THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

Division of Wildlife Conservation
McGrath Area Office

P.O. Box 230
McGrath, Alaska 99627
Main: 907.524.3323
Fax: 907.524.3324

MEMORANDUM

TO:	Jason Caikoski Regional Supervisor	*DATE*:	07/21/23
THRU:			
FROM:	Josh Peirce	*SUBJECT*:	Sheep Surveys 2023

We conducted sheep trend-composition surveys in a portion of Unit 19C on 13, 18 and 19 July 2023. On the 13th I was an observer with Brett Gibbens, on the 18th I flew the state Supercub with a volunteer observer, and on the 19th, I was the observer with Mike Litzen. We were able to survey all 6 of our survey units for the first time since 2019. These included the Sheep Creek East and West, Post North and South, Tonzona and Little Tonzona survey areas (Figs. 1–3). The weather has been extremely rainy this summer however we finally got a few short weather windows that coincided with pilot/observer availability. Conditions were excellent on the days flown.

Areas were surveyed by flying contours of equal elevation, covering each area from approximately 3,000 ft MSL to the tops of the mountains. We circled each sheep or group of sheep, obtained a total count, and classified them as lambs, "ewes," sublegal rams or legal rams (full curl). "Ewes" included female and small male sheep. A handheld digital camera was used to aid in the count and classification of some groups of sheep.

Table 1 contains data from 2010 – 2023. These areas have been consistently surveyed since 2010 and represent the best overall picture of sheep in 19C. During the 2023 count only 413 sheep were counted. This was approximately 62% fewer sheep than the average of 1,088 sheep from 2010 – 2019 and approximately 72% fewer sheep than the high count of 1,499 sheep in 2010. There were 18% lambs in the sample which is the same as the average from 2010 – 2019. While the percentage of lambs was average, the total number of lambs (n=73) was lower than even 2013 when there was a very poor cohort of lambs (n=94). Overall, we found 3% legal rams and 21% sublegal rams.

The winter of 2022/2023 was another difficult winter with snow persisting well into May. In McGrath on April 30th we had 34" of snow which broke all records going back to 1969. Interestingly with the deep snow, lamb production appeared to be average.

There has been a precipitous drop in harvest since 2019 and the number of rams taken the last 2 years were the lowest since 1983 (Figure 4). In March 2023 the board of game closed all nonresident sheep hunting for RY23 and I would expect sheep harvest to be very low this coming fall.

While these surveys are primarily meant to obtain composition data, they do have some value as an index in assessing overall numbers. Sheep movements and survey timing can have an effect on the total numbers of sheep counted, but it is clear that sheep have declined dramatically in 19C since 2017.

Table 1. Cumulative data from Sheep Creek East and West, Post North and South, Tonzona and Little Tonzona survey areas, 2010–2023.

