

# NEVADA DIVISION OF WILDLIFE'S BIGHORN SHEEP MANAGEMENT PLAN

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## THE VALUE OF BIGHORN SHEEP

The sight of bighorn sheep leaping nimbly across rugged slopes elicits emotions that impress and inspire viewers. From primitive inhabitants to civilized peoples, a recurring theme in records kept on bighorn sheep is the strong sentiment elicited by this animal.

One of the most difficult tasks in wildlife management is to place value on wildlife. Economics alone do not even come close to describing the values of wildlife to the people of the State of Nevada. Other values, which are nearly impossible to quantify, must be considered when evaluating what an animal is worth. Activities such as wildlife viewing and photography are examples of the use of the bighorn sheep resource that are not well documented but no doubt account for thousands of recreational days annually. Even people that have no expectations of seeing bighorn sheep in the wild want to know they are present and will be into the future.

The interest and enthusiasm expressed in bighorn sheep through conservation organizations such as Nevada Bighorns Unlimited, the Fraternity of the Desert Bighorn and the Foundation for North American Wild Sheep attests to the tremendous respect and admiration that sportsmen and the general public have for the State's bighorn sheep. Through political and financial support, construction of water developments, and other habitat improvement projects, these bighorn-support groups have benefited many wildlife species. The Nevada Division of Wildlife recognizes these immeasurable values of bighorn sheep and has the responsibility to ensure that they are managed for the enjoyment and use by both present and future generations.

# TABLE OF CONTENTS

ACKNOWLEDGEMENTS .....	1
EXECUTIVE SUMMARY .....	2
WILDLIFE COMMISSION POLICIES .....	3
HISTORY .....	4
HABITAT MANAGEMENT .....	6
POLICY STATEMENTS .....	6
Habitat Delineation .....	6
Habitat Acquisition .....	8
Special Habitat Designation.....	9
Movement Corridor Protection.....	9
Water Development.....	10
Grazing Input.....	11
Fire .....	12
Roads, Off Road Vehicle Use.....	13
Mining.....	14
POPULATION MANAGEMENT.....	14
POLICY STATEMENT.....	15
Bighorn Sheep Capture and Transplanting.....	15
Reintroductions.....	15
Augmentations.....	16
Capture .....	17
Population Monitoring.....	17
Subspecies Delineation .....	18
Disease .....	21
Predator Management.....	22
HARVEST MANAGEMENT.....	23
POLICY STATEMENT.....	23
Quota Criteria and Tag Requirements.....	23
Season Structure.....	24
LAW ENFORCEMENT .....	25
ECONOMICS .....	26
Hunter Expenditures.....	26
Division Revenue.....	26
Division Expenditures .....	27
Trapping and Transplanting Costs.....	28
CONSERVATION EDUCATION.....	28

POLICY STATEMENT.....	28
Educating Nevada’s Youth .....	29
Educating the General Public .....	29
Educating Hunters .....	30
PLAN EVALUATION .....	30
LITERATURE CITED .....	31
APPENDIX A - LAWS AND REGULATIONS PERTINENT TO BIGHORN SHEEP MANAGEMENT.....	A-1
Appropriate Federal Laws, Policies and Agreements Pertinent to Bighorn Sheep Management in Nevada .....	A-1
Nevada Revised Statutes Pertinent to Bighorn Sheep Management .....	A-3
Nevada Administrative Code Pertinent To Bighorn Sheep Management .....	A-4
Commission Policies Pertinent To Bighorn Sheep Management.....	A-4
Department of Agriculture Regulations on Lost Or Trespass Domestic Sheep And Goats .....	A-5
43 CFR (BLM) .....	A-5

