# FINAL
# ENVIRONMENTAL DOCUMENT

Section 362, Title 14, California Code of Regulations

Regarding

# Bighorn Sheep Hunting

**SCH# 2018112036**

May 10, 2019

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND WILDLIFE
On behalf of the FISH AND GAME COMMISSION

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# CHAPTER 1. SUMMARY

Existing law (Section 4902, California Fish and Game Code (FGC)) allows the Fish and Game Commission (Commission) to authorize sport hunting of mature Nelson bighorn rams in geographic areas for which management plans have been developed. Section 4901 of the FGC directs the Department of Fish and Wildlife (Department) to develop management plans for each Nelson bighorn sheep unit. These plans guide conservation actions and support recreational harvest opportunities established by the Commission. Appendix 1 includes FGC sections pertinent to Nelson bighorn sheep management.

State law requires the Commission to review the mammal hunting regulations, and the Department to present its recommendations for changes to the mammal hunting regulations to the Commission at a public meeting. Mammal hunting regulations adopted by the Commission provide for hunting Nelson bighorn sheep in specific areas of the State (Section 362, Title 14, California Code of Regulations (CCR)). The full text of Section 362 with proposed changes appears in Appendix 2.

In adopting regulations for limited hunting of mature Nelson bighorn sheep rams, the Commission would implement Section 4902 of the FGC, which is consistent with the wildlife conservation policy adopted by the California Legislature (Section 1801, FGC). The State's wildlife conservation policy, among other things, includes an objective of providing hunting opportunities when such use is consistent with maintaining healthy wildlife populations.

## PROPOSED PROJECT AND ALTERNATIVES

The proposed project involves modifications to the current bighorn sheep hunting regulations for the 2019/2020 hunting season and continuing until the Commission adopts subsequent regulations modifying the tag limits. The tag limits will be consistent with statutory limitations (sections 4900 to 4904, FGC) on mature ram harvest within each hunt zone. Specifically, the Department proposes to:

- Increase the tag quota range in the Marble Mountains Zone by one tag, the Clark/Kingston Mountain Ranges Zone by two tags, and the White Mountains Zone by one tag

- Increase the individual tag quotas in other zones within previously analyzed quota ranges
- Establish a new hunt zone in the Newberry, Rodman, and Ord Mountains;
- Reallocate the Kelso and Old Dad Peak Fund-Raising Tag to the Cady Mountains Fund-Raising tag (see full regulatory text in Appendix 2).

In total, the project would increase the total availability of tags by ten, for a statewide total of up to 42 tags. Because final tag allocations are not established until survey results are completed and analyzed, the Commission, based on a recommendation from the Department, is evaluating a potential range of proposed hunting tag quotas. Upon completion of the aforementioned analyses, the Department will provide the Commission with an updated recommendation to evaluate as it makes a final decision on hunting tag allocations.

The Commission is also considering two alternatives to the proposed project that could feasibly attain the objectives of the project. Alternative 1 (no change) would maintain the existing tag quotas and zone without change. Alternative 2 (increased harvest) involves increasing tag quotas in the existing hunt zones by 50 percent. Current and proposed harvest strategies generally allow for continued population growth through time while remaining consistent with the statutory limitations. The Increased Harvest alternative may not affect population growth over time but would likely exceed the statutory limit of mature ram harvest in most hunt zones.

## SUMMARY OF IMPACTS AND MITIGATION

Table 1 summarizes Commission findings that there are no significant long-term adverse impacts associated with the proposed project or any of the project alternatives considered for the 2019 Nelson bighorn sheep hunting regulations.

**Table 1: Effects on the Environment of Limited Public Hunting of Bighorn Sheep**

| Alternative | Significant Impact | Nature of Impact | Mitigation Available | Nature of Mitigation |
|---|---|---|---|---|
| **Proposed Project**: Modify number of tags, establish a new hunt zone, and reallocate a fund-raising tag | No | None | N/A | N/A |
| **Alternative 1:** No change | No | None | N/A | N/A |
| **Alternative 2:** Increased harvest of mature rams | No | None | N/A | N/A |

It is anticipated the number of tags issued will fall near the upper end of the proposed ranges (Table 2). Given the low number of tags in each zone, the resulting harvest for 2019 will likely be similar to that of 2018. On a statewide basis, the total hunter harvest will likely exceed that of previous years due to high hunter success (generally approaching 100 percent), the increased number of tags and addition of one new hunt zone. Based on success rates from previous years, the actual harvest is anticipated to be approximately 95 percent of the bighorn sheep tags allocated for 2019.

TRIBAL COORDINATION

The Department is committed to developing and maintaining an effective, positive and cooperative relationship with California federally recognized Tribes (Tribes) regarding Nelson bighorn sheep management. In order to achieve the goals regarding California's bighorn sheep populations, innovative management actions and collaboration will be required, and guidance from a statewide management plan (management plan) for Nelson bighorn sheep currently in development is necessary to help mediate competing and conflicting interests and assure the conservation, protection, restoration, enhancement and reestablishment of California's bighorn sheep populations and habitat. This is critical to providing cultural, scientific, educational, recreational, aesthetic and economic benefits for present and future generations of Californians.

A letter to Tribal Representatives on November 7, 2018 provided notification of the Department's proposal to amend hunting regulations for Nelson bighorn sheep pursuant

to the California Environmental Quality Act (CEQA), Public Resources Code Section 21080.3.1. The letter described opportunities to provide input to the proposed regulations through consultation pursuant to Public Resources Code sections 21080.3.1 and 21030.3.2, or during the public comment period for release of the Environmental Document.

## AREAS OF CONTROVERSY

A Notice of Preparation was filed with the State Clearinghouse on November 13, 2018. Pursuant to Section 21080.3.1 of the California Environmental Quality Act (CEQA), in a joint letter, the Commission and Department informed Tribal Representatives of the proposed project. One Tribe requested to review the Draft Environmental Document (DED).

Both the Commission and the Department have encouraged public input regarding the nature and scope of the environmental impacts to be addressed in the Environmental Document (ED). The Department presented information on potential changes to bighorn sheep hunting regulations at the September 20, 2018 Wildlife Resources Committee (WRC) meeting held in Sacramento. A scoping session to discuss documents prepared in support of mammal hunting and trapping regulations was held in Sacramento, CA on November 30, 2018. No areas of controversy regarding nelson bighorn sheep hunting were identified at either meeting. Written comments have been submitted regarding specific hunting regulation changes (Appendix 3); no comments were received related to the scope of the analysis on environmental impacts under the CEQA.

## RESOURCE AREAS ANALYZED IN THIS DOCUMENT

This Final Environmental Document (FED) analyzes the potential for significant impacts to Biological Resources and Recreation, as well as Cumulative Impacts. After completing an initial study (Appendix 4), reviewing the comments received during the scoping period, and evaluating the potential environmental impacts of the project, the other resource areas were eliminated based on the Commission's determination that there was no potential for significant impact in those areas.

## ISSUES TO BE RESOLVED

As provided by existing law, the Commission is the decision-making body (lead agency) considering the proposed project, while the Department has the responsibility for conducting management activities, such as resource assessments, preparing management plans, operating public hunting opportunities, and enforcing laws and regulations. The primary issue for the Commission to resolve is whether to change Nelson bighorn sheep hunting regulations as an element of bighorn sheep management. If such changes are authorized, the Commission will specify the areas, seasons, methods of take, number of bighorn sheep tags to be allocated, and other special conditions.

## FUNCTIONAL EQUIVALENCY

CEQA requires all public agencies in the State to evaluate the environmental impacts of projects they approve, including regulations, which may have a potential to significantly affect the environment. CEQA review of the proposed project will be conducted in accordance with the Commission's Certified Regulatory Program (CRP) approved by the Secretary for the California Resources Agency pursuant to Public Resources Code Section 21080.5 (See generally CCR, Title 14, sections 781.5 and 15251(b)). The Department has prepared this FED, which is the functional equivalent of an Environmental Impact Report, on behalf of the Commission in compliance with this requirement. The FED provides the Commission, other agencies, and the general public with an objective assessment of the potential effects of the proposed action.

In addition, pursuant to Section 15087 of the CEQA Guidelines, this ED is available for public review for 45 days. During the review period, the public is encouraged to provide written comments regarding the environmental document to the Department of Fish and Wildlife, Wildlife Branch, 1812 9th Street, Sacramento, CA 95811. The original deadline for comments to the Department of April 5, 2019 and was extended to May 8, 2019. This ED and any documents incorporated by reference will be available for inspection at: 1812 9th Street, Sacramento, CA 95811.

Written and oral comments received in response to the DED will be addressed in a Response to Comments Chapter, which, together with the DED, will constitute the Final

Environmental Document. In addition, the Commission will consider the comments received pursuant to the Administrative Procedure Act addressing the proposed regulations. The rulemaking process under the Administrative Procedure Act to promulgate regulations is running concurrently with this environmental review pursuant to CEQA. This Final Environmental Document will inform the Commission's exercise of discretion as lead agency under CEQA in deciding whether or how to approve the proposed project as described in this document and the proposed regulations.

## CHAPTER 2. THE PROPOSED ACTION

The Commission, based on a recommendation from the Department, is considering the following modifications to existing Nelson bighorn sheep hunting regulations.

1. Increase the Tag Range in the Marble Mountains Zone, the Clark/Kingston Mountain Ranges Zone, and the White Mountains Zone

In order to maintain management goals and objectives, it is periodically necessary to modify quotas in response to dynamic environmental and biological conditions. This proposed project modifies Nelson bighorn sheep tag ranges to account for fluctuations in populations of bighorn sheep (Table 2).

The increased tags will allow the Department to increase opportunity while providing a biologically appropriate harvest within the Marble Mountains, Clark/Kingston Mountain Ranges, and White Mountains zones. The new tag ranges would be 0-5, 0-4, and 0-6 respectively for the general draw hunts in those zones.

Section 4902, FGC limits the number of hunting tags for mature Nelson bighorn sheep rams to no more than 15 percent of the number of such males estimated to occur in each geographic area for which an approved management plan has been prepared. Annual population estimates are based on aerial surveys carried out by Department biologists, or on models developed from data obtained during those aerial surveys. Annual survey data or resulting models of population size upon which tag allocations are based are available from the Wildlife Branch, California Department of Fish and Wildlife, Sacramento, California.

2. Establish a New Hunt Zone

There are currently 9 bighorn sheep hunting zones in California. As a result of successful Nelson bighorn sheep conservation and management efforts in the Newberry, Rodman and Ord Mountains in San Bernardino County, a new hunt zone with a tag range of 0-6 is proposed. The new Nelson bighorn sheep hunt zone would be called the Newberry, Rodman and Ord Mountains bighorn sheep hunt and be added to the list of areas open to hunting of Nelson bighorn sheep (Figure 1). The number of tags (range 0-6) to be issued would be restricted to no more than 15 percent of the number of mature Nelson bighorn rams estimated to occur in the hunt zone, as stipulated by state law. Tags would be available to the general public during a season beginning on the first Saturday in December 2019, and continuing through the first Sunday in February 2020 . This opportunity complies with sections 4900 to 4904 of the FGC and recommendations provided in a management plan for the Newberry, Rodman and Ord Mountains Unit, forthcoming in March 2019.

