
CHAPTER 12: CARIBOU MANAGEMENT REPORT

From: 1 July 2012
To: 30 June 2014¹

LOCATION

GAME MANAGEMENT UNITS: 20B, 20C, 20D, 20E, and 25C (20,000 mi²)

HERD: Fortymile

GEOGRAPHIC DESCRIPTION: Charley, Fortymile, Salcha, Goodpaster, and Ladue rivers, and Birch and Shaw Creek drainages between the Tanana River and the south bank of the Yukon River; the Fortymile caribou herd currently ranges up to 130 miles into Yukon, Canada

BACKGROUND

The Fortymile caribou herd (FCH) range includes portions of the upper Fortymile, Tanana, and Yukon river drainages in both Alaska and Yukon, Canada. FCH is important for consumptive and nonconsumptive uses in Interior Alaska and southern Yukon. Like other caribou herds in Alaska, FCH has displayed major changes in abundance and distribution through time. During the 1920s, it was the largest herd in Alaska and perhaps one of the largest in the world, estimated by Murie (1935) at over 500,000 caribou. For unknown reasons, FCH declined during the 1930s to an estimated 10,000–20,000 caribou (Skoog 1956). Timing of the subsequent recovery is unclear, but by the 1950s, FCH had increased to an estimated 50,000 caribou (Valkenburg et al. 1994). Herd recovery was likely aided significantly by a federal predator control program that began in 1947. Through the early 1960s the herd fluctuated slightly, but most population estimates were around 50,000 animals (Valkenburg et al. 1994).

Between the mid-1960s and mid-1970s the herd declined and was estimated to be at its lowest population level since the 1920s (5,740–8,610 animals) during 1973–1976 (Valkenburg et al. 1994). This decline was attributed to a combination of high harvests, severe winters, and wolf predation (Davis et al. 1978, Valkenburg and Davis 1989). During this decline, FCH reduced its range size and changed its seasonal migration patterns. By the early 1960s the herd stopped crossing the Steese Highway in significant numbers, and by the early 1970s, few Fortymile caribou continued to make annual movements into Yukon, Canada. Since the early 1970s the herd's range has remained about 19,300 mi² (50,000 km²), less than 25% of the range thought to have been used by FCH during the 1920s.

¹ At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

FCH began increasing after 1976, likely in response to favorable weather conditions, reduced harvests, and a natural decline in wolf numbers. By 1990 the herd was estimated at 22,766 caribou. During 1990–1995, the herd remained relatively stable at about 22,000 caribou when population growth stabilized due to high adult mortality, unusually low pregnancy rate in 1993, and low-to-moderate calf survival (Boertje and Gardner 2000a). In combination with public wolf trapping, the Alaska Department of Fish and Game (ADF&G) conducted nonlethal wolf control during November 1997–May 2001. Within the calving and summer range of FCH, wolf numbers were reduced by 78% to 2 sterilized alpha wolves in each of 15 pack territories (Gardner 2003). During 1996–2002, FCH doubled in size due to elevated pregnancy rates and increased adult and calf survival (Table 1). The current objectives of 50,000–100,000 caribou and harvest of 1,000–15,000 caribou were established by the Alaska Board of Game in 2000 and are defined in intensive management regulations (Title 5 of the Alaska Administrative Code, regulation 92.108 [5 AAC 92.108]).

FCH historically provided much of the food needed by residents within its range. From the late 1800s to World War I, the herd was subject to market hunting in both Alaska and Yukon. Most hunting was concentrated along the Steese Highway and along the Yukon River upstream from Dawson before the Taylor Highway was constructed in the mid-1950s. During the 1960s, hunting was concentrated along the Steese and Taylor highways in Alaska and along the Top of the World Highway in Yukon. During the late 1970s and the 1980s, Alaska’s hunting regulations for Fortymile caribou were designed to benefit subsistence hunters and to prevent harvest from limiting herd growth. Bag limits, harvest quotas, and season openings tailored to benefit local residents were the primary regulatory mechanisms used to meet these objectives. Hunting seasons were deliberately set to avoid the period when road crossings were likely. Consequently, hunter concentration and harvest distribution shifted from highways to trail systems accessed from the Taylor and Steese highways and areas accessed from small airstrips within the Fortymile and Charley river drainages.

Harvest was further restricted during the early 1990s to reduce impact on herd growth. Harvest regulations also became increasingly complex due to a legal ruling regarding Alaska’s subsistence law that initiated federal management of the herd on federal lands. Competition among Alaska hunters increased because of the reduced quotas and complex regulations. During this period many residents within the herd’s range were unhappy with the ineffectiveness of dual federal and state management in administering the hunts and bringing about a herd increase. In response, the Upper Tanana-Fortymile Fish and Game Advisory Committee, the Tr’ondëk Hwëchîn First Nation in Yukon, and other public groups requested that ADF&G, the U.S. federal agencies, and Yukon Department of Renewable Resources work with the public to develop a management plan for FCH.

In 1994 the Fortymile Caribou Herd Management Planning Team was established. The team was comprised of 13 members of the public representing subsistence users from Alaska and Yukon, sport hunters, Native villages and corporations, environmental groups, and agency representatives from ADF&G, Bureau of Land Management, U.S. Fish and Wildlife Service, National Park Service, and Yukon Department of Renewable Resources.

The team completed the *Fortymile Caribou Herd Management Plan* in October 1995 (Fortymile Caribou Herd Management Planning Team 1995). This plan included recommendations for herd

size, harvest, and habitat management and recommended a combination of nonlethal wolf control by ADF&G and wolf trapping by the public to reduce wolf predation on caribou calves. Harvest management recommendations prompted the Alaska Board of Game and the Federal Subsistence Board to develop new harvest regulations. The Alaska Board of Game, the Federal Subsistence Board, and the Yukon Fish and Wildlife Management Board endorsed the plan and developed new harvest regulations that satisfied the plan and guided regulatory decisions during 1996–2000. The plan formally ended in 2001.

In 1999 the 5 Fish and Game advisory committees within the herd's range in Alaska (Central, Delta, Eagle, Fairbanks, and Upper Tanana-Fortymile) recognized the need to cooperatively develop harvest regulations that would benefit hunters and carry out the goals of the Fortymile caribou herd management plan. These advisory committees, with input from the federal Eastern Interior Regional Advisory Council to the Federal Subsistence Board, Yukon Department of Renewable Resources, Yukon First Nations, and many other interested parties, developed the *Fortymile Caribou Herd Harvest Plan 2001–2006* (Advisory Committee Coalition 2000). The 2001–2006 harvest plan was developed to guide harvest management of the Fortymile caribou herd in Alaska during 2001–2006 and retained the same primary goals of the *1995 Fortymile Caribou Herd Management Plan*. Those goals provided conditions for continued growth of Fortymile caribou herd to allow it to expand to its former range in Alaska and Yukon. The 2001–2006 harvest plan also provided for resumption of traditional hunting opportunity that was severely reduced during 1995–2000. The 2001–2006 harvest plan was endorsed by the Alaska Board of Game in March 2000 and guided regulation development and implementation during regulatory years (RY; regulatory year begins 1 July and ends 30 June, e.g., RY02 = 1 July 2002–30 June 2003) RY02–RY05.

In 2005 these Fish and Game advisory committees again reconvened to develop an updated plan. In March 2006, with input from the federal Eastern Interior Regional Advisory Council, Yukon Department of Environment (formerly Yukon Department of Renewable Resources), Yukon First Nations, and many other interested parties, they developed the *Fortymile Caribou Herd Harvest Plan 2006–2012* (Advisory Committee Coalition 2006). The 2006–2012 harvest plan retained the same primary goals as the 1995 management plan and 2001–2006 harvest plan and was endorsed by the Alaska Board of Game in March 2006. The 2006–2012 harvest plan guided regulation development and implementation during RY06–RY11.

Again in 2011, the original 5 Alaska Fish and Game advisory committees, as well as the Matanuska-Susitna Valley and Anchorage advisory committees developed the *Fortymile Caribou Herd Harvest Plan 2012–2018* (Harvest Management Coalition 2012). The 2012–2018 harvest plan retained the same primary goals as the 1995 management plan, the 2001–2006 harvest plan, and the 2006–2012 harvest plan. The Alaska Board of Game endorsed the 2012–2018 harvest plan in March 2012. The 2012–2018 harvest plan will guide regulatory development and implementation during RY12–RY18.

MANAGEMENT DIRECTION

Gardner (2003) summarized Fortymile caribou herd management direction during the 1970s through 2000. During RY02–RY05, FCH management was guided by recommendations in the

2001–2006 harvest plan. During RY06–RY14, management was guided by recommendations in the 2006–2012 and 2012–2018 harvest plans.

The Fortymile harvest plans have been a highly successful joint state–federal management program benefiting users and FCH. Since 2001 these plans have had support of the public and regulatory boards and have withstood a number of proposals to state and federal boards that could have resulted in reduction in herd growth, potential population declines, or to separation of state and federal hunt management systems.

The following management goals and objectives were developed to meet the goals of the 2006–2012 and 2012–2018 harvest plans and the intensive management regulations. In addition, management goals, objectives, and activities were revised for RY10–RY11 to address uncertainty about historic range size and sustainability of estimated historic population levels, and more clearly define the FCH management program.

