

STAFF ANALYSIS
TEMPORARY SPECIAL ACTION
WSA22-05/06

ISSUES

Temporary Wildlife Special Action WSA22-05, submitted by the Northwest Arctic Subsistence Regional Advisory Council (Northwest Arctic Council), requests a reduction in the caribou harvest limit in Unit 23 to 4 caribou per year, only one of which may be a cow for the remainder of the 2022-24 regulatory cycle.

Temporary Wildlife Special Action WSA22-06, submitted by the Western Interior Subsistence Regional Advisory Council (Western Interior Council), requests a reduction in the caribou harvest limit across the range of the Western Arctic caribou herd to 4 caribou per year, only one of which may be a cow for the remainder of the 2022-24 regulatory cycle. Specific areas include Units 21D, remainder; 24A, remainder; 24B, remainder; 24C; 24D; and all caribou hunt areas within Units 22, 23, and 26A.

DISCUSSION

WSA22-05

The Northwest Arctic Council is requesting a temporary special action to reduce the caribou harvest limit in Unit 23 to 4 caribou per year (either 4 bulls or 3 bulls and 1 cow). The Western Arctic caribou herd (WACH) has continued to decline with the most recent estimate being 164,000 caribou. The Northwest Arctic Council is greatly concerned about the precipitous decline of the WACH and feels that immediate action is needed to slow the decline and prevent the herd from reaching a point of no return. The request for a temporary special action will be followed with a proposal for regulatory change during the 2024-26 Wildlife regulatory cycle. The Northwest Arctic Council feels that the harvest recommendations proposed by the WACH Working Group are a starting point for the conservation of the WACH while still allowing some harvest. The Northwest Arctic Council recognizes that federally qualified subsistence users are already facing food insecurities, but this drastic reduction of caribou harvest is a means to help protect the caribou herd while still allowing some harvest.

WSA22-06

The Western Interior Council is greatly concerned about the precipitous decline of the WACH, which is approaching 1976 levels, and feel that immediate action is needed to slow the decline and prevent the herd from reaching a point it could not recover from. The Western Interior Council stated that the harvest recommendations set forth by the WACH Working Group are a good starting point for the conservation of the WACH while still allowing some harvest. The Western Interior Council believes incidental mortality of the herd is affecting the overall population and feels that there is an immediate need to address the situation. The Western Interior Council recognizes that federally qualified subsistence users are already facing food insecurities, but this drastic reduction of caribou harvest and protection of cows is

necessary to protect the remaining caribou herd. The Western Interior Council stated that restricting all users across the entire range of the WACH is the most equitable method to reduce harvest.

Note: Following the public hearing held on May 2, 2023, the Western Interior Council indicated via e-mails they would like to withdraw this request. While Councils cannot formally change or withdraw special action requests outside of a public forum, the chair intends to speak to the Board during the comment period about this issue when they meet to consider this request on June 8th.

The applicable Federal regulations are found in 36 CFR 242.19(b) and 50 CFR 100.19(b) (Temporary Special Actions) and state that:

. . . After adequate notice and public hearing, the Board may temporarily close or open public lands for the taking of fish and wildlife for subsistence uses, or modify the requirements for subsistence take, or close public lands for the taking of fish and wildlife for nonsubsistence uses, or restrict take for nonsubsistence uses.

Existing Federal Regulation

Note: These are the Federal regulations for the 2022-24 Wildlife Regulatory Cycle, which include a temporary closure to caribou hunting by non-federally qualified users on Bureau of Land Management managed lands between the Noatak and Kobuk Rivers and all of Noatak National Preserve from Aug. 1-Sept. 30. The Federal Subsistence Board approved this closure via deferred Temporary Special Action WSA21-01 in March 2022.

Unit 21D—Caribou

Unit 21D, remainder— 5 caribou per day, as follows: Calves may not be taken.

Bulls may be harvested.

*July 1-Oct. 14.
Feb. 1-June 30.*

Cows may be harvested.

Sep. 1-Mar. 31.

Unit 22—Caribou

Unit 22B that portion west of Golovnin Bay and west of a line along the west bank of the Fish and Niukluk Rivers to the mouth of the Libby River and excluding all portions of the Niukluk River drainage upstream from and including the Libby River drainage - 5 caribou per day by State registration permit. Calves may not be taken.

Oct. 1-Apr. 30.

May 1-Sep. 30, a season may be announced.

Units 22A, that portion north of the Golsovia River drainage, 22B remainder, that portion of Unit 22D in the Kuzitrin River drainage (excluding the Pilgrim River drainage), and the Agiapuk River drainages,

July 1–June 30.

including the tributaries, and Unit 22E, that portion east of and including the Tin Creek drainage - 5 caribou per day by State registration permit. Calves may not be taken.

Unit 22A, remainder - 5 caribou per day by State registration permit. Calves may not be taken *July 1-June 30, season may be announced.*

Unit 22D, that portion in the Pilgrim River drainage - 5 caribou per day by State registration permit. Calves may not be taken *Oct. 1-Apr. 30. May 1-Sep. 30, season may be announced*

Units 22C, 22D remainder, 22E remainder - 5 caribou per day by State registration permit. Calves may not be taken *July 1-June 30, season may be announced*

Unit 23—Caribou

Unit 23—that portion which includes all drainages north and west of, and including, the Singoalik River drainage—5 caribou per day by State registration permit as follows:

Bulls may be harvested *July 1—June 30*

Cows may be harvested. However, cows accompanied by calves may not be taken July 15—Oct. 14. *July 15—Apr. 30*

Unit 23, remainder—5 caribou per day by State registration permit as follows:

Bulls may be harvested *July 1—June 30*

Cows may be harvested. However, cows accompanied by calves may not be taken July 31—Oct. 14. *July 31—Mar. 31*

Federal public lands within a 10-mile-wide corridor (5 miles either side) along the Noatak River from the western boundary of Noatak National Preserve upstream to the confluence with the Cutler River; within the northern and southern boundaries of the Eli and Agashashok River drainages, respectively; and within the Squirrel River drainage are closed to caribou hunting except by federally qualified subsistence users hunting under these regulations.

Unit 23—Caribou

Bureau of Land Management managed lands between the Noatak and Kobuk Rivers and Noatak National Preserve are closed to caribou hunting from Aug. 1-Sep. 30 for the 2022-24 regulatory cycle, except by federally qualified subsistence users hunting under these regulations.

Unit 24—Caribou

*Units 24A remainder, 24B remainder - 5 caribou per day, as follows:
Calves may not be taken.*

Bulls may be harvested. July 1-Oct. 14.

Feb. 1-June 30.

Cows may be harvested. July 15-Apr. 30.

Units 24C, 24D - 5 caribou per day, as follows: Calves may not be taken.

Bulls may be harvested. July 1-Oct. 14.

Feb. 1-June 30.

Cows may be harvested Sep. 1-Mar. 31.

Unit 26—Caribou

Unit 26A - that portion of the Colville River drainage upstream from the Anaktuvuk River, and drainages of the Chukchi Sea south and west of, and including the Utukok River drainage - 5 caribou per day by State registration permit as follows: Calves may not be taken

Bulls may be harvested July 1-Oct. 14.

Dec. 6-June 30.

Cows may be harvested; however, cows accompanied by calves may not be taken July 16-Oct. 15

July 16-Mar. 15.

Noatak National Preserve is closed to caribou hunting from Aug. 1-Sep. 30 for the 2022-24 regulatory cycle, except by federally qualified subsistence users hunting under these regulations.

Unit 26A remainder - 5 caribou per day by State registration permit as follows: Calves may not be taken

Bulls may be harvested

July 1-Oct. 15.

Dec. 6-June 30.

Up to 3 cows per day may be harvested; however, cows accompanied by calves may not be taken July 16-Oct. 15

July 16-Mar. 15.

Proposed Federal Regulation

Note: These are the Federal regulations for the 2022-24 Wildlife Regulatory Cycle, which include a temporary closure to caribou hunting by non-federally qualified users on Bureau of Land Management managed lands between the Noatak and Kobuk Rivers and all of Noatak National Preserve from Aug. 1-Sept. 30. The Federal Subsistence Board approved this closure via deferred Temporary Special Action WSA21-01 in March 2022.

Unit 21D—Caribou

Unit 21D, remainder— ~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow**, as follows: Calves may not be taken.

Bulls may be harvested.

July 1-Oct. 14.

Feb. 1-June 30.

Cows may be harvested.

Sep. 1-Mar. 31.

Unit 22—Caribou

Unit 22B that portion west of Golovnin Bay and west of a line along the west bank of the Fish and Niukluk Rivers to the mouth of the Libby River and excluding all portions of the Niukluk River drainage upstream from and including the Libby River drainage - ~~5 caribou per~~

Oct. 1-Apr. 30.

May 1-Sep. 30, a season may be announced.

~~day~~ **4 caribou per year, only 1 may be a cow** by State registration permit. Calves may not be taken.

Units 22A, that portion north of the Golsovia River drainage, 22B remainder, that portion of Unit 22D in the Kuzitrin River drainage (excluding the Pilgrim River drainage), and the Agiapuk River drainages, including the tributaries, and Unit 22E, that portion east of and including the Tin Creek drainage - ~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow** by State registration permit. Calves may not be taken. July 1–June 30.

Unit 22A, remainder - ~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow** by State registration permit. Calves may not be taken July 1–June 30, season may be announced.

Unit 22D, that portion in the Pilgrim River drainage - ~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow** by State registration permit. Calves may not be taken Oct. 1–Apr. 30. May 1–Sep. 30, season may be announced

Units 22C, 22D remainder, 22E remainder - ~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow** by State registration permit. Calves may not be taken July 1–June 30, season may be announced

Unit 23–Caribou

Unit 23—that portion which includes all drainages north and west of, and including, the Singoalik River drainage—~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow** by State registration permit as follows:

Bulls may be harvested July 1–June 30

Cows may be harvested. However, cows accompanied by calves may not be taken July 15–Oct. 14. July 15–Apr. 30

Unit 23, remainder—~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow** by State registration permit as follows:

Bulls may be harvested July 1–June 30

Cows may be harvested. However, cows accompanied by calves may not be taken July 31–Oct. 14. July 31–Mar. 31

Unit 23—Caribou

Federal public lands within a 10-mile-wide corridor (5 miles either side) along the Noatak River from the western boundary of Noatak National Preserve upstream to the confluence with the Cutler River; within the northern and southern boundaries of the Eli and Agashashok River drainages, respectively; and within the Squirrel River drainage are closed to caribou hunting except by federally qualified subsistence users hunting under these regulations.

Bureau of Land Management managed lands between the Noatak and Kobuk Rivers and Noatak National Preserve are closed to caribou hunting from Aug. 1-Sep. 30 for the 2022-24 regulatory cycle, except by federally qualified subsistence users hunting under these regulations.

Unit 24—Caribou

*Units 24A remainder, 24B remainder - ~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow** as follows: Calves may not be taken.*

Bulls may be harvested.

July 1-Oct. 14.

Feb. 1-June 30.

Cows may be harvested.

July 15-Apr. 30.

*Units 24C, 24D - ~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow** as follows: Calves may not be taken.*

Bulls may be harvested.

July 1-Oct. 14.

Feb. 1-June 30.

Cows may be harvested

Sep. 1-Mar. 31.

Unit 26—Caribou

*Unit 26A - that portion of the Colville River drainage upstream from the Anaktuvuk River, and drainages of the Chukchi Sea south and west of, and including the Utukok River drainage - ~~5 caribou per day~~ **4***

caribou per year, only 1 may be a cow by State registration permit as follows: Calves may not be taken.

Bulls may be harvested

July 1-Oct. 14.

Dec. 6-June 30.

Cows may be harvested; however, cows accompanied by calves may not be taken July 16-Oct. 15

July 16-Mar. 15.

Noatak National Preserve is closed to caribou hunting from Aug. 1-Sep. 30 for the 2022-24 regulatory cycle, except by federally qualified subsistence users hunting under these regulations.

*Unit 26A remainder - ~~5 caribou per day~~ **4 caribou per year, only 1 may be a cow** by State registration permit as follows: Calves may not be taken.*

Bulls may be harvested

July 1-Oct. 15.

Dec. 6-June 30.

*~~Up to 3 cows per day~~ **Only 1 cow** may be harvested; however, cows accompanied by calves may not be taken July 16-Oct. 15*

July 16-Mar. 15.

Existing State Regulation

Unit 21D—Caribou

21D remainder

Residents—5 caribou per day, however, calves may not be taken.

July 1-Oct. 14

Bulls

Feb. 1-June 30.

Cows

Sept. 1-Mar. 31.

Nonresidents—1 bull; however, calves may not be taken

Aug. 1-Sept. 30

Unit 22—Caribou

22A, north of the Golsovia River drainage	<i>Residents—Twenty caribou total, up to 5 per day by permit.</i>	
	<i>Bulls RC800</i>	<i>No closed season</i>
	<i>Cows RC800</i>	<i>July 1-Mar. 31.</i>
	<i>Nonresidents—1 bull</i>	<i>Aug. 1-Sept. 30</i>
22A, remainder	<i>Residents— Twenty caribou total, up to 5 per day by permit. Bulls may not be taken Oct. 15- Jan 31, and cows may not be taken Apr 1- Aug 31. RC800</i>	<i>May be announced</i>
	<i>Nonresidents—1 bull</i>	<i>May be announced</i>
22B, west of Golovnin Bay, west of the west banks of Fish and Niukluk rivers below the Libby River, (excluding the Libby River drainage and Niukluk River drainage above, the mouth of the Libby River)	<i>Residents— Twenty caribou total, up to 5 per day by permit.</i>	
	<i>Bulls RC800</i>	<i>Oct. 1-Apr. 30</i>
	<i>Cows RC800</i>	<i>Oct. 1-Mar 31.</i>
	<i>Residents— Twenty caribou total, up to 5 per day by permit. Cows may not be taken Apr 1- Aug 31. RC800</i>	<i>May be announced</i>
	<i>Nonresidents—1 bull</i>	<i>May be announced</i>
22B, remainder	<i>Residents— Twenty caribou total, up to 5 per day by permit.</i>	
	<i>Bulls RC800</i>	<i>No closed season</i>
	<i>Cows RC800</i>	<i>July 1-Mar. 31.</i>
	<i>Nonresidents—1 bull</i>	<i>Aug. 1-Sept. 30</i>
22C	<i>Residents— Twenty caribou total, up to 5 per day by permit. Bulls may not be taken Oct 15-Jan 31, and cows may not be taken Apr 1-Aug 31. RC800</i>	<i>May be announced</i>

	<i>Nonresidents—1 bull</i>	<i>May be announced</i>
<i>22D, Pilgrim River drainage</i>	<i>Residents— Twenty caribou total, up to 5 per day by permit.</i>	
	<i>Bulls RC800</i>	<i>Oct. 1-Apr. 30</i>
	<i>Cows RC800</i>	<i>Oct. 1-Mar. 31.</i>
	<i>Residents— Twenty caribou total, up to 5 per day by permit. Cows may not be taken Apr 1-Aug 31. RC800</i>	<i>May be announced</i>
	<i>Nonresidents—1 bull; however, calves may not be taken</i>	<i>May be announced</i>
<i>22D, in the Kuzitrin River drainage (excluding the Pilgrim River drainage) and the Agiapuk River drainage</i>	<i>Residents— Twenty caribou total, up to 5 per day by permit.</i>	
	<i>Bulls RC800</i>	<i>No closed season</i>
	<i>Cows RC800</i>	<i>July 1-Mar. 31.</i>
	<i>Nonresidents—1 bull</i>	<i>Aug. 1-Sept. 30</i>
<i>22D, remainder</i>	<i>Residents— Twenty caribou total, up to 5 per day by permit. Bulls may not be taken Oct 15- Jan 31, and cows may not be taken Apr 1 – Aug 31. RC800</i>	<i>May be announced.</i>
	<i>Nonresidents—1 bull</i>	<i>Aug. 1-Sept. 30</i>
<i>22E, east of and including the Sanaguich River drainage</i>	<i>Residents— Twenty caribou total, up to 5 per day by permit.</i>	
	<i>Bulls RC800</i>	<i>No closed season</i>
	<i>Cows RC800</i>	<i>July 1-Mar. 31.</i>
	<i>Nonresidents—1 bull</i>	<i>Aug. 1-Sept. 30</i>

22E, remainder Residents— Twenty caribou total, up to 5 per day by permit. Bulls may not be taken Oct 15- Jan 31, and cows may not be taken Apr 1 – Aug 31.
RC800

Nonresidents—1 bull May be announced

Unit 23—Caribou

23, north of and including the Singoalik River drainage Residents—5 caribou per day by permit.
Bulls RC907 No closed season

Cows RC907 Jul. 15-Apr. 30

Nonresidents—1 bull Aug. 1-Sept. 30

23 remainder Residents—5 caribou per day by permit.
Bulls RC907 No closed season

Cows RC907 Sept. 1-Mar. 31.

Nonresidents—1 bull Aug. 1-Sept. 30

Unit 24—Caribou

24A remainder. Residents—10 caribou July 1-Apr. 30.

A portion of this area is within the DHCMA and additional restrictions apply Nonresidents—2 bulls Aug. 1-Sept. 30

24B remainder Residents—5 caribou per day, however, calves may not be taken.

Bulls July 1-Oct 14
Feb 1-June 30

Cows July 15-Apr. 30.

Nonresidents—1 bull, however, calves may not be taken Aug. 1-Sept. 30

<i>24C and 24D</i>	<i>Residents—5 caribou per day, however, calves may not be taken.</i>	
	<i>Bulls</i>	<i>July 1-Oct 14 Feb 1-June 30</i>
	<i>Cows</i>	<i>Sept. 1-Mar. 31.</i>
	<i>Nonresidents—1 bull, however, calves may not be taken</i>	<i>Aug. 1-Sept. 30</i>

Unit 26—Caribou

<i>26A, the Colville River drainage upstream from the Anaktuvuk River, and drainages of the Chukchi Sea south and west of, and including the Utukok River drainage</i>	<i>Residents—5 caribou per day by permit.</i>	
	<i>Bulls RC907</i>	<i>July 1-Oct. 14 Feb. 1-June 30.</i>
	<i>Cows RC907</i>	<i>Jul. 15-Apr. 30</i>
	<i>Nonresidents—1 bull</i>	<i>July 15-Sept. 30</i>
<i>26A remainder</i>	<i>Residents—5 caribou per day by permit. RC907</i>	<i>July 1-July 15 Mar 16-June 30.</i>
	<i>5 caribou per day three of which may be cows by permit; cows with calves may not be taken. RC907</i>	<i>July 16-Oct 15.</i>
	<i>3 cows per day by permit. RC907</i>	<i>Oct 16-Dec 31</i>
	<i>5 caribou per day three of which may be cows by permit. RC907</i>	<i>Jan 1-Mar 15</i>
	<i>Nonresidents—1 bull; however, calves may not be taken</i>	<i>July 15-Sept 30</i>

Extent of Federal Public Lands

Federal public lands comprise approximately 55.7% of Unit 21D and consist of 29.3% U.S. Fish and Wildlife Service (FWS) managed lands, and 26.4% Bureau of Land Management (BLM) managed lands.

Federal public lands comprise approximately 43.5% of Unit 22 and consist of 28.1% BLM managed lands, 12.4% National Park Service (NPS) managed lands, and 3% FWS managed lands.

Federal public lands comprise approximately 70.5% of Unit 23 and consist of 39.6% NPS managed lands, 21.8% BLM managed lands, and 9.1% FWS managed lands.

Federal public lands comprise approximately 64.4% of Unit 24 and consist of 21.8% NPS managed lands, and 21.8% FWS managed lands, 20.8% BLM managed lands.

Federal public lands comprise approximately 67.5% of Unit 26 and consist of 45.2% BLM managed lands, 17.3% FWS managed lands, and 5% NPS managed lands.

Federal public lands comprise approximately 72.7% of Unit 26A and consist of 66% BLM managed lands, 6.6% NPS managed lands, and .01% FWS managed lands.

Customary and Traditional Use Determinations

Residents of Units 21B, 21C, 21D, and Huslia have a customary and traditional use determination for caribou in Unit 21D.

Residents of Units 21D west of the Koyukuk and Yukon Rivers, 22 (except residents of St. Lawrence Island), 23, 24, Kotlik, Emmonak, Hooper Bay, Scammon Bay, Chevak, Marshall, Mountain Village, Pilot Station, Pitka's Point, Russian Mission, St. Marys, Nunam Iqua, and Alakanuk have a customary and traditional use determination for caribou in Unit 22A.

Residents of Units 21D west of the Koyukuk and Yukon Rivers, 22 (excluding residents of St. Lawrence Island), 23, and 24 have a customary and traditional use determination for caribou in Unit 22 remainder.

Residents of Units 21D west of the Koyukuk and Yukon Rivers, 22, 23, 24 including residents of Wiseman but not other residents of the Dalton Highway Corridor Management Area, 26A, and Galena have a customary and traditional use determination for caribou in Unit 23.

Residents of Unit 24, Galena, Kobuk, Koyukuk, Stevens Village, and Tanana have a customary and traditional use determination for caribou in Unit 24.

