

CITIZEN PETITION FORM

Date: 11/28/2021

Issue:	Harvesting a cow moose with a calf
Which rule are you seeking to create or revise? Please include a copy of the rule you are proposing to create or change, preferably with the change made in redline format.	
CODE OF COLORADO REGULATIONS Colorado Parks and Wildlife 2 CCR 406-2 ARTICLE XI - MOOSE #270 - MOOSE SEASONS, LICENSES, AND SPECIAL RESTRICTIONS See "Attachment A" (Redlined) and any associated Colorado Rules or Regulations pertaining to the take of a Cow Moose with a Calf by its side or a Cow Mose accompanied by a Calf	
Why are you seeking to create or revise this rule? Please include a general statement of the reasons for the requested rule or revision and any relevant information related to the request.	
I watched a Cow Moose get taken with a Calf by its side and I could not believe it would have been legal to do that. I looked into Colorado Wildlife rules and regulations and could not find where that was restricted even though Colorado specifically restricts taking Bears with cubs. There are studies that show that Moose Calves likely go to waste when the Cow Moose is taken as they are unlikely to survive the winter without the help and protection of the mother. This is especially true in areas that receive snow like much of the Colorado Rocky Mountains. (See Attachments) Other states prohibit the taking of a Cow Moose with a calf by its side (WY) or a Cow Moose accompanied by a calf (AK). (See Attachments) Many Hunters on online forums recognize the difference between the survivability of a Moose Calf vs an Elk Calf, but many see no issue with it. It is in Colorado's best interest to educate the hunters of the waste involved with taking the Cow Moose when a Calf is present as not all Hunters have the ethics, education or experience to recognize the risks to the Calf when the Cow Moose is killed.	
Petitioner's name:	Eric Meyer

Attachments

- A. CODE OF COLORADO REGULATIONS
Colorado Parks and Wildlife
2 CCR 406-2
ARTICLE XI - MOOSE
#270 - MOOSE SEASONS, LICENSES, AND SPECIAL RESTRICTIONS
- B. Innes, Robin J. 2010. *Alces americanus*
- C. For juvenile moose, momma's boys and girls fare best
(Constantine Alexander's Journal)

Includes References to:
Berger, Joel. Estimation of Body-Size Traits by Photogrammetry
in Large Mammals to Inform Conservation."
- D. Wyoming Statutes - Moose Hunting Seasons
- E. 2021-2022 Alaska Hunting Regulations - Moose

Attachment A

Redlined

CODE OF COLORADO REGULATIONS

Colorado Parks and Wildlife

2 CCR 406-2

ARTICLE XI - MOOSE

#270 - MOOSE SEASONS, LICENSES, AND SPECIAL RESTRICTIONS

ARTICLE XI - MOOSE

#270 - MOOSE SEASONS, LICENSES, AND SPECIAL RESTRICTIONS

- A. Antlerless Archery, Muzzle-loading firearms (rifle and smoothbore musket), and Rifle Season Dates, Units and Limited Licenses.**
Allocation of these licenses will float between the moose seasons in accordance with the hunt code chosen by successful applicants.

Unit(s)	Hunt Code	Archery		Muzzleloader		Rifle		Antlerless Licenses (2021)	
		Open Date	Closed Date	Open Date	Closed Date	Open Date	Closed Date	Resident	Nonresident
6 except within 1/4 mile of Hwy 14 in Jackson County from Cameron Pass west to USFS Road 740 at Gould	MF006O1A	09/11/2021	09/30/2021					19	4
	MF006O1M			09/11/2021	09/19/2021				
	MF006O1R					10/01/2021	10/14/2021		
7, 8, 191 except within 1/4 mile of Hwy 14	MF007O1A*	09/11/2021	09/30/2021					6	2
	MF007O1M*			09/11/2021	09/19/2021				
	MF007O1R*					10/01/2021	10/14/2021		
12, 23, 24	MF012O1A	09/11/2021	09/30/2021					15	0
	MF012O1M			09/11/2021	09/19/2021				
	MF012O1R					10/01/2021	10/14/2021		
14	MF014O1A	09/11/2021	09/30/2021					8	1
	MF014O1M			09/11/2021	09/19/2021				
	MF014O1R					10/01/2021	10/14/2021		
15, 27	MF015O1A	09/11/2021	09/30/2021					8	1
	MF015O1M			09/11/2021	09/19/2021				
	MF015O1R					10/01/2021	10/14/2021		
16	MF016O1A	09/11/2021	09/30/2021					17	0
	MF016O1M			09/11/2021	09/19/2021				
	MF016O1R					10/01/2021	10/14/2021		
17	MF017O1A	09/11/2021	09/30/2021					7	1
	MF017O1M			09/11/2021	09/19/2021				
	MF017O1R					10/01/2021	10/14/2021		
18, 181	MF018O1A	09/11/2021	09/30/2021					7	1