MANAGEMENT GOAL

- Restore FCH to as much of its traditional range in Alaska and Yukon as possible, within sustainable levels, and without significantly compromising herd health and habitat condition.

MANAGEMENT OBJECTIVES

- Objective 1:* Provide conditions for the Fortymile herd to grow at an annual rate of 5–10%, until population indices indicate the herd is becoming nutritionally stressed, to provide increased caribou hunting and viewing.
- Objective 2:* Manage for a herd size of 50,000–100,000, unless nutrition indices indicate a lower sustainable limit.
- Objective 3:* Manage the herd to sustain an annual harvest of 1,000–15,000 caribou.
- Objective 4:* Maintain an October bull:cow ratio of at least 35:100.

MANAGEMENT ACTIVITIES

- Work with land agencies, landowners, and developers to minimize the impact of human activities on caribou habitat (Objective 1).
- Work with land agencies, landowners, and developers to mitigate developments detrimental to Fortymile caribou (Objective 1).
- Maintain regulatory flexibility to stabilize the FCH population if nutrition indices indicate herd health is becoming significantly compromised (Objectives 2 and 3).
- Work with land agencies and landowners to maintain a near-natural fire regime (Objective 1).
- Attempt annual photocensuses (Objectives 1 and 2).
- Conduct annual fall composition surveys (Objectives 1 and 4).

- Capture 35 female calves-of-the-year annually to collect biological information and deploy radio collars to maintain the minimum sample size of 75 radiocollared females in the herd (Objectives 1–4).
- Maintain a minimum sample size of at least 75 radiocollared females, including a minimum of 15 satellite and 60 VHF collars (Objectives 1–4).
- Radiotrack throughout the year to determine seasonal distribution, mortality rates, and proximity to highways during hunting seasons (Objectives 1–3).
- Monitor changes in seasonal range distribution (Objectives 1–3).
- Conduct annual parturition surveys in May to determine parturition rates of radiocollared females ≥ 3 -years of age (Objectives 1 and 2).
- Regulate hunting to maintain an annual harvest of 2% ($\pm 0.3\%$) of the preseason population estimate, with no more than 25% of the harvest consisting of cows (Objectives 1–4).
- Monitor harvest through hunt reports (Objective 3).
- Regulate caribou hunting along the Steese Highway, Chena Hot Springs Road, Taylor Highway, and Boundary Cutoff to avoid heavy roadside harvest to the extent possible, without jeopardizing higher priority objectives (Objectives 1 and 3).
- Provide for increased caribou hunting, viewing, and other wildlife-related recreation (Objectives 1–4).

METHODS

POPULATION STATUS AND TREND

Population Census

During RY12–RY14, we attempted annual photocensus counts of FCH between late June and mid-July. However, during these years, caribou were not adequately aggregated or were not in areas that allowed for visual counting and photographing, and the census was not conducted. Population estimates will be developed for these years based on a population model (Boertje and Gardner 2000b).

When a photocensus was successful, population size was estimated using the modified aerial photo-direct count technique (Davis et al. 1979). Photocensuses were conducted once the herd formed 5–15 tightly aggregated groups in areas that provided conditions adequate to visually count and photograph the caribou. Prior to the census we conducted several reconnaissance flights to determine if the caribou were adequately grouped near or above treeline. These postcalving aggregations were located by radiotracking radiocollared caribou. Once the herd was grouped, we attempted the census using 3–5 spotter planes (Piper PA-18 or Bellanca Scout) and 1 radiotracking aircraft (Cessna 185 or 206, Bellanca Scout, or PA-18). Groups of caribou were photographed with a Zeiss RMK-A aerial camera mounted in the belly of a de Havilland Beaver aircraft. During the census the radiotracking plane located all radiocollared animals in the herd, and the spotter planes flew search patterns to locate groups of caribou that did not have

radiocollared animals associated with them. We photographed all groups that were too large for observers to count accurately from aircraft (i.e., >50 caribou).

Caribou were counted directly from photographs, and all photographs were counted twice, each time by a different person. If counts were within 3% of one another, the 2 counts were averaged; otherwise, photographs were counted a third time, and the 3 counts were averaged. We derived minimum population estimates by adding individual caribou counted on photographs to caribou counted from spotter planes that were not photographed. No correction factors were used to account for caribou missed during the search.

Productivity

Parturition rates were determined by observing known-age radiocollared females from a Piper PA-18 during calving season. Caribou observed with calves, hard antlers, or distended udders were classified as parturient (Whitten 1995). In 2013 and 2014, radiocollared females ≥ 3 -years old were radiotracked 3–4 times at approximately 4–5 day intervals during 12–28 May.

Population Composition, Captures, and Body Condition

During RY12–RY14 we conducted aerial surveys and captures during late September through mid-October to estimate herd sex and age composition, deploy radio and satellite collars to maintain a sample of known-age females, and assess body condition of 5-month-old females.

During composition surveys we located all functioning radio collars in the herd using a fixed-wing aircraft (Piper PA-18 or Bellanca Scout) and used an observer in a Robinson R-44 helicopter to visually classify 10–15% of the herd. On the day of the survey, we tallied the composition of each group using a digital voice recorder. The voice recordings were reviewed at a later date, tallied on a 5-position counter, and totals were recorded on a data sheet. We classified each caribou as a cow, calf, or bull. Bulls were further classified as small, medium, or large, based on antler size (Eagan 1993).

Composition data for each group of caribou were weighted by the proportion of radiocollared Fortymile caribou in that group. We attempted to spread survey effort evenly throughout the herd by classifying an equal number of caribou in the vicinity of each radio collar. To adjust for variable group size and number of radiocollared caribou per group, we multiplied the number of cows and bulls in each group by the proportion of radiocollared caribou that were in the group to derive weighted totals and ratios for each group. Weighted totals and ratios of all groups were added to derive herd composition.

Captures were conducted annually during the first 2 weeks of October (late October in RY13) and again in late April. During October, 4- and 5-month-old female calves were captured to collect weights and other biological measurements to help assess nutritional condition of the herd. Twenty to 21 VHF radio collars were deployed annually on these calves to maintain a sample of known-age females for each cohort to assess age-specific parturition rates in the herd.

During April captures, an additional 14–18 female calves were collared annually to bolster the sample size of known-age females/cohorts to provide a high likelihood that at least 20 females/cohorts would survive to age 3. This was intended to maintain a minimum sample size of 20 3-year-old females/cohorts to assess 3-year-old parturition rates in the herd.

Additional adult cows were fitted with satellite radio collars during October captures in RY12–RY14 to maintain a sample size of ≥ 75 radiocollared females in the herd.

Distribution and Movements

We obtained seasonal herd distribution, movements, and estimates of annual mortality by monitoring 114–161 cows fitted with VHF and satellite radio collars throughout the year. On an annual basis, a portion of the radiocollared caribou were located approximately weekly during hunting seasons in August, September, and December; 3–4 times during calving in May; 8–10 times leading up to the annual photocensus attempt during June and early July; and sporadically during the remainder of the year.

Harvest

Harvest was monitored using hunter check stations, hunter contacts in the field, and registration permit hunt reports. To reduce the risk of overharvest, successful hunters were required to report their kill within 3–5 days. Harvest data were summarized by regulatory year. We analyzed data on harvest success, hunt area, hunter residence and effort, method of transportation, and harvest chronology. We established the annual harvest quota using the 2006–2012 and 2012–2018 harvest plans. During RY12–RY14 the annual harvest quota was 1,000 caribou, with no more than 25% cows in any year.

To manage and distribute harvest, we followed the 2006–2012 and 2012–2018 harvest plan guidelines to divide the FCH hunt area into zones and allocate the annual quota between hunting seasons and among these zones. Seventy-five percent of the annual harvest quota was allocated to the fall hunting season (RC860 permit). The winter season (RC867 permit) harvest quota was 25% of the annual harvest quota plus any unharvested portion of the fall quota.

The fall harvest quota was further divided between hunt zones: the Steese Highway-Chena Hot Springs Road area (zone 1), the Taylor Highway area (zone 3), and the roadless area between these road-accessible zones (zone 2). The winter harvest quota was also allocated between zones. The road-accessible zone (zone 1 or 3) that had the greatest number of caribou immediately prior to the season opening was allocated 60% of the winter quota and the other road-accessible zone was allocated 40%. Zone 2 harvest was included with the harvest quota of either zone 1 or 3. In RY12–RY14, zone 4 (the White Mountains north of the Steese Highway) was added to the hunt area for both the fall and winter hunts and had a combined quota with zone 1.

We issued emergency orders to close hunting seasons when harvest quotas were met or uncontrollable overharvest was expected. Emergency orders were also issued to reopen seasons if danger of uncontrollable overharvest had passed, and unharvested quota was available. Further information regarding Fortymile caribou harvest management is in the 2001–2006 harvest plan (Advisory Committee Coalition 2000), 2006–2012 harvest plan (Advisory Committee Coalition 2006), and 2012–2018 harvest plan (Harvest Management Coalition 2012).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Modeled population estimates have not yet been developed for RY10–RY14. Analysis will be completed and included in the next report.