Residents of Unit 26, Anaktuvuk Pass, and Point Hope have a customary and traditional use determination for caribou in Unit 26A.

Regulatory History

See **Appendix 1**

Current Events

2024-26 Federal Wildlife Proposals

Four proposals affecting the WACH were submitted for the 2024-26 Federal wildlife regulatory cycle. The Northwest Arctic Council submitted Wildlife Proposal WP24-29, which requests the same changes as WSA22-05; specifically, to reduce the Unit 23 caribou harvest limit to 4 caribou per year, only one of which may be a cow.

The WACH Working Group submitted Wildlife Proposal WP24-28, which requests the same changes as WSA22-06; specifically, to reduce the caribou harvest limit across the range of the WACH to 4 caribou per year, however, no more than 1 cow may be taken. The affected areas include Units 21D, remainder; 24B, remainder; 24C; 24D; and all caribou hunt areas within Units 22, 23, and 26A. However, unlike WSA22-06, Proposal WP24-28 does not include Unit 24A, remainder. The WACH Working Group also voted at their December 2022 meeting to submit an identical State proposal to the BOG.

The Northwest and North Slope Councils also submitted Proposals WP24-30 and WP24-31, respectively, to close caribou hunting to non-federally qualified users in Unit 23 from Aug. 1-Oct. 31.

April 26 public hearing summary (WSA22-05 and WSA22-06)

OSM held a public hearing on WSA22-05 and WSA22-06 on April 26, 2023 in Kotzebue and via teleconference. Fourteen people testified. The majority of participants spoke in favor of the need for conservation of caribou but in opposition to the 4 caribou per year as proposed in the special action request. Speakers, almost unanimously, stressed that caribou is their dietary staple and an integral aspect of their cultural identity. They stated that the limit, as proposed, would disrupt a basic aspect of the subsistence economy, the ability to harvest for others who can't hunt for themselves. Climate change was acknowledged as a reason for changing caribou migration patterns. However, other phenomena were discussed. The effects of sport hunters and their use of airplanes is a major cause of concern because it is perceived as a disruption to caribou migration patterns. A couple of speakers said that migrations are interrupted when sport hunters don't follow local conservation practices such as letting the caribou leaders pass so the herd will follow. Speakers told of other local conservation practices and indigenous ways of showing respect, including letting caribou pass in the spring when they are skinny, not hunting cows in times of low numbers and using all parts of the caribou they harvest. One person noted that caribou population crashes are part of Indigenous Knowledge and these practices are enacted during these times.

One of the most pervasive themes was the short amount of time between the Northwest Arctic Council's request submission and public hearing, and the lack of village outreach. The lack of outreach is a major point of contention because, the participants said, those are the people who are the hunters and who make their living off of the land. Most speakers talked about the high cost of living in the region and that residents are not able to just stop hunting. Participants from the North Slope stated that this proposal is not relevant for them because they harvest from the Teshekpuk herd and not the Western Arctic herd.

As noted, many speakers spoke of the need to take conservation measures to preserve the Western Arctic herd. The Kobuk Valley National Park Subsistence Resource Commission suggested changing the limit to 5 bulls per day and no cows so that harvesting for others can be sustained. One speaker, an elder, did not overtly support the proposal but candidly shared his thoughts as to how conservation of the herd should be addressed. He stated that local hunting patterns have changed because of the presence of sport hunters who prefer to take bulls and disrupt migration routes. He said this led to the need for local hunters to shift to cow harvest. He expressed extreme concern that the use of semi-automatic weapons has taken the place of bolt action rifles among local hunters. He observed that some people shoot into the herd and may kill several caribou and that they don't harvest all of them. He acknowledged natural fluctuation in caribou herd numbers and said that local people are going to have to "tighten their belts." Like other speakers, he feels that the prohibition of fly-in hunting would allow for the restoration of caribou migration routes. He

sincerely requested that all agencies come to the table to address local concerns and bring their data to find a viable solution to conserving the Western Arctic herd.

May 2, 2023 public hearing summary (WSA22-06 only)

OSM held another public hearing on WSA22-06 on May 2, 2023 via teleconference. Forty-five people provided testimony. The vast majority of testifiers were from North Slope communities and strongly opposed the request. One person from Ambler supported the request, stressing the importance of protecting cows and the need for conservation now to ensure the herd's preservation into the future. Several commenters did not provide an explicit position.

The primary reason people opposed the request was because the proposed harvest limit reduction would not be enough to provide for people's subsistence uses, potentially resulting in starvation across North Slope communities. Many testifiers stated four caribou per year was not enough to feed their families or share with others in their community, including elders, widows, and people unable to hunt for themselves. One testifier commented that his family uses 30-50 caribou each year, while another stated four caribou would only last her family one month. People also emphasized that caribou are vital for their survival; they rely on caribou both nutritionally and culturally. For example, caribou sinew is used to construct whaling boats. Several testifiers stressed that subsistence users only take what they need and harvest sustainably; they should not be criminalized for feeding their families; sport hunters should be restricted first. Additionally, store-bought food is prohibitively expensive and not as healthy as caribou.

Another reason people opposed the request was because most caribou harvested in Unit 26A are from the Teshekpuk or Central Arctic caribou herds, not the WACH. As the TCH and CACH populations are not declining like the WACH, this harvest limit reduction would be an unnecessary restriction on subsistence uses. Many also commented that the timing of the public hearing was terrible because many of the region's caribou hunters were out whaling. Several others expressed a need for meaningful tribal consultation on the request.

Several testifiers agreed that some conservation measures were needed to address the decline of the WACH, but that the requested restrictions were too drastic, too soon and did not allow sufficient time or opportunity for input by the subsistence users who would be most affected by these restrictions. Others expressed frustration at the Western Interior Council dictating what harvest regulations should be outside of their area in the North Slope region.

A representative from ADF&G commented that a similar proposal will be addressed by the BOG in January 2024 and that outlying subunits occupied by other herds such as the TCH and CACH should be considered for removal from this request.

Following this public hearing, the Western Interior Council indicated via e-mails that they would like to withdraw this request. While Councils cannot formally withdraw special action requests outside of a public forum, the chair intends to speak to the Board about this issue when they meet to consider this request on June 8th.

Tribal and ANCSA consultation summary

Participants in the Tribal teleconference included representatives of the Inupiat Community of the Arctic Slope (ICAS), Naqsrarmiut Tribal Council of Anaktuvuk Pass, and the Arctic Slope Community Foundation.

Participants said that 4 caribou per household for the year is not enough because hunters harvest for those who cannot hunt, not just their household. They stated that caribou is a staple food, but it is more than that, it is cultural identity and is healthier than store-bought food. Some participants discussed the conflict they face, they know WACH caribou needs to be conserved but they also need caribou in order to live. One person described Traditional/Indigenous Knowledge and on-going user conflict, “We know not to overharvest for 10,000 years and now it’s all regulated for us. Just difficult to follow your regulations with over 1,000 super cub planes coming to harvest the same caribou.”

Discussion of management topics included a request for the State to be at the table with villages and Federal managers to discuss and work out how to conserve the herd. Participants stated that they do not harvest the WACH and asked if enforcement would be herd-specific. OSM staff replied that law enforcement makes no distinction between herds; enforcement occurs according to harvest regulations in specific units and areas.

Participants asked about the timing of the special action and OSM staff replied that the Board is meeting to address it on June 8, 2023. Because this is a temporary special action, if the Board adopted the proposal, it would only last for one regulatory cycle and would end in June 2024. The conflict that hunters face was voiced again when a participant said that he knew he was going against himself but wondered if the closure should last for two cycles in order to save the herd because, he said, “...if we lose them, everything falls apart.”

Participants in the Alaska Native Claims Settlement Act (ANCSA) teleconference included representatives of the Inupiat Community of the Arctic Slope (ICAS), Naqsrarmiut Tribal Council of Anaktuvuk Pass, and NANA Regional Corporation.

The NANA Corporation representatives stated that NANA does not have an official position on the proposal but wanted to share concerns voiced by NANA shareholders. In general, shareholders have expressed deep and overwhelming worry and a heavy sense of concern. The main concern is that people do not know how they would feed their families and their communities if this special action is adopted. The fast speed of the process and the timing of the public hearings was cited as problematic because communities and families have not had time to discuss the situation among themselves. People expressed worry about shifting harvests away from caribou because other resources are also in decline. The use of the entire caribou for many purposes is also an issue; people will not just lose food, but the ability to make clothing, tools, and art from caribou.

Harvesting caribou for others is a central aspect of Inupiat culture and economy. The ability to harvest for others is a major concern. Participants requested clarification on the designated hunter permit. OSM staff replied that on Federal public lands, any federally qualified user can be a designated hunter for another federally qualified user. One participant asked how law enforcement would deal with several designated hunters in one boat with only their allowed limit of caribou on board. OSM staff replied that it would be permissible as permitted by State or Federal regulations. During the public hearings on April 26 and May

2, 2023, many participants expressed concerns about access to designated hunter permits. OSM staff has contacted U.S. Fish and Wildlife Service Refuge and National Park Service colleagues to identify exactly how to obtain designated hunter permits in hub communities and villages. Per their request, OSM staff has provided preliminary information to NANA representatives.

Participants asked how OSM came to the harvest limit proposed in WSA22-05/06. OSM staff replied that it was proposed by the Western Arctic Caribou Herd Working Group. The Chair of the Western Interior Council, Jack Reakoff, explained further that the Western Interior Council proposal was prompted by the drastic decline of the WACH and the immediate need to conserve caribou cows.

PLACEHOLDER

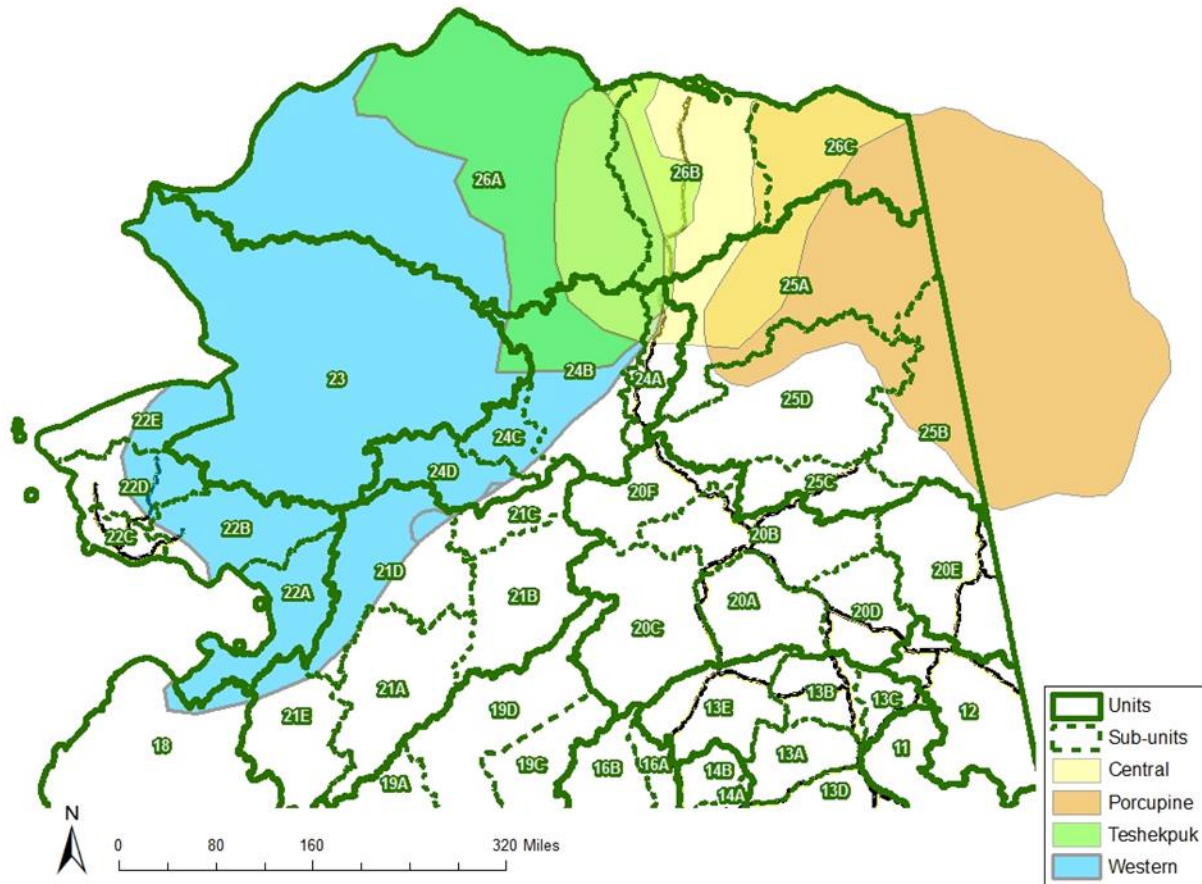
Biological Background

The Teshekpuk caribou herd (TCH), WACH, and Central Arctic caribou herd (CACH) have ranges that overlap in Units 26A and 24B (**Map 1**), and there can be considerable mixing of herds during the fall and winter (Prichard et al. 2020). As the current temporary wildlife special actions requests focuses on conservation concerns for the WACH, this analysis will focus on the WACH. The TCH primarily occupies Unit 26A, and this analysis will briefly consider TCH biology and range. The CACH, which mostly occurs in Unit 26B, (Dau 2011, 2015, Lenart 2011, Parrett 2011, 2015c, 2015d), will not be considered further in this analysis.

Caribou abundance naturally fluctuates over decades (Gunn 2003, WACHWG 2011). Gunn (2003) reports the mean doubling rate for Alaskan caribou as 10 ± 2.3 years. Although the underlying mechanisms causing these fluctuations are uncertain, climatic oscillations (i.e., Arctic and Pacific Decadal Oscillations) may play an important role (Gunn 2003, Joly et al. 2011). Climatic oscillations can influence factors such as snow depth, icing, forage quality and growth, wildfire occurrence, insect levels, and predation, which all contribute to caribou population dynamics (Joly et al. 2011). Density-dependent reduction in forage availability, resulting in poorer body condition may exacerbate caribou population fluctuations (Gunn 2003).

Caribou calving generally occurs from late May to mid-June (Dau 2013, Cameron et al. 2018). Weaning generally occurs in late October and early November before the breeding season (Taillon et al. 2011). Calves may stay with their mothers through their first winter, which improves calves' access to food and body condition (Holand et al. 2012). Calves orphaned after weaning (October) have greater chances of survival than calves orphaned before weaning (Russell et al. 1991, Joly 2000, Holand et al. 2012, Rughetti and Festa-Bianchet 2014).

Caribou feed on a wide variety of plants including lichens, fungi, sedges, grasses, forbs, and twigs of woody plants. Arctic caribou depend primarily on lichens during the fall and winter, but during summer they feed on leaves, grasses and sedges (Joly and Cameron 2018, Miller 2003).



Map 1. Herd overlap and ranges of the WACH, TCH, CACH, and PCH.

Western Arctic Caribou Herd

The WACH has historically been the largest caribou herd in Alaska and has a home range of approximately 157,000 square miles in northwestern Alaska. In the spring, most mature cows move north to calving grounds in the Utukok Hills, while bulls and immature cows lag behind and move toward summer range in the Wulik Peaks and Lisburne Hills (**Map 2**; Dau 2011; WACHWG 2011, 2019). After calving, cows and calves move west toward the Lisburne Hills where they mix with the bulls and non-maternal cows. During the summer, the herd moves rapidly to the Brooks Range. Calving locations of individuals average 35 miles apart from one year to the next, and 90% of females calved within one week from the previous year (Joly et al. 2021). The WACH has used the same general calving grounds for more than 100 years (Cameron et al. 2020).

Except for summer periods, little individual site-specific fidelity is observed from year to year, especially during the winter (Joly et al. 2021). The winter range fluctuates year to year as the WACH demonstrate low fidelity to wintering grounds (Joly et al. 2021). Rut occurs during fall migration (Dau 2011, WACHWG 2011). The fall migration is more variable and shows less fidelity to specific migration routes than the spring migration. While caribou still showed a fidelity to certain regions within the herd's range (Joly et al. 2021).

In recent years, the timing of fall migration has been less predictable (Joly et al. 2021). Reasons for changes in migration phenology are unknown. However, Cameron et al. (2021) found that WACH migrated in response to snow events and cold temperatures but would pause migration when they encountered snow free areas or warmer temperatures. This corresponds with Traditional Ecological Knowledge, which has observed caribou migrating in response to weather (NWARAC 2021b). Caribou migrations are also closely related to the population size and density of the herd (Burch 1972, Joly et al. 2021b).

The proportion of caribou using certain migration paths also varies each year (**Figure 1**, Baltensperger and Joly 2019, Joly and Cameron 2020). Changes in migration paths are likely influenced by multiple factors including food availability, snow depth, rugged terrain, and dense vegetation (Nicholson et al. 2016, Fullman et al. 2017). If caribou travelled the same migration routes every year, their food resources would likely be depleted (NWARAC 2016a). Anthropogenic factors can also influence migration paths. Radio collared caribou data has shown that the Red Dog Mine Road, near Kivalina has delayed the fall migration along the coast with some caribou turning around rather than crossing the road (Wilson et al. 2016, WACHWG 2021).

The WACH Working Group consists of a broad spectrum of stakeholders, including subsistence users, sport hunters, conservationists, hunting guides, reindeer herders and transporters. The Group is also technically supported by NPS, FWS, BLM, and ADF&G personnel. The WACH Working Group developed a WACH Cooperative Management Plan in 2003 and revised it in 2011 and 2019 (WACHWG 2011, 2019). The WACH Management Plan identifies nine plan elements: cooperation, population management, habitat, regulations, reindeer, knowledge, education, human activities, and changing climate, as well as associated goals, strategies, and management actions. As part of the population management element, the WACH Working Group developed a guide to herd management determined by population size, population trend, and harvest rate. Population sizes guiding management level determinations were based on recent (since 1970) historical data for the WACH (WACHWG 2011, 2019). Revisions to recommended harvest levels under liberal and conservative management were made in 2015 (WACHWG 2015) and 2019 (WACHWG 2019a, **Table 1**).

The WACH population declined rapidly in the early 1970s, bottoming out at about 75,000 animals in 1976. Aerial photocensuses have been used since 1986 to estimate population size. The WACH population increased throughout the 1980s and 1990s, peaking at 490,000 animals in 2003 (**Figure 2**). From 2003-2016, the herd declined at an average annual rate of 7.1% from approximately 490,000 caribou to 200,928 caribou (Dau 2011, 2014; Caribou Trails 2014; Parrett 2016). In 2017, the herd increased to an estimated 259,000 caribou (Parrett 2017a). However, part of this increase may have been due to improved photographic technology as ADF&G switched from film to higher resolution digital cameras. The 2019 population estimate was 244,000 caribou (Hansen 2019a). No photocensus was completed in 2020, but ADF&G completed a census in 2021 (WACHWG 2020). The 2021 population estimate was 188,000 caribou with a 95% confidence interval of +/- 11,855 and a minimum count of 180,374. This is approximately a 24% decline from the 2019 population estimate (WACHWG 2021). The 2022 population estimate was 164,000 caribou with a 95% confidence interval of +/- 7,271 and a minimum count of 161,034, representing an additional 12% decline (**Figure 2**, WACHWG 2022).

Between 1982 and 2011, the WACH population was within the liberal management level prescribed by the WACH Working Group (**Figure 2, Table 1**). In 2013, the herd population estimate fell below the population threshold for liberal management of a decreasing population (265,000), slipping into the conservative management level. In 2020, as no photocensus was completed, the WACH Working Group voted to maintain the herd's status at the conservative declining level (WACH Working Group 2020). The 2021 population estimate fell below the population threshold for conservative management of a decreasing population (200,000). The WACH Working Group voted to place the herd in the preservative declining level in 2021 and 2022 (WACHWG 2021, 2022).

Between 1970 and 2021, the bull:cow ratio exceeded Critical Management level of 30 bulls:100 cows identified in the 2019 WACH Management Plan (**Figure 3**). (Note: Previous management plans identified 40 bulls:100 cows as the critical management level). However, the average annual number of bulls:100 cows was greater during the period of population growth (54:100 between 1976–2001) than during the recent period of decline (44:100 between 2004-2016). However, in 2017 the bull:100 cow ratio was the highest since 1998 at 54 bulls:100 cows. In 2021, that ratio fell slightly to 47 bulls:100 cows (**Figure 3, WACHWG 2021**). Additionally, Dau (2015) states that while trends in bull:cow ratios are accurate, actual values should be interpreted with caution due to sexual segregation during sampling and the inability to sample the entire population, which likely account for more annual variability than actual changes in composition.

Although factors contributing to the 2003-present decline are not known with certainty, increased adult cow mortality, and decreased calf recruitment and survival played a role (Dau 2011, WACHWG 2022). Since the mid-1980s, adult mortality has slowly increased while recruitment has slowly decreased (**Figure 4, Dau 2013**). Prichard (2009) developed a population model specifically for the WACH using various demographic parameters and found adult cow survival to have the largest impact on population size, followed by calf survival and then parturition rates.

