

**Annual Report to the Alaska Board of Game on  
Intensive Management for Fortymile Caribou  
with Wolf Predation Control**

**in the Upper Yukon–Tanana Predation Control Area  
of Game Management Units 12, 20B, 20D, 20E and 25C**

**Prepared by the Division of Wildlife Conservation  
March 2023**

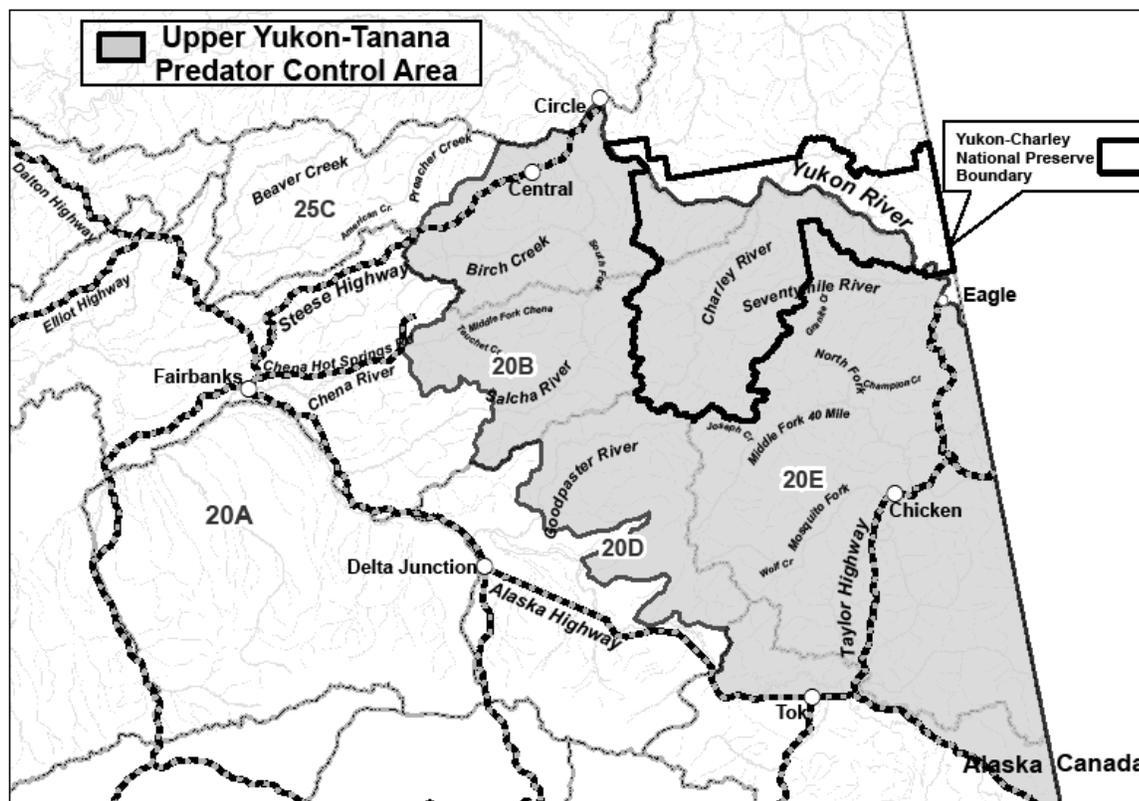


1) **Description of IM Program<sup>1</sup>**

- A) **This report is an annual evaluation for a predation control program authorized by the Alaska Board of Game (board) under 5 AAC 92.113**
- B) **Month this report was submitted by the department to the board:** March 2023.
- C) **Program name:** Upper Yukon–Tanana Predation Control Program (UYTPCP).
- D) **Existing program has an associated Operational Plan**
- E) **Game Management Unit(s) fully or partly included in IM program area:** Units 12, 20B, 20D, 20E and 25C.
- F) **IM objectives for Fortymile caribou herd (FCH):** population size 50,000–100,000 and harvest 1,000–15,000.
- G) **Month and year the current predation control program was originally authorized by the board:** November 2004. **Indicate date(s) if renewed:** March 2009, February 2014, and March 2020.
- H) **Predation control is currently suspended in this IM area.**
- I) **If active, month and year the current predation control program began:** Not active
