2023-2024 Bighorn Sheep Quota Recommendation Forms

2023-2024 Mountain Goat Quota Recommendation Forms

(Accompanies Commission Regulation 23-14)

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **045** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	138	8	14		250	144	9	9
2020-2021	76	2	9		120	74	5	4
2022-2023	77	1	1		110	69	5	3
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	7	5.6	100%		6.2			
2020	6	5.8	86%		8			
2022	2	2.5	100%		5			
Trend	down	down	stable		down			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2017						8		
2020					6	3		1
2022					2			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
2	100%	0%	100%	0%	100%	045		2		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

Recommend 2 resident ram tags in Early Season. Quota to remain conservative. This herd experinced a die-off in late 2020 from (M. ovi) from Unit 182. Rational for below 50% and 8% of total 1+ Rams in model: Total mature ram availability still largely unknown from die-off, only one mature ram observed on aerial survey in 2022 and overall age of the 2 harvested rams from last year was 2.5, well under NDOW's objective of 6+.years old.

Reporting Biologist: Neill **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **132** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	57	6	3		120	72	7	4
2020-2021	103	10	6		140	80	5	5
2022-2023	46	5	2		130	78	7	4
Trend	down	down	down		stable	stable	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	2	5.5	100%		11.5	0	NA	NA
2021	3	6	75.00		15.5	0	NA	NA
2022	3	5	100%		5	0	NA	NA
Trend	up	stable						

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
		0	0	0	2	0	0	0
2019		0	0	0	4	0	0	0
2022		0	0	0	4	0	0	0
Trend					up			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
2	100%	0%	100%	0%	100%	132		2		0	
	Archery	0%			0%	0					

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

As of 2022, Units 131 and 164 are now combined with Unit 132 for a combined hunt. Of the four tags recomended last year, one ram was harvested in Unit 131 and three rams were harvested in Unit 132. The combined hunt unit group 131, 164, 132 quota reflects a conservative quota recommendation based solely on Unit 132 due to the uncertainty of ram availability in Units 131 and 164. For the 2023 season, two ram tags are being recomended for the combined unit group. An aerial survey is scheduled for this unit group in the fall of 2023.

Reporting Biologist: Kirk **Supervisor:** Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **131, 164** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	67	3	3		110	70	6	3
2020-2021	59	2	1		80	50	5	2
2022-2023	19	2	1		60	40	4	2
Trend	down	stable	stable		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	2	5	67%		12.7	0	NA	NA
2021	1	7	100.00		2	0	NA	NA
2022	1	3	100%		8	0	NA	NA
Trend	down	down	stable		down			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
		0	0	0	3			
2019		0	0	0	1			
2022		0	0	0	0			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
0	100%	0%	100%	0%	100%	131, 164		0		0	
	Archery	0%			0%	0					

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

As of 2022, Units 131 and 164 are now combined with Unit 132 for a combined hunt. Of the four tags recomended last year, one ram was harvested in Unit 131 and three rams were harvested in Unit 132. The combined hunt unit group 131, 164, 132 quota reflects a conservative quota recommendation based solely on Unit 132 due to the uncertainty of ram availability in Units 131 and 164. For the 2023 season, two ram tags are being recommended for the combined unit group. An aerial survey is scheduled for this unit group in the fall of 2023.

Reporting Biologist: Kirk **Supervisor:** Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **134, 251** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	101	5	5		160	107	8	6
2021-2022	112	9	6		150	100	4	4
2022-2023					150	96	5	4
Trend	stable	up	stable		stable	stable	up	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	4	6.3	100%		7.3	0	0%	0
2021	2	6	40%		13	0	0%	0
2022	2	4.5	67%		11	0	0%	0
Trend	stable	down	down		down			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2019					4			
2021					5			
2022					3			
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
3	100%	0%	100%	0%	100%	134, 251		3		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300

In 2011, a disease event caused a decline in lamb recruitment and affected adult survival. In recent years, higher lamb ratios have been observed, indicating a recovery of the population. Presumably, drought conditions have slowed this herd's rebound. Two new water development projects are scheduled to be built this summer in the Reveille range. This could help this herd expand south into unoccupied bighorn habitat. During the 2021 aerial survey, a lamb ratio of 41 lambs:100 ewes was classified. This ratio is higher than previous years and gives hope that this population will rebound. This hunt is difficult due to lower densities of bighorn sheep and large roadless areas. The Department received reports that snow conditions and bighorn distributions made this another difficult hunting season. With all this

Reporting Biologist: Burkett **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **161** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2018-2019	387	32	24		500	291	22	16
2021-2022	281	20	9		550	335	19	17
2022-2023	-	-	-		400	246	15	13
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2018	9	5.7	90%		4.7			
2021	16	5.8	94%		5	23	77%	
2022	11	5.4	65%		7.7	22	44%	
Trend	down	stable	down		up	stable	down	

Previous Quotas		Ewes Res	Ewes NR		Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2019					5	3	0	2
2021		30	3		8	7	1	2
2022		45	5		8	7	1	1
Trend		up	up		stable	stable	stable	down

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
12	45%	45%	90%	10%	100%	161	1	4	4	1	1
	Archery	10%				NR AR	1				

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags
224	22	9%		22		44%	45	5

Quota and Population Objective Rationale Population Objective: 400

Poor harvest success, lower average age of harvested rams, and an extended average total days hunted in Unit 161, warrant a reduction in the ram quota. Drought conditions have compounded the effects of the high densities of sheep on summer range. The overutilization of habitat has been observed in the form of hedging in shrubs and a reduction of grass availability. This high density of sheep has reduced adult survival rates and produced a lower population estimate. Ewe tags recommendations will remain consistent with the previous year's quota to inhibit herd growth.

Reporting Biologist: Burkett **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **163, 162** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	169	18	11		320	205	12	9
2021-2022	--	--	--		320	206	13	9
2022-2023	33	2	2		110	77	5	3
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	9	6.8	100%		5			
2021	8	6.1	100%		3.6			
2022	6	4.5	75%		7.3			
Trend	down	down	down		up			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2019					8		1	
2021				1	7		1	
2022				1	7		1	
Trend					stable		stable	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
1	90%	10%	90%	10%	100%	163, 162		1	0	0	0
	Archery	0%			0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 400

The 2022 aerial survey was surprisingly low. Bighorn were largely absent from historical habitat. Several days were spent on the ground looking for bighorn sheep. A collaring effort took place in November of 2022. Two rams and three ewes were collared and all came back ELISA positive for Mycoplasma ovipneumoniae, indicating they have been exposed to the bacterium. This is evidence that the cause for the disappearance of bighorn sheep is due to a disease spillover. The population estimate has been decreased and the Department recommends to reduce the quota to one.