Calf production has likely had little influence on the population trajectory (Dau 2013, 2015). Between 1990 and 2003, the June calf:cow ratio averaged 66 calves:100 cows/year. Between 2004 and 2017, the June calf:cow ratio averaged 72 calves:100 cows/year. In June 2018, 86 calves:100 cows were observed, which approximates the highest parturition level ever recorded for the herd (86 calves:100 cows in 1992) (Dau 2016a, WACH Working Group 2021). The 5-year period from 2015-2019 had the highest (83%) parturition rate of any period since monitoring began. Since 2018, the parturition rates have decreased. In 2022, the calf:cow ratio was 64 calves:100 cows. The long-term average (1992-2022) is 70 calves:100 cows/year (**Figure 5, WACHWG 2022, NWARAC 2023**).

Decreased calf survival through summer and fall and recruitment into the herd may have contributed to the recent population decline (Dau 2013, 2015). Fall calf:cow ratios indicate calf survival over summer. Between 1976 and 2017, the fall calf:cow ratio ranged from 35 to 59 calves:100 cows/year, averaging 47 calves:100 cows/year (**Figure 5**).

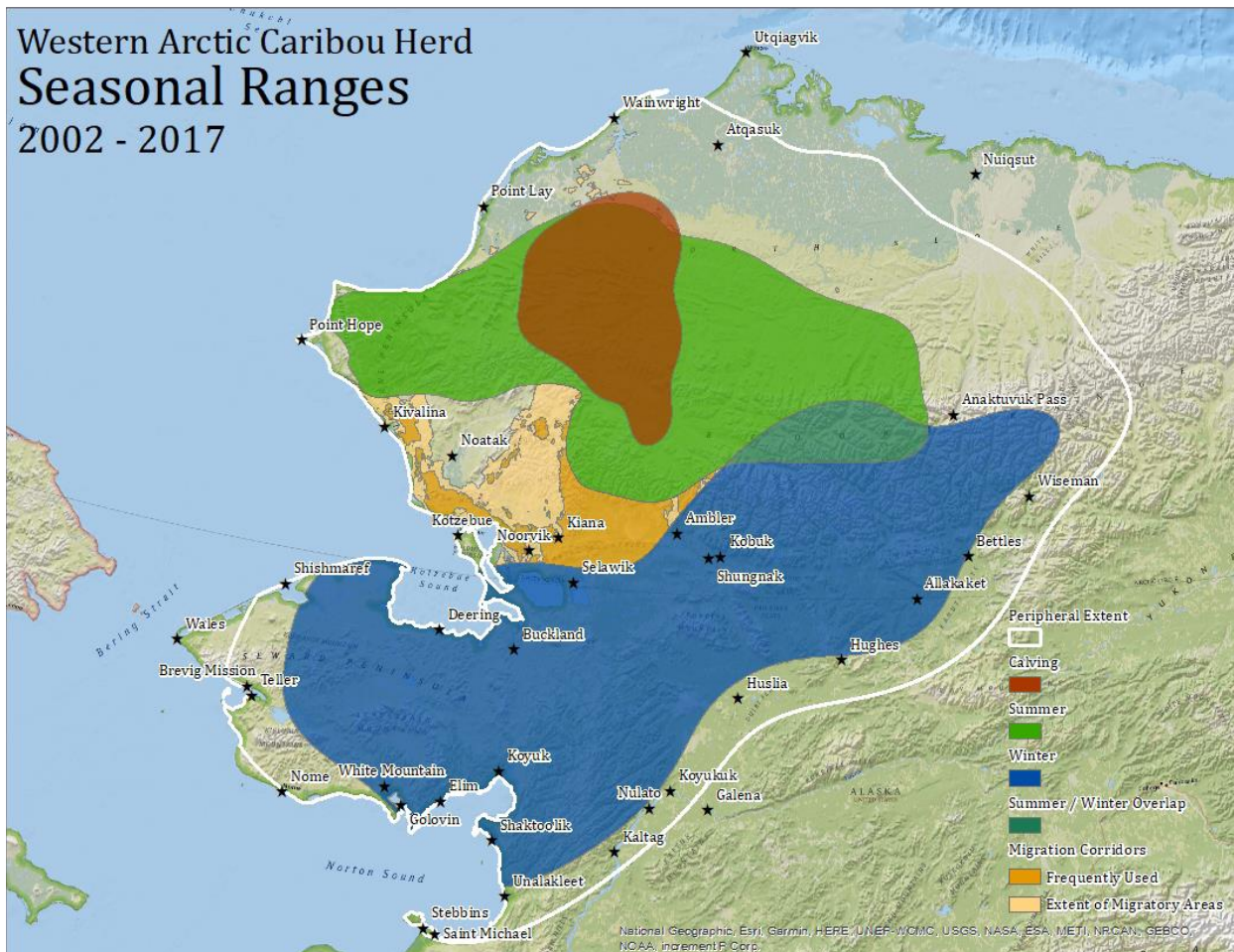
Similarly, the ratio of short yearlings (SY, 10-11 months old caribou) to adults provides a measure of overwintering calf survival and recruitment. Between 1998 and 2022, SY:adult ratios ranged from 9-26

and averaged 17 SY:100 adults/year (**Figure 5**). SY:100 adult ratios were high from 2016-2018, ranging from 21-23 SY:100 adults (Dau 2016b, NWARAC 2019a, NWARAC 2023). The 2022 SY:100 adult ratio was on par with the long-term average at 17 SY:100 adults (WACHWG 2022). Over the past seven years the short yearling ratio has been at or above the long-term average. Thus, recruitment does not appear to be a major driver of herd decline.

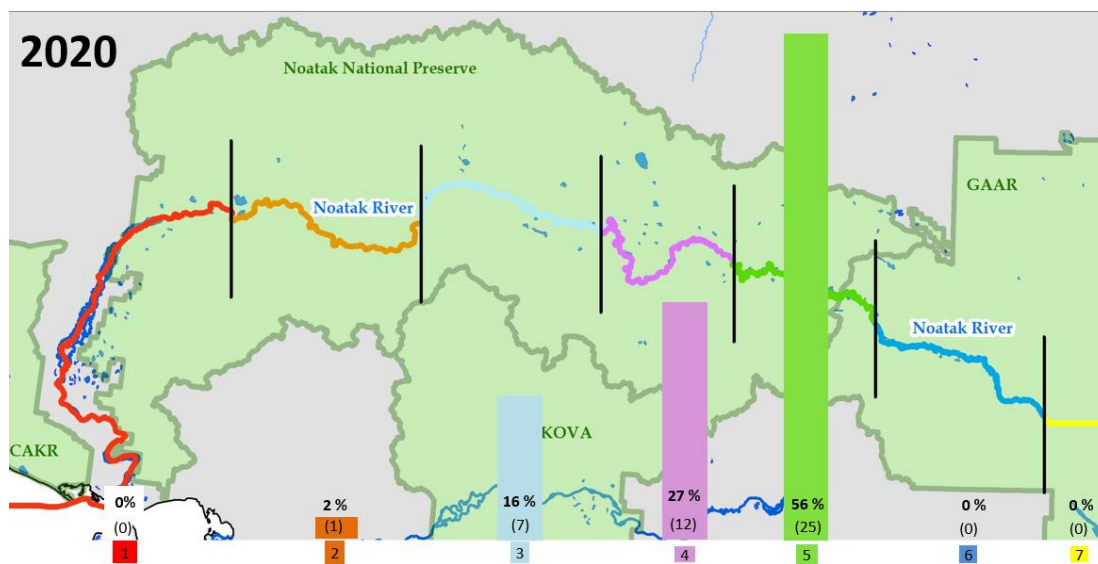
Cow mortality affects the trajectory of the herd (Dau 2011, 2013, Prichard 2009, NWARAC 2019a). The long-term mortality rate of radio-collared adult cows averaged 19% from 1987-2020 (WACHWG 2022). The annual mortality rate increased from an average of 15% between 1987 and 2003 to 23% from 2004-2014 (**Figure 4**, Dau 2011, 2013, 2014, 2015). Mortality rates declined in 2015 and 2016, but then increased sharply in 2017. However, the increased mortality rate in 2017 may have been due to a low and aging sample size as few caribou were collared in the previous two years (Prichard et al. 2012, NWARAC 2019a) and/or difficult weather conditions (Gurarie et al. 2020). Prior to 2019, ADF&G and NPS deployed collars on caribou at Onion Portage via boat in September. Only seven collars total were deployed in both 2017 and 2018 due to fewer caribou migrating through Onion Portage at predictable times. ADF&G and NPS began deploying collars using net gun techniques via helicopter in April 2019 (Joly and Cameron 2021). Since 2018, estimated mortality rates have remained above the long-term average, ranging from 23-36%. Estimated mortality includes all causes of death including hunting (Dau 2011). Dau (2015) states that cow mortality estimates are conservative due to exclusion of unhealthy (i.e. diseased) and yearling cows from collaring. These mortality estimates are influenced by the age at which individuals were collared (which is unknown), sample size and how long the collars have been on individuals (Dau 2015, Prichard et al. 2012).

Cow mortality is low over winter and then increases in the spring/early summer, likely due to the convergence of declining body condition, demands of migration, and lactation prior to the availability of higher quality forage. Conversely, bull mortality spikes during the fall, both naturally from the demands of rut and from targeted human harvest (Dau 2013, 2014). Additionally, Prichard (2009) and Dau (2015) suggest that harvest levels and rates of cows can greatly impact population trajectory.

Increased predation, hunting pressure, deteriorating range condition (including habitat loss and fragmentation), climate change, fall and winter icing events, and disease may be contributing factors to the population decline (Joly et al. 2011; Dau 2014, 2015). Joly et al. (2007) documented a decline in lichen cover in portions of the wintering areas of the WACH, which continued through at least 2015 (BLM, unpublished data).



Map 2. Western Arctic Caribou Herd seasonal range map, 2002-2017 (image from WACHWG 2019a).



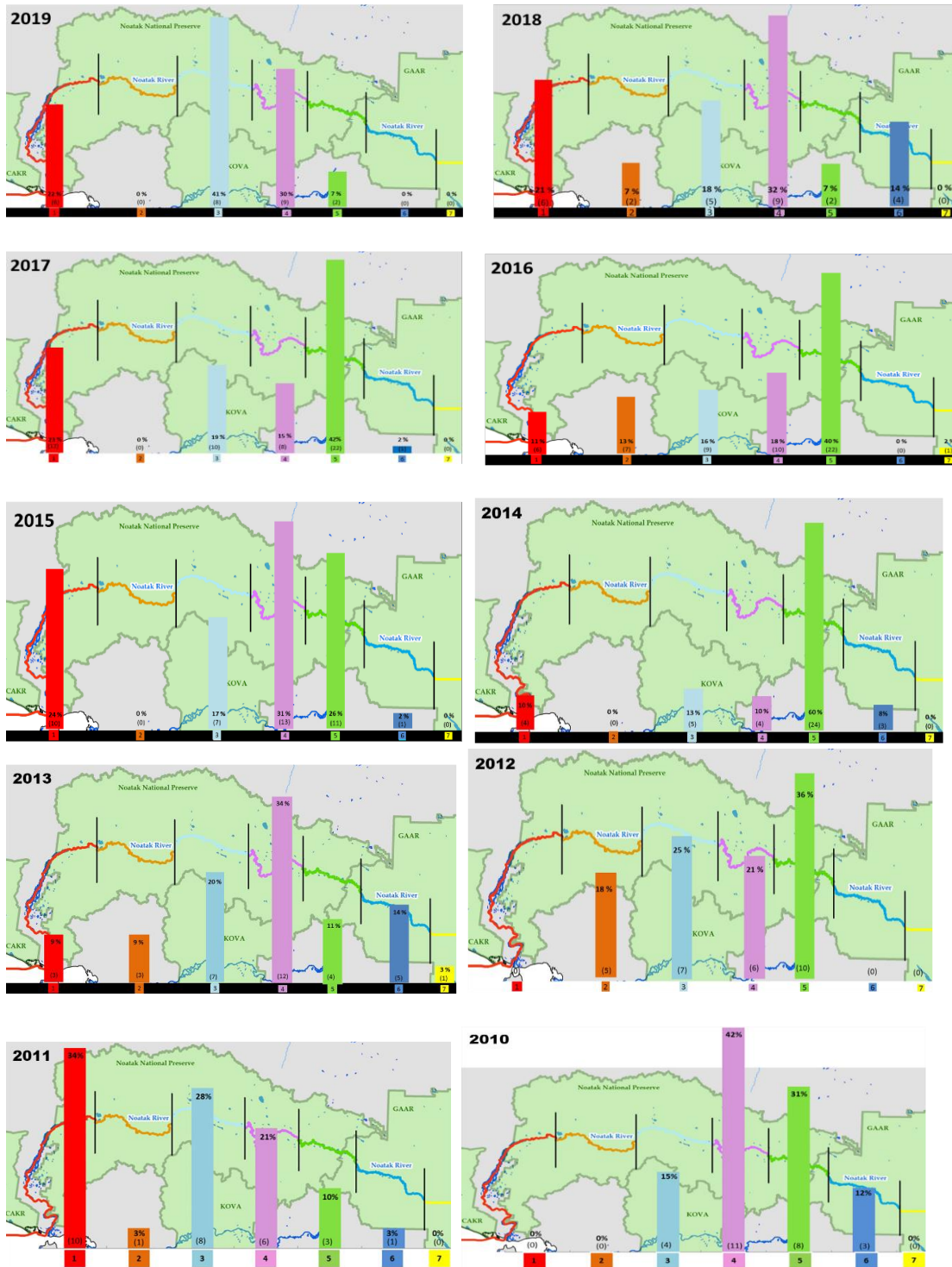


Figure 1. 2010-2020 distribution of caribou crossing the Noatak River during fall. Histograms depict where collared female caribou crossed the Noatak River, generally from north to south, on their fall migration. Relative percentages (top number) and the absolute number (middle number) of caribou are provided. The river is divided into seven (lowest number) color-coded segments which are displayed in the background. The middle five segments are 100 river kilometers long, while the westernmost segment (red) is 200 km (before extending into the Chukchi Sea) and the easternmost (yellow) runs as far east as WACH caribou are known to migrate (Joly and Cameron 2021).

Table 1. Western Arctic Caribou Herd management levels using herd size, population trend, and harvest rate (**WACHWG 2019b**).

Management and Harvest Level	Population Trend			Harvest Recommendations May Include:
	Declining Adult Cow Survival <80% Calf Recruitment <15:100	Stable Adult Cow Survival 80%-88% Calf Recruitment 15-22:100	Increasing Adult Cow Survival >88% Calf Recruitment >22:100	
Liberal	Pop: 265,000+	Pop: 230,000+	Pop: 200,000+	<ul style="list-style-type: none"> • Reduce harvest of bulls by nonresidents to maintain at least 30 bulls:100 cows • No restriction of bull harvest by resident hunters unless bull:cow ratios fall below 30 bulls:100 cows
	Harvest: 14,000+	Harvest: 14,000+	Harvest: 14,000+	
Conservative	Pop: 200,000-265,000	Pop: 170,000-230,000	Pop: 150,000-200,000	<ul style="list-style-type: none"> • Encourage voluntary reduction in calf harvest, especially when the population is declining • No cow harvest by nonresidents • Restriction of bull harvest by nonresidents • Limit the subsistence harvest of bulls only when necessary to maintain a minimum 30:100 bull:cow ratio
	Harvest: 10,000-14,000	Harvest: 10,000-14,000	Harvest: 10,000-14,000	
Preservative	Pop: 130,000-200,000	Pop: 115,000-170,000	Pop: 100,000-150,000	<ul style="list-style-type: none"> • No harvest of calves • Limit harvest of cows by resident hunters through permit hunts and/or village quotas • Limit the subsistence harvest of bulls to maintain at least 30 bulls:100 cows • Harvest restricted to residents only, according to state and federal law. Closure of some federal public lands to non-qualified users may be necessary
	Harvest: 6,000-10,000	Harvest: 6,000-10,000	Harvest: 6,000-10,000	
Critical	Pop: <130,000	Pop: <115,000	Pop: <100,000	<ul style="list-style-type: none"> • No harvest of calves • Highly restrict the harvest of cows through permit hunts and/or village quotas • Limit the subsistence harvest of bulls to maintain at least 30 bulls:100 cows • Harvest restricted to residents only, according to state and federal law. Closure of some federal public lands to non-qualified users may be necessary
	Harvest: <6,000	Harvest: <6,000	Harvest: <6,000	

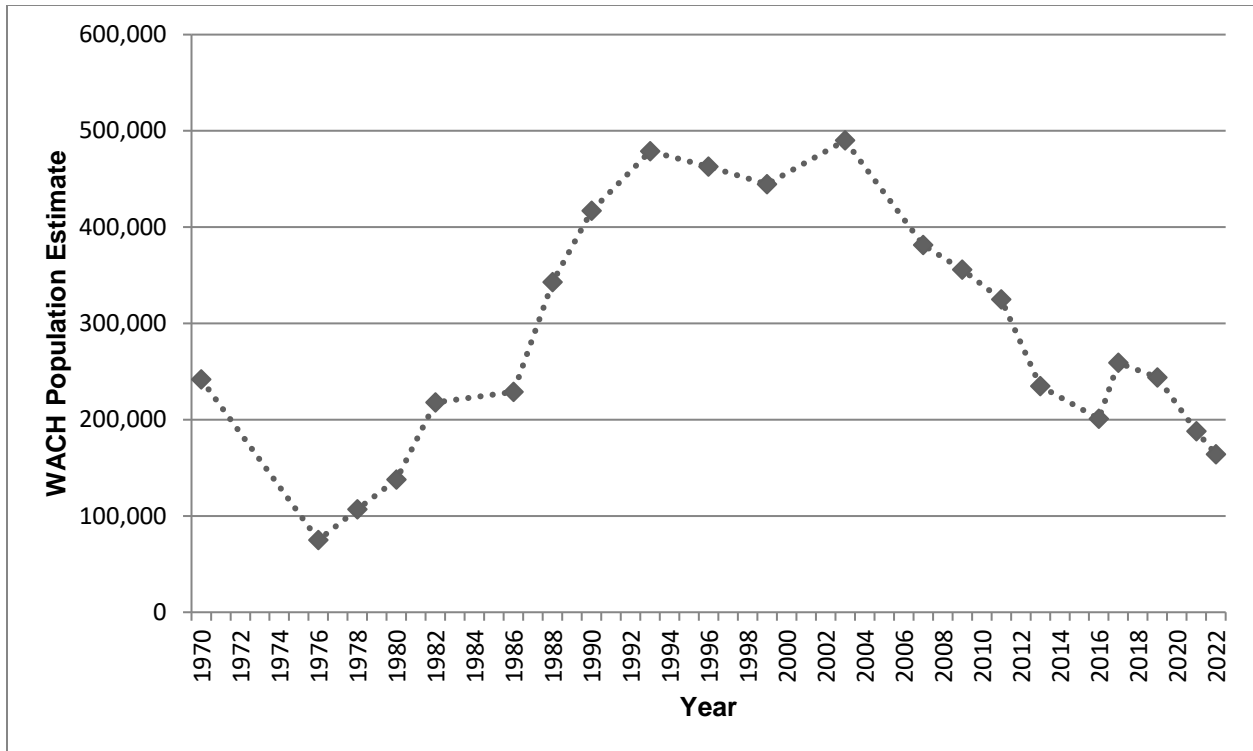


Figure 2. The WACH population estimates from 1970–2022. Population estimates from 1986–2022 are based on aerial photographs of groups of caribou that contained radio-collared animals (Dau 2011, 2013, 2014; Parrett 2016, 2017a; Hansen 2019a; WACHWG 2021, 2022).

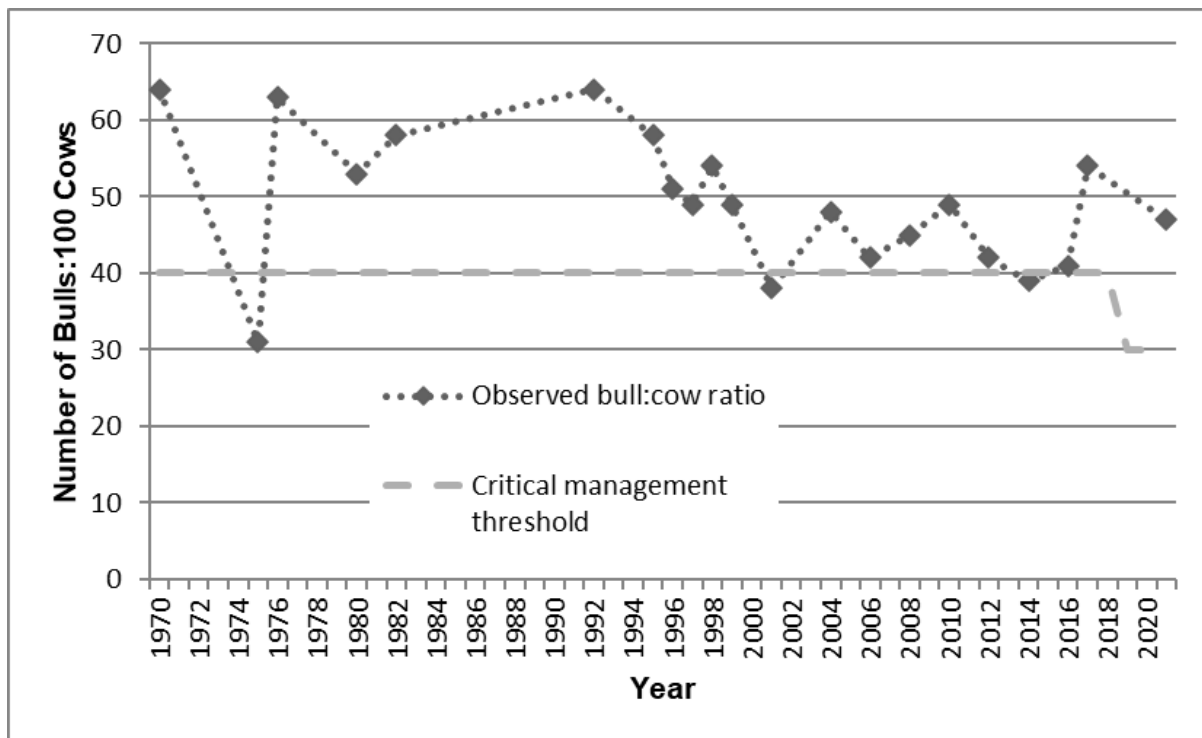


Figure 3. Bull:cow ratios for the WACH (Dau 2015, ADF&G 2017c, Parrett 2017a, WACHWG 2021).