- J) **A habitat management program funded by the department or from other sources is currently active in this IM area:** No
- K) **Size of IM program area (square miles) and geographic description:** The area encompasses 18,750 mi<sup>2</sup> in that portion of Unit 12 north of the Alaska Highway; that portion of Unit 20D within the Goodpaster River drainage upstream from and including the South Fork Goodpaster River drainage, and within the Healy River, and the Billy and Sand creek drainages; that portion of Unit 20B within the Salcha River drainage upstream from and including the Goose Creek drainage, and within the Middle Fork of the Chena River drainage; all of Unit 20E; and that portion of Unit 25C within the Birch Creek drainage upstream from the Steese Highway bridge, and within the area draining into the south and west bank of the Yukon River upstream from the community of Circle (Fig. 1). However, within this area, predation control activities have not been authorized by the National Park Service within Yukon-Charley Preserve (2,833 mi<sup>2</sup>).

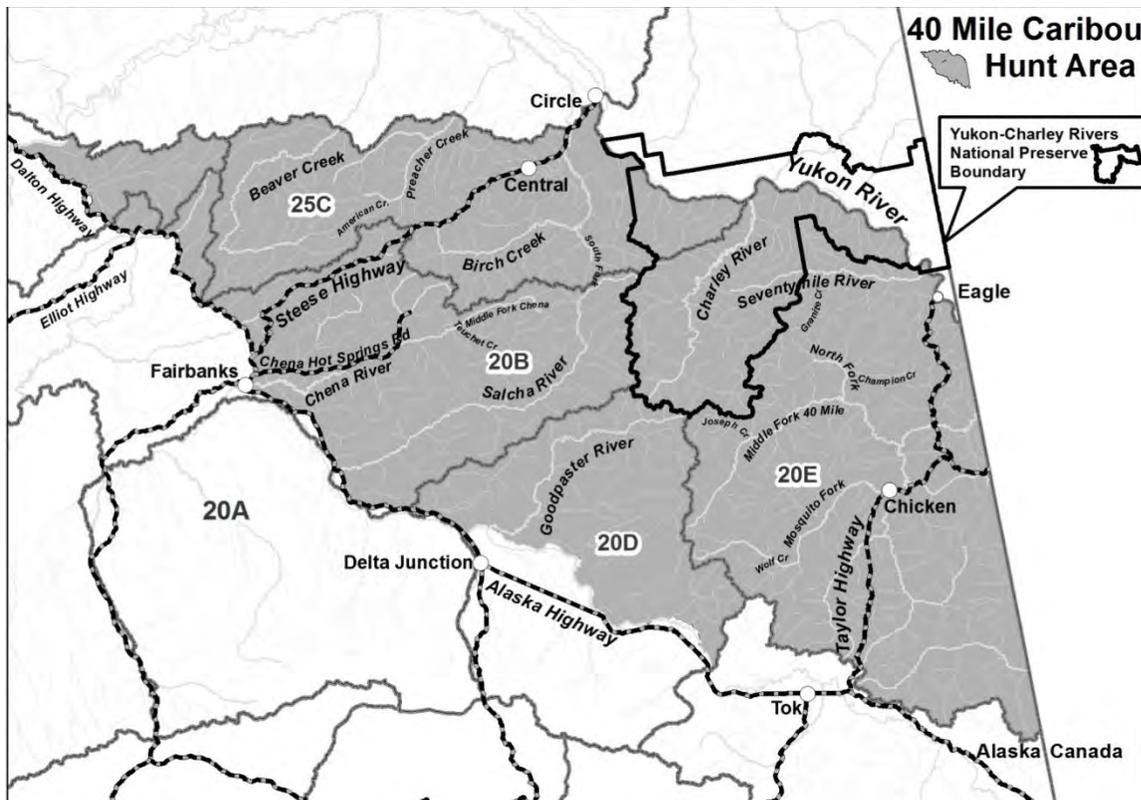
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<sup>1</sup> For purpose and context of this report format, see *Intensive Management Protocol, section on Tools for Program Implementation and Assessment*



