	WP26–45 Executive Summary
General Description	Wildlife Proposal WP26-45, requests to allow cow moose without calves to be taken in Unit 18, remainder from July 16 – 31. *Submitted by: Yukon-Kuskokwim Delta Subsistence Regional Advisory Council*
Proposed Regulation	**Unit 18– Moose** *Unit 18, remainder—3 moose, only one of which may be antlered.* ***July 16*** *~~Aug. 1~~-Apr. 30* ***Bulls and cows accompanied by calves may not be taken July 16 - 31.*** *Antlered bulls may not be harvested from Oct. 1 through Nov. 30.*
OSM Preliminary Conclusion	**Support** Proposal WP26-45 **with modification** to also allow the harvest of bulls from July 16 – 31
Yukon-Kuskokwim Delta Subsistence Regional Advisory Council Recommendation	
Western Interior Alaska Subsistence Regional Advisory Council Recommendation	
Interagency Staff Committee Comments	
ADF&G Comments	
Written Public Comments	**None**

Draft Wildlife Analysis
WP26-45

ISSUE

Wildlife Proposal WP26-45, submitted by the Yukon-Kuskokwim Delta Subsistence Regional Advisory Council (Council), requests to allow cow moose without calves to be taken in Unit 18, remainder from July 16 – 31 (**Figure 1**).

Proponent Statement

The proponent states that salmon fishing on the Yukon River has been restricted for a number of years and has created severe food security issues. At the same time that salmon have declined, moose numbers in Unit 18, remainder have increased and are approaching levels that pose concerns for habitat degradation. The proponent concludes that with the current abundance of moose, additional harvest can be supported without conservation concerns in Unit 18, remainder. This proposal would create additional opportunity for federally qualified subsistence users.

Current Federal Regulations

Unit 18− Moose

Unit 18, remainder—3 moose, only one of which may be antlered. Antlered bulls may not be harvested from Oct. 1 through Nov. 30.	*Aug. 1-Apr. 30*

Proposed Federal Regulations

Unit 18− Moose

Unit 18, remainder—3 moose, only one of which may be antlered.	***July 16*** ~~*Aug. 1*~~*-Apr. 30*
Bulls and cows accompanied by calves may not be taken July 16 - 31. *Antlered bulls may not be harvested from Oct. 1 through Nov. 30.*	

Current State Regulations

Unit 18− Moose

Unit 18, remainder (includes Lower Yukon hunt area)	*Residents: Three moose only one of which may be an antlered bull, taking calves or cows accompanied by calves is prohibited*	*HT*	*Aug 1-Sept 30*
	Or *Three antlerless moose*	*HT*	*Oct 1-Nov 30*
	Or *Three moose*	*HT*	*Dec 1-Apr 30*
	Nonresidents: One antlered bull	*HT*	*Sept 1-Sept 30*
	Or *One antlerless moose*	*HT*	*Dec 1-Mar 15*

Extent of Federal Public Lands

Unit 18 is comprised of 68% Federal public lands and consists of 65% U.S. Fish and Wildlife Service (USFWS) managed lands and 3% Bureau of Land Management (BLM) managed lands (**Figure 1**).