## LIST OF FIGURES AND TABLES

Figure 1. Bighorn Sheep Distribution In Nevada In 1860, 1960, And 2001. ....	5
Figure 2. Occupied And Unoccupied Potential Bighorn Sheep Habitat In Nevada As Of 2001. ....	7
Figure 3. Bighorn Sheep Subspecies Delineation Boundaries For Future Transplants Of Desert, California, And Rocky Mountain Bighorn Sheep.....	20
Figure 4. Average Age Of Harvested Desert And California Bighorn Sheep Rams In Nevada From 1990 – 2000.....	23
Figure 5. Nevada Bighorn Sheep Tag Sales Revenue And Its Potential Federal Aid Match From 1981 – 2000... ..	27
Table 1. Annual Division Bighorn Sheep Management Expenditures For FY2000.....	28

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- **Tommy Ford**, Wildlife Commissioner
- **Clint Bentley**, representing the Fraternity of the Desert Bighorn
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- **Tony Wasley**, NDOW eastern Nevada bighorn sheep biologist

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## EXECUTIVE SUMMARY

The bighorn sheep management plan is a guiding document for the Nevada Board of Wildlife Commissioners (Commission) and the Nevada Division of Wildlife (Division) efforts in the conservation and management of bighorn sheep populations and their habitat. The plan includes Commission policies that are overall goals that guide the Division. The majority of the plan is a framework that outlines the actions and strategies that Division employees will follow in planning and conducting bighorn sheep management and conservation.

Bighorn sheep have been shown to be one of the more numerous and most widely distributed large ungulates throughout historic Nevada. But by the late 19<sup>th</sup> century, several factors caused the decline of Nevada's bighorn populations.

The quality and quantity of suitable habitat will ultimately determine the number of bighorn sheep that the State of Nevada will support. Continued collaboration with land management agencies, government entities, private landowners, and sportsmen is imperative when protecting and enhancing bighorn sheep habitat. All occupied and potential bighorn sheep habitat will be delineated and limiting factors will be identified for each. Information gathered through this activity will be the basis for protection and enhancement activities. The purchase of conservation easements, property and associated grazing privileges, conversions of Animal Unit Months (AUM's) from domestic sheep to cattle or water rights, will be done to protect or enhance important bighorn sheep habitat. The Division will actively pursue a program to provide water for bighorn sheep as a means to increase population levels and distribution in water deficient habitats.

From a population management perspective, the underlying goal of this plan is to restore and maintain bighorn herds at optimal population levels based on a multitude of demographic and ecological parameters. Bighorn sheep will be reintroduced into suitable but unoccupied habitats. Bighorn herds below optimal levels will be augmented to bolster populations. Comprehensive planning, coordination, and follow up will be conducted in the capture and release of bighorn sheep. All future releases of bighorn subspecies will be within their identified delineation area, with the largest portion of Nevada being delineated for desert bighorn sheep. Bighorn populations will be adequately monitored to assess trends and detect significant demographic changes and/or home range/movement changes. The Division will investigate and address all disease related problems in a timely fashion.

Bighorn sheep hunting is a legitimate and desirable use of the bighorn resource. The Division will develop quota recommendations with the expectation of obtaining a statewide average age of 6 years for harvested rams. Since bighorn sheep are a highly regarded and sought after big-game species, the Division will continue to protect bighorn sheep populations through education and appropriate enforcement of pertinent wildlife laws and regulations.

The desert bighorn sheep is Nevada's state animal; yet, the general public has very little knowledge about bighorn sheep. Therefore, the Division is challenged to increase public awareness and appreciation for bighorn sheep and their habitats in order to facilitate decisions favorable to their long-term well being.



## **BIGHORN SHEEP MANAGEMENT PLAN'S WILDLIFE COMMISSION POLICIES**

- The Division will work to protect all bighorn sheep habitat that is currently in good condition.
- In order to expand numbers and distribution of bighorn sheep, limiting factors, such as lack of water and poor forage conditions, need to be addressed. Management actions to enhance these deficiencies will be aggressively pursued.
- The Division will increase bighorn populations of all subspecies statewide to a level where all habitats are occupied and each herd is self-sustaining.
- Bighorn sheep hunting is a legitimate and desirable use of the bighorn resource.
- The Division will increase public awareness and appreciation for bighorn sheep and their habitats in order to facilitate decisions favorable to their long-term well being.