3. Reallocate a Fund-raising Tag

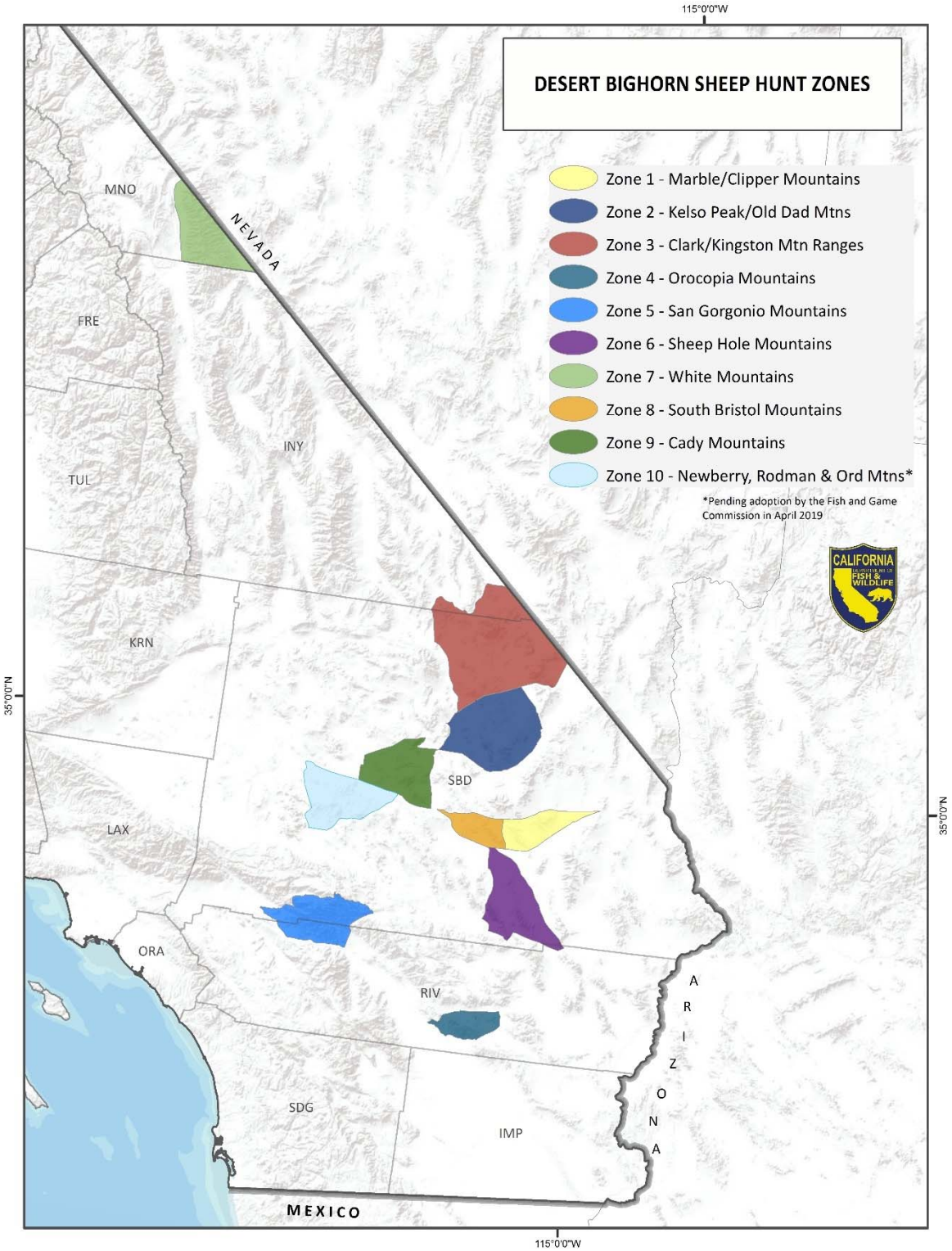
The proposed project would reallocate the Kelso and Old Dad Peak fund-raising tag to the Cady Mountains. This tag shall be valid from the first Saturday of November 2019 through the first Sunday of February 2020.

**Table 2: Proposed 2019 Tag Allocation**

| Hunt Zone or Tag | 2018 Tag Allocation | 2018 Tag Range | 2019 Tag Range (Proposed) |
|---|---|---|---|
| Zone 1 - Marble Mountains | 4 | 0-4 | 0-5 |
| Zone 2 - Kelso Peak/Old Dad Mountains | 0 | 0-4 | 0-4 |
| Zone 3 - Clark/Kingston Mountain Ranges | 2 | 0-2 | 0-4 |
| Zone 4 - Orocopia Mountains | 1 | 0-2 | 0-2 |
| Zone 5 - San Gorgonio Wilderness | 2 | 0-3 | 0-3 |
| Zone 6 - Sheep Hole Mountains | 0 | 0-2 | 0-2 |
| Zone 7 - White Mountains | 3 | 0-5 | 0-6 |
| Zone 8 - South Bristol Mountains | 1 | 0-3 | 0-3 |
| Zone 9 - Cady Mountains | 4 | 0-4 | 0-4 |
| Zone 10 - Newberry, Rodman, Ord Mountains (New) | - | - | 0-6 |

| | | | |
|---|---|---|---|
| Open Zone Fund-Raising Tag | 1 | 0-1 | 0-1 |
| Marble/Clipper/South Bristol Mountains Fund-Raising Tag | 1 | 0-1 | 0-1 |
| Kelso and Old Dad Peak Fund-Raising Tag | 0 | 0-1 | - |
| Cady Mountains Fund-Raising Tag (New) | - | - | 0-1 |
| TOTAL | 19 | 0-32 | 0-42 |

**Figure 1: Desert Bighorn Sheep Hunt Zones**



## BACKGROUND AND EXISTING CONDITIONS

### *Historical Perspective of Bighorn Sheep Management in California*

Bighorn sheep existing today probably are the descendants of similar animals that entered North America via the Bering land bridge during the Illinoisan glaciation, at least 150,000 years ago (Cowan 1940, Geist 1970). Wild sheep spread across the glaciated mountains of western North America during the Sangamon interglacial period. The Wisconsin glaciation, 10,000 to 125,000 years ago, then separated the animals into two populations that persisted in unglaciated areas. Subsequently, Dall's sheep (*Ovis dalli*) evolved from populations in the Alaska-Yukon region, and bighorn sheep (*Ovis canadensis*) evolved in a region south of glaciated mountains and forests in what is now the continental United States (as summarized by Bailey 1980). Following the Wisconsin glaciation, wild sheep radiated into dry, mountainous terrain.

Geist (1971) tied the evolution of Asiatic and North American sheep to the expanding availability of favorable habitat, an occurrence concomitant with receding glaciers. The races, or subspecies, of *Ovis canadensis* currently recognized as desert bighorn sheep evolved from wild sheep that persisted in the southern region despite climatic changes. In part, they may have persisted because of the lack of competition with other large, native herbivores (Bailey 1980).

In California, bighorn sheep are found primarily in the southeastern part of the State in numerous Mojave and Sonoran desert mountain ranges. They also occur in several populations in the eastern Sierra Nevada; and, in three populations, in the Transverse Ranges of Ventura, Los Angeles, and San Bernardino counties. The probable historical and current distributions of bighorn sheep in California are illustrated in Figure 2.

Until recently, taxonomists have recognized three subspecies of mountain sheep in the state, including *O. c. californiana* (which was thought to occur throughout the Sierra Nevada and historically in northeastern California), *O. c. nelsoni* (which occurs throughout the majority of the Mojave and Sonoran deserts and in the transverse ranges of southwest California), and *O. c. cremnobates* (which occupied the peninsular ranges located primarily near the border with Mexico) (Cowan 1940). There have, however, been recent changes in nomenclature with respect to bighorn sheep inhabiting the Sierra Nevada and the peninsular ranges. Indeed, bighorn sheep occupying the

Sierra Nevada were designated *O. c. californiana* and are the only representative of that taxon; at the same time, all other wild sheep formerly designated as *O. c. californiana* were synonymized with *O. c. canadensis*, and are now recognized as the Rocky Mountain subspecies (Wehausen and Ramey 2000). Moreover, bighorn sheep inhabiting the peninsular ranges and formerly recognized as the subspecies *cremnobates*, were synonymized with *O. c. nelsoni*, and no longer are considered a distinct subspecies (Wehausen and Ramey 1993).

To further complicate nomenclature, Joseph Grinnell (1912) had assigned the subspecific epithet *sierrae* to those animals he described from the Sierra Nevada before Cowan (1940) published his revision of the taxonomy of North American mountain sheep and, obviously, before Wehausen and Ramey (2000) synonymized *californiana* with *canadensis*. Because sheep in the Sierra Nevada warrant subspecific recognition (Wehausen and Ramey 2000), judicious application of the rule of priority as it appears in the International Code of Zoological Nomenclature dictates that those animals are once again assigned to the subspecies *sierrae* (Wehausen et al. 2005).

Throughout much of the range occupied by bighorn sheep, the downward trend in numbers began with the human settlement of vast, uninhabited areas (Buechner 1960). Although a great deal of attention has been paid to the potential impacts of unregulated market hunting associated with the influx of gold mining during the 1850s (Buechner 1960) another likely factor was the introduction of livestock, primarily domestic sheep, throughout much of the range of bighorn sheep (Buechner 1960). Indeed, Francisco Garces, who chronicled the expeditions of Father Anza as he traveled from what is now Arizona north and west toward the Pacific coast of California, described dead and dying bighorn sheep in the Santa Rosa Mountains of southern California as early as 1776 (Bolton 1930). Garces described dead and moribund animals in association with livestock being herded northward by the Anza Expedition (Bolton 1930). Further evidence persists in the form of a legend among the Kaliwa Indians of Baja California, which describes a pestilence that killed many wild sheep in northern Mexico following the arrival of Spaniards and their livestock (Tinker 1978).

Historically, bighorn sheep were more numerous than they are today (Buechner 1960); a reasonable estimate for California is about 10,000 individuals in 1800 (Bleich 2006). These animals were distributed among approximately 100 populations at that time (Wehausen et al. 1987a).

In the decades immediately following the discovery of gold in California, several populations of bighorn sheep in the Sierra Nevada were eliminated, likely as a result of diseases contracted from domestic sheep that were grazed in that mountain range. The reduction in bighorn sheep, and wildlife populations in general, resulted in the first legal protection for bighorn sheep and other species of large mammals in California. At that time, it was believed that wildlife populations protected from hunting would flourish and recolonize former ranges and, in 1872, the California Legislature passed a law protecting deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), and pronghorn (*Antilocapra americana*) for eight months of the year. In 1878, the Legislature amended the act to establish a four-year moratorium on the taking of any elk, pronghorn antelope, bighorn sheep, or female deer and, in 1883, the moratorium on taking bighorn sheep was extended indefinitely. In 1933, bighorn sheep became the first species in California to be classified as "fully protected" by the California Legislature (California Department of Fish and Game 2005a).

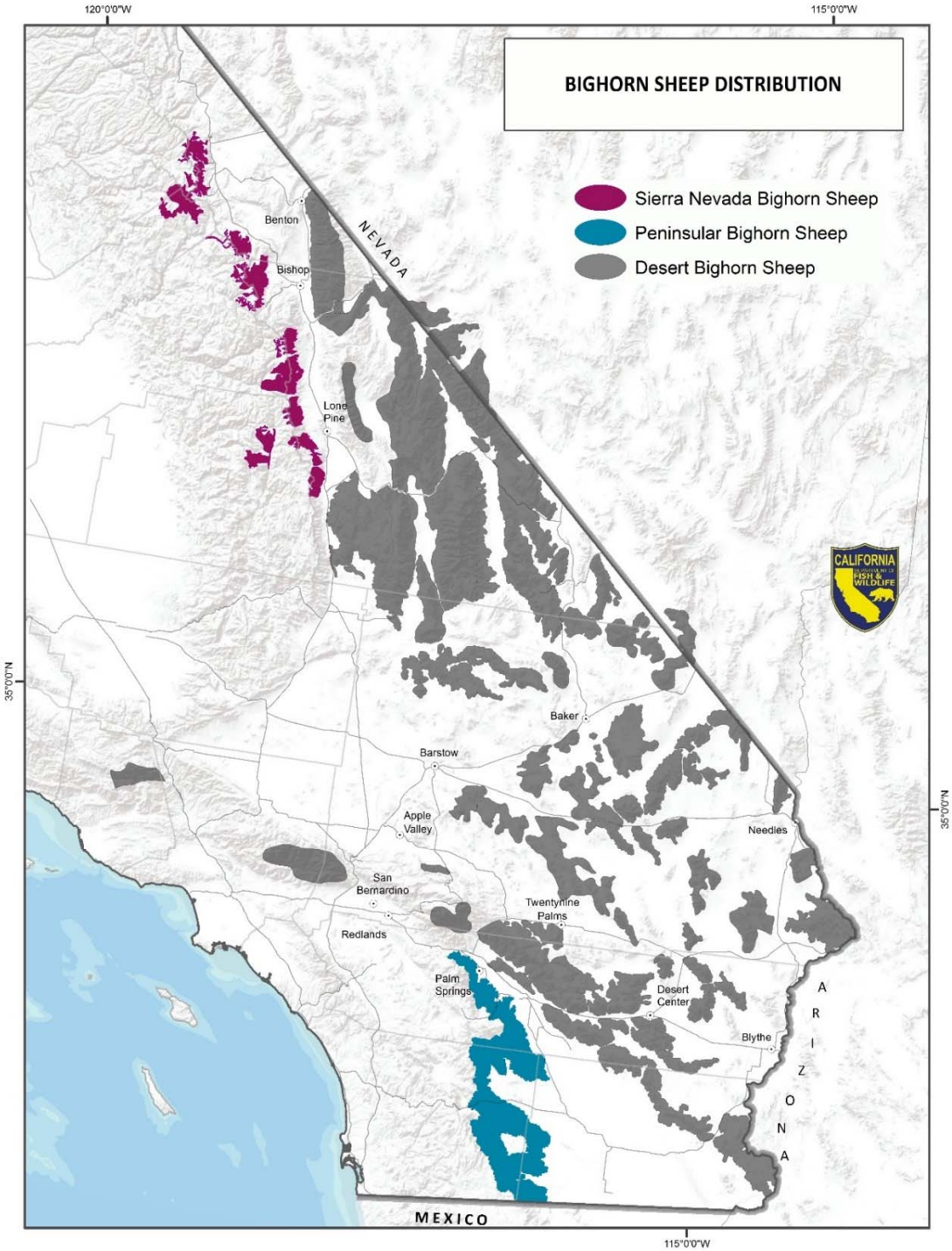
Despite the well-intentioned efforts of the California Legislature, total protection did not halt the loss of bighorn sheep in California (Wehausen et al. 1987a, Bleich 2006), and populations of bighorn sheep continued to disappear (Epps et al. 2003). Historic surveys and population estimates suggest that diseases, habitat changes, and competition for forage, rather than illegal take, resulted in the elimination of bighorn sheep in some areas, of which the most recent examples were the losses of translocated populations of bighorn sheep at Lava Beds National Monument in Siskiyou County (Weaver 1983), and in the Warner Mountains of Modoc County (Weaver and Clark 1988), both of which are thought to have resulted from respiratory disease contracted from domestic sheep in those areas (Foreyt and Jessup 1982, Weaver and Clark 1988).