During RY03–RY14, photocensuses were completed in RY06, RY08, and RY09. The herd size was likely underestimated in RY06 due to poor sightability and difficulty of identifying the large number of caribou in timbered habitat. Therefore, the RY06 results were not used to estimate population size. While herd size probably fluctuated during RY03–RY05, it likely remained at about 40,000–44,000 caribou based on low calf:cow ratios observed during fall herd composition surveys (Gross 2007, Boertje et al. 2012). The herd likely increased slowly during RY06 and RY07, and estimates during these years were derived from interpolations based on herd estimates from RY03–RY05 and RY08–RY09 (J. A. Gross, Wildlife Biologist, ADF&G, unpublished data, Tok; R. D. Boertje, Wildlife Biologist, ADF&G, unpublished data, Fairbanks). Successful photocensuses were completed in RY08 and RY09, with 46,510 and 51,675 caribou counted, respectively.

Productivity

May parturition rates (also referred to as natality rates or birth rates) of radiocollared females ≥ 3 -years old were 88% ($n = 81$) in 2013 and 63% ($n = 102$) in 2014 (Table 2). Parturition rates of 3-year-old radiocollared females were 83% ($n = 18$) in 2013 and 37% ($n = 19$) in 2014.

Natality rate can be a useful index to assess herd nutrition (Valkenburg et al. 2000). Parturition rates of 3-year-old cows during different phases of herd growth (increasing population phase, stable/high population phase, and decreasing population phase) were a more sensitive indicator of herd nutrition than parturition rate of other age classes in the George River herd in northeastern Quebec and northern Labrador (Bergerud et al. 2008), as well as the Delta and Nelchina herds in Alaska (Valkenburg et al. 2003).

Analysis of parturition rates of known-age cows in Alaska caribou herds indicates that a 5-year moving average of 3-year-old parturition rates of $< 55\%$ could indicate nutritional stress (Boertje et al. 2012). In 2012 the 5-year moving average parturition rate of 3-year-old FCH cows (54.6%) fell below the threshold identified by Boertje et al. (2012) as a cautionary signal that nutritional status of the herd was notably reduced (Table 2). However, the 5-year moving average increased to 59.5% after inclusion of the 2013 3-year-old parturition rate of 83% ($n = 18$). In 2014 the 3-year-old parturition was 37%, but the 5-year moving average remained above the threshold at 56.8%.

Although the 5-year moving average of 3-year-old parturition rate was above the threshold in 2013 and 2014, nutritional status of the herd is still in question and deserves ongoing scrutiny. Additional information about the nutritional status of FCH can be found in Boertje et al. (2012).

Population Composition

RY12. We conducted the fall 2012 composition survey on 9 October. A total of 4,832 caribou were classified in the vicinity of 55 (69%) of 80 randomly-selected radiocollared animals in the herd, resulting in an estimated 22 calves and 40 bulls:100 cows (Table 1).

RY13. We conducted the fall 2013 composition survey during 6–13 October. A total of 3,921 caribou were classified in the vicinity of 114 (88%) of the 130 total radiocollared animals in the herd, resulting in an estimated 28 calves and 38 bulls:100 cows (Table 1).

RY14. We conducted the fall 2014 composition survey on 9 October. A total of 4,794 caribou were classified in the vicinity of 72 (96%) of 75 randomly-selected radiocollared animals in the herd, resulting in an estimated 25 calves and 34 bulls:100 cows (Table 1).

The bull:cow ratio remained relatively stable during RY10–RY13, ranging between 38 and 43. In RY14, the ratio dropped to 34 but was likely due to uneven distribution of bulls in the herd during the RY14 composition survey rather than a sudden change in the proportion of bulls in the herd. The RY10–RY13 ratios indicate bull numbers are likely stable under the current harvest management strategy. Harvest quotas will remain conservative (~2% of the herd annually) through RY15 to allow for continued herd growth and a stable bull:cow ratio. This harvest strategy should also maintain the ratio of large bulls in the herd.

Captures and Body Condition

During October 2012, 2013, and 2014, we captured 25, 22, and 25 5-month-old female calves and deployed 21, 20, and 20 VHF radio collars on these calves, respectively. In addition, a total of 28 satellite radio collars were deployed on adult cows in October during these years. Average calf weight was 50.5 kg (111.4 lb) in 2012, 49.5 kg (109.2 lb) in 2013, and 55.1 kg (121.4 lb) in 2014 (Table 3). Fall calf weights have been collected on FCH since 1990. We found a declining trend in FCH fall calf weights (0.20 kg/yr, $P = 0.005$) from 1990 to 2014. However, the 2014 calf weights were the highest observed since 2000, possibly associated with the herd's range expansion in fall-winter 2013–2014.

During April 2012, 2013 and 2014, we deployed radio collars on 18, 15, and 14 11-month-old female calves.

Distribution and Movements

Calving and Postcalving. In May 2012, FCH primarily calved in the Charley, Middle Fork Fortymile, and upper Goodpaster river drainages. The majority of the herd spent June in the Middle Fork Fortymile, upper Charley, upper Goodpaster, and upper Salcha river drainages.

In May 2013, FCH primarily calved along the eastern and southern edges of the Yukon-Charley Rivers National Preserve in the lower Middle Fork Fortymile (downstream from and including Joseph Creek), North Fork Fortymile, and upper Charley river drainages. The majority of the herd spent June in the North Fork Fortymile, upper Middle Fork Fortymile, upper Charley, upper Goodpaster, and upper Salcha river drainages.

In May 2014, FCH primarily calved along the western and southern edges of the Yukon-Charley Rivers National Preserve, in the Joseph Creek drainage of the Middle Fork Fortymile River, and

in the headwaters of the Salcha and Goodpaster river drainages. The majority of the herd spent June in the same general area where the herd calved.

Pre-rut and Rut. In late September to mid-October 2012, FCH was concentrated in the upper Seventymile, Charley, South Fork and mainstream Birch Creek, upper Salcha, and upper West Fork Chena river drainages.

In late September to mid-October 2013, FCH made a move from the Seventymile river drainage and American Summit area northeast into Yukon, Canada. The herd concentrated in the drainages flowing into the north and south banks of the Yukon River within 40–60 miles of the Alaska-Yukon border.

In late September through mid-October 2014, FCH was concentrated in the upper Middle Fork Fortymile River, in the areas surrounding Chicken and Boundary, and in the Sixtymile river drainage in Yukon, Canada.

Winter. During November 2012–March 2013, the majority of the herd was concentrated in the White Mountains and Birch Creek areas near the Steese Highway. A smaller portion of the herd was distributed in the eastern portion of its winter range, primarily near the Top of the World Highway between Boundary, Alaska and Dawson, Yukon Territory.

During November 2013–March 2014, the majority of the herd concentrated within 40–60 miles of the Alaska-Yukon border, in both Alaska and Yukon. The herd ranged from the upper Ladue River drainage to the south to the Tatonduk and Ogilvie river drainages to the north.

During November 2014–March 2015, the majority of the herd was concentrated in the Birch Creek and middle fork of the Chena river drainages near the Steese Highway and Chena Hot Springs Road, in the upper Goodpaster River drainage, and in the northwest portion of the Yukon-Charley Rivers National Preserve south of the Yukon River. A smaller portion of the herd was also distributed in the eastern portion of its winter range, primarily near the Top of the World Highway between Boundary, Alaska and Dawson, Yukon Territory.

MORTALITY

Harvest

Season and Bag Limit. Both fall and winter hunts were in place for FCH during RY12–RY14, with various zone-specific bag limits and season dates for state and federal hunts (Table 4). Detailed descriptions and a map of the hunt zones are in the Appendix.

Alaska Board of Game Actions and Emergency Orders. We issued several emergency orders to delay, close, and reopen hunting seasons in various hunt zones in order to meet harvest quotas (Table 5).

During the January 2013 Alaska Board of Game meeting, a targeted hunt (limited registration hunt) and youth permit hunt were established for the Fortymile herd.

The targeted hunt was developed to allow a few hunters to take caribou along the Steese or Taylor highways when large numbers of caribou are present near the highways, and the

unlimited registration permit hunt (RC867) closes because of concerns about exceeding the harvest quota. This hunt is open to Alaska residents only. If conditions warrant, this hunt may be announced by emergency order, and hunters will be allowed to submit an application for participation in this hunt. A few hunters will be randomly selected from all applications to participate in this hunt.

The youth hunt was developed by the board to provide limited opportunity for youth hunters to meet the board's legal mandates to provide youth hunt opportunity where appropriate. This hunt was implemented for the first time during the RY14 hunting season, and details and results of this hunt will be discussed during the next report period.

During the March 2014 Alaska Board of Game meeting, the board reauthorized the portions of the existing upper Yukon-Tanana predation control program in Units 12, 20B, 20D, 20E, and 25C intended to benefit the Fortymile caribou herd.

Harvest by Hunters. We issued 4,701 registration permits in RY12, 3,904 in RY13, and 5,852 in RY14 (Table 6). In RY12, 2,822 hunters reported taking 1,297 caribou; in RY13, 2,637 hunters reported taking 1,186 caribou; and 3,460 hunters took 974 in RY14 (Table 6). Total human-caused mortality of Fortymile caribou, including harvest reported on registration permits and general harvest tickets, accidental death, and illegal and unreported harvest, was estimated to be 1,331 in RY12, 1,269 in RY13, and 1,029 in RY14 (Table 7). To assist herd growth during RY12–RY14, the Tr'ondëk Hwëchîn First Nation members in Yukon, Canada chose not to exercise their constitutional right to hunt FCH; concomitantly all other federal and provincial hunting seasons for FCH were closed in Canada.

