

Bighorn Sheep Quota Recommendation Form

 Subspecies: California Bighorn

 Unit Group: 011,013

 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 41 | 0 | 0 | | | | |
| 2018-2019 | 67 | 0 | 1 | | | | |
| 2020-2021 | | | | 82 | 46 | 5 | 3 |
| Trend | | | | | | | |

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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 0 | | | | | | |
| 2018 | 0 | | | | | | |
| 2020 | 0 | | | | | | |
| Trend | | | | | | | |

Previous Quotas

| | Ewes Res | Ewes NR | Ram Resident | | Ram Nonresident | |
|-------|----------|---------|--------------|------|-----------------|------|
| | | | Early | Late | Early | Late |
| 2015 | | | 0 | | | |
| 2018 | | | 0 | | | |
| 2020 | | | 0 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | Early % | Late % | Resident | | | | Nonresident | | | |
|-----------------|---------|--------|----------|------|---------|---------|-------------|------|-------|------|
| | | | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 1 | 100% | 0% | 100% | 0% | 100% | 011,013 | 1 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

 Population Objective:

One tag will be issued for the 21' season. There have been reports and observations of mature rams along the Guano and Coleman Rim. This herd will also see some interstate herd activity with Oregon. A single tag in the unit should be sustainable for a few years at the current population projections.

Reporting Biologist: _____

 Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

 Subspecies: California Bighorn

 Unit Group: 012

 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 90 | 7 | 11 | | | | |
| 2018-2019 | 144 | 14 | 7 | | | | |
| 2020-2021 | 116 | 4 | 8 | 178 | 112 | 5 | 5 |
| Trend | | | | | | | |

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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 4 | 6 | 100% | | | | |
| 2018 | 4 | 5.5 | 100% | | | | |
| 2020 | 5 | 6.2 | 100% | 14.4 | | | |
| Trend | | | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 4 | | | |
| 2018 | | | 4 | | | |
| 2020 | | | 5 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 5 | 100% | 0% | 80% | 20% | 100% | 012 | 4 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

 Population Objective:

Estimates and trend in the last few years is upward in this herd and hunt unit. Unit 012 is a large hunt unit and could support 350 to 400 bighorn. Augmentations planned in the near future could help bolster this herd further and allow for continued herd growth and expansion. Augmentations are planned in areas where densities of sheep are low and will help to increase numbers in these underutilized areas of unit 012.

Reporting Biologist: _____

 Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

 Subspecies: California Bighorn

 Unit Group: 014

 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 50 | 0 | 0 | | | | |
| 2018-2019 | 31 | 2 | 0 | | | | |
| 2020-2021 | 51 | 7 | 2 | 121 | 75 | 3 | 4 |
| Trend | | | | | | | |

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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 4 | 5.5 | 100% | | | | |
| 2018 | 3 | 4.3 | | | | | |
| 2020 | 2 | 7 | 50% | 10.5 | | | |
| Trend | | | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 4 | | | |
| 2018 | | | 3 | | | |
| 2020 | | | 2 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 2 | 100% | 0% | 100% | 0% | 100% | 014 | 2 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

 Population Objective:

Quotas for 2021 are expected to stay at 2 tags. Lack of mature rams and lower numbers of sheep have impacted hunting of CBHS in this hunt unit over the past few years. Population Objective of 250. The recent augmentation will hopefully bolster this population of sheep. However, mountain lion predation may be partially limiting herd growth.

Reporting Biologist: _____

 Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

 Subspecies: California Bighorn

 Unit Group: 021, 022

 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 21 | 4 | 3 | 92 | 61 | 4 | 3 |
| 2018-2019 | | 7 | 4 | 90 | 58 | 3 | 3 |
| 2020-2021 | | | | 90 | 58 | 3 | 3 |
| Trend | | | | | | | |

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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 3 | 7.3 | 100% | | | | |
| 2018 | 2 | 8 | 66% | | | | |
| 2020 | 2 | 7.5 | 66% | | | | |
| Trend | | | | | | | |

Previous Quotas

| | Ewes Res | Ewes NR | Ram Resident | | Ram Nonresident | |
|-------|----------|---------|--------------|------|-----------------|------|
| | | | Early | Late | Early | Late |
| 2015 | | | 3 | | | |
| 2018 | | | 3 | | | |
| 2020 | | | 3 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | Early % | Late % | Res | | % Split | Unit(s) | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|----------|----------|------|-------------|--|
| | | | Early | Late | | | Early | Late | | |
| 3 | 100% | 0% | 100% | 0% | 100% | 021, 022 | 3 | | 0 | |
| | | | | 0% | | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

 Population Objective:

Quotas increased by 1 tag in 2019. Recommended quota for 2020 should remain at 3 tags. Sufficient rams are available but are limited due to small population size. Population estimates have been pulled back in this unit in recent years due to significant loss of habitat from very large wildfires.(200,000 ac). Sheep hunting areas can be difficult to access due to private lands (ranches) closing off access. Pyramid Lake tribal lands also limit access from east side of hunt unit.

Reporting Biologist: _____

 Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

 Subspecies: California Bighorn

 Unit Group: 033

 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2013-2014 | 41 | 3 | 4 | 158 | 98 | 6 | 5 |
| 2018-2019 | 73 | 7 | 4 | 109 | 61 | 4 | 3 |
| 2020-2021 | | | | 116 | 71 | 4 | 4 |
| Trend | | | | | | | |

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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 2 | 6 | 100% | 3.5 | | | |
| 2018 | 4 | 5.5 | 100.00 | 14 | | | |
| 2020 | 1 | 6 | 33% | 11 | | | |
| Trend | | | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 3 | | | |
| 2018 | | | 3 | | | |
| 2020 | | | 3 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 3 | 100% | 0% | 100% | 0% | 100% | 033 | 3 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

 Population Objective:

Quotas were increased by 1 tag in 2019. 2021 recommended quotas should remain at 3 tags. Hunting bighorn on the Sheldon remains a challenge but sufficient mature rams are available. Low densities and expansive amount of habitat make it difficult to located sheep. Population objective is currently estimated at 300 sheep but the Sheldon CBHS population was impacted by long-term drought between 2007 and 2015. Other factors include sheep movements outside of hunt unit north into the state of Oregon. The McGee Mountain portion of Unit 032 was added to the 033 Hunt for the 2021 season. There has also been an augmentataion on the McGee Mountain area that has since been heavily impacted by predators.

Reporting Biologist: _____

 Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: California Unit Group: 051 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 114 | 15 | 7 | 184 | 126 | 4 | 5 |
| 2018-2019 | | | | 144 | 94 | 6 | 4 |
| 2020-2021 | 134 | 21 | 6 | 116 | 73 | 4 | 3 |
| Trend | | | | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 3 | 6 | 100% | 5 | | | |
| 2018 | 4 | 6 | 100% | 7 | | | |
| 2020 | 2 | 8 | 66% | 5 | | | |
| Trend | down | up | down | down | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 3 | | | |
| 2018 | | | 4 | | | |
| 2020 | | | 3 | | | |
| Trend | | | down | | | |

Ram Quota Recommendations

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

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 350

This population has been limited by disease. There is plenty of room in this range to expand.

Reporting Biologist: Partee

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

 Subspecies: California

 Unit Group: 031

 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 100 | 7 | 7 | 115 | 59 | 10 | 5 |
| 2018-2019 | 97 | 12 | 12 | 130 | 64 | 10 | 5 |
| 2020-2021 | 70 | 11 | 5 | 153 | 83 | 7 | 6 |
| Trend | down | down | down | up | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 10 | 7.2 | 100% | 7 | | | |
| 2018 | 7 | 7.1 | 100% | 4 | | | |
| 2020 | 5 | 7.4 | 83% | 3 | | | 8 |
| Trend | down | up | down | down | | | |

Previous Quotas

| | Hert | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|-----------|------|----|--------------|------|-----------------|------|
| | | Res | NR | Early | Late | Early | Late |
| 2015 | Hert | | | 8 | | 1 | |
| 2018 | PIW Dream | | | 5 | | | |
| 2020 | | | | 6 | | | |
| Trend | | | | up | | | |

Ram Quota Recommendations

| Total Ram Quota | Early % | Late % | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | | | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 6 | 100% | 0% | 100% | 0% | 100% | 031 | 6 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

 Population Objective: 300

Sheep numbers are still doing well in the Double H's. The Montana Mountains should be repopulated as soon as possible. Quality in this unit is dropping a little but there are plenty of mature rams.