*Contemporary Management of Bighorn Sheep in California*

Currently, bighorn sheep occupy about 60 mountain ranges in California (Wehausen et al. 1987a, Abella et al. 2011); these populations are distributed primarily in the Sierra Nevada and desert regions of eastern and southern California (Epps et al. 2003). About 600 bighorn sheep occupy the Sierra Nevada, 800 occupy the peninsular ranges, and the remainder (about 4,000) occur in the transverse ranges, the Mojave Desert, and the Sonoran Desert. There are more populations than there are mountain ranges

supporting bighorn sheep, because some larger mountain ranges contain multiple populations based on distinct ranges of females (Bleich et al. 1996).

**Figure 2: Bighorn Sheep Distribution in California**



As a result of the aforementioned taxonomic and nomenclatural revisions, two subspecies of bighorn sheep currently are recognized in California. *Ovis canadensis nelsoni* occurs in suitable habitat in the Transverse Ranges, the Mojave Desert, and the Sonoran Desert; *O. c. sierrae* is restricted to the Sierra Nevada. Since 1998, bighorn sheep occupying the peninsular ranges have been afforded protection under the federal Endangered Species Act (U.S. Fish and Wildlife Service 2000), and bighorn sheep occupying the Sierra Nevada have been afforded similar protection since 2000 (U.S. Fish and Wildlife Service 2008). The California Fish and Game Commission has classified bighorn sheep inhabiting the peninsular ranges as threatened, and those inhabiting the Sierra Nevada are classified by the Commission as endangered.

Although the Department has supported an active management program for many years, contemporary management of bighorn sheep began with the passage of Senate Resolution 43 in 1963 (Bleich 2006). Input from interested conservation groups was instrumental in the passage of that resolution, which resulted in funding for the most detailed survey of bighorn sheep yet conducted in California; until that time, basic inventory data consisted only of cursory surveys that occurred in 1940, 1946, and 1957. Survey work completed during 1968-1972 as a result of Senate Resolution 43 yielded an estimate of 3,700 bighorn sheep in California (Weaver 1972). More importantly, however, was the fact that for the first time ever the management needs of bighorn sheep, including land-use conflicts, water developments, and re-introductions, were addressed.

As a result of management recommendations resulting from implementation of Senate Resolution 43, the Department of Fish and Game (now Fish and Wildlife) implemented an ambitious program to acquire habitat for bighorn sheep occupying the peninsular ranges. Additionally, the Volunteer Desert Water and Wildlife Survey (VDWWS) was founded to help carry out recommendations for water developments put forth by Weaver (1972), and to assist the Department with census efforts and other work related to bighorn sheep and other desert wildlife. Since 1970, volunteers have contributed thousands of hours of labor to the program, resulting in dozens of habitat enhancement projects directed specifically at conserving populations of bighorn sheep (Bleich et al. 1982, Bleich 1990).

An effort to reestablish bighorn sheep on historical ranges also occurred as a result of Senate Resolution 43. The first such effort took place in 1971 at Lava Beds National

Monument, and in 1980 a similar effort was initiated in the Warner Mountains. Both of those attempts ultimately were unsuccessful.

In 1979, translocation of California bighorn sheep from the Mount Baxter herd in the Sierra Nevada was initiated, largely as a result of research conducted by Wehausen (1979) in combination with recommendations by the Department (Leach 1974) that the subspecies be introduced to areas from which it had been eliminated. Since then, a total of 118 animals have been translocated, 108 of which were used to reestablish bighorn sheep populations in three areas of the Sierra Nevada: Wheeler Crest, Mount Langley, and Lee Vining Canyon or to augment other extant populations in that range, and 10 of which were translocated to the Warner Mountains of Modoc County, California. These translocations took place in 1979, 1980, 1982, 1986, 1987, 1988, 2001, 2005, and 2009.

In 1981, Assembly Concurrent Resolution 41 was passed and directed the Department to prepare a study plan to investigate population status, competition, diseases, and the potential to introduce bighorn sheep to historically occupied areas in California. Funding was allocated from the California Environmental License Plate Fund for the purpose of carrying out the investigations outlined by the Department's study plan (Weaver 1983).

In 1983, the Department completed a statewide management plan for bighorn sheep (California Department of Fish and Game 1983). The plan identified a number of specific management programs, designed to help meet statewide goals for the management and restoration of bighorn sheep populations. Goals specifically listed in the statewide plan are to: (1) maintain, improve, and expand bighorn sheep habitat where possible or feasible; (2) reestablish bighorn sheep populations on historic ranges where feasible; (3) increase bighorn sheep populations so that all races become numerous enough to no longer require classification as threatened or fully protected; and (4) provide for aesthetic, educational, and recreational uses of bighorn sheep. Aside from the specific recommendations of Leach et al. (1974) regarding California bighorn sheep, this was the first official Department document to advocate the reintroduction of all subspecies of bighorn sheep in California.

Subsequently, in 1983 a series of translocation projects involving Nelson bighorn sheep (*O. c. nelsoni*) from two large Mojave Desert mountain ranges began. To date, 230 animals have been removed from Old Dad Peak for translocation to the Whipple

Mountains, Sheep Hole Mountains, Eagle Crags, Argus Mountains, Avawatz Mountains, Chuckwalla Mountains, Bristol Mountains, and Bullion Mountains. A total of 55 animals have been removed from the Marble Mountains for translocation to the Whipple Mountains and Eagle Crags (Bleich et al. 1990, Torres et al. 1994).

By 1983, it was determined that the population of Nelson bighorn sheep in the San Gabriel Mountains was large enough to support removals for translocation (Holl and Bleich 1983), and in 1983, 1985, and 1987, a total of 71 animals were removed from winter ranges in the South Fork of Lytle Creek and Cattle Canyon. Those animals were translocated to a vacant, historical winter range in the Prairie Fork of the San Gabriel River (within the San Gabriel Mountains) and to historical habitat near San Rafael Peak, in Ventura County (Bleich et al. 1990). In 1988, 10 sheep were captured in Lone Tree Canyon of the White Mountains, Mono County, and translocated to Silver Canyon, also in the White Mountains, Inyo County. Since 1979, the Department has reestablished 11 new populations and augmented four small populations through translocation projects.

In 1986, the enactment of Assembly Bill 3117 (Chapter 745) created a series of laws which comprised the most significant legislation affecting bighorn sheep management in California since the 1878 legislation that established the initial moratorium on the taking of bighorn sheep. This law contained language that directed the Department to prepare management plans for each population of bighorn sheep in California. In addition, Assembly Bill 3117 differed from previous legislation that would have authorized hunting in that it: (1) made bighorn sheep a game mammal in only two areas (Old Dad Peak and the Marble Mountains); (2) provided for one hunting tag to be available for fund-raising purposes each year with the revenues from bighorn sheep hunting to be put in an account set aside solely for the benefit of bighorn sheep; (3) set a biologically conservative limit on the number of tags which could be offered each year, not to exceed 15 percent of the mature males counted annually in each population; and (4) contained an expiration date of December 31, 1992, unless the Legislature extended it beyond that date. In 1990, the Legislature removed the expiration date.

Implementation of Section 4902 of the FGC (Appendix 2) has involved hunting of a limited number of mature Nelson bighorn rams since 1987, when specific regulations similar to the proposed action were initially adopted by the Commission. Hunts have been conducted annually since then, pursuant to Section 362 of Title 14, CCR.

Assembly Bill 977 amended sections 4902 and 4903, FGC, and thereby (1) permitted the Commission to authorize hunting of Nelson bighorn rams in management units for which plans have been developed pursuant to Section 4901, FGC; (2) increased to three the permissible number of fund-raising license tags to be available for programs and projects to benefit bighorn sheep (the number of these authorized, if more than one, would not be permitted to exceed 15 percent of the total number of tags authorized generally); and (3) specified that any use of those revenues for the Department's administrative overhead shall be limited to the reasonable costs associated with direct administration of the program.

The Department's Bighorn Sheep Management Program is currently revising the statewide management plan for Nelson bighorn sheep in California. This planning effort will identify and prioritize actions to ensure the long-term viability of bighorn sheep populations, consistent with existing State policy. Protection of important habitats and inter-mountain movement corridors, identification of future introduction sites, and habitat enhancements will be addressed. The planning effort is occurring in cooperation with the Bureau of Land Management, California Department of Parks and Recreation, Department of Defense (Military), and National Park Service (NPS).

Intensive data collection continues to provide basic information for updating and preparing additional management plans, as required by the FGC. These efforts include assessing habitat and potential movement corridors, and surveys to estimate population sizes, age class structure, sex ratios, sampling individual animals for the prevalence of diseases and parasites, and implementing strategies to stabilize or enhance individual populations of Nelson bighorn sheep.

## EXISTING CONDITIONS

Regulated public hunting for Nelson bighorn sheep began in 1987 in California with passage of AB 3117, and has occurred without interruption since that date. Additional public hunts for Nelson bighorn sheep have been established subsequent to 1987 and annual hunts for Nelson bighorn sheep have been part of the existing conditions in California for the last 24 years. Appendix 1 lists the verbatim for the current and proposed conditions for hunting Nelson bighorn sheep in California.

## POLICY CONSIDERATIONS

The Legislature formulates laws and policies regulating the management of fish and wildlife in California. The general wildlife conservation policy of the State is to encourage the conservation and maintenance of wildlife resources under the jurisdiction and influence of the State (Section 1801 of the California Fish and Game Code). The policy includes the following objectives (which are also the objectives for this proposed project):

1. To provide for the beneficial use and enjoyment of wildlife by all citizens of the State;
2. To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to man;
3. To provide for aesthetic, educational, and non-appropriative uses of the various wildlife species;
4. To maintain diversified recreational uses of wildlife, including hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with the maintenance of healthy, viable wildlife resources, the public safety, and a quality outdoor experience;
5. To provide for economic contributions so the citizens of the State through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the State, individually and collectively, through regulated management. Such management shall be consistent with the maintenance of healthy and thriving wildlife resources and the public ownership status of the wildlife resource;
6. To alleviate economic losses or public health and safety problems caused by wildlife; and
7. To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the above-stated objectives.

With respect to Nelson bighorn sheep, the Legislature has established the State’s policy regarding management in sections 4900 to 4904 of the FGC (Appendix 2). Section 4900 declares that bighorn sheep are an important wildlife resource of the state to be managed and maintained at sound biological levels, and that it is the policy of the state to encourage the preservation, restoration, utilization, and management of California's bighorn sheep populations, and that such management shall be in accordance with the

policy set forth in Section 1801 of the FGC. Section 4901 directs the Department to determine the status and trend of bighorn sheep populations by management units, and to prepare plans for each of the management units. Each plan is to address (a) the numbers, age, sex ratios, and distribution of bighorn sheep within the management unit; (b) range conditions and any competition that may exist as a result of human, livestock, wild burro, or any other mammal encroachment; (c) the need to relocate or reestablish bighorn populations; (d) the prevalence of disease or parasites within the population; and (e) recommendations for achieving the policy objective of Section 4900.

Section 4902 provides that the Commission (a) may adopt all regulations pertaining to biologically sound management of Nelson bighorn sheep (*O. c. nelsoni*), including sport hunting of mature Nelson bighorn rams; (b) may not authorize permits in a single year within a single management unit in excess of the Department's annual estimate of the population in that management unit; (c) may determine the fee for a tag to take a Nelson bighorn ram, but restricts that amount to five hundred dollars; (d) shall annually direct the department to authorize not more than three of the tags available for issuance that year to take Nelson bighorn rams for the purpose of raising funds for programs and projects to benefit Nelson bighorn sheep, that those tags may be sold to residents or nonresidents for fund-raising purposes and shall not be subject to any fee limitation as described in Section 4902(c), specifies certain non-profit organization(s) as the seller(s) of not less than one of those tags if more than one fund-raising tag is authorized, restricts the number of fund-raising tags, if more than one, to no more than 15 percent of the total number of tags authorized to hunt Nelson bighorn rams in any given year, and mandates that all successful applicants complete a hunter familiarization and orientation conducted by the Department prior to hunting.