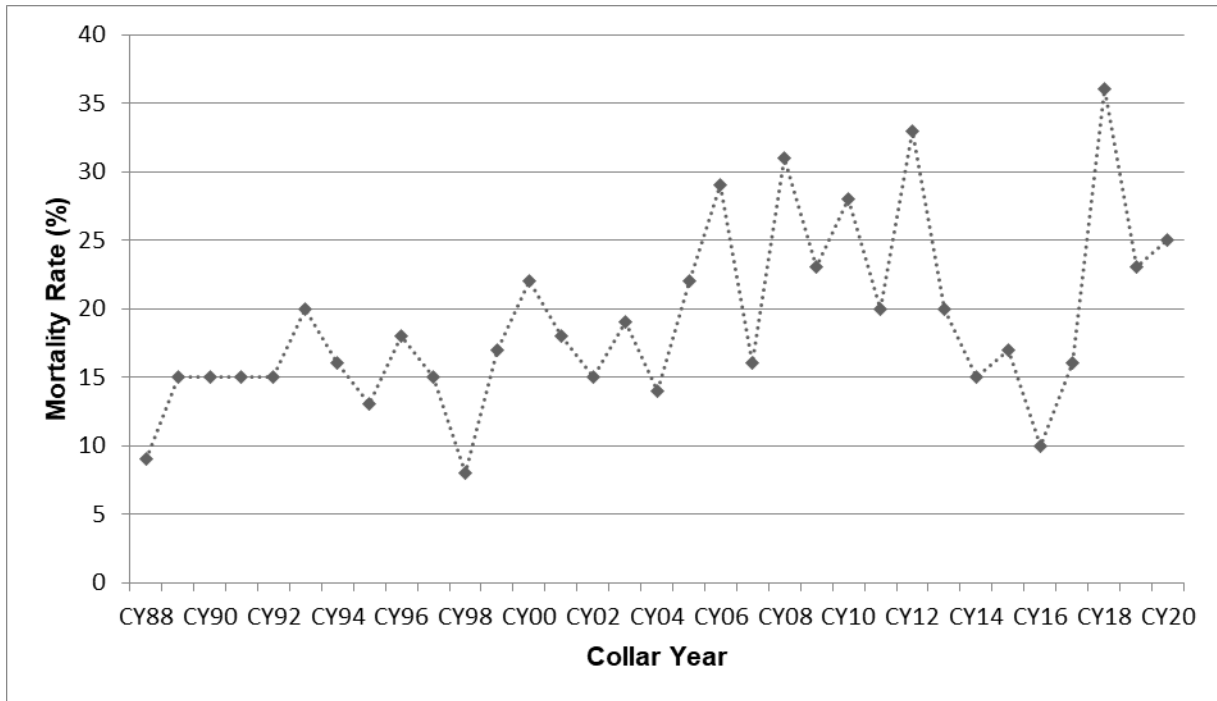


Figure 4. Mortality rate of radio-collared cow caribou in the Western Arctic caribou Herd (Dau 2013, 2015, 2016b; NWARAC 2019a; WACHWG 2020, 2021). Collar Year = 1 Oct-Sep 30. Note: Prior to 2019, collars were deployed via boat in Onion Portage from September to October. Starting in 2019 collars were deployed via net gun techniques in spring (Joly and Cameron 2021).

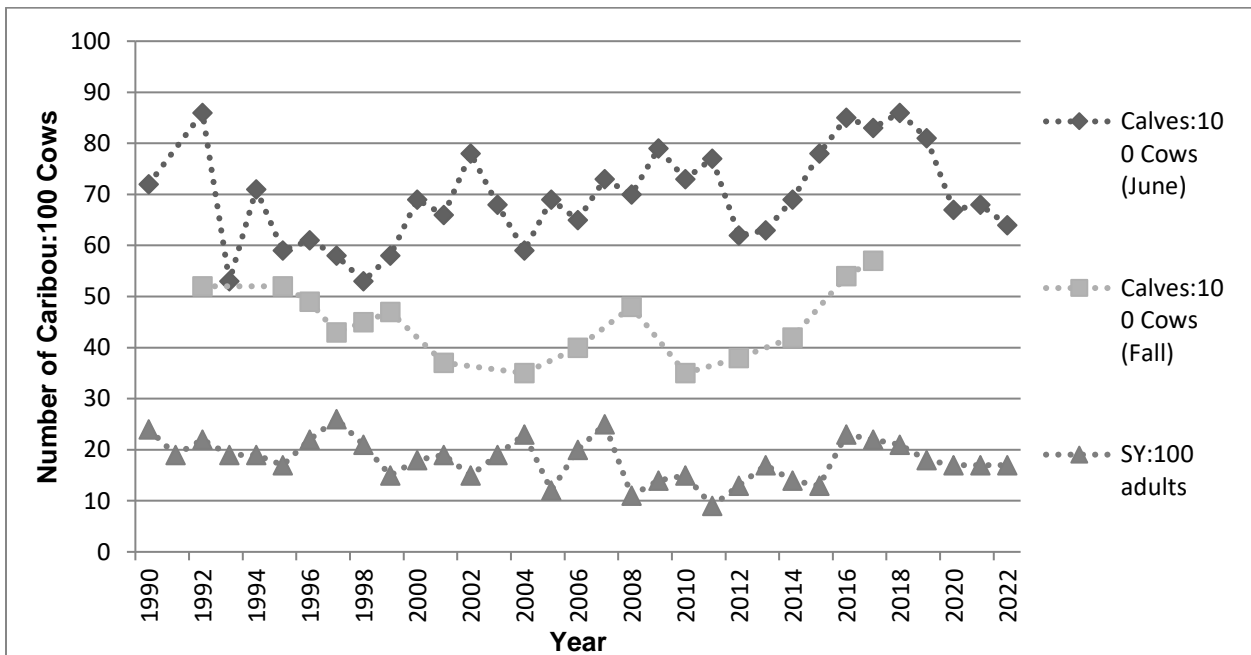


Figure 5. Calf:cow and short yearling (SY):adult ratios for the WACH (Dau 2013, 2015, 2016a; ADF&G 2017c; Parrett 2017a; NWARAC 2019a, 2023; WACHWG 2021, 2022). Short yearlings are 10-11 months old caribou.

Teshkepuk Caribou Herd

The TCH calving and summering areas overlap with the eastern portion of the National Petroleum Reserve–Alaska (NPR–A). Most of the TCH moves toward Teshekpuk Lake in May to calve in early June. The primary calving grounds of the TCH (approximately 1.8 million acres) occur to the east, southeast and northeast of Teshekpuk Lake (**Figure 6**, Person et al. 2007, Wilson et al. 2012). From late June through July cows and bulls move to seek relief from insects (**Figure 6**, Carroll 2007, Parrett 2007). Fall and winter movements are more variable, although most of the TCH winters on the coastal plain (Carroll 2007). The TCH winters in four relatively distinct areas: the coastal plain between Atqasuk and Wainwright; the coastal plain west of Nuiqsut; the central Brooks Range; and the shared winter ranges with the WACH in the Noatak, Kobuk, and Selawik drainages (**Figure 6**, Parrett 2021).

State management objectives for the TCH include (Parrett 2021):

- Maintain a population of at least 15,000 caribou, recognizing that caribou numbers naturally fluctuate.
- Provide a harvest of at least 900 caribou in a sustainable manner.
- Maintain a population with a range of 25–35 bulls:100 cows, depending upon population level.
- Obtain harvest estimates with sufficient data such that a 15% change in annual harvest is detectable.
- Develop regulations that have broad support among users and cooperating agencies.
- Clarify the relationships between both abundance and vital rates with harvest, habitat, body condition, predation, seasonal mixture with adjacent herds, and immigration between adjacent herds.
- Monitor herd characteristics and population parameters.
- Provide high-quality data on distribution, habitat preferences, and movement patterns to facilitate effective planning and mitigation of oil development and associated infrastructure.

Since 1984, the minimum population of the TCH has been estimated from aerial photocensuses and radio-telemetry data. The TCH population increased from an estimated 18,292 caribou (minimum estimate 11,822) in 1984 to 68,932 caribou (minimum estimate 64,106) in 2008. From 2008 to 2014, the population declined by almost half to 39,000 caribou (Parrett 2015a). Interpretation of population estimates is difficult due to movements and range overlap among caribou herds, which results in both temporary and permanent immigration and emigration (Person et al. 2007). For example, the minimum count in 2013 contained an unknown number of CACH caribou (Parrett 2015a). Following the 2013 census, Alaska Department of Fish and Game (ADF&G) made the decision to manage the TCH based on the minimum count because the bulk of the animals that were estimated rather than counted were with the WACH at the time of the photocensus (Parrett 2015b, pers. comm.). In 2017, the minimum count was 56,255 with a population estimate of 55,614 (SE = 2,909). During 2012–2017, the management objective of maintaining a population of at least 15,000 caribou was met (Parrett 2021). The total minimum count for the 2022 photocensus was 51,225 caribou and the abundance estimate was 61,593 animals (95% CI: 52,188–70,998) (Daggett 2023, pers. comm.).

In 2013 and 2016, the number of bulls:100 cows was 39 bulls:100 cows and 28 bulls:100 cows, respectively (Parrett 2011, 2013, 2015a, Parrett 2017a, pers. comm.). Comparison of bull:cow and calf:cow ratios from 1991-2000 and later years is not possible due to changes in methodology. The calf:cow ratio increased from 18 calves:100 cows between 2009-2013 to 48 calves:100 cows in 2016 (Parrett 2013, 2015a, Parrett 2017a, pers. comm.). In addition, the number of SY:adults declined from an average of 20 SY:100 adults between 1999 and 2008 to an average of 14 SY:100 adults from 2009-2014 (Figure 3) (Parrett 2013) and increased in 2016 to 29 SY:100 adults (Parrett 2017a, pers. comm.). From 2018-2021, the SY:adults returned to an average of 14 SY:100 adults. The most recent survey in 2023 decreased to 6.8 SY:100 adults (Daggett 2023, pers. comm.).

The annual mortality of adult radio collared females from the TCH has remained close to the long term (1991-2012) average of 14.5% (range 8–25%) (Parrett 2011, 2015a, Caribou Trails 2014). As the TCH declined, calf weights declined, indicating that poor nutrition may have had a significant effect on this herd (Carroll 2015, pers. comm., Parrett 2015b, pers. comm.). In 2016 increased calf weights, high adult female survival (92%), high yearling recruitment (29 yearlings:100 adults), high calf production (81%), and a high calf:cow ratio (48 calves:100 cows) suggest that the population may be stable or declining at a slower rate (Parrett 2017a, pers. comm., Klimstra 2017) In contrast, the body condition of individuals from the WACH, which declined dramatically over the same time period, had remained relatively good, indicating that caribou were still finding enough food within their range (Caribou Trails 2014, Dau 2014). Parturition rates from 2018-2022 peaked at 85% in 2020 and have since declined to 45% in 2022 (Daggett 2023, pers. comm.).

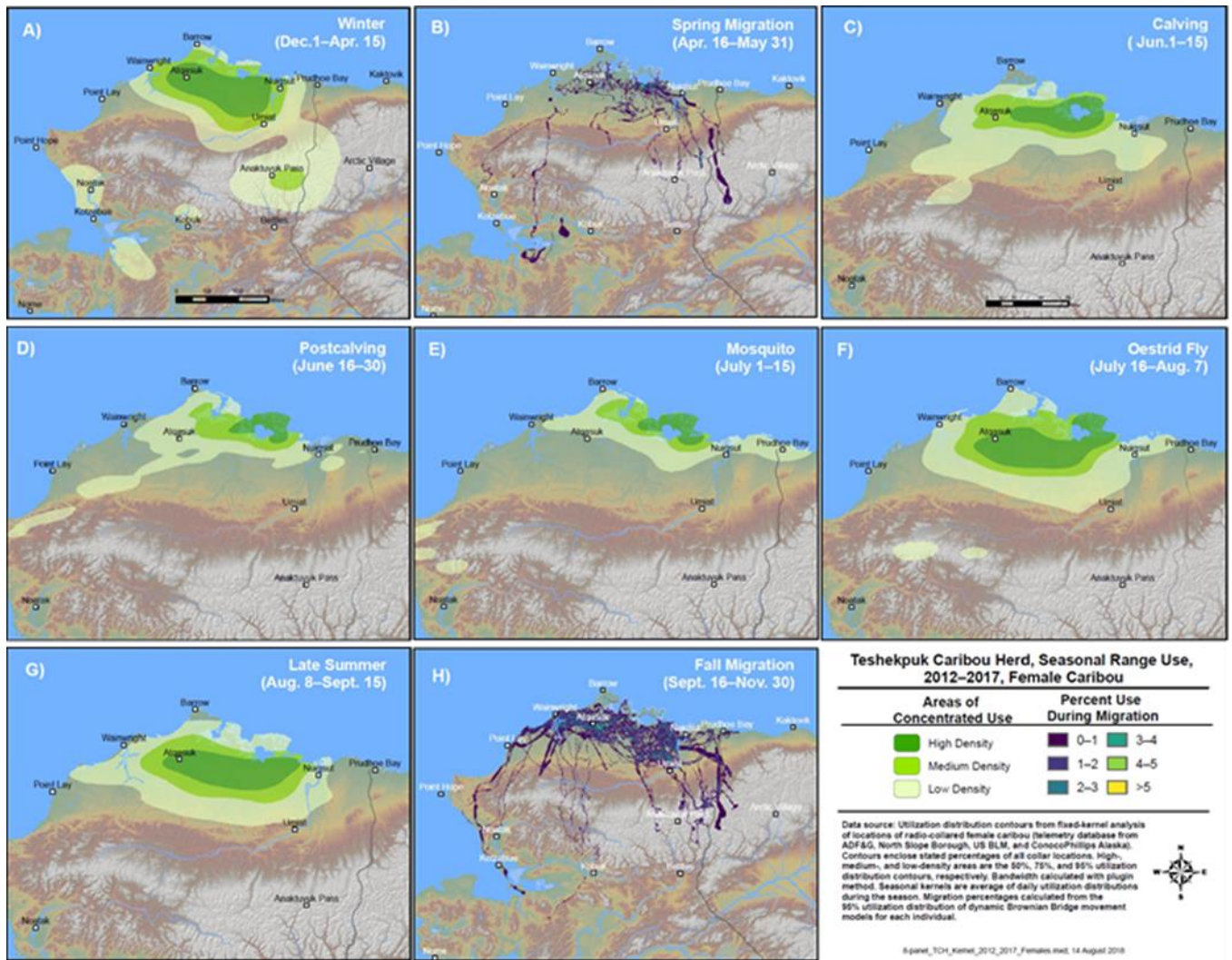


Figure 6. Seasonal ranges, 2012–2017, for satellite collared female caribou of the Teshekpuk caribou herd, Alaska (Parrett 2021). Note: Utqiagvik was known as Barrow until 2016.

Cultural Knowledge and Traditional Practices

This section was originally written for WSA22-05, Unit 23. Some of the information is specific to Unit 23 but the summary of Alaska Native values and Indigenous and Traditional Ecological Knowledge presented here are widespread perspectives present in all the communities affected by WSA22-05/06, with, of course, variations among communities and individuals. The two public hearings and the tribal consultations on this proposal showed the conflict faced by the majority of participants. The affected communities who rely on the Western Arctic Caribou Herd are aware that conservation measures are needed. They do not, however, consider this special action request as the way to address declining herd numbers because they see it as an outside decision that is being done to them and not with them. The frequent use of the phrase, “Hunger knows no law” reflects the resentment of outside impositions without local consultation or understanding of local conservation practices. It is no accident that this phrase was coined during the “Duck In” when the Iñupiat people protested regulations that prohibited their traditional spring duck harvest which saved them from starvation after winter food supplies were depleted (Burwell. Nd).

Caribou have been a primary subsistence resource for the Iñupiat of the Northwest Arctic, Seward Peninsula, and North Slope regions for thousands of years. Archaeological deposits at the Onion Portage site on the Kobuk River document 10,000 years of caribou hunting at this location, which is still used today as a prime hunting spot (Anderson 1968, 1988), and even older archaeological deposits dated to ca. 11,000 years ago occur in the Kivalina River drainage (Buvit et al. 2019).

Iñupiaq hunting values are based on the perspective that the human animal relationship is reciprocal. Maintaining the reciprocal relationship requires respectful human behavior toward animals that is guided by a system of rules. Three of the primary rules are 1) that humans must harvest animals who give themselves, 2) they must not waste any part of animals they harvest, and 3), in times of low animal populations, people must practice the “...intentional limitation of resource harvests,” that “...will encourage the highest population levels” (Burch 1984, 1994, 1995, Nelson 1983: 221, ADF&G 1992). Failure to follow these rules will cause the animals not to return because they have not been respected. This special action request reflects the practice of intentional harvest limitation in order to maintain respectful and reciprocal relations between humans and caribou. At the Northwest Arctic Council meeting in October 2022, one Council member explained:

Caribou is, I know they're going down. My son got caribou. I have caribou. So, he gave away to elders. And I always tell him don't get any more, I'll stop him when we have enough caribou because a family, my size, there's six of us in the family, and four caribou is enough for the whole year, and I always tell my son that's enough. When you get four caribou, that's good. The caribou herd is going down, we're not going to hunt this spring. And young men now, now days, if you teach them right, they'll listen, and I'm glad my son is doing that. Because I know the caribou is going down and we have to respect that (20).

Most of the communities affected by this special action rely on caribou for the majority of their subsistence harvest (Braem et al. 2015, 2017). In household harvest surveys conducted between 1964 and 2017, caribou were often the most harvested species of wild resource in terms of pounds of edible weight. Based

on reporting, the average amount of caribou harvested per person was 430 pounds in Deering in 2013 and as low as no caribou harvested in other Unit 23 communities (ADF&G 2021, **Appendix 2**).

The number of pounds “per person” does not indicate that every person in a community harvested 430 pounds of caribou. Not all members of a community harvest and distribute wild foods at equal levels. Generally, many more people use caribou than harvest caribou because of the Iñupiaq cultural value of harvesting and sharing subsistence foods to provide for those who do not have a hunter in the household. Community subsistence harvests throughout rural Alaska often fall under the 30/70 hypothesis (Magdanz et al. 2005: 41, Wolfe et al. 2010). ADF&G Division of Subsistence reports have consistently shown that it is common for 30% of the households in a rural Alaska community to harvest enough wild foods to provide for the remaining 70%.

This statement from a Northwest Arctic Council member at the October 2022 Council meeting illustrates the intricacies of harvest and sharing and the effects of the sharp decline in the WACH size:

And, please, start worrying about the caribou when they start going, the young, because our people live on caribou heavily. This is a bad year. My boy got some...he stayed at Onion Portage for two weeks...He hauled over 25 [caribou] to Kiana, gave them all away. He came home with 15 but he gave himself one and he gave me one. He gave the rest away. I mean I'm still getting calls; they want meat and I tell them, okay, then I'll sell you my meat if you send me some steaks, fair trade, which is true. Caribou's our steaks. But we can't afford to go – that's what I told them, and some guy said, you are just being stingy, I said no I'm not being stingy, it's a fair trade. Because when my boy was going, me and him together, just to buy gas, over three drums of gas because he had to go to Kiana to get more gas because he hauled some caribou to Kiana and went back to Onion Portage. That's what I'm saying; it costs us money. And that's about all I have to say. Because I am a caribou guy and I won't live without caribou but I am going to hurt because I think we're going to hurt because our numbers are low, we could tell (17).