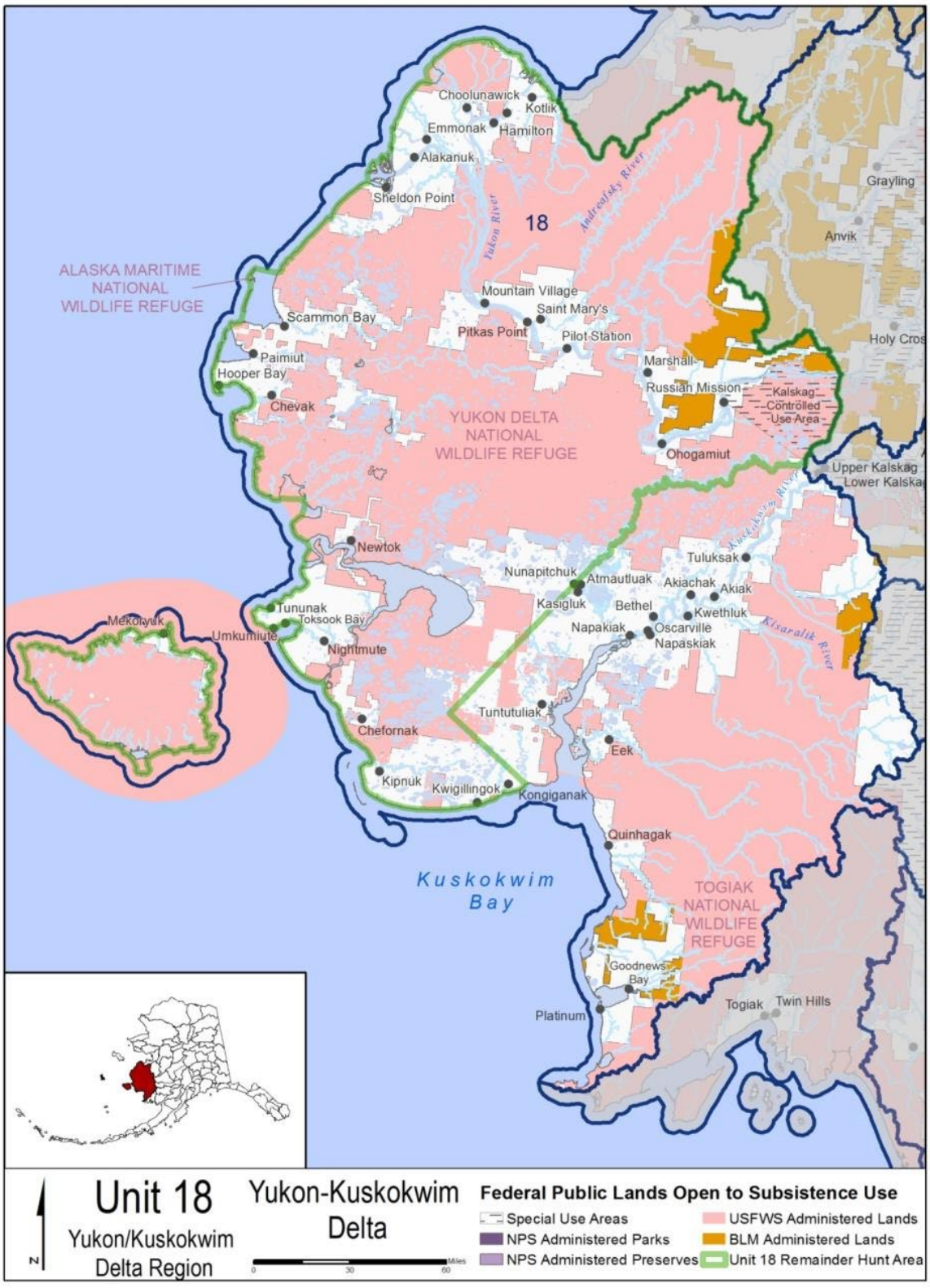

Figure 1. Unit 18 remainder hunt area.

Customary and Traditional Use Determination

Residents of Unit 18, Upper Kalskag (Kalskag), Lower Kalskag, Aniak, and Chuathbaluk have a customary and traditional use determination for moose in Unit 18, that portion of the Yukon River drainage upstream of Russian Mission and that portion of the Kuskokwim River drainage upstream of, but not including, the Tuluksak River drainage.

Residents of Unit 18, Lower Kalskag, St. Michael, Stebbins, and Upper Kalskag have a customary and traditional use determination for moose in Unit 18, that portion north of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village, and all drainages north of the Yukon River downstream from Marshall.

Residents of Unit 18, Lower Kalskag, and Upper Kalskag have a customary and traditional use determination for moose in Unit 18, remainder.

Regulatory History

In November 2005, the Alaska Board of Game (BOG) adopted Proposal 4 in response to the rapid growth of the lower Yukon moose population. Action taken on the proposal modified the State harvest limit by allowing the harvest of antlered bulls only and established a winter season for antlered bulls and calves. During its November 2007 meeting, the BOG adopted Proposal 6, which lengthened the fall moose season for the lower Yukon and remainder areas of Unit 18 by 21 days and lengthened the winter season in the lower Yukon by 10 days.