	MF018O1M			09/11/2021	09/19/2021				
	MF018O1R					10/01/2021	10/14/2021		
19 except within 1/4 mile of Hwy 14	MF019O1A*	09/11/2021	09/30/2021					7	0
	MF019O1M*			09/11/2021	09/19/2021				
	MF019O1R*					10/01/2021	10/14/2021		
20, except within 1/4 mile of the high waterline of Brainard Lake from the beginning of archery season until the US Forest Service gate closes on Brainard Lake Road.	MF020O1A	09/11/2021	09/30/2021					3	0
	MF020O1M			09/11/2021	09/19/2021				
	MF020O1R					10/01/2021	10/14/2021		
25, 26, 231	MF025O1A	09/11/2021	09/30/2021					1	0
	MF025O1M			09/11/2021	09/19/2021				
	MF025O1R					10/01/2021	10/14/2021		
28	MF028O1A*	09/11/2021	09/30/2021					6	2
	MF028O1M*			09/11/2021	09/19/2021				
	MF028O1R*					10/01/2021	10/14/2021		
29 except within 1/4 mile of the high waterline of Brainard Lake from the beginning of archery season until the US Forest Service gate closes on Brainard Lake Road.	MF029O1A	09/11/2021	09/30/2021					9	1
	MF029O1M			09/11/2021	09/19/2021				
	MF029O1R					10/01/2021	10/14/2021		
36	MF036O1A	09/11/2021	09/30/2021					1	0
	MF036O1M			09/11/2021	09/19/2021				
	MF036O1R					10/01/2021	10/14/2021		
37, 371	MF037O1A	09/11/2021	09/30/2021					22	3

	MF037O1M			09/11/2021	09/19/2021				
	MF037O1R					10/01/2021	10/14/2021		
38	MF038O1A	09/11/2021	09/30/2021					3	1
	MF038O1M			09/11/2021	09/19/2021				
	MF038O1R					10/01/2021	10/14/2021		
38 those portions bounded on the west by US Hwy 6/Colo Hwy 119 and Colo Hwy 119	MF038S1A	09/11/2021	09/30/2021					3	0
	MF038S1M			09/11/2021	09/19/2021				
	MF038L1R					10/16/2021 10/30/2021 11/13/2021 11/24/2021	10/20/2021 11/07/2021 11/19/2021 11/28/2021		
39, 46	MF039O1A	09/11/2021	09/30/2021					6	0
	MF039O1M			09/11/2021	09/19/2021				
	MF039O1R					10/01/2021	10/14/2021		
41, 42, 421	MF041O1A	09/11/2021	09/30/2021					18	2
	MF041O1M			09/11/2021	09/19/2021				
	MF041L1R					10/16/2021 10/30/2021 11/13/2021 11/24/2021	10/20/2021 11/07/2021 11/19/2021 11/28/2021		
43	MF043O1A	09/11/2021	09/30/2021					1	0
	MF043O1M			09/11/2021	09/19/2021				
	MF043O1R					10/01/2021	10/14/2021		
47, 471, 444	MF047O1A	09/11/2021	09/30/2021					1	0
	MF047O1M			09/11/2021	09/19/2021				
	MF047O1R					10/01/2021	10/14/2021		
49, 500	MF049O1A	09/11/2021	09/30/2021					13	3
	MF049O1M			09/11/2021	09/19/2021				
	MF049O1R					10/01/2021	10/14/2021		
50, 51, 59, 501, 511, 581	MF050O1A	09/11/2021	09/30/2021					2	0
	MF050O1M			09/11/2021	09/19/2021				
	MF050O1R					10/01/2021	10/14/2021		
52, 411, 521	MF052O1A	09/11/2021	09/30/2021					9	1
	MF052O1M			09/11/2021	09/19/2021				
	MF052L1R					10/16/2021 10/30/2021 11/13/2021 11/24/2021	10/20/2021 11/07/2021 11/19/2021 11/28/2021		