Caribou harvest is affected by multiple factors: availability of animals, shifting migration routes, human population size, community location, the availability of other resources, and others. The numbers in these tables cited in this section are approximations and do not tell the entire story of caribou harvest or need in these communities. The estimated number of caribou harvested by the communities affected by this special action from approximately 1982-2010 is shown in Appendix 3. These estimated harvest totals may indicate which Units and communities would be most affected by this special action. The harvest numbers reported during this specific period of time suggest that, among the 5 Units affected by this proposal, Unit 21 harvested the least amount of caribou (generally less than 100 per year), Unit 22 includes some communities (Nome, Koyuk, Shaktoolik, Shishmaref and Unalakleet) that harvested high numbers of caribou (more than 100 per year) and others that did not, Unit 23 communities generally exhibit high caribou harvests, Unit 24 community harvests vary with the exception of the high-harvesting community of Anaktuvuk Pass, and Unit 26 communities exhibit high caribou harvests (ADF&G 2015). Low caribou harvests in Unit 21 does not mean that caribou is not important to these communities. They may receive most of their caribou through trade and barter or the caribou may not have been in the area between 1982 and 2010.

When considering the caribou harvest numbers shown in Appendix 3, it is not surprising that the most vocal participants in the recent public hearings and tribal consultations are from the high-harvesting Units: residents of northwest Alaska in Unit 23, residents of Anaktuvuk Pass in Unit 24, and residents of the North Slope in Unit 26A.

Local WACH harvest has been relatively stable in Unit 23 since the 1990s, but residents of some communities have had to “greatly increase their expenditure of money and effort to maintain these harvest levels” (Dau 2015:14-30). This may be true of the other communities that will be affected by this special action. This is due in part to having to travel farther, more frequently, and for longer durations to find caribou (Halas 2015; Gonzalez et al. 2018). In addition, regardless of specific timing, variability from year-to-year places additional uncertainty and stress on communities regarding their food supply, as has occurred in Shungnak on the upper Kobuk River (Braem et al. 2015). Furthermore, harvest data from comprehensive subsistence household surveys are not sufficiently up to date to provide accurate information on the full impact of the decline in caribou for subsistence harvest. Currently, ADF&G Division of Subsistence is conducting surveys of caribou harvest in Selawik, Shungnak, Noatak, Deering, and Kobuk. This research is scheduled to be completed in 2024 (Cold 2021).

Fall is the preferred season for harvest by most communities. Prior to freeze-up, bulls have traditionally been preferred because they are fatter than cows (Georgette and Loon 1993). The objective of the fall hunt has historically been to acquire large quantities of high-quality meat to freeze for winter (Burch 1994). Ideally, caribou harvesting occurs when the weather is cool enough to prevent spoilage of meat, but before freeze-up. Hunters search for caribou and attempt to intercept them at known river crossings, making the Kobuk and Noatak Rivers central as traditional hunting areas. But because of the variable range of the herd, the critical hunting sites change each year. Noatak National Preserve was not only the hunting grounds of the people living on the Noatak River; it was also an alternative hunting site for people living on the Kobuk River, Selawik River, and Kotzebue Sound (Deur et al. 2019). At river crossings, caribou can be selectively harvested with small caliber rifles. Caribou can be harvested in large numbers, when available, and transported back to villages by boat before freeze-up. After freeze-up, cows are preferred, because bulls are typically skinnier and in rut by then; the meat smells bad and is of poor quality (Braem et al. 2015). For this reason, delayed migrations may result in a shift towards harvesting cows, as communities miss the opportunity to harvest fat bulls prior to freeze-up. Small groups of caribou that have over-wintered may be harvested by hunters in areas that are accessible by snowmachine.

The Northwest Arctic Council has identified multiple factors that may be negatively affecting the WACH population of the WACH and local people’s ability to harvest caribou. Climate change, delayed caribou migration, development, increased predation by bears and wolves and/or a combination of these factors has led to difficulty for caribou-dependent communities in Unit 23 and (Dau 2015, Braem et al. 2015, NWARAC 2020, 2021). Reducing their harvest is one of the few actions Unit 23 communities can take to attempt to slow the WACH population decline. The Northwest Arctic Council’s request to intentionally reduce caribou harvest through this special action request reflects the Iñupiaq values in the hope of intentionally limiting themselves to contribute to the recovery of the caribou population upon which they depend.

Harvest History

Western Arctic Caribou Herd harvest

The WACH Working Group provides recommendations on herd management, including harvest levels. Currently, the WACH is within the “preservative declining” level, which prescribes a harvest of 6,000-10,000 caribou (**Table 1**). Previous versions of the WACH management plan recommended a harvest rate of 6% of the estimated population when the herd was declining (WACHWG 2011, Parrett 2017b, pers. comm.). As the 2022 population estimate was 164,000 caribou, the harvestable surplus is currently 9,840 caribou (6% of 164,000) (WACHWG 2022). The State manages the WACH on a sustained yield basis (i.e. managing current harvests to ensure future harvests). Of particular concern is the overharvest of cows, which may have occurred since 2010/11 (Dau 2015). Dau (2015:14-29) states, “even modest increases in the cow harvest above sustainable levels could have a significant effect on the population trajectory of the WACH.”

Caribou harvest by local hunters is estimated from community harvest surveys (**Table 2**), if available, and from models developed by A. Craig with ADF&G’s Division of Wildlife Conservation Region V. These models incorporate factors such as community size, availability of caribou, and per capita harvests for each community, which are based on mean values from multiple community harvest surveys (Dau 2015). In 2015, Craig’s models replaced models developed by Sutherland (2005), resulting in changes to local caribou harvest estimates from past years. While Craig’s models accurately reflect harvest trends, they do not accurately reflect actual harvest numbers (Dau 2015). (Note: no model accurately reflects harvest numbers). This analysis only considers the updated harvest estimates using Craig’s new model as cited in Dau (2015). Caribou harvest by nonlocal residents and nonresidents are based on harvest reports from harvest tickets and registration permits (Dau 2015). Hunters considered local by ADF&G are functionally identical to Federally qualified subsistence users (e.g. residents of St. Lawrence Island are technically Federally qualified subsistence users, but do not frequently harvest Western Arctic caribou).

From 1999–2018, the rangewide average estimated total harvest from the WACH was 14,103 caribou/year, ranging from 11,729-16,219 caribou/year (Hansen 2020 and 2021a, pers. comm.), but has generally been estimated at 12,000 +/- 1,750 caribou per year since 1996 (WACHWG 2021, WACHWG 2019b). Additionally, harvest estimates do not include wounding loss, which may be hundreds of caribou (Dau 2015). Year-specific harvest estimates have not been generated since 2018, in part because they are not very accurate (Hansen 2021a, pers. comm., WACHWG 2021). While all of these harvest estimates are above the preservative harvest level specified in the WACH Management Plan and indicate unsustainable harvest levels, actual harvest is unknown and could be much lower due to caribou being unavailable for harvest near local communities.

Local hunters account for approximately 95% of the total WACH harvest and residents of Unit 23 account for approximately 58% of the total harvest on average (ADF&G 2017c). Comparison of caribou harvest by community from household survey data (**Table 2**) with **Figure 1** demonstrates that local community harvests parallel WACH availability rather than population trends. For example, Ambler only harvested 325 caribou when the WACH population peaked in 2003 but harvested 685 caribou in 2012 when most of the WACH migrated through eastern Unit 23. Similarly, Noatak only harvested 66 caribou

in 2010 when no GPS-collared caribou migrated through western Unit 23. Harvest increased substantially (360 caribou) the following year when 37% of the GPS-collared caribou (and thus, a greater proportion of the WACH) migrated through western Unit 23 (**Table 2**).

Between 1998 and 2020, annual reported caribou harvest in Unit 23 ranged from 168-814 caribou (Hansen 2021a, pers. comm.). Over the same time period, reported harvest by non-Federally qualified users ranged from 131-657 caribou. The lowest reported harvest occurred in 2016 when all Federal public lands in Unit 23 were closed to non-Federally qualified users, but before harvest reporting was required for Federally qualified subsistence users. Regardless, local compliance with reporting mandates is considered low but increasing. In 2017 and 2018, registration permits became required under State and Federal regulations, respectively, which is reflected in the greater number of reported caribou harvest by Federally qualified subsistence users. However, compliance with reporting caribou harvest still remains too low to accurately estimate total caribou harvest. On average, 76% of WACH caribou harvested by nonlocals are harvested in Unit 23 (Dau 2015). Between 2016, when Federal lands closures began, and 2020, reported caribou harvest by non-local hunters in Unit 23 averaged 254 caribou (WinfoNet 2018, 2019, Hansen 2021a pers. comm.).

From 1999-2013, 72% of nonlocal hunters on average accessed the WACH by plane. Most nonlocal harvest (85-90%) occurs between August 25 and October 7. Most local subsistence hunters harvest WACH caribou whenever they are available using boats, 4-wheelers, and snowmachines (Dau 2015, Fix and Ackerman 2015). In Unit 23, caribou have historically been available during fall migration, but this has no longer been the case in recent years; caribou migration has occurred later in fall, resulting in subsistence harvest also occurring later, which in turn contributes to food insecurity.

The caribou harvest in Unit 21D averages 0-10 caribou/year (Dau 2009, 2013, 2016, pers. comm.).

Unit 26A and Teshekpuk Caribou Herd harvest

Reliance on caribou from a particular herd within Unit 26A varies by community. Residents of Atqasuk, Barrow, Nuiqsut, and Wainwright harvest caribou primarily from the TCH while residents from Anaktuvuk Pass, Point Lay, and Point Hope harvest caribou primarily from the WACH (Dau 2011, Parrett 2011, 2013). Weather, distance of caribou from the community, terrain, and high fuel costs are some of the factors that can affect the availability and accessibility of caribou. Residents of Nuiqsut, which is on the northeast corner of Unit 26A, harvest approximately 11% of their caribou from the CACH (**Table 3**, Parrett 2013).

Range overlap between the three caribou herds, frequent changes in the wintering distribution of the TCH and WACH, and annual variation in the community harvest survey effort and location make it difficult to determine the proportion of the TCH, WACH, and CACH in the harvest. Knowledge of caribou distribution at the time of the reported harvest is sometimes used to estimate the proportion of the harvest from each herd. A general overview of the relative utilization based on estimated harvest of each caribou herd by community for regulatory year 2010/11, is presented in **Table 3** (Parrett 2011, Dau 2011, and

Lenart 2011). The percentage of caribou harvested from different herds by community has varied $\leq 2\%$ for all communities between 2008/09, 2009/10, and 2010/11.

Harvest from the TCH is difficult to estimate because of very poor reporting, variation in community survey effort and location, widely varying wintering distribution of the TCH, and mixing of caribou herds. Most of the harvest occurs from July-October by local hunters in Unit 26A. Very low levels of TCH harvest occur in Units 23, 24, and 26B. Non-locals and non-residents account for less than 3% of the TCH harvest (Parrett 2013). Parrett (2013) estimates 3,387 TCH caribou were harvested in Unit 26A by local communities in each of 2010/11 and 2011/12 and that previously reported harvest estimates (Parrett 2009) were biased high due to oversampling (**Table 3**). This estimated harvest is well above State objectives.

Table 3. Estimated caribou harvest of the Teshekpuk, Western Arctic and Central Arctic caribou herds during the 2010/2011 regulatory years in Unit 26A by federally qualified users (Parrett 2013, Dau 2013). Note: Due to the mixing of the herds, annual variation in the community harvest surveys and missing data, the percentages for each community do not add up to 100%.

Community	Human population ^a	Per capita caribou harvest ^{bc}	Approximate total community harvest	Estimated annual TCH harvest (%)	Estimated annual WACH harvest (%)	Estimated annual CACH harvest (%)
Anaktuvuk Pass	331	1.8	582	174 (30)	431 (80)	
Atqasuk	234	0.9	215	210 (98)	6 (2)	
Barrow	4,290	0.5	2,145	2,123 (97)	62 (3)	
Nuiqsut	411	1.1	468	403 (86)	3 (1)	36 (11)
Point Lay	191	1.3	247	49 (20)	120 (40)	
Point Hope	704		894	0	894 (100)	
Wainwright	559	1.3	710	426 (60)	48 (15)	
Total Harvest				3,387	1564	36

^a Population estimates averaged from the 2010 U.S. Census and 2012 Alaska Department of Commerce, Division of Community and Regional Affairs data

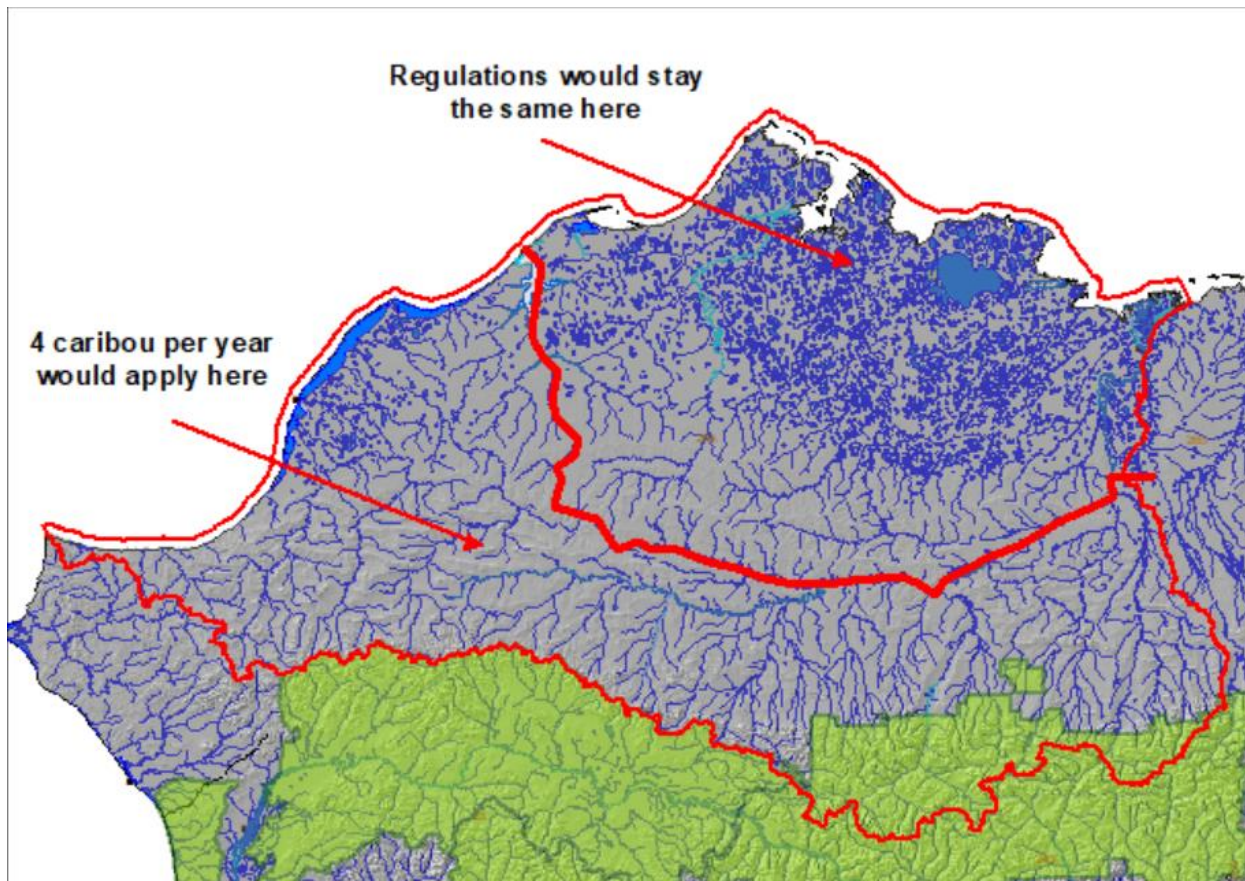
^b Citations associated with per-capita caribou harvest assessment by community can be found in Table 5 (Parrett 2011).

^c Sutherland (2005)

Alternatives Considered

Adoption of WSA22-06, as written, may cause unnecessary hardship and restrictions for subsistence users in the northeastern portions of Unit 26A primarily occupied by Teshekpuk (not Western Arctic) caribou, and would therefore not result in a substantial reduction in WACH harvest in those areas. One option to consider would be to exclude Unit 26A remainder from the hunt areas affected by the proposed harvest limit reductions.

Another similar option recommended by Selawik NWR and the Western Arctic National Parklands would be to modify hunt area descriptors and to exclude that portion of Unit 26A north and east of a line running from the east/north bank of Wainwright Inlet to the headwaters of the Ketik River, to the headwaters of the Awuna River to the Colville River at Umiat then east to the Dalton Highway at Sagwon (**Map 4**). Both of these alternatives could reduce hardships and unnecessary restrictions for subsistence users in the portions of Unit 26A where caribou harvest is primarily from the TCH.



Map 4. Alternative boundary change for Unit 26A.

Effects of the Proposal

If WSA22-05 is adopted, the Federal caribou harvest limit in Unit 23 would be reduced from 5 caribou/day to 4 caribou/year, only one of which may be a cow for the remainder of the 2022-24 wildlife regulatory cycle. If WSA22-06 is adopted, the same harvest limit reduction would occur across the entire range of the WACH, including Units 22, 23, 26A, and portions of Units 21D and 24. The decreased harvest limits and more restrictive cow harvest would reduce subsistence hunting opportunity and harvest under Federal regulations, but could help conserve the WACH and aid in its recovery, which, in turn, could provide more subsistence hunting opportunity in the future. Additionally, intentional harvest reduction to conserve the resource aligns with local cultural practices and values.

However, all Alaska residents could still harvest 5 caribou/day under State regulations on most Federal public lands, which could greatly limit the impacts of adopting these requests on both the WACH and subsistence users. Federal regulations would also become more restrictive than State regulations for the 2022-24 regulatory cycle. However, as only Federal regulations apply on National Park lands and National Monuments, harvest may decrease within Gates of the Arctic NP, Kobuk Valley NP, and Cape Krusenstern NM. Additionally, Noatak National Preserve and BLM managed lands between the Kobuk and Noatak Rivers are closed to non-federally qualified users from Aug. 1-Sep. 30 for the 2022-24 wildlife regulatory cycle per approval of WSA21-01. This closure represents the area and time period when the majority of WACH caribou have historically been harvested. Therefore, this closure coupled with the reduced harvest limits requested by these special actions could result in substantial harvest reductions, particularly of cow caribou, which could help with the conservation and recovery of the WACH. A Federal subsistence priority would also be maintained during this time period and in this area.

In recent years, no collared WACH caribou have migrated into Units 22 or 21D, remainder. Therefore, any regulation changes in these units are unlikely to affect WACH harvest. However, resident caribou herds may potentially be present in Unit 22 (SPRAC 2021, 2022), and harvest limit reductions under Federal regulations might unnecessarily curtail harvest from these caribou, although users would still be able to harvest 5 caribou/day under State regulations. Additionally, the TCH primarily occupies Unit 26A remainder and has not experienced substantial population declines like the WACH. Therefore, reducing the harvest limits in Unit 26A remainder may not substantially affect WACH harvest or conservation and could unnecessarily restrict subsistence harvest from the TCH, although again, users would still be able to harvest 5 caribou/day under State regulations.

The reduced Federal harvest limits could also impact sharing networks, which are an important cultural component for subsistence users in these areas and contribute to food security. While four caribou per year may be enough for individuals and some families (NWARAC 2022), many families and elders depend on the “super households” to provide caribou meat. Testimony received during the public hearings also indicated 4 caribou per year is not enough to meet subsistence needs. However, the use of designated hunter permits could dampen these effects and are intended to accommodate the cultural practice of harvesting for others. Designated hunter permits allow federally qualified subsistence users to hunt for others and allow designated hunters to possess two harvest limits at one time. However, it may take time for hunters to embrace the use of these permits.

OSM CONCLUSION

Oppose Temporary Wildlife Special Action WSA22-05 and Temporary Wildlife Special Action WSA22-06.

Justification

OSM supports measures to reduce conservation concerns for the WACH. The precipitous decline of the WACH warrants strong measures to aid in the recovery and conservation of this population. Current harvest rates, especially the taking of cows, could prolong or worsen the current decline, and hamper recovery efforts. Additionally, while causes of the decline are multi-faceted and uncertain, reducing human harvest is the most controllable factor.

However, overwhelming public testimony indicated the harvest limit reductions proposed in these requests are too drastic, too soon, and that the special action regulatory process did not allow adequate time for local input, consultation, and buy-in. Federally qualified subsistence users are already facing food insecurities. More public input opportunities are needed to develop a plan that will address the conservation needs of the WACH, while also allowing Federally qualified subsistence users to meet their subsistence needs. More input is especially needed from the communities on the edge of the WACH's range and from communities that harvest from multiple herds where a reduction may not be necessary. Additionally, the proponent of WSA22-06 has indicated they no longer support the request.

The regulatory timeline for a temporary special action is not long enough to sufficiently conduct the amount of outreach required for such a significant reduction in the harvest limit. Additionally, the effect of these harvest limit reductions under Federal regulations would be limited during the remainder of the 2022-24 regulatory cycle as State regulations would continue to be 5 caribou/day. The proposal process is better suited to adequately receive public input on changes to both State and Federal regulations to develop a mutually agreeable solution that addresses both conservation concerns and subsistence uses.

