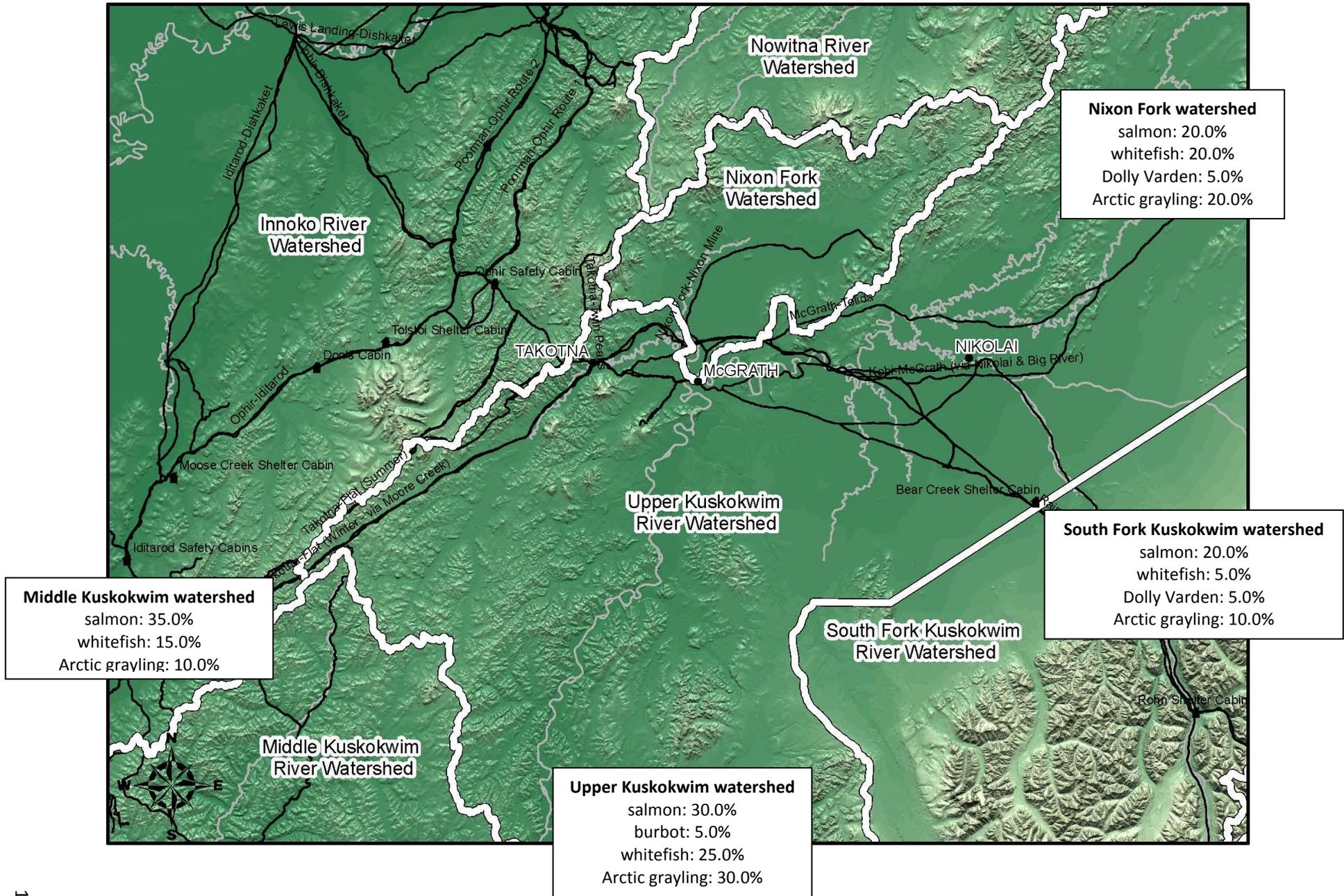
Map 39: Western Interior fishing responses

McGrath: $n = 20$ Takotna: $n = 7$
 Nikolai: $n = 3$ Total: $n = 30$



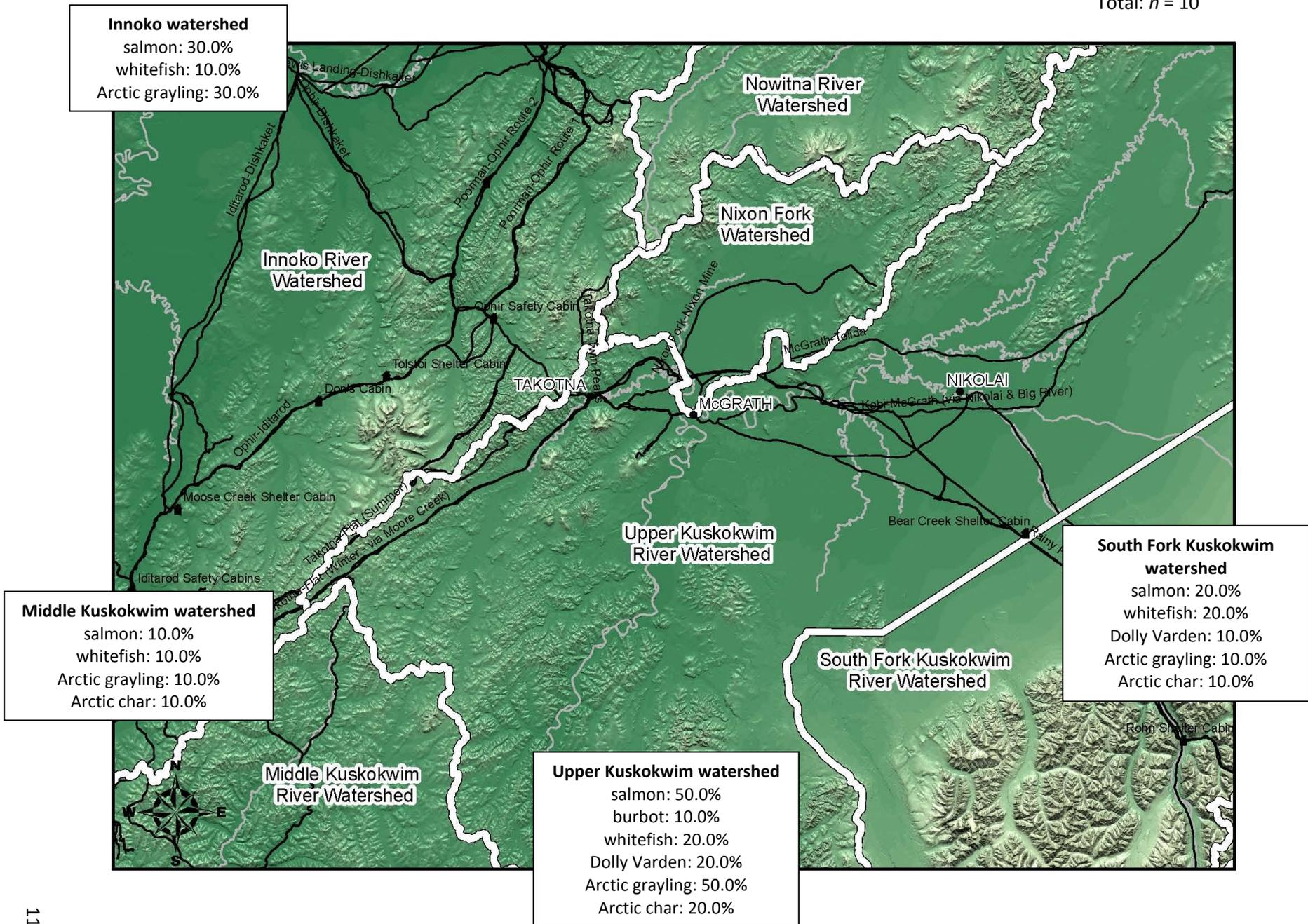
Map 40: McGrath fishing responses

McGrath: n = 20



Map 41: Nikolai & Takotna fishing responses

Nikolai: $n = 3$
 Takotna: $n = 7$
 Total: $n = 10$

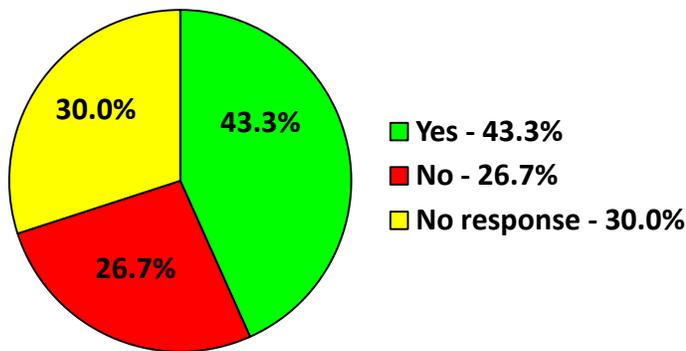


Subsistence Needs

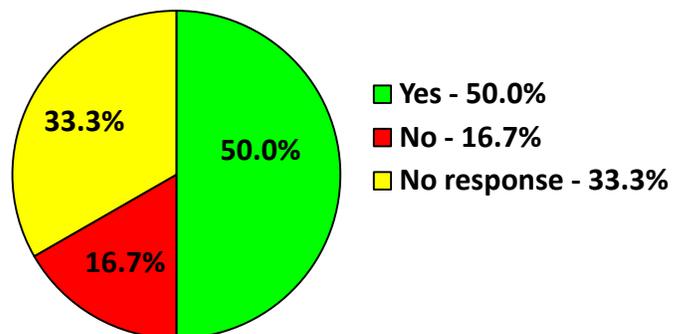
In the region as a whole, 13 respondents (43.3%) agreed that they met their household's subsistence hunting needs for moose, caribou, black bear and brown bear and 15 respondents (50.0%) agreed that they met their household's subsistence fishing needs for salmon, burbot, whitefish, lamprey, Dolly Varden, Arctic grayling and Arctic char in the previous year, seen in Figure 29 below. Six households in McGrath (30.0%) and seven households in Nikolai and Takotna (70.0%) responded that they met their subsistence hunting needs in the previous year. Eleven households in McGrath (55.0%) and four households in Nikolai and Takotna (40.0%) responded that they met their subsistence fishing needs in the previous year, seen in Figure 54 below and Figure 55 on page 112 .