Hunter Residency and Success. Nonresidents made up 8–13% of hunters during RY12–RY14 and accounted for 11–17% of the total harvest (Table 8). The success rate for residents (local and nonlocal combined) was 27–43%, whereas success rate for nonresidents was 38–58% (Table 8).

Harvest Chronology. During the fall hunt (RC860) in RY12–RY14, most harvest (85–90%) occurred during the last week in August and first week in September. This coincides with the hunt zones 1 and 3 season openings on 29 August in RY12–RY13 and 3 September opening in RY14 (Table 9).

During the winter hunting season (RC867) in RY12 and RY14, harvest was more evenly spread throughout the season than during the fall hunt (Table 10). However, in RY13, the winter season was cancelled due to the quota being taken during the fall (RC860) hunt. Closures and delayed openings in portions of the hunt area where large numbers of caribou gathered along highways resulted in slower harvest and longer seasons during RY12 and RY14.

Transport Methods.

RC860 Fall Hunts — In RY12–RY14, the types of transportation used by successful hunters varied by hunt zone and depended primarily on the number of all-terrain vehicle (ATV) trails available and whether air taxi companies worked in the area. All successful hunters in the roadless portions of FCH range (primarily zones 2 and 4) used boats and airplanes. This remote hunt area has few or difficult-to-access trails, resulting in very limited opportunities for ground transportation.

Successful hunters in the Steese Highway-Chena Hot Springs area in northeastern Unit 20B and southeastern Unit 25C (zone 1) primarily used ATVs, followed by highway vehicles. Hunters who used ATVs had high harvest success during the fall seasons.

Successful hunters in Unit 20E (zone 3 and part of zone 2) primarily used ATVs, followed by highway vehicles. The Chicken Ridge Trail and its spur trails were the primary access points used by hunters with ATVs to hunt FCH in Unit 20E. Walk-in hunters accessed the herd from the Taylor Highway near American Summit in the Glacier Mountain Controlled Use Area where motorized vehicles were not allowed for hunting. American Summit provided an ideal location for hunters without ATVs or other off-road vehicles to access FCH when caribou were in this area.

RC867 Winter Hunts — A variety of transportation types were used by successful hunters (Table 11). Successful hunters primarily accessed FCH using snowmachines and highway vehicles along the Steese and Taylor highways (zones 1 and 3).

Other Mortality

Boertje and Gardner (1998a, 1998b, 1999, 2000b) and Gardner (2001) described in detail the factors that limited FCH growth during 1996–2000, and the management actions taken to mitigate those factors and encourage herd recovery. These factors, primarily wolf predation, continued to influence FCH through RY13. We continued wolf predation control during RY12–RY13 to reduce wolf predation on FCH (Alaska Department of Fish and Game 2014).

HABITAT

Assessment

In 1998, for the first time in 3 decades, FCH exceeded 1.3 caribou/mi² (0.5 caribou/km²). Beginning in 2001 the herd expanded its range use, possibly as a result of increased herd size. The herd moved farther west near the Steese Highway in fall 2001 and used winter range in Yukon, Canada during winters 2000–2001 through 2012–2013. In fall 2013, the herd moved farther east and northeast into Yukon than had been observed in many decades. However, more than 40% of the historic Fortymile range remains unused since the 1960s, and the farthest east and southeast portions of the range have not been used since at least the 1940s.

Fecal samples from overgrazed winter ranges frequently contain a relatively high proportion of mosses or vegetation other than lichens (Boertje 1984). During winters 1991–1992, 1992–1993, 1995–1996, 1996–1997, and 1999–2000, range conditions were excellent, as evidenced by high proportions of lichen fragments (72–81%) and a low proportion of mosses (8%) in fecal samples. Additional data collected during 2000–2004 indicate a high proportion of lichens in fecal samples (W. B. Collins, Wildlife Biologist, ADF&G, personal communication, 2009), suggesting that Fortymile winter range continued to be in excellent condition.

Nelchina herd caribou have wintered in portions of the Fortymile winter range since 1999. Nelchina calves that wintered in the Fortymile range were significantly heavier than calves that wintered in Units 11 and 13 (B. W. Dale, Wildlife Biologist, ADF&G, personal communication, 2009). Also, Nelchina calves on Fortymile range gained weight over winter, except in years when snow depth was above average.

Wildfires in 2004 and 2005 burned about 15% of the winter range of FCH and may have influenced habitat selection or predation risk of caribou starting in winter 2004–2005. Recent burns provide much lower biomass of terrestrial lichens than mature spruce forest with lichen understory, and caribou may avoid recent burns because of unfavorable snow conditions or deadfalls that impede movement (Joly et al. 2003). Caribou from the Nelchina herd occupied adjacent winter range in Unit 20E and used recent (<50-yr-old) burns less than expected (Joly et al. 2003).

Despite the area of winter range that burned in recent years, a large portion of the historic range of FCH remains unoccupied by caribou. Thus, availability of winter range is likely not limiting growth of FCH.

The Pogo gold mine began operating in 2003 in the Goodpaster river drainage. This mine has had limited impact on the Fortymile herd, but concern remains focused on future activity. If additional roads for the Pogo mine reach to the upper Goodpaster River and Mount Harper area, careful access management will be required to ensure that the herd is not negatively impacted during calving and postcalving. Future access decisions have not been adequately addressed in the mine planning process.

Enhancement

No habitat enhancement efforts in FCH range were initiated during RY12–RY14. However, the *Alaska Interagency Wildland Fire Management Plan* (Alaska Wildland Fire Coordinating Group 2010) limits suppression of wildfire where human resources are not at risk. Limited suppression should ensure a near-natural fire regime necessary for the long-term maintenance of caribou range in Interior Alaska.

One of the goals of the 1995 *Fortymile Caribou Management Plan* was to ensure adequate protection for the herd's range during and after recovery. Current habitat and development issues are mostly related to mining and military activities in calving and postcalving areas where FCH is most sensitive to disturbance. Working with the mining community and the U.S. Air Force, we minimized the effects of mining exploration and low-flying military aircraft by maintaining a website that displayed the areas the herd was using. The website was updated when the herd distribution changed. The mining industry and military used this website during 1999–2014 to plan their activities away from the herd and have minimized their impacts during calving and postcalving.

The *Upper Yukon Area Plan* (Alaska Department of Natural Resources 2003) guided management of state lands within FCH range during RY04–RY14. The plan gives adequate protection against resource development for the Fortymile herd throughout its range and strong protection for the calving and postcalving ranges.

NONREGULATORY MANAGEMENT PROBLEMS AND NEEDS

The 1995 *Fortymile Caribou Herd Management Plan* formally ended in May 2001. Two of the plan's objectives are ongoing: 1) habitat protection and 2) a public awareness program. Protecting caribou habitat and informing the public about herd status and consumptive and nonconsumptive use opportunities were essential components of the plan's goal to restore FCH to its traditional range. It was also the plan's goal to promote healthy wildlife populations for

their intrinsic value. Since April 2003 habitat protection of FCH range in Alaska has been addressed through land use plans and agreements made with the mining industry and the military.

We have several ongoing public awareness projects. Highway informational signs were placed along the Taylor and Steese highways in summer 2004. The Fortymile caribou newsletter, *The Comeback Trail*, was produced by ADF&G during RY02, RY03, RY06, RY08 and RY10 and distributed to about 4,500 Alaska and Yukon residents, advisory committees, regional councils, state and federal management boards, and area schools. Additional public awareness programs would help ensure continued public support for FCH. A cooperative state-federal program enhancing the viewing, education, and hunting opportunities of FCH would benefit the herd and people interested in the herd.

CONCLUSIONS AND RECOMMENDATIONS

Because we were unable to complete a photocensus during RY10–RY13, we are unable to conclude whether objective 1 was met. However, conservative harvest quotas, emergency orders to limit harvest, continued wolf predation control, and following guidelines in FCH harvest plans (Advisory Committee Coalition 2006, Harvest Management Coalition 2012) likely combined to provide conditions favorable for growth. With a declining trend in calf weights and the 5-year moving average parturition rate of 3-year-old cows remaining close to 55% during RY10–RY14, we will continue to closely monitor indicators of nutritional condition during the next report period as recommended by Boertje et al. (2012). This information will be used to evaluate the herd's nutritional status and determine if continued herd growth is warranted.

During RY10, with an estimated population of 51,675 caribou, FCH reached the lower end of the intensive management objective of 50,000–100,000 caribou (management objective 2). Additional analysis will be needed to determine if the population objective was met in RY11–RY13 and will be completed during the next report period.

Harvest was managed following the guidelines in the 2012–2018 harvest plan. During RY12–RY13, the annual quota was 1,000 in both years (including up to 25% cows in all years). We did meet the lower end of the harvest objective (management objective 3) in RY12–RY13, with an annual harvest of 1,297 and 1,186 during these years. Harvest levels allowed fall bull:cow ratios to remain above 35 bulls:100 cows during RY12–RY13, so management objective 4 to maintain an October bull:cow ratio of at least 35 bulls:100 cows was met.

Increases in population size have made FCH one of the most accessible herds in the state, benefiting hunters and nonconsumptive users. This provides for increased caribou hunting, viewing, and other wildlife-related recreation in Alaska and Yukon.