At its March 2009 meeting, the BOG adopted Proposal 228, which liberalized the State harvest limit from antlered bulls to any moose for the Dec. 20–Jan. 20 season in the lower Yukon area of Unit 18. The BOG stated that the affected moose population increased to a size that could support the harvest of cows.

At its November 12, 2009 work session, the Federal Subsistence Board (Board) approved Special Action WSA08-13, which requested the harvest limit in the lower Yukon area of Unit 18 be increased to two moose per regulatory year, with one allowed in the fall and one in the winter.

At its November 13−16, 2009 meeting, the BOG adopted new regulations to extend the closing date of the winter season from Jan. 20 to Feb. 28 and move the boundary between the lower Yukon and the remainder areas south, to a more discernible geographic landmark.

In 2010, the Yukon Delta National Wildlife Refuge (NWR) submitted Proposal WP10-56, which requested that the harvest limit in the lower Yukon area of Unit 18 (that portion north and west of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village, excluding all Yukon River drainages upriver from Mountain Village) be changed to two moose per regulatory year. Hunters were allowed to harvest one antlered bull in the fall season and one moose in the winter season. Hunters that did not harvest a moose in the fall would be allowed to harvest two moose during the winter season. The proposal also requested that the Yukon Delta NWR manager be delegated the authority to restrict

the harvest in the winter season to one antlered bull or one moose per regulatory year, after consultation with the Alaska Department of Fish and Game (ADF&G). The proposal was adopted by the Board with modification to extend the closing date of the winter season to February 28.

Also in 2010, the Yukon Delta NWR submitted Proposal WP10-57, which requested a change in a portion of the regulatory boundary description for Unit 18, north and west of a line from Cape Romanzof to Kusilvak Mountain to Mountain Village, excluding all Yukon River drainages upriver from Mountain Village. This area was referred to as the lower Yukon hunt area. The proposal was adopted by the Board with modification to remove the Cape Romanzof to Kusilvak Mountain section and replace it with a descriptor for the Kashunuk River drainage.

In 2012, the Yukon Delta NWR submitted Proposal WP12-49, requesting the moose season in Unit 18, lower Yukon, be revised from the fall and winter dates (Aug. 10 - Sept. 30 and Dec. 20 - Feb. 28) to Aug. 1 – last day of Feb. The harvest limit was two moose, only one of which may be antlered. The harvest of an antlered bull would be limited to the dates of Aug. 1 – Sept. 30. The proposal was adopted with modification by the Board at its January 2012 meeting to allow for the harvest of an antlered bull starting on Aug. 1 instead of Sept. 1.

In 2014, the Council submitted Proposal WP14-23, which requested an extension of the moose season in Unit 18, lower Yukon, from Aug. 1 – last day of Feb., to Aug. 1 – Mar. 31. It also requested removal of the antlered bulls restriction from Aug. 1 –Sept. 30. The proposal was adopted with modification by the Board, which resulted in combining the lower Yukon portion of Unit 18 with Unit 18 remainder, establishing a single Yukon drainage hunt area. The modification also stipulated that antlered bulls may not be harvested Oct. 1 – Nov. 30. The harvest limit in Unit 18 remainder was also increased to two moose.

In 2018, the Board adopted Proposal WP18-29, submitted by the Orutsararmiut Native Council, which requested the moose season in Unit 18 remainder be lengthened from Aug. 1- Mar. 31 to Aug. 1- Apr. 30. The Council concurred with the analysis and agency reports that the moose population seemed to be doing very well in the area and supported providing additional subsistence opportunity through an extended season.

At its January 17−20, 2020 meeting, the BOG adopted Proposal 8 to extend the State's winter season from closing Mar. 15 to Apr. 30. The BOG stated that the moose population was continuing to increase and suspected that the Paimiut area had surpassed carrying capacity. Extending the season to Apr. 30 would help manage the growing moose population (BOG 2020).

In 2021, the Board approved emergency special action WSA21-02, submitted by the Council, requesting the Board increase the harvest limit for moose in Unit 18 remainder from 2 moose to 3 moose for the rest of the 2020/21 hunting season, which ended on April 30, 2021. The Board approved this request as the moose population in the Unit 18 remainder hunt area exceeded management objectives and habitat carrying capacity. While increasing the harvest limit may not have been enough to slow the growth of the moose population, it increased opportunity for harvest by federally qualified

subsistence users and helped support sharing in an area that has experienced a decline in salmon and caribou harvest.