 Reporting Biologist: Partee

 Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: California Unit Group: 032 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 152 | 18 | 8 | 307 | 172 | 15 | 11 |
| 2018-2019 | 109 | 15 | 8 | 332 | 180 | 14 | 12 |
| 2020-2021 | 76 | 11 | 4 | 349 | 190 | 19 | 13 |
| Trend | down | down | down | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 13 | 7 | 100% | 6 | | | |
| 2018 | 13 | 6 | 100% | 6 | | | |
| 2020 | 10 | 6 | 83% | 15 | | | 10 |
| Trend | down | stable | down | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 9 | | 2 | |
| 2018 | | | 11 | | 2 | |
| 2020 | | | 10 | | 1 | |
| Trend | | | down | | down | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | Resident | | Nonresident | | |
|-----------------|---------|--------|-------|------|---------|----------|-------|-------------|-------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 12 | 100% | 0% | 90% | 10% | 100% | 032 | 11 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: **400+**

This is an expansive unit which can support additional bighorns. There are still good numbers in this unit.

Reporting Biologist: Partee

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: California Unit Group: 034 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 109 | 8 | 4 | 230 | 125 | 13 | 8 |
| 2018-2019 | 110 | 8 | 4 | 266 | 147 | 15 | 9 |
| 2020-2021 | 90 | 6 | 1 | 336 | 181 | 18 | 12 |
| Trend | down | down | down | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 9 | 7 | 90% | 4 | | | |
| 2018 | 8 | 7 | 90% | 9 | | | |
| 2020 | 7 | 8 | 88% | 11 | | | |
| Trend | down | up | down | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 8 | | 2 | |
| 2018 | | | 8 | | 1 | |
| 2020 | | | 7 | | 1 | |
| Trend | | | down | | stable | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | Resident | | Nonresident | | |
|-----------------|---------|--------|-------|------|---------|----------|-------|-------------|-------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 9 | 100% | 0% | 90% | 10% | 100% | 034 | 8 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: **300+**

This unit continues to support good numbers of sheep. 16 sheep were removed from this unit for an augmentation in the Lake Range for Pyramid Lake Tribe.

Reporting Biologist: Partee

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: California

Unit Group: 035

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 68 | 16 | 6 | 178 | 109 | 4 | 6 |
| 2018-2019 | 18 | 1 | 1 | 257 | 158 | 8 | 8 |
| 2020-2021 | 112 | 8 | 3 | 313 | 184 | 11 | 10 |
| 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 2 | 6 | 66% | 8 | | | |
| 2018 | 7 | 7 | 88% | 5 | | | |
| 2020 | 9 | 8 | 82% | 4 | | | |
| Trend | up | up | down | down | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 3 | | | |
| 2018 | | | 6 | | 2 | |
| 2020 | | | 10 | | 1 | |
| Trend | | | up | | down | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 8 | 100% | 0% | 90% | 10% | 100% | 035 | 7 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 300+

Bighorn continue to expand into unoccupied habitat within the Jackson Mountains. Quotes are down just a little this year to account for any specialty tags going into this area. The Bloody Runs have been excluded from any sheep hunts for the next couple of years to let the rams in that area mature a bit longer.

Reporting Biologist: Partee

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 207

Year 2021

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 | 408 | 51 | 48 | 484 | 264 | 31 | 18 |
| 2019 | 452 | 51 | 35 | 503 | 281 | 28 | 18 |
| 2020 | 180 | 22 | 25 | 388 | 242 | 19 | 12 |
| 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 | 12 | 5 | 100% | 4.5 | | | |
| 2019 | 5 | 6.2 | 100% | 1.6 | | | |
| 2020 | 4 | 6.25 | 100% | 2 | | | |
| Trend | down | up | stable | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2018 | | | 10 | | 2 | |
| 2019 | | | 5 | | 1 | |
| 2020 | | | 3 | | 1 | |
| Trend | | | down | | stable | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 4 | 100% | 0% | 80% | 20% | 100% | 207 | 3 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Reporting Biologist: Salisbury

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 045, 153

Year 2021

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 | 138 | 8 | 14 | 230 | 130 | 8 | 8 |
| 2019-2020 | 138 | 5 | 14 | 271 | 158 | 10 | 9 |
| 2020-2021 | 76 | 2 | 9 | 121 | 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 | 8 | 5.6 | 100% | 4 | | | |
| 2019 | 8 | 5.6 | 89% | 3 | | | |
| 2020 | 6 | 6 | 89% | 8 | | | |
| Trend | down | stable | stable | up | | | |

Previous Quotas

| | Rams | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|------|----|--------------|--------|-----------------|------|
| | | Res | NR | Early | Late | Early | Late |
| 2018 | 8 | | | 4 | 4 | | |
| 2019 | 9 | | | 5 | 3 | | 1 |
| 2020 | 10 | | | 6 | 3 | | 1 |
| Trend | | | | up | stable | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|--------|-------|------|---------|----------|-------|----------|---------|-------------|--|
| Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late | |
| 100% | 0% | 0% | 100% | 100% | 045, 153 | 2 | no hunt | no hunt | no hunt | |
| | | 0% | | | | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Unit 045 experienced a pneumonia disease event summer/fall 2020. Our initial conservative estimate of population dieoff was 55% of the population. 50% 6+ year old rams in the model is 5, 8% of total rams is 4. Early Hunt only, Recommend quota of 2 tags. Future surveys and field observations will aid in determining true extent of this disease event. Recommended quota of 2 to be on the conservative side. Sufficient older class rams should be available in the Indian Caves area as well as in the Tobin Range.

Reporting Biologist: Neill

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 181

Year 2021

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 | 408 | 51 | 48 | 484 | 264 | 31 | 18 |
| 2019 | 452 | 51 | 35 | 640 | 281 | 28 | 18 |
| 2020 | 440 | 59 | 61 | 623 | 371 | 31 | 20 |
| 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2013 | 10 | 7.3 | 91% | 4.1 | | | |
| 2018 | 18 | 7.3 | 100% | 4 | | | |
| 2020 | 19 | 6.2 | 100% | 3.7 | | | |
| Trend | up | down | stable | down | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2018 | | | 16 | | 2 | |
| 2020 | | | 17 | | 2 | |
| 2021 | | | | | | |
| Trend | | | up | | up | |

Ram Quota Recommendations

| Ram Quota Recommendations | | | | | | | Resident | | Nonresident | |
|---------------------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| Total Ram Quota | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 18 | 100% | 0% | 90% | 10% | 100% | 181 | 16 | | 2 | |
| | | | 0% | | | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Hunting occurs on Bravo 17 military land where the military has a tolerance for a limited number of hunters on Naval grounds. Increasing quotas may result in a split season to limit congestion.

Reporting Biologist: Salisbury

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 182, 044

Year 2021

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 | 328 | 22 | 34 | 535 | 308 | 22 | 18 |
| 2019 | 265 | 32 | 18 | 647 | 391 | 23 | 20 |
| 2020 | 92 | 10 | 8 | 557 | 314 | 28 | 19 |
| 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2013 | 9 | 5.1 | 90% | 6.7 | | | |
| 2018 | 14 | 5.8 | 100% | 2.1 | | | |
| 2020 | 18 | 6 | 100% | 4.78 | | | |
| Trend | up | up | stable | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2013 | | | 8 | | 2 | |
| 2018 | | | 12 | | 2 | |
| 2020 | | | 17 | | 3 | |
| Trend | | | up | | up | |

Ram Quota Recommendations

| Total Ram Quota | ALW % | Archery % | | | | | Resident | | Nonresident | |
|-----------------|-------|-----------|-------|------|---------|----------|----------|---------|-------------|------|
| | | | Res % | NR % | % Split | Unit(s) | ALW | Archery | Early | Late |
| 19 | 90% | 10% | 88% | 12% | 100% | 182, 044 | 15 | 2 | 2 | 0 |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Quota is based on 8% of 1+ rams. There are currently concerns with die-off due to disease event that may have persisted into the fall of 2020. Surveys and model show ample rams exist for harvest.

Reporting Biologist: Salisbury

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 183

Year 2021

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 | 294 | 32 | 29 | 452 | 263 | 15 | 19 |
| 2019 | 192 | 30 | 18 | 303 | 184 | 10 | 9 |
| 2020 | 185 | 22 | 15 | 273 | 166 | 13 | 9 |
| Trend | | | | | | | |

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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2013 | 9 | 5.8 | 100% | 6.1 | | | |
| 2019 | 5 | 6.2 | 100% | 3.2 | | | |
| 2020 | 8 | 5.5 | 100% | 2.65 | | | |
| Trend | up | down | stable | down | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2013 | | | 8 | | 1 | |
| 2019 | | | 4 | | 1 | |
| 2020 | | | 6 | | 1 | |
| Trend | | | up | | stable | |

Ram Quota Recommendations

| Ram Quota Recommendations | | | | | | | Resident | | Nonresident | |
|---------------------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| Total Ram Quota | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 7 | 100% | 0% | 80% | 20% | 100% | 183 | 6 | | 1 | |
| | | | 0% | | | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Average age of harvested rams have decreased. Recommend tag quota below 8% total rams.