Figure 53: Western Interior - Were your household's subsistence needs met in the previous year?

Were your household's subsistence **hunting** needs met in the previous year?



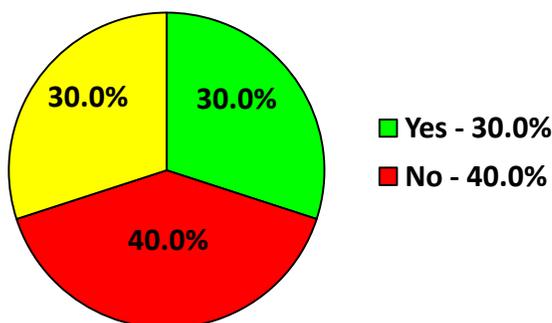
Were your household's subsistence **fishing** needs met in the previous year?



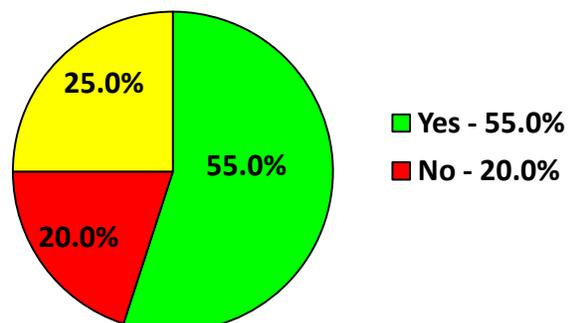
Notes: Number of households, total: $n = 30$; McGrath: $n = 20$; Nikolai: $n = 3$; Takotna: $n = 7$.

Figure 54: McGrath - Were your household's subsistence needs met between October 2009 and September 2010?

Were your household's subsistence **hunting** needs met between October 2009 and September 2010?



Were your household's subsistence **fishing** needs met between October 2009 and September 2010?

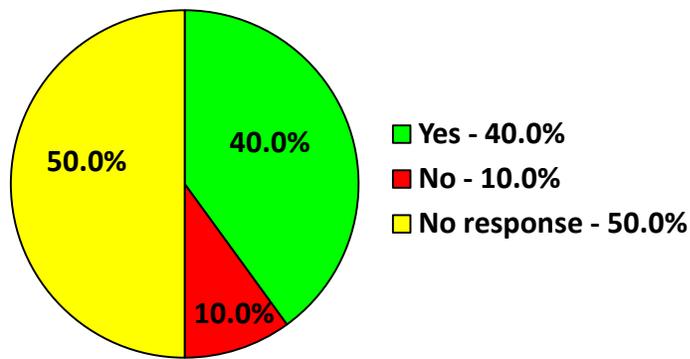
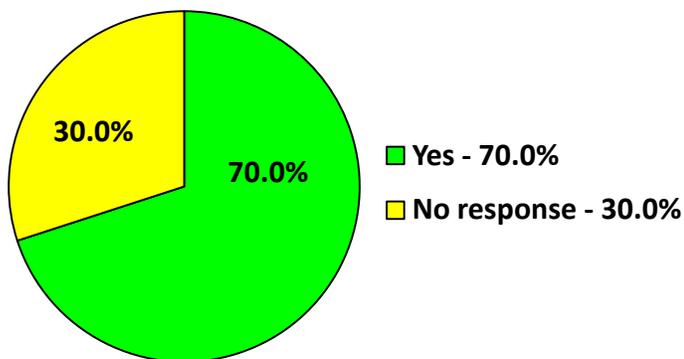


Notes: Number of households, McGrath: $n = 20$

Figure 55: Nikolai & Takotna - Were your household's subsistence needs met between November 2009 and October 2010?

Were your household's subsistence **hunting** needs met between November 2009 and October 2010?

Were your household's subsistence **fishing** needs met between November 2009 and October 2010?



Notes: Number of households, total: $n = 10$, Nikolai: $n = 3$; Takotna: $n = 7$.

In the Western Interior region, four respondents commented that their household's needs were not met for moose, two respondents commented that their household's needs were not met for caribou and one respondent commented that their household's needs were not met for bear. As well, two respondents commented that they did not get enough animals to meet their subsistence needs and one respondent commented that small game (rabbits and grouse) are important subsistence resources. One respondent also commented that they did not collect enough firewood.

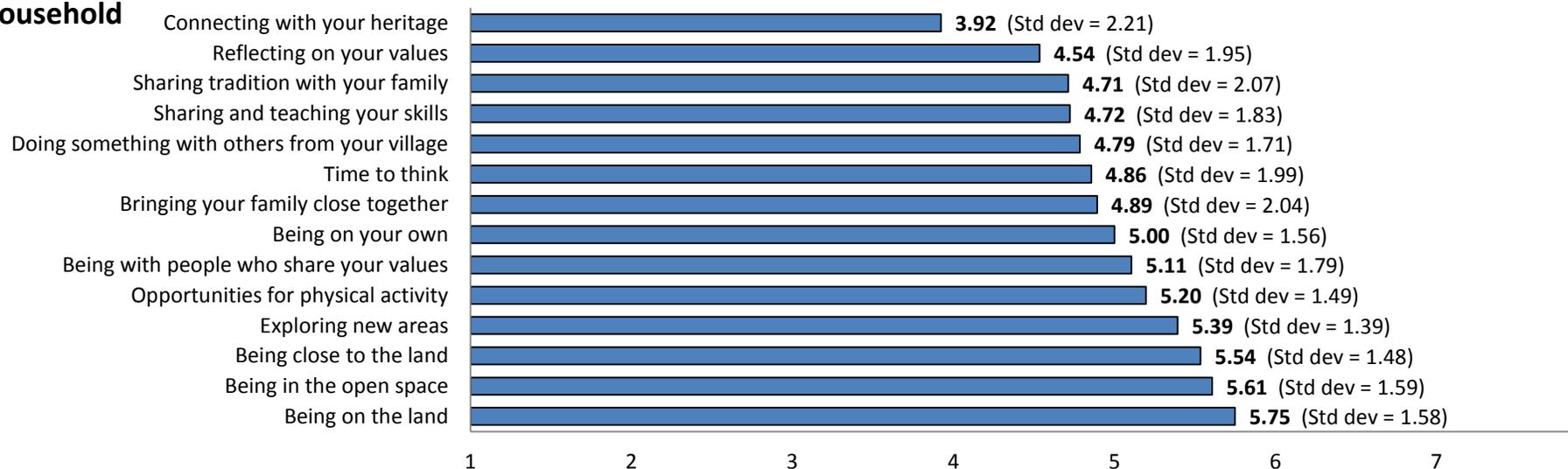
One respondent commented that there was a poor salmon run, one respondent commented that they did not meet their fishing needs due to poor health and one respondent commented that there was a low fish count.

Reasons land managed by the BLM might be important to your household and village

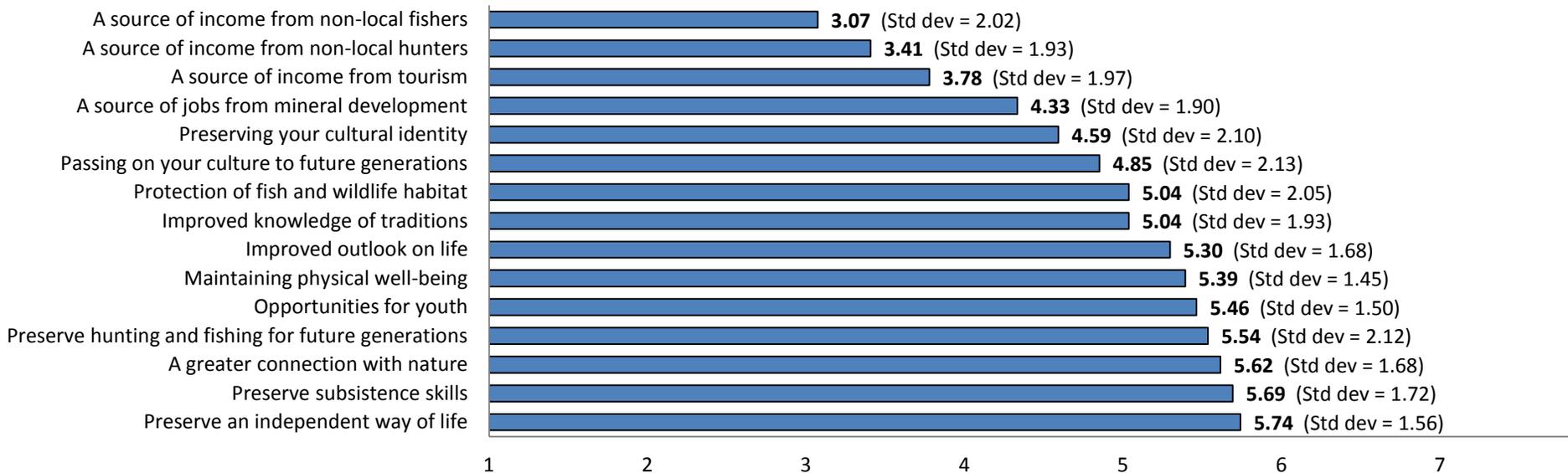
Figure 56 on page 113 shows responses from Western Interior respondents regarding why BLM managed land might be important to their household and village. The first chart shows responses regarding why land managed by the BLM might be important to the **household**; the second chart displays responses regarding why land managed by the BLM might be important to the **village**. Figure 57 on page 114 shows responses from McGrath and Figure 58 on page 115 shows responses from Nikolai and Takotna. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (not at all important) to 7 (extremely important).