## HISTORY

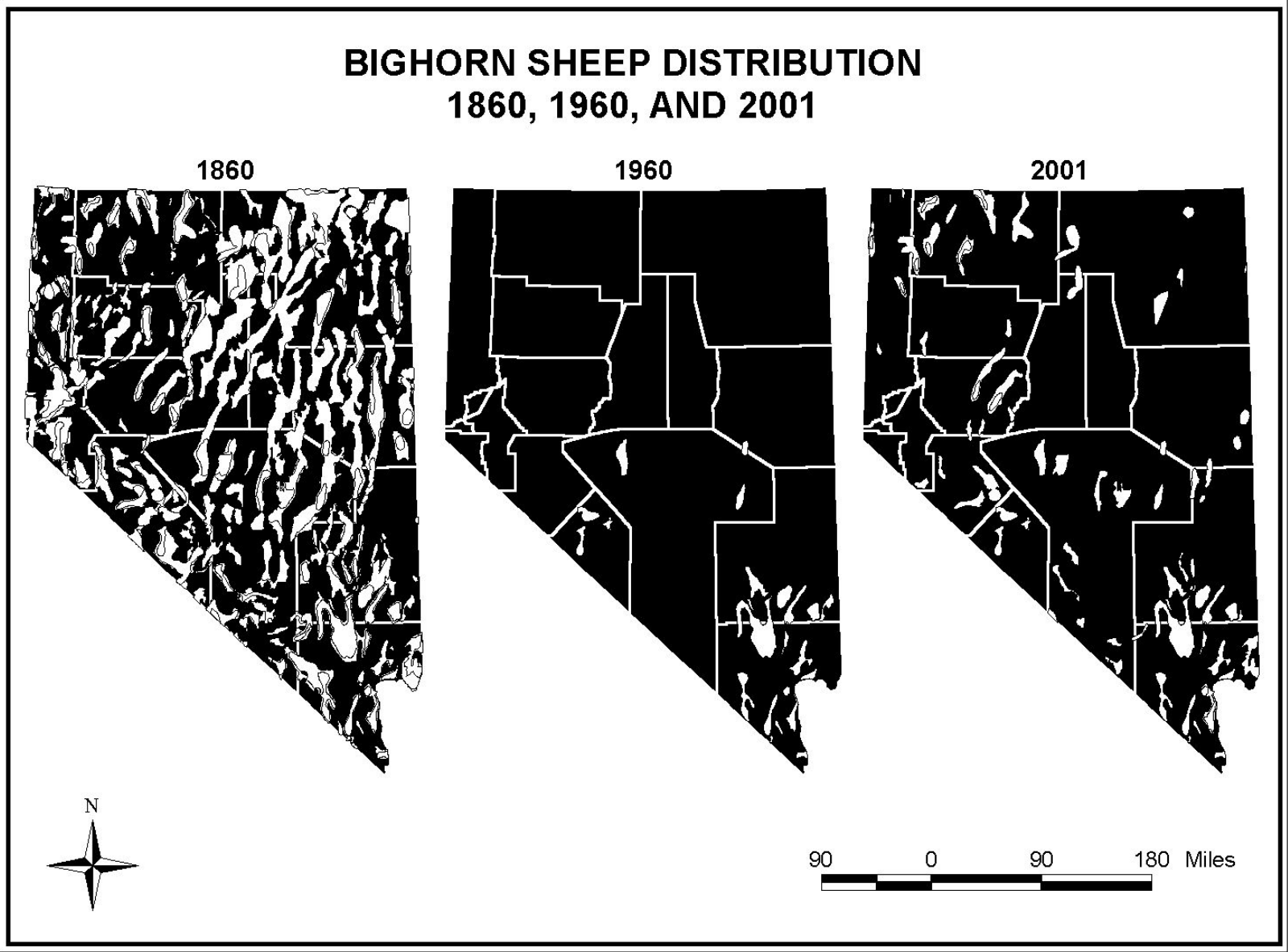
The earliest archaeological record of bighorns in Nevada are remains from Pintwater Cave, northwest of Las Vegas, dated at 28,000 years before the present (Buck et al. 1997). Archeological investigations based on bones and petroglyphs have shown bighorns to be one of the more numerous and most widely distributed large ungulates throughout historic Nevada (Harrington 1933; Jennings 1957; Gruhn 1976). John C. Fremont wrote on January 11, 1834 during his travels through Nevada's Lake Range, "On our road down, the next day, we saw herds of mountain sheep....." (Smith 1909). But by the beginning of the late 19<sup>th</sup> century, commercial and illegal hunting, competition with livestock, and the effects of livestock diseases all appear to have caused the decline of Nevada's bighorn populations.