Reporting Biologist: Salisbury

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 184

Year 2021

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 | 126 | 9 | 7 | 183 | 114 | 7 | 5 |
| 2019 | 38 | 5 | 2 | 168 | 107 | 6 | 5 |
| 2020 | 127 | 13 | 16 | 176 | 100 | 8 | 5 |
| Trend | up | up | up | up | down | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2013 | 4 | 4.5 | 57% | 4.4 | | | |
| 2018 | 4 | 4 | 80% | 5.4 | | | |
| 2020 | 6 | 6.5 | 100% | 2.66 | | | |
| Trend | stable | up | up | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2013 | | | 3 | 3 | 1 | |
| 2018 | | | 4 | | 1 | |
| 2020 | | | 5 | | 1 | |
| Trend | | | up | down | stable | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|--------|-------|------|---------|---------|-------|----------|-------|-------------|--|
| Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late | |
| 100% | 0% | 80% | 20% | 100% | 184 | 4 | | 1 | | |
| | | 0% | | | | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Used 50% 6 year old rams =6 ram tags. Lower average age rams killed because of hunters hunting the easier Eastgate Hills. Mountain is tough to hunt for the average hunter.

Reporting Biologist: Salisbury

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 202

Year 2021

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 | 121 | 10 | 12 | 202 | 121 | 6 | 8 |
| 2019 | 35 | 2 | 2 | 169 | 166 | 7 | 5 |
| 2020 | 65 | 9 | 6 | 154 | 100 | 8 | 4 |
| Trend | up | up | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2013 | 4 | 6.5 | 100% | 2 | | | |
| 2019 | 5 | 5.4 | 100% | 1.8 | | | |
| 2020 | 5 | 4.6 | 100% | 1.2 | | | |
| Trend | stable | down | stable | down | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2013 | | | 4 | | | |
| 2018 | | | 6 | | | |
| 2020 | | | 6 | | | |
| Trend | | | up | | | |

Ram Quota Recommendations

| Ram Quota Recommendations | | | | | | | Resident | | Nonresident | |
|---------------------------|---------|--------|-------|------|---------|---------|----------|---------|-------------|------|
| Total Ram Quota | Early % | Late % | Res % | NR % | % Split | Unit(s) | ALW | Archery | Early | Late |
| 4 | 100% | 0% | 100% | 0% | 100% | 202 | 4 | 1 | 0 | |
| | | | 0% | | | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Continued lion mortality coupled with highway mortality. So similar tag quota as of 2019.

Reporting Biologist: Salisbury

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 204

Year 2021

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 | 21 | 2 | 1 | 65 | 38 | 4 | 2 |
| 2019 | 0 | | | 59 | 36 | 4 | 2 |
| 2020 | 30 | 2 | 2 | 52 | 33 | 4 | 2 |
| Trend | up | stable | | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2013 | | | | | | | |
| 2019 | 2 | 4.5 | 100% | 2 | | | |
| 2020 | 2 | 7 | 100% | 3.5 | | | |
| Trend | stable | up | stable | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2013 | | | | | | |
| 2019 | | | 1 | | | |
| 2020 | | | 2 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Ram Quota Recommendations | | | | | | | Resident | | Nonresident | |
|---------------------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| Total Ram Quota | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 2 | 100% | 0% | 80% | 20% | 100% | 204 | 2 | | 0 | |
| | | | 0% | | | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Two rams harvested aged 4 and 5. Keep at 2 tags.

Reporting Biologist: Salisbury

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 205

Year 2021

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 | 462 | 41 | 46 | 676 | 394 | 23 | 23 |
| 2019 | 359 | 48 | 49 | 627 | 375 | 20 | 20 |
| 2020 | 180 | 22 | 25 | 431 | 263 | 19 | 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 | 16 | 6.1 | 94% | 3.4 | | | |
| 2019 | 10 | 6.8 | 77% | 5.4 | | | |
| 2020 | 9 | 6.55 | 100% | 3.66 | | | |
| Trend | down | down | up | down | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2018 | | | 15 | | 2 | |
| 2019 | | | 13 | | 1 | |
| 2020 | | | 8 | | 1 | |
| Trend | | | down | | stable | |

Ram Quota Recommendations

| Ram Quota Recommendations | | | | | | | Resident | | Nonresident | |
|---------------------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| Total Ram Quota | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 9 | 100% | 0% | 80% | 20% | 100% | 205 | 7 | | 2 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Die off fall of 2019. Conservative quota to allow for unknown adult ram mortality.

Reporting Biologist: Salisbury

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 206, 208

Year 2021

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 | 88 | 9 | 9 | 275 | 179 | 4 | 8 |
| 2019 | 129 | 12 | 12 | 313 | 188 | 8 | 10 |
| 2020 | 97 | 11 | 9 | 241 | 162 | 6 | 6 |
| 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 | 6 | 6.5 | 86% | 10.4 | | | |
| 2019 | 1 | 7 | 33% | 8.3 | | | |
| 2020 | 4 | 5.75 | 100% | 4.25 | | | |
| Trend | up | down | up | down | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2018 | | | 7 | | | |
| 2019 | | | 4 | | | |
| 2020 | | | 4 | | | |
| Trend | | | stable | | | |

Ram Quota Recommendations

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

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

All rams harvested were in the Garfield Hills and the Candalaria Hills (newer release areas). Four rams observed on survey were 6+ but were also one horn rams. Consider quota below the 8% total rams in model.

Reporting Biologist: Salisbury

Supervisor: Munson

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 264 - 266

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2012-2013 | 128 | 12 | 19 | 310 | 186 | 14 | 10 |
| 2017-2018 | 61 | 0 | 2 | 160 | 105 | 11 | 4 |
| 2019-2020 | 39 | 0 | 0 | 140 | 86 | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 8 | 5.9 | 100% | 4 | -- | -- | -- |
| 2018 | 2 | 7 | 100% | 11.5 | -- | -- | -- |
| 2020 | 2 | 8 | 100% | 1.5 | -- | -- | -- |
| Trend | down | up | stable | | -- | -- | -- |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|-----|
| | Res | NR | 264,265 | 266 | 264,265 | 266 |
| 2015 | -- | -- | 6 | 2 | -- | -- |
| 2018 | -- | -- | 1 | 1 | -- | -- |
| 2020 | -- | -- | 1 | 1 | -- | -- |
| Trend | | | down | down | | |

Ram Quota Recommendations

| Total Ram Quota | Early % | Late % | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | | | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 2 | 100% | 0% | 100% | 0% | 50% | 264,265 | 1 | | 0 | |
| | | | | | 50% | 266 | 1 | | 0 | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: **600-700**

In 2021, the combined units 264-266 represent a new unit grouping. Although bighorn sheep densities are low throughout a vast area that includes the Newberry Mountains, south Eldorado Mountains and north Eldorado Mountains due to prolonged population level impacts of respiratory disease, an overall quota of 2 was deemed reasonable.

Reporting Biologist: Cummings

Supervisor: Kimble

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn Unit Group: 134,251 Year 2021

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 |
|-----------|---------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2014-2015 | 157 | 22 | 7 | 210 | 148 | 11 | 5 |
| 2019-2020 | 101 | 5 | 5 | 190 | 120 | 8 | 6 |
| 2020-2021 | Not Conducted | Not conducted | Not Conducted | 170 | 103 | 7 | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2014 | 2 | 5.5 | 50% | | 0 | 0% | 0 |
| 2018 | 4 | 6.3 | | 7.3 | 0 | 0% | 0 |
| 2020 | 5 | 6.4 | 100% | 8.2 | 0 | 0% | 0% |
| Trend | | | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2014 | | | 4 | | | |
| 2018 | | | 4 | | | |
| 2020 | | | 5 | | | |
| Trend | | | stable | | | |

Ram Quota Recommendations

| Total Ram Quota | Early % | Late % | Resident | | | Unit(s) | Resident | | Nonresident | |
|-----------------|---------|--------|----------|------|---------|---------|----------|------|-------------|------|
| | | | Res % | NR % | % Split | | Early | Late | Early | Late |
| 5 | 100% | 0% | 100% | 0% | 100% | 134,251 | 5 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: **300**

2020 Lamb recruitment was depressed in adjacent units and used to run this population model. I recommend the same number of ram tags as last year. This population is starting to come back from the depressed lamb recruitment from 2011-2013 due to M.o.vi. lamb recruitment of recent years shows signs of recovery.