Reporting Biologist: Burkett **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **173N** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	45	4	1		130	109	9	6
2021-2022	36	1	0		120	103	9	6
2022-2023	-	-	-		120	74	5	4
Trend	stable	down	down		stable	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	1	8	33%		8.33			
2021	2	5.5	50%		17.75			
2022	1	4	33%		6.3			
Trend	down	down	down		down			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2020					3		1	
2021					4			
2022					3			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
5	100%		100%	0%	20%	173N		1			
Management Ram Hunt					80%	173N MR		4			

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300

This year marks the inaugural hunt for the 173N management ram tag. The management hunt will be confined to the hunt area's boundaries while the 173N hunter may hunt anywhere within 173N. These new boundaries are made up of US Forest Service designated wilderness and roadless areas. Being confined to these areas will relieve harvest of immature rams in the Seyler Peak area. Success in this Unit has remained low. This will continue to be a difficult hunt. Surveys in this unit range in sample size due to rugged terrain with thick limber pine, single leaf pinyon, and juniper. These factors also add to the complexity of the hunt. The Department recommends a slight increase in tags due to the chronic low success rates.

Reporting Biologist: Burkett **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **173S** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2018-2019	43	2	3		80	53	2	3
2020-2021	51	6	6		80	47	2	2
2022-2023	52	8	7		60	39	2	2
Trend	stable	up	up		down	down	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	2	5.5	100%		11.5			
2021	1	6	50%		4.5			
2022	2	8	100%		5.8			
Trend	stable	up	up		up			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2020					2			
2021					2			
2022					2			
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
2	100%	0%	100%	0%	100%	173S		2		0	
	Archery										

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 200

Unit 173S has been separated from the 173N model. With the models separated, the new population estimates are used this year in the quota recommendation form. This year's lamb ratio indicates that disease could still be cycling through the herd. A positive ELISA test from a capture and collaring project in 2022 confirmed that portions of the herd have been exposed to *Mycoplasma ovipneumoniae* . Mature rams continue to be classified on survey. The Department recommends that the quota remain the same at 2 tags.

Reporting Biologist: Burkett **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **181** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	408	51	48		609	353	27	20
2020-2021	440	59	61		625	371	32	20
2022-2023	138	9	16		515	324	38	15
Trend	down	down	down		down	down	up	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	21	6.4	100%		6.3			
2020	18	7.8	0.90		4.6			
2022	24	6.8	92%		4.8			
Trend	up	down	up		down			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2017	16				14		2	
2020	20				18		2	
2022	20				18		2	
Trend								

Ram Quota Recommendations

Total Ram Quota	East %	West %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident East	Resident West	Nonresident East	Nonresident West
22	60%	40%	93%	7%	100%	181		12	8	1	1
	Archery	0%			0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

Bighorn sheep ram quota of 22. 50% of 6 year old plus is 38. With 8% total rams of 15. Direct 60% of total quota into 181 East involving NAS jurisdiction. Navy restrictions and congestion can be an issue in the first two weeks of the hunt. So raised tag quota slightly to reduce ram ratio without swamping the DOD land with hunters and the required EOD training. Have had heavy ram harvest for quite some time now.

Reporting Biologist: Jason Salisbury **Supervisor:** 1200

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **182** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	328	22	34		612	352	29	21
2020-2021	92	10	8		453	273	18	14
2022-2023					421	268	24	12
Trend	down	down	down		down	down	up	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	19	5.8	10000%		5.09			
2020	18	6	0.94		8.89			
2022	16	5.7	75%		4.63			
Trend	down	up	down		up			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2017					12		2	
2020					18		2	
2022				2	18		2	
Trend								

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
9	100%	0%	90%	10%	100%	182		8		1	
	Archery	0%			0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale

Population Objective:

Re

50% of total rams in model is 24 rams with 8% of total rams =12. Increased harvest of mature rams following the die-off coupled with increased lion mortalitity. Has resulted in a low overall ram segement in the population. Hunters had a tough time turning up mature rams in the high 150's during the hunt. Reduce total ram quota to 9 this year in line with lowered mature ram availability.

Reporting Biologist: Salisbury **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **183** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	294	32	29		396	234	12	13
2020-2021	185	22	15		257	158	17	8
2022-2023	46	3	4		265	162	20	8
Trend	down	down	down		down	down	up	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	9	6.6	90%		4			
2020	5	7.4	100.00		3.2			
2022	8	7	100%		2.75			
Trend	up	down	stable		down			

		Ewes		Ram Resident			Ram Nonresident	
Previous Quotas		Res	NR	Archery	Early	Late	Early	Late
2017					9		2	
2020					6		1	
2022					7		1	
Trend					up		stable	

Ram Quota Recommendations

							Resident			Nonresident	
Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Archery	Early	Late	Early	Late
9	100%	0%	90%	10%	100%	183		8		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

50% of total rams in model is = 20 rams with 8% of total rams= 8. Raise the total ram quota by 1. 2021 was the first year we saw increases in lamb survival following the die off that occurred three years previously. Hunters found mature rams but the B&C quality was lacking. Lots of rams observed in the 140-150 range. Can justify a small increase in ram harvest compared to last year.

Reporting Biologist: Salisbury **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **184** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	126	9	7		182	111	7	6
2020-2021	127	13	16		161	100	5	6
2022-2023	78	4	5		126	84	4	3
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	4	5.6	100%		3.75			
2020	5	5.4	100.00		6.66			
2022	5	7	100%		1.8			
Trend	up	up	down		down			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2017					4		1	
2020					4		1	
2022					3		1	
Trend								

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
6	100%	0%	85%	15%	100%	184		5		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

Recommend the 50% of 6 six year old rams for total harvest. Which is equal to 4 tags total. five resident tags with one non resident tag.

Reporting Biologist: Salisbury **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **202** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	121	10	12		188	115	8	6
2020-2021	65	9	6		150	109	8	4
2022-2023					138	97	5	4
Trend	up	up	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	5	6.2	83%		2			
2020	5	5.4	100.00		1.8			
2022	3	7	100%		4.33			
Trend	down	up	stable		up			

		Ewes		Ram Resident			Ram Nonresident	
Previous Quotas		Res	NR	Archery	Early	Late	Early	Late
2017					6			
2020					5			
2022				1	5			
Trend				stable	stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
3	100%	0%	100%	0%	100%	202		3		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

50% 6 year old rams = 5. 8% of total rams = 4 rams. Recommend a quota of 3 ram tags. Increased highway road mortalities coupled with increased lion predation on the ram segments.