Figure 56: Western Interior - Reasons land managed by the BLM might be important to your household and village

Household



Village



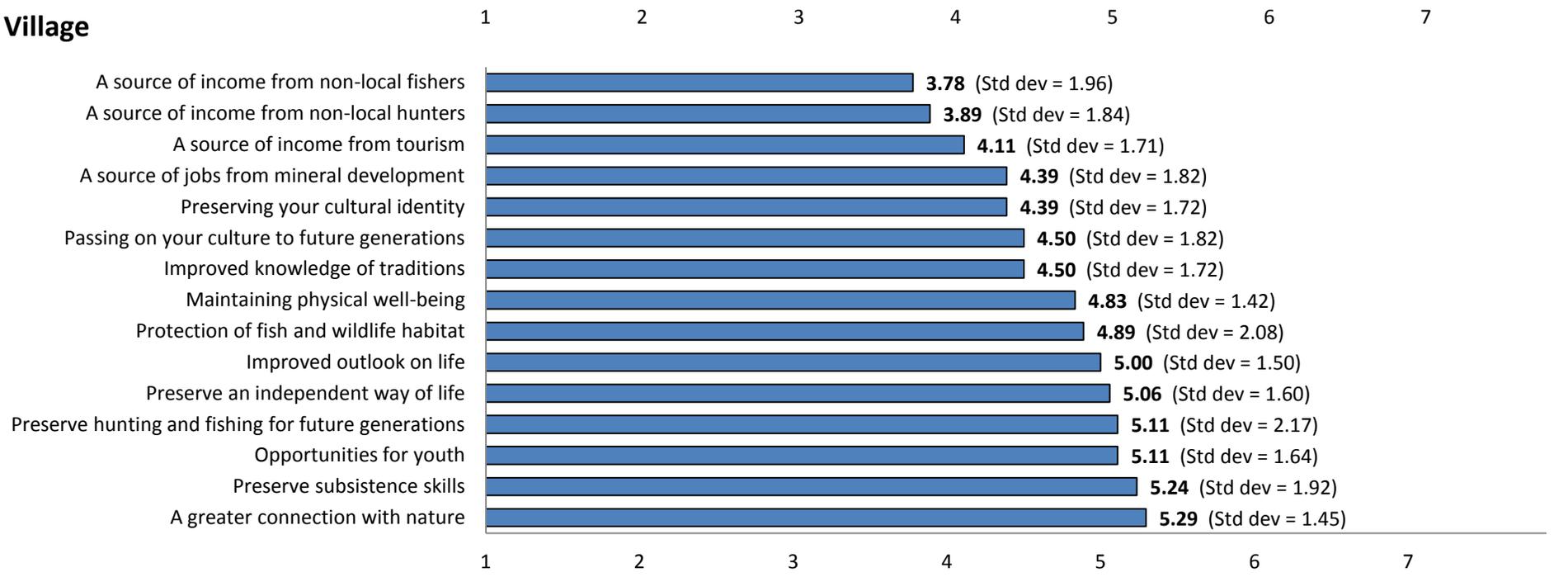
Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 26 to 28. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 57: McGrath - Reasons land managed by the BLM might be important to your household and village

Household

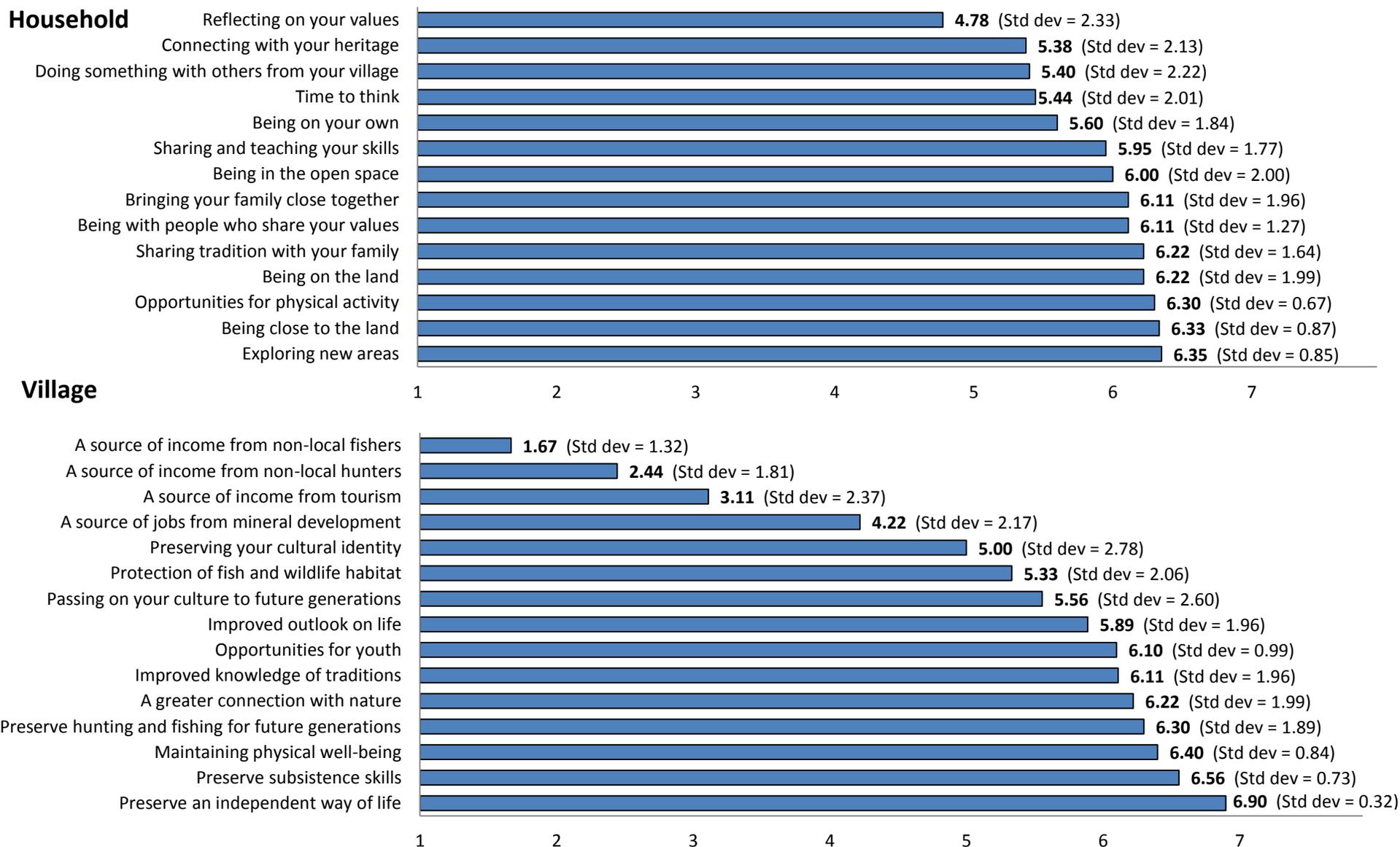


Village



Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 17 to 19. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 58: Nikolai & Takotna - Reasons land managed by the BLM might be important to your household and village

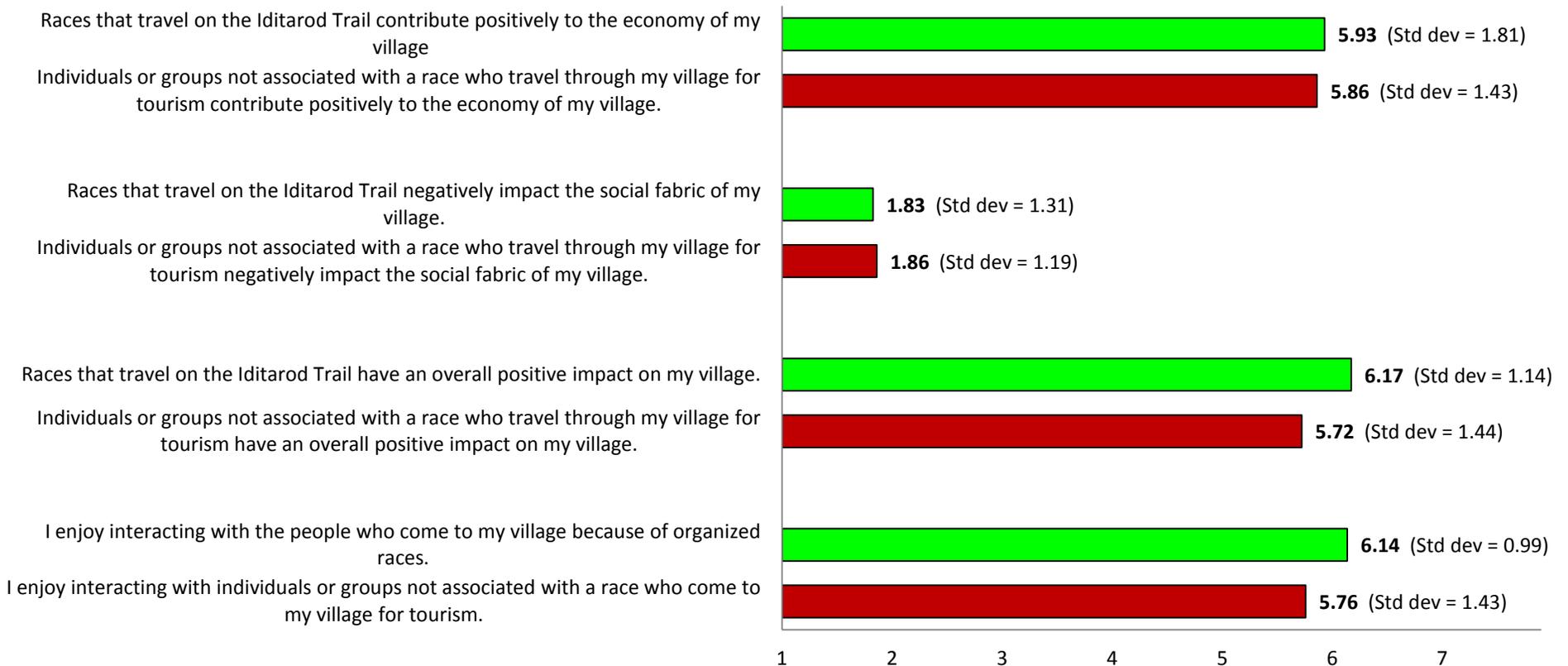


Notes: Figure shows mean for responses on a 7 point scale. 1 = not at all important and 7 = extremely important. Organized from top to bottom by lowest to highest mean. *ns* ranged from 8 to 10. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Impact of visitors on your village