Section 4903 states that revenue from the sale of bighorn sheep tags for hunting Nelson bighorn sheep rams shall be deposited into the Big Game Management Account established in Section 3953 and, upon appropriation, shall be made available for programs and projects to benefit bighorn sheep and other big game as defined in that section.

# CHAPTER 3. POTENTIAL FOR SIGNIFICANT EFFECTS

Hunting of bighorn sheep will result in the deaths of individual animals. The removal of individual male animals from only 10 populations (Marble Mountains, Old Dad Peak/Kelso Mountains, Clark/Kingston Mountains, Orocopia Mountains, San Gorgonio Wilderness, Sheep Hole Mountains, White Mountains, South Bristol Mountains, Cady Mountains, and Newberry, Rodman and Ord Mountains) is not expected to significantly reduce herd size, or to affect the reproductive base of the population. The proposed action (modification of hunting tag ranges in three existing hunt zones, the addition of one hunt zone, and reallocation of one fund-raising tag) and adjusting tag quotas within previously analyzed tag ranges will result in maintaining these herds at or above approved management plan objectives and will maintain the ratio of male to female bighorn sheep at levels adequate to insure reproduction.

The approximately 60 herds of Nelson bighorn sheep in California occur from Mono County in the north, to the Mexican border in the south (Torres et al. 1996, Abella et al 2011). These populations are widely distributed, primarily throughout the southeastern part of the State and in the Sierra Nevada. Nelson bighorn sheep populations currently being considered in the proposed action, number about 4,000 and occur in Mono, Inyo, San Bernardino, Riverside, Ventura, Imperial, and Los Angeles counties. Ten hunting zones for Nelson bighorn sheep have been identified and cover only a portion of the entire range of Nelson bighorn sheep. Therefore, entire portions of the range and population will not be influenced by that activity.

Assuming the maximum number of tags is issued and all holders of bighorn sheep tags are successful, a maximum of 42 mature Nelson bighorn rams could be removed in 2019 from the statewide estimated population of 4,000 Nelson bighorn sheep. This short-term reduction of one percent of the total statewide population of Nelson bighorn sheep is well within the ability of the statewide population to maintain or increase in size over the long-term. The ability of bighorn sheep populations to experience a given level of hunting mortality without decreasing in health or vitality is described by Savidge and Ziesenis (1980) as sustained-yield management. It is reasonable that a removal of less than one percent of the statewide population is compatible with the long-term conservation of the subspecies. Thus, the removal of up to 42 mature male Nelson bighorn sheep is not expected to have a measurable impact on regional or statewide populations.

Pursuant to Section 4902, FGC, the number of tags allocated will not exceed more than 15 percent of the mature rams estimated in any management unit. Depending on the management unit, assessment of aerial or ground survey data will ensure that harvest will not exceed 15 percent of the mature rams in each management unit, as provided for by State law.

Before taking action regarding this proposal, the Commission will consider Nelson bighorn sheep populations, social structure, genetics, habitat, food supplies, the welfare of individual animals, impacts to other wildlife and plant species, impacts to recreational opportunities, public safety, the potential for cumulative impacts, and other pertinent facts and testimony. Although not a resource category where CEQA requires analysis, for informational value the Commission has also analyzed the potential for effects on economics from the proposed project. Each of these areas is discussed in more detail below.

## THE SPECIES

### *Population*

Under the proposed hunting programs, it is expected that a segment of the mortality previously identified as "natural" mortality will be shifted to hunting mortality. To a degree, hunting mortality will be substituted for, rather than added to, natural mortality. This follows the concept of compensatory mortality as described by Peek (1986) who noted that, "If hunting is a compensatory form of mortality then populations may be presumed to fluctuate in response to other factors, and stocks are little affected by exploitation. However, if hunting is additive to other forms of mortality then it serves as a depressant."

According to the concept of compensatory mortality, the production and survival of young animals within each population are ultimately expected to replace the animals removed by hunting. At the low level of proposed harvest, when combined with differential use of habitats by males and females during the birthing season (Bleich et al. 1997), influences of compensatory mortality are not expected to be measurable. Ongoing long-term demographic research on bighorn sheep populations has identified the primary factors influencing the abundance of those specialized herbivores. Given

the importance and significant variation in annual precipitation in these desert ecosystems, and the associated variation in diet quality, density-dependent mechanisms are difficult to observe (Wehausen 1992), but increased recruitment of young should compensate for increased rates of death resulting from harvest.

Since the hunting of Nelson bighorn sheep will occur, at most, in only ten of the State's approximately 60 populations of bighorn sheep under the alternatives considered, the removal of individual animals is not expected to have a significant effect on the statewide population of bighorn sheep. The existing populations of bighorn sheep in California are geographically separated and widely distributed, yet capable of moving among and between mountain ranges (Bleich et al. 1996). Therefore, the proposed action of providing opportunities to harvest up to 6 mature male Nelson bighorn sheep in the Newberry, Rodman and Ord Mountains, where a minimum of 62 mature males are estimated to occur, and an increase of 23 tags to the total potential statewide harvest, for a maximum of up to 42 mature Nelson bighorn rams from an estimated population of 4,000 total Nelson bighorn sheep will not have a significant adverse impact on any specific population to be hunted or on the statewide population of bighorn sheep.

The Department is committed to long-term demographic investigations of bighorn sheep populations. This research is particularly important in management units for which individual bighorn sheep are removed for translocation or harvest. To facilitate this research, animals have been telemetered and monitored in each proposed hunt zone.

The Department annually conducts fall/winter aerial surveys to count bighorn sheep within the majority of the management units being considered in this assessment, and ground counts are conducted during summer in the White Mountains Management Unit (Appendix 5). These surveys result in minimum population estimates, because many animals are missed during such surveys. Several published articles (Caughley 1974, Samuel et al. 1987, Graham and Bell 1989, Bodie et al. 1995, Bleich et al. 2001, Bernatas and Nelson 2004) have demonstrated that significant portions of populations being surveyed using aerial census techniques are not observed because of "visibility bias".

In some of the proposed hunt zones, aerial survey data are supplemented with independent ground surveys to record numbers of marked and unmarked sheep, which

are used to generate additional information on population size. This synthesis of data has made it possible to accurately assess the changes in bighorn sheep numbers, ratios of males to females or young to females, and to monitor the impacts of hunting and relocation (Wehausen 1992). Additionally, these aerial and ground survey results are used to determine tag allocations, and to ensure the proposed harvest does not exceed 15 percent of the mature rams in any of the respective management units.

Tag allocations have historically been determined by computing 15 percent of the mature rams observed during the annual surveys. These data are used to modify the range of tags to be allocated to ensure no more than 15 percent of the minimum number of mature males known to be present are harvested. The results of such surveys represent the minimum number of bighorn sheep, including mature males, present in a given population, and result in under-estimates of the true population of males and the total population. This procedure will continue to be used to generally assign tag allocations.

Independent estimates of population size and demographic parameters of bighorn sheep populations are derived using a combination of aerial census and ground observations of marked and unmarked animals in the hunt zones, and intensive ground surveys are conducted in the White Mountains. Wehausen (1990) and Jaeger et al. (1992) refer to this method as Multiple Direct Sampling (MDS). This method estimates population parameters from cumulative (or repeated) surveys that record the number of marked and unmarked animals observed, and assumes binomial sampling probabilities with replacement (Wehausen 1992).

*Social Structure*

Bighorn sheep demonstrate pronounced sexual segregation (rams and ewes separate) during the majority of the year (Bleich et al. 1997). During periods of segregation, competition between the sexes for food and water is limited or nonexistent. In order for density-dependent responses to occur, a reduction in competition between males and females and the offspring of those females must occur if the population size is limited by the habitat. The removal of so few rams, that likely do not compete with females and young to any appreciable extent, is unlikely to result in substantial increases in recruitment of young animals into any population. Nevertheless, enhanced body condition among males, decreased consumption of available resources by bighorn

sheep throughout the management unit, and decreased energetic costs resulting from fewer potential interactions among mature males, would be among the compensatory responses expected to occur as a result of the removal of less than 15 percent of mature Nelson bighorn rams from any particular hunt zone, as specified by State law.

The proposed action has the potential to increase the current hunter harvest by one ram each in the Marble and Clipper Mountains, and White Mountains, and by two rams in the Clark and Kingston Range, as well as establish a new hunt zone in the Newberry, Rodman, and Ord Mountains with up to six tags (up to 10 additional tags in four hunt zones). The additional harvest in the existing zones and new harvest on a previously unhunted population may alter the ratio of males to females in each of those zones. It is unlikely, however, that the proposed action will affect the survivorship of young in those populations, given that males and females live separately for the majority of the year. Moreover, removal of 55 bighorn sheep from the Marble Mountains for translocation during 1983-85 did not result in measurable responses in recruitment rates (Wehausen 1988). Thus, it is unlikely that the removal of a small number of males from the proposed hunt zones will result in a detectable increase in recruitment rates of young.

*Genetics*

Apollonio et al. (1989) reported that the removal of the majority of successfully breeding males from a population of lek-breeding fallow deer (*Dama dama*) resulted in a decrease of the overall productivity of the lek. Byers and Kitchen (1988) reported that in pronghorn (*Antilocapra americana*), the deaths of all mature males during a severe winter storm was followed by a mating system change from territoriality to harem defense, apparently because no males were sufficiently dominant to exclude other males from a territory. Speculation regarding the removal of large, old males of bighorn sheep, a species in which males form a tending bond with estrous females, thus warrants some consideration (Festa-Bianchet 1989).

It has been hypothesized that harvesting older males may remove the “best genes” from populations of bighorn sheep subject to “trophy hunting”. Fitzsimmons et al. (1995) reported that horn growth was higher males with greater genetic diversity, or heterozygosity, than less heterozygous rams for the 6$^{th}$, 7$^{th}$, and 8$^{th}$ years of life, and that by the end of the 8$^{th}$ year males exhibiting the greatest heterozygosity had higher horn volumes than males exhibiting lower heterozygosity.

The unregulated harvest of male bighorn sheep from a small, isolated population of Rocky Mountain bighorn sheep reportedly resulted in significant declines in body size and horn size (Coltman et al. 2003). Moreover, severe rates of selective harvesting (that are unlikely to be implemented by management agencies) potentially elicit an undesired evolutionary response when the targeted trait is heritable, as are size of horns or antlers (Hartl et al. 1991, 1995; Williams et al. 1994, Lukefar and Jacobson 1998, Kruuk et al. 2002). Nevertheless, the only example demonstrating the negative effects of selective harvest of ungulates in North America is that of Coltman et al. (2003), who investigated this phenomenon at Ram Mountain, Alberta, Canada. That population of Rocky Mountain bighorn sheep was small and isolated, but harvest was regulated only by a 4/5 curl regulation, and hunter opportunity essentially was unlimited. As a result, nearly every male was harvested upon attaining legal size, thereby allowing males with slow-growing horns to reach older age classes and do a disproportionate amount of the breeding. As a result, Coltman et al. (2003) concluded that the harvest rate in their study population resulted in selection against the fastest growing males before they reached their reproductive peak, and thereby reduced their genetic contribution to the population. Conversely, Coltman (2008) recognized that the selective effect reported by Coltman et al. (2003) may have been overestimated because it was not possible to account for the confounding effects of changes in population density during their study, a phenomenon that affected nutrient availability among animals in that population. Garel et al. (2007) concluded that selective harvest in a bottlenecked and genetically mixed population of mouflon (*Ovis* spp.) reduced the reproductive contribution of males that possessed a horn conformation desirable to hunters, which ultimately resulted in a selective advantage for smaller-horned males in that population. Neither of the situations described by Coltman et al. (2003) or Garel et al. (2007) are applicable to the harvest of bighorn sheep in California because of the very limited (less than 15 percent) potential harvest of mature males resulting from carefully regulated hunting opportunities.

Despite these observations, selection of large males by hunters may facilitate copulations by younger, smaller-horned males that may not encounter breeding opportunities in the presence of larger males (Hogg 1984). Resultant breeding by subdominant, smaller-horned males has the potential to increase the ratio of effective population size to census population size and, thereby, the potential to increase total genetic diversity within some populations (Singer and Zeigenfuss 2002). The effect of

an increase in the ratio of effective population size to census population size would, thus, offset the potential effects of the removal of some dominant males.

The consequences of declines in genetic diversity have also been questioned with respect to their demographic influences. Nevertheless, bighorn sheep that have been severely impacted by population bottlenecks and have resultant low genetic diversity appear not to be impacting the potential of those populations to recover in size (Wehausen and Ramey 2004). In contrast to the essentially unlimited harvest rates described by Coltman et al. (2003), harvest proposals considered in this document are extremely restricted, and remove but a very small proportion (less than 15 percent) of the minimum number of mature males from any single population, and less than 1 percent of the statewide population as a whole. As a result, the limited harvests proposed by the Department will not result in the small population sizes described by Wehausen and Ramey (2004).