Reporting Biologist: Salisbury **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **204** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	21	2	1		65	37	4	2
2020-2021	30	2	2		59	37	4	2
2022-2023					44	29	2	1
Trend	stable	stable	stable		down	down	down	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	0							
2020	2	4.5	100.00		2			
2022	1	7	100%		1			
Trend	stable	stable	stable		stable			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2017								
2020					2			
2022				1	2			
Trend				stable	stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
1	100%	0%	100%	0%	100%	204		1		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

Recommend 1 tag total for ram harvest.

Reporting Biologist: Salisbury **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **205/207** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	364	31	46		626	361	25	21
2020-2021	359	48	49		726	436	24	23
2022-2023	283	32	40		326	203	21	10
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	13	6.4	86%		5.26			
2020	10	6.8	100.00		4.6			
2022	6	6.9	66%		5.14			
Trend	down	up	down		up			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2017					11		2	
2020					10		1	
2022					8		1	
Trend					down		stable	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
10	100%	0%	90%	10%	70%	205		6		1	
	Archery				30%	207	0	3	0	0	0

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

Recommend 8% of total rams for harvest =10 tags split between 205 and 207. We had three unsuccessfuls in the harvest data. Recommend continued low ram harvest in unit to account for any unkown disease events that still maybe occurring.

Reporting Biologist: Salisbury **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **206,208** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	144	15	14		264	178	6	3
2020-2021	129	12	12		272	179	5	7
2022-2023	98	7	6		205	145	4	5
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	5	5	83%		6.16			
2020	1	7	0.25		2			
2022	3	6.75	75%		4.5			
Trend	down	stable	up		up			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2017								
2020								
2022								
Trend								

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
4	100%	0%	100%	0%	100%	206,208		4		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

50% of 6 year old plus in model = 4 rams tags. One ram was harvested out of the main Excelsiors all other harvest came out of Candalaria Hills, and Garfield Hills. Continue low ram harvest especially if most rams harvest comes out of the newly established sheep populations that include the Candalaria Hills and the Garfield Hills.

Reporting Biologist: Salisbury **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **211** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	315	36	19		450	274	18	13
2021-2022	241	25	19		400	265	16	12
2022-2023	-	-	-		360	239	16	10
Trend	down	down	stable		down	down	stable	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	12	6.8	92%		5.2			
2021	9	6.9	69%		4.2			
2022	9	7	75%		6.6			
Trend	stable	stable	up		up			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2019					13		1	
2021				1	10		2	
2022				1	10		1	
Trend					stable		up	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
10	90%	0%	90%	10%	100%	211	1	8		1	
	Archery	10%			0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 500

The average age of harvested rams remains high in Unit 211. A new strain of *Mycoplasma ovipnuemoniae* has been detected in adjacent Units. A disease spillover is expected to have occurred. Ground surveys observed few lambs in ewe groups. The average days hunted was high with a continued low ram hunter success. The Department recommends a reduction in the total ram quota to 10.

Reporting Biologist: Burkett **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **212** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	230	47	16		400	230	23	14
2021-2022	249	45	33		350	198	30	12
2022-2023	131	18	31		250	150	21	8
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	13	7.8	93%		2.2			
2021	17	7.8	94%		3.3			
2022	16	7.2	84%		5.7			
Trend	down	stable	down		up			

		Ewes		Ram Resident			Ram Nonresident	
Previous Quotas		Res	NR	Archery	Early	Late	Early	Late
2019					6	6	1	1
2021				1	7	7	1	2
2022				2	9	7	1	1
Trend				up	up	stable	stable	down

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
8	90%		90%	10%	100%	212	1	6		1	
	Archery	10%			0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 400

The 2022 aerial survey yielded another year of low lamb ratios. Reduced lamb ratios are concerning for the future of this herd, but many mature rams are still observed on survey. The cause of the lower lamb ratios can be attributed to drought and disease. The average age for harvested rams is still high. Although, ram hunter success dropped and average days hunted increased. With all this taken into consideration, the Department recommends a reduction in total ram tags to 8.

Reporting Biologist: Burkett **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **213** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2018-2019	297	54	19		400	202	22	15
2021-2022	--	--	--		330	175	23	12
2022-2023	95	12	12		120	69	11	4
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2018	14	6.1	100%		2.2	28	68%	
2021	16	6.75	67%		4.5	10	67%	
2022	10	5.6	63%		7.4	-	-	
Trend	down	stable	stable		up			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2018		40	4		7	6	2	1
2021		15	1	2	7	6	2	2
2022		-	-	2	6	6	1	1
Trend				stable	down	stable	down	down

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
4	80%	0%	80%	20%	100%	213	1	2		1	
	Archery	20%			0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 400

Drought and disease have caused this herd to decline rapidly. Aerial surveys in 2022 revealed a low sample size and low ram ratio. The average age of harvested rams declined to 5.6. Average days hunted increased to 7.4 and hunter success was poor at 67%. These metrics all indicate a decline in the population. The Department recommends a reduced total ram quota of 4.

Reporting Biologist: Burkett **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **221, 223, 241** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	201	18	15		240	144	15	8
2021-2022	--	--	--		220	137	12	7
2022-2023	194	7	13		210	133	11	7
Trend	down	down	down		stable	stable	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	6	7.3	100%		4.2			
2021	6	7.3	71%		6.75			
2022	6	7	100%		6			
Trend	stable	stable	up		stable			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020					7			
2021					8			
2022					6			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
6	100%	0%	100%	0%	40%	221,222		2			
	Archery				60%	241		4			

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300

Severe drought conditions and continuing effects of *Mycoplasma ovipnumoniae* infection have reduced lamb survival and recruitment into the adult population leading to a slightly decreasing population. Hunt success and average days hunted has remained stable the last two years. Due to harvest metrics, and available mature rams the Department recommends a similar tag quota to last year.

Reporting Biologist: Shanks **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **243** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	158	14	11		180	111	8	5
2021-2022	168	13	9		170	108	9	5
2022-2023	-	-	-		180	126	8	4
Trend	stable	stable	down		stable	up	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	4	5.8	100%		5.75			
2021	4	6.8	60%		5.5			
2022	5	7.6	100%		6.6			
Trend	up	up	up		up			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2020					5			
2021					5			
2022					5			
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
5	100%	0%	100%	0%	100%	243		5		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300

This bighorn population has undergone a slight decrease over the past 4 years, yet a record survey of 168 sheep was conducted in 2021. No formal surveys were conducted in 2022. The decrease in population size is likely due to low lamb survival caused by severe drought conditions experienced the past 2 years. The mature ram segment of this herd is still strong as supported by survey data and hunt metrics. Hunter success has fluctuated over the past 3 years due to limited road access and difficulty in accessing the unit, but average age of harvested rams remains high. The Department recommends no change in quota.