The Pogo mine is expected to have limited impact on the Fortymile herd, but concern remains regarding future access decisions. We will continue to monitor this project and its potential impact on the Fortymile caribou during the next report period. The *Alaska Interagency Fire Management Plan* (Alaska Wildland Fire Coordinating Group 1998) allowed for a near-natural fire regime within FCH range in Alaska during RY12–RY13.

For the next report period the management goals and objectives will remain the same. However, some of the management activities will be revised to reflect several recent changes in management and research efforts. The revised activities for the next report period will include:

- Work with land agencies, landowners, and developers to minimize the impact of human activities on caribou habitat (Objective 1).
- Work with land agencies, landowners, and developers to mitigate developments detrimental to Fortymile caribou (Objective 1).
- Maintain regulatory flexibility to stabilize FCH population if nutrition indices indicate herd health is becoming significantly compromised (Objectives 2 and 3).
- Work with land agencies and landowners to maintain a near-natural fire regime (Objective 1).
- Attempt annual photocensuses (Objectives 1 and 2).
- Conduct annual fall composition surveys (Objectives 1 and 4).
- Capture 25–30 female calves in October to collect weights and biological measurements to help assess nutritional condition of the herd (Objectives 1–4).
- Deploy 35 VHF collars on calves-of-the-year annually (20 in October and 15 in April), to provide a high likelihood that at least 20 known-age females/cohort will survive to age 3 (Objectives 1–4).
- Maintain a minimum sample size of at least 75 radiocollared females, including a minimum of 50 satellite collars (Objectives 1–4).
- Maintain 20–30 radiocollared bulls, preferably using satellite collars if funding allows (Objectives 1–4).
- Radiotrack throughout the year to determine seasonal distribution, mortality rates, and proximity to highways during hunting seasons (Objectives 1–3).
- Monitor changes in seasonal range distribution (Objectives 1–3).
- Conduct annual parturition surveys in May to determine parturition rates of radiocollared females ≥ 3 -years of age (Objectives 1 and 2).
- Regulate hunting to maintain an annual harvest of 2% ($\pm 0.3\%$) of the preseason population estimate, with no more than 25% of the harvest consisting of cows (Objectives 1–4).
- Monitor harvest through hunt reports (Objective 3).
- Regulate caribou hunting along the Steese Highway, Chena Hot Springs Road, Taylor Highway, and Boundary Cutoff to avoid heavy roadside harvest to the extent possible without jeopardizing higher priority objectives (Objectives 1 and 3).

- Provide for increased caribou viewing and other wildlife-related recreation (Objectives 1–4).

In addition, we plan to continue with the following activity:

- Work with research staff to refine nutrition indices to determine when the herd is becoming nutritionally stressed.

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PREPARED BY:

Jeffrey A. Gross
Wildlife Biologist III

APPROVED BY:

Jackie J. Kephart
Assistant Management Coordinator

REVIEWED BY:

Torsten W. Bentzen
Wildlife Biologist III

Laura A. McCarthy
Publications Technician II

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Table 1. Fortymile caribou fall composition counts and population size, Alaska, regulatory years^a 1985–2014.

Regulatory year	Date of composition count	Bulls: 100 Cows	Calves: 100 Cows	% Calves	% Cows	% Small bulls	% Medium bulls	% Large bulls	% Bulls	Composition sample size	Photocensus estimate ^b	Estimate of herd size
1985	10/16/85	50	36	19	54	39	23	38	27	1,067	15,307	15,307 ^c
1986	10/13/86	36	28	17	61	35	24	41	22	1,381		
1987	9/28/87	40	37	21	57	13	43	44	22	2,253	19,975	19,975 ^c
1988	10/2–3/88	38	30	18	59	29	41	30	23	1,295		
1989	10/13/89	27	24	16	66	34	41	25	18	1,781	22,766	22,766 ^c
1990	9/27–28/90	44	29	17	58	42	39	19	26	1,742		
1991	10/10/91	39	16	10	64	41	34	25	25	1,445	21,884	21,884 ^c
1992	9/26/92	48	30	17	56	37	36	27	27	2,530		
1993	10/3/93	46	29	17	57	48	36	17	26	3,659	22,104	22,104 ^c
1994	9/30/94	44	27	19	57	45	33	22	24	2,990	22,558	22,558 ^c
1995	10/3/95	43	32	18	57	43	31	27	25	3,303	23,458	23,458 ^c
1996	9/30/96	41	36	20	57	46	31	23	23	4,582	25,910	25,910 ^c
1997	9/30/97	46	41	22	53	48	28	24	25	6,196	31,029	31,029 ^c
1998	9/29/98	40	38	21	56	49	27	24	23	4,322	33,110	33,110 ^c
1999	9/29/99	48	37	20	54	55	29	16	26	4,336	34,640	34,640 ^c
2000	10/01/00	45	27	16	58	48	28	24	26	6,512		35,900 ^d
2001	9/29/01	49	38	20	53	44	32	24	27	6,878		40,800 ^d
2002	9/28/02	43	39	21	55	42	28	30	24	6,088	43,375	43,375 ^c
2003	9/27/03	50	17	10	60	51	29	21	30	6,296		40,000–44,000 ^e
2004	9/28/04	45	28	16	59	31	37	32	25	4,157		40,000–44,000 ^e
2005	10/5/05	51	18	10	59	25	23	52	30	2,350		40,000–44,000 ^e
2006	10/5/06	43	34	19	57	27	29	44	24	4,995		43,837 ^f
2007	10/4/07	36	37	22	58	34	34	33	21	5,228		44,673 ^f
2008	10/7–8/08	37	33	19	59	30	43	27	22	4,119	46,510	46,510 ^c
2009	10/7/09	59	34	17	52	26	33	42	30	4,503	51,675	51,675 ^c
2010	10/2/10	43	32	18	58	27	31	41	24	7,169		— ^g
2011	10/5/11	42	25	15	60	21	42	37	25	3,949		— ^g
2012	10/9/12	40	22	13	62	19	40	41	25	4,832		— ^g
2013	10/6–10/13	38	28	17	60	28	32	40	23	3,921		— ^g
2014	10/9/14	34	25	16	63	34	36	31	21	4,794		— ^g

^a Regulatory year (RY) begins 1 July and ends 30 June (e.g., RY85 = 1 July 1985–30 June 1986).

^b Number yearling, adults, and a portion of the calves counted during photocensus between mid-June of the current regulatory year to early July of the following regulatory year. Census counts were not conducted during RY00–RY01, RY03–RY07, or RY10–RY14 because caribou were too scattered or visual conditions were inadequate.

^c Herd estimates were the result of the summer censuses, and population models were used to derive total estimates. Population estimate for mid-June of the current regulatory year to early July of the following regulatory year.

^d Herd estimates were derived from population models using data from summer census counts, fall composition counts, spring parturition surveys and monthly mortality surveys of radiocollared caribou. Population estimate for 15 May of the current regulatory year.

^e Based on summer 2009 and 2010 photocensus results, the population estimates for RY03–RY05 were revised. While the herd likely experienced some level of fluctuation during this period, it likely remained relatively stable ranging 40,000–44,000 during RY03–RY05. This is based on below-average fall calf:cow ratios (17:100 in RY03 and 18:100 in RY05), spring parturition rates (68% in RY03, 77% in RY05, and 80% in RY06) and overwinter calf survival (56% [$n = 16$]) during winter 2004–2005.

^f Average interpolations of herd size, because herd size was not estimated.

^g Modeled population estimates not yet developed.

Table 2. Fortymile caribou parturition rates of known-age radiocollared females, Alaska, 1993–2014.

Year	Survey date	3-year olds ^a (%)		4-year olds ^a (%)		≥5-year olds ^a (%)		All cows ≥3-years old ^a (%)	
1993	11 May–3 Jun ^b	4/9	(44)	1/1	(100)	27/37	(73)	32/47	(68)
1994	11 May–7 Jun ^b	5/6	(83)	4/6	(67)	28/33	(85)	37/45	(82)
1995	11–19 May ^b	5/7	(71)	2/3	(67)	28/31	(90)	35/41	(85)
1996	12–21 May ^b	9/9	(100)	5/5	(100)	24/25	(96)	38/39	(97)
1997	10–20 May ^b	6/6	(100)	7/8	(88)	26/32	(81)	39/46	(85)
1998	10–19 May ^b	9/9	(100)	6/6	(100)	32/33	(97)	47/48	(98)
1999	11–19 May ^b	10/12	(83)	9/9	(100)	40/47	(85)	59/68	(87)
2000	12–20 May ^b	8/9	(89)	11/13	(85)	37/40	(93)	55/61	(90)
2001	13–21 May ^b	7/10	(70)	6/7	(86)	37/40	(93)	50/57	(88)
2002	11–19 May ^b	6/7	(86)	10/10	(100)	34/36	(94)	50/53	(94)
2003	12–23 May ^c	9/11	(82)	1/7	(14)	26/35	(74)	36/53	(68)
2004	14–27 May ^c	4/7	(57)	9/9	(100)	28/31	(90)	41/47	(87)
2005	12–22 May ^c	2/6	(33)	7/7	(100)	21/26	(81)	30/39	(77)
2006	14–22 May ^c	9/11	(82)	6/6	(100)	34/44	(77)	49/61	(80)
2007	11–27 May ^c	5/6	(83)	10/10	(100)	40/45	(89)	55/61	(90)
2008	11–26 May ^c	7/8	(88)	3/5	(60)	43/46	(93)	53/59	(90)
2009	12–24 May ^c	3/9	(33)	5/7	(71)	31/40	(78)	39/56	(70)
2010	11–28 May ^c	2/7	(29)	8/10	(80)	33/43	(77)	43/60	(72)
2011	14–27 May ^c	2/3	(67)	5/7	(71)	42/48	(88)	63/73 ^d	(86)
2012	12–23 May ^c	8/13	(62)	1/2	(50)	41/45	(91)	58/71 ^e	(82)
2013	14–27 May ^c	15/18	(83)	12/13	(92)	38/44	(86)	71/81 ^f	(88)
2014	12–28 May ^c	7/19	(37)	12/17	(71)	36/52	(69)	64/102 ^g	(62)

^a Number of radiocollared cows with calf + radiocollared cows with no calf, but with hard antler or udder divided by number of radiocollared cows observed.