66	MF066O1A	09/11/2021	09/30/2021					3	0
	MF066O1M			09/11/2021	09/19/2021				
	MF066O1R					10/01/2021	10/14/2021		
67	MF067O1A	09/11/2021	09/30/2021					2	0
	MF067O1M			09/11/2021	09/19/2021				
	MF067O1R					10/01/2021	10/14/2021		
76	MF076O1A	09/11/2021	09/30/2021					2	0
	MF076O1M			09/11/2021	09/19/2021				
	MF076O1R					10/01/2021	10/14/2021		
76, 77, 751 Weminuche Wilderness Only	MF076S1A	09/11/2021	09/30/2021					2	0
	MF076S1M			09/11/2021	09/19/2021				
	MF076S1R					10/01/2021	10/14/2021		
161	MF161O1A	09/11/2021	09/30/2021					14	0
	MF161O1M			09/11/2021	09/19/2021				
	MF161O1R					10/01/2021	10/14/2021		
171 except within 1/4 mile of Hwy 14 in Jackson County from Cameron Pass west to USFS Road 740 at Gould	MF171O1A	09/11/2021	09/30/2021					14	3
	MF171O1M			09/11/2021	09/19/2021				
	MF171O1R					10/01/2021	10/14/2021		
191 except within 1/4 mile of Hwy 14	MF191O1A	09/11/2021	09/30/2021					2	0
	MF191O1M			09/11/2021	09/19/2021				
	MF191O1R					10/01/2021	10/14/2021		
361	MF361O1A	09/11/2021	09/30/2021					1	0
	MF361O1M			09/11/2021	09/19/2021				
	MF361O1R					10/01/2021	10/14/2021		
Total								232	26
*Licenses associated with this hunt code are guaranteed to hunters in 2021 due to natural disaster relief (see table #270.B for license numbers)									

WY example: "except cow moose with calf at side"

AK example: "however, no person may take a cow accompanied by a calf."

B. Guaranteed Licenses, Antlerless Archery, Muzzle-loading firearms (rifle and smoothbore musket), and Rifle Season Dates, Units and Limited Licenses. Allocation of these licenses will float between the moose seasons in accordance with the hunt code chosen by successful applicants. Returned licenses for these hunt codes will be manually reissued to applicants from the 2020 limited license drawing of the original hunt code after the draw occurs.

Unit(s)	Hunt Code	Archery		Muzzleloader		Rifle		Antlerless Licenses (2021)	
		Open Date	Closed Date	Open Date	Closed Date	Open Date	Closed Date	Resident	Nonresident
7, 8, 191 except within 1/4 mile of Hwy 14	MF007G1A*	09/11/2021	09/30/2021					17	3
	MF007G1M*			09/11/2021	09/19/2021				
	MF007G1R*					10/01/2021	10/14/2021		
19 except within 1/4 mile of Hwy 14	MF019G1A*	09/11/2021	09/30/2021					10	0
	MF019G1M*			09/11/2021	09/19/2021				
	MF019G1R*					10/01/2021	10/14/2021		
28	MF028G1A*	09/11/2021	09/30/2021					7	0
	MF028G1M*			09/11/2021	09/19/2021				
	MF028G1R*					10/01/2021	10/14/2021		
TOTALS								34	3

C. Season-Choice Antlered and Either-Sex Moose Seasons, Dates, Units (as described in Chapter 0 of these regulations). Licenses are valid during Archery, Muzzleloader, and Rifle seasons until filled. License holders must comply with all applicable season restrictions, including but not limited to, applicable season dates and manner of take restrictions.

Unit(s)	Hunt Code	Archery		Muzzleloader		Rifle		Antlered Licenses (unless noted) (2021)	
		Open Dates	Closed Dates	Open Dates	Closed Dates	Open Dates	Closed Dates	Resident	Nonresident
1, 201	ME001O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	Either-sex 1	Either-sex 0

WY example: "except cow moose with calf at side"

AK example: "however, no person may take a cow accompanied by a calf."