LITERATURE CITED

- ADF&G. 1992. Customary and Traditional Worksheets. Northwest Alaska GMU's 22 and 23, Black Bear, Brown Bear, Caribou, Dall Sheep, Moose, Muskoxen. Division of Subsistence, Kotzebue, Alaska.
- ADF&G. 2009. Summary of Alaska Board of Game Arctic/Western region meeting. Nome, AK. November 13-16, 2009. <http://www.adfg.alaska.gov/index.cfm?adfg=gameboard.meetinginfo&date=11-13-2009&meeting=arctic>. Retrieved: May 31, 2021.
- ADF&G. 2015. RC069. Estimated total caribou harvest by community, per capita caribou harvest by community, and data sources, GMUs 21, 22, 23, 24 and 26: Western Arctic caribou herd and Teshekpuk caribou herd. Alaska Board of Game Meeting Information. Southcentral Region, March 13-18, 2015. http://www.adfg.alaska.gov/static/regulations/regprocess/gameboard/pdfs/2014-2015/Southcentral_03_13_15/rcs/rc069_ADFG_Caribou_harvest_data.pdf. Accessed: April 15, 2024.
- ADF&G. 2017a. Board of Game Arctic and Western Region Meeting Materials. January 6-9, 2017. Bethel, AK.
- ADF&G. 2017b. 2016-2017 draw supplement. https://www.adfg.alaska.gov/static/license/huntlicense/pdfs/2016-2017_draw_supplement.pdf. Retrieved: February 1, 2017.
- ADF&G 2017c. Region V caribou overview. Alaska Board of Game. Arctic and western region. Jan. 6-9, 2017. Bethel, AK. http://www.adfg.alaska.gov/static/regulations/regprocess/gameboard/pdfs/2016-2017/aw/Tab_1.3_RegionV_Caribou_Overview.pdf. Accessed January 20, 2017.
- ADF&G. 2021. CSIS: Community subsistence information system. <http://www.adfg.alaska.gov/sb/CSIS/>. Retrieved: April 8, 2021.
- Anderson, D. D. 1968. A stone age campsite at the gateway to America. *Scientific American* 218(6): 24–33.
- Anderson, D. D. 1988. Onion Portage: the archaeology of a stratified site from the Kobuk River, Northwest Alaska. *Anthropological papers of the University of Alaska*. 22 (1-2): 1-163.
- Anderson, D.D. 1998. Kuuvaumiut subsistence: traditional Eskimo life in the latter twentieth century. National Park Service, Department of the Interior.
- Atkinson, H. 2021. Anthropologist: Personal communication: email. Western Arctic National Parklands. National Park Service. Kotzebue, AK.
- Bacon, J.J., T.R. Hepa, H.K. Brower, Jr., M. Pedersen, T.P. Olemaun, J.C. George, and B.G. Corrigan. 2011. Estimates of subsistence harvest for villages on the North Slope of Alaska, 1994–2003. Department of Wildlife Management, North Slope Borough, Alaska.
- Baltensperger, A.P. and K. Joly. 2019. Using seasonal landscape models to predict space use and migratory patterns of an arctic ungulate. *Movement ecology* 7(1): 1-19.
- Betchkal, D. 2015. Acoustic monitoring report, Noatak National Preserve – 2013 and 2014. National Park Service. <https://science.nature.nps.gov/im/units/cakn/vitalsign.cfm?vsid=71>. Retrieved: February 1, 2017.

- Braem, N. M, E.H Mikow, M.L. Kostick; contributors: A. Brenner, A.R. Godduhn, and B. Retherford. 2017. Chukchi Sea and Norton Sound observation network: harvest and use of wild resources in 9 communities in arctic Alaska, 2012–2014. ADF&G, Div. of Subsistence Tech. Paper No. 403. Fairbanks, AK.
- Braem, N.M, E.H Mikow, S.J Wilson, and M.L. Kostick. 2015. Wild food harvests in 3 Upper Kobuk River communities: Ambler, Shungnak, and Kobuk. ADF&G, Div. of Subsistence Tech. Paper No. 402. Fairbanks, AK
- Burch, Jr., E.S. 1972. The caribou/wild reindeer as a human resource. *American Antiquity* 37(3): 339–68.
- Burch, Jr., E. S. 1984. The Kotzebue Sound Eskimo. In *Handbook of North American Indians--Arctic*. Volume 5. Edited by David Damas. Smithsonian Institution, Washington, D.C.
- Burch, Jr., E. S. 1994. The cultural and natural heritage of Northwest Alaska. Volume V. Nana Museum of the Arctic, Kotzebue, Alaska and U.S. National Park Service, Alaska Region. Anchorage, AK.
- Burch, E.S. 1998. The Inupiaq Eskimo nations of Northwest Alaska. University of Alaska Press. Fairbanks, AK.
- Burch, Jr., E. S. 2012. Caribou herds of Northwest Alaska 1850-2000. Edited by Krupnik Igor and Jim Dau. University of Alaska Press. Fairbanks, AK.
- Burwell, Michael. Nd. Hunger knows no law: seminal Native protest and the Barrow duck-in of 1961. U.S. Department of the Interior, Minerals Management Service, Alaska.
https://alaska.digication.com/indigenous_documents/developing-anas-in-the-1960s. Accessed April 26, 2023.
- Buvit, I, Rasic, JT, Kuehn, SR, Hedman. 2019. WH. Fluted projectile points in a stratified context at the Raven Bluff site document a late arrival of Paleoindian technology in northwest Alaska. *Geoarchaeology*. 34: 3– 14.
- Cameron, M.D, J.M., Eisaguirre, G.A., Breed, J., Joly, and K., Kielland. 2021. Mechanistic movement models identify continuously updated autumn migration cues in Arctic caribou. *Movement Ecology* 9(54). 1-12
- Cameron, M.D., K. Joly, G.A. Breed, C.P.H Mulder, and K. Kielland. 2020. Pronounced Fidelity and Selection for Average Conditions of Calving Area Suggestive of Spatial Memory in a Highly Migratory Ungulate. *Front. Ecol. Evol.* 8:564567. doi: 10.3389/fevo.2020.564567.
- Cameron, M. D., K. Joly, G. A. Breed, L. S. Parrett, and K. Kielland. 2018. Movement-based methods to infer parturition events in migratory ungulates. *Canadian Journal of Zoology* 96: 1187-1195. DOI: 10.1139/cjz-2017-0314.
- Caribou Trails. 2014. News from the Western Arctic Caribou Herd Working Group. Western Arctic Caribou Herd Working Group, Nome, AK. Issue 14. http://westernarcticcaribou.org/wp-content/uploads/2014/07/CT2014_FINAL_lowres.pdf. Retrieved: June 23, 2015.
- Cold, H. 2021. Alaska Department of Fish and Game Subsistence Division: review of arctic areas Subsistence Division projects. Presentation to the Northwest Arctic Regional Advisory Council, November 1-2.
- Daggett, C. 2023. Wildlife Biologist. Personal communication: e-mail. ADF&G. Utqiagvik, AK.

- Dau, J. 2011. Units 21D, 22A, 22B, 22C, 22D, 22E, 23, 24, and 26A caribou management report. Pages 187-250 in P. Harper, editor. Caribou management report of survey and inventory activities July 1, 2008–30 June 30, 2010. ADF&G. Juneau, AK.
- Dau, J. 2013. Units 21D, 22A, 22B, 22C, 22D, 22E, 23, 24, and 26A caribou management report. Pages 201-280 in P. Harper, editor. Caribou management report of survey and inventory activities July 1, 2010–30 June 30, 2012. ADF&G. Juneau, AK.
- Dau, J. 2014. Wildlife Biologist. Western Arctic Caribou herd presentation. Western Arctic Caribou Herd (WACH) Working Group Meeting, December 17-18, 2014. Anchorage, Alaska. ADF&G. Nome, AK.
- Dau, J. 2015. Units 21D, 22A, 22B, 22C, 22D, 22E, 23, 24 and 26A. Chapter 14, pages 14-1 through 14-89 in P. Harper, and Laura A. McCarthy, eds. Caribou management report of survey and inventory activities 1 July 2012–30 June 2014. ADF&G, Species Management Report ADF&G/DWC/SMR-2015-4, Juneau, AK.
- Dau, J. 2016a. Memorandum to S. Machida dated June 21, 2016. 2016 Western arctic caribou herd calving survey: 4-12 June. ADF&G Division of Wildlife Conservation, Fairbanks, AK.
- Dau, J. 2016b. Memorandum to S. Machida dated April 26, 2016. 2016 Western Arctic caribou herd recruitment survey: 31 March and 5, 19, and 21 April. ADF&G Division of Wildlife Conservation, Fairbanks, AK.
- Deur, D.D., J. Hebert and H. Atkinson. 2019. Noatak National Preserve: traditional use study. Draft phase I report (unpublished). Portland State University Department of Anthropology and the National Park Service.
- Fix, P.J. and A. Ackerman. 2015. Noatak National Preserve sport hunter survey: caribou hunters from 2010-2013. Natural resources report. National Park Service.
- Fullman, T.J., K. Joly, A. Ackerman. 2017. Effects of environmental features and sport hunting on caribou
- Georgette, S., and H. Loon. 1993. Subsistence use of fish and wildlife in Kotzebue, a Northwest Alaska regional center. ADF&G, Div. of Subsistence Tech. Paper No. 167. Fairbanks, AK.
- Gonzalez, D., E. H. Mikow, and M. L. Kostick. 2018. Subsistence wildlife harvests in Buckland, Koyuk, and Noatak, Alaska 2016-2017. ADF&G, Div. of Subsistence Special Publication SP2018-05. Fairbanks, AK.
- Gunn, A. 2003. Voles, lemmings and caribou – population cycles revisited? *Rangifer*, Special Issue 14: 105-111.
- Gurarie, E., P.R. Thompson, A.P. Kelly, N.C. Larter, W.F. Fagan, and K. Joly. 2020. For everything there is a season: estimating periodic hazard functions with the cyclomort R package. *Methods in Ecology and Evolution* 11 (1): 129-138. DOI: 10.1111/2041-210X.13305.
- Halas, G. 2015. Caribou migration, subsistence hunting, and user group conflicts in Northwest Alaska: A traditional knowledge perspective. University of Fairbanks-Alaska. Fairbanks, AK.
- Hansen, D.A. 2019a. 2019 Western Arctic Caribou Herd – herd population status, other metrics. Presentation to Western Arctic Caribou Herd Working Group Technical Committee. December 10, 2019. <https://westernarcticcaribou.net/>.
- Hansen, D.A. 2020. Wildlife Biologist. Personal communication: e-mail. ADF&G. Kotzebue, AK.

- Hansen, D.A. 2021a. Wildlife Biologist. Personal communication: e-mail. ADF&G. Kotzebue, AK.
- Holand, O., R.B. Weladji, A. Mysterud, K. Roed, E. Reimers, M. Nieminen. 2012. Induced orphaning reveals post-weaning maternal care in reindeer. *European Journal of Wildlife Research*. 58: 589-596.
- Joly, K. 2015. Wildlife Biologist, Gates of the Arctic National Park and Preserve. Personal communication: e-mail NPS. Fairbanks, AK.
- Joly, K. 2000. Orphan caribou, *Rangifer tarandus*, calves: a re-evaluation of overwinter survival data. *The Canadian field naturalist* 114: 322-323.
- Joly, K., and M. D. Cameron. 2018. Early fall and late winter diets of migratory caribou in northwest Alaska. *Rangifer* 38 (1): 27-38. DOI: [10.7557/2.38.1.4107](https://doi.org/10.7557/2.38.1.4107).
- Joly, K., and M.D. Cameron. 2020. Caribou vital sign annual report for the Arctic Network Inventory and Monitoring Program, September 2019-August 2020. Natural resource report. National Park Service.
- Joly, K., and M.D. Cameron. 2021. Caribou vital sign annual report for the Arctic Network Inventory and Monitoring Program, September 2019-August 2020. Natural resource report. National Park Service.
- Joly, K., E. Gurarie, D.A. Hansen, M.D. Cameron. 2021. Seasonal patterns of spatial fidelity and temporal consistency in the distribution and movements of a migratory ungulate. *Ecology and Evolution*. 2021;11:8183–8200.
- Joly, K., A. Gunn, S. D. Côté, M. Panzacchi, J. Adamczewski, M. J. Sutor, and E. Gurarie. 2021b. Caribou and reindeer migrations in the changing Arctic. *Animal Migrations* 8: 156-167. DOI: [10.1515/ami-2020-0110](https://doi.org/10.1515/ami-2020-0110).
- Joly, K., R.R. Jandt, C.R. Meyers, and J.M. Cole. 2007. Changes in vegetative cover on the Western Arctic herd winter range from 1981–2005: potential effects of grazing and climate change. *Rangifer Special Issue* 17:199-207.
- Joly, K., D.R. Klein, D.L. Verbyla, T.S. Rupp, and F.S. Chapin, III. 2011. Linkages between large-scale climate patterns and the dynamics of Arctic caribou populations. *Ecography* 34: 345-352.
- Lenart, E. A. 2011. Units 26B and 26C caribou. Pages 315-345 in P. Harper, ed. Caribou management report of survey and inventory activities 1 July 2008–30 June 2010. ADF&G. Project 3.0. Juneau, AK.
- Magdanz, J., E. Trigg, A. Ahmasuk, P. Nanouk, D. Koster, and K. Kamletz. 2005. Patterns and trends in subsistence salmon harvests Norton Sound and Port Clarence, 1994-2003. ADF&G, Div. of Subsistence Tech Paper No. 294. Juneau, AK. 134 pp.
- Mikow, E., N. M. Braem, and M. Kostick. 2014. Subsistence Wildlife Harvests in Brevig Mission, Deering, Noatak, and Teller, Alaska, 2011-2012. ADF&G, Div. of Subsistence Special Publication No. 2014-02. Fairbanks, AK.
- Mikow, E.H, and M. Cunningham. 2020. Harvest and Use of Wild Resources in Buckland, Alaska, 2018. ADF&G, Div. of Subsistence Tech. Paper No. 472. Fairbanks, AK.
- Miller, F.L. 2003. Caribou (*Rangifer tarandus*). Pages 965-997 in Feldhamer, B.C. Thompson, and J.A. Chapman, eds. *Wild mammals of North America- biology, management, and conservation*. John Hopkins University Press.

Nicholson, K.L., S.M. Arthur, J.S. Horne, E.O. Garton, and P.A. Del Vecchio. 2016. Modeling caribou movements: seasonal ranges and migration routes of the Central Arctic Herd. *PLoS ONE* 11(4): e0150333. <https://doi.org/10.1371/journal.pone.0150333>.

Nelson, Richard K. 1983. *Make Prayers to the Raven*. The University of Chicago Press. Chicago IL.

NPS. 2020. Commercial use authorization stipulations: 2020 park specific regulations—Western Arctic Parklands. <https://www.nps.gov/locations/alaska/stips-wear.htm>. Retrieved April 2, 2021.

NWARAC. 2016a. Transcripts of the Northwest Arctic Subsistence Regional Advisory Council proceedings, October 5-6, 2016 in Selawik, AK. Office of Subsistence Management, USFWS. Anchorage, AK.

NWARAC. 2019a. Transcripts of the Northwest Arctic Subsistence Regional Advisory Council proceedings, April 9-10, 2019 in Kotzebue, AK. Office of Subsistence Management, USFWS. Anchorage, AK.

NWARAC. 2020. Transcripts of the Northwest Arctic Subsistence Regional Advisory Council proceedings, November 3, 2020. Teleconference. Office of Subsistence Management, USFWS. Anchorage, AK.

NWARAC. 2021a. Transcripts of the Northwest Arctic Subsistence Regional Advisory Council proceedings, February 18, 2021. Teleconference. Office of Subsistence Management, USFWS. Anchorage, AK.

NWARAC 2021b. Transcripts of the Northwest Arctic Subsistence Regional Advisory Council proceedings, November 1 and 2, 2021. Teleconference. Office of Subsistence Management, USFWS. Anchorage, AK.

NWARAC 2023. Transcripts of the Northwest Arctic Subsistence Regional Advisory Council proceedings, March 7, 2023.

OSM. 2015. Staff analysis WSA15–03/04/05/06. Office of Subsistence Management, FWS. Anchorage, AK. 26 pp.

OSM and ADF&G. 2023. Community subsistence information system. <http://www.adfg.alaska.gov/sb/CSIS/>, accessed April 27-30, 2023. ADF&G. Division of Subsistence. Anchorage, AK.

Parrett, L.S. 2011. Units 26A, Teshekpuk caribou herd. Pages 283-314 *in* P. Harper, ed. Caribou management report of survey and inventory activities 1 July 2008–30 June 2010. ADF&G. Project 3.0. Juneau, AK.

Parrett, L.S. 2015b. Memorandum to P. Bente, Management Coordinator, dated October 29, 2015. 2015 Western Arctic Herd (WAH) captured conducted September 15-17, 2015. ADF&G Division of Wildlife Conservation, Fairbanks, AK.

Parrett, L.S., 2015c. Unit 26A, Teshekpuk caribou herd. Chapter 17, pages 17-1 through 17-28 *in* P. Harper and L.A. McCarthy, eds. Caribou management report of survey and inventory activities 1 July 2012-30 June 2014. ADF&G, Species Management Report ADF&G /DWC?SMR-2015-4, Juneau, AK.

Parrett, L.S. 2015d. Memorandum to P. Bente, Management Coordinator, dated December 31, 2015. Summary of Teshekpuk Caribou Herd photocensus conducted July 6, 2015. ADF&G Division of Wildlife Conservation. Fairbanks, AK.

Parrett, L.S. 2016. Memorandum for distribution, dated August 25, 2016. Summary of Western Arctic Caribou Herd photocensus conducted July 1, 2016. ADF&G Division of Wildlife Conservation, Fairbanks, AK.

- Parrett, L.S. 2017a. WAH Caribou Overview. Western Arctic Caribou Herd Working Group Meeting. December 2017. <https://westernarcticcaribou.net.files.wordpress.com/2017/12/2017-complete-wg-meeting-binder-dec-13-14-2017-for-webpost.pdf>. Retrieved December 20, 2017.
- Parrett, L.S. 2017b. Wildlife Biologist IV. Personal communication: phone and e-mail. ADF&G. Fairbanks, AK.
- Parrett, L. S. 2021. Teshekpuk caribou herd management report and plan, Game Management Units 23, 24, and 26: Report period 1 July 2012–30 June 2017, and plan period 1 July 2017–30 June 2022. Alaska Department of Fish and Game, Species Management Report and Plan ADF&G/DWC/SMR&P-2021-43, Juneau, AK.
- Prichard, A.K. 2009. Development of a preliminary model for the Western Arctic Caribou Herd. ABR, Inc. – Environmental Research and Services. Fairbanks, AK.
- Prichard, A.K., K. Joly and J. Dau. 2012. Quantifying telemetry collar bias when age is unknown: a simulation study with a long-lived ungulate. *Journal of Wildlife Management* 76 (7): 1441-1449. DOI: 10.1002/jwmg.394.
- Prichard, A.K., L.S. Parrett, E.A. Lenart, J.R. Caikoski, K. Joly, B.T. Person. 2020. Interchange and overlap among four adjacent arctic caribou herd. *Journal of Wildlife Management* 84 (8): 1500-1514. DOI: 10.1002/jwmg.21934.
- Rughetti, M., M. Festa-Bianchet. 2014. Effects of selective harvest of non-lactating females on chamois population dynamics. *Journal of applied ecology*. 51: 1075-1084.
- Russell, D.E., S.G. Fancy, K.R. Whitten, R.G. White. 1991. Overwinter survival of orphan caribou, *Rangifer tarandus*, calves. *Canadian field naturalist*. 105: 103-105.
- SPRAC 2021. Transcripts of the Seward Peninsula Subsistence Regional Advisory Council proceedings, October 26, 2021.
- SPRAC 2022. Transcripts of the Seward Peninsula Subsistence Regional Advisory Council proceedings, October 4, 2022.
- Spaeder, J., D. Callaway, and D. Johnson. 2003. *The Western Arctic Caribou Herd: Barriers and Bridges to Cooperative Management*. National Park Service. Kotzebue, AK.
- Sutherland, R. 2005. Harvest estimates of the Western Arctic caribou herd, Alaska. Proceedings of the 10th North American Caribou Workshop. Girdwood, AK. May 4-6, 2004. *Rangifer* special issue 16:177-184.
- Taillon, J., V. Brodeur, M. Festa-Bianchet, S.D. Cote. 2011. Variation in body condition of migratory caribou at calving and weaning: which measures should we use? *Ecoscience* 18(3): 295-303.
- USFWS. 2014. FY2014 annual report reply to the Norwest Arctic Subsistence Regional Advisory Council. Office of Subsistence Management, USFWS. Anchorage, AK.
- WACH (Western Arctic Caribou Herd) Working Group. 2011. *Western Arctic Caribou Herd Cooperative Management Plan – Revised December 2011*. Nome, AK.
- WACH (Western Arctic Caribou Herd) Working Group. 2015. *Western Arctic Caribou Herd Cooperative Management Plan. Table 1 Revision – Dec. 2015*. <https://westernarcticcaribou.net/herd-management/>. Accessed June 1, 2017.

WACH (Western Arctic Caribou Herd) Working Group. 2019a. Western Arctic Caribou Herd Working Group Meeting. December 10-12, 2019. Anchorage, AK.