Reporting Biologist: Shanks **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **244** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	94	8	10		140	87	4	4
2021-2022	--	--	--		110	70	4	3
2022-2023	67	4	7		105	65	5	3
Trend	down	down	down		stable	stable	up	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	5	8.8	100%		6	--	--	--
2021	4	7.3	100%		9.7	--	--	--
2022	3	9.7	100%		6	--	--	--
Trend	down	up	stable		down	--	--	--

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020					5			
2021					3		1	
2022					2		1	
Trend					down		stable	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
3	100%	0%	100%	0%	100%	244		3		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 225

This population has been relatively stable with a slight decline in recent years due in part to drought. Movement between the Arrow Range and adjacent ranges is suspected, especially in years with poor forage conditions. The 2022 fall survey indicated sufficient mature rams in this unit, therefore we recommend no change in total quota for 2023.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **245,133** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	113	8	5		140	84	5	4
2021-2022	--	--	--		140	84	4	4
2022-2023	85	2	7		130	79	4	4
Trend	down	down	up		stable	stable	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	4	6	100%		2			
2021	4	7	100%		7			
2022	4	7	100%		4.3			
Trend	stable	stable	stable		down			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020					4			
2021					4			
2022					4			
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
3	100%	0%	100%	0%	100%	245,133		3		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 200

This population is slightly decreasing due to lower lamb recruitment in recent years. Over the past 3 years, hunter success has remained 100%, the average number of days hunted has remained low, and the average age of harvested rams has increased. Although average age has remained strong the quality of rams and the lack of replacement of ram cohorts in the population due to poor lamb recruitment is causing the Department to recommend a slight tag decrease.

Reporting Biologist: Shanks **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **252** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	87	6	10		120	93	5	2
2021-2022	--	--	--		100	77	5	2
2022-2023	44	3	4		60	50	3	1
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	4	7.8	100%		3.8			
2021	2	8.5	100%		11			
2022	2	7.5	100%		9.5			
Trend	stable	stable	stable		down			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020					4			
2021					3			
2022					2			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
1	100%	0%	100%	0%	100%	252		1		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300

The Stonewall bighorn population has experienced low lamb ratios for the past eight years. This is attributed to *Mycoplasma ovipneumoniae* , causing high lamb mortality, and resulting in a severe population decline. Mature rams are still present in this population, but a drop of 1 tag is warranted because of a drop in the 50% of 6+ year old ram segment of the herd.

Reporting Biologist: Burkett **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **253** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2018-2019	148	24	29		180	100	14	6
2021-2022	117	19	19		130	80	16	4
2022-2023	105	14	13		120	77	16	3
Trend	down	down	down		stable	stable	stable	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2018	6	8.5	86%		2.3	11		
2021	8	7.8	100%		2.9	-		
2022	5	8.6	83%		6.7	-		
Trend	down	stable	down		up			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2018					7			
2021					6		1	
2022					5		1	
Trend					down		stable	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
5	100%	0%	80%	20%	100%	253		4		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300

Estimated lamb recruitment in this population has been depressed since 2015, the same year two harvested rams tested positive for *M. ovi*. In an effort to monitor disease prevalence and connectivity with adjacent mountain ranges, we collared and tested 15 bighorn sheep (9 ewes, 6 rams) in this herd in November 2022. Above-average precipitation in the autumn and winter provided a temporary reprieve from prolonged drought, though herd-level effects may not be seen. The demographics of this population skew to older age classes, and we recommend a reduction in quota to 5 (4 resident and 1 non-resident).

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **254** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	158	14	10		170	113	7	4
2021-2022	--	--	--		120	85	5	3
2022-2023	114	13	10		113	78	5	3
Trend	down	down	stable		stable	stable	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	3	8	100%		4.7	--	--	--
2021	4	7.5	80%		2.3	--	--	--
2022	5	7.6	100%		5.6	--	--	--
Trend	up	stable	up		up	--	--	--

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020					3			
2021					5			
2022					3			
Trend					up			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
3	100%	0%	100%	0%	100%	254		3		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 225

The Falcon guzzler project was completed in January 2023, and the Department conducted an emergency water haul to the Eagle Basin guzzler during September surveys despite good precipitation. It is suspected that sheep in this population, especially rams, move seasonally between the Specter Range and the NNSS to the north and/or Last Chance Range to the south. In November, six bighorn sheep were collared (3 ewes, 3 rams) as part of an effort to monitor movement and connectivity between these adjacent ranges. One ewe tested positive for M. ovi. Two specialty tagholders harvested from this unit in 2022 (Dream and Heritage) in addition to the three standard tags with a 100% success rate. Due to known disease prevalence, low lamb ratios for the past three years, and high harvest in 2022,

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert Bighorn** Unit Group: **261** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	117	7	16		140	89	7	4
2021-2022	--	--	--		120	73	5	3
2022-2023	62	3	7		110	69	5	3
Trend	down	down	down		down	down	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	4	9.5	100%		8			
2021	5	6.2	100%		6.8			
2022	1	8	33%		12.5			
Trend	down	up	down		up			

Previous Quotas	Ewes		Ram Resident			Ram Nonresident	
	Res	NR	Archery	Early	Late	Early	Late
2020				3			
2021				5			
2022				3			
Trend				down			

Ram Quota Recommendations							Resident			Nonresident	
Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Archery	Early	Late	Early	Late
2	100%	0%	100%	0%	100%	261		2		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 225

Due to extreme drought and poor range conditions, model survival rates for adults and lambs were adjusted down in 2020 through 2022. Historical fall surveys indicate lamb ratios between 30 and 50 lambs:100 ewes, but population growth remains negative in models. Migration is possible to/from adjacent ranges (Nopah, Resting Spring, Funeral). Due to low hunter success, increased hunter effort, and poor survey results, the Department Recommends a reduced quota of 2 tags in 2023.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **262** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2018-2019	152	12	14		150	95	10	4
2021-2022	83	2	9		140	88	6	5
2022-2023	37	1	5		120	74	5	4
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2018	4	7.3	80%		4.4			
2021	2	7	40%		7.7			
2022	3	8	100%		3.7			
Trend	up	stable	up		down			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2018					4		1	
2021					5			
2022					3			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
3	100%	0%	100%	0%	100%	262		3		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 600

Weather conditions prevented us from surveying the middle and upper Spring Mountains/La Madre area of this unit in 2022. We recommend an increased survey effort in 2023 for a comprehensive assessment of distribution, ram age class, and lamb productivity throughout the unit. Ram quality and hunter effort indicate there are sufficient mature rams, and the Department recommends no change in quota for 2023.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **263** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2018-2019	226	11	28		250	157	22	7
2021-2022	165	8	19		200	114	11	6
2022-2023	211	14	15		230	120	13	6
Trend	up	up	down		up	stable	up	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2018	11	8.7	100%		2.5			
2021	8	8.9	100%		3.4			
2022	4	8	80%		7.6			
Trend	down	stable	down		up			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2018					8		1	
2021					7		1	
2022					4		1	
Trend					down		stable	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
6	100%	0%	85%	15%	100%	263		5		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 400