Unit(s)	Hunt Code	Archery		Muzzleloader		Rifle		Antlered Licenses (unless noted) (2021)	
		Open Dates	Closed Dates	Open Dates	Closed Dates	Open Dates	Closed Dates	Resident	Nonresident
6 except within 1/4 mile of Hwy 14 in Jackson County from Cameron Pass west to USFS Road 740 at Gould	MM006O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	16	3
7, 8, 191 except within 1/4 mile of Hwy 14	MM007O1X*	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	1	1
12, 23, 24	MM012O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	10	0
14	MM014O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	9	2
15, 27	MM015O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	6	1
16	MM016O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	14	0
17	MM017O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	5	1
18, 181	MM018O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	6	1
18 - Those portions bounded on the north by the Continental Divide; on the east by the divide between Willow Creek and East Fork of Troublesome drainages and the divide between Corral Creek and Troublesome Creek drainages; on the south by Round Gulch; and on the west by the main fork of Troublesome Creek and Sheep Creek	MM018S1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	1	0
19 except within 1/4 mile of Hwy 14	MM019O1X*	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	1	0

Unit(s)	Hunt Code	Archery		Muzzleloader		Rifle		Antlered Licenses (unless noted) (2021)	
		Open Dates	Closed Dates	Open Dates	Closed Dates	Open Dates	Closed Dates	Resident	Nonresident
20, 29 except within 1/4 mile of the high waterline of Brainard Lake from the beginning of archery season until the US Forest Service gate closes on Brainard Lake Road.	MM020O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	5	0
25, 26, 231	MM025O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	1	0
28	MM028O1X*	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	12	1
36	MM036O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	2	0
37, 371	MM037O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	14	3
38	MM038O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	3	0
39, 46	MM039O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	5	0
41, 42, 52, 411, 421, 521	MM041O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	10	2
43	MM043O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	1	0
44, 45	MM044O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	2	0
47, 471, 444	MM047O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	2	0
48, 481	MM048O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	2	0
49, 500	MM049O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	8	1
50, 51, 59, 501, 511, 581	MM050O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	2	0
53, 54, 63	MM053O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	3	0
55, 551	MM055O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	5	0
56, 561	MM056O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	2	0
65	ME065O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	Either-sex 1	Either-sex 0
66	MM066O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	4	0
67	MM067O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	3	0
68, 79, 681	MM068O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	2	0
74, 75	MM074O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	1	0
76	MM076O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	4	1

WY example: "except cow moose with calf at side"
AK example: "however, no person may take a cow accompanied by a calf."

Unit(s)	Hunt Code	Archery		Muzzleloader		Rifle		Antlered Licenses (unless noted) (2021)	
		Open Dates	Closed Dates	Open Dates	Closed Dates	Open Dates	Closed Dates	Resident	Nonresident
76, 77, 751 Weminuche Wilderness Only	MM076S1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	4	1
161	MM161O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	15	0
171 except within 1/4 mile of Hwy 14 in Jackson County from Cameron Pass west to USFS Road 740 at Gould	MM171O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	7	1
361	MM361O1X	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	1	0
Total								191	19

*Licenses associated with this hunt code are guaranteed to hunters in 2021 due to natural disaster relief (see table #270.D for license numbers)

- D. Guaranteed Licenses, Season-Choice Antlered and Either-Sex Moose Seasons, Dates, Units (as described in Chapter 0 of these regulations).** Licenses are valid during Archery, Muzzleloader, and Rifle seasons until filled. License holders must comply with all applicable season restrictions, including but not limited to, applicable season dates and manner of take restrictions. Returned licenses for these hunt codes will be manually reissued to applicants from the 2020 limited license drawing of the original hunt code after the draw occurs.

Unit(s)	Hunt Code	Archery		Muzzleloader		Rifle		Antlered Licenses (unless noted) (2021)	
		Open Dates	Closed Dates	Open Dates	Closed Dates	Open Dates	Closed Dates	Resident	Nonresident
7, 8, 191 except within 1/4 mile of Hwy 14	MM007G1X*	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	10	2
19 except within 1/4 mile of Hwy 14	MM019G1X*	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	6	0
28	MM028G1X*	09/11/2021	09/30/2021	09/11/2021	09/19/2021	10/01/2021	10/14/2021	1	1
TOTALS								17	3

E. Special Restrictions

Citizen Petition (add special restriction to clarify no antlerless moose shall be taken when a moose calf is present) **WY example:** "except cow moose with calf at side" **AK example:** "however, no person may take a cow accompanied by a calf."

1. All moose licensees shall complete and return a harvest questionnaire provided by the Division within 30 days after the close of their hunting season. Any moose licensee who does not complete and return the mandatory questionnaire as required shall not be considered for any future moose license.