In 2022, the Board adopted Proposal WP22-42 as part of the consensus agenda to increase the harvest limit of moose from 2 to 3 in Unit 18, remainder. The Office of Subsistence Management supported the proposal as the moose population in the Unit 18 remainder hunt area far exceeded management objectives and was believed to exceed the habitat carrying capacity. Increasing the harvest limit from 2 to 3 moose could help limit the growth of the moose population and provide additional subsistence opportunity.

In 2024, the BOG adopted Proposal 9 to increase the resident harvest limit in Unit 18 remainder from 2 to 3 moose. ADF&G submitted the proposal because the lower Yukon moose population is showing signs of nutritional stress. Additional harvest may help reduce the moose population, improving its overall health.

Biological Background

Moose began to migrate into the Yukon-Kuskokwim Delta during the mid- to late-1940s and have become an important subsistence resource for locals (Perry 2014). Moose rely on willow and shrub habitats for browsing and for cover from predators (Tape et al. 2016). The taller vegetation heights estimated in the northern and western portions of the state provide more suitable cover and increased forage availability above the snowpack for moose populations than was present in the past (Tape et al. 2016), yet most of the Yukon-Kuskokwim Delta is lowland treeless tundra and is not suitable as winter moose habitat. Consequently, much of the region supports only low to very low density moose populations. However, productive habitat does exist along river corridors, with approximately 4,500 mi^2 and 3,500 mi^2 of suitable moose habitat occurring along the Yukon and Kuskokwim Rivers, respectively (Perry 2014). The Yukon River moose population currently occupies most of the available riparian habitat, is at moderate to high density, is growing, and has high calf production and yearling recruitment (Perry 2014, 2023).

Quantitative ADF&G management objectives for moose in Unit 18 include to manage for a post-hunt (fall) sex ratio of 30 bulls:100 cows. A new objective specific to the lower Yukon area for the regulatory year (RY)15-RY19 planning period is to maintain lower Yukon moose populations at a level the habitat can consistently support while ensuring sustainable harvest. Previously, for the RY10-RY14 reporting period, the objective was to allow the lower Yukon River moose population to grow in abundance to at least 4,000 moose (Perry 2023):

Population and composition surveys are conducted in four survey areas in Unit 18 (Perry 2023). The Lowest Yukon, Andreafsky, and Paimiut survey areas are located within the Unit 18 remainder hunt area **(Figure 2)**. These survey areas were purposely kept small to allow for multiple areas to be surveyed annually.

Between 1988 and 2008, surveys to estimate population size were conducted in the Lowest Yukon survey area of Unit 18 (**Table 1**; OSM 2021). At that time, the survey area encompassed the riparian

corridor along the main stem of the Yukon River downstream of Mountain Village (Perry 2014). In February 2017, the survey area was expanded to accommodate the widening distribution of moose. The results of the 2017 survey estimated the population to be 8,226 moose in the expanded survey area, or 4.7 moose/mi^2 (OSM 2021). By comparison, the moose population and density within the original survey area in 2017 was estimated to be 5,719 with 4.8 moose/mi^2, compared to 2.4 moose/mi^2 in 2008 (**Figure 3**; OSM 2021). The most recent survey was done in Feb./March 2021. The results of this survey estimated the population to be 12,031 moose in the expanded survey area, at 6.89 moose/mi^2. This implies that the Lowest Yukon moose population in Unit 18 has grown at an annual rate of 10% per year from 2017 to 2021 (ADF&G 2021a). This is well above the State's previous management objective of 4,000 moose for this area (Perry 2023).

In the adjacent Andreafsky survey area, which includes the Yukon River from Pilot Station downstream to Mountain Village (Perry 2014), surveys were most recently conducted in 2021. The population was estimated at 6,852 moose. The density was estimated in combination with the Paimiut survey area at 3.68 moose/mi^2 (ADF&G 2021b). Like the moose population in the Lowest Yukon survey area, the population in the Andreafsky area has grown substantially since the early 2000s (**Figure 3**), but it remains at lower density compared to the Lowest Yukon population (OSM 2021).