	2010	2013	2014	2015	2016	2017	2019	2023
Approx. Area (mi^2)	453	453	453	453	453	453	453	453
Total Rams	348	268	374	301	255	343	202	98
Legal Rams	56	60	55	46	53	60	33	13
Sublegal Rams	292	208	319	255	202	283	169	85
"Ewes"	864	490	639	499	593	697	390	242
Lambs	287	94	168	167	195	266	178	73
Lambs:100 "Ewes"	33	19	26	33	33	38	46	30
Rams:100"Ewes"	40	55	59	60	43	49	52	40
Legal Rams:100 "Ewes"	6	12	9	9	9	9	8	5
Sublegal Rams:100 "Ewes"	34	42	50	51	34	41	43	35
% Lambs	19	11	14	17	19	20	23	18
% Rams	23	31	32	31	24	26	26	24
% Legal Rams	4	7	5	5	5	5	4	3
% Sublegal Rams	19	24	27	26	19	22	22	21
Total Sheep	1499	852	1181	967	1043	1306	770	413
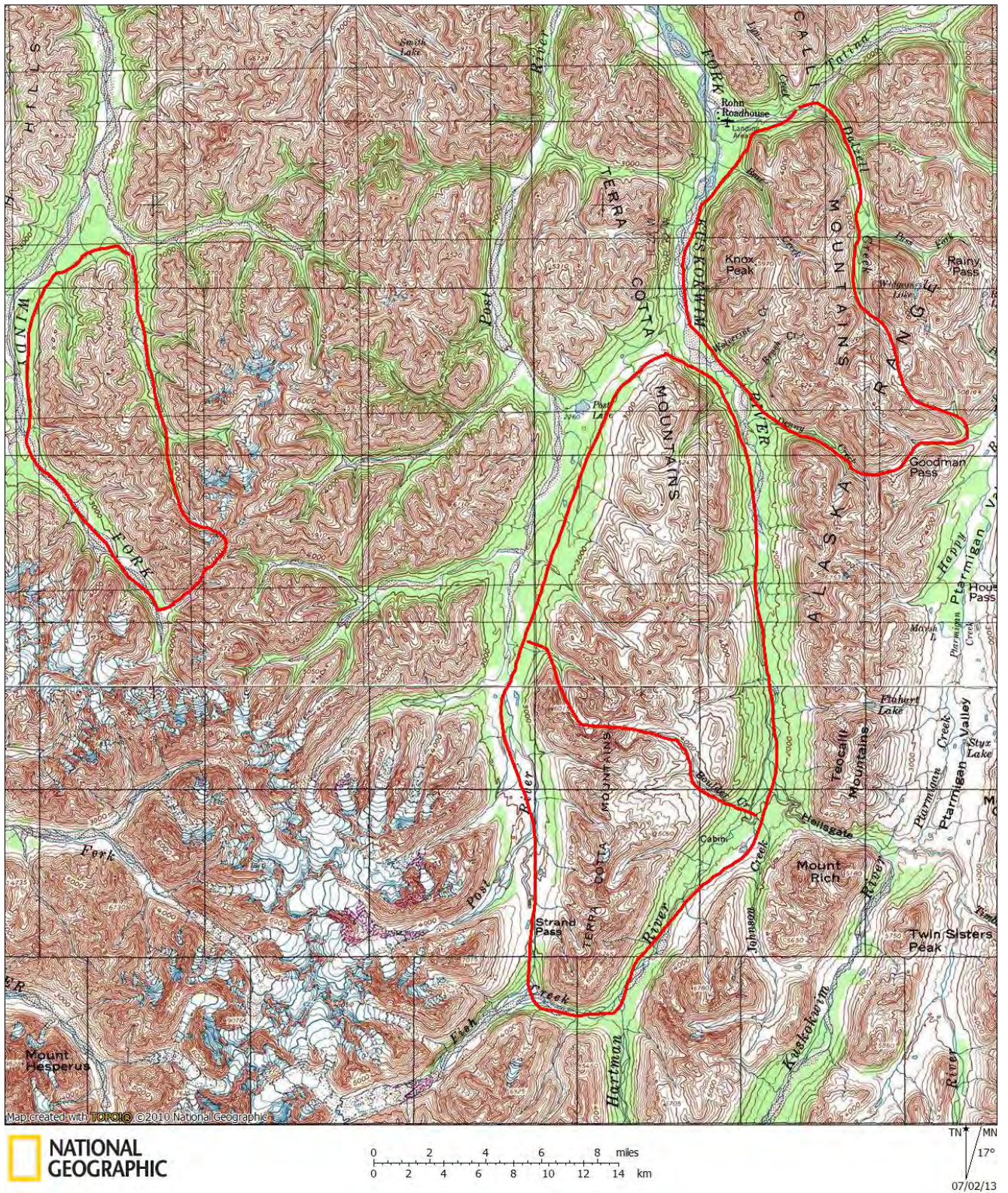
Figure 1. Windy Fork, Knox Peak, Post North and Post South survey areas.
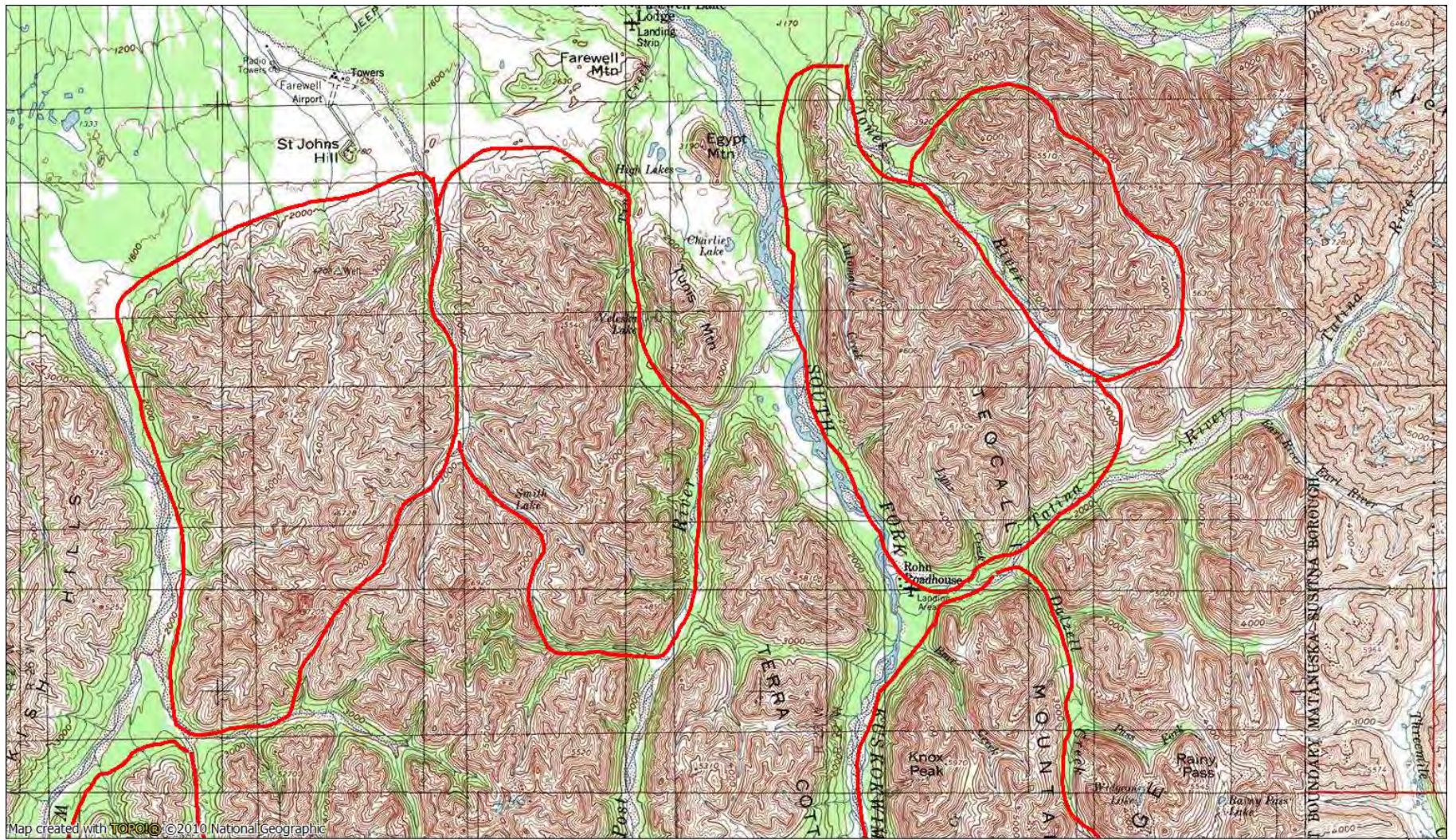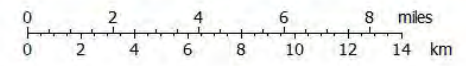