Reporting Biologist: Burkett

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies Desert Bighorn

Unit Group: 161

Year 2021

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 |
|-----------|---------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 308 | 45 | 18 | 400 | 236 | 14 | 14 |
| 2017-2018 | 387 | 32 | 24 | 500 | 291 | 22 | 16 |
| 2020-2021 | Not Conducted | Not Conducted | Not Conducted | 550 | 335 | 19 | 17 |
| Trend | up | stable | stable | up | up | stable | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2016 | 8 | 5.3 | 90% | | | | |
| 2017 | 9 | 5.7 | 90.00 | 4.7 | | | |
| 2020 | 18 | 5.9 | 100% | 4.25 | | | |
| Trend | up | stable | up | down | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | | | | |
| 2017 | | | 5 | 3 | 0 | 2 |
| 2020 | | | 8 | 8 | 1 | 1 |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 17 | 55% | 45% | 90% | 10% | 100% | 161 | 8 | 7 | 1 | 1 |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| 315 | 20 | 6% | | 20 | 60% | 30 | 3 |

5

Quota and Population Objective Rationale

Population Objective: 450

This population will be reduced to achieve population objective, reduce foray possibility, and limit over-utilize the available habitat. Hedging and other signs of a population nearing vegetative carrying capacity are evident on Mount Jefferson. I recommend a slight reduction in ram tags due to a slight downward trend of 50% of rams 6+. To reduce the population, I recommend taking a multi-tiered approach. This year, 30 resident and 5 nonresident ewe tags is warranted for the inaugural 161 ewe hunt.

Reporting Biologist: Burkett

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies Desert Bighorn

Unit Group: 162,163

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2016-2017 | 136 | 17 | 7 | 300 | 187 | 13 | 9 |
| 2018-2019 | 173 | 17 | 10 | 310 | 197 | 15 | 9 |
| 2020-2021 | 169 | 18 | 11 | 320 | 205 | 12 | 9 |
| Trend | stable | stable | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2017 | 7 | 5.4 | 78% | 4.1 | | | |
| 2019 | 9 | 6.8 | 100.00 | 5 | | | |
| 2020 | 8 | 4.6 | 88% | 2.4 | | | |
| Trend | stable | down | stable | down | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2017 | | | 9 | | | |
| 2019 | | | 8 | | 1 | |
| 2020 | | | 8 | | 1 | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | ALW % | Archery % | | | | | Resident | | Nonresident | |
|-----------------|-------|-----------|-------|------|---------|---------|----------|---------|-------------|------|
| | | | Res % | NR % | % Split | Unit(s) | ALW | Archery | Early | Late |
| 9 | 90% | 10% | 90% | 10% | 100% | 162,163 | 7 | 1 | 1 | 0 |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 350

Average ram harvested age was reduced in 2020 due to poor hunter effort. This population is growing and pioneering into unoccupied habitat. Older age class rams are available for harvest and have remained stable. I recommend the same quota as the previous year.

Reporting Biologist: Burkett

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies Desert Bighorn

Unit Group: 173

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 77 | 7 | 6 | 190 | 113 | 11 | 6 |
| 2018-2019 | 43 | 2 | 3 | 190 | 109 | 9 | 6 |
| 2020-2021 | 51 | 6 | 6 | 170 | 101 | 8 | 6 |
| Trend | stable | stable | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2016 | 4 | 4 | | | | | |
| 2019 | 4 | 5.3 | 67.00 | 7 | | | |
| 2020 | 3 | 6.3 | 50% | 10.75 | | | |
| Trend | stable | up | stable | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|---|-----------------|---|
| | Res | NR | N | S | N | S |
| 2016 | | | | | | |
| 2019 | | | 4 | 1 | 1 | |
| 2020 | | | 3 | 2 | 1 | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 6 | 100% | 0% | 100% | 0% | 60% | 173N | 4 | | 0 | |
| | | | | | 40% | 173S | 2 | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 300

Both of these hunt units are currently modeled as one population. 173N is an incredibly difficult hunt. In order to give hunters better opportunities to harvest, the season has been extended. I recommend 4 ram tags for 173N. 173S has many mature rams observed on survey. For this hunt I recommend 2 ram tags.

Reporting Biologist: Burkett

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies Desert Bighorn

Unit Group: 211

Year 2021

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 | 48 | 15 | 450 | 260 | 20 | 13 |
| 2019-2020 | 315 | 36 | 19 | 450 | 274 | 18 | 13 |
| 2020-2021 | Not Conducted | Not Conducted | Not Conducted | 450 | 271 | 15 | 13 |
| Trend | stable | stable | up | stable | stable | 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 | 9 | 6.7 | 75% | 3.5 | | | |
| 2019 | 12 | 6.8 | 92% | 5.2 | | | |
| 2020 | 13 | 6.7 | 93% | 4.9 | | | |
| Trend | up | stable | up | stable | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2017 | | | 10 | | 2 | |
| 2019 | | | 12 | | 1 | |
| 2020 | | | 13 | | 1 | |
| Trend | | | up | | stable | |

Ram Quota Recommendations

| Total Ram Quota | ALW % | Archery % | | | | | Resident | | Nonresident | |
|-----------------|-------|-----------|-------|------|---------|---------|----------|---------|-------------|------|
| | | | Res % | NR % | % Split | Unit(s) | ALW | Archery | Early | Late |
| 13 | 90% | 10% | 85% | 15% | 100% | 211 | 10 | 1 | 2 | 0 |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 500

Average harvest age continues to be high and stable with the slight increase in ram tags last year. The population is stable with a slight trend upwards. I recommend 13 ram tags this year.

Reporting Biologist: Burkett

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies Desert Bighorn

Unit Group: 212

Year 2021

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 |
|-----------|---------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2016-2017 | 350 | 28 | 33 | 450 | 252 | 21 | 14 |
| 2019-2020 | 230 | 47 | 16 | 400 | 198 | 23 | 14 |
| 2020-2021 | Not Conducted | Not Conducted | Not Conducted | 400 | 221 | 22 | 13 |
| Trend | stable | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2017 | 14 | 7.3 | 88% | 2.9 | -18 | | |
| 2019 | 13 | 7.8 | 93% | 2.2 | | | |
| 2020 | 16 | 7.7 | 100% | 3.3 | | | |
| Trend | up | stable | up | stable | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2017 | | | 7 | 6 | 1 | 2 |
| 2019 | | | 6 | 6 | 1 | 1 |
| 2020 | | | 8 | 8 | 1 | 1 |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | Resident | | | | Nonresident | | | |
|-----------------|---------|--------|----------|------|---------|-------------|-------------|------|-------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 18 | 50% | 50% | 90% | 10% | 90% | 212 ALW | 7 | 7 | 1 | 1 |
| | | | | | 10% | 212 Archery | 2 | | 0 | 0 |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 400

This population remains at or below the population objective and does not require further ewe harvest. Average ram harvest age continues to remain high. Average hunt days remains at a low level from which we can infer many older rams are available.

Reporting Biologist: Burkett

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies Desert Bighorn

Unit Group: 213

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 265 | 33 | 8 | 550 | 330 | 38 | 19 |
| 2018-2019 | 379 | 35 | 10 | 500 | 272 | 22 | 17 |
| 2020-2021 | 297 | 54 | 19 | 400 | 202 | 22 | 15 |
| Trend | stable | up | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 18 | 6.3 | | | 26 | | |
| 2018 | 14 | 6.1 | | | 28 | | |
| 2020 | 15 | 5.7 | 93% | 4.8 | 25 | 81% | |
| Trend | stable | stable | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | | | | |
| 2018 | | | | | | |
| 2020 | 28 | 3 | 7 | 6 | 3 | 2 |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | Resident | | | | Nonresident | | | |
|-----------------|---------|--------|----------|------|---------|-------------|-------------|------|-------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 17 | 53% | 47% | 90% | 10% | 90% | 213 | 7 | 6 | 2 | 2 |
| | | | | | 10% | 213 Archery | 2 | | 0 | 0 |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| 190 | 12 | 6% | | 12 | 80% | 14 | 2 |

Quota and Population Objective Rationale

Population Objective: 400

The population has nearly reached our population objective. Ewe tags have been significantly reduced to reflect this. Older rams continue to be observed on survey. Average harvested age continues to be stable. I recommend an increase in ram tags to 19.