All moose harvested through hunting shall be submitted for inspection to an employee of the Division on or before the 5th working day after the taking thereof. Any licensee who takes an antlered moose shall personally present the head, with antlers attached, to any Division office. Any licensee who takes an antlerless moose shall personally present a front incisor tooth or the entire head to any Division office. Moose heads must be unfrozen when presented for inspection. If not unfrozen, the Division may retain heads as necessary for thawing sufficient to extract the incisor teeth. A mandatory check report shall be completed at the time of inspection.

3. At the time of the mandatory check, the Division shall be authorized to extract and retain the incisor teeth.

Special Seasons

ARTICLE XII - SPECIAL HUNTING SEASONS/LICENSES FOR BIG GAME

#271 - BIG GAME ANIMALS CAUSING DAMAGE AND BIG GAME POPULATIONS OVER OBJECTIVE

A. Special Population Management Seasons for Big Game Ungulates

1. The Director shall have the authority to establish special management seasons for antlerless or female big game ungulates in specific game management units or portions thereof which significantly exceed the population objective, when the anticipated harvest from the current year's archery, muzzle-loading and regular rifle seasons did not occur. Provided further that the Director shall have the authority to establish these hunts between November 16 and February 28, to specify a time period for each of these hunts but not to exceed ten days each, and shall authorize hunters to use designated unfilled big game licenses for these hunts and units.

2. The Director shall have the authority to allocate antlerless deer and/or elk licenses on existing Ranching for Wildlife properties located in game management units where deer or elk populations significantly exceed the population objective. These licenses shall be in addition to the number of licenses allocated to each ranch pursuant to the Cooperative Agreement established in #210(A)(2). The additional allocation and use of the antlerless licenses provided for in this section shall be in the same proportion, by species (not sex), as established in the ranch's respective Cooperative Agreement and subject to the following provisions:

a. No ranch shall be required to accept any additional antlerless licenses.

Attachment B

Redlined

Innes, Robin J. 2010. *Alces americanus*

AUTHORSHIP AND CITATION:

Innes, Robin J. 2010. *Alces americanus*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: www.fs.fed.us/database/feis/animals/mammal/alam/all.html [2021, November 16].

- [Courtship and mating](#)
- [Reproduction and development](#)
- [Social behavior](#)
- [Home range and movements](#)
- [Population density](#)
- [Survival](#)
- [Life span](#)

AUTHORSHIP AND CITATION:
 Innes, Robin J. 2010. Alces americanus. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: www.fs.fed.us/database/feis/animals/mammal/alam/all.html [2021, November 16].

Physical description: The moose is the largest member of the deer family (Cervidae) [29]. Within their large [latitudinal range](#) in North America, moose vary greatly in body size. Moose are smallest in southern parts of the species' distribution [93]. The largest moose occur at approximately 65 °N latitude in Alaska and Yukon [79,93]. Moose become smaller again north of 70 °N latitude [93]. Adult male moose (bulls) may be >40% heavier than adult females (cows) [79]. In Alaska (where moose are some of the largest in the world), bull moose may weigh 1,200 to 1,500 pounds (540-680 kg), and cows may weigh 800 to 1,300 pounds (360-590 kg) [29].

Adult moose have long legs that allow them to travel through deep snow, but depths greater than chest height (approximately >28 inches (70 cm)) hinder moose movements. Snow depths approximately >35 inches (90 cm) often cause moose to reduce movements and restrict activities to small areas (e.g., [79,114,128,210,225,281]) (see [Home range](#)). Hard, crusted snow can also make movement difficult and cause injuries to lower legs and hooves [206]. Travel through deep and/or crusted snow is high in energy cost. Deep and/or crusted snow also reduces the availability of food growing near the ground. When snow is shallow, moose paw through it to reach vegetation on the ground. If the snow becomes too deep or encrusted, moose are limited to foraging on plants that are emergent from the snow but within the moose's reach. When snow is deep and/or encrusted, moose frequently move to and remain in places with high canopy cover, where snow may be shallower and/or softer, to conserve energy (see [Cover](#)) [231]. In a 1974 review on the influence of snow on moose behavior, Coady [48] concluded that moose movements were not restricted by snow depths <16 inches (40 cm); slight restrictions occurred when snow depths ranged from 16 to 28 inches (40-70 cm); definite impediments to movements occurred when snow depths were >28 inches; and snow depths >35 inches (90 cm) greatly restricted movements and food intake. This suggested that snow depths >35 inches may influence survival and lead to changes in population demographics. Because of their shorter legs, calves may be more restricted by deep snow than adults; similarly, because of their large body size, large males may be least affected by deep snow. Such body size differences may help explain differential movements of sex and age groups during winter in some areas (see [Age, gender, and reproductive status](#)) [40,48,281].