**Figure 1. Upper Yukon–Tanana Predator Control Program Area (18,750 mi<sup>2</sup>). Predation control activities have not been authorized by the National Park Service within the Yukon–Charley Preserve portion (2,833 mi<sup>2</sup>) of the control program area.**

- L) Size and geographic description of area for assessing ungulate abundance: 25,217 mi<sup>2</sup> Fortymile Caribou hunt area (Fig. 2).**



**Figure 2. Fortymile Caribou Herd Hunt Area in Alaska (25,217 mi<sup>2</sup>).**

- M) Size and geographic description of area for ungulate harvest reporting:** Fortymile Caribou Herd (FCH) hunt area; 25,217 mi<sup>2</sup>.
- N) Size and geographic description of area for assessing predator abundance:** Upper Yukon–Tanana Predation Control Area (UYTPCA); 18,750 mi<sup>2</sup>.
- O) Size and geographic description of predation control area:** UYTPCA, 18,750 mi<sup>2</sup>. However, predation control activities have not been authorized by the National Park Service within the Yukon–Charley Preserve portion (2,833 mi<sup>2</sup>) of the control program area.
- P) Criteria for evaluating progress toward IM objectives:** Caribou abundance and harvest.
- Q) Criteria for success with this program:** FCH population = 50,000–100,000 and harvest = 1,000–15,000 caribou.
- R) Department recommendation for IM Program during this reporting period:** Conduct evaluation of program.

## 2) Prey data

**Date(s) and method of most recent abundance assessment for:** Caribou – July 2022 photocensus preliminary results (Table 1).

**Compared to IM area, was a similar trend and magnitude of difference in abundance observed in nearby non-treatment area(s) since program inception: Non-treatment area not established.**

**Date(s) of most recent age and sex composition survey for: Caribou – October 2022 composition survey (Table 1).**

**Compared to IM area, was a similar composition trend and magnitude of difference in composition observed in nearby non-treatment area(s) since program inception: Non-treatment area not established.**

**Table 1. Fortymile Caribou Herd (FCH) abundance, age and sex composition in FCH hunt area since the herd was added to the control program in year 3.**

Period	Regulatory <sup>a</sup> year	Abundance	Composition (number per 100 cows)		
			Calves	Bulls	Total <i>n</i>
Year 1	2004	--	--	--	--
Year 2	2005	--	--	--	--
Year 3	2006	43,837 <sup>b</sup>	34	43	4,995
Year 4	2007	44,673 <sup>b</sup>	37	36	5,228
Year 5	2008	46,510 <sup>c</sup>	33	37	4,119
Year 6	2009	51,675 <sup>c</sup>	34	59	4,503
Year 7	2010	--	32	43	7,169
Year 8	2011	--	25	42	3,949
Year 9	2012	--	22	40	4,832
Year 10	2013	--	28	38	3,921
Year 11	2014	--	25	34	4,794
Year 12	2015	--	35	53	5,663
Year 13	2016	--	32	48	3,288
Year 14	2017	73,009 <sup>c</sup>	--	--	--
Year 15	2018	--	18	51	4,429
Year 16	2019	--	--	--	--
Year 17	2020	--	26	35	6,709
Year 18	2021	--	19	40	5,174
Year 19	2022	38,012 <sup>cd</sup>	21	36	3,302

<sup>a</sup> Regulatory year is 1 July through 30 June (e.g., Regulatory year 2004 = 1 July 2004 through 30 June 2005)

<sup>b</sup> Modeled population estimate.

<sup>c</sup> Minimum population estimate from photocensus.

<sup>d</sup> Preliminary results.