Reporting Biologist: Burkett

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 21,223,24

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 149 | 8 | 7 | 300 | 181 | 14 | 10 |
| 2018-2019 | 165 | 7 | 12 | 270 | 158 | 15 | 9 |
| 2020-2021 | 201 | 18 | 15 | 240 | 140 | 15 | 7 |
| Trend | up | up | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 4 | 6 | 66% | 9.9 | 0 | | 0 |
| 2018 | 5 | 5.6 | 85% | 9 | 0 | | 0 |
| 2020 | 6 | 7.3 | 100% | 4.2 | 0 | | 0% |
| Trend | up | up | up | down | stable | | stable |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 6 | | | |
| 2018 | | | 6 | | | |
| 2020 | | | 7 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 8 | 100% | 0% | 100% | 0% | 40% | 221,223 | 3 | | 0 | |
| | | | | | 60% | 241 | 5 | | 0 | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | 0 | | 0% | | |

Quota and Population Objective Rationale

Population Objective: 300

The number of mature rams has remained stable. Recruitment 6 -7 years ago was good, indicating the cohort of mature rams will remain high or slightly increase this upcoming year. Last year hunter success and average age of harvested rams has high, while the number of days hunted was low, indicating an adequate number of mature rams are available for harvest. The tags will be distributed between Unit group 221, 223 and Unit 241 to distribute hunting pressure more evenly across the area. I recommend a slight increase to eight total tags with 3 in Unit Group 221,223 and 5 in Unit 241.

Reporting Biologist: Daniel Sallee

Supervisor: Joe Bennett

Bighorn Sheep Quota Recommendation Form

 Subspecies: Desert Bighorn

 Unit Group: 243

 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 124 | 12 | 10 | 170 | 107 | 7 | 5 |
| 2018-2019 | 158 | 14 | 11 | 190 | 115 | 8 | 6 |
| 2020-2021 | | | | 180 | 112 | 9 | 5 |
| 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 5 | 6.5 | 100% | 9 | 0 | | 0 |
| 2018 | 3 | 7 | 75% | 8 | 0 | | 0 |
| 2020 | 4 | 5.8 | 100% | 5.75 | 0 | | 0% |
| Trend | up | stable | stable | down | stable | | stable |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 5 | | | |
| 2018 | | | 4 | | | |
| 2020 | | | 5 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

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

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| 0 | 112 | 100% | 0 | 112 | 0% | #DIV/0! | #DIV/0! |

Quota and Population Objective Rationale

 Population Objective: 300

The estimated population size has remained stable as well as the number of mature rams. Hunter harvest has remained high this year, though average ram age was a modestly lower than previous years. However, the average number of days hunted was low this year. The population appears to be healthy and the number of mature rams warrants no change in quota relative to last year.

 Reporting Biologist: Daniel Sallee

 Supervisor: Joe Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 244

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2016-2017 | 124 | 7 | 14 | 130 | 80 | 9 | 4 |
| 2018-2019 | 123 | 9 | 17 | 130 | 79 | 7 | 4 |
| 2020-2021 | 94 | 8 | 10 | 140 | 87 | 4 | 4 |
| Trend | down | stable | | | | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 5 | 8.6 | 100% | 5 | -- | -- | -- |
| 2018 | 7 | 8.1 | 100% | 5.4 | -- | -- | -- |
| 2020 | 5 | 8.8 | 100% | 6 | -- | -- | -- |
| Trend | | | stable | up | -- | -- | -- |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 5 | | | |
| 2018 | | | 6 | | | |
| 2020 | | | 5 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 4 | 100% | 0% | 75% | 25% | 100% | 244 | 3 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 200-225

2021 Nonresident season authorized. Population model reflects fewer 6- and 7-yr-old rams in 2021. Recommend one tag reduction.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn Unit Group: 133,245 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 119 | 8 | 6 | 110 | 67 | 6 | 4 |
| 2018-2019 | 140 | 9 | 12 | 130 | 82 | 5 | 4 |
| 2020-2021 | 113 | 8 | 5 | 130 | 84 | 5 | 4 |
| Trend | stable | stable | stable | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 2 | 6 | 66% | 6.8 | 0 | | 0 |
| 2018 | 3 | 4.3 | 100% | 6 | 0 | | 0 |
| 2020 | 4 | 6 | 100% | 2 | 0 | | 0% |
| Trend | up | stable | | | stable | | stable |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 3 | | | |
| 2018 | | | 3 | | | |
| 2020 | | | 4 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | Resident | | Nonresident | | Unit(s) |
|-----------------|----------|--------|-------------|------|---------|
| | Early % | Late % | Early | Late | |
| 4 | 100% | 0% | 4 | 0 | 133,245 |
| | | | | | 0 |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| 0 | 84 | 100% | 0 | 84 | 0% | #DIV/0! | #DIV/0! |

Quota and Population Objective Rationale

Population Objective: 200

The estimated population size remained stable relative to last year and is exhibiting an upward trend. The number of mature rams in the population also remained stable. This year hunter success was high, age of harvested rams was high, and number of days hunted was low, indicating rams are available for harvest. I recommend no change in quota relative to last year.

Reporting Biologist: Daniel Sallee

Supervisor: Joe Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies Desert Bighorn

Unit Group: 252

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 238 | 35 | 20 | 240 | 171 | 9 | 6 |
| 2018-2019 | 117 | 6 | 10 | 170 | 123 | 11 | 3 |
| 2020-2021 | 87 | 6 | 10 | 120 | 93 | 5 | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 7 | 7.3 | | | | | |
| 2018 | 3 | 5.7 | | | | | |
| 2020 | 4 | 7.8 | 100% | 3.8 | | | |
| Trend | down | up | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | | | | |
| 2018 | | | | | | |
| 2020 | | | 4 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 3 | 100% | 0% | 100% | 0% | 100% | 252 | 3 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 300

Due to M.o.vi, this population has had significantly depressed lamb recruitment for many years. The sheep that remain are older. Many of the rams observed on survey were older age-class rams. I recommend 3 ram tags, reduction from last year.

Reporting Biologist: Burkett

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 253

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2014-2015 | 265 | 6 | 19 | 250 | 136 | 8 | 9 |
| 2016-2017 | 187 | 20 | 18 | 220 | 113 | 14 | 8 |
| 2018-2019 | 148 | 24 | 29 | 160 | 82 | 16 | 5 |
| Trend | down | up | | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 9 | 7.6 | 100% | 3.2 | --- | --- | --- |
| 2018 | 7 | 6.0 | 100% | 6.6 | --- | --- | --- |
| 2020 | 6 | 8.5 | 86% | 2.3 | --- | --- | --- |
| Trend | | | | | --- | --- | --- |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 6 | | | |
| 2018 | | | 7 | | | |
| 2020 | | | 7 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 7 | 100% | 0% | 85% | 15% | 100% | 253 | 6 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

2021 Nonresident season authorized. The last aerial survey was conducted in fall 2018. In 2020, the scheduled aerial survey was not conducted, as emergency water hauls were undertaken. Recommend no change in overall quota.

Reporting Biologist: Cummings

Supervisor: Patrick

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 254

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 69 | 7 | 2 | 110 | 73 | 5 | 3 |
| 2018-2019 | 133 | 11 | 6 | 160 | 113 | 6 | 4 |
| 2020-2021 | 158 | 14 | 10 | 170 | 113 | 7 | 4 |
| Trend | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 2 | 7 | 100% | 2.5 | -- | -- | -- |
| 2018 | 3 | 4.3 | 100% | 8.3 | -- | -- | -- |
| 2020 | 3 | 8 | 100% | 4.7 | -- | -- | -- |
| Trend | up | up | stable | down | -- | -- | -- |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 2 | | | |
| 2018 | | | 3 | | | |
| 2020 | | | 3 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 5 | 100% | 0% | 100% | 0% | 100% | 254 | 5 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: **200-225**

The population model reflects (on TRAP page) rapid expansion in 2016-2018, as a result of substantial immigration. The modification to the model was necessary in view of the 2017 aerial survey sample of 190 bighorn sheep. Bighorn population data obtained on the fall 2020 survey appears to indicate the population expanded over 100% since 2015. Recommend a resident tag increase from 3 to 5.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 261

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2016-2017 | 141 | 14 | 12 | 150 | 89 | 8 | 4 |
| 2018-2019 | 82 | 12 | 2 | 140 | 83 | 9 | 4 |
| 2020-2021 | 117 | 7 | 16 | 140 | 89 | 7 | 4 |
| Trend | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 6 | 7.2 | 100% | 6.3 | -- | -- | -- |
| 2018 | 3 | 6 | 50% | 8.8 | -- | -- | -- |
| 2020 | 4 | 9.5 | 100% | 8 | -- | -- | -- |
| Trend | | | | | -- | -- | -- |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 5 | | 1 | |
| 2018 | | | 5 | | 1 | |
| 2020 | | | 3 | | 1 | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 5 | 100% | 0% | 100% | 0% | 100% | 261 | 5 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: **200-225**

2021 Nonresident season/tag eliminated. Based on aerial survey data obtained in 2018 and 2020, the bighorn population was modeled down (lowered some survival rates) from 150 to 140. The quota recommendation reflects a 1 tag increase. Based on population model, 8% of rams = 4 and 50% of 6+ rams = 7.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 262