Population estimates were conducted in the Paimiut survey area in February 2013 and was estimated 6,031 moose with a density of 3.84 moose/mi^2, which was an increase from the population estimate of 3,614 moose and density of 2.3 moose/mi^2 calculated in 2006 (**Table 1, Figure 3**; OSM 2021, Perry 2014). In 2021, the moose population within the Paimiut survey area was estimated at 4,786 moose (ADF&G 2021b).

Adequate survey conditions for fall composition surveys are only present every three or four years. Consequently, composition surveys are completed as conditions allow (Perry 2014). The most recent composition data for all three survey areas was collected in 2021. The 2021 bull:cow ratios in all survey areas exceeded management objectives, ranging from 43-61 bulls:100 cows. Fall calf:cow ratios of < 20 calves:100 cows, 20–40 calves:100 cows, and > 40 calves:100 cows may indicate declining, stable, and growing moose populations, respectively (ADF&G 2012). The calf:cow ratios in the Lowest Yukon survey area have been consistently high since 2010, indicating a growing population and was 61 calves:100 cows in 2021. The calf:cow ratios in the Andreafsy and Paimuit survey areas have indicated a stable to moderately growing moose population since 2019, and were 37 calves and 39 calves:100 cows, respectively in 2021 (**Table 2**; ADF&G 2020, 2021b).

Within areas near the Yukon River in Unit 18, ADF&G estimated the moose population at a minimum of 24,000 animals in 2024. Browse removal rates were estimated to be 31% within the Unit 18 remainder hunt area in 2021. Calf to cow ratios are generally declining and spring short yearling weights downriver of Mountain Village averaged below 300lbs in 2021 and 2022. These indices suggest the moose population along the Lower Yukon River is experiencing nutritional stress (ADF&G 2024).