WACH (Western Arctic Caribou Herd) Working Group. 2019b. Western Arctic Caribou Herd Cooperative Management. December 2019. <https://westernarcticcaribou.net/herd-management/>. Accessed March 31, 2023.

WACH (Western Arctic Caribou Herd) Working Group. 2020. Western Arctic Caribou Herd Working Group Meeting December 9, 2020. Teleconference.

WACH (Western Arctic Caribou Herd) Working Group. 2021. Western Arctic Caribou Herd Working Group Meeting December 16, 2021. Teleconference.

WACH (Western Arctic Caribou Herd) Working Group. 2022. Western Arctic Caribou Herd Working Group Meeting December 14-15, 2022. Anchorage, AK.

Whiting, Alex. 2006. Native Village of Kotzebue Harvest Survey Program 2002 - 2003 - 2004: Results of Three Consecutive Years Cooperating with *Qikiqtagrugmiut* to Understand Their Annual Catch of Selected Fish and Wildlife." Native Village of Kotzebue, Alaska.

Wilson, R.R., L.S. Parrett, K. Joly, and J.R. Dau. 2016. Effects of roads on individual caribou movements during migration. *Biological Conservation* 195(2016):2-8.

WINFONET. 2018. Wildlife information network. ADF&G. Anchorage, AK. <https://winfonet.alaska.gov/>. Retrieved: November 2018.

WINFONET. 2019. Wildlife information network. ADF&G. Anchorage, AK. <https://winfonet.alaska.gov/>. Retrieved: July 2019.

Wolfe, Robert J., Cheryl L. Scott, William E. Simeone, Charles J. Utermohle, and Mary C. Pete. 2010. "The 'Super-Household' in Alaska Native Subsistence Economies." Final Report to the National Science Foundation, Project ARC 0352611.

SUBSISTENCE REGIONAL ADVISORY COUNCIL RECOMMENDATIONS

Seward Peninsula Subsistence Regional Advisory Council

Support WSA22-05.

Justification

The Council voted to support the special action. Council members noted the expected Federal proposal submission from the Western Arctic Caribou Herd Working Group to reduce all harvest of Western Arctic caribou to four caribou per year for the 2024–2026 regulatory cycle. The Council supported the Northwest Arctic Regional Advisory Council’s approach to preemptively limit harvest for this coming year to conserve as much of the population as possible.

Western Interior Alaska Subsistence Regional Advisory Council

Support WSA22-05.

Justification

The Council supported the special action request from the Northwest Arctic Regional Advisory Council. The Western Interior Council feels there is a strong need to conserve Western Arctic adult cow caribou. However, Council members stated that Unit 23 residents should not be the only users constrained on harvest limits, even by their own hand, and considered modifying the request to include all users of the Western Arctic Caribou Herd. The Council believes that conservation of this herd should be shared across their range by all users. Along with supporting the Northwest Arctic Council’s request, the Western Interior council submitted a subsequent special action request to reduce harvest by all users of the Western Arctic herd caribou.

INTERAGENCY STAFF COMMITTEE COMMENTS

The Interagency Staff Committee acknowledges the concerns expressed by the Northwest Arctic (NWARAC) and Western Interior Alaska (WIRAC) Subsistence Regional Advisory Councils about the decline of the Western Arctic Caribou Herd (WACH) population. We commend the proactive conservation measures being suggested by these Councils. These special action requests aim to protect the conservation and long-term survival of the WACH and ensure the continuation of subsistence uses of the caribou resource. Based on long-term monitoring of the herd, it is clear that the WACH is in serious decline, and rural residents are concerned about their opportunity to harvest from the herd.

Due to the timing of when the special actions were developed, only two of the four Councils with a customary and traditional use determination for the WACH were able to act on one of the two special actions. The Seward Peninsula Subsistence Regional Advisory Council (SPRAC) and the WIRAC supported WSA22-05. While both the Councils recommendations may be supported by substantial evidence,

they could also be detrimental to the satisfaction of subsistence needs. The WIRAC has recently expressed its desire to have WSA22-06 withdrawn from consideration by the Board. This may or may not impact what the Federal Subsistence Board (Board) will need to consider when deliberating WSA22-05.

There are a few things the Board may want to consider when deliberating on these special actions. First, all Alaska residents could still harvest five caribou/day under State regulations on most Federal public lands, which could limit the impact of adopting these requests on both the WACH and subsistence users. Federal regulations would also become more restrictive than State regulations for the 2022-24 regulatory cycle. If both special actions were approved, there would be an uneven distribution of harvest options available to Federally qualified subsistence users, depending on where they live and on the units for which they have a customary and traditional use determination for caribou. During the 2023 hunting season, Temporary Special Action WSA21-01 will still be in place, closing the Noatak National Preserve (including the Nigu River portion of the Preserve in Unit 26A) and BLM-managed lands between the Noatak and Kobuk rivers in Unit 23 to caribou hunting by non-Federally qualified users from August 1 to September 30. Therefore, during this time period, Federally qualified subsistence users primarily harvesting from the WACH in Unit 23 would be limited to the more restrictive Federal hunting regulations, while other Federally qualified subsistence users harvesting in other units could harvest under the more liberal State regulations.

The analysis for WSA22-05/06 indicates that residents of Unit 23 account for 58% of the total harvest of the WACH on average. This would leave a substantial user group open to harvesting under more liberal regulations, which could counteract any benefit to restricting harvest in other areas of the WACH range. Moreover, as shown in the analysis for WSA22-05/06, the WACH has substantially utilized the western and southern portions of Unit 26A in recent years; including a large area of State lands that would not be subject to the more restrictive Federal regulations that would apply should WSA22-05/06 be approved.

Another aspect to consider is that many communities in Unit 26A harvest caribou from the Teshekpuk Caribou Herd (TCH) which is currently healthy. Approval of WSA22-06 would subject these rural residents to more restrictive harvest regulations at a time when they are not needed for the TCH. The analysis for WSA22-05/06 does present a possible alternative to minimize disruption to these users by excluding certain portions of Unit 26A from the harvest restrictions proposed in WSA22-06 to reduce unnecessary hardship for subsistence users in the portions of Unit 26A where the TCH are often available. The Board may want to consider this alternative during its deliberations if warranted. Other communities potentially affected by this special action also harvest from the Central Arctic Caribou Herd, which like the TCH is also at a healthy population size.

Further, the Board may want to consider reductions in the harvest limit for the WACH during the wildlife regulatory proposal process rather than through the special action process. The WACH Working Group has submitted Wildlife Proposal WP24-28, which mirrors WSA22-06, and the NWARAC has submitted Wildlife Proposal WP24-29, which mirrors WSA22-05. Addressing reductions in harvest limits for the WACH in this manner has the advantage of proposals going through the full review process, including review of an analysis by all the affected Councils and subsequent recommendation from the Councils as well. It would also allow the public to review and comment on the proposal analysis so that both the Councils and the Board will have the benefit of the full suite of public input.

During the public hearings held for WSA22-05/06, there was strong opposition from many in the affected communities to the proposed harvest reductions. Testimony indicated that four caribou per year was not enough to meet subsistence needs. Many also stated that the individual harvest limits would dramatically impact their traditional culture of sharing that provides for extended families and entire communities. Overall, feedback from the public hearing was a request to work with communities to develop conservation measures based on indigenous knowledge and supported by traditional cultural values. Taking the time for further engagement with subsistence communities through a more deliberative proposal process may better support conservation efforts and strategies to address food security. Additionally, the Alaska Board of Game will be taking up the same proposals to reduce the harvest limit for the WACH in January 2024 at their Western Arctic/Western Region meeting. Both the Federal and State regulatory processes would lead to implementation of any changes simultaneously on both Federal and State lands in advance of the Fall 2024 hunting season.

The ISC acknowledges the need to take strong conservation measures as soon as possible to conserve the WACH and protect the long-term continuation of subsistence uses. Limiting cow harvest is the primary strategy identified to achieve conservation goals and sustainability of the herd. Meaningful alternatives to the requested special actions might be a higher annual harvest limit while reducing cow harvest for the 2023 hunting season, and then reevaluate additional measures through the full regulatory proposal process and Board action during the April 2024 wildlife regulatory meeting

Appendix 1

Regulatory History

In 2013, an aerial photo census indicated significant declines in the TCH (Caribou Trails 2014), WACH (Dau 2011), and possibly the Central Arctic Caribou Herd (CACH) populations. In response, the Alaska Board of Game adopted modified Proposal 202 (RC76) in March 2015 to reduce harvest opportunities for both residents and nonresidents within the range of the WACH and the TCH. These regulation changes – which included lowering bag limits, changing harvest seasons, modifying the hunt area descriptors, and restricting bull and cow harvest and prohibiting calf harvest – were adopted to slow or reverse the population decline. These regulatory changes took effect on July 1, 2015.

Four Special Actions, WSA15-03/04/05/06, submitted by the North Slope Regional Advisory Council requested changes to caribou regulations in Units 23, 24, and 26. Temporary Special Action WSA15-03, requested designation of a new hunt area for caribou in Unit 23 where the harvest limit would be reduced from 15 caribou per day to 5 caribou per day, the harvest season be reduced for bulls and cows, and the take of calves would be prohibited. Temporary Special Action WSA15-04, requested designation of a new hunt area for caribou in Unit 24, the harvest seasons be reduced for bulls and cows, and the take of calves be prohibited.

Temporary Special Action WSA15-05, requested that bull caribou harvest limit in Unit 26A be reduced from 10 caribou per day to 5 caribou per day, the cow harvest limit be reduced to 3 per day, the harvest seasons for bulls and cows be reduced, and the take of calves and cows with calves be prohibited. Compared to the new State caribou regulations, it requested 3 additional weeks to the bull harvest season (Dec. 6- Dec. 31). Temporary Special Action WSA15-06, requested designation of a new hunt area for caribou in Unit 26B where the harvest limit would be reduced from 10 caribou per day to 5 caribou per day, the harvest season would be shortened, and the take of calves would be prohibited.

The Federal Subsistence Board (Board) approved Temporary Special Actions WSA15-03/04/05/06 with modification to simplify and clarify the regulatory language; maintain the current hunt areas in Units 23 and 24; decrease the harvest limit from 15 to 5 caribou per day and shorten the cow and bull seasons throughout Unit 23; prohibit the harvest of cows with calves throughout the affected units; and reduce the harvest limit in Unit 26B remainder from 10 to 5 caribou per day and shorten the season. These special actions took effect on July 1, 2015.

In 2015, the Northwest Arctic Council submitted a temporary special action request (WSA16-01) to close caribou hunting on Federal public lands in Unit 23 to non-Federally qualified users for the 2016/17 regulatory year. The Council stated that their request was necessary for conservation purposes but also needed because nonlocal hunting activities were negatively affecting subsistence harvests. In April 2016, the Board approved WSA16-01, basing its decision on the strong support of the Northwest Arctic and North Slope Councils, public testimony in favor of the request, as well as concerns over conservation and continuation of subsistence uses.

In 2016, six proposals (WP16-37, WP16-48, WP16-49/52, WP16-61, and WP16-63) concerning WACH caribou regulations were submitted to the Board. The Board adopted WP16-48 with modification to allow

the positioning of a caribou, wolf, or wolverine for harvest in Unit 23 on BLM lands only. Proposal WP16-37 requested that Federal caribou regulations mirror the new State regulations across the ranges of the WACH and TCH (Units 21D, 22, 23, 24, 26A, and 26B). The Board adopted Proposal WP16-37 with modification to reduce the harvest limit to five caribou per day, restrict bull harvest during rut and cow harvest around calving, prohibit the harvest of calves and the harvest of cows with calves before weaning (mid-October), and to create a new hunt area in the northwest corner of Unit 23. The Board took no action on the remaining proposals (WP16-49/52, and WP16-61, and WP16-63) due to action taken on WP16-37.

In 2016, the BOG adopted Proposal 140 as amended to make the following changes to Unit 22 caribou regulations: establish a registration permit hunt (RC800), set an annual harvest limit of 20 caribou total, and lengthen cow and bull seasons in several hunt areas.

These State and Federal regulatory changes were the first time that harvest restrictions had been implemented for the WACH and TCH in over 30 years and were the result of extensive discussion and compromise among a variety of stakeholders. The requested restrictions were also supported by management recommendations outlined in the Western Arctic Herd Management Plan (WACH Working Group 2011).

In June 2016, the State submitted a special action request (WSA16-03) to reopen caribou hunting on Federal public lands in Unit 23 to non-Federally qualified users, providing new biological information (e.g. calf recruitment, weight, body condition) on the WACH. The State specified that there was no biological reason for the closure and that it could increase user conflicts. In January 2017, the Board rejected WSA16-03 due to the position of all four affected Councils (Northwest Arctic, North Slope, Seward Peninsula, and Western Interior) as well as public testimony and Tribal consultation comments opposing the request. Additionally, the Board found the new information provided by the State to be insufficient to rescind the closure.

In January 2017, the BOG adopted Proposal 2, requiring registration permits for residents hunting caribou within the range of the Western Arctic and Teshekpuk herds in Units 21, 23, 24, and 26 (a similar proposal was passed for Unit 22 in 2016). ADF&G submitted the proposal in order to better monitor harvest and improve management flexibility. The BOG also rejected Proposal 3 (deferred Proposal 85 from 2016), which would have removed the caribou harvest ticket and report exception for residents living north of the Yukon River in Units 23 and 26A). Also in January 2017, the BOG rejected Proposal 45, which proposed requiring big game hunting camps to be spaced at least three miles apart along the Noatak, Agashashok, Eli, and Squirrel Rivers. The proposal failed as it would be difficult to enforce.

In March 2017, the Northwest Arctic and North Slope Councils submitted temporary special action requests (WSA17-03 and -04, respectively) to close caribou hunting on Federal public lands in Unit 23 and in Units 26A and 26B, respectively, to non-Federally qualified users for the 2017/18 regulatory year. Both Councils stated that the intent of the proposed closures was to ensure subsistence use in the 2017/18 regulatory year, to protect declining caribou populations, and to reduce user conflicts. The Board voted to approve WSA17-03 with modification to close all Federal public lands within a 10 mile wide corridor (5 miles either side) along the Noatak River from the western boundary of Noatak National Preserve upstream to the confluence with the Cutler River; within the northern and southern boundaries of the Eli and Agashashok River drainages, respectively; and within the Squirrel River drainage, to caribou hunting except by Federally qualified subsistence users for the 2017/18 regulatory year. The Board considered the modification a reasonable compromise for all users, and that closure of the specified area was warranted

in order to continue subsistence use. The Board rejected WSA17-04 due to recent changes to State regulations that should reduce caribou harvest.

In April 2018, the Board adopted Proposals WP18-46 with modification and WP18-48 (effective July 1, 2018). Proposal WP18-46 requested closing caribou hunting on Federal public lands in Unit 23 to non-Federally qualified users (similar to WSA16-01 and WSA17-03). The Board adopted WP18-46 with the same modification as WSA17-03 (see above) as the Northwest Arctic, Western Interior, and Seward Peninsula Councils as well as the village of Noatak supported this modification and viewed the targeted closure as effectively addressing user conflicts and the continuation of subsistence uses. The Board also adopted WP18-48 to require State registration permits for caribou hunting in Units 22, 23, and 26A to improve harvest reporting and herd management, and to align with State regulations.

Also in 2018, the Board considered proposal WP18-57, which requested that caribou hunting on Federal public lands in Units 26A and 26B be closed to non-Federally qualified users. This proposal was submitted by the North Slope Council to ensure continuation of subsistence, protect the caribou herds, and reduce user conflicts. The Board rejected WP18-57, choosing to allow time to evaluate the effects of recently implemented harvest restrictions. In addition, the Board expressed concern that closing Federal lands would shift users to State lands, increasing conflict.

In January 2020, the BOG adopted Proposal 20 to open a year-round resident season for caribou bull harvest in Unit 23 under State regulations. The BOG also adopted Proposal 24 as amended to remove the restriction on caribou calf harvest in Units 22, 23, and 26A. Proposal 28, which would have eliminated the caribou registration permit in Units 23 and 26A for North Slope resident hunters, was not adopted by the BOG, due to an ongoing need for harvest data.

In April 2020, the Board adopted Proposal WP20-46 to open a year-round bull season and permit calf harvest for caribou in Unit 23. Creating a year-round season for bulls was intended to allow for harvest of bulls when caribou migration had been delayed, alleviating harvest pressure on cows. The prohibition on calf harvest was lifted in order to permit taking of calves that had been orphaned or injured.

In 2021, the Northwest Arctic Council submitted Temporary Wildlife Special Action WSA21-01, which requested closing Federal public lands in Units 23 and 26A to caribou and moose hunting by non-Federally qualified users from Aug. 1 - Sept. 30, 2021. The Council expressed concern about the late migration of caribou into and through Unit 23 and stated that the lack of fall harvest has resulted in empty freezers and stressed communities. The Council hoped a closure would reduce the impacts from transporters and non-local hunters on migrating caribou. In June 2021, the Board deferred action on this request and asked that Office of Subsistence Management (OSM) staff seek additional input on concerns related to caribou from the WACH Working Group, Federal land-managing agencies, local Fish and Game Advisory Committees, the Alaska Department of Fish and Game (ADF&G), Federal Subsistence Regional Advisory Councils, commercial guides and transporters, and subsistence users in the area.

In March 2022, the Board approved WSA21-01a (for caribou; WSA21-01b applied to moose) with modification to close Noatak National Preserve (including the Nigu River portion of the Preserve in Unit 26A) and BLM managed lands between the Noatak and Kobuk rivers in Unit 23 to caribou hunting by non-Federally qualified users from August 1 through September 30 during the 2022-2023 and 2023-2024

regulatory years. The Board stated this modification was a reasonable compromise that provides for the continuation of subsistence uses and the conservation of the Western Arctic Caribou Herd, while precluding unnecessary restrictions on non-Federally qualified users. The partial closure targets the areas of highest user conflicts and minimizes potential disruptions to caribou migration. The Board also expressed concern over the 24% WACH population decline over the past two years, which prompted the WACH Working Group to change the herd's management level to preservative declining.

In April 2022, the Board rejected Proposal WP22-47, which requested that caribou calf harvest be permitted in Unit 22 because four members of the Board felt this would supply new opportunity for Federally qualified subsistence users and would align Federal and State regulations. The remaining four Board members opposed the proposal and felt with the herd in decline that it would be unwise to allow the harvest of caribou calves.

Controlled Use Areas

Noatak Controlled Use Area

In 1988, the Traditional Council of Noatak submitted a proposal to the BOG to create the Noatak Controlled Use Area (CUA) in order to restrict the use of aircraft in any manner for big game hunting from August 15-September 20 due to user conflicts (Fall 1990). The proposed Controlled Use Area extended five miles on either side of the Noatak River, from the mouth of the Eli River upstream to the mouth of the Nimiuktuk River, including the north side of Kivivik Creek (ADF&G 1988). The BOG adopted the proposal with modification to close a much smaller area extending from the Kugururok River to Sapun Creek from August 20-September 20.

The Controlled Use Area was expanded in 1994 and modified in 2017 (Betchkal 2015, Halas 2015, ADF&G 2017a). From 1994-2016, the Noatak Controlled Use Area consisted of a 10-mile-wide corridor (5 miles either side) along the Noatak River from its mouth to Sapun Creek with approximately 80 miles of the Controlled Use Area within Noatak National Preserve (NP) (**Map 3**, Betchkal 2015). The closure dates from 1994-2009 were August 25-September 15. In 2009 (effective 2010), the BOG adopted Proposal 22 to expand the closure dates to August 15-September 30 in response to the timing of caribou migration becoming less predictable (ADF&G 2009). During the 2016/17 BOG regulatory cycle, the Noatak/Kivalina & Kotzebue AC proposed (Proposal 44) extending the upriver boundary of the Noatak Controlled Use Area to the Cutler River, citing increased user conflicts as their rationale (ADF&G 2017b). In January 2017, the BOG approved amended Proposal 44 to shift the boundaries of the Noatak Controlled Use Area to start at the mouth of the Agashashok River and end at the mouth of the Nimiuktuk River with approximately 105 miles within Noatak NP (**Map 3**, ADF&G 2017a).

In 1990, the Noatak Controlled Use Area was adopted under Federal regulations. In 1995, the Board adopted Proposal P95-50 to expand the time-period and area of the Controlled Use Area to August 25-September 15 and the mouth of the Noatak River upstream to the mouth of Sapun Creek, respectively, which aligned with State regulations as they existed at that time.

In 2008, Proposals WP08-50 and 51 requested modifications to the Noatak Controlled Use Area dates. These proposals were submitted in response to caribou migration occurring later in the season, to improve

caribou harvest for subsistence users, and to decrease conflicts between local and nonlocal hunters. The Board deferred these proposals to the next regulatory cycle. In 2010, Proposals WP10-82, 83, and 85 requested similar date changes. The Board adopted WP10-85 to expand the time period during which aircraft are restricted in the Noatak Controlled Use Area to August 15-September 30, which aligned with the current State regulations.