^b Near daily flights were flown during this period in conjunction with a calf mortality research project.

^c Three to 4 flights were conducted during this period.

^d Includes 15 adult cows (≥3-years old) of unknown age.

^e Includes 11 adult cows (≥3-years old) of unknown age.

^f Includes 6 adult cows (≥3-years old) of unknown age.

^g Includes 14 adult cows (≥3-years old) of unknown age.

Table 3. Fortymile caribou fall 4-month-old female calf weights, Alaska, 1990–2014.

Year	Capture dates	Average weight	
		in kg (lb) ^a	<i>n</i>
1990	25–27 Sep	52.8 (116.3)	14
1991	21–22 Oct	53.9 (118.9)	14
1992	29–30 Sep	55.1 (121.5)	14
1993	4 Oct	56.1 (123.8)	15
1994	1 Oct	54.5 (120.0)	14
1995	29 Sep	56.7 (125.0)	15
1996	29 Sep–1 Oct	54.7 (120.7)	14
1997	29–30 Sep	59.3 (130.7)	15
1998	26 Sep	53.0 (116.9)	17
1999	30 Sep	54.7 (120.5)	15
2000	2 Oct	56.7 (125.0)	15
2001	26 Sep	54.1 (119.3)	17
2002	29 Sep	52.0 (114.7)	15
2003	26-27 Sep	51.1 (112.6)	18
2004	28-29 Sep	53.7 (118.3)	16
2005	24-25 Sep	51.4 (113.4)	16
2006	1–3 Oct	54.4 (119.8)	14
2007	27 Sep	53.9 (118.8)	15
2008	6–7 Oct	47.4 (104.6)	15
2009	8–9 Oct	48.8 (107.5)	18
2010	8–9 Oct	54.7 (120.7)	18
2011	8–9 Oct	50.6 (111.6)	26
2012	8–9 Oct	50.5 (111.4)	25
2013	24–28 Oct	49.5 (109.2)	18
2014	7–11 Oct	55.1 (121.4)	25

^a Weight without radio collar.

Table 4. Fortymile caribou seasons and bag limits managed as joint state-federal registration permit hunts, Alaska, regulatory years^a 2012–2014.

Regulatory years	Zone 1 ^b		Zone 2 ^b		Zone 3 ^b		Zone 4 ^b	
	State Season/Bag limit	Federal ^c Season/Bag limit	State Season/Bag limit	Federal ^c Season/Bag limit	State Season/Bag limit	Federal ^c Season/Bag limit	State Season/Bag limit	Federal ^c Season/Bag limit
<i>2012–2014</i>								
RESIDENT:	29 Aug– 30 Sep 1 bull.	10 Aug– 30 Sep 1 bull.	10 Aug– 30 Sep 1 bull.	10 Aug– 30 Sep 1 bull.	29 Aug– 30 Sep 1 bull.	10 Aug– 30 Sep 1 bull.	10 Aug– 30 Sep 1 bull.	10 Aug– 30 Sep 1 bull.
	1 Dec– 31 Mar 1 caribou.	1 Nov– 31 Mar 1 caribou.	1 Dec–31 Mar 1 caribou	1 Nov– 31 Mar 1 caribou.	1 Dec–31 Mar 1 caribou.	1 Nov– 31 Mar 1 caribou.	1 Dec–31 Mar 1 caribou.	1 Nov–31 Mar 1 caribou.
NONRESIDENT:	29 Aug– 20 Sep 1 bull.	No open season	10 Aug– 20 Sep 1 bull.	No open season	29 Aug– 20 Sep 1 bull.	No open season	10 Aug– 20 Sep 1 bull.	No open season

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2012 = 1 July 2012–30 June 2013).

^b Zone descriptions are in Appendix A.

^c Federal subsistence hunters are residents who live in communities or units in rural areas defined by the Federal Subsistence Board. Definition of who qualifies as a Fortymile caribou federal subsistence user differs among units. In Unit 20E the definition includes rural residents of Unit 12 (north of Wrangell–St Elias National Park and Preserve), Unit 20D, and Unit 20E. However, in Unit 25C, eligible federal subsistence users are all rural residents in the state.

Table 5. Fortymile caribou emergency orders issued during regulatory years^a 2012–2014, Alaska.

Regulatory year	Effective date	Emergency order number	Permit hunt and area affected	Action taken/reason
2012	29 Aug 2012	03-06-12	RC860 accessible from the Steese Highway and Chena Hot Springs Road in Units 20B and 25C.	Closed area early. Quota met.
2012	2 Sep 2012	03-07-12	RC860 accessible from the Taylor Highway in Unit 20E.	Closed area early. Quota met.
2012	30 Nov 2012	03-08-12	RC867 and RC999 accessible from the Steese Highway in Units 20B and 25C.	Close area of RC867 early to prevent overharvest and open RC999 limited registration hunt.
2012	12 Jan 2013	03-02-13	RC867 accessible from the Steese Highway and Chena Hot Springs Road in Units 20B and 25C.	Closed area early. Quota met.
2013	30 Aug 2013	03-05-13	RC860 accessible from the Taylor Highway in Unit 20E.	Closed area early. Quota met.
2013	2 Sep 2013	03-06-13	RC860 accessible from the Steese Highway and Chena Hot Springs Road in Units 20B and 25C.	Closed area early. Quota met.
2013	20 Sep 2013	03-07-13	RC860 roadless areas in Units 20B, 20D, 20E, 20F and 25C.	Closed area early. Quota met.
2013	28 Sep 2013	03-09-13	General harvest caribou in southern Unit 25B accessible from the Taylor Highway and Yukon River.	Close to prevent overharvest of the Fortymile caribou herd.

Regulatory year	Effective date	Emergency order number	Permit hunt and area affected	Action taken/reason
2013	1 Nov 2013	03-10-13	RC867 accessible from the Steese Highway in Units 20B and 25C and from the Taylor Highway in Unit 20E.	Cancelled season. Quota taken in fall hunt.
2014	1 July 2014	03-03-14	General harvest caribou in southern Unit 25B accessible from the Taylor Highway and Yukon River and RC860 accessible from the Steese Highway and Chena Hot Springs Road in Units 20B and 25C and from the Taylor Highway in Unit 20E.	Close southern Unit 25 and delayed season in portion of RC860 to prevent overharvest of the Fortymile caribou herd
2014	4 Sep 2014	03-05-14	RC860 accessible from the Steese Highway and Chena Hot Springs Road in Units 20B and 25C.	Closed area early. Quota met.
2014	30 Nov 2014	03-06-14	RC867 accessible from the Steese Highway in Units 20B and 25C and the Taylor Highway south of MP 112.6 in Unit 20E.	Close area of RC867 early to prevent overharvest.
2014	22 Feb 2015	03-01-15	RC867 accessible from the Steese Highway and Chena Hot Springs Road in Units 20B, 20D, 20F and 25C.	Closed area early. Quota met.

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2012 = 1 July 2012–30 June 2013).

Table 6. Reported Fortymile caribou harvest by joint state–federal registration permit, Alaska, regulatory years^a 2002–2014^b.

Regulatory year	Permits issued	Did		Did not		Total hunted	Successful hunters (%)	Unsuccessful hunters (%)	Harvest			Total reported harvest	Harvest quota	
		not hunt (%)	report (%)	Bulls	Cows				Unk	Cows	Total			
2002 ^c	4,155	1,397 (34)	138 (3)	2,620 (63)	860 ^d (33)	1,760 (67)	663	185	12	860	235	950		
2003 ^c	5,718	2,135 (37)	143 (3)	3,440 (60)	799 ^e (23)	2,641 (77)	612	181	6	799	210	850		
2004 ^f	4,217	1,540 (37)	180 (4)	2,497 (59)	846 ^g (34)	1,651 (66)	592	243	11	846	210	850		
2005 ^f	4,438	1,786 (40)	169 (4)	2,483 (56)	741 ^h (30)	1,742 (70)	557	182	2	741	210	850		
2006 ^f	3,975	1,295 (33)	75 (2)	2,605 (66)	852 ⁱ (33)	1,753 (67)	601	247	4	852	210	850		
2007 ^f	4,576	1,361 (30)	33 (1)	3,182 (70)	1,012 ^j (32)	2,170 (68)	746	262	4	1,012	210	850		
2008 ^f	3,582 ^k	1,078 (30)	9 (1)	2,471 (69)	913 ^l (37)	1,558 (63)	681	217	15	913	210	850		
2009 ^f	2,765 ^k	736 (27)	7 (1)	2,018 (73)	1,083 ^m (54)	935 (46)	881	192	10	1,083	210	850		
2010 ^f	5,113	1,930 (38)	64 (1)	3,119 (61)	725 ⁿ (23)	2,394 (77)	630	89	6	725	200	795		
2011 ^f	3,771	1,495 (40)	56 (1)	2,220 (59)	1,066 ^o (48)	1,154 (52)	935	125	6	1,066	250	1,000		
2012 ^f	4,701	1,748 (37)	131 (3)	2,822 (60)	1,297 ^p (46)	1,525 (54)	1,081	190	26	1,297	250	1,000		
2013 ^f	3,904	1,229 (31)	38 (1)	2,637 (68)	1,186 ^q (45)	1,451 (55)	1,152	14	20	1,186	250	1,000		
2014 ^f	5,852 ^k	1,736 (30)	653 (11)	3,460 (59)	974 ^r (28)	2,486 (72)	684	278	12	974	250	1,000		

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2002 = 1 July 2002–30 June 2003).