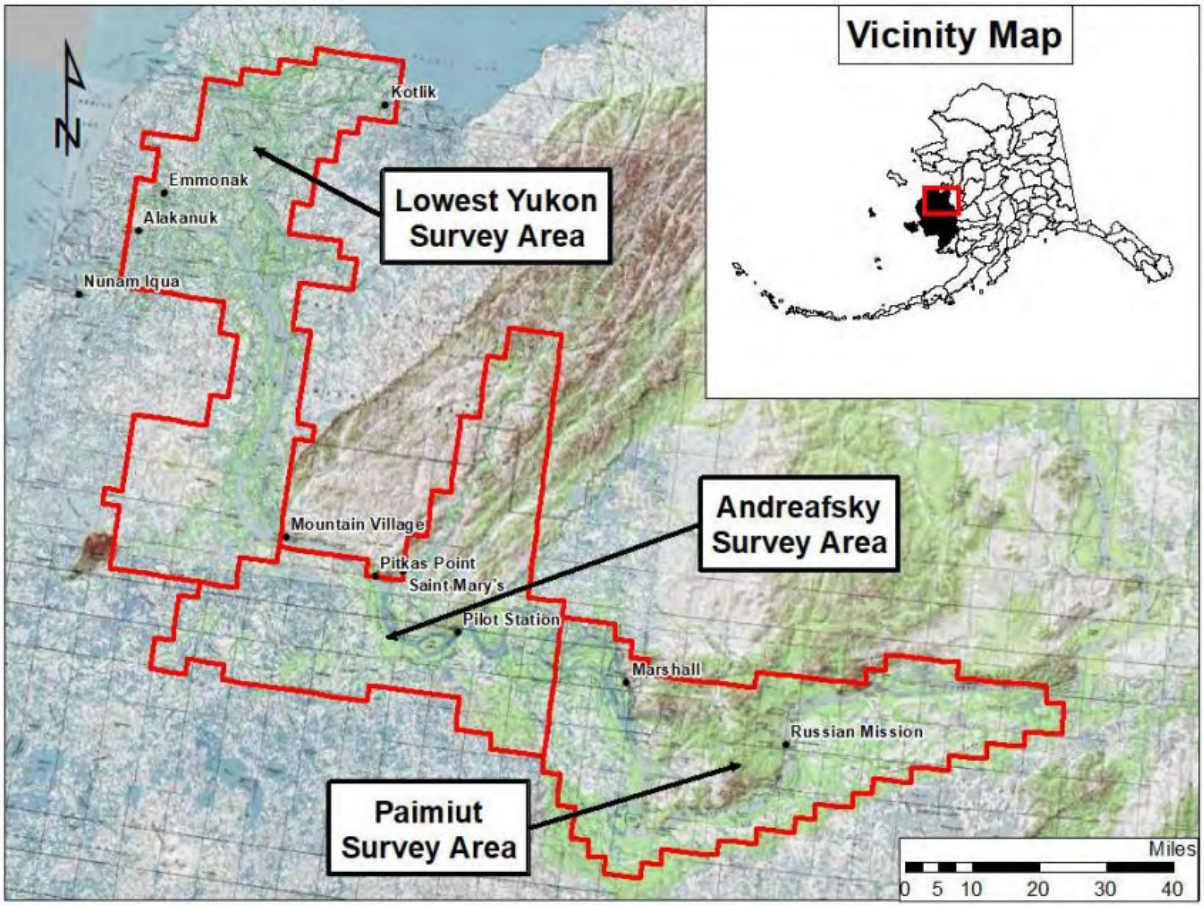

Figure 2. Map of Unit 18 geospatial population estimator (GSPE) survey areas, western Alaska. Figure from Perry 2023.

Table 1. Moose population estimates from spring surveys in the survey areas located within Unit 18 remainder (OSM 2021, ADF&G 2021a, ADF&G 2021b).

Survey Area	Year	Estimate at 95%CI	Density (mi^2)	Survey Technique
Lowest Yukon	1988	0	NA	Minimum count
	1992	28	0.02	Minimum count
	1994	65	0.04	Minimum count
	2002	674 ± 21.9%	0.59	Spatial method
	2005	1342 ± 21.0%	1.12	Spatial method
	2008	2,827 ± 11.98%	2.37	Spatial method
	2008	3,319 ± 16.08%	2.78	Spatial method w/ SCF
	2017	5,719± 12%	4.79	Geospatial
	2017*	8,226 ± 11%	4.71	Geospatial
	2021	12,031 ± 33%	6.89	Geospatial
Andreafsky	1995	52 ± 74.0%	0.04	Gassaway method
	1999	524 ± 29.8%	0.23	Spatial method
	2002	418 ± 22.4%	0.26	Spatial method
	2012	2,748 ± 19.8%	1.72	Spatial method
	2012	3,170 ± 24.3%	1.99	Spatial method w/ SCF
	2021	6,852 ± 20.2%	3.68**	Geospatial
Paimiut	1992	994 ± 19.7%	0.64	Gassaway method
	1998	2,024 ± 12.93%	1.3	Gassaway method
	2002	2,382 ± 16.1%	1.52	Spatial method
	2006	3,614 ± 18.1%	2.3	Spatial method
	2013	5,598 ± 17.8%	3.56	Spatial method
	2013	6,031 ± 20.0%	3.84	Spatial method w/ SCF
	2021	4,786 ± 14.5%	3.68**	Geospatial

*Survey area was increased in 2017 in the Lowest Yukon area.
** Andreafsky and Paimiut density estimates done as one combined unit.