An adult moose's large size and long legs help it escape predators [93]. When confronted with a predator, a moose may stand its ground and defend itself by flailing and kicking its legs, or it may flee and attempt to evade the predator by trotting rapidly over obstacles or swimming into deep water that hinders the predator's movements. A moose may also flee to an area that provides better footing, such as areas with shallow snow, and maneuver to confront the predator [40,93]. Large moose tend to stand their ground, whereas small moose tend to flee. Reluctance of large moose to flee from threats contributes to high rates of [collision mortality](#) in some populations [40]. A large moose can kill the moose's primary predators—bears (American black bears (*Ursus americanus*), brown bears (*U. arctos*), and grizzly bears (*U. arctos horribilis*)) and gray wolves (*Canis lupus*)—in its defense. Because of their small size, moose calves are most vulnerable to predation [93]. According to Geist [93], moose calves <330 pounds (150 kg) typically cannot evade predators by fleeing and need maternal protection. Calves >330 pounds may evade predators by fleeing but are typically not able to successfully confront predators on their own. Yearlings >530 pounds (240 kg) may be able to confront predators and successfully defend themselves. A moose's ability to defend itself against predators is particularly important in winter, when snow conditions may curtail movements [93].

Moose have the largest antlers of any living cervid [79]. Only males have antlers [29]. Antlers are palmate and may weigh >77 pounds (35 kg). Bulls begin to grow antlers in mid-March. Most growth occurs in June and July, when antler length may increase by nearly 1.0 inch (2.5 cm)/day [79]. Antler growth and mineralization develop under the velvet [41,79]. The velvet period lasts about 140 days in large bulls in good condition ("prime" bulls)

Attachment C

Redlined

For juvenile moose, momma's boys and girls fare best
(Constantine Alexander's Journal)

Includes References to:

Berger, Joel. Estimation of Body-Size Traits by Photogrammetry
in Large Mammals to Inform Conservation."

BERGER, JOEL. "Estimation of Body-Size Traits by Photogrammetry in Large
Mammals to Inform Conservation." *Conservation Biology*, vol. 26, no. 5, [Wiley,
Society for Conservation Biology], 2012, pp. 769–77,
<http://www.jstor.org/stable/23255330>.

Constantine Alexander's Journal

Our Sea, Our Life.

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08/24/2012

For juvenile moose, momma's boys and girls fare best

WCS study shows protective moose moms are key to juvenile survival

Based on ten years of fieldwork in the Tetons of Wyoming, WCS Conservation Biologist, University of Montana Professor and study author Dr. Joel Berger looked at whether body size of juvenile moose and maternal presence were related to survival of the young animals. In animals from elk to lizards and fish, size matters, and larger individuals enjoy a survival advantage. However, results of Berger's study showed that for juvenile moose, body mass had no significant effect on overwinter survival. Maternal presence did.

The study, "Estimation of Body-Size Traits by Photogrammetry in Large Mammals to Inform Conservation" appears in the early view section of the on-line edition of the journal *Conservation Biology*.

The study found that orphaned moose in their first winter were subjected to 8 to 47 times more aggression from adult moose than were young moose whose mothers were present. Overall, the survival of orphan calves was about 8 times lower than those with mothers.

Along with facing more aggression from kicking by adult females and being displaced from the best feeding areas, Berger theorized that orphans incur greater metabolic costs and expend more energy in deep snow. Why orphans were attacked more was not clear, but Berger raised the possibility that mothers were trying to maintain more resources for their own offspring.

"These findings highlight the importance of maternal presence rather than body size and suggest policy changes may be warranted in how harvest quotas are set," said Berger. "In some circumstances, the shooting of mothers with young has been permitted under the assumption that calf survival is minimally affected. Clearly, that is not the case."

In another development from the study, Berger pioneered a new method to estimate the size of juveniles without resorting to immobilization by darting or netting by helicopters – both methods that are stressful to wildlife. Instead, Berger used photogrammetry—a process of using photographs to determine the properties of objects. Digitally measuring head sizes on photographs enabled estimation of juvenile body mass in a quick and non-invasive fashion.

Berger said, "Other methods of acquiring data on large animals are exhaustive, expensive and more invasive. Photogrammetric assessment has shown to be accurate, widely deployable and much easier on the animals and scientists, and the findings in this study illustrate the method can be used to inform conservation planning."