**Describe trend in abundance or composition: 2–4% annual rate of increase during regulatory years 2004–2009, based on modeling and photocensus results, 10% annual rate of increase during regulatory years 2010 through 2016, based on minimum counts from photocensus results and 14% annual rate of decline (preliminary analysis) during regulatory years 2017 through 2021, based on minimum counts from photocensus results.**

**Table 2. Fortymile Caribou Herd (FCH) harvest in FCH hunt area during years 1 through 15. The FCH was added to the control program in year 3.**

Period	Regulatory year <sup>a</sup>	Reported on registration permit				Youth draw permit	General harvest report	Estimated		Total
		M	F	Unk	Total			Other <sup>b</sup>	Yukon harvest	
Year 1	2004	592	243	11	846	-	12	10	0	868
Year 2	2005	557	182	2	741	-	4	10	0	755
Year 3	2006	601	247	4	852	-	12	10	0	874
Year 4	2007	746	262	4	1,012	-	20	10	0	1,042
Year 5	2008	681	217	0	898	-	9	10	0	917
Year 6	2009	881	192	10	1,083	-	11	10	0	1,104
Year 7	2010	630	89	6	725	-	4	10	15	754
Year 8	2011	935	125	6	1,066	-	18	10	15	1,109
Year 9	2012	1,081	190	25	1,296	-	12	10	15	1,333
Year 10	2013	1,152	14	20	1,186	-	75 <sup>c</sup>	10	60	1,331
Year 11	2014	690	283	14	987	-	19	10	15	1,031
Year 12	2015	830	291	10	1,131	14	8	10	30	1,193
Year 13	2016	648	334	8	990	17	3	10	5	1,025
Year 14	2017	1,314	637	1	1,952	18	10	10	5	2,018 <sup>d</sup>
Year 15	2018	1,940	495	4	2,439	22	13	10	30	2,514
Year 16	2019	1,636	991	25	2,652	22	8	10	30	2,780 <sup>d</sup>
Year 17	2020	4,116	3,165	47	7,328	22	42	10	50	7,452
Year 18	2021	2,193	2,343	17	4,553	22	15	10	50	4,650
Year 19	2022	939	170	9	1,118	6	3	10	50	1,187 <sup>e</sup>

<sup>a</sup> A regulatory year is 1 July through 30 June (e.g., regulatory year 2004 = 1 July 2004 through 30 June 2005).

<sup>b</sup> Includes estimated unreported and/or illegal harvest.

<sup>c</sup> Includes 65 harvested in Unit 25B.

<sup>d</sup> Includes caribou harvested under RC857; 23 in RY17 and 58 in RY19

<sup>e</sup> Preliminary data. Winter hunt is ongoing at time of this report.

**Describe trend in harvest:** Harvest controlled by fixed annual harvest quota. Annual quota was 850 caribou/year during regulatory years 2006 through 2009 (RY2006–RY2009; A regulatory year is 1 July through 30 June, meaning RY2006 = 1 July 2006 through 30 June 2007), 795 caribou/year in RY2010, 1,000 caribou/year during RY2011–RY2016, 1,750 caribou during RY2017, 2,030 during RY2018, 2,180 during RY2019, 10,000 during RY2020, 5,000 during RY2021 and 1,200 during RY2022.

**Describe any other harvest-related trend if appropriate:** None.

### 3) Predator data

**Date(s) and method of most recent spring abundance assessment for wolves:** March 2020, Intensive Aerial Wolf Survey.

**Date(s) and method of most recent fall abundance assessment for wolves:** October 2022 minimum population estimate, including all wolves associated with radiocollared wolves and wolves in uncollared packs located during radiotracking flights during October 2021 – December 2022.

Other research or evidence of trend or abundance status in wolves: None.