This unit was surveyed in 2022 and the most recent survey prior was conducted in 2018. Estimates for lamb recruitment have been poor for the past ten years based on survey data, range conditions, and prolonged drought. However, based on the observed age classes of the most recent survey, we believe recruitment may have been higher than estimated between the 2018 and 2022 survey years. Younger age classes may have been underestimated, however mature ram estimates remain the same. The Department recommends an increase in quota to 6 for 2023.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **264-266** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	39	0	0		140	86	11	4
2021-2022	--	--	--		90	54	5	2
2022-2023	--	--	--		70	44	4	2
Trend					down	down	down	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	2	8	100%		1.5			
2021	2	6.5	100%		3.5			
2022	2	8	100%		5			
Trend	stable	up	stable		up			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2019					1			
2021					2			
2022					2			
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
2	100%	0%	100%	0%	100%	264-266		2		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 600

Units 264-266 were combined as a unit group in 2021. Bighorn sheep densities remain low in the Newberry and Eldorado Mountains due to the impacts of disease and prolonged drought. Hunter success has been good with a small increase in hunter effort. The Department recommends no change in quota for 2023.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **267** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	251	14	23		300	200	12	8
2021-2022	296	13	9		320	190	12	8
2022-2023	305	31	16		360	210	12	8
Trend	up	up	up		up	up	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	10	7.1	100%		2.9			
2021	9	7.1	90%		4.2			
2022	8	7.2	100%		7.6			
Trend	down	stable	stable		up			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2019					9	--	1	--
2021					9		1	--
2022					8		1	
Trend					down		stable	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
10	90%	0%	90%	10%	100%	267	1	8		1	
	Archery	10%			0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 350

This year saw the second-highest number of bighorn sheep classified on survey in this unit, though the number of lambs observed was very low. Despite prolonged drought conditions, this population appears to be growing. This population is modeled together with Unit 268 due to high connectivity between ranges. Bighorn sheep in these units do not have a documented history of *M. ovi* and remain some of the only *M. ovi*-free extant herds in the west. None of the four one-horn ram tags issued for combined units 267 and 268 were filled in 267. A new archery hunt was implemented for 2023 with a single tag. The Department recommends an increase in quota for a total of ten tags (8 resident, 1 non-resident, and 1 archery).

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **268** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	480	31	54		650	310	37	25
2021-2022	380	34	60		550	245	48	23
2022-2023	499	70	76		520	240	38	15
Trend	up	up	up		stable	stable	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	31	7.6	97%		5.8	50	80%	
2021	40	7.3	98%		4.8	46	62%	
2022	34	7.3	95%		5.6	19	52%	28
Trend	down	stable	stable		stable	down	down	

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020		72	8		28		4	--
2021		76	9		37		7	--
2022		36	4		33		5	--
Trend		down	down		down		down	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
38	100%	0%	87%	13%	100%	268		33		5	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags
219	21	9%	0	21		52%	36	4

Quota and Population Objective Rationale Population Objective: 500

There were more bighorn sheep observed and in larger groups in the North Muddy Mountains, California Ridge, and Weisser Ridge this year than in the previous ten years, likely due to monsoonal precipitation and green-up during autumn surveys. A new hardline water development was installed in Valley of Fire State Park, and a weather station was installed at the Five Ram guzzler to monitor local conditions. The ewe quota was reduced in 2022 due to the transfer of thirty-two bighorn sheep (28 ewes, 4 rams) to Utah to use as a clean source herd. Future transfers to Utah are being considered over the next several years, though not in 2023. Four one-horn ram tags were issued for combined Units 267 and 268, and three one-horn rams were harvested in 268. The Department recommends a quota of 38 total ram tags and 40 total ewe tags.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **271,242** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	144	15	12		300	188	14	9
2021-2022	77	9	9		280	172	13	8
2022-2023	-	-	-		230	156	12	7
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	9	8	88%		6.4			
2021	8	7.5	77%		8.6			
2022	5	8.4	71%		10.1			
Trend	down	stable	stable		up			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020					9		1	
2021					8		1	
2022					6		1	
Trend					down		stable	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
5	100%	0%	90%	10%	100%	271,242		4		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 400

This bighorn population has declined in recent years due to potential disease exposure, drought and poor lamb recruitment. The most recent aerial survey in 2021 was very low, however there was no evidence of an all age-class die off. Recent aerial survey data and poor lamb recruitment were indications that we were overestimating this population leading the Department to model this population down. Harvest metrics including success and average days hunted are also trending in down and up respectively. The Department is recommending a slight tag decrease due to population trend and harvest metrics.

Reporting Biologist: Shanks **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **272** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	55	7	5		90	58	6	3
2021-2022	--	--	--		70	45	3	2
2022-2023	--	--	--		60	37	3	2
Trend					down	down	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2019	0	--	0%		7.0			
2021	1	8	100%		1			
2022	1	8	100%		11			
Trend	stable	stable	stable		up			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020					1			
2021					1			
2022					1			
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
1	100%	0%	100%	0%	100%	272		1		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 225

This unit was not surveyed in 2022. Unit 272 is remote, vast and sparsely populated by bighorn sheep. Hunter success over the last 10 years (2012 - 2022) was 59%. The Department recommends no change in ram quota relative to last year.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **280** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	100	8	8		140	91	6	4
2021-2022	--	--	--		100	62	5	3
2022-2023	147	16	13		150	93	9	5
Trend	up	up	up		up	up	up	up

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	4	9	80%		3.6			
2021	3	8.3	60%		6.8			
2022	3	9.7	100%		4.3			
Trend	stable	stable	up		down			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2020					5			
2021					5			
2022					3			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
5	100%	0%	100%	0%	100%	280		5		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 225

This unit falls within the National Test and Training Range (NTTR) and Desert National Wildlife Range, which has access and activity restrictions enforced by the US Air Force (USAF) and US Fish and Wildlife Service (FWS). Survey results were very good this year with a high observed lamb ratio and good range conditions. The Department recommends an increase in quota to 5 tags this year due to favorable estimates and harvest metrics.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **281** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	109	7	20		210	126	10	7
2021-2022	72	4	6		110	67	6	4
2022-2023	93	10	8		110	66	6	4
Trend	up	up	up		stable	stable	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	6	8	100%		3.8			
2021	6	6.3	75%		4.75			
2022	1	9	25%		6			
Trend	down	up	down		up			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020					6			
2021					8			
2022					4			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
4	100%	0%	100%	0%	100%	281		4		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300