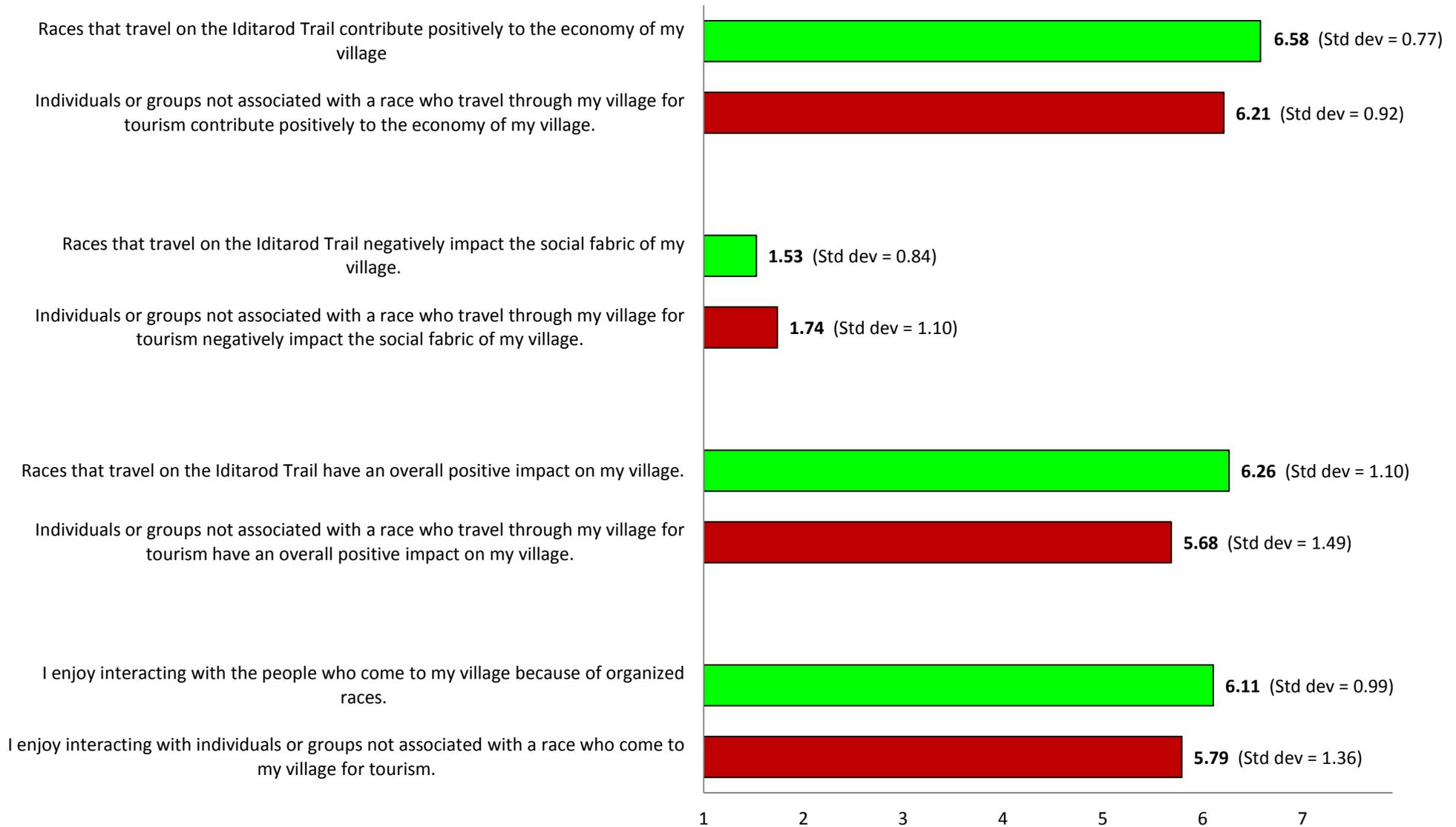
The surveys sent to households in the Western Interior region distinguished between visitors associated with races along the INHT and visitors not associated with races along the INHT. Figure 59 below displays the responses from all Western Interior respondents regarding their perceptions of the impacts visitors on their village. Figure 60 on page 117 shows responses from McGrath. Figure 61 on page 118 shows responses from Nikolai and Takotna. The mean response for each question is printed in bold. The standard deviation appears in parentheses after each mean. The scale ranges from 1 (strongly disagree) to 7 (strongly agree).

Figure 59: Western Interior - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. $n = 29$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 60: McGrath - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. $n = 19$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Figure 61: Nikolai & Takotna - Impact of visitors on your village



Notes: Figure shows mean for responses on a 7 point scale. 1 = strongly disagree and 7 = strongly agree. $n = 10$. Means are printed in **bold**. The standard deviation appears in parentheses after each mean.

Discussion

Validity

After careful review of our data, we are confident that the results of the Bering Sea and Western Interior Land Use Study are valid to serve as a starting point in identifying important subsistence harvest areas and travel routes in the BSWI planning area, as well as reasons BLM managed land is important, and perceptions regarding the impact of visitors on villages. Our conclusion is based on two reasons: evidence of “measurement validity” and presentation of preliminary results to the villages.

Measurement validity refers to evidence that a survey measures what it intends to measure and can be demonstrated in several ways including face validity and construct validity (Vaske, 2008). The results presented in this report demonstrate face validity. Respondents indicated that members of their household hunted and fished in the watersheds that were geographically near their home. The results presented on the regional maps show that, for the most part, members of respondent’s households ranged further from their homes to hunt than they did to fish. Also, the data did not show any puzzling or unusual results.

The pattern of results from the questions asking respondents to rate the importance of BLM managed land to their household and village, and asking respondents to rate if they agreed or disagreed with a list of statements regarding visitors to their village also showed remarkable consistency across villages and regions. As we expect different villages would hold similar values for BLM managed lands, this pattern provides evidence of construct validity.

Regarding how well our results represent the villages, we surveyed approximately 75% of the households from the villages and CDPs near BLM managed land within or nearby the BSWI planning area. Of that 75% of households surveyed, we received responses from just over 20% of households. This compares to a response rate of 27% for the Alaska Residents Statistics Program Study (Fix, 2009) and a response rate of 32% for the Alaska section of the Wildlife Values in the West Study (Teel et al., 2005). As well, the reader should note that some of the results presented in the regional results section rely on small sample sizes. To check how well our results represent each village’s hunting and fishing areas, travel patterns, etc., we took the steps listed below.

We completed the BSWI Land Use Study Preliminary Report at the end of August, 2011. We then sent a copy of that report to each city and tribal council from the villages that we surveyed as well as to the BLM Anchorage Field Office. Included with the report was a letter to each council, asking them to review the report and to send us any comments, questions or concerns. We especially stressed that we wanted the councils to “check” our results and to let us know if any of the results seemed to be incorrect or misleading. Several weeks after sending out copies of this preliminary report, we contacted city and tribal administrators to follow up on the preliminary report. We did not receive any information from the city and tribal councils that indicated that the preliminary report contained errors.

For the reasons listed above, we are confident our results are valid to serve as a starting point in identifying important subsistence harvest areas and travel routes in the BSWI planning area. However, given the large confidence intervals around some of the results, scoping meetings for the EIS will provide another check on the validity of the results.

Harvest of subsistence resources

A high percentage of respondents from all villages and regions indicated that members of their household hunted and fished in the watersheds demarcated on the regional maps sent with the BSWI survey. This indicates that the lands surrounding each village or CDP (some of which are managed by the BLM) are very important areas for subsistence hunting and fishing.

The results also show that while the lands surrounding each village are very important hunting and fishing areas for residents of that village, some households traveled to other watersheds, some quite distant from their home village, to hunt and fish. It is also critical to recognize our results represent a short period of time: one year (2009-2010). Areas that are important for hunting or fishing might change from year to year depending on location of fish and game.

Responses varied considerably by village and region regarding the question “were your household’s subsistence hunting/fishing needs met in the previous year?” However, throughout all six regions, approximately 50% of respondents indicated that they met their household’s subsistence hunting needs in the previous year and approximately 63% of respondents indicated that they met their household’s subsistence fishing needs in the previous year.

Importance of lands managed by the BLM to your household and village

Across all six regions, respondents consistently highly rated the same reasons why land managed by the BLM might be important to their household. “Being on the land,” “being in the open space,” “sharing tradition with your family” “reflecting on your values,” “connecting with your heritage” and “bring your family close together” were consistently rated as the top three reasons.

Respondents from different villages also consistently rated highly the same reasons why land managed by the BLM might be important to their village. “Preserve hunting and fishing for future generations,” “protection of fish and wildlife habitat,” “preserve subsistence skills,” “passing your culture to future generations,” “preserve an independent way of life,” “preserving your cultural identity” and “a greater connection with nature” consistently rated as the top three reasons.

Across all six regions, “a source of income from non-local fishers,” “a source of income from non-local hunters,” “A source of income from tourism,” and “a source of jobs from mineral development” were rated as the four least important reasons why land managed by the BLM is important to their village.

Impacts of visitors on your village

We broke respondents from this section into two groups: households along the route of the INHT (the Bering Sea, Lower Yukon and Western Interior regions) that received a survey that differentiated between race-affiliated visitors and non-race affiliated visitors; and households not along the route of the INHT (the Yukon Delta, Lower Kuskokwim and Upper Kuskokwim regions) that received a survey that did not ask about race affiliated visitors. The results from these questions show two distinct patterns: villages in close proximity to, or on the route of the INHT exhibited a response pattern indicating a positive attitude towards visitors to their villages, while villages not in close proximity to the INHT appear to be ambivalent towards visitors.