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 97 | 10 | 10 | 190 | 123 | 12 | 6 |
| 2016-2017 | 156 | 17 | 13 | 170 | 108 | 12 | 5 |
| 2018-2019 | 152 | 12 | 14 | 150 | 95 | 10 | 4 |
| Trend | | | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 8 | 7.5 | 100% | 4.3 | -- | -- | -- |
| 2018 | 5 | 7.0 | 100% | 3 | -- | -- | -- |
| 2020 | 4 | 7.3 | 80% | 4.4 | -- | -- | -- |
| Trend | | | | | -- | -- | -- |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 6 | | 1 | |
| 2018 | | | 4 | | 1 | |
| 2020 | | | 4 | | 1 | |
| Trend | | | | | stable | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 5 | 100% | 0% | 100% | 0% | 100% | 262 | 5 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 600

2021 no nonresident. Recommended quota consistent with population model sideboards. The quota recommendation reflects half of the estimated number of rams 6+. Thus, recommend no change in total quota relative to last year.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn Unit Group: 263 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 137 | 9 | 11 | 330 | 204 | 24 | 10 |
| 2016-2017 | 239 | 6 | 27 | 280 | 175 | 26 | 8 |
| 2018-2019 | 226 | 11 | 28 | 220 | 157 | 16 | 5 |
| Trend | down | | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 9 | 6.3 | 100% | 7.8 | -- | -- | -- |
| 2018 | 10 | 7.0 | 100% | 6.7 | -- | -- | -- |
| 2020 | 11 | 8.7 | 100% | 2.5 | -- | -- | -- |
| Trend | up | up | stable | down | -- | -- | -- |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 7 | | 1 | |
| 2018 | | | 8 | | 1 | |
| 2020 | | | 7 | | 1 | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 7 | 100% | 0% | 85% | 15% | 100% | 263 | 6 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: 400

The last aerial survey was conducted in 2018. Available data portray a bighorn sheep population in decline since 2012 (2012-2019). Based on impressive harvest metrics and the rapid draw down rates on water developments this last fall - winter, it is quite possible the bighorn population is underestimated. The recommended quota reflects the high end of the sideboards in the population model. Thus, recommend no change in quota relative to last year. In 2020, two Heritage Tags and one Dream Tag were filled in the McCullough Range.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 267

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2012-2013 | -- | -- | -- | 300 | 200 | 12 | 8 |
| 2017-2018 | 271 | 24 | 8 | 300 | 200 | 12 | 8 |
| 2019-2020 | 251 | 14 | 23 | 300 | 200 | 12 | 8 |
| 2021 | | | | 300 | 160 | 12 | 8 |
| Trend | stable | stable | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 8 | 7.4 | 100% | 3.0 | -- | -- | |
| 2018 | 9 | 8.0 | 100% | 3.9 | -- | -- | |
| 2020 | 10 | 7.1 | 100% | 2.9 | -- | -- | |
| Trend | up | | stable | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|----|-----------------|----|
| | Res | NR | 267 | | 267 | |
| 2015 | -- | -- | 7 | -- | 1 | -- |
| 2018 | -- | -- | 8 | -- | 1 | -- |
| 2020 | -- | -- | 9 | -- | 1 | -- |
| Trend | | | up | | stable | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 10 | 100% | 0% | 90% | 10% | 100% | 267 | 9 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Recommend no change in quota relative to last year.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 268

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2012-2013 | -- | -- | -- | 600 | 332 | 33 | 22 |
| 2017-2018 | 642 | 60 | 80 | 700 | 366 | 39 | 26 |
| 2019-2020 | 480 | 31 | 54 | 650 | 310 | 37 | 25 |
| 2021 | -- | -- | -- | 600 | 300 | 43 | 26 |
| Trend | stable | stable | stable | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 29 | 6.1 | 97% | 4.1 | 26 | 74% | 0 |
| 2018 | 29 | 7.0 | 97% | 5.9 | 33 | 61% | 0 |
| 2020 | 31 | 7.6 | 97% | 5.8 | 47 | 65% | 0% |
| Trend | up | up | stable | stable | up | up | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|--------|-----------------|--------|
| | Res | NR | 268 | | 268 | |
| 2015 | 40 | -- | 25 | | 4 | |
| 2018 | 50 | 6 | 23 | | 4 | |
| 2020 | 72 | 8 | 28 | | 4 | |
| Trend | | | stable | stable | stable | stable |

Ram Quota Recommendations

| Total Ram Quota | | | Resident | | | Nonresident | | | | |
|-----------------|---------|--------|----------|------|---------|-------------|-------|------|-------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 42 | 100% | 0% | 87% | 13% | 100% | 268 | 37 | | 5 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | Avg % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| 240 | 60 | 20.0% | | 60 | 70% | 77 | 9 |

Quota and Population Objective Rationale

Population Objective: 500

In the latter half of 2020, lack of water availability in the western portion of the Muddy Mountains resulted in death for an unknown number of bighorn sheep. Thus, the population model reflects a 6% contraction from 2020. Ram to ewe ratios encountered in the last five aerial surveys: (2014-100 rams:100 ewes), (2015-116 rams:100 ewes), (2016-104 rams:100 ewes), (2017-94 rams:100 ewes), (2019-73 rams:100 ewes). Due to persistent drought conditions, the total ewe objective was revised downward from 275 in 2020 to 240. Two additional things to consider: a 2020 ram hunter in Unit 268 observed several sick rams in two areas. He reported that he harvested a sick ram. Also last year, a photographer in Unit 267 observed sick bighorn at/near Sandstone Spring in Unit 267. Notwithstanding disease, if by later in the year there is no evidence of exposure to M ovi in the Muddy - Black bighorn herd, there may be the possibility that sheep will be furnished to UDWR.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 271, 242

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 211 | 31 | 26 | 290 | 185 | 17 | 9 |
| 2018-2019 | 176 | 12 | 27 | 280 | 190 | 11 | 8 |
| 2020-2021 | | | | 300 | 197 | 9 | 8 |
| Trend | down | down | stable | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 11 | 8.5 | 91% | 9.8 | 0 | | 0 |
| 2018 | 9 | 6.8 | 100% | 5.3 | 0 | | 0 |
| 2020 | 9 | 8 | 90% | 6.4 | 0 | | 0% |
| Trend | down | stable | stable | down | stable | | stable |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 11 | | 1 | |
| 2018 | | | 8 | | 1 | |
| 2020 | | | 9 | | 1 | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|----------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 9 | 100% | 0% | 90% | 10% | 100% | 271, 242 | 8 | | 1 | |
| | | | | | 0% | 0 | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| 0 | 197 | 100% | 0 | 197 | 0% | #DIV/0! | #DIV/0! |

Quota and Population Objective Rationale

Population Objective: 400

The estimated population size has remained relatively stable with a slight upward trend driven by the female portion of the population. The number of mature rams has decreased relative to previous years. Hunter harvest and age of harvested rams has remained high, indicating an adequate number of mature rams on the landscape. I recommend no change in number of tags relative to last year.

Reporting Biologist: Daniel Sallee

Supervisor: Joe Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 272

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2012-2013 | -- | -- | -- | 130 | 80 | 5 | 4 |
| 2017-2018 | 81 | 3 | 8 | 90 | 59 | 6 | 3 |
| 2019-2020 | 55 | 7 | 5 | 90 | 58 | 6 | 3 |
| 2021 | -- | -- | -- | 90 | 57 | 4 | 3 |
| 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 2 | 3.0 | 100% | 15.5 | -- | -- | -- |
| 2018 | 1 | 4.0 | 50% | 21.5 | -- | -- | -- |
| 2020 | 0 | -- | 0% | 7.0 | -- | -- | -- |
| Trend | down | | down | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | -- | -- | 2 | -- | -- | -- |
| 2018 | -- | -- | 2 | -- | -- | -- |
| 2020 | -- | -- | 1 | -- | -- | -- |
| Trend | | | stable | | | |

Ram Quota Recommendations

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

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2019 % Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|-------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Unit 272 is remote, vast and sparsely populated by bighorn sheep. Hunter success over the last ten years (2011 - 2020) was 53%. Recommend no change in ram quota relative to last year.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 280

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 94 | 2 | 8 | 122 | 78 | 8 | 4 |
| 2018-2019 | 162 | 4 | 14 | 157 | 103 | 5 | 4 |
| 2020-2021 | 100 | 8 | 8 | 142 | 91 | 6 | 4 |
| Trend | | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 1 | 6 | 33% | 1 | -- | -- | -- |
| 2018 | 3 | 8.3 | 75% | 3.3 | -- | -- | -- |
| 2020 | 4 | 9 | 80% | 3.6 | -- | -- | -- |
| Trend | up | up | up | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 3 | | | |
| 2018 | | | 4 | | | |
| 2020 | | | 5 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