BERGER, JOEL. "Estimation of Body-Size Traits by Photogrammetry in Large Mammals to Inform Conservation." *Conservation Biology*, vol. 26, no. 5, [Wiley, Society for Conservation Biology], 2012, pp. 769–77, <http://www.jstor.org/stable/23255330>.



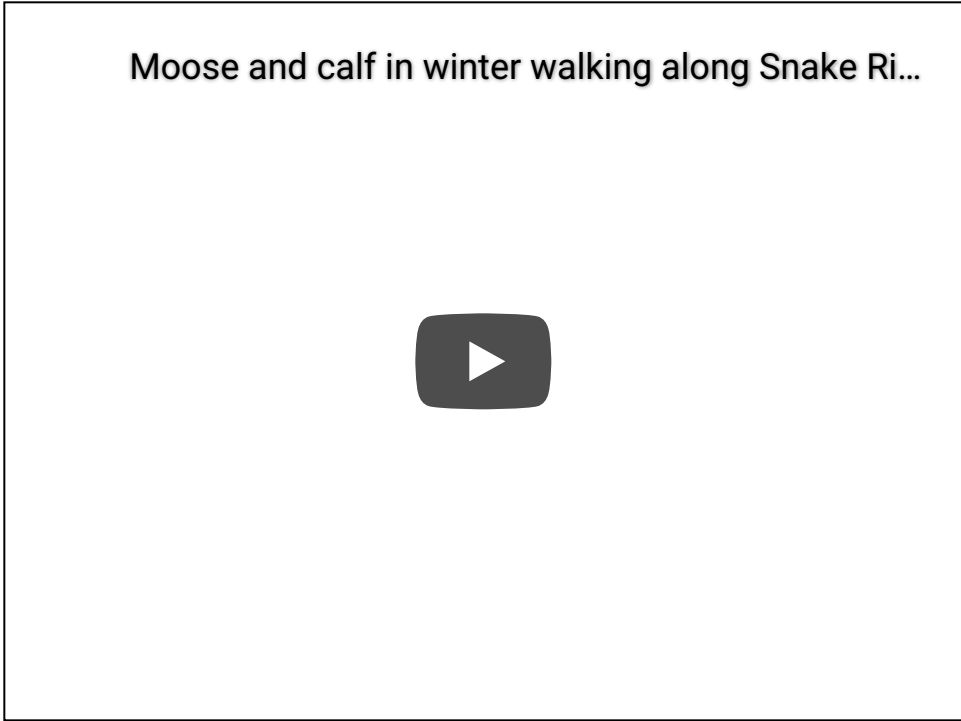
This is a moose mother and her newborn calf. Credit: Dr. Joel Berger

Contact: Scott Smith

ssmith@wcs.org

718-220-3698

[Wildlife Conservation Society](#)



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Attachment D

Redlined
Wyoming Statutes - Moose Hunting Seasons

CHAPTER 8

MOOSE HUNTING SEASONS

Section 1. Authority. This regulation is promulgated by authority of Wyoming Statutes § 23-1-302, § 23-1-703 and § 23-2-104.

Section 2. Hunting Seasons.

Hunt areas, season dates and limitations.

Hunt Area	Type	Special Archery Dates		Regular Season Dates		Quota	Limitations
		Opens	Closes	Opens	Closes		
1	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	10	Any moose, except cow moose with calf at side
1	4	Sep. 1	Sep. 30	Oct. 1	Oct. 31	5	Antlerless moose, except cow moose with calf at side
2, 30	1	Sep. 1	Sep. 30	Oct. 1	Nov. 20	5	Antlered moose
3	1	Sep. 1	Sep. 19	Sep. 20	Oct. 31	15	Antlered moose
3	4	Sep. 1	Sep. 19	Sep. 20	Oct. 31	5	Antlerless moose, except cow moose with calf at side; valid off national forest
5	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	25	Antlered moose
6	1	Sep. 1	Sep. 30	Oct. 1	Nov. 20	5	Antlered moose
7							Closed
8							Closed
9	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	3	Antlered moose (2 residents; 1 nonresident)
10	1	Sep. 1	Sep. 14	Sep. 15	Oct. 31	8	Antlered moose (6 residents; 2 nonresidents)
11	1	Sep. 1	Sep. 9	Sep. 10	Nov. 10	5	Antlered moose
14							Closed
15							Closed
16, 37	1	Sep. 1	Sep. 14	Sep. 15	Nov. 15	5	Antlered moose
17, 28	1	Sep. 1	Sep. 14	Sep. 15	Oct. 31	5	Antlered moose
18	1	Sep. 1	Sep. 30	Oct. 1	Oct. 31	5	Antlered moose
19							Closed
20	1	Sep. 1	Sep. 14	Sep. 15	Oct. 31	15	Antlered moose