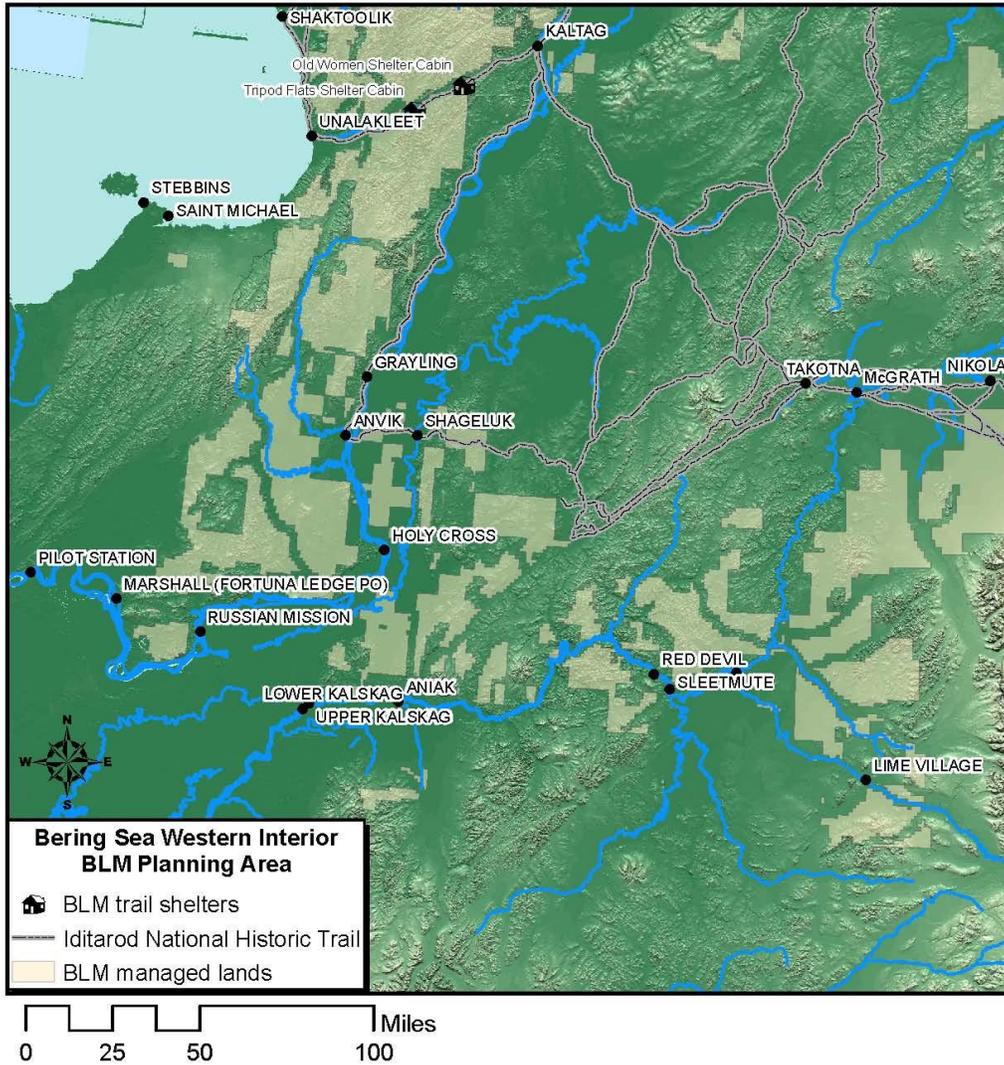
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Appendix A – Sample copy of the BSWI Land Use Survey

Note: Surveys sent to households in the Yukon Delta, Lower Kuskokwim and Upper Kuskokwim regions did not include Section 1 (Use of the Iditarod Trail) or the parts of Section 5 (Impacts of Visitors on your Village) that asked about race affiliated visitors.

Travel and Subsistence Activities in the Bering Sea Area of Alaska



Department of Resources Management

323 O'Neill Bldg.

PO Box 757200

Fairbanks, AK 99775-7200

Greetings,

Thank you for participating in this survey. This survey is being conducted to gather information regarding your travel and subsistence activities on land managed by the Bureau of Land Management (BLM). The reason we are gathering this information is that the BLM will soon be developing a Resource Management Plan for this area. This management plan will be called the "Bering Sea Western Interior Resource Management Plan." The BLM does not have comprehensive information on how residents of your village use land they manage or why that land is important to your community. We will report our findings to the BLM and they will incorporate that information into the Resource Management Plan they develop.

The Resource Management Plan has not yet been developed, nor will we be writing the plan. Therefore, we cannot make promises about what the plan might contain or outcomes of the plan. However, when drafting the plan, the BLM cannot consider your use of land they manage or reasons why it is important to your community if they do not know about it. Thus, it is important to document your use of subsistence resources in the planning area and reasons why land in this area is important to your community.

You might have answered similar questions on other surveys and for the Alaska Department of Fish and Game. However, information is needed specific to lands that will be included in the Bering Sea Western Interior Resource Management Plan.

This survey should take no more than 20 minutes of your time.

This survey consists of the enclosed three maps and this booklet. One map shows the Iditarod Trail, another map shows different sections of land broken up into five areas, and the third map shows lands near your village managed by the BLM. These maps will be used to answer questions in the survey. This booklet is divided into five sections.

Section 1: asks about your use of the Iditarod Trail.

Section 2: asks about your household's harvest of subsistence resources on land managed by the BLM.

Section 3: asks about travel routes that cross land managed by the BLM.

Section 4: asks why land managed by the BLM is important to you and your village.

Section 5: asks about impacts associated with visitors to your village.

After you complete the survey, including marking your travel routes on the enclosed map, return the survey and map in the postage paid return envelope. If someone from your household already received and filled out a copy of this survey, please check the box on the next page and return this survey without filling it out.

If you have questions please contact:

Eric Lingle
Research Assistant
elingle@alaska.edu

Peter Fix
Principal Investigator
(907) 474-6926; pjfix@alaska.edu

If someone from your household already completed a copy of this survey, please check the box below, and return this survey in the postage paid return envelope without filling it out. Thank you.

Someone from my household already completed a copy of this survey

SECTION 1: USE OF IDITAROD TRAIL

This section of the survey asks about your use of the Iditarod Trail during this past winter (from November 2009 through May 2010). Please examine the enclosed map marked "Iditarod National Historic Trail" and answer the questions regarding your travel on the different trail segments shown on that map.

1. Please indicate how often members of your household used each section of the Iditarod Trail this past winter (from November 2009 through May 2010). *(Please check the appropriate response for each trail section.)*

Section one	Section two	Section three	Section four	Section five	Section six
<input type="checkbox"/> Did not use					
<input type="checkbox"/> 1 time					
<input type="checkbox"/> 2-4 times					
<input type="checkbox"/> 5-10 times					
<input type="checkbox"/> More than 10					

2. Please indicate how members of your household traveled on each section of the Iditarod Trail this past winter (from November 2009 through May 2010). *(Please check all that apply for each trail section.)*

Section one	Section two	Section three	Section four	Section five	Section six
<input type="checkbox"/> Did not use					
<input type="checkbox"/> Snowmachine					
<input type="checkbox"/> Dogsled					
<input type="checkbox"/> Human powered*					
<input type="checkbox"/> Other (please explain):					

* Human powered includes walking, snowshoeing, skiing, biking, running, etc.

3. Next we would like to know why members of your household traveled on these trail sections. For each Iditarod Trail section listed below, please mark the reasons why they traveled on that section during this past winter. *(Please check all that apply for each trail section.)*

Section one	Section two	Section three	Section four	Section five	Section six
<input type="checkbox"/> Did not use					
<input type="checkbox"/> Access for subsistence					
<input type="checkbox"/> Travel to other villages					
<input type="checkbox"/> Recreation					
<input type="checkbox"/> Other (please explain):					

4. We would like to know if there is anything that might limit your household's use of the Iditarod Trail. Please check the box below of any of the potential reasons that might limit your use of the trail. *(Please check all that apply.)*

- | | | |
|--|--|---------------------------------------|
| <input type="checkbox"/> Poor grooming | <input type="checkbox"/> Lack of trail marking | <input type="checkbox"/> Cost of fuel |
| <input type="checkbox"/> Poor weather | <input type="checkbox"/> Personal safety | <input type="checkbox"/> Lack of time |
| <input type="checkbox"/> Poor trail conditions | <input type="checkbox"/> Other: _____ | |

If you checked poor trail conditions, please explain: _____

5. Please indicate which shelter cabins members of your household visited during the past winter (from November 2009 through May 2010). *(Please check all that apply.)*

- | | | |
|---|---|---|
| <input type="checkbox"/> Rohn Shelter Cabin | <input type="checkbox"/> Cripple Checkpoint Safety Shelters | <input type="checkbox"/> Tripod Flats Shelter Cabin |
| <input type="checkbox"/> Bear Creek Shelter Cabin | <input type="checkbox"/> Poorman Safety Cabin | <input type="checkbox"/> Old Woman Shelter Cabin |
| <input type="checkbox"/> Don's Cabin | <input type="checkbox"/> Big Yentna Shelter Cabin | <input type="checkbox"/> Topkok Shelter Cabin |
| <input type="checkbox"/> Carlson Crossing Shelter Cabin | <input type="checkbox"/> Iditarod Safety Cabins | <input type="checkbox"/> California Creek Shelter Cabin |
| <input type="checkbox"/> Other: _____ | | |

- Did not use a shelter cabin

6. How important is the presence of shelter cabins in your household's decision to use the Iditarod trail? *(Please check the most appropriate response.)*

- Not at all important
- Slightly important
- Moderately important
- Very important

7. Would the presence of more shelter cabins increase your household's use of the Iditarod Trail? *(Please check the most appropriate response.)*

- No increase
- Slight increase
- Moderate increase
- Significant increase

8. How often would your household take advantage of a mass transit (i.e. large snowcat) between villages if it were available? *(Please check the most appropriate response.)*

- Not at all
- Occasionally
- Frequently

SECTION 2: HARVEST OF SUBSISTENCE RESOURCES

The map included with this survey titled "Bering Sea Watershed Map" divides the land of interest for this study into five areas, based on watersheds. We would like to know how often someone in your household traveled to each of these areas to harvest animals and fish in the past year (from November 2009 through October 2010). In the tables below there are separate rows for different animals and fish, and columns for each area.

9. Please indicate how often members of your **household** traveled to each area for the purpose of harvesting moose, caribou, black bear, or brown bear between November 2009 and October 2010.

	Bering Sea Coast	Unalakeet Watershed	Middle Yukon River	Innoko River Watershed	Anvik River Watershed
	<input type="checkbox"/> Did not hunt in this area	<input type="checkbox"/> Did not hunt in this area	<input type="checkbox"/> Did not hunt in this area	<input type="checkbox"/> Did not hunt in this area	<input type="checkbox"/> Did not hunt in this area
Moose	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20
Caribou	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20
Black bear	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20
Brown bear	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20

10. Were your household's needs met from November 2009 to October 2010 for the subsistence resources listed in the above table? *Please check one:* ___ Yes ___ No

If no, for which resources were your needs not met? (*Please list resources and explain.*)

11. Please indicate how often members of your **household** traveled to each area for the purpose of fishing for the species listed below between November 2009 and October 2010.