This unit falls within the National Test and Training Range (NTTR) and Desert National Wildlife Range and has access and activity restrictions enforced by the US Air Force (USAF) and US Fish and Wildlife Service (FWS). Only one of four tagholders were successful in 2022 (one tag was returned) while six of the eight tagholders were successful in 2021 with hunter effort increasing both years. Range conditions were good during autumn surveys with noticeable greenup from monsoons, and recent winter precipitation should maintain favorable forage conditions. The Department recommends no change in quota for 2023.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **282** Year **2022**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	97	8	12		80	97	7	5
2021-2022	52	3	2		60	35	5	2
2022-2023	26	2	0		50	30	4	2
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	3	10	75%		7.3			
2021	2	6	66%		8.3			
2022	0	--	0%		0			
Trend	down	down	down		up			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2020					4			
2021					5			
2022					1			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
0	100%	0%	100%	0%	100%	282		0		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2021% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 175

This unit falls within the National Test and Training Range (NTTR) and Desert National Wildlife Range and has access and activity restrictions enforced by the US Air Force (USAF) and US Fish and Wildlife Service (FWS). Fewer sheep than expected were classified in the Desert Range and some coverage of the East Desert water systems. There were no mature rams observed. A collaring project set for 2022 in collaboration with the USAF and FWS was halted due to low numbers. The population in this unit may have temporarily dispersed into adjacent ranges due to poor range conditions caused by extreme drought over several years. The single tag for this unit was returned before the hunt and was not reissued. This hunt has been eliminated in this unit until populations rebound, and the Department will conduct thorough surveys of this unit in the coming years.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **283-284** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	77	6	6		220	134	11	7
2021-2022	88	6	9		120	73	7	3
2022-2023	-	-	-		90	58	5	4
Trend	up	stable	up		down	down	down	up

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	4	5.3	80%		11			
2021	4	6.5	80%		9.4			
2022	4	7.25	100%		9.75			
Trend	stable	up	up		stable			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020					4		1	
2021					4		1	
2022					3		1	
Trend					down		stable	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
4	100%	0%	80%	20%	100%	283-284		3		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 800

Aerial surveys were not conducted in this unit in 2022. This population has been impacted by disease issues and has been slow to recover, especially in recent years due to extreme drought. Hunter success was good, although effort remains high. The Department recommends no change in quota for 2023.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **Desert** Unit Group: **286** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	148	11	8		170	99	5	5
2021-2022	55	9	3		100	59	6	3
2022-2023	34	2	2		90	52	6	3
Trend	down	down	down		down	stable	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	5	6.6	100%		7.0			
2021	1	6	100%		5			
2022	1	7	50%		1			
Trend	stable	stable	down		down			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2020					5			
2021					5			
2022					1			
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
2	100%	0%	100%	0%	100%	286		2		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 225

In 2021, survey results prompted the Department to inform the five tagholders for this unit that observed populations were much lower than expected, and one tagholder harvested. The quota for the following year was lowered to 2. Survey observations were slightly lower this year though population trends remain similar, therefore the Department recommends no change to the quota this year.

Reporting Biologist: Wood **Supervisor:** Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: **California** Unit Group: **012, 014** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	167	11	10		230	156	5	7
2021-2022	61	4	1		175	116	5	5
2022-2023	58	9	6		135	89	5	3
Trend	down	stable	down		down	down	stable	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	6	6.33	86%		13	n/a	n/a	n/a
2021	4	6.5	67%		6.75	n/a	n/a	n/a
2022	3	6.33	75%		8.33	n/a	n/a	n/a
Trend	down	stable	stable		stable			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020		0	0	0	6	0	1	0
2021		0	0	0	5	0	1	0
2022		0	0	0	3	0	1	0
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
1	100%	0%	100%	0%	100%	012, 014		1		0	
	Archery	0%			0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300

This year, hunt units 012 and 014 were combined due to collar data showing sheep movement between the two hunt units. As a result, the data in the tables above is a combination of the past three years of sheep metrics from unit 012 and 014. The sheep in 012 and 014 have experienced population decline as a result of drought, predation, low quality forage, and feral horses exceeding appropriate management levels. With the contraction in population size and this being the first year the hunt units are combined, NDOW recommends being conservative on the tag quota for this unit grouping.

Reporting Biologist: Jon Ewanyk **Supervisor:** Cooper Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **California** Unit Group: **022** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	53	7	4		95	59	3	3
2021-2022	58	6	6		80	58	3	3
2022-2023	31	11	7		80	53	4	2
Trend	down	up	up		stable	stable	up	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	2	7.5	67%		11.5	n/a	n/a	n/a
2021	2	7.5	100%		9	n/a	n/a	n/a
2022	1	8	50%		8	n/a	n/a	n/a
Trend	down	stable	down		down			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020		0	0	0	3	0	0	0
2021		0	0	0	2	0	0	0
2022		0	0	0	2	0	0	0
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
2	100%	0%	100%	0%	100%	022		2		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 110

The sheep population in 022 is stable, which has been reflected in the past few years of hunter success, and age class of harvested rams. The sheep hunt in this unit grouping is limited by access issues in the northern end of the Virginia Mountains, where the sheep spend most of their time during the season. Due to hunters having access issues, NDOW recommends keeping the quota at 2 tags for this unit grouping.

Reporting Biologist: Jon Ewanyk **Supervisor:** Cooper Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **California** Unit Group: **031** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	93	7	9		137	74	9	5
2020-2021	70	11	5		150	83	6	5
2022-2023	75	9	3		146	84	6	5
Trend	up	down	down					

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	4	7.5	100%		7.5	0		
2020	5	7.4	83%		7	0		8
2022	6	5.7	100%		6	0		
Trend	stable	down	stable					

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2017					4			
2020					6			
2022					6			
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
5	100%	0%	100%	0%	100%	031		5		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300

The population in the Double H Mountains continues to do well and has not been affected by the disease event that took place in the Montana Mountains. Aerial surveys have indicated that there is a good age representation with our ram segment that should sustain this herd in the coming years. This year saw a slight drop with the older age class rams due to previouse year's harvest therefore resulting in a tag drop in this unit.This year marked one of the lowest lamb rates which may be due to the lower survey number. This herd has remained relatively constant the last couple of years with slight increases.