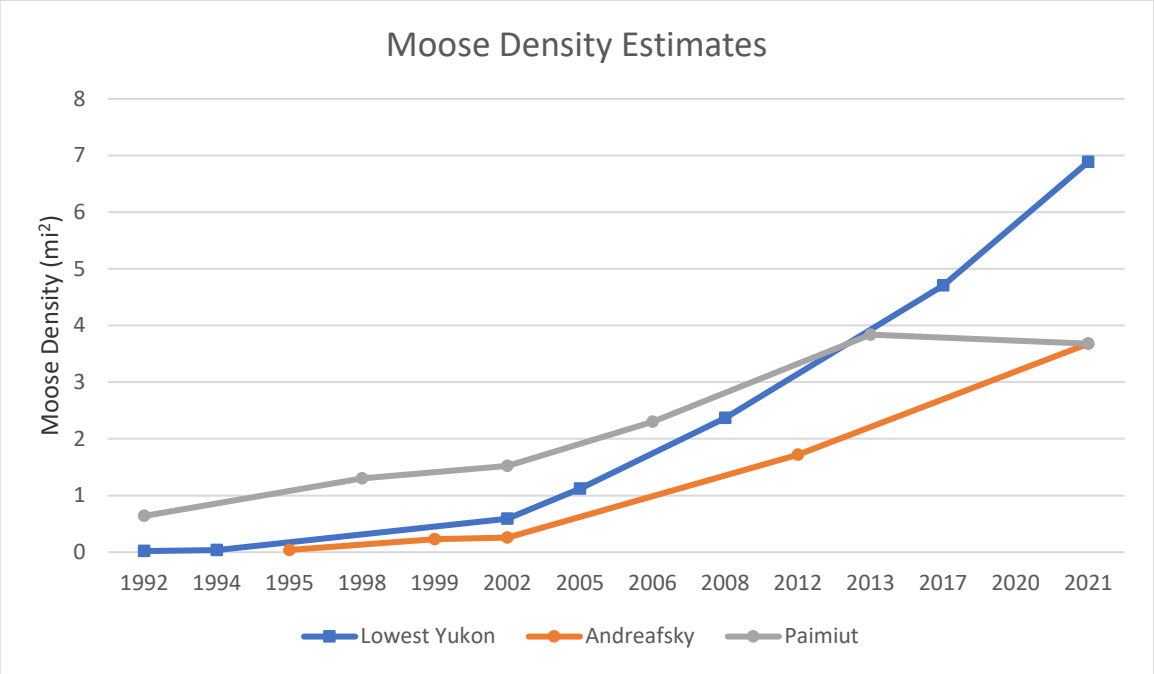

Figure 3. Moose density trend for Lowest Yukon, Andreafsky, and Paimiut survey areas. Note: Andreafsky and Paimiut density estimates were combined in 2021.

Table 2. Composition survey data from the moose survey areas located within Unit 18 remainder (ADF&G 2020).

Area	Year	Bull: 100 Cows	Calf: 100 Cows
Lowest Yukon Survey Area	2010	30	69
	2013	40	48
	2016	51	75
	2021	43	61
Andreafsky Survey Area	2010	42	61
	2019	57	41
	2020	63	35
	2021	61	37
Paimut Survey Area	2013	40	48
	2016	58	54
	2019	57	40
	2021	57	39

Harvest History

ADF&G's harvest records for the general moose hunt in Unit 18 only includes Unit 18 remainder as moose harvest in the other hunt areas of Unit 18 are by registration permit. Over the past 10 years, the largest portion of the harvest has been by Alaska residents. Total reported harvest has increased roughly 26% from 587 moose in 2010 to 795 moose in 2019 (**Figure 5**). While the number of hunters has stayed relatively the same in the past 10 years, the success rate for those hunters has increased from 52% to 73% (ADF&G 2021c). Most moose are harvested during the fall (vs. the winter) season (ADF&G 2024).