	Bering Sea Coast	Unalakeet Watershed	Middle Yukon River	Innoko River Watershed	Anvik River Watershed
	<input type="checkbox"/> Did not fish in this area	<input type="checkbox"/> Did not fish in this area	<input type="checkbox"/> Did not fish in this area	<input type="checkbox"/> Did not fish in this area	<input type="checkbox"/> Did not fish in this area
Salmon	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20
Burbot	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20
Whitefish	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20
Lamprey (Eels)	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20
Dolly Varden	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20
Grayling	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20
Arctic Char	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20	<input type="checkbox"/> 0 <input type="checkbox"/> 11-20 <input type="checkbox"/> 1-10 <input type="checkbox"/> > 20

12. Were your household's needs met from November 2009 to October 2010 for the subsistence resources listed in the above table? *Please check one:* ___ Yes ___ No

If no, for which resources were your needs not met? (*Please list resources and explain.*)

SECTION 3: TRAVEL ROUTES

We would like to know what travel routes you and members of your household use in the area shown on the enclosed map titled “Bering Sea BLM Lands.” By travel routes we mean routes that are well known and have been regularly used for the past ten years.

13. Please mark your travel routes on the Bering Sea BLM Lands map, along with a brief description of the primary uses of that route. For example, indicate if the route is used primary for travel to another village, access to subsistence resources, etc. After you mark your travel routes, return the map with this booklet in the postage paid return envelope.

SECTION 4: IMPORTANCE OF LANDS MANAGED BY THE BLM TO YOUR HOUSEHOLD AND VILLAGE

We realize the lands surrounding your community are extremely important as a source of subsistence resources. We also would like to document in what other ways the lands managed by the BLM, as shown on the enclosed Bering Sea BLM Lands map, might be important to members of your household and to your village.

The first table below lists several reasons why visiting the land managed by the BLM, as shown on the Bering Sea BLM Lands map, might be important to members of your **household**. The second table lists reasons these lands might be important to your **village**. Please circle the number corresponding to the importance of each potential reason in both tables.

14. Reasons traveling to the land managed by the BLM might be important to members of your **household**.
(Please circle the number that best represents the importance of each reason.)

Potential reasons	Importance						
	← Not at all	-----	Somewhat	-----	Extremely	→	
Learning about a new area	1	2	3	4	5	6	7
Keeping physically active	1	2	3	4	5	6	7
Being with people who share your values	1	2	3	4	5	6	7
Bringing your family close together	1	2	3	4	5	6	7
Being on your own	1	2	3	4	5	6	7
Exploring the area	1	2	3	4	5	6	7
Having opportunities for physical activity	1	2	3	4	5	6	7
Teaching your skills to others	1	2	3	4	5	6	7
Connecting with your heritage	1	2	3	4	5	6	7
Being close to the land	1	2	3	4	5	6	7
Reflecting on your values	1	2	3	4	5	6	7
Being in the open space	1	2	3	4	5	6	7
Doing something with others from your village	1	2	3	4	5	6	7
Sharing tradition with your family	1	2	3	4	5	6	7
Time to think	1	2	3	4	5	6	7
Sharing your skill and knowledge with others	1	2	3	4	5	6	7
Being on the land	1	2	3	4	5	6	7

Are there other reasons visiting land managed by the BLM is important to members of your **household**?
Please explain.

15. Reasons the land managed by the BLM might be important to your **village**.
(Please circle the number that best represents the importance of each reason.)

Potential reasons	Importance						
	← Not at all	-----	Somewhat	-----	Extremely	→	
Maintain physical well-being	1	2	3	4	5	6	7
Preserve subsistence skills	1	2	3	4	5	6	7
Improved outlook on life	1	2	3	4	5	6	7
Improved knowledge of traditions	1	2	3	4	5	6	7
Preserving your cultural identity	1	2	3	4	5	6	7
A greater connection with nature	1	2	3	4	5	6	7
Preserve an independent way of life	1	2	3	4	5	6	7
A source of income from tourism	1	2	3	4	5	6	7
Passing on your culture to future generations	1	2	3	4	5	6	7
A source of jobs from mineral development	1	2	3	4	5	6	7
Opportunities for youth	1	2	3	4	5	6	7
A source of income from non-local hunters	1	2	3	4	5	6	7
A source of income from non-local fishers	1	2	3	4	5	6	7
Protection of fish and wildlife habitat	1	2	3	4	5	6	7
Preserve hunting and fishing opportunities for future generations	1	2	3	4	5	6	7

Are there other reasons land managed by the BLM is important to your community?
Please explain.

SECTION 5: IMPACTS OF VISITORS ON YOUR VILLAGE

This section asks about your perceptions of impacts resulting from people visiting the area surrounding your village. This can include races such as the Iditarod, or individuals/groups coming to your area to canoe/raft on rivers, hunt or fish. We are interested in your perceptions of positive and negative impacts.

16. Please indicate whether you disagree or agree with each statement below.

	Strongly disagree	Moderately disagree	Slightly disagree	Neither	Slightly agree	Moderately agree	Strongly agree
Races that travel on the Iditarod Trail (e.g., Iron Dog, Iditarod Trail Classic, Iditarod Sled Dog Race) contribute positively to the economy of my village.	1	2	3	4	5	6	7
Races that travel on the Iditarod Trail negatively impact the social fabric of my village.	1	2	3	4	5	6	7
Races that travel on the Iditarod Trail have an overall positive impact on my village.	1	2	3	4	5	6	7
I enjoy interacting with the people who come to my village because of organized races.	1	2	3	4	5	6	7
Individuals or groups not associated with a race who travel through my village for tourism contribute positively to the economy of my village.	1	2	3	4	5	6	7
Individuals or groups not associated with a race who travel through my village for tourism negatively impact the social fabric of my village.	1	2	3	4	5	6	7
Individuals or groups not associated with a race who travel through my village for tourism have an overall positive impact on my village.	1	2	3	4	5	6	7
I enjoy interacting with individuals or groups not associated with a race who come to my village for tourism.	1	2	3	4	5	6	7

Do you have any additional comments?

Thank you for completing this survey.

Please return this survey and the map with your travel routes in the postage paid return envelope.

Appendix B – Additional comments

Are there other reasons visiting BLM managed land is important to members of your household?

Subsistence

Native Culture is 100% reliant on the land not for owning but for survival. Cultures clash when hunting/fishing/trapping rights are threatened. Outside influences are slow to adapt to indigenous ways and are seen by many as the greatest threat for the welfare of our cultures. Unlike the American Indian, Natives in the North have conditions that deter many from engaging our region... but that I'm sure will soon change.

For the hunting and the fishing. For the view mostly and sometimes needing to borrow a cabin for shelter.

Gathering the things we need to survive. Food, source of pride in providing for one's family.

Yes, a lot of here have land up river and use them as much as we can for subsistence purpose

Food! That's where the fish, caribou, moose etc... sometimes are found.

We have used this land and the river for hundreds if not thousands of years. We depend on it for subsistence foods and traditional uses.

Subsistence for food and culture

Because all our lands we used for subsistence are being corralled for purposes not suited to aboriginal right to subsist.

Subsistence fishing & hunting.

Traditional hunting, trapping & harvesting of subsistence foods.

Food

Subsistence activities

Subsistence: hunt, fish, gather, trap, camp. LANDS RESERVED FOR WILDLIFE.

Gathering edible greens in spring and gathering subsistence!!

Areas where land is managed by BML has been used by our ancestors for subsistence. Hunters that know the area have visited the lands managed by BLM for subsistence purposes or where the game may be.

To open for hunting and trapping

Recreation, subsistence and gather food and wood

No, it is mainly used for subsistence purposes

Hunting, subsistence, and gathering

Trapping

Hunting, Trapping, fishing and see country, we know it's there.

Where we get our berries and tea for the winter

Harvesting

Provide for subsistence

1. Pick berries. 2. Get firewood.

Food / wood gathering / berry picking

Berry picking: salmon berry, blueberry, blackberry, raspberry, red berry picking.

Travel where our Elders have been using dog travel, snow shoes and living off the country.

Trapping and getting wood.

Feeding Family - High cost of food in the stores and GAS

Well we go fishing at Pike Lake to harvest Pike. I think that is an important subsistence area

Yes. They come up with permits now to hunt where we've always hunted for our subsistence. Had to also do a "fed permit" and go to some area's we've hardly hunted - and access to some of these areas were just about impossible.

Berry picking, camping, exploring

Picking berries

Life feels right being on or by the river, being on the tundra picking berries and hunting in the areas I hope never have to be restricted on our use of the lands and water ways around our home.

Subsistence harvesting of animals, fish, berries and plants are important not only for eating, but teaching others (children and adults) how to live off the land and respect it.

Moose hunting, berry picking

Trapping is an important activity that is not mentioned in this document.

Getting wood to keep warm in the winter or yearly.

Subsistence fishing to feed dogs and self.

To keep our way of subsistence lifestyle alive for generations to come.

Reasons we are extremely happy is that our grand children will learn how or where to go for subsistence. The lands we have we have to stay to get or harvest fish & beaver, ducks, and berries. Fish - we move to our fish camp to fish and dry for winter food, especially for our dogs. Beaver - We get beavers like 3 or 4 to eat and dry for winter food. Ducks - we get few to eat and freeze for winter food. Berries - we have to go in our lands to pick berries for winter's food.

In the spring time harvesting of just being there to know how our grandparents and grand uncles used to harvest the needed things that comes once a year them. Unit 11, until nationally by laws stand being sold year round, where at that time only once a year things in the Spring!

We travel the lands near and far for subsistence gathering of all kinds and to also keep contact with friends and family in neighboring villages.

Hoping, our native foods are not taken away from us, most of us live off the land, and I hope the berry picking grounds should not be ruined, for example Kalskag hill feeds the whole community.

Gathering resources

Berry picking

To gather berries and get food for my family.

Much is for food to eat and to teach kids how to eat off the land so starvation is held at bay. There is not much money around.

Our people have lands that is know by word of mouth where we can travel until we get to an area that belongs to another group of people or tribe for their hunting, gathering food, wood and fishing, camping, and trading grounds.

Management

To realize that even though BLM owns this land and manages it, in our hearts we still are the users and forever ours, and the real stewards of this land.

FAA Part 35. Drop of hunts for moose on BLM lands!! Lesser of two Evil's!! - Feds – State

Who said its BLM's?

These lands were managed by my ancestors in the Linalakleit watershed for centuries before 1776 + 1959

Help protect hunting areas from outsiders.