Geist (1971) suggested that, if mortality of older males was related to rutting activity, younger males should be expected to suffer greater mortality if allowed to participate in the rut because of the absence of older males. Indeed, Heimer (1980), Heimer et al. (1984), and Heimer and Watson (1986) suggested that the removal of older and larger males by hunters would result in lowered survival of young males. Moreover, Heimer et al. (1984) reported that natural survival of Dall's sheep (*Ovis dalli*) males aged four to eight years was lower in areas with greater hunting pressure and a less restrictive definition of legal males.

In a specific test of Heimer's predictions, Murphy et al. (1990) reported no support for the hypothesis that reducing the number of older males had an adverse effect on the survival rate of young males. Similarly, other studies of *Ovis spp*. (Stewart 1980, Hoefs and Barichello 1984) have failed to demonstrate evidence of depressed survival of young rams in heavily hunted populations. The strongest support for the hypothesis is Heimer et al.'s (1984) study of the high rate of disappearance of young rams that had been trapped and marked, and were part of a hunted population. Murphy et al. (1990) concluded, however, that the disappearance of those young rams could be explained by dispersal and reduced sightability, rather than by reduced survivorship. Males tend to move over larger areas than do females, and their absence in areas they occupied as lambs does not mean they died. Further, Whitten (2001) concluded that sheep harvest trends were driven largely by weather patterns that affected sheep productivity, survival,

and abundance, rather than by horn curl regulations. In populations of Rocky Mountain bighorn sheep and desert bighorn sheep in which removal rates were carefully regulated and very low, Singer and Zeigenfuss (2002) concluded that young rams did not expend greater energy than young rams in non-hunted populations. Those authors concluded that there was no detectable effect on survivorship of those young rams and that harvesting of mature males did not lower survivorship of young males.

In the ten populations under consideration in the project, low harvest rates proposed should not disrupt the age structure and, hence, the social structure of these populations. An analysis of the hunter harvest indicates that the average age of all rams taken through the 2016/2017 hunting season was approximately 7 years. This mean age is lower than the life expectancy of a desert bighorn sheep, suggesting that harvests are not particularly concentrated on the oldest or largest males; hence, selective removal of the fastest growing males is an unlikely consequence of the limited opportunities being proposed.

The extremely conservative harvest rates in populations dominated by mature males have likely precluded any shift in the age structures or genetic diversity of these populations. An increase of up to 23 tags from current levels of hunting is not anticipated to have any impact on the age structure of the populations. Even with the combined removal of up to 42 mature Nelson bighorn sheep rams from ten proposed hunt zones, and with a maximum potential of 7 in any single zone, no changes in the age structure of the populations are anticipated, nor are any other adverse effects.

*Habitat*

As proposed by the project, the removal of up to 42 rams will slightly reduce the total number of bighorn sheep in each of the hunt zones, as well as the statewide population, until the birth of young the following spring. Under the proposed regulations, the maximum number of bighorn sheep that could be removed from any single zone is seven (the Open Zone fund-raising tag may potentially remove a ram from this zone), and that take would be limited to the Newberry, Rodman and Ord Mountains. The maximum number of mature male Nelson bighorn sheep that could be removed from any other zone ranges from three to six, and would only reflect an increase of two to four rams above current levels of hunting. Those rates of harvest could yield slight improvement in habitat conditions, particularly in areas of those hunt zones that are

utilized primarily by adult males. It is unlikely, however, that any substantial improvement in habitat conditions will result, nor that any increase in recruitment rate, will be realized. The maximum number of mature Nelson bighorn rams that would be removed during the 2019 hunting season would be 42. The proposed removal rate and the distribution of animals to be removed among 10 separate hunt zones is expected to be too low to result in any measurable change in habitat conditions.

Wehausen et al. (1987b) demonstrated a strong relationship between precipitation and recruitment rates in a Sonoran Desert bighorn sheep population. Similarly, Monson (1960) noted the relationship between precipitation and bighorn sheep populations. Beatley (1974) emphasized the relationship between precipitation and phenological events in Mojave Desert ecosystems, and Wehausen (1988, 1990) noted the apparent relationship between high recruitment in the Marble Mountains in the late 1970s and early 1980s and levels of precipitation. Thus, it is likely that timing and amount of precipitation, rather than population levels of bighorn sheep, are the primary factors determining habitat conditions in the proposed hunt zones.

A maximum of 42 hunters, their guides, and selected individuals will participate in the bighorn sheep hunt. Given the low densities of human use, any habitat loss and degradation attributable to the proposed project would be negligible. Therefore, the cumulative environmental impact of habitat loss and the proposed project will not be significant

OTHER WILDLIFE AND PLANT SPECIES

The results of the Department's previous determination that no significant impacts would be incurred by other wildlife or plant species as a result of bighorn sheep hunting, as published in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) are hereby incorporated by reference. Several plant and wildlife species listed as threatened or endangered can be found within the proposed project area. Because these areas are open year-round for public uses not limited to hiking, horseback riding, camping, hunting, photography, and bird watching, the low number of bighorn sheep hunters resulting from the proposed project is unlikely cause impacts to sensitive plant and wildlife species.

## RECREATIONAL OPPORTUNITIES

### *Hunting Opportunities*

The proposed action would authorize up to 23 additional tags, for a maximum of 42 opportunities for hunters to participate in this unique outdoor experience. This will be the 33rd such hunt in as many years. The demand for bighorn sheep hunting opportunities in California, and worldwide, is extremely high, as described in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b), and hereby incorporated by reference.

In 2018, all applicants for bighorn sheep tags paid a $7.50 nonrefundable application fee to enter a drawing, and they must possess a California hunting license. Additionally, a total of approximately $ 8.4 million has been received through the auction of fundraising tags from 1987 to 2018. The proposed action will positively impact the hunting public of the State by providing hunting opportunities consistent with sections 203.1 and 4902, FGC, and the State's wildlife conservation policy in Section 1801 of the FGC, and will provide funds specifically for conservation and restoration of bighorn sheep in California, consistent with sections 4902 and 4903 of the FGC.

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, there will be overlap of upland game (quail and chukar), rabbit, predator, and deer hunting seasons in two additional hunt areas for a portion of the year. However, due to the low numbers of sheep hunters in each area, coupled with the large areas open to hunting, it is unlikely that sheep hunters will affect the success or quality of the experience for hunters of other species of wildlife.

Because it would increase the hunting opportunity, the proposed project is not anticipated to have a significant impact on recreational hunting opportunities.

### *Nonhunting Opportunities*

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005) and incorporated herein by reference, the non-

hunting users of the bighorn sheep resource (viewing, nature study, research, photography) are not expected to be significantly impacted by the hunting of mature bighorn sheep rams, including Nelson Bighorn Sheep (in the peninsular ranges, transverse ranges, the Mojave Desert, and the Sonoran Desert) and Sierra Nevada bighorn sheep, from a statewide population that now numbers approximately 5,400 animals. The proposed action is not expected to impair the ability of non-consumptive users to enjoy the outdoors, the bighorn sheep resource or its habitat because the non-hunting user will have opportunities to view bighorn sheep in unhunted situations indefinitely. No populations of bighorn sheep occurring in the other mountain ranges will be exposed to sheep hunting as a result of this project and, as a result, opportunities for non-hunting uses of those populations will not be affected.

ECONOMICS

Under the proposed alternative, hunters from outside the local areas would continue to visit the region and purchase goods and services from local merchants. This additional spending will generate retail sales, income, and possibly employment in businesses such as motels, restaurants, and retail stores. Spending effects would be minor, because of the small number of tags sold. Any potential effects would likely be distributed among those communities located nearest to the sheep hunt areas, including Barstow, Baker, Blythe, Cadiz, Ludlow, Indio, Morongo Valley, Desert Center, Needles, Twenty-Nine Palms, and Amboy, in Riverside, San Bernardino, Inyo, and Imperial counties. These economic effects are likely to be an insignificant positive effect on the communities. More detail is available in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b).

PUBLIC SAFETY

Since 1987, the Department has not received reports of bighorn sheep hunting related casualties in California, as discussed in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference. As with any outdoor activity, there is always risk of injury or death, however the probability of being injured while bighorn sheep hunting is extremely low. This good safety record is due, in part, to the requirement that all hunters must successfully pass a hunter safety education course prior to receiving a license. Since completion of the 2005 Environmental Document for Bighorn Sheep Hunting (California Department of

Fish and Game 2005b) the Department has not received any reports of sheep hunting related casualties in California. The Commission does not anticipate any significant adverse impacts to public safety with the proposed project

## SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The proposed project allows an increase of up to 23 bighorn sheep hunters, bringing the potential harvest to a total of 42 animals distributed across 10 hunt zones, assuming the maximum number of tags is allocated. As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, this short-term use could enhance long-term productivity by reducing competition for forage. However, given the extremely limited harvest, any reduction in intraspecific competition would be negligible and likely undetectable.

If the proposed project were delayed for any reason, no significant long-term impact on the population would be expected. However, this delay would eliminate the proposed allocation of additional hunting opportunities as per the Department's bighorn sheep management program and would not address the high demand for more recreational hunting opportunities involving bighorn sheep or be consistent with State policy regarding bighorn sheep management, or with project objectives.

The proposed increase of 23 tags, for a maximum of 42 mature Nelson bighorn sheep rams removed by hunting will not have a significant long-term adverse impact on either the specific populations to be hunted or on the statewide population of bighorn sheep.

# CHAPTER 4. CUMULATIVE IMPACTS

The Commission could consider and may approve additional hunts in the future. The Commission has concluded that there will be no significant adverse cumulative effects on the State's Nelson bighorn sheep resource if the proposed project is implemented. The statutorily mandated regulation process involves review at least once every three years, Proposed recommendations for regulatory changes would be presented by the Department to the Commission along with supporting data and analysis prior to consideration of any future hunt. As with potential changes to hunting regulations for

deer, elk, and pronghorn antelope, the Commission receives recommendations regarding mammal hunting regulations from Commission members, its staff, the Department, other public agencies, and the public. More detail on this analysis is contained in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference.

HABITAT LOSS OR DEGRADATION

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the proposed project, in combination with current bighorn hunts and other factors, is not likely to cause habitat loss and degradation. Changes in habitat are not expected to be significant in the project areas in the foreseeable future, as many of the designated hunt zones and part of the proposed new hunt zone are within wilderness areas. Areas designated as wilderness have their habitat protected in perpetuity, or until Congress determines other values exceed those associated with wilderness classification

DROUGHT

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, drought can have an impact on local populations of bighorn sheep, and droughts are a natural occurrence faced by bighorn sheep throughout their evolutionary history. Further, drought conditions are generally localized, both spatially and temporally. The removal of an additional 23 mature Nelson bighorn sheep rams, for a maximum of 42 rams, would, in fact, decrease competition among males for available forage within hunt zones, but the effects of such a reduction in competition would be difficult to detect. The possibility of drought impairing the bighorn sheep population on a statewide basis is unlikely. It is anticipated that the statewide population will remain in a healthy, viable condition, even though dynamic weather patterns may affect some populations in some years. Therefore, the Commission does not anticipate any significant adverse cumulative impacts resulting from drought.

## WILDFIRES

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, the sparse vegetation and lack of fuel in bighorn sheep habitat makes it unlikely that wildfires have the potential to adversely affect bighorn sheep in the majority of the hunt zones. However, the San Gorgonio Wilderness occurs in an area of potential wildfires. Most research has shown burning, especially prescribed burning, to be favorable to bighorn sheep and deer. These fires maintain movement corridors, escape terrain, and provide new herbaceous vegetation, which is higher in nutrition than decadent vegetation and, ultimately, enhance nutrient availability to animals foraging in newly burned areas. Therefore, the Commission does not anticipate any significant adverse cumulative impacts resulting from wildfires.

## DISEASE, ROAD KILLS AND OTHER MORTALITY

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, no data available indicate road kills, disease, predation, or natural mortality factors will act as additive impacts which, along with the mortalities associated with the limited hunting program, will have significant adverse cumulative impacts on local, regional or statewide bighorn sheep populations. The Commission does not anticipate any significant cumulative impacts resulting from disease in combination with the proposed hunting project.

## ILLEGAL HARVEST

As noted in the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference, illegal take does not appear to be a significant factor affecting the population. The Department has documented annually approximately one to three cases of bighorn sheep being killed illegally statewide. The verified illegal take involves an extremely low proportion of the State's approximately 5,400 bighorn sheep and is widely distributed. Illegal take does not appear to be a significant factor affecting the population and, even with the potential harvest of up to 42 bighorn sheep statewide, the cumulative impacts of illegal harvest are not expected to be significant. Since the bighorn sheep outside the hunt zones are

either fully protected or State-listed species, detecting and preventing illegal take is a high priority for the Department.