**Table 3. Wolf abundance and removal in the Upper Yukon–Tanana Predation Control Area since program implementation since year 1. Removal objective was 60–80% of pre-control fall abundance in year 1 of wolf predation control program when predation control was active, so estimated or confirmed number remaining by 1 May each regulatory year in the predation control area must be at least 88.**

Period	Regulatory <sup>a</sup> year	Fall abundance (range)	Harvest removal		Dept. control removal	Public control removal	Total removal	Spring abundance (range) <sup>b</sup>
			Trap	Hunt				
Year 1	2004	380 <sup>cd</sup> (350–410)	52	23	N/A	60	135	245 (215–275)
Year 2	2005	335 <sup>d</sup> (300–370)	58	10	N/A	17	85	250 (215–285)
Year 3	2006	362 <sup>d</sup> (300–425)	73	7	N/A	23	103	259 (197–322)
Year 4	2007	382 <sup>d</sup> (366–398)	57	14	N/A	27	98	284 (268–300)
Year 5	2008	372 <sup>e</sup>	82	11	84	49	226	146
Year 6	2009	235 <sup>f</sup>	31	4	15	10	60	175
Year 7	2010	274 <sup>d</sup> (262–285)	26	11	0	25	62	212 (200–223)
Year 8	2011	329 <sup>d</sup> (315–342)	62	17	56	8	145	184 (170–197)
Year 9	2012	386 <sup>d</sup> (368–403)	41	12	40	78	171	215 (197–232)
Year 10	2013	356 <sup>d</sup> (338–373)	44	10	31	31	116	240 (222–257)
Year 11	2014	374 <sup>d</sup> (357–393)	38	10	33	24	105	269 (252–288)

Period	Regulatory <sup>a</sup> year	Fall abundance (range)	Harvest removal		Dept. control removal	Public control removal	Total removal	Spring abundance (range) <sup>b</sup>
			Trap	Hunt				
Year 12	2015	408 <sup>d</sup> (390–426)	55	14	19	29	117	291 (273–309)
Year 13	2016	451 <sup>d</sup> (431–471)	109	21	88	18	236	215 (195–235)
Year 14	2017	391 <sup>d</sup> (372–409)	61	10	50	19	140	251 (232–269)
Year 15	2018	408 <sup>d</sup> (390–427)	34	7	--	--	41	367 (349–386)
Year 16	2019	479 <sup>g</sup> (463–495)	69	21	--	--	90	389 (373–405)
Year 17	2020	255 <sup>h</sup>	122	31	--	--	153	-- <sup>i</sup>
Year 18	2021	294 <sup>h</sup>	49	18	--	--	67	-- <sup>i</sup>
Year 19	2022	228 <sup>h</sup>	2 <sup>j</sup>	29 <sup>j</sup>	--	--	31 <sup>j</sup>	-- <sup>i</sup>

<sup>a</sup>Regulatory year is 1 July through 30 June (e.g., regulatory year 2004 = 1 July 2004 through 30 June 2005).

<sup>b</sup>Fall estimate minus all known wolf kills.

<sup>c</sup>Pre-control population estimate.

<sup>d</sup>Fall modeled estimate.

<sup>e</sup>Revised fall modeled estimate using results from a March 2009 reconnaissance survey and regulatory year 2008 removal data. The original fall modeled estimate was 393–431.

<sup>f</sup>Revised fall modeled estimate using results from a March 2010 reconnaissance survey and regulatory year 2009 removal data. The original fall modeled estimate was 262–299.

<sup>g</sup>Estimate developed using results from a March 2020 Intensive Aerial Wolf Survey and regulatory year 2019 removal data.

<sup>h</sup>Minimum population estimate, including all wolves associated with radiocollared wolves and wolves in uncollared packs located during radiotracking flights during October–January in this regulatory year.

<sup>i</sup>Model still being developed as of March 2023.

<sup>j</sup>Preliminary data, season is ongoing.