Selawik National Wildlife Refuge: Area Not Authorized for Commercial Transporters and Guides

In 2011, Selawik National Wildlife Refuge (NWR) designated refuge lands in the northwest portion of the refuge as closed to big game hunting by commercial guides and transporters through their comprehensive conservation plan (USFWS 2011, 2014). These refuge lands are intermingled with private lands near the villages of Noorvik and Selawik (**Map 3**). The purpose of this closure was to minimize trespass on private lands and to reduce user conflicts (USFWS 2011).

At the winter 2021 meeting of the Northwest Arctic Council, a representative of Selawik National Refuge reported that only two hunters were brought into the refuge by air taxis and transporters in 2020. Because caribou are no longer abundant in Selawik National Wildlife Refuge in September, and because the non-resident moose season is already closed in Unit 23, the refuge no longer receives many fly-in hunters (NWARAC 2021a).

Noatak National Preserve Delayed Entry Controlled Use Area

In 2012, the NPS established a Special Commercial Use Area or “delayed entry zone” in the western portion of the Noatak NP (Halas 2015, Fix and Ackerman 2015). Within this zone, transporters can only transport nonlocal caribou hunters after a pre-determined date unless otherwise specified by the Western Arctic Parklands (WEAR) Superintendent in consultation with commercial operators, other agencies and local villages (Halas 2015). In 2020, the delayed entry end date was changed from September 15 to September 22 (NPS 2020) in response to requests from the Cape Krusenstern National Monument and Kobuk Valley National Park SRCs and the Native Village of Noatak (Atkinson 2021, pers. comm.). The purpose of this zone is to allow a sufficient number of caribou to cross the Noatak River and establish migration routes, to limit interactions between local and nonlocal hunters, and to allow local hunters the first opportunity to harvest caribou in that area (**Map 3**, USFWS 2014, Halas 2015).

Aircraft in National Parks and Monuments

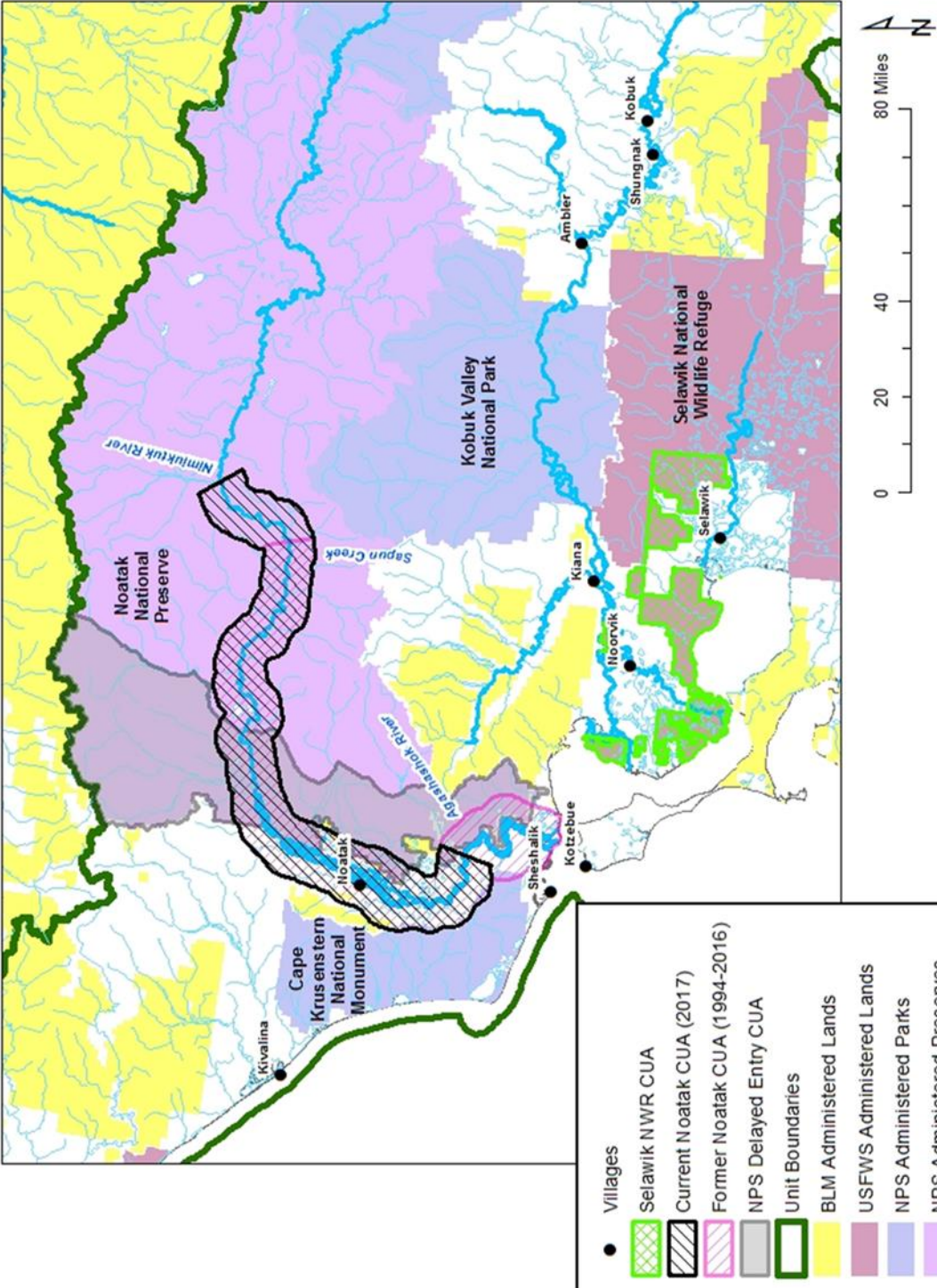
National parks and monuments in Unit 23 include Cape Krusenstern National Monument, Kobuk Valley National Park, and Gates of the Arctic National Park. The use of aircraft for access to or from lands and waters within a national park or monument for purposes of taking fish or wildlife within the national park or monument is prohibited, except in the case of exempted communities and individuals for the purpose of subsistence access. However, aircraft are allowed to access lands and waters in national parks and monuments for the purposes of engaging in any activity allowed by law other than the taking of fish and wildlife.

Anaktuvuk Pass Controlled Use Area

That portion of Unit 26A bounded by a line beginning at 153° 30' W. long. on the game management boundary between Units 24 and 26A, north along 153° 30' W. long. to 69° N. lat., east along 69° N. lat. to 152° 10' W. long., south along 152° 10' W. long. to 68° 30' N. lat., east along 68° 30' N. lat. to 150° 40' W. long., south along 150° 40' W. long. to the game management boundary between Units 24 and 26A, and westerly along the game management unit boundary to the point of origin at 153° 30' W. long. From Aug 15 - Oct 15, the area is closed to the use of aircraft for caribou hunting, including transportation of caribou hunters, their hunting gear, and/or parts of caribou. However, this does not apply to transportation of caribou hunters, their gear, or caribou parts by aircraft between publicly owned airports in the controlled use area

Dalton Highway Corridor Management Area (DHCMA)

Units 20 and 24-26 extending five miles from each side of the Dalton Highway, including the drivable surface of the Dalton Highway, from the Yukon River to the Arctic Ocean, and including the Prudhoe Bay Closed Area. The area within the Prudhoe Bay Closed Area is closed to the taking of big game; the remainder of the DHCMA is closed to hunting; however, big game, small game, and fur animals may be taken in the area by bow and arrow only, and small game may be taken by falconry. Any hunter traveling on the Dalton Highway must stop at any check station operated by the department within the DHCMA.



Map 3. Federal and State Controlled Use Areas in Unit 23

Appendix 2

Unit 23 data only. Two measures of caribou harvest between 1982 and 2018 in communities with a customary and traditional use determination for caribou in Unit 23. Data is from the ADF&G Division of Subsistence Community Subsistence Information System (ADF&G 2021) with the following exceptions. Kotzebue data for 2002-2004 is from Whiting 2006; Noatak and Deering data for 2011 is from Mikow et al. 2014; 2018 data for Buckland is from Mikow and Cunningham 2020; Point Hope data for 2000-2001 is from Bacon et al. 2009, rev. 2011. Dashes indicate that no data is available

Community	Year	Estimated Number of Caribou Harvested	Estimated Pounds of Caribou per Person
Kotzebue	2014	1,286	59
	2013	1,680	75
	2012	1,803	78
	2004	1,915	--
	2003	1,719	--
	2002	2,376	--
	1986	1,917	97
	Avg	1,814	77
Selawik	2011	683	109
	2006	934	165
	1999	1,289	249
	Avg	987	174.3
Kivalina	2010	86	32
	2007	268	85
	1992	351	138
	1983	564	283.9
	1982	346	179
	Avg	323	144
Noatak	2016	337	80

Community	Year	Estimated Number of Caribou Harvested	Estimated Pounds of Caribou per Person
	2011	360	89.8
	2007	441	114
	2002	410	120
	1999	683	224
	1994	615	220
	Avg	474	141.3
Point Hope	2014	185	34
	2000-2001	219	--
	1994	355	67
	Avg	253	50.5
Lower Kobuk River			
Noorvik	2017	250	65
	2012	851	198
	2008	767	173
	2002	988	181
	Avg	714	154.3
Kiana	2009	414	149
	2006	306	108.5
	1999	488	174
	Avg	402	143.8
Upper Kobuk River			
Ambler	2012	685	330
	2009	456	260

Community	Year	Estimated Number of Caribou Harvested	Estimated Pounds of Caribou per Person
	2003	325	176
	Avg	489	255.3
Shungnak	2012	396	196
	2008	416	218
	2002	403	220
	1998	561	312
	Avg	444	236.5
Kobuk	2012	119	98
	2009	210	194
	2004	134	148
	Avg	154	146.7
Northern Seward Peninsula			
Buckland	2018	950	220
	2016	637	179
	2009	535	176
	2003	637	212
	Avg	689	196.8
Deering	2017	342	342
	2013	404	430
	2011-2012	237	205.9
	2007	182	161
	1994	142	131
	Avg	261	254

Appendix 3

ADF&G. 2015. RC069. Estimated total caribou harvest by community, per capita caribou harvest by community, and data sources, GMUs 21, 22, 23, 24 and 26A: Western Arctic caribou herd and Teshekpuk caribou herd.

Unit 21 D

Community	Year/Period	Est # caribou harvested	# caribou per capita	Source
Galena	2010	6	0.01	CSIS
	2002	8	0.01	Brown et al. 2004
	2001	0		Andersen et al. 2004
	1999	8	0.01	Andersen et al. 2001
	1998	7	0.01	Andersen et al. 2000
	1997	39	0.07	Andersen et al. 1998
	1996	40	0.07	CSIS
	1985	40	0.06	CSIS
Kaltag	2002	0		CSIS
	2001	0		Andersen et al. 2004
	1999	0		Andersen et al. 2001
	1998	6	0.03	Andersen et al. 2000
	1997	8	0.03	Andersen et al. 1998
	1996	16	0.07	CSIS
Nulato	2010	0		CSIS
	2001	0		Andersen et al. 2004
	1999	0		Andersen et al. 2001
	1998	5	0.02	Andersen et al. 2000
	1997	3	0.01	Andersen et al. 1998
	1996	13	0.04	CSIS

Unit 22

Brevig Mission	2011	46	0.11	Mikow et al. 2014
	2005-2006	43	0.13	Ahmasuk et al.
	2000-2001	76	0.28	Georgette et al. 2002, unpubd data
	1989	0		CSIS
	1984	0		CSIS
Elim	2010	83	0.25	Braem et al. 2014
	2005-2006	150	0.51	Ahmasuk et al.
	1999-2000	227	0.74	Georgette et al. 2000, unpubd data
Golovin	2012	64	0.37	CSIS

	2010	17	0.11	Braem et al. 2014
	2001	106	0.68	Georgette et al. 2002, unpubd data
	1989	40	0.22	CSIS
Koyuk	2010	184	0.55	Braem et al. 2014
	2005-2006	447	1.21	Ahmasuk et al.
	2004	414	1.19	ADF&G unpubd data
	1998	263	0.90	Georgette 1999, unpubd data
Nome	RY2013-14	137	0.04	Dept. Wildlife Conservation
	RY2012-13	112	0.03	Dept. Wildlife Conservation
	RY2010-11	112	0.03	Dept. Wildlife Conservation
	RY2009-10	137	0.04	Dept. Wildlife Conservation
	RY2008-09	106	0.03	Dept. Wildlife Conservation
	RY2007-08	57	0.02	Dept. Wildlife Conservation
	RY2006-07	111	0.03	Dept. Wildlife Conservation
	RY2005-06	95	0.03	Dept. Wildlife Conservation
	RY2004-05	46	0.01	Dept. Wildlife Conservation
	RY2003-04	125	0.04	Dept. Wildlife Conservation
	RY2002-03	109	0.03	Dept. Wildlife Conservation
	RY1999-00	522	0.15	Dept. Wildlife Conservation
Shaktoolik	2009	134	0.58	Braem et al. 2012
	2003	198	0.89	CSIS
	1999-2000	125	0.57	Georgette et al. 2000, unpubd data
	1998	167	0.75	Georgette 1999, unpubd data
Shishmaref	2009	345	0.57	Braem et al. 2012
	2005-2006	827	1.42	Ahmasuk et al.
	2000-2001	299	0.53	CSIS
St. Michael	2005-2006	17	0.04	Ahmasuk et al.
	2003	48	0.12	Georgette et al. 2005, unpub data
Stebbins	2013			
	2005-2006	21	0.03	Ahmasuk et al.
	2002	0		CSIS
Teller	2011	17	0.07	
	2005-2006	0		Ahmasuk et al.
	2000	21	0.08	Georgette et al. 2002, unpub data
Unalakleet	2005-2006	554	0.76	Ahmasuk et al.
	2004	723	0.99	CSIS

	2002	167	0.23	CSIS
Wales	2017			
	2010	0		Braem et al. 2014
	2005-2006	7	0.05	Ahmasuk et al.
	1994	4	0.03	Magdanz et al. 2002
White Mtn.	2009	99	0.52	Braem et al. 2012
	2005-2006	50	0.22	Ahmasuk et al.
	2009	99	0.52	Braem et al. 2012

Unit 23

Ambler	2012	685	2.54	Braem et al. 2015
	2009	456	1.75	Braem 2012
	2003	325	1.12	Georgette et al. 2005, unpub data
Buckland	2018			
	2009	561	1.30	Braem 2012
	2003	637	1.56	Magdanz et al. 2011
Deering	2017			
	2013	393	2.85	ADF&G unpublished data
	2011-2012	237	1.91	Braem 2011
	2007-2008	182	1.37	Braem 2011
	1994	142	0.96	Magdanz et al. 2002
Kiana	2009	440	1.18	Braem 2012
	2006	306	0.77	Magdanz et al. 2011
	1999	488	1.23	ADF&G unpublished data
Kivalina	2010-2011	86	0.23	Braem et al. 2014
	2007	268	0.67	Magdanz et al. 2010
	1992	351	0.49	CSIS
	1983	564	0.78	CSIS
	1982	346	0.48	CSIS
Kobuk	2012	119	0.84	Braem et al. 2015
	2009	210	1.72	Braem 2012
	2004-2005	134	1.06	ADF&G unpublished data
Kotzebue	2013-2014	1629	0.51	ADF&G unpublished data
	2012-2013	1804	0.56	CSIS
	2003	1915	0.61	Whiting 2003
	2002	1719	0.56	Whiting 2003
	2001	2376	0.77	Whiting 2003

	1991	3782	1.04	CSIS
	1986	1917	0.71	Georgette and Loon 1993
Noatak	2011	360	0.66	Mikow et al. 2014
	2010	66	0.13	Braem et al. 2014
	2007	441	0.90	Magdanz et al. 2010
	2002	410	0.90	Georgette et al. 2004, unpub data
	1999	683	1.61	Georgette et al 2000., unpub data
	1994	615	1.62	Magdanz et al. 2002
Noorvik	2017			
	2012	851	1.36	CSIS
	2008	767	1.19	Braem et al. 2012
	2002	988	1.46	Georgette et al. 2004, unpub data
Point Hope	2000-2001	219	0.31	Bacon et al. 2009, rev. 2011
	1994-1995	355	0.49	Bacon et al. 2009, rev. 2011
Selawik	2011	683	0.79	Braem et al. 2013
	2006	934	1.11	CSIS
	1999	1289	1.68	CSIS
Shungnak	2012	396	1.47	Braem et al. 2015
	2008	416	1.53	Braem 2012
	2002	403	1.62	Magdanz et al. 2004
	1998	561	2.17	Georgette 1999, unpubd data

Unit 24

Alatna/Allakaket	1984	4	0.02	CSIS
	1983	0		CSIS
	1982	5	0.03	Marcotte and Haynes 1985
Alatna	2011	28	0.89	Holen et al. 2012
	2002-2003	34	0.94	Brown et al. 2004
	2001-2002	0		Andersen et al. 2004
	1999-2000	0		Andersen et al. 2001
	1998-1999	11	0.44	Andersen et al. 2000
	1997-1998	21	0.84	Andersen et al. 1998
	2011	95	0.65	Holen et al. 2012
Allakaket	2002-2003	106	0.78	Brown et al. 2004

	2001-2002	9	0.05	Andersen et al. 2004
	1999-2000	13	0.07	Andersen et al. 2001
	1998-1999	43	0.23	Andersen et al. 2000
	1997-1998	11	0.06	Andersen et al. 1998
Anaktuvuk Pass	2011	616	1.99	Holen et al. 2012
	2006-2007	696	2.33	Pedersen & Nageak 2008 unpubd.
	2002-2003	436	1.44	Bacon et al. 2009, rev. 2011
	2001-2002	271	0.91	Bacon et al. 2009, rev. 2011
	2000-2001	732	2.60	Bacon et al. 2009, rev. 2011
	1999-2000	329	1.05	Bacon et al. 2009, rev. 2011
	1998-1999	500	1.62	Bacon et al. 2009, rev. 2011
	1996-1997	210	0.69	Bacon et al. 2009, rev. 2011
	1994-1995	322	1.13	Brower and Opie 1996
	1993-1994	574	1.81	Pedersen and Opie 1994, unpubd.
	1992	600	2.21	Fuller and George 1997 [rev 1999]
	1991-1992	536	1.97	Pedersen and Opie 1992, unpubd.
	1990-1991	592	2.18	Pedersen and Opie 1991, unpubd.
Bettles/Evansville	2002-2003	0		Brown et al. 2004
	1984	3		CSIS
	1983	5		CSIS
	1982	11	0.17	Marcotte and Haynes 1985
Bettles	2011	6	0.50	Holen et al. 2012
	1999-2000	21	0.31	Andersen et al. 2001
	1998-1999	25	0.82	Andersen et al. 2000
	1997-1998	0		Andersen et al. 1998
Evansville	2011	0		Holen et al. 2012
	1999-2000	2	0.08	Andersen et al. 2001
	1998-1999	4	0.13	Andersen et al. 2000
	1997-1998	3	0.06	Andersen et al. 1998
Hughes	2014			
	1982	0		Marcotte and Haynes 1985
Huslia	2002-2003	82	0.38	Brown et al. 2004
	1999-2000	78	0.31	Andersen et al. 2001
	1998-1999	264	1.08	Andersen et al. 2000
	1997-1998	56	0.26	Andersen et al. 1998
Wiseman	2011	4	0.31	Holen et al. 2012

Unit 26

Atqasuk	2006-2007	157	0.71	Braem et al. 2011
	2005-2006	174	0.75	Braem et al. 2011
	2004-2005	207	0.81	Braem et al. 2011
	2003-2004	352	1.43	Braem et al. 2011
	2002-2003	221	0.97	Braem et al. 2011
	1997-1998	266	1.12	Bacon et al. 2009, rev. 2011
	1996--1997	398	1.77	Bacon et al. 2009, rev. 2011
	1994-1995	262	1.17	Hepa et al. 1997
Nuiqsut	2006--2007	475	1.22	Braem et al. 2011
	2005-2006	363	0.87	Braem et al. 2011
	2004-2005	546	1.26	Braem et al. 2011
	2003-2004	564	1.34	Braem et al. 2011
	2002-2003	397	1.01	Braem et al. 2011
	2000-2001	496	1.14	Bacon et al. 2009
	1999-2000	413	0.85	Pedersen 2000, unpublished
	1995-1996	362	0.88	Bacon et al. 2009, rev. 2011
	1994-1995	258	0.62	Brower and Opie 1998
	1993	672	1.86	Pedersen 1995
	1992	278	0.66	Fuller and George 1997 [rev 1999]
	1985-1986	513	1.28	ADF&G unpublished data
	Point Hope	2000-2001	219	0.31
1994-1995		355	0.49	Bacon et al. 2009, rev. 2011
Point Lay	2012	356	1.42	ADF&G unpublished data
	2002-2003	154	0.62	Bacon et al. 2009, rev. 2011
	1994-1995	223	1.20	Bacon et al. 2009, rev. 2011
	1987	157	1.30	CSIS
Wainwright	2009	1231	2.09	Kofinas et al. in prep.
	2002-2003	866	1.63	Bacon et al. 2009, rev. 2011
	1992	748	1.41	Fuller and George 1997 [rev 1999]
	1989-1990	711	1.45	Braund & Associates 1993
	1988-1989	505	1.03	Braund & Associates 1993