DEPREDATION

The Department does not have the authority to issue kill permits for bighorn sheep causing property damage (Section 4181, Fish and Game Code). As a result, depredation does not affect the population of bighorn sheep and no potential exists for any cumulative impact with the proposed project

THE INDIVIDUAL ANIMAL

The proposed project will result in the deaths of individual bighorn sheep, and wounding losses could occur as a result of implementation of the proposed project. However, the Department is aware of only one animal having been lost after being wounded in 32 hunting seasons. Thus, the rate of wounding is extremely low, and the cumulative impacts of the potential harvest increase of 23 rams statewide, for a maximum of 42 mature Nelson bighorn sheep statewide, combined with the exceedingly low rate of wounding, would not result in an impact that could be considered to significantly impact the population of bighorn sheep inhabiting any hunt zone, or the state of California as a whole. For more discussion of wounding losses, see the Environmental Document for Bighorn Sheep Hunting (California Department of Fish and Game 2005b) and incorporated herein by reference.

GLOBAL CLIMATE CHANGE

Climate change caused by increasing atmospheric concentrations of greenhouse gases are expected to result in marked changes in climate throughout the world (deVos and McKinney 2005). Although many wildlife habitats in North America have become progressively warmer and drier in the last 12,000 years (Lane et al. 1994, Ball et al. 1998), the greatest rate of change has occurred during the last 150 years (Fredrickson et al. 1998). Predicted changes due to continued warming include increased frequency and severity of wildfires, increased frequency of extreme weather events, regional variation in precipitation, northward and upward shifts in vegetative communities, and modifications to existing biotic communities (Bachelet et al. 2001, McCarty 2001, Walther et al. 2002). These changes are expected to affect abundance, distribution, and

structure of vegetative and animal communities (Kapelle et al. 1999).

Local and specific regional changes in climate and associated changes in vegetative communities will be the determining factors regarding the distribution and abundance of bighorn sheep in California and elsewhere. Although research specific to bighorn sheep responses to climate change is limited, available information indicates those populations inhabiting the hottest, low-lying mountain ranges will be among the first to be impacted (Epps et al. 2004), but those populations inhabiting the highest and most botanically diverse desert ranges may be less affected, and serve as refugia for the species (Epps et al. 2006). Moreover, some areas occupied by bighorn sheep may experience increases in the quality of habitat (Epps et al. 2006).

Populations of bighorn sheep in California are vulnerable to any decrease in habitat quality as mediated by climate change (Epps et al. 2006, Stewart et al. 2016) For example, higher spring and summer temperatures will result in reduced diet quality for bighorn sheep (Epps 2004), and extended droughts and drying of water sources may produce die-offs of adult animals (Allen 1980). Among bighorn sheep inhabiting desert environments, diet quality or forage availability influence body condition, which affects reproduction and recruitment rates (Wehausen 2005) and, ultimately, population size. Thus, future changes in climate that result in warmer temperatures or greater aridity have the potential to result in fewer bighorn sheep in desert ecosystems (Epps et al. 2006). Nevertheless, habitat conditions in some areas currently occupied by bighorn sheep, for example the San Gabriel Mountains and other transverse ranges of California, may experience changes that will be of benefit to bighorn sheep (Epps et al. 2006) as a result of lower densities of vegetation (Epps et al. 2006). Thus, available information indicates global climate change portends both adverse and beneficial effects to bighorn sheep habitat and, ultimately, bighorn sheep populations.

Bighorn sheep hunting in California is regulated by the California Fish and Game Commission. Hunting seasons and tag quotas are proposed to the Commission for adoption on an annual basis. These seasons and quotas are based on annual population estimates as dictated by the California Legislature (Fish and Game Code Section 4902) and are adjusted each year as needed. Although the impacts of climate change on bighorn sheep in California could be positive in some instances, they most certainly will be negative in others. Nevertheless, the Department and the Commission have the ability to quickly respond to population fluctuations by increasing or decreasing

hunter opportunity in accordance with current and future management objectives for this species. Reducing one mortality factor, for example sport hunting, will not alone mitigate for impacts associated with global climate change. The ability to manage and provide adequate amounts of resources, both nutritional and otherwise, will be the factor that ultimately dictates persistence of populations. Therefore, the Commission does not anticipate that global climate change will have a significant cumulative impact on the bighorn sheep populations.

## CHAPTER 5. ALTERNATIVES TO THE PROJECT

The Commission considered two alternatives to the proposed project, which would modify tag quotas, create one additional hunt zone for bighorn sheep, and reallocate a fund-raising tag.

### ALTERNATIVE 1 – NO CHANGE

The "no-change" alternative would continue to provide hunting opportunities for mature Nelson bighorn rams in the nine hunt zones that currently are open to that activity. The range of tags available to hunt bighorn sheep in each of those zones would remain the same, and would not be subject to adjustment as determined by the Department's annual population estimates as specified in Section 4901 of the Fish and Game Code. One fund-raising tag, currently designated in the Kelso and Old Dad Peak Hunt Zone, would remain in place, and not used for fund-raising purposes given the disease impacts that herd unit has sustained. In short, there would be no change from the 2018 bighorn sheep hunting regulations. Because there would be no change in existing conditions or current levels of hunting activity and bighorn sheep harvest, the no-project alternative would not lead to any potential significant impacts on the environment.

### ALTERNATIVE 2 – INCREASED HARVEST

The ranges of potential hunting tags available for each zone is intentionally conservative. Tag allocation is based on the number of mature rams known to exist in each zone, or on the number of mature rams estimated to be present following application of an extremely conservative correction factor (n/0.80) that assumes aerial surveys account for 80 percent of the animals present. However, Wehausen and Bleich (2007) reported aerial surveys in an ecologically similar mountain range produced

observations of less than 50 percent of the total number estimated compared to mark-resight methods.

To increase the tag range by 50 percent in the existing nine zones beyond the range of tags proposed by the Department (Appendix 2 and Table 2) could result in a violation of state law if the end result exceeded more than 15 percent of the total number of mature Nelson bighorn sheep rams known or estimated to be present in any single hunt zone. Increasing tags beyond current levels needs to be carefully considered for consistency with statutory requirements. Under the ”increased harvest” alternative, it is possible that support for bighorn sheep management programs among interested conservation groups and hunters could decline, because conservation has been at the forefront of issues affecting bighorn sheep. An increased rate of harvest would not likely be supported among bighorn sheep advocacy groups.

Because neither the proposed project nor the alternatives are anticipated to cause any significant impacts on the environment, there is no environmentally superior alternative. However, the proposed project most closely meets the objectives of Section 1801 of the FGC.

## CHAPTER 6. RESPONSE TO PUBLIC COMMENTS

In accordance with CEQA, public input and agency consultation were encouraged during the environmental review process. An NOP was provided to the State Clearinghouse, land management agencies having a key role in desert bighorn sheep management, and all individuals and organizations which expressed an interest in bighorn sheep management. No comments were received as a result of the NOP circulation.

The Department prepared a DED regarding bighorn sheep hunting (Section 362, Title 14, CCR). The DED was made available for public review on February 14, 2019. In addition, correspondence was either emailed or letters sent to every county library for public posting and notice of the availability of the DED. No comments were received during the 45-day comment period. A formal notice letter proposing the 2019-20 Nelson bighorn sheep hunting regulations dated November 7, 2018, was also sent on behalf of the Department and the Fish and Game Commission to California Tribes, who requested to be notified for CEQA projects. No California Tribes requested consultation.

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NOTE: these documents are generally available through university libraries. Documents prepared by governmental agencies can be obtained through those agencies.


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# Appendix 1. Existing Regulatory Language for Bighorn Sheep Hunting with Proposed 2019 Changes

§362. Nelson Bighorn Sheep.

(a) Areas:

(1) Zone 1 - Marble/Clipper Mountains: That portion of San Bernardino County beginning at the intersection of Kelbaker Road and the National Trails Highway; north on Kelbaker Road to the junction with Interstate Highway 40; east on Interstate Highway 40 to the intersection with National Trails Highway; southwest on National Trails Highway to junction with Kelbaker Road.

(2) Zone 2 - Kelso Peak and Old Dad Mountains: That portion of San Bernardino County beginning at the intersection of Kelbaker Road and the Union Pacific Railroad in Kelso; southwest along the Union Pacific Railroad to intersection with unnamed road at Crucero; north on unnamed road to the merging with Mojave Road; northeast on Mojave Road to the junction with Zzyzx Road; north on Zzyzx Road to intersection with Interstate Highway 15; northeast on Interstate Highway 15 to the intersection with Cima Road; south on Cima Road to the intersection with the Union Pacific Railroad in Cima; southwest on the Union Pacific Railroad to the intersection with Kelbaker Road in Kelso.

(3) Zone 3 - Clark and Kingston Mountain Ranges: That portion of San Bernardino and Inyo counties beginning at the intersection of Interstate Highway 15 and California State Highway 127 in Baker; north on California State Highway 127 to the junction with Old Spanish Gentry Road at Tecopa; southeast on Old Spanish Gentry Road to the junction with Furnace Creek Road; southeast on Furnace Creek Road to the junction with Mesquite Valley Road; north on Mesquite Valley Road to Old Spanish Trail Highway; north and east on Old Spanish Trail Highway to California/Nevada state line; southeast on California/Nevada state line to the intersection with Interstate Highway 15; southwest on Interstate Highway 15 to the junction with California State Highway 127.

(4) Zone 4 - Orocopia Mountains: That portion of Riverside County beginning at the intersection of Interstate Highway 10 and Cottonwood Springs Road; east on Interstate Highway 10 to the junction with Red Cloud Mine Road; south on Red Cloud Mine Road to the junction with the Eagle Mountain Mining Railroad; southwest on the Eagle Mountain Mining Railroad to the junction with the Bradshaw Trail; southwest on the Bradshaw Trail to the Intersection with the Coachella Canal; west along the Coachella Canal to the junction with Box Canyon Road; northeast on Box Canyon Road to the junction with Cottonwood Springs Road; north on Cottonwood Springs Road to the intersection with Interstate Highway 10.

(5) Zone 5 - San Gorgonio Wilderness: That portion of Riverside and San Bernardino counties beginning at the intersection of Interstate Highway 10 and California State Highway 62, west on Interstate Highway 10 to the junction with California State Highway 30; north on California State Highway 30 to the junction with California State Highway 38; east and north on California State Highway 38 to the junction with Forest Service Route 1N01; east on Forest Service Route 1N01 to its joining with Pipes Road; east on Pipes Road to the junction with Pioneertown Road; southeast on Pioneertown Road to the junction with California State Highway 62; southwest on California State Highway 62 to the intersection with Interstate Highway 10.

(6) Zone 6 - Sheep Hole Mountains: That portion of San Bernardino County beginning at the junction of California State Highway 62 and Ironage Road; northwest on Ironage Road to the intersection with Amboy Road; north on Amboy Road to the intersection with National Trails Highway; east on National Trails Highway to the junction with Saltus Road; southeast on Saltus Road to the junction with unnamed road in Saltus that runs through Cadiz Valley; southeast on unnamed road to the intersection with California State Highway 62; west on California State Highway 62 to the junction with Ironage Road.

(7) Zone 7 - White Mountains: That portion of Mono County within a line beginning at U.S. Highway 6 and the Mono-Inyo county line; northward on Highway 6 to the California-Nevada State Line; southeasterly along the California-Nevada State Line to the Mono-Inyo County Line; westward along the Mono-Inyo County Line to the point of beginning.

(8) Zone 8 - South Bristol Mountains: That portion of San Bernardino County beginning at the junction of Kelbaker Road and the National Trails Highway; west on the National Trails Highway to the intersection with Interstate Highway 40; east on Interstate Highway 40 to the junction with Kelbaker Road; south on Kelbaker Road to the point of beginning.

(9) Zone 9 - Cady Mountains: That portion of San Bernardino County beginning at the junction of Interstate Highway 40 and Newberry Road; north on Newberry Road to intersection with Riverside Road; East on Riverside Road to junction with Harvard Road; north on Harvard Road to junction with Interstate Highway 15; northeast on Interstate Highway 15 to junction with Basin Road; south on Basin Road to intersection with Union Pacific Railroad; east on Union Pacific Railroad to intersection with Crucero Road; south on Crucero Road to intersection with Interstate Highway 40; west on Interstate Highway 40 to the point of beginning.

(10) Zone 10 – Newberry, Rodman and Ord Mountains: That portion of San Bernardino County beginning at the junction with Interstate 40 and Barstow Road; South on Barstow Road to the junction with Northside Road; East on Northside Road to the intersection with Camp Rock Road; Northeast on Camp Rock Road to the intersection with Powerline Road; East on Powerline Road and continue on Transmission Line Road to the

intersection with Interstate 40, West along Interstate 40, to the point of the beginning

(b) Seasons:

(1) Open Zone Fund-raising Tag: The holder of the fund-raising license tag issued pursuant to subsection 4902(d) of the Fish and Game Code may hunt:

(A) Zones 1 through 4, 6, 8 and 9: Beginning the first Saturday in November and extending through the first Sunday in February.