The earliest effort at bighorn management in Nevada appeared as an 1861 law closing sheep harvest between January 1<sup>st</sup> and July 1<sup>st</sup>. Other laws were enacted, varying the hunting season dates, but in 1901, the legislature closed bighorn hunting and it continued to be closed until 1952. As more laws and attention were brought on bighorn sheep management, indications were that illegal, subsistence-based hunting in the state began to decline during the 1940's (Jones 1957).

The Nevada Division of Wildlife (Division), formerly known as the Department of Fish and Game, began bighorn sheep management in the late 1940's. In 1936, the U.S. Fish and Wildlife Service created the Desert National Wildlife Range for the protection of several desert bighorn sheep herds in southern Nevada. However, despite conservation efforts, Nevada's bighorn numbers continued to decline until the middle part of the century.

Figure 1 depicts the estimated bighorn sheep distribution in 1860, 1960, and 2001. The 1860 distribution is based on historic accounts and archeological evidence of bighorn sheep and biological judgment of areas that had adequate bighorn habitat. Using this distribution and a conservative density value for bighorn sheep, it was calculated by the bighorn sheep management team that Nevada's bighorn population in 1860 exceeded 30,000. But by 1960, it was estimated to have declined to a level between 2,000 and 3,000 bighorn. By the 1980's, bighorn sheep management intensified and restored animals to many of their historic ranges through habitat improvement and transplant programs. The 2001 statewide estimate was 6,500 bighorn sheep in 74 mountain ranges.

The continued existence of bighorn sheep in Nevada will rely on a mixture of science, sentiment and proper management decisions. This plan is a part of an effort to continue a course of action to ensure that this species will endure.



**Figure 1. Bighorn Sheep Distribution in Nevada in 1860, 1960, and 2001.**

# HABITAT MANAGEMENT

The quality and quantity of suitable habitat will ultimately determine the number of bighorn sheep that the State of Nevada will support. Since most of the bighorn sheep habitat is managed by the Bureau of Land Management, the U.S. Forest Service, the U.S. Fish and Wildlife Service, the National Park Service, military installations, Indian Tribes, and private landowners, it is imperative that the Division always strive for cooperation and collaboration with these entities. State, County, and Local Governments also make decisions that have the potential to impact bighorn habitat. It is important that the Division provides input for all decisions affecting bighorn sheep habitat since the loss of habitat, or reduction in the habitat quality, will reduce the number of sheep that an area can support. The Division supports land use and habitat designations (i.e., wilderness, ACEC's, etc) as long as wildlife management activities that are used to manage bighorn populations and their habitat are allowed to continue.

Conservation organizations, such as Nevada Bighorns Unlimited (NBU), the Fraternity of the Desert Bighorn Sheep (Fraternity), The Foundation for North America Wild Sheep (FNAWS) and others, play an extremely important role in habitat protection and enhancement. The Division will continue to foster excellent working relationships with these groups in order to maximize habitat protection and habitat enhancement efforts.

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## POLICY STATEMENTS

- **The Division will work to protect all bighorn sheep habitat that is currently in good condition.**
  - **In order to expand numbers and distribution of bighorn sheep, limiting factors, such as lack of water and poor forage conditions, need to be addressed. Management actions to enhance these deficiencies will be aggressively pursued.**
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