Figure 2. Sheep Creek East, Sheep Creek West, Tatina and Jones River survey areas.
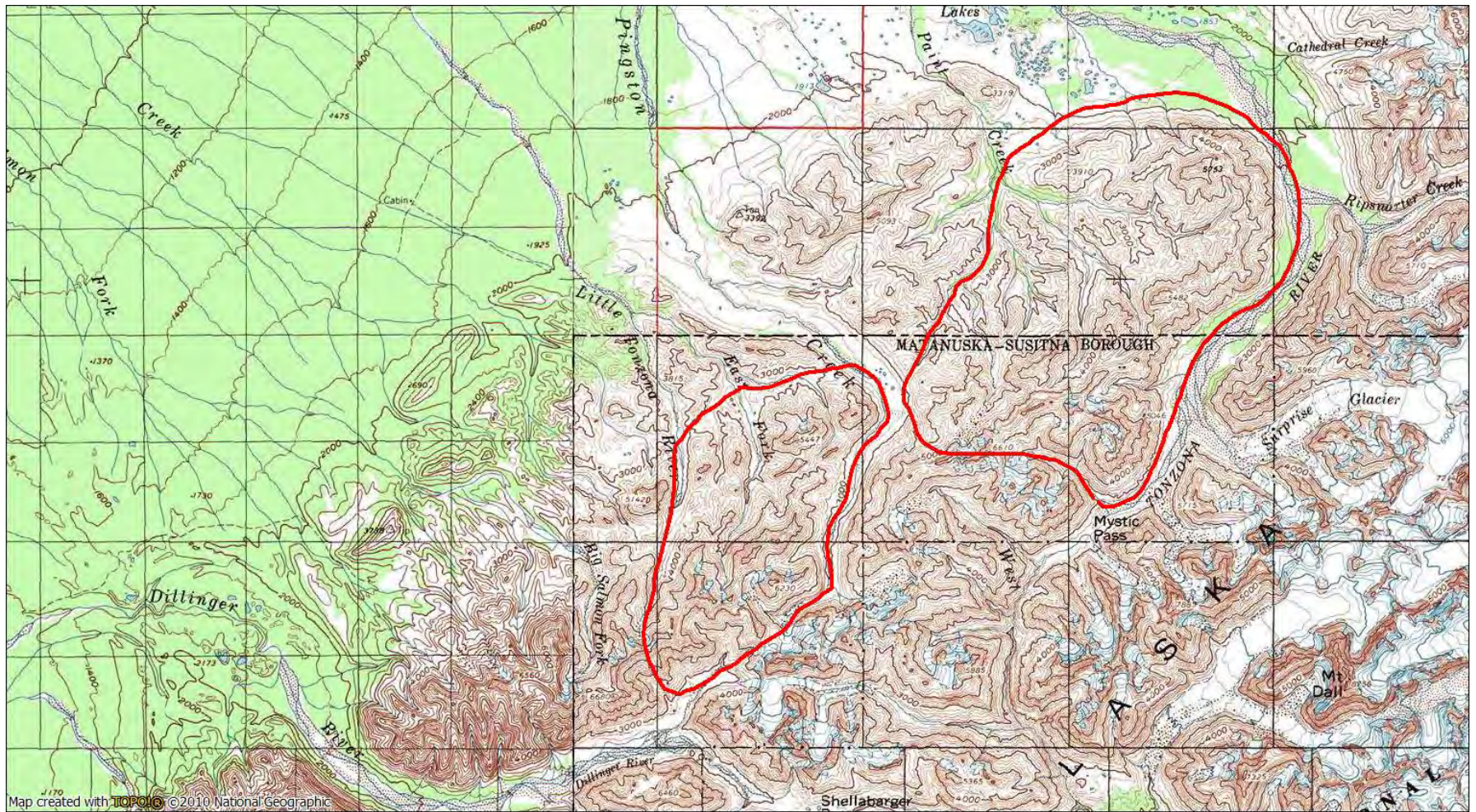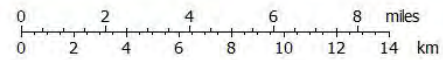
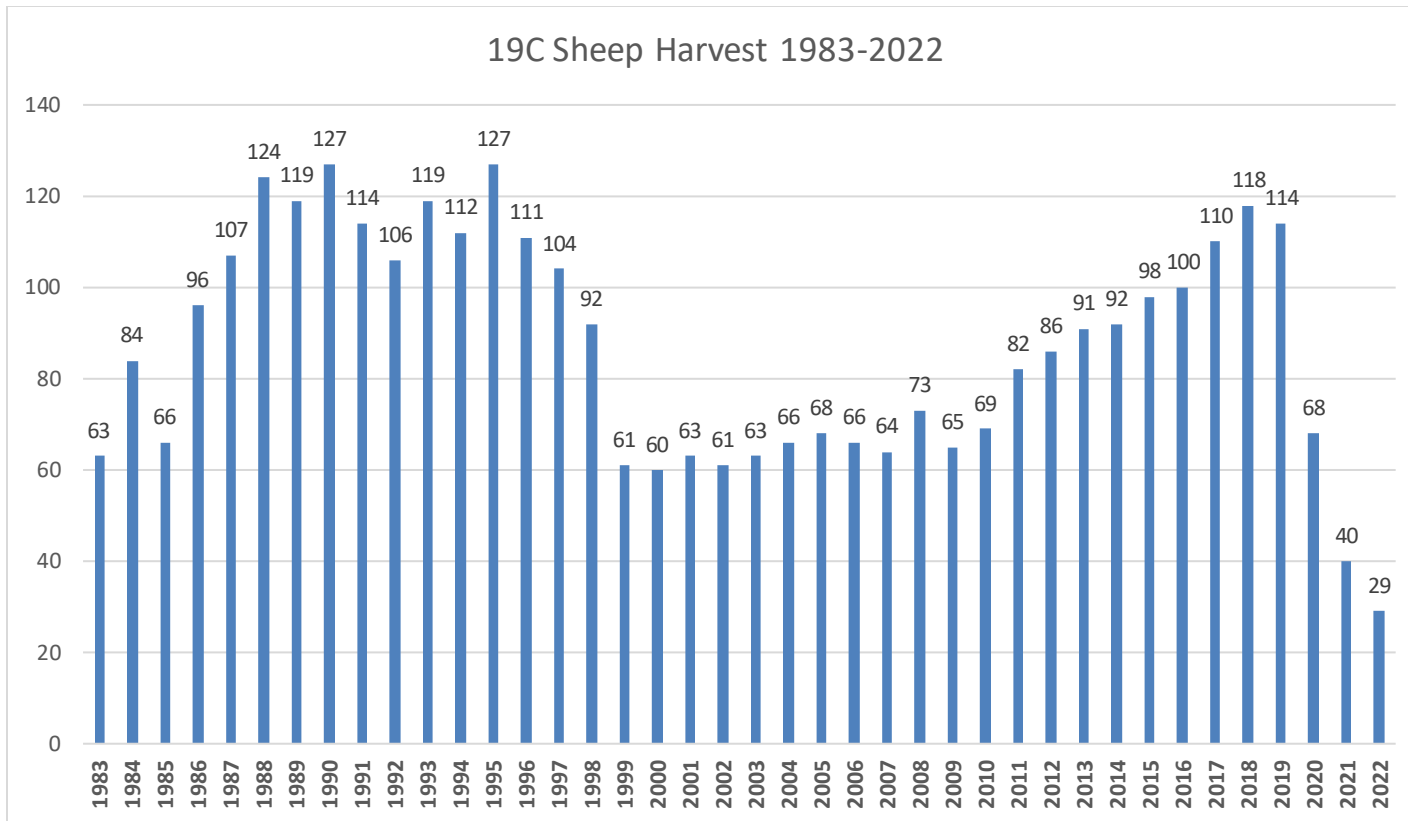Figure 3. Little Tonzona and Tonzona survey areas.