(B) Zone 5: Beginning the third Saturday in November and extending through the third Sunday in February.

(C) Zone 7: Beginning the first Saturday in August and extending through the last Sunday in September.

(2) Marble/Clipper/South Bristol Mountains Fund-raising Tag: The holder of the fund-raising license tag issued pursuant to subsection 4902(d) of the Fish and Game Code may hunt:

(A) Zones 1 and 8: Beginning the first Saturday in November and extending through the first Sunday in February.

(3) ~~Kelso Peak and Old Dad Mountains~~ Cady Mountains Fund-raising Tag: The holder of the fund-raising license tag issued pursuant to subsection 4902(d) of the Fish and Game Code may hunt:

(A) ~~Zone 2:~~ Zone 9: Beginning the first Saturday in November and extending through the first Sunday in February.

(4) Except as provided in subsection 362(b)(1), the Nelson bighorn sheep season in the areas described in subsection 362(a) shall be defined as follows:

(A) ~~Zones 1 through 4, 6, 8 and 9:~~ Zones 1, 2, 3, 4, 6, 8, 9, and 10: The first Saturday in December and extend through the first Sunday in February.

(B) Zone 5: The third Saturday in December and extend through the third Sunday in February.

(C) Zone 7: Beginning the third Saturday in August and extending through the last Sunday in September.

(5) Except as specifically provided in section 362, the take of bighorn sheep is prohibited.

(c) Bag and possession Limit: One mature ram defined as follows: a male Nelson bighorn sheep (Ovis canadensis nelsoni ) having at least one horn, the tip of which extends beyond a point in a straight line beginning at the front (anterior) edge of the horn base, and extending downward through the rear (posterior) edge of the visible portion of the eye and continuing downward through the horn. All reference points are based on viewing the ram directly from a 90 degree angle from which the head is facing. A diagram showing the correct viewing procedure shall be distributed by the department to each successful

applicant.

d) Number of License Tags:

| | *Tag* |
|---|---|
| *Nelson Bighorn Sheep Hunt Zones* | *Allocation* |
| Zone 1 - Marble/Clipper Mountains | ~~4~~ [ 0-5 ] |
| Zone 2 - Kelso Peak/Old Dad Mountains | ~~0~~ [ 0-4 ] |
| Zone 3 - Clark/Kingston Mountain Ranges | ~~2~~ [ 0-4 ] |
| Zone 4 - Orocopia Mountains | ~~1~~ [ 0-2 ] |
| Zone 5 - San Gorgonio Wilderness | ~~2~~ [ 0-3 ] |
| Zone 6 - Sheep Hole Mountains | ~~0~~ [ 0-2 ] |
| Zone 7 - White Mountains | ~~3~~ [ 0-6 ] |
| Zone 8 - South Bristol Mountains | ~~1~~ [ 0-3 ] |
| Zone 9 - Cady Mountains | ~~4~~ [ 0-4 ] |
| Zone 10 – Newberry, Rodman, Ord Mountains | [ 0-6 ] |
| Open Zone Fund-Raising Tag | 1 |
| Marble/Clipper/South Bristol Mountains Fund-Raising Tag | 1 |
| ~~Kelso Peak/Old Dad Mountains~~ Cady Mountains Fund-Raising Tag | ~~0~~ 1 |
| Total: | ~~19~~ [ 0-42 ] |

(e) Conditions:

(1) Nelson bighorn rams shall only be taken between one-half hour before sunrise and one-half hour after sunset.

(2) Only methods specified in sections 353 and 354, Title 14, CCR, for taking bighorn sheep may be used.

(3) Each tagholder shall possess a spotting telescope capable of magnification of 15 power (15X), which is not affixed to a rifle, while hunting.

(4) Successful general tagholders shall present the head and edible portion of the carcass of a bighorn ram to the department's checking station within 48 hours after killing the animal. All successful tagholders shall notify the department's Bishop office by telephone at (760) 872-1171 or ~~(760) 413-9596~~ (760) 872-1346 within 24 hours of killing the animal and arrange for the head and carcass to be examined.

(5) All successful bighorn sheep tagholders shall make the horns of each ram available to the department to be permanently marked in the manner prescribed by the department for identification purposes within 48 hours of killing the animal. The purpose of the permanent marking shall be to identify Nelson bighorn rams which were legally taken and

which may be transported and possessed outside the areas described in subsection 362(a).

(6) The department reserves the right to take and use any part of the tagholder's bighorn ram, except the horns, for biological analysis as long as no more than one pound of edible meat is removed.

Note: Authority cited: Sections 200, 203, 265, 1050 and 4902, Fish and Game Code. Reference: Sections 1050, 3950 and 4902, Fish and Game Code.

# Appendix 2.
# California Fish and Game Code
# Chapter 11. Bighorn Sheep [4900-4903]

**4900. Legislative Declaration of Policy to Encourage Preservation, etc.**

The Legislature declares that bighorn sheep are an important wildlife resource of the state to be managed and maintained at sound biological levels. Therefore, it is hereby declared to be the policy of the state to encourage the preservation, restoration, utilization, and management of California's bighorn sheep population. The management shall be in accordance with the policy set forth in Section 1801.

*(Added by Stats. 1986, Ch. 745, Sec. 3.)*

**4901. Determining Status and Trend**

The department shall determine the status and the trend of bighorn sheep populations by management units. A plan shall be developed for each of the management units. The plan for each management unit shall include all of the following:

(a) Data on the numbers, age, sex ratios, and distribution of bighorn sheep within the management unit.

(b) A survey of range conditions and a report on the competition that may exist as a result of human, livestock, wild burro, or any other mammal encroachment.

(c) An assessment of the need to relocate or reestablish bighorn populations.

(d) A statement on the prevalence of disease or parasites within the population.

(e) Recommendations for achieving the policy objective of Section 4900.

*(Added by Stats. 1986, Ch. 745, Sec. 3.)*

**4902. Nelson Bighorn Rams; Management, Hunting, Fees, etc.**

(a) The commission may adopt all regulations necessary to provide for biologically sound management of Nelson bighorn sheep (subspecies Ovis canadensis nelsoni).

(b) (1) After the plans developed by the department pursuant to Section 4901 for the management units have been submitted, the commission may authorize sport hunting of mature Nelson bighorn rams. Before authorizing the sport hunting, the commission shall take into account the Nelson bighorn sheep population statewide, including the population in the management units designated for hunting.

(2) Notwithstanding Section 219, the commission shall not, however, adopt regulations authorizing the sport hunting in a single year of more than 15 percent of the mature Nelson bighorn rams in a single management unit, based on the department's annual estimate of the population in each management unit.

(c) The fee for a tag to take a Nelson bighorn ram shall be four hundred dollars ($400) for a resident of the state, which shall be adjusted annually pursuant to Section 713. On or before July 1, 2015, the commission shall, by regulation, fix the fee for a nonresident of the state at not less than one thousand five hundred dollars ($1,500), which shall be adjusted annually pursuant to Section 713. Fee revenues shall be deposited in the Big Game Management Account established in Section 3953 and, upon appropriation by the Legislature, shall be expended as set forth in that section.

(d) The commission shall annually direct the department to authorize not more than three of the tags available for issuance that year to take Nelson bighorn rams for the purpose of raising funds for programs and projects to benefit Nelson bighorn sheep. These tags may be sold to residents or nonresidents of the State of California at auction or by another method and shall not be subject to the fee limitation prescribed in subdivision (c). Commencing with tags sold for the 1993 hunting season, if more than one tag is authorized, the department shall designate a nonprofit organization organized pursuant to the laws of this state, or the California chapter of a nonprofit organization organized pursuant to the laws of another state, as the seller of not less than one of these tags. The number of tags authorized for the purpose of raising funds pursuant to this subdivision, if more than one, shall not exceed 15 percent of the total number of tags authorized pursuant to subdivision (b). All revenue from the sale of tags pursuant to this subdivision shall be deposited in the Big Game Management Account established in Section 3953 and, upon appropriation by the Legislature, shall be expended as set forth in that section.

(e) No tag issued pursuant to this section shall be valid unless and until the licensee has successfully completed a prehunt hunter familiarization and orientation and has demonstrated to the department that he or she is familiar with the requisite equipment for participating in the hunting of Nelson bighorn rams, as determined by the commission. The orientation shall be conducted by the department at convenient locations and times preceding each season, as determined by the commission.

*(Amended by Stats. 2014, Ch. 467, Sec. 4. (AB 2105) Effective January 1, 2015.)*

**4903. Revenues From Fees and Expenditures**

Revenue from the fees authorized by this chapter shall be deposited in the Big Game Management Account established in Section 3953 and, upon appropriation by the Legislature, shall be expended as set forth in that section. Administrative overhead shall be limited to the reasonable costs associated with the direct administration of the program. These funds shall be used to augment, and not to replace, moneys appropriated from existing funds available to the department for the preservation, restoration, utilization, and management of bighorn sheep. The department shall maintain internal accountability necessary to ensure that all restrictions on the expenditure of these funds are met.

**4904. Annual Report; Content**

[Repealed Stats. 2012]

# Appendix 3: Public Comments Received

| Name and Date | Comment |
|---|---|
| Andy Nickell<br>11/30/2018<br>Submitted via e-mail | Hello<br>These are my comments on the bighorn sheep program in California:<br><br>Because of limited numbers of bighorn sheep statewide I believe tag allocation should be based on providing maximum hunter opportunity to the greatest number of hunters.<br><br>The majority of bighorn tags should be awarded in a random draw instead of using preference points. New hunters and young hunters will likely never catch up to the maximum point holders of today due to sheer numbers of hunters and low numbers of sheep, awarding 90% of sheep tags to max point holders only serves to discourage new hunters from even bothering to apply as well as driving hunters to apply out of state taking their conservation dollars elsewhere.<br><br>Lack of hunter recruitment is one of many factors that will negatively impact conservation efforts in the future, and lack of opportunity is the leading cause of lack of hunter retention.<br><br>Any new hunter who runs the numbers will see that with the current preference point system they have virtually no chance of hunting bighorn sheep in the state of California.<br><br>To increase numbers of bighorn sheep we should look to Nevada's sheep program for guidance which has been extremely successful in restoring sheep populations statewide from a low point in the 1960s.<br><br>Domestic sheep cause conflicts with bighorn sheep. Native wildlife should be given greater priority than agriculture. If this means cutting domestic grazing allotments then so be it. |

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| | Thank you |
| Cliff St. Martin<br>Dry Creek Outfitters<br>12/6/2018<br>Submitted via email | Dry Creek Outfitters and crew spend countless days every year in the desert observing BHS and working closely with California Fish and Wildlife, SCBS, and California Wild Sheep.<br>In doing so, we see the populations of BHS throughout different units. Few units are struggling with very low lamb recruitment and also populations doing very well. I would like to recommend below, harvest numbers in each unit that would be very conservative but yet an overall increase in most units but not all units. Obviously each year this quota needs be revisited.<br>I apologize for not listing each unit by their individual "zone number" but I'm in the field and trying to stumble through this by phone.<br><br>Kelso/ Old Dads - 0 tags again this season<br><br>White Mountains- 4 tags total<br>Even though the Whites are a large unit access is limited. As a result all four tags could at the same time could be somewhat crowded. Also in the past their is interference with the sheep season opener the same date as the archery deer season.<br>It would make for a much more enjoyable hunt for everyone to have it a split season with two tags for sheep beginning around August 1st. And running approx. 30days until first of Sept.<br>The second season beginning the next day and running approx. 30 days until the first of October.<br><br>Marble/ Clippers- 5 tags<br>Again with a split season. Starting the first Saturday in December and splitting it in half with the second half ending as usual.<br>Clark/Kingston's - 2 tags<br>Cady's- 4 tags<br>Orocopias-1 tag<br>Sheep Holes- 1 tag |

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| | San Gorgonios- 4 tags<br>South Bristol's- 0<br><br>Also with the possibility of additional unit or units opening and having an additional auction tag ( zone specific )<br>We need to be sure the fund raising tag and zone specific tags are in separate units. The open zone tag should hold priority over all tags thus keeping the zone specific holder and the fund raising holder unable to hunt the two premier units in Calif. (Orocopias and San Gorgonios )<br><br>I strongly believe we need to lengthen the season dates for the auction hunters. The auction hunter pays a great deal of money to have a great hunt and this year was not good. Sheep were scattered throughout the unit where a specific ram was being hunted just two weeks before the opener. That along with the deer season opening the same day ruined the hunters opportunity at a great ram. This particular family has purchased this tag twice in the past three years spending approx. $400,000.00 on the two tags.<br>I think that opening the season for the zone specific and open zone tag holder could begin as early as Sept. 1 and run through March or April at least. There should be no issues about this. Only one ram will be harvested and this would be a great incentive to more potential bidders. |

# Appendix 4: Environmental Checklist Form

# Environmental Checklist form

NOTE: The following is a sample form and may be tailored to satisfy individual agencies' needs and project circumstances. It may be used to meet the requirements for an initial study when the criteria set forth in CEQA Guidelines have been met. Substantial evidence of potential impacts that are not listed on this form must also be considered. The sample questions in this form are intended to encourage thoughtful assessment of impacts, and do not necessarily represent thresholds of significance.