Reporting Biologist: Partee **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **California** Unit Group: **033, 032** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2019-2020	66	9	4		120	74	4	4
2021-2022	36	2	2		115	70	4	3
2022-2023	72	9	4		115	63	4	3
Trend	up	up	up		stable	stable	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	1	6	33%		11	n/a	n/a	n/a
2021	1	2	33%		13.3	n/a	n/a	n/a
2022	1	5	50%		8.5	n/a	n/a	n/a
Trend	stable	stable	up		down			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020		0	0	0	3	0	0	0
2021		0	0	0	3	0	0	0
2022		0	0	0	2	0	0	0
Trend					down			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
2	100%	0%	100%	0%	100%	033, 032		2		0	
	Archery	0%			0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 160

The sheep population on the Sheldon seems to be stable despite drought and predation issues. Lamb ratios on the Sheldon improved this year, and the number of sheep detected on survey was double what was observed the year prior. Given that hunters have struggled to find mature rams during the past few hunt seasons, NDOW recommends being conservative with the number of tags in this unit and keeping the quota at 2.

Reporting Biologist: Jon Ewanyk **Supervisor:** Cooper Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **California** Unit Group: **032** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	115	19	16		358	207	14	12
2020-2021	76	11	4		236	136	12	8
2022-2023	148	11	5		253	150	18	8
Trend	up	stable	stable					

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	15	6.6	100%		5.7	0		
2020	10	6	84.00		15	0		10
2022	10	6	100%		9	0		
Trend	stable	stable	stable					

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2017					12		2	
2020					11		1	
2022					9		1	
Trend					up			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
6	100%	0%	90%	10%	100%	032		5		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 400

Modeled age classes remain strong across the board with this herd, and ram harvest should be expected to good this year. We are seeing a slight decline in the quality of rams harvested; however, the age class of harvested rams remain strong. During survey the number of animals surveyed was much higher than the five year average. Fewer rams were surveyed in the older age class leading to a slight drop in quotas this year.

Reporting Biologist: Partee **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **California** Unit Group: **034** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	166	2	4		208	127	13	7
2020-2021	90	6	1		238	140	11	8
2022-2023	57	2	1		237	143	10	7
Trend	down	down	stable					

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	8	8	89%		10			
2020	7	8	64%		11			
2022	9	6	100%		8			
Trend	stable	stable	up					

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2017					8		1	
2020					10		1	
2022					8		1	
Trend					up			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
6	100%	0%	90%	10%	100%	034		5		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 300+

During survey the animals classified was much lower than the five-year average. This popultion may be slightly over estimated which should be corrected in the coming years. We are continuing to show good age distribution for both males and females with a slight drop in the older age class. Harvest over the last couple of years have shown a good age structure with the quality of the rams dipping slightly. Due to the fewer older age class rams seen during survey there will be a slight reduction in tags this year.

Reporting Biologist: Partee **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **California** Unit Group: **035** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	88	7	0		203	121	6	7
2020-2021	106	8	3		239	141	9	8
2022-2023	165	23	9		260	154	11	8
Trend	up	up	up					

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	4	6.75	100%		6.75			
2020	9	8	82%		4			
2022	10	7	100%		26			
Trend	up	stable	stable					

		Ewes		Ram Resident			Ram Nonresident	
Previous Quotas		Res	NR	Archery	Early	Late	Early	Late
2017					3		1	
2020					10		1	
2022					8		1	
Trend					up			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
7	100%	0%	90%	10%	100%	035		6		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 400

This unit continues to do extremely well over the last few years. There has been a substantial increase in the number of animals surveyed the last couple of years which continues to increase. Animals are starting to distribute themselves in areas that we have not seen. Ram ratios are right in line of what we saw during the last survey with the lamb ratio increasing slightly. During survey we saw a strong age class of rams in the population which will benefit this unit for the next few years.

Reporting Biologist: Partee **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **California** Unit Group: **051** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	143	14	7		170	112	6	5
2020-2021	134	21	6		125	78	9	5
2022-2023	105	7	3		95	60	4	3
Trend	down	down	down		down	down	down	down

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	5	6.8	100%		14.2			
2020	2	8	67%		5			
2022	2	7	100%		10			
Trend	down	stable	stable		stable			

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2017					4			
2020					3			
2022					2			
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
2	100%	0%	100%	0%	100%	051		2		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective: 400

Unit 051 continues to struggle with disease issues resulting in survey numbers to fluctuate. This year had a slightly higher number of sheep classified during survey with an increase in lamb production. Ram ratios in this unit are comparable to what we saw last year during survey. This year is thesecond full year that we started a test and remove project in the Santa Rosa Range to hopefully target those animals that are actively shedding the bacteria. This project will most likely take place every year for the next several years in hopes of removing or slowing the spread of M. Ovi so that this population may eventually increase. With the continued work in the Santa Rosas, tag number should remain relatively conservative.

Reporting Biologist: Partee **Supervisor:** Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: **California** Unit Group: **068** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	101	4	1		150	69	10	6
2021-2022	115	20	13		150	75	8	6
2022-2023	0	0	0		180	84	11	7
Trend					up	up	up	up

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020	12	7.2	100%		5.25	1	100%	14
2021	7	7.8	100%		10	0	0%	0
2022	7	6.7	100%		3.7	0	0%	0
Trend	stable	down	stable		down	down	down	stable

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
2020		1			8		1	
2021		0			5		1	
2022		0			5		1	
Trend		stable			stable		stable	

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
6	100%	0%	90%	10%	100%	068		5		1	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

In recent years, unit 068 has become attractive to those seeking to harvest large rams and to specialty tag holders. The recommended 2023 quota is slightly conservative to account for the specialty tags that have gone into this unit in the past several years, and those that will likely go in this year. This year's tag quota is based on the harvest guideline of 8% of Total rams when including the expected specialty tag interest.

Reporting Biologist: Hale **Supervisor:** Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: **Rocky Mountain** Unit Group: **102** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2020-2021	32	5	2		50			
2021-2022	39	4	3		60	35	3	2
2022-2023	36	3	1		65	35	3	2
Trend					up			

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2020								
2021								
2022	1	9	100%		2			
Trend	up							

Previous Quotas		Ewes		Ram Resident			Ram Nonresident	
		Res	NR	Archery	Early	Late	Early	Late
2020								
2021								
2022					1			
Trend					up			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
1	100%	0%	100%	0%	100%	102		1		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

After 8 years of strong recruitment (>50 lambs:100 ewes) this herd is finally showing meaningful growth. There is a strong age distribution in the ram segment that should allow for continued limited quotas. There were 17 rams classified on 2021-2022 survey, with several known/identifiable rams not being observed. The 2022-2023 survey was less successful locating rams, but conditions were very difficult.