**4) Habitat data and nutritional condition of prey species where active habitat enhancement is occurring or was recommended in the Operational Plan, describe progress toward objectives: No enhancement recommended by the Operational Plan and no active habitat enhancement conducted.**

**Table 4. Nutritional indicators for Fortymile Caribou Herd (FCH) in FCH hunt area since year 1.**

<b>Period</b>	<b>Regulatory<sup>a</sup> Year</b>	<b>Spring Birthrates (% of cows &gt;36 months old that gave birth)</b>	<b>Spring Birthrates of 3-year-olds (% of cows =36 months old that gave birth)</b>
Year 1	2004	85	33
Year 2	2005	80	82
Year 3	2006	91	83
Year 4	2007	90	88
Year 5	2008	77	30
Year 6	2009	77	29
Year 7	2010	85	67
Year 8	2011	89	62
Year 9	2012	88	83
Year 10	2013	69	37
Year 11	2014	92	60
Year 12	2015	81	25
Year 13	2016	91	89
Year 14	2017	67	32
Year 15	2018	84	38
Year 16	2019	91	40
Year 17	2020	79	33
Year 18	2021	81	20

<sup>a</sup> regulatory year is 1 July through 30 June (e.g., regulatory year 2004 = 1 July 2004 through 30 June 2005)

## **5) Costs specific to implementing Intensive Management**

**Table 8. Upper Yukon–Tanana program cost (\$1,000 = 1.0) of agency salary based on estimate of proportional time of field level staff and cost of operations for intensive management activities (e.g., predator control or habitat enhancement beyond normal Survey and Inventory work) performed by personnel in the department or work by other state agencies (e.g., Division of Forestry) or contractors in Upper Yukon–Tanana Predator Control Area during since year 7.**

Period	Fiscal <sup>a</sup> Year	Predation control <sup>b</sup>		Other IM activities		Total IM cost	Research cost <sup>e</sup>
		Time <sup>c</sup>	Cost <sup>d</sup>	Time	Cost		
Year 7	2011	0.4	3.5	12.7	166.4	169.9	67.1
Year 8	2012	3.9	242.5	12.0	154.0	396.5	80.3
Year 9	2013	2.3	136.1	11.8	150.0	286.1	12.0
Year 10	2014	1.6	96.0	16.3	207.4	303.4	98.0
Year 11	2015	1.3	153.5	18.0	308.9	462.4	148.7
Year 12	2016	0.9	86.1	20.1	392.2	478.3	232.0
Year 13	2017	2.3	287.7	20.1	392.2	679.9	234.0
Year 14	2018	2.8	182.3	24.5	345.3	527.6	336.7
Year 15	2019	0.0	0.0	22.5	256.0	256.0	405.2
Year 16	2020	0.0	0.0	16.4	308.3	308.3	260.2
Year 17	2021	0.4	2.2	34.0	489.1	491.3	445.7
Year 18	2022	0.0	0.0	28.2	416.9	416.9	304.2

<sup>a</sup> Fiscal year (FY) is also 1 July to 30 June but the year is one greater than the comparable Regulatory Year (e.g., Fiscal year 2011 is 1 July 2010 to 30 June 2011).

<sup>b</sup> State or private funds only.

<sup>c</sup> Person-months (22 days per month)

<sup>d</sup> Salary plus operations. Beginning in Fiscal Year 2019, Other IM activities includes normal survey and inventory work, which is typically more robust in an IM program than standard survey and inventory work.

<sup>e</sup> Separate from implementing IM program but beneficial for understanding the ecological or human response to management treatment (scientific approach that is not unique to IM).

## 6) Department recommendations for annual evaluation (1 February) following Year 18 (February 2021) for UYTPCP

**Has progress toward defined criteria been achieved?** Based on modeling and photocensus results the FCH increased 2–4% annually during regulatory years 2004–2009, and increased 10% annually during regulatory years 2010–2017. However, based on modeling a photocensus results the herd declined by 14% annually during regulatory years 2018–2022 and fell below the lower end of the IM population objective of 50,000–100,000, by regulatory year 2021.

**Has achievement of success criteria occurred?** The preliminary results of the June 2022 photo census estimated the caribou population at 40,265, which is below the IM population objective of 50,000–100,000. However, with the current reported harvest of 1,127 caribou in Alaska during regulatory year 2022, harvest is within the IM harvest objective of 1,000–15,000.

**Recommendation for Predation Control:** Predator control activities have been suspended in the UYTPCA so that the department can evaluate the effects of predation control on the FCH and wolves in the area. We will continue monitoring the results of the program through caribou harvest and caribou and wolf population parameters.