Many Natives have out and out said - do not want White Man on our lands wish you would leave. So, to hunt you've got to be able to big game hunt BLM.

By visiting BLM managed lands, all should show respect of the managed lands, native or non-native people, Lands that are protected by BLM are future goals for our young people growing up, teach the young BLM protect the manage lands.

Our Native allotment is in BLM areas. We have no choice but to go there.

Almost all of these would be rated higher if there were any BLM land near McGrath. Almost all of these reasons/values/criteria can be met or satisfied on Native Corp. and State Lands much closer to town or more accessible (along rivers, trails, etc.)

Nature

Visit hot springs

Always to check the land

We love to camp and experiencing nature is very important.

Learn and share how others use lands.

Answering questions and helping out on land issues.

You can still go less than 10 miles and not see anybody.

Make sure they are kept clean - trash etc.

Just get out of town and enjoying nature

Few people are seen there

Family

As my father and his father so shall I and my son, and his son shall after I am gone.

Yes, being with family members

Simply a way of life for our family.

Showing and teaching family members and others

This has always been our lifestyle from forever.

Helps combat social ills, busy bodies have healthy minds.

Me and my wife like to "berry bump"

Spiritual

Because our ancestors are buried in these lands since time immemorial.

It's our church. Where God gives us food from the land if we care for the land and keep it good we will be rewarded with good luck of gathering foods.

Very important- because the land is our mother and the sky is our father

We believe in cycles, because animals do travel when there is less food

Visitors

See if any abuse or vandalism is done by visitors in groups

Because if we don't bring them out and tell them about the area they would otherwise not know about the area and might not need to go there because they do not know about the area.

Mining

Cleaning up the Toxic Chemicals at old mercury mine.

Skills

It's always good to know and what you learn and how to travel, because it's hard sometimes, and have to know where and what you're doing.

Are there other reasons visiting BLM managed land is important to your community?

Subsistence

Berry Picking

Subsistence Priority!

Keep out subsistence hunting and fishing a local matter first and foremost before state and sport hunting and fishing

For berry picking and fishing, camping and caribou and moose hunting.

Subsistence and culture

It's mostly for subsistence fishing & hunting, even in the Bering Sea: We live on the land for as I could remember - I am 70 years old! Moose especially, also too much brown bear in our area: need bear hunters here in the Norton Sound area.

Open for hunting and trapping

Berry picking, bird hunting, wood gathering, fishing, swimming. If we all do our part it will be available for generations to come.

Trapping is an important activity for communities in this area.

Harvesting Reasons

1. Get wood. 2. Pick berries.

Hunting. Keep it Clean!

Gathering resources necessary for subsistence

I have seen VERY few on BLM land hunting moose. Everyone travels North and Northwest out of Unalakleet when hunting Caribou.

It represents wealth for the future, a buffer against what may come, and a reservoir of resources (untouched) which to some extent feed the more used areas.

Because they have always been there for our subsistence life style.

For the future use - life goes on, animals, birds and fish.

Keep out all non-local people out of our subsistence use areas.

We can get permits to hunt.

Management

The surrounding area IS part of our community and always has been. BLM just happens to have authority over OUR land at the moment. Our village will not survive if our access to surrounding lands is restricted. I don't understand how someone in Washington DC or Anchorage or Fairbanks can know how to RUN or MANAGE our land.

I don't know some time laws are made by people who visit here once or twice a lifetime and do not take the time to really appreciate what is here or try to understand how we use our resources. For example you're not here and you don't understand our values.

Thank you for trying to maintain different areas. Also for the help you give in assisting stranded boaters like myself.

I would like to see a road from Unalakleet to Kaltag to bring food, gas and oil prices down.

Because it is rightfully ours

The resources we depend on to sustain life over generations is still available to us with a minimal amount of regulation, except by our elders.

Ask regional Native Corporations, they too have land issues.

BLM should NOT be "managing" OUR LAND!

Well managed lands.

The state of Alaska is perceived to be anti-village, anti-Native, and pro-development. The BLM is an important check on the power of the State of Alaska (And their millionaire campaign donors).

Don't tell me where to hunt and not to hunt!

Land managed by BLM is a plus for me. Our local Native Corporation is corrupt, unlawful and mismanaged. I believe our local Native Corporation Land is misused, mismanaged, and needs to be managed by the federal government rather than the uneducated, and disadvantaged native corporation. There's too much nepotism and corruption, which if managed by BLM will be audited and managed decently etc.

BLM has helped in firefighting and personnel and native lands also by hire locals for jobs and teaching youth fish and game and how to respect the land and fish and game.

We are involved in bison transplant in this region. We want this with the help of the state. BLM must stop the reg thoughts on use for this purpose.

Safety cabins Iditarod Trail marking

Keep everyone updated.

BLM has done nothing listed above. BLM = Fire only.

What & where are the lands managed by BLM? What has BLM done listed above? What is listed I have never heard anything BLM does BUT fight Fire.

Conservation

Help the village make sure land is not polluted.

Preserving wild lands forever!

Native culture by Natives is 100% conservation. We are taught our rivers, streams, lands, and ocean are the top of our tables. If we pollute any of these areas our food and resources will be polluted. When we visit regions for subsistence we practice leaving the area cleaner than when we got there, take care and love the land and waters God gave us. Our goal is not for trophy or sport but for health and survival.

You people pretty much destroy everything you get your hands on.

Yes, BLM land should be managed and used a way that protects the land, water and animals from toxins.

Stop the mine at Donlin. There's too much to lose if they poison the land.

All mineral take outs from watershed draining to Kuskokwim like the Gold mining - Donlin should be stopped - because all our salmon and fishes year round in the river will be affected by the poisons draining to the Kuskokwim. This will effect everything when the poisons surface years from now and leak out to the river! Then all the villages that depend on fishes and the river and Alaska help wild animals will diminished the people will surly need the government for lots of help, which even the government is going broke now! It'll be even worst then.

Protecting fish and animals.

Water/Water Shed and Air Quality. A significant part of our watershed is BLM land. We get our drinking water from the river and depend on fish (&wildlife) which depend on healthy watersheds. (McGrath groundwater is poor.) Once again - most/all of these reasons would be ranked much higher if there was BLM land near McGrath - or BLM land that was not time/cost prohibitive to get to from McGrath.

We need rearing area for wildlife and buffer zone for other people.

To conserve hunting of big game and fishing and the impact of too much hunting in our lands.

It would be great if they manage the beaver dams that are stopping the fish from going up their streams where they lay their eggs. There are so many beaver dams they are ruining our fishing areas and no one is doing anything about it. When we try, they fine us for killing beaver, which they never use to worry about in my past.

Community

Yes! We have to know about the (my) land. Who was there and when is important to our community.

Keep and protect what little we have of our culture.

We gather at communities to share our style of dancing and social gatherings for families and friends from far and near communities.

Yes, and future goal, youth growing up need to know these are precious tools that need to be protected by BLM.

This type of lifestyle is all we have left.

We love our lifestyle and the lifestyle means being out and about in the areas around our homes on a regular basis. If it's all 7's for me it has to be for my village too because people who share my lifestyle live in my village.

Should get to come for any events, socialize w/hunters.

For the future of our kids and grandkids

Because the lands we have was given to us from our great -grand- parents for our parents to give to us the land, where we would stay and camp for subsistence USED. There are no other reasons land management by the BLM is important to our community.

Yes, it's all around us except for the ocean.

Tourism

BLM lands provide for economic stability as long as tourism exists from a local lodge that provides income from retail sales, employment and financial support for community events.

Control the flood of Lower 48 people coming and yet to come, but I'm afraid it (control) won't last long.

Just from outsiders

Yes, protect our land from others that are not residents on the state.

When hunting in area where you live, resident only, because of the population in each area.

Keep those tourists off our land. We don't need people to play with our way of life for their enjoyment or as their playthings!

I don't want any sport fishing or sport hunting done around Andraefsky river area.

JOBS

Jobs

Do you have any additional comments?

Tourism

We do not like hook and release! You're playing with our food when you allow catch and release.

There are not many tourists that come to our area that I know of.

Outside groups coming out to the villages impact negative and positive with their money and influence vs. waste and ignorance.

Very few here at St. Mary's

Don't really care about Trophy Hunters

Eco-tourism would work, if managed properly. That would be the only type of tourism I would be happy with.

I do not know of many people traveling this particular area for tourism, I am unable to comment.

From my experience people that pass through the area have little economic effect on us. It is nice to have visitors come through because it gives locals the opportunity to share their culture, fostering appreciation for the local culture by both parties involved.

Groups do not travel through Russian Mission for tourism. Thank God! People come for school events, visit family and friends, and during carnival. (February) This is NOT tourism.

No one asks us when, who and why individuals or groups come into area. If you ask corporations and NOT the TRIBE "Village" where the PEOPLE are impacted

As long as others respect the land we live on.

Although we don't have tourism in our community when group or individuals come to stop by it's a pleasure to talk to them about our way of life and show them our community.

Individuals who come to my village kill too many of our moose close by the communities. I think that there should be a boundary where out-of-towners can't hunt within our communities. This is going to really impact our village in the future.

I have nothing against individuals or groups coming to this area to hunt or fish. Where they hunt/fish should satisfy their needs. It's fine with me.

No tourism or tourists come here

I strongly support keeping tourism, sport hunters and fishers out of my hunting and fishing grounds.

Yes, the big game hunters are coming around to hunt without our permission on the lands we own and that is not alright for them to do that. They made the whole village very mad and they just want to leave the moose on land to rot and that's not fair to the village and the people a still mad about it.

We don't get tourists out here in these bush villages, so I can't say much.

My wife and I own the Anvik River Lodge. We also live there periodically during the off season and consider it home. Over the past 16 years it has had a positive effect on the village, and we work closely on many issues.

Tours at present are not significant, one way on the other. Why should we the people have the burden to state why we use and need the use of the land BLM if they are saviors of management for our good, should spend time here to find this out. We should be co-managers of these lands.

Holy Cross is not on Iditarod Trail, so most of these questions don't apply to me or my village. Nobody I know comes to Holy Cross for tourism.

Groups of tourism during the summer months do not associate with locals - no input of funds into the village – only the Anvik River Lodge - Which is 90 miles up the river. Their jet-boats impact the spawning of salmon and moose hunting which local people depend on for living and subsistence activities.