^b Data from RC860, RC863, RC865, RC866 and RC867 harvest reports.

^c Includes RC863, RC865, RC866 and RC867.

^d An additional 16 hunters reported harvesting Fortymile caribou on general harvest reports.

^e An additional 15 hunters reported harvesting Fortymile caribou on general harvest reports.

^f Includes RC860 and RC867.

^g An additional 12 hunters reported harvesting Fortymile caribou on general harvest reports.

^h An additional 4 hunters reported harvesting Fortymile caribou on general harvest reports.

ⁱ An additional 12 hunters reported harvesting Fortymile caribou on general harvest reports.

^j An additional 20 hunters reported harvesting Fortymile caribou on general harvest reports.

^k Differences in permits issued and the sum of did not hunt + fail to report (FTR) + total hunted is due to individual hunters obtaining multiple permits during the same season.

^l An additional 9 hunters reported harvesting Fortymile caribou on general harvest reports.

^m An additional 11 hunters reported harvesting Fortymile caribou on general harvest reports.

ⁿ An additional 4 hunters reported harvesting Fortymile caribou on general harvest reports.

^o An additional 18 hunters reported harvesting Fortymile caribou on general harvest reports.

^p An additional 9 hunters reported harvesting Fortymile caribou on general harvest reports.

^q An additional 58 hunters reported harvesting Fortymile caribou on general harvest reports.

^r An additional 30 hunters reported harvesting Fortymile caribou on general harvest reports, and 20 hunters reported harvesting Fortymile caribou on DC851 reports.

Table 7. Fortymile caribou harvest, Alaska, regulatory years^a 2002–2014.

Regulatory year	Reported on registration permit ^{b,c}				Reported on general harvest report	Estimated			Yukon harvest	Total
	M	F	Unk	Total		Unreported	Illegal	Total		
2002	663	185	12	860	16	5	5	10	1	887
2003	612	181	6	799	15	5	5	10	0	824
2004	592	243	11	846	12	5	5	10	0	868
2005	557	182	2	741	4	5	5	10	0	755
2006	601	247	4	852	12	5	5	10	0	874
2007	746	262	4	1,012	20	5	5	10	0	1,042
2008	681	217	0	898	9	5	5	10	0	917
2009	881	192	10	1,083	11	5	5	10	0	1,104
2010	630	89	6	725	4	5	5	10	15	754
2011	935	125	6	1,066	18	5	5	10	15	1,109
2012	1,081	190	26	1,297	9	5	5	10	15	1,331
2013	1,152	14	20	1,186	58 ^d	5	5	10	15	1,269
2014	684	278	12	974	30 ^e	5	5	10	15	1,029

^a Regulatory year (RY) begins 1 July and ends 30 June (e.g., RY02 = 1 July 2002–30 June 2003).

^b Data from RC863, RC865, RC866 and RC867 harvest reports in RY02–RY03.

^c Data from RC860 and RC867 harvest reports in RY04–RY09.

^d Includes 49 general harvest reports from Fortymile herd caribou harvested in southern Unit 25B near Eagle, Alaska in late September.

^e Includes 20 DC851 reports from Fortymile herd caribou harvested in this Youth Permit Hunt in early August.

Table 8. Fortymile caribou hunter residency and success of hunters who reported residency, Alaska, regulatory years^a 2002–2014^b.

Regulatory year	Successful					Unsuccessful					Unknown success	Total hunters
	Local ^c resident	Nonlocal resident	Nonresident	Unknown residency	Total (%)	Local ^c resident	Nonlocal resident	Nonresident	Unknown residency	Total (%)		
2002	182	616	57	5	860 (33)	225	1,402	124	5	1,756 (67)	4	2,620
2003	102	609	85	3	799 (23)	226	2,235	163	3	2,627 (77)	14	3,440
2004	109	660	77	0	846 (34)	155	1,375	110	1	1,641 (66)	9	2,496
2005	133	539	68	1	741 (30)	169	1,458	114	0	1,741 (70)	3	2,485
2006	141	623	88	0	852 (33)	203	1,431	118	0	1,752 (67)	1	2,605
2007	119	779	114	0	1,012 (32)	269	1,791	110	0	2,170 (68)	0	3,182
2008	87	713	122	0	922 (36)	215	1,329	70	0	1,614 (64)	0	2,536
2009	111	881	103	1	1,096 (53)	153	751	84	0	988 (47)	4	2,088
2010	112	531	82	0	725 (23)	212	2,048	134	0	2,394 (77)	0	3,119
2011	190	751	125	0	1,066 (48)	175	913	65	0	1,153 (52)	0	2,219
2012	96	1,043	162	3	1,304 (45)	232	1,275	116	0	1,623 (55)	0	2,927
2013	126	855	203	2	1,186 (45)	139	1,163	149	0	1,451 (55)	0	2,637
2014	88	776	107	3	974 (28)	157	2,152	177	0	2,486 (72)	3	3,463

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2002 = 1 July 2002–30 June 2003).

^b Data from RC860, RC863, RC865, RC866 and RC867 harvest reports and general season harvest reports for the Fortymile caribou herd.

^c Residents of Unit 12 north of Wrangell–St Elias, Unit 20E, Unit 20D, and residents of Circle and Central in Unit 25C.

Table 9. Fortymile caribou autumn harvest by month/day, Alaska, regulatory years^a 2002–2014^b.

Regulatory year	Harvest by month/day (%)									<i>n</i>
	8/10–8/16	8/17–8/23	8/24–8/30	8/31–9/6	9/7–9/13	9/14–9/20	9/21–9/27	9/28–9/30		
2002	146 (23)	75 (12)	133 (21)	251 (39)	11 (2)	15 (2)	9 (1)	6 (1)	646	
2003	110 (21)	77 (14)	92 (17)	84 (16)	42 (8)	126 (24)	3 (1)	0 (0)	534	
2004	129 (24)	80 (15)	126 (24)	87 (17)	47 (9)	51 (10)	4 (1)	3 (1)	527	
2005	272 (57)	85 (18)	41 (9)	46 (10)	26 (5)	4 (1)	1 (<1)	0 (0)	475	
2006	336 (70)	38 (8)	33 (7)	36 (8)	19 (4)	15 (3)	2 (<1)	1 (<1)	480	
2007	444 (74)	24 (4)	18 (3)	44 (7)	38 (6)	18 (3)	3 (1)	10 (2)	599	
2008	519 (72)	25 (4)	36 (5)	49 (8)	44 (6)	33 (5)	1 (1)	0 (0)	707	
2009	888 (84)	19 (2)	30 (3)	36 (3)	42 (4)	38 (4)	0 (0)	0 (0)	1,053	
2010	29 (6)	16 (4)	236 (51)	61 (13)	49 (11)	29 (6)	33 (7)	7 (2)	460	
2011	27 (3)	29 (3)	503 (59)	220 (26)	20 (2)	36 (4)	7 (1)	3 (1)	852 ^c	
2012	32 (3)	29 (3)	673 (67)	228 (23)	18 (2)	16 (2)	1 (<1)	6 (1)	1,003	
2013	31 (3)	80 (7)	742 (63)	263 (22)	30 (3)	26 (2)	4 (<1)	0 (0)	1,186 ^d	
2014	25 (5)	32 (6)	43 (8)	327 (61)	41 (8)	18 (3)	21 (4)	26 (5)	540 ^e	

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2002 = 1 July 2002–30 June 2003).

^b Data from RC860, RC863, RC865 and RC866 harvest reports for the Fortymile caribou herd that indicated a harvest date.

^c Includes 7 unknown.

^d Includes 10 unknown.

^e Includes 7 unknown.

Table 10. Fortymile caribou winter harvest by month/day, Alaska, regulatory years^a 2002–2014^b.