Figure 4. 19C Sheep harvest from 1983 – 2022.

Ongoing and Planned Sheep Research

Regions 2 and 4

Tom Lohuis and Kyle Smith have been investigating rates and causes of mortality, disease presence and prevalence, and the effects of climate change in Chugach and Talkeetna Mountains sheep.

Research in the GMU 13D portion of the Chugach started in 2009 and concluded in 2014; research in GMU 14C Chugach started in 2012 and is ongoing. Sheep in the Chugach appear nutritionally stressed, with low and variable pregnancy rates driving population trajectories. Predation takes less Chugach sheep than in other ranges, approximately 1/3 of lambs born are killed by a variety of predators, 1/3 are lost to accidents, malnutrition, and disease, and 1/3 survive. Only about 1/5 adults in the Chugach are killed by predators. Avalanches are the leading cause of death. Current research is focused on nutrition, habitat, and how snow and ice layers affect sheep foraging behavior, and how those factors may have changed as a result of recent weather patterns.

Research began in GMU13A and 14A in the Talkeetnas in 2019. Data collection on that project is complete as of Summer 2023. Data is currently being analyzed. This project was initiated in response to the detection of Mycoplasma Ovipneumoniae (M ovi) in hunter harvested sheep in the Boulder Creek area. Currently, it does not appear that M Ovi nor other disease play a role in shaping sheep populations in Southcentral Alaska. Other results from this research indicated extremely high levels (29-34%) of overwinter mortality on adult sheep during the winters of 2019-20, 2020-21, and 2021-22. For reference, in most winters, between 8-15% of radiocollared adults are lost to a variety of causes. High overwinter mortality rates measured in the collared sample were mirrored by data from summer population surveys indicating that the Talkeetna Mountains population decreased by approximately 50% over the duration of the project.

Region 3

Brad Wendling and Joe Want currently have two research projects on line, with a third slated to begin summer 2024.

Horn morphometry research was initiated in 2016 in an attempt to assess how many legal rams survive a given hunting season. This work compared age and degree of curl at harvest to when a ram first became legally eligible for harvest and found that, for the years 2016-2022, on a statewide basis, between 57-66% harvested were legally eligible for harvest for at least one previous hunting season year prior to being taken.

The Brooks Range Ram Ecology Project deployed 50 GPS radio collars on rams in summer 2023. One-half of these were deployed on rams on State of Alaska lands in Game Management Units 24A and 25A, in areas open to hunting on a full curl, harvest ticket bag limit. The remainder of collars were deployed on rams on National Park Service land in Game Management Units 24A and 24B in areas only open to subsistence hunting. An additional 60 ewes (30 in the area open to general harvest and 30 in the area open to subsistence hunting)

will be marked with GPS collars in the spring of 2024. This project will attempt to 1) Compare demographic rates (survival, recruitment, population growth) between the two study areas; 2) investigate seasonal and annual movement patterns and habitat selection, 3) compare the reproductive contribution of ram age classes between the study areas, and 4) assess overall health of sheep in both study areas.

Starting in June 2024, another 60 radio collars are slated to be deployed on State of Alaska and National Park Service lands in the central Alaska Range in Game Management Units 20A and in Denali National Park. The experimental design and goals of this study are identical to the Brooks Range Ram ecology study, although there are plans to add ewe and lamb components to the project in the near future.

Region 5

Christie Osburn plans to deploy 40 GPS radio collars in March 2024 on adult ewes in the DeLong and Baird mountains in GMUs 23 and 26A to assess sheep home ranges, habitat use, health, and population demographics.

Statewide

Survey and inventory work continues, along with health surveillance and monitoring. It is also noteworthy that research staff collaborate with universities and other agencies and make a point to involve multiple graduate students on current ADF&G research projects.