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

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: **200-225**

Harvest metrics and model simulation support a quota of 5 to 6 ram tags. Aerial survey data obtained in fall 2020, reflect low lamb and yearling ram representation and may indicate disease was/is an underlying factor in the recent apparent population contraction. Recommend no change in ram quota relative to last year.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 281

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 84 | 11 | 12 | 220 | 127 | 7 | 7 |
| 2018-2019 | 98 | 9 | 10 | 200 | 123 | 7 | 6 |
| 2020-2021 | 109 | 7 | 20 | 210 | 126 | 10 | 7 |
| Trend | up | down | | | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 5 | 6.8 | 100% | 4 | -- | -- | -- |
| 2018 | 6 | 6.7 | 86% | 3.9 | -- | -- | -- |
| 2020 | 6 | 8 | 100% | 3.8 | -- | -- | -- |
| Trend | stable | stable | stable | stable | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 5 | | | |
| 2018 | | | 7 | | | |
| 2020 | | | 6 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 8 | 100% | 0% | 100% | 0% | 100% | 281 | 8 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective: **300-320**

2021 bighorn population model simulation results - ram quota sideboards: 8% of rams = 7 and 50% of 6+ rams = 10. In 2020, harvest metrics were noteworthy. Recommend increase in ram quota from 6 to 8.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 282

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 70 | 2 | 5 | 130 | 85 | 5 | 4 |
| 2018-2019 | 49 | 4 | 3 | 140 | 92 | 7 | 4 |
| 2020-2021 | 97 | 8 | 12 | 160 | 97 | 7 | 5 |
| 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 3 | 6 | 60% | 11.4 | -- | -- | -- |
| 2018 | 4 | 7.8 | 100% | 3.3 | -- | -- | -- |
| 2020 | 3 | 10 | 75% | 7.3 | -- | -- | -- |
| Trend | | up | | | -- | -- | -- |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 5 | | | |
| 2018 | | | 4 | | | |
| 2020 | | | 4 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 5 | 100% | 0% | 100% | 0% | 100% | 282 | 5 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Recommend increase in quota from 4 to 5 tags. Recommendation based on increased number of rams encountered on fall 2020 aerial survey and population model simulation.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

 Subspecies: Desert Bighorn

 Unit Group: 283-284

 Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 240 | 15 | 16 | 260 | 158 | 17 | 8 |
| 2017-2018 | 186 | 12 | 12 | 230 | 140 | 15 | 7 |
| 2019-2020 | 77 | 6 | 6 | 220 | 134 | 11 | 7 |
| 2021 | -- | -- | -- | 220 | 130 | 14 | 7 |
| Trend | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 3 | 7.3 | 60% | 14.0 | -- | -- | -- |
| 2018 | 3 | 6.0 | 43% | 10.3 | -- | -- | -- |
| 2020 | 4 | 5.3 | 80% | 11.0 | -- | -- | -- |
| Trend | stable | down | | | -- | -- | -- |

Previous Quotas

| | Ewes Res | Ewes NR | Ram Resident | | Ram Nonresident | |
|-------|----------|---------|--------------|------|-----------------|------|
| | | | Early | Late | Early | Late |
| 2015 | | | 4 | | 1 | |
| 2018 | | | 6 | | 1 | |
| 2020 | | | 4 | | 1 | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | Early % | Late % | Resident | | | | Nonresident | | | |
|-----------------|---------|--------|----------|------|---------|---------|-------------|------|-------|------|
| | | | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 5 | 100% | 0% | 80% | 20% | 100% | 283-284 | 4 | | 1 | |
| | | | 0% | | | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

 Population Objective: 800-1000

Recommend no change in ram quota relative to last year.

 Reporting Biologist: Cummings

 Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 286

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 70 | 8 | 8 | 130 | 77 | 9 | 4 |
| 2017-2018 | 230 | 7 | 13 | 160 | 93 | 8 | 5 |
| 2019-2020 | 148 | 11 | 8 | 170 | 99 | 5 | 5 |
| 2021 | -- | -- | -- | 170 | 100 | 4 | 5 |
| Trend | | | | up | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 2 | 5.5 | 100% | 10.0 | -- | -- | -- |
| 2018 | 4 | 7.3 | 80% | 11.5 | -- | -- | -- |
| 2020 | 5 | 6.6 | 100% | 7.0 | -- | -- | -- |
| Trend | | | | | -- | -- | -- |

Previous Quotas

| | Ewes Res | Ewes NR | Ram Resident | | Ram Nonresident | |
|-------|----------|---------|--------------|------|-----------------|------|
| | | | Early | Late | Early | Late |
| 2015 | | | 2 | | | |
| 2018 | | | 5 | | | |
| 2020 | | | 5 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | Resident | | Nonresident | |
|-----------------|----------|--------|-------------|------|
| | Early % | Late % | Early | Late |
| 5 | 100% | 0% | 5 | 0 |
| | | 0% | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Recommend no change in quota relative to last year.

Reporting Biologist: Cummings

Supervisor: Bennett

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: _____

Year 2021

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 | 41 | 3 | 6 | 45 | 21 | 3 | 0.96 |
| 2019-2020 | 48 | 5 | 6 | 50 | 24 | 3 | 0.96 |
| 2020-2021 | 34 | 1 | 6 | 35 | 16 | 3 | 1.04 |
| Trend | down | stable | down | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 1 | 6 | 100% | 5 | | | |
| 2018 | 1 | 10 | 100% | 3 | | | |
| 2020 | 1 | 5 | 100% | 15 | | | 11% |
| Trend | stable | stable | stable | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 1 | | | |
| 2018 | | | 1 | | | |
| 2020 | | | 1 | | | |
| Trend | | | stable | | | |

Ram Quota Recommendations

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

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Efforts to remove the disease pathogen *Mycoplasma ovipneumoniae* from the Snowstorm California bighorn population are continuing. This effort requires close monitoring of the remaining bighorn in Unit 066. Due to this close monitoring, biologists are confident there will be an estimated six mature rams on the Snowstorms this summer, so the lone tag holder should have an opportunity to harvest a mature ram. The tag quota recommendation of one has remained unchanged for several years.

Reporting Biologist: Jeffress

Supervisor: Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: California Bighorn

Unit Group: 068

Year 2021

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 | 108 | 12 | 4 | 160 | 78 | 18 | 7 |
| 2019-2020 | 109 | 13 | 12 | 150 | 72 | 13 | 7 |
| 2020-2021 | 101 | 4 | 1 | 150 | 69 | 10 | 6 |
| Trend | down | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2018 | 7 | 7.1 | 100% | | 2 | 100% | 0 |
| 2019 | 8 | 7.3 | 100% | 8 | 1 | 100% | 15 |
| 2020 | 12 | 7.2 | 100% | 5 | 1 | 100% | 14 |
| Trend | up | stable | stable | down | down | stable | down |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|--------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2018 | 2 | | 6 | | | |
| 2019 | 1 | | 7 | | 1 | |
| 2020 | 1 | | 8 | | 1 | |
| Trend | stable | | up | | stable | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 6 | 100% | 0% | 85% | 15% | 100% | 068 | 5 | | 1 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

The Sheep Creek herd will continue to be managed to maintain its current population level (~150 adult animals). All three specialty tags were filled in 068 in 2020, so a more conservative 2021 tag quota of 6 is being recommended to account for that increased ram harvest.

Reporting Biologist: S. Hale

Supervisor: T. Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: Rocky Mountain Bighorn

Unit Group: 074

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 20 | 2 | 1 | 29 | 15 | 1 | 1 |
| 2018-2019 | 18 | 3 | 2 | 27 | 14 | 2 | 1 |
| 2020-2021 | 23 | 2 | 5 | 33 | 17 | 3 | 1 |
| Trend | up | stable | up | up | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 0 | | | | | | |
| 2018 | 0 | | | | | | |
| 2020 | 1 | 5 | 100% | 4 | | | |
| Trend | | | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 0 | | | |
| 2018 | | | 0 | | | |
| 2020 | | | 1 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 1 | 100% | 0% | 100% | 0% | 100% | 074 | 1 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

This herd remains stable. Lamb ratios showed a slight increase two years ago, but are back down the past two years. Ewes actively shedding M.ovi are still being identified to allow biologists to make management decisions that could help remove the pathogen from the herd. The ram quota will remain at 1 until this herd can start recovering from depressed lamb recruitment.