Regulatory year	Harvest by month/day (%)										Total
	11/1–11/16	11/17–11/30	12/1–12/15	12/16–12/31	1/1–1/15	1/16–1/31	2/1–2/15	2/16–2/28			
2002 ^c	4 (2)	7 (3)	183 (91)	1 (1)	1 (1)	5 (2)	0 (0)	0 (0)	0 (0)	201	
2003 ^c	30 (12)	6 (2)	199 (82)	7 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	242	
2004 ^c	23 (7)	21 (7)	224 (72)	24 (8)	4 (1)	1 (<1)	0 (0)	12 (4)	309		
2005 ^c	68 (26)	5 (2)	42 (16)	42 (16)	33 (13)	19 (7)	17 (6)	38 (14)	264		
2006 ^c	63 (17)	27 (7)	279 (75)	0 (0)	0 (0)	0 (0)	0 (0)	1 (<1)	370		
2007 ^c	48 (12)	15 (4)	342 (84)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	405		
2008 ^c	23 (12)	16 (8)	156 (79)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	196		
2009 ^c	10 (38)	14 (54)	1 (4)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	26		
2010 ^c	1 (1)	0 (0)	5 (2)	14 (5)	65 (25)	28 (11)	57 (22)	52 (20)	265 ^d		
2011 ^c	0 (0)	21 (10)	95 (44)	39 (18)	7 (3)	0 (0)	36 (17)	16 (7)	214		
2012 ^c	10 (3)	6 (2)	47 (16)	52 (18)	125 (43)	12 (4)	13 (4)	2 (1)	294 ^e		
2013 ^f	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0		
2014	33 (8)	12 (3)	199 (46)	31 (7)	44 (10)	43 (10)	30 (7)	43 (10)	435		

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2002 = 1 July 2002–30 June 2003).

^b Data from RC867 harvest reports for the Fortymile caribou herd that indicated a harvest date.

^c Caribou harvested in November, were taken by federally qualified hunters, hunting on federal land only, under federal subsistence regulations.

^d An additional 43 caribou (16% of total winter harvest) were harvested in March during a season extension opened by emergency order.

^e An additional 27 caribou (9% of total winter harvest) were harvested in March. The March portion of the season was added by the Alaska Board of Game during their spring 2012 meeting.

^f Winter hunt was cancelled due to high harvest during fall hunt.

Table 11. Fortymile caribou harvest by transport method, Alaska, regulatory years^a 2002–2014^b.

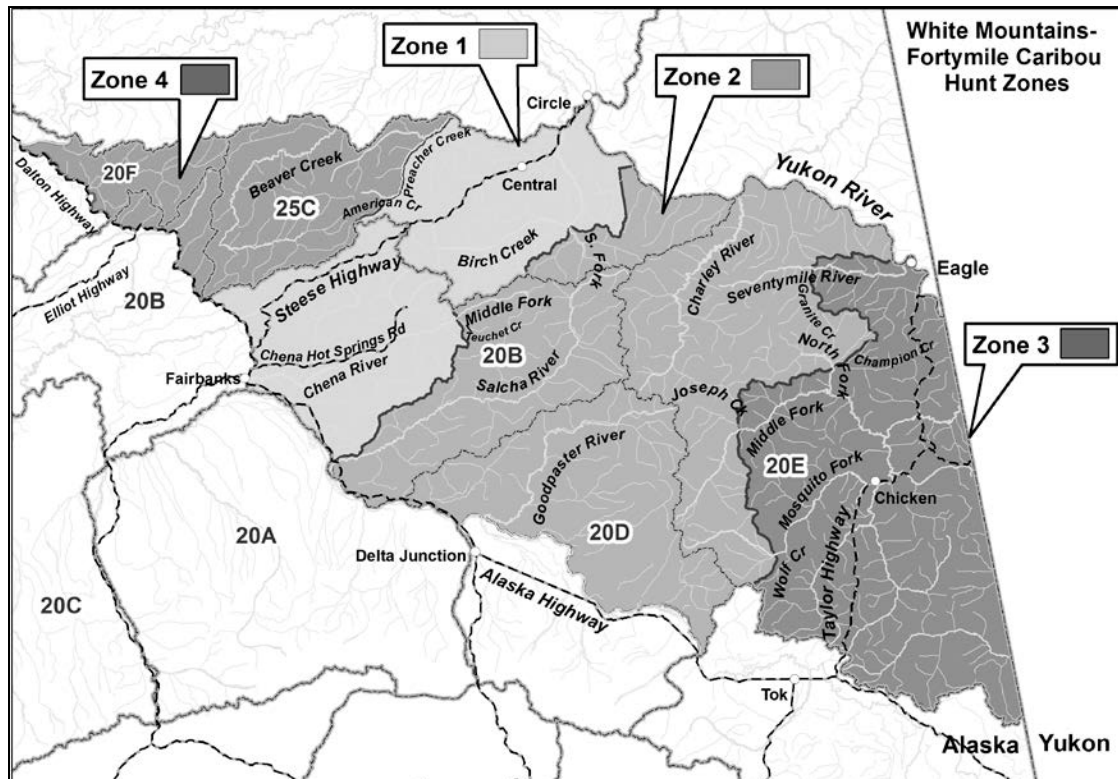
Regulatory year	Harvest by transport method (%)										
	Airplane	Horse	Boat/Airboat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Walking	Unk	Total	
2002	64 (7)	0 (0)	26 (3)	341 (40)	132 (15)	36 (4)	229 (27)	2 (<1)	30 (3)	860	
2003	103 (13)	0 (0)	47 (6)	276 (35)	158 (20)	34 (4)	116 (15)	44 (6)	21 (3)	799	
2004	69 (8)	1 (<1)	43 (5)	319 (38)	199 (24)	34 (4)	135 (16)	12 (1)	34 (4)	846	
2005	75 (10)	1 (<1)	63 (9)	274 (37)	97 (13)	58 (8)	164 (22)	4 (1)	5 (1)	741	
2006	83 (10)	5 (1)	45 (5)	303 (36)	232 (27)	26 (3)	136 (16)	6 (1)	16 (2)	852	
2007	102 (10)	3 (<1)	39 (4)	376 (37)	288 (28)	37 (4)	148 (15)	7 (1)	12 (1)	1,012	
2008	135 (15)	0 (0)	55 (6)	409 (45)	137 (15)	29 (3)	114 (12)	18 (2)	16 (2)	913	
2009	106 (10)	8 (<1)	50 (5)	670 (62)	5 (<1)	69 (6)	145 (13)	17 (2)	13 (1)	1,083	
2010	116 (16)	0 (0)	18 (3)	246 (34)	156 (22)	21 (3)	141 (19)	12 (2)	15 (2)	725	
2011	107 (10)	0 (0)	29 (3)	480 (45)	166 (16)	30 (3)	224 (21)	12 (1)	18 (2)	1,066	
2012	130 (10)	0 (0)	29 (2)	635 (49)	211 (16)	47 (4)	191 (15)	14 (1)	40 (3)	1,297	
2013	145 (12)	3 (<1)	32 (3)	697 (59)	0 (0)	53 (4)	187 (16)	15 (1)	54 (5)	1,186	
2014	134 (14)	1 (<1)	40 (4)	281 (29)	348 (36)	26 (3)	101 (10)	9 (1)	34 (3)	974	

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2002 = 1 July 2002–30 June 2003).

^b Data from RC860, RC863, RC865, RC866, and RC867 harvest reports for the Fortymile caribou herd.

APPENDIX A. Hunt zone map and descriptions.

Fortymile caribou herd (FCH) harvest is managed so that hunters in different parts of the herd's range all have hunting opportunity. To accomplish this, the *Fortymile Caribou Herd Harvest Plan 2006–2012* (Advisory Committee Coalition 2006) and *Fortymile Caribou Herd Harvest Plan 2012–2018* (Harvest Management Coalition 2012) combine portions of Game Management Units 20B, 20D, 20E, 20F, and 25C into hunt zones for purposes of hunting FCH. State of Alaska hunting seasons and bag limits are based on these zones, which are intended to help manage and distribute FCH harvest. Federal seasons are managed by units, not zones. Federal lands used for harvest of FCH are in Units 25C, 20E, and 20F.



Zone 1

Unit 20B, that portion within the Chatanika river drainage north and east of the Steese Highway, and that portion south and east of the Steese Highway, except the middle fork of the Chena river drainage upstream from and including the Teuchet Creek drainage and except the Salcha river drainage.

Unit 25C, that portion east of the east bank of the mainstem of Preacher Creek to its confluence with American Creek, then east of the east bank of American Creek, excluding that portion within the drainage of the south fork of Birch Creek and excluding that portion within the Yukon–Charley Rivers National Preserve.

Zone 2

Unit 20B, that portion south and east of the Steese Highway within the middle fork of the Chena river drainage upstream from and including the Teuchet Creek drainage and the Salcha river drainage.

Unit 20D, that portion north of the south bank of the Tanana River.

Unit 20E, that portion within the Charley river drainage, the Seventymile river drainage upstream from and including the Granite Creek drainage, the North Fork Fortymile river drainage upstream from, but not including the Champion Creek drainage, the Middle Fork Fortymile river drainage upstream from and including the Joseph Creek drainage, the Mosquito Fork of the Fortymile river drainage upstream from and including the Wolf Creek drainage, and the drainages flowing into the Yukon River downstream from the confluence of the Seventymile and Yukon rivers.

Unit 25C, that portion within the drainage of South Fork Birch Creek and that portion within the Yukon–Charley Rivers National Preserve.

Zone 3

Unit 20E, remainder (the road and trail accessible portion of the herd's range in the vicinity of the Taylor Highway).

Zone 4

Unit 20B and Unit 20F those portions north and west of the Steese Highway, north and east of the Elliot Highway to its intersection with the Dalton Highway, then east of the Dalton Highway and south of the Yukon River, excluding the Chatanika river drainage.

Unit 25C, that portion west of the east bank of the mainstem of Preacher Creek to its confluence with American Creek, then west of the east bank of American Creek.