Reporting Biologist: Roberts **Supervisor:** Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: **Rocky Mountain** Unit Group: **115** Year **2023**

Survey and Model Results

Year	Survey Total	Survey 4-5 yr old Rams	Survey 6+ yr old Rams		Pop Estimate	1+ Ewes Population	50% 6+ yr old Rams	8% of 1+ Rams
2017-2018	20	1	0		40	22	2	1
2020-2021	29	3	3		60	34	3	2
2022-2023	8	0	0		70	39	3	2
Trend	down	down	down		up	up	stable	stable

Hunt Results and Translocation Removal

Year	Rams Harvested	Average Age Harvested Rams	% Ram Hunter Success		Avg Days Hunted	Ewes Harvested	% Ewe Hunter Success	Ewes Nonlethal Removal
2017	1	5	100%		7			
2020	2	3	100%		10			
2022	2	7	100%		8			
Trend	stable	up	stable		down			

Previous Quotas		Ewes Res	Ewes NR	Ram Resident Archery	Ram Resident Early	Ram Resident Late	Ram Nonresident Early	Ram Nonresident Late
					1			
2017					2			
2022					2			
Trend					stable			

Ram Quota Recommendations

Total Ram Quota	Early %	Late %	Res %	NR %	% Unit Split	Unit(s)	Resident Archery	Resident Early	Resident Late	Nonresident Early	Nonresident Late
1	100%	0%	100%	0%	100%	115		1		0	
	Archery				0%						

Ewe Removal Recommendations

Total Ewe Objective	# Reduce	% Reduce	Nonlethal		Harvest	2022% Succ	Res Tags	NR Tags

Quota and Population Objective Rationale Population Objective:

Harvest success has been 100% the last two years. The average age of rams harvested in the last two years is 7.75. Survey efforts resulted in poor sample size in 2019, 2021, and 2022. In 2020 a record sample was obtained along with the largest number of rams ever observed. Multiple mature rams were observed as well. Due to high hunter success and poor surveys, caution is being exercised and only one tag is being recommended for 2023.

Reporting Biologist: Menghini **Supervisor:** Donham

Mountain Goat Quota Recommendation Form

Subspecies: **Mountain Goat** Unit Group: **101** Year **2023**

Survey and Model Results

Year	Survey Total	Survey Adults	Survey Kids	Kids/100 Ads	Pop Estimate
2020-2021	38	34	4	12	50
2021-2022	20	18	2	11	55
2022-2023	22	18	4	22	45
Trend	down	down	down	down	down

Hunt Results and Translocation Removal

Year	Billy Harvest	Billy Avg Age	Nanny Harvest	Nanny Avg Age	Total Harvest	% Hunter Success
2020	1	4.0	0	NA	1	100%
2021	1	7.0	NA	NA	1	100%
2022	1	5.0	NA	NA	1	100%
Trend	stable		stable		stable	stable

Previous Quotas

Year	Resident	Nonresident
2020	1	0
2021	1	0
2022	1	0
Trend	stable	

Any Mountain Goat Quota Recommendations

Total Quota	Res %	NR %	Resident	Nonresident
1	100%	0%	1	0

Quota and Population Objective Rationale Population Objective: NA

The 2021-2022 survey was very disappointing in the sample size and the lack of collared animals that were observed. Of the 10 live collared animals, only 2 were classified. Summertime telemetry work showed a high production rate through mid-August, and was very promising in light of the disease issues in this unit since 2009. The 2022-2023 survey was again disappointing, with only 2 of 5 collared goats being observed. The silver lining was that 6 yearling goats were observed in the small sample size. The high proportion of yearlings points to a higher 2021-2022 kid ratio than the one observed on survey. Based on recent status and trend of the Unit 101 population, the quota recommendtion reflects status quo.

Reporting Biologist: Roberts **Supervisor:** Donham

Mountain Goat Quota Recommendation Form

Subspecies: **Mountain Goat** Unit Group: **102** Year **2023**

Survey and Model Results

Year	Survey Total	Survey Adults	Survey Kids	Kids/100 Ads	Pop Estimate
2020-2021	133	100	33	33	200
2021-2022	171	128	43	34	240
2022-2023	108	89	19	21	240
Trend	down	down	down	down	stable

Hunt Results and Translocation Removal

Year	Billy Harvest	Billy Avg Age	Nanny Harvest	Nanny Avg Age	Total Harvest	% Hunter Success
2020	3	6.3	3	4.3	6	86%
2021	2	4.0	1	4.0	3	43%
2022	7	4.0	3	7.3	10	83%
Trend	up	stable	up		up	

Previous Quotas

Year	Resident	Nonresident
2020	7	0
2021	7	0
2022	12	0
Trend	stable	up

Any Mountain Goat Quota Recommendation

Total Quota	Res %	NR %	Resident	Nonresident
12	90%	10%	11	1

Quota and Population Objective Rationale Population Objective: NA

The 2022-2023 survey represents a below average sample for this unit. Poor conditions made for a difficult survey, and abbreviated effort. After 2 years of exceptional recruitment rates, the kid ratio moderated in 2022 and generated a similar estimate to 2022. There were 2 hunters in 2022 that were unsuccessful, and the heavy snow loads experienced at the end of the season may have been a contributing factor. The 2023 total quota is proposed to be the same as previous season, but that includes one tag being allocated to the nonresident pool, and one tag being allocated to the Silver State Tag Program.

Reporting Biologist: Roberts **Supervisor:** Donham

Mountain Goat Quota Recommendation Form

Subspecies: **Mountain Goat** Unit Group: **103** Year **2023**

Survey and Model Results

Year	Survey Total	Survey Adults	Survey Kids	Kids/100 Ads	Pop Estimate
2020-2021	21	18	3	17	40
2021-2022	10	9	1	11	45
2022-2023	NA	NA	NA		50
Trend	stable	stable	stable	stable	up

Hunt Results and Translocation Removal

Year	Billy Harvest	Billy Avg Age	Nanny Harvest	Nanny Avg Age	Total Harvest	% Hunter Success
2020	1	4.0	0	NA	1	100%
2021	1	5.0	0	NA	1	100%
2022	0	NA	0	NA	0	0%
Trend	down		stable		down	

Previous Quotas

Year	Resident	Nonresident
2020	1	0
2021	1	0
2022	1	0
Trend	stable	stable

Any Mountain Goat Quota Recommendations

Total Quota	Res %	NR %	Resident	Nonresident
1	100%	0%	1	0

Quota and Population Objective Rationale Population Objective: NA

The 2022-2023 survey season was plagued by variable winds and difficult snow conditions, and resulted the Unit 103 survey being cut from the schedule. Summertime observations showed fair production of kids, and average adult group size. There was not any correspondence with the 2022 hunter, but the lack of harvest is abnormal and will be monitored. This herd continues to maintain and the quota recommendation remains the same as in 2022.

Reporting Biologist: Roberts **Supervisor:** Donham