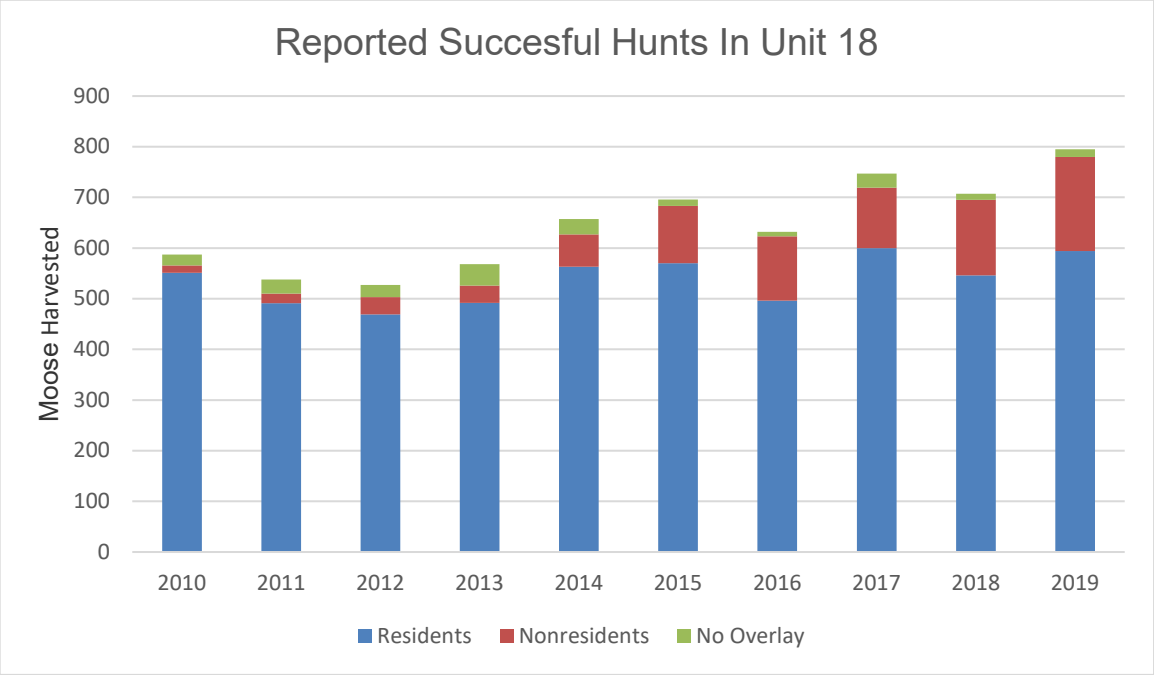

Figure 4. Reported general season moose harvested in Unit 18 (ADF&G 2021c).

Alternative(s) Considered

One alternative considered was to also allow the take of bulls from July 16-31. The submitted proposal only requests the take of cows without calves during the extended summer season. However, allowing the take of bulls during this time as well increases subsistence opportunity and there are no conservation concerns. As only one of the three moose may be antlered, take of a bull during the summer would preclude the harvest of a bull during September, when they are typically harvested.

Another alternative considered was to also allow the take of calves and cows with calves from July 16 – 31 as the Unit 18, remainder moose population may be exceeding carrying capacity and is showing signs of nutritional stress. Therefore, there is no biological reason to restrict harvest to only cows without calves in late July as increasing harvest, especially of cows may help curb population growth and protect the sustainability of this moose population and its habitat in the long-term. This restriction

also does not apply to the remainder of the season (Aug. 1 – Apr. 30). However, this alternative was not further considered as it does not meet the proponent's intent, which specified cows without calves.

Discussion and Effects

If this proposal is adopted, users could harvest cow moose without calves in Unit 18, remainder from July 16 – 31, increasing subsistence opportunity. Moose typically calve from mid-May to early June; therefore adding the condition of "without calves" will greatly reduce the number of moose available for harvest as most cows will be accompanied by a calf in late July and bulls may not be taken. No conservation concerns exist as the Unit 18 remainder moose population is high density, continues to grow and is believed to exceed habitat carrying capacity. Therefore, any increase is harvest could benefit the moose population and subsistence use in the long term by helping to slow the continued growth of this moose population and protect its habitat from over-browsing.

In addition, the expanded harvest season would increase opportunity for federally qualified subsistence users and might promote further sharing of moose throughout the Yukon-Kuskokwim region, increasing food security, especially during this time of low salmon returns and caribou populations. This proposal would increase regulatory complexity by misaligning State and Federal regulations. Users would need to differentiate land status during the late July season, and could not harvest moose from the Yukon River, which is a State-managed, navigable waterway.

OSM PRELIMINARY CONCLUSION

Support Proposal WP26-45 **with modification** to also allow the harvest of bulls from July 16 – 31.

The draft regulations read:

Unit 18– Moose

Unit 18, remainder—3 moose, only one of which may be antlered.	***July 16*** *~~Aug. 1~~ Apr. 30*
Cows accompanied by calves may not be taken July 16 - 31. *Antlered bulls may not be harvested from Oct. 1 through Nov. 30.*	

Justification

The moose population in the Unit 18 remainder hunt area is showing signs of nutritional stress and is believed to exceed its habitat carrying capacity. Allowing cow moose without calves to be taken in Unit 18, remainder from July 16 – 31 may help limit the growth of this moose population and will provide additional subsistence opportunity for federally qualified subsistence users, contributing to food security.

Also allowing the harvest of bulls during late July further increases subsistence opportunity, and there is no biological reason to restrict bull harvest during this time.

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