Reporting Biologist: Huebner

Supervisor: Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: Rocky Mountain Bighorn

Unit Group: 091

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2015-2016 | 24 | 0 | 10 | 65 | 38 | 8 | 2 |
| 2018-2019 | 43 | 4 | 4 | 53 | 32 | 5 | 2 |
| 2020-2021 | 40 | 2 | 5 | 40 | 25 | 2 | 1 |
| Trend | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 1 | 7 | 100% | | | | |
| 2018 | 1 | 9 | 100% | | | | |
| 2020 | 1 | 5 | 100% | | | | |
| Trend | | | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 1 | | | |
| 2018 | | | 1 | | | |
| 2020 | | | 1 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

| Total Ram Quota | Resident | | Nonresident | | Unit(s) |
|-----------------|----------|--------|-------------|------|---------|
| | Early % | Late % | Early | Late | |
| 0 | 100% | 0% | 100% | 0% | 091 |
| | | | 0% | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

This herd remains stable. A season will not be offered in 2021. Few older rams are present in the population, primarily due to predation. Continuing increases in lamb production over the next few years will be necessary to consider opening the season again in the foreseeable future.

Reporting Biologist: Huebner

Supervisor: Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: Rocky Mountain Bighorn

Unit Group: 114

Year 2021

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 | 54 | 2 | 0 | 90 | 55 | 3 | 3 |
| 2019-2020 | 53 | 8 | 0 | 95 | 56 | 4 | 3 |
| 2020-2021 | 31 | 2 | 0 | 105 | 61 | 5 | 3 |
| Trend | down | down | stable | up | up | 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 | 4 | 5 | 100% | 10 | | | |
| 2019 | 2 | 5.5 | 100% | 10 | | | |
| 2020 | 1 | 5 | 33% | 29 | | | |
| Trend | down | stable | down | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|--------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2018 | 4 | | 2 | 2 | | |
| 2019 | 3 | | 2 | 1 | | |
| 2020 | 3 | | 2 | 1 | | |
| Trend | down | | stable | stable | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 3 | 100% | 0% | 100% | 0% | 100% | 114 | 3 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Due to lower hunter success and the difficult nature of this unit, the early and late hunts were replaced with one continuous season. The new season is August 1st to February 20th. The long season will allow hunters to hunt various seasonal habitats and various stages of bighorn behavior. This population is showing a slight increase because of improved lamb recruitment. Recommended quotas are the same as 2020.

Reporting Biologist: Kody Menghini

Supervisor: Tom Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: Rocky Mountain Bighorn

Unit Group: 115

Year 2021

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 | 18 | 3 | 2 | 50 | 28 | 3 | 2 |
| 2019-2020 | 9 | 2 | 1 | 50 | 29 | 3 | 2 |
| 2020-2021 | 29 | 3 | 3 | 60 | 34 | 3 | 2 |
| 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2018 | 1 | 7 | 100% | 7 | | | |
| 2019 | 2 | 3 | 100% | 10 | | | |
| 2020 | 0 | 0 | 0% | NA | | | |
| Trend | down | down | down | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2018 | | | 1 | | | |
| 2019 | | | 2 | | | |
| 2020 | | | 2 | | | |
| Trend | | | stable | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 2 | 100% | 0% | 100% | 0% | 100% | 115 | 2 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

Collar data is showing that bighorn start moving out of Great Basin National Park in November. In response to this knowledge the opening date for this hunt was moved from December 20th to November 15th. The ending date is still February 20th. This population is showing a slight increase because of improved lamb recruitment. Recommended quotas are the same as 2020.

Reporting Biologist: Kody Menghini

Supervisor: Tom Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 131,164

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2014-2015 | 76 | 8 | 6 | 140 | 88 | 12 | 4 |
| 2017-2018 | 61 | 6 | 3 | 110 | 70 | 10 | 3 |
| 2019-2020 | 59 | 2 | 1 | 80 | 56 | 5 | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 4 | 5.8 | 80% | 4.7 | | | |
| 2018 | 3 | 7.3 | 100% | 8 | | | |
| 2020 | 1 | 6 | 33% | 14.7 | | | |
| Trend | down | down | down | up | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 5 | | | |
| 2018 | | | 3 | | | |
| 2020 | | | 3 | | | |
| Trend | | | stable | | | |

Ram Quota Recommendations

| Total Ram Quota | | | | | | | Resident | | Nonresident | |
|-----------------|---------|--------|-------|------|---------|---------|----------|------|-------------|------|
| | Early % | Late % | Res % | NR % | % Split | Unit(s) | Early | Late | Early | Late |
| 1 | 100% | 0% | 100% | 0% | 100% | 131,164 | 1 | | 0 | |
| | | | | | 0% | | | | | |

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

The previous 5 year average age of harvested rams is 6 yrs, which meets the management objective of ≥ 6 yrs. For 2020, the average days hunted per tag holder was 14.7 days with a 33% success rate. The statewide average was 4.6 days hunted per tag holder with a 95% success rate. No formal bighorn survey was conducted in 2020, but the previous 5 year average observed lamb ratio was 23 lambs:100 ewes. An abbreviated ground survey and short fly over during a different survey effort only turned up 3 ewes and no lambs. Given the lack of observed sheep in unit 131, along with the comparatively poor hunter success rates and days per hunter metric, it is thought that 131 may be experiencing another disease event. The majority of the sheep observed during past surveys are from unit 164.

Reporting Biologist: Clint Garrett

Supervisor: Tom Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 132N

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2014-2015 | 26 | 0 | 0 | 110 | 65 | 3 | 3 |
| 2017-2018 | 85 | 11 | 5 | 100 | 61 | 8 | 3 |
| 2019-2020 | 103 | 10 | 6 | 120 | 73 | 6 | 4 |
| Trend | up | stable | stable | up | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 0 | 0 | 0% | 0 | | | |
| 2018 | 2 | 5 | 67% | 2.5 | | | |
| 2020 | 3 | 5 | 100% | 1 | | | |
| Trend | | | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 1 | | | |
| 2018 | | | 4 | | | |
| 2020 | | | 4 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

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

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

The previous 5 year average age of harvested rams is 5.4 yrs, which is below the management objective of ≥ 6 . For 2020, the average days hunted per tag holder was 1 day with a 100% success rate (1 returned tag). The statewide average was 4.6 days hunted per tag holder with a 95% success rate. No formal bighorn survey was conducted in 2020, but the previous 5 year average observed lamb ratio was 44 lambs:100 ewes. The 2021 recommended tag quota of 4 is being split between Unit 132N and 132S, with 2 tags in each unit. The combined recommendation is based on 8% of total rams.

Reporting Biologist: Clint Garrett

Supervisor: Tom Donham

Bighorn Sheep Quota Recommendation Form

Subspecies: Desert Bighorn

Unit Group: 132S

Year 2021

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 |
|-----------|--------------|------------------------|-----------------------|--------------|----------------------|--------------------|---------------|
| 2014-2015 | 26 | 0 | 0 | 110 | 65 | 3 | 3 |
| 2017-2018 | 85 | 11 | 5 | 100 | 61 | 8 | 3 |
| 2019-2020 | 103 | 10 | 6 | 120 | 73 | 6 | 4 |
| Trend | up | stable | stable | up | up | 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 |
|-------|----------------|----------------------------|----------------------|-----------------|----------------|----------------------|------------------------|
| 2015 | 0 | 0 | 0% | 0 | | | |
| 2018 | 2 | 5 | 67% | 2.5 | | | |
| 2020 | 3 | 5 | 100% | 1 | | | |
| Trend | | | | | | | |

Previous Quotas

| | Ewes | | Ram Resident | | Ram Nonresident | |
|-------|------|----|--------------|------|-----------------|------|
| | Res | NR | Early | Late | Early | Late |
| 2015 | | | 1 | | | |
| 2018 | | | 4 | | | |
| 2020 | | | 4 | | | |
| Trend | | | | | | |

Ram Quota Recommendations

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

Ewe Removal Recommendations

| Total Ewe Objective | # Reduce | % Reduce | Nonlethal | Harvest | 2020% Succ | Res Tags | NR Tags |
|---------------------|----------|----------|-----------|---------|------------|----------|---------|
| | | | | | | | |

Quota and Population Objective Rationale

Population Objective:

The previous 5 year average is 5.4 yrs, which is below the management objective of ≥ 6 yrs. For 2020, the average days hunted per tag holder was 1 day with a 100% success rate (1 returned tag). The statewide average was 4.6 days hunted per tag holder with a 95% success rate. No formal bighorn survey was conducted in 2020, but the previous 5 year average observed lamb ratio was 44 lambs:100 ewes. The 2021 recommended tag quota of 4 is being split between Unit 132N and 132S, with 2 tags in each unit. The combined recommendation is based on 8% of total rams.

Reporting Biologist: Clint Garrett

Supervisor: Tom Donham