Access. Tourists do not come through Holy Cross. Individuals who come to Holy Cross for hunting and fishing do not interact.

Anvik River Lodge uses high powered (225hp and 250 hp jet units to travel to the lodge on the Anvik River. spooking ALL game along the river causing people to go out of their way to hunt for their family. Also might be causing a decline of the salmon, eggs and young fish that use the Anvik River for shelter and hatchery. Lodge owners are from Florida and they don't live in the area. They are visitors who bring in thousands of dollars and DO NOT contribute to the village in anyway. They don't even hire locals. Before they started using jet units people could go 10-15 minutes out of town and have a successful hunt on the Anvik River. All of last hunting season no one has seen any game on the Anvik River, the game is spooked and don't move if boats are used or heard. I spent one week in the drainage and never seen a single moose or bear. This needs attention ASAP!

Most guides order their supplies from out of the village. Most money spent here is on fuel.

Birdwatchers are good.

Tourist and especially rafters interfere with out fishing and hunting because they're all over the area, everyday. *Note, Two years in a row I went to my usual hunting and fishing areas only to find Fishing Guide clients and rafters.

I don't enjoy seeing tourists clogging up our Aniak River - They scare the moose during hunting season. And they litter. I've seen hunters with moose bags - improperly handled and rotting. There needs to be a better monitor for them.

They land in the village and are whisked away to camps and when they leave it is a brief stay here too. They have a positive impact on the wallets of their guides. We don't have a chance to interact with them, and we are on the same plane when they arrive or leave and can hear their comments about what a remote place it is and hear their jokes about it. They sound anxious to return home to all their amenities and infrastructures they enjoy. So be it. I love this area and they can take it or leave it.

Tourists rarely travel through my village.

No one comes here for tourism that I know of.

We don't see much tourism, but increased tourism could be beneficial to our community.

Never seen nobody pass by.

Hardly tourism is in our area, only when projects work we get outside workers.

No tourism.

No tourism in our village.

People who come and hunt from different areas don't clean their trash and mess when they leave their hunting/fishing ours. If they'd keep the land clean no one would care if they came from anywhere.

In the first place we have no tourism here and secondly I'd be happy to bring them fishing maybe hunting and sight-seeing and let them learn of our history before the Russians claimed Alaska and claimed it even though Alaska all ready had its owners in the land that was then taking care of its people living off the land.

Most tourists in our area bypass our village altogether.

We are pleased with what we can see and help people that need help. Especially hunters from different villages, because they are Natives and people's that need food for winter to help their family.

I think tourism is a low impact way for my village to have a way to create jobs and sustainability.

They just come to feel superior!

I haven't meet tourists. I have heard of people canoeing/rafting down the river. I don't think groups of people would have a negative impact - maybe more tourists would be a positive impact.

They never spent money in my village so who cares. Also, they are cheap

My last two years hunting moose I was disturbed by fishing guides going back and forth up the Aniak ALL DAY LONG, keeping game away from the river. I was frustrating as hell.

Don't trash the land, but enjoy our bounty.

Tourists who come through our village should respect our cultural ways of living. We need our subsistence activities because food from stores here in the village is more expensive than where they come from. We pay triple the price for groceries than they do, especially in the winter time, when people can't go hunting because of the extreme cold weathers.

Management

Once again people sitting around table reading reports making laws and rules for people they don't know or have met. Try living the lifestyle for a couple of years.

I wish Fish & Game departments would share the concerns and positive outlook on issues that impact our subsistence and culture lifestyles. Seems like all Fish and Game tries to discredit us.

Get together with Fish and Game Law Enforcement to stop the hunting the moose at night with spot lights of bear, especially on the Unalakleet River.

Can we manage our own lands and lives?

Keep our waters and lands clean.

The land should remain open to all, but managed in a manner that will preserve the beauty and wonder for generations to come.

Too many wolves and bears killing off our moose.

Need fewer regulations for fishing & hunting. Subsistence is our way of life out here in the bush. The cost of living is too high, even for gas & heating fuel!

Notify Tribe NOT Corporation.

It appears to me that BLM wastes a lot of money in the "Wild & Scenic" area of the Unalakleet River. I view their presence as a very negative impact. If people can get there they should be able to enjoy it. Running their camp and imposing motor limitations and reclaiming a family's camp has created negative feelings in me towards the BLM. I have not seen anything good come from it.

No BLM management.

We in our village have to abide by the rules/regulations of the State & Federal Government and our own rules of hunting, fishing and gathering food/wood. We try to follow while we keep our identity as people of the land for thousands of years. To survive this land where we are, we have to work together especially with the weather, four changing seasons, where we go to get what food/wood we need to survive.

Call me before you do anything, I sure can help you. I've hunted, trapped and fished all my life. I've seen changes from 50 plus years. We'll take care of the land together. Don't do anything stupid.

Thank you BLM for protecting our forest, rivers and waterways lands and all environments. You're welcome, BLM.

I wish the State and Federal authorities have the villages run their own fish and game. Everyday since B/A took over for Reindeer Herding, our fish & game has gone downhill.

Community

We would like to know about our land, to know happenings of the lands.

Community Events, for example Yupik singing and dancing

We want the land and the resources for our own people and younger generation.

Keep our culture and tradition for any residents of Russian Mission AK.

I would have the tribes be connected

The more young people can see of the world outside of our village and what they can do outside while young 18-30 the better for them.

Well, it's my pleasure sharing or having family traveling so on?

Just help in the ways we live from disappearing

Subsistence

We live off our land - that is our way of life.

Without land use we as Natives have no other means of making a living.

Keeping BLM lands wild and undeveloped (especially no roads) is very important to me and my family. Wild lands are especially important for a continued subsistence lifestyle.

If the gasoline price was lower than \$5.00 a gallon the routes for all subsistence gathering would be greater lengths indeed, providing abundant foods from subsistence.

"Sirs: I am returning your survey and the following comments: 1. My ancestors and now myself have lived and occupied Unalakleet since the Creator of the Universe placed us here. My Grandmother and Unalit Ppik woman, told me that we utilized all the area surrounding Unalakleet, all along the Norton Sound to Koyuk, Alaska to Pikmiktalik and in land to the Yukon River and Kaltag - an area encompassing nine million acres of land. This was necessary to range for hunting, fishing and gathering to maintain food on the table for the family, and community. Today we need the same ranging for resources areas for the same purposes however federal and state regulations prohibit us from practicing the indigenous people's lifestyle and does not recognize all elements that make up the subsistence economy. The Iditarod Trail: The trail should be held to the easements already established. I have a native allotment that does not grant as easement for this Iditarod Trail on it and so it stands today and the race still uses it without checking with me. This is all I have now. Happy New Year!

The resources, which are renewable that has sustained our subsistence way of life remain vital to our survival as a people. Our cash economy or lack of it makes buying permits and licenses for what we hunted and fished for generations very hard.

Open area for subsistence use by villages.

Travel

We really appreciate the Shelter Cabins the BLM and State DNR have/are having constructed - it is not just "rich tourists" that use them - they probably have already saved the life of more than one traveler. (We had a local freeze to death near Medfra last winter). As there is not much additional BLM land near McGrath & some other village building additional cabins and improving/maintaining/grooming the Iditarod Trail (with our State DNR & local support) is probably the best thing the BLM can do to not only improve and increase access to BLM lands - but to improve the opportunity and safety for all types of uses for all types of people - whether locals or "guests", rich or poor, etc.

We drive Snogos from Takotna to Nome and return each and every year. 2011 will make 20 years.

My travel routes are from Ophir to 20 miles south of Rohn cabin.

I've traveled constantly and all over the Yukon-Kuskokwim area. I have one complaint. I've hit BLM metal land markers twice in my life. I damaged my snowmachine and hurt my ribs real badly. With a fresh snowfall, I didn't see the metal landmark, traveling at 25 MPH, I hit one and flew off my snowmachine. I'm glad my daughter behind me did not hit it first - she watched me fly off and thought I was hurt real badly. Hitting a stiff metal marker is worse than hitting a stump. It brought me to an abrupt stop. I believe someone else will be physically and seriously hurt. I was told to file a lawsuit but, being broke and happy is enough. Again I stress this issue about these steel posts. My neck has a kink, knot in it, from that scary day. Advise the rest of the people in management.

Groom/blade off humps near Kaltag and Shaktoolik foothills.

Road from Unalakleet to Kaltag.

Races

Three separate races: Iron Dog has little positive economic or other contribution. Iditasport has probably strongest economic and social impact. I'm positive Iditarod brings a little money - mostly for school, it brings volunteers together is a big way, one of the year's community highlights. Our household enjoys non-race tourists because of our family store on the trail. The few kids get exposure to the outside world. If tourism were a huge presence, this would not be such a positive experience.

Require Iron Dog Association to follow immediately behind their racers with at least two trail groomers equal or better to the groomers used by the Iditarod. While the trail is soft and pliable - I have measured washboards in the extreme between Bison Camp and Nikolai at 32" deep!! No joke - it costs money to replace shocks and makes travel miserable all the way to Nome. No single user group should be allowed to yearly, continually destroy the trail for all other users.

Iron Dog contributes NOTHING to Nikolai except destroyed trails.

Iditarod brings straw and too many strange plants - grass and grasshoppers.

Too many dog booties on the trail!

Positive/negative feedback regarding the survey

We appreciate you involving us in your decision process.

Please no more killing trees with these surveys.

The more we tell you, the less we hunt and fish!

Leave us alone.

Appendix C – Additional maps

Bering Sea Western Interior Hunting and Fishing by Region

- **Bering Sea Region: $n = 108$**
- **Yukon Delta Region: $n = 66$**
- **Lower Yukon Region: $n = 26$**
- **Lower Kuskokwim Region: $n = 61$**
- **Upper Kuskokwim Region: $n = 25$**
- **Western Interior Region: $n = 30$**

Unalakleet and Kaltag Portage Area Travel Routes: $n = 59$

Yukon Delta and Lower Yukon River Area Travel Routes: $n = 34$

Lower Yukon Area Travel Routes: $n = 9$

Kuskokwim River Area Travel Routes: $n = 25$

Upper Kuskokwim River Area Travel Routes: $n = 13$

Western Interior Area Travel Routes: $n = 17$