Attachment E

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2021-2022 Alaska Hunting Regulations - Moose

OPEN TO:		R = RESIDENTS ONLY	B = RESIDENTS AND NONRESIDENTS	N = NONRESIDENTS ONLY		
OPEN TO:	UNIT/ AREA	BAG LIMIT AND SPECIAL INSTRUCTIONS			PERMIT/ HUNT #	OPEN SEASON
Caribou <i>continued</i>						
B		One bull			HT	Aug 10-Sept 20
R	19D	One antlerless caribou by permit available in person at license vendors in McGrath, Nikolai, and Takotna beginning Dec 1			RC795	Jan 1-Feb 28
Moose <ul style="list-style-type: none"> In areas indicated by a ⚠ federal restrictions exist, see pg 8. Spike-fork, 50-inch antlers, and brow tines are defined on pages 30-31. In all hunts limited to one sex, evidence of sex must remain naturally attached to the meat. 						
R	19A	Lime Village Management Area	Two bulls by permit		TM684	Aug 10-Sept 25 Nov 20-Mar 31
R	19A	⚠ Kuskokwim River drainage downstream from, and including, the George River drainage, and downstream from and excluding the Downey Creek drainage	One antlered bull by permit		TM680	Sept 1-Sept 20
R	19A	remainder	One antlered bull by permit available in Sleetmute and Stony River July 19-23	Permits issued on a first-come first-served basis (number of permits to be announced).	RM682	Sept 1-Sept 5
N	no open season					
R	19B	within the Nonresident Closed Area	One bull with spike-fork or 50-inch antlers or antlers with 4 or more brow tines on at least one side		HT	Sept 1-Sept 20
R			One bull with spike-fork or 50-inch antlers or antlers with 4 or more brow tines on at least one side		HT	Sept 1-Sept 20
N	19B	remainder	One bull with 50-inch antlers or antlers with 4 or more brow tines on at least one side. Nonresidents must complete an ADF&G-approved hunter orientation course or must be accompanied in the field by a registered guide or resident relative within the second-degree of kindred. Contact ADF&G (907) 459-7206	Nonresident orientation required (see page 103)	HT	Sept 5-Sept 20
R	19C	west of the South Fork Kuskokwim, East of the Windy Fork Kuskokwim and north of a line between 62° 24' N, 154° 7' W and 62° 30' N, 153° 32' W	OR One bull with spike-fork, 50-inch antlers or antlers with 4 or more brow tines on at least one side. Permit available online at http://hunt.alaska.gov , or in person in McGrath, Anchorage, Fairbanks and Palmer, beginning Aug 2		RM653	Sept 1-Sept 20
			One bull by permit available in person in McGrath and Nikolai beginning Jan 10; aircraft prohibited Jan 1-Feb 28		RM655	Feb 1-Feb 28
N			One bull with 50-inch antlers or antlers with 4 or more brow tines on at least one side. Permit available online at http://hunt.alaska.gov , or in person in McGrath, Anchorage, Fairbanks and Palmer, beginning Aug 2		RM653	Sept 1-Sept 20
R	19C	remainder	OR One bull with spike-fork or 50-inch antlers or antlers with 4 or more brow tines on at least one side		HT	Sept 1-Sept 20
R			One bull by permit available in person in McGrath and Nikolai beginning Jan 10; aircraft prohibited Jan 1-Feb 28		RM655	Feb 1-Feb 28
N			One bull with 50-inch antlers or antlers with 4 or more brow tines on at least one side		HT	Sept 1-Sept 20
R	19D	Upper Kuskokwim Controlled Use Area	OR One antlered bull by permit available in person in McGrath, Nikolai, and Takotna beginning July 22-Aug 20		RM650	Sept 1-Sept 25
			One moose however, no person may take a cow accompanied by a calf. Permit available in person in McGrath, Nikolai, and Takotna Jan 10.		RM660	Feb 1-Feb 28

*Hunt numbers starting with a "C" = Community, "D" = Drawing, "HT" = Harvest ticket, "R" = Registration, "T" = Tier II. See pages 14-15.