1. Project title: Bighorn Sheep Hunting

2. Lead agency name and address:

   California Fish and Game Commission

   1416 9th Street

   Sacramento, CA 95814

3. Contact person and phone number: Melissa Miller-Henson, Acting Executive Director, Fish and Game Commission,

   (916) 653-4389

4. Project location: Statewide

5. Project sponsor's name and address:

   California Department of Fish and Wildlife

   Wildlife Branch, 1812 9th Street

   Sacramento, CA 95811

6. General plan designation: N/A

7. Zoning: N/A

8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.) The proposed project would modify bighorn sheep hunting tag quotas, establish a new hunt zone, and reallocate a fund-raising tag.

9. Surrounding land uses and setting: Briefly describe the project's surroundings:

   The project occurs in areas in Mono, San Bernardino, and Riverside Counties.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

N/A

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

    No.

NOTE: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

| | | |
|---|---|---|
| ☐ Aesthetics | ☐ Agriculture and Forestry Resources | ☐ Air Quality |
| ☒ Biological Resources | ☐ Cultural Resources | ☐ Geology /Soils |
| ☐ Greenhouse Gas Emissions | ☐ Hazards & Hazardous Materials | ☐ Hydrology / Water Quality |
| ☐ Land Use / Planning | ☐ Mineral Resources | ☐ Noise |
| ☐ Population / Housing | ☐ Public Services | ☒ Recreation |
| ☐ Transportation/Traffic | ☐ Tribal Cultural Resources | ☐ Utilities/Service Systems |
| ☐ Mandatory Findings of Significance | | |

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT equivalent under the Commission's Certified Regulatory Plan is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature _____ Date 2/19/19

## EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance

Issues:

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| I. AESTHETICS. Would the project: | | | | |
| a) Have a substantial adverse effect on a scenic vista? | ☐ | ☐ | ☐ | ☒ |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | ☐ | ☐ | ☐ | ☒ |
| c) Substantially degrade the existing visual character or quality of the site and its surroundings? | ☐ | ☐ | ☐ | ☒ |
| d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | ☐ | ☐ | ☐ | ☒ |
| II. AGRICULTURE AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project: | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | ☐ | ☐ | ☐ | ☒ |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | ☐ | ☐ | ☐ | ☒ |
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | ☐ | ☐ | ☐ | ☒ |
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |
| e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |
| III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project: | | | | |
| a) Conflict with or obstruct implementation of the applicable air quality plan? | ☐ | ☐ | ☐ | ☒ |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation? | ☐ | ☐ | ☐ | ☒ |
| c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? | ☐ | ☐ | ☐ | ☒ |
| d) Expose sensitive receptors to substantial pollutant concentrations? | ☐ | ☐ | ☐ | ☒ |
| e) Create objectionable odors affecting a substantial number of people? | ☐ | ☐ | ☐ | ☒ |
| IV. BIOLOGICAL RESOURCES: Would the project: | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | ☒ | ☐ | ☐ | ☐ |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service? | ☐ | ☐ | ☐ | ☒ |
| c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | ☐ | ☐ | ☐ | ☒ |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | ☐ | ☐ | ☐ | ☒ |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | ☐ | ☐ | ☐ | ☒ |
| f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| V. CULTURAL RESOURCES. Would the project: | | | | |
| a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5? | ☐ | ☐ | ☐ | ☒ |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5? | ☐ | ☐ | ☐ | ☒ |
| c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | ☐ | ☐ | ☐ | ☒ |
| d) Disturb any human remains, including those interred outside of dedicated cemeteries? | ☐ | ☐ | ☐ | ☒ |
| VI. GEOLOGY AND SOILS. Would the project: | | | | |
| a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: | ☐ | ☐ | ☐ | ☒ |
| i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. | ☐ | ☐ | ☐ | ☒ |
| ii) Strong seismic ground shaking? | ☐ | ☐ | ☐ | ☒ |
| iii) Seismic-related ground failure, including liquefaction? | ☐ | ☐ | ☐ | ☒ |
| iv) Landslides? | ☐ | ☐ | ☐ | ☒ |
| b) Result in substantial soil erosion or the loss of topsoil? | ☐ | ☐ | ☐ | ☒ |
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? | ☐ | ☐ | ☐ | ☒ |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | ☐ | ☐ | ☐ | ☒ |
| VII. GREENHOUSE GAS EMISSIONS. Would the project: | | | | |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | ☐ | ☐ | ☐ | ☒ |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | ☐ | ☐ | ☐ | ☒ |
| VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the project: | | | | |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | ☐ | ☐ | ☐ | ☒ |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | ☐ | ☐ | ☐ | ☒ |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | ☐ | ☐ | ☐ | ☒ |
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? | ☐ | ☐ | ☐ | ☒ |
| f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? | ☐ | ☐ | ☐ | ☒ |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☐ | ☒ |
| h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | ☐ | ☐ | ☐ | ☒ |
| IX. HYDROLOGY AND WATER QUALITY. Would the project: | | | | |
| a) Violate any water quality standards or waste discharge requirements? | ☐ | ☐ | ☐ | ☒ |
| b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? | ☐ | ☐ | ☐ | ☒ |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? | ☐ | ☐ | ☐ | ☒ |
| e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? | ☐ | ☐ | ☐ | ☒ |
| f) Otherwise substantially degrade water quality? | ☐ | ☐ | ☐ | ☒ |
| g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? | ☐ | ☐ | ☐ | ☒ |
| h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows? | ☐ | ☐ | ☐ | ☒ |
| i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? | ☐ | ☐ | ☐ | ☒ |
| j) Inundation by seiche, tsunami, or mudflow? | ☐ | ☐ | ☐ | ☒ |
| X. LAND USE AND PLANNING. Would the project: | | | | |
| a) Physically divide an established community? | ☐ | ☐ | ☐ | ☒ |
| b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| c) Conflict with any applicable habitat conservation plan or natural community conservation plan? | ☐ | ☐ | ☐ | ☒ |
| XI. MINERAL RESOURCES. Would the project: | | | | |
| a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | ☐ | ☐ | ☐ | ☒ |
| b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | ☐ | ☐ | ☐ | ☒ |
| XII. NOISE -- Would the project result in: | | | | |
| a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | ☐ | ☐ | ☐ | ☒ |
| b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? | ☐ | ☐ | ☐ | ☒ |
| c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? | ☐ | ☐ | ☐ | ☒ |
| d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | ☐ | ☐ | ☐ | ☒ |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☐ | ☒ |
| f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| XIII. POPULATION AND HOUSING. Would the project: | | | | |
| a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | ☐ | ☐ | ☐ | ☒ |
| b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☒ |
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☒ |
| XIV. PUBLIC SERVICES. | | | | |
| a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: | ☐ | ☐ | ☐ | ☒ |
| Fire protection? | ☐ | ☐ | ☐ | ☒ |
| Police protection? | ☐ | ☐ | ☐ | ☒ |
| Schools? | ☐ | ☐ | ☐ | ☒ |
| Parks? | ☐ | ☐ | ☐ | ☒ |
| Other public facilities? | ☐ | ☐ | ☐ | ☒ |
| XV. RECREATION. | | | | |
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | ☐ | ☐ | ☐ | ☒ |
| b) Does the project include recreational facilities or require the construction or expansion of | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| recreational facilities which might have an adverse physical effect on the environment? | | | | |
| c) Does the project have the potential to impact recreational activities dependent on wildlife, such as hunting or wildlife viewing? | ☒ | ☐ | ☐ | ☐ |
| XVI. TRANSPORTATION/TRAFFIC. | | | | |
| Would the project: | | | | |
| a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? | ☐ | ☐ | ☐ | ☒ |
| b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? | ☐ | ☐ | ☐ | ☒ |
| c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? | ☐ | ☐ | ☐ | ☒ |
| d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | ☐ | ☐ | ☐ | ☒ |
| e) Result in inadequate emergency access? | ☐ | ☐ | ☐ | ☒ |
| f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? | ☐ | ☐ | ☐ | ☒ |
| XVII. TRIBAL CULTURAL RESOURCES | | | | |
| a ) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| sacred place, or object with cultural value to a California Native American tribe, and that is: | | | | |
| i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or | ☐ | ☐ | ☐ | ☒ |
| ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| XVIII. UTILITIES AND SERVICE SYSTEMS.<br>Would the project: | | | | |
| a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? | ☐ | ☐ | ☐ | ☒ |
| b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | ☐ | ☐ | ☐ | ☒ |
| c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | ☐ | ☐ | ☐ | ☒ |
| d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? | ☐ | ☐ | ☐ | ☒ |
| e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | ☐ | ☐ | ☐ | ☒ |
| f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? | ☐ | ☐ | ☐ | ☒ |
| g) Comply with federal, state, and local statutes and regulations related to solid waste? | ☐ | ☐ | ☐ | ☒ |
| XIX. MANDATORY FINDINGS OF SIGNIFICANCE | | | | |
| a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | ☐ | ☐ | ☐ | ☒ |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| current projects, and the effects of probable future projects)? | | | | |
| c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☐ | ☐ | ☒ |

Note: Authority cited: Sections 21083 and 21083.05, 21083.09 Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21073, 21074 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21080.3.1, 21080.3.2,21082.3, 21084.2, 21084.3, 21093, 21094, 21095, and 21151, Public Resources Code; *Sundstrom v. County of Mendocino,*(1988) 202 Cal.App.3d 296; *Leonoff v. Monterey Board of Supervisors,* (1990) 222 Cal.App.3d 1337; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

# Appendix 5: Desert Bighorn Sheep Surveys

| Zone | Year | Survey Type | Number of Lambs | Number of Ewes | Number of Rams | Number of Unclassified | Total Counted |
|---|---|---|---|---|---|---|---|
| Marble Mountains & Clipper Mountains | 2007 | Helicopter | 12 | 84 | 46 | 0 | 142 |
| | 2009 | Helicopter | 34 | 88 | 65 | 0 | 187 |
| | 2015 | Helicopter | 8 | 48 | 23 | 5 | 84 |
| | 2016 | Ground | 42 | 73 | 35 | 2 | 152 |
| | 2018 | Ground | 18 | 78 | 35 | 1 | 132 |
| | 2007 | Helicopter | 0 | 8 | 11 | 0 | 19 |
| | 2009 | Helicopter | 4 | 13 | 16 | 0 | 33 |
| | 2015 | Helicopter | 4 | 20 | 22 | 0 | 46 |
| Clark Mountain Kingston Range | 2007 | Helicopter | 0 | 31 | 18 | 0 | 49 |
| | 2009 | Helicopter | 0 | 12 | 8 | 0 | 20 |
| | 2015 | Helicopter | 0 | 1 | 3 | 0 | 4 |
| | 2016 | Helicopter | 1 | 31 | 13 | 5 | 50 |
| | 2007 | Helicopter | 3 | 27 | 21 | 0 | 51 |
| | 2009 | Helicopter | 6 | 33 | 20 | 0 | 59 |
| | 2015 | Helicopter | 9 | 25 | 14 | 0 | 48 |
| | 2016 | Helicopter | 3 | 31 | 19 | 2 | 55 |
| | 2018 | Helicopter | 5 | 80 | 34 | 0 | 119 |
| White Mountains | 2008 | Helicopter | 16 | 59 | 52 | 0 | 127 |
| | 2009 | Helicopter | 16 | 60 | 29 | 2 | 107 |
| | 2015 | Ground | 46 | 69 | 82 | 20 | 217 |
| | 2016 | Ground | 26 | 43 | 9 | 22 | 100 |
| | 2018 | Ground | 36 | 124 | 62 | 1 | 223 |
| Cady Mountains | 2007 | Helicopter | 12 | 59 | 38 | 0 | 109 |
| | 2009 | Helicopter | 37 | 92 | 38 | 0 | 167 |
| | 2010 | Helicopter | 23 | 102 | 49 | 0 | 174 |
| | 2018 | Helicopter | 8 | 58 | 27 | 0 | 93 |
| Newberry, Rodman and Ord Mountains | 2016 | Helicopter | 49 | 70 | 52 | 0 | 171 |
| | 2018 | Helicopter | 35 | 95 | 72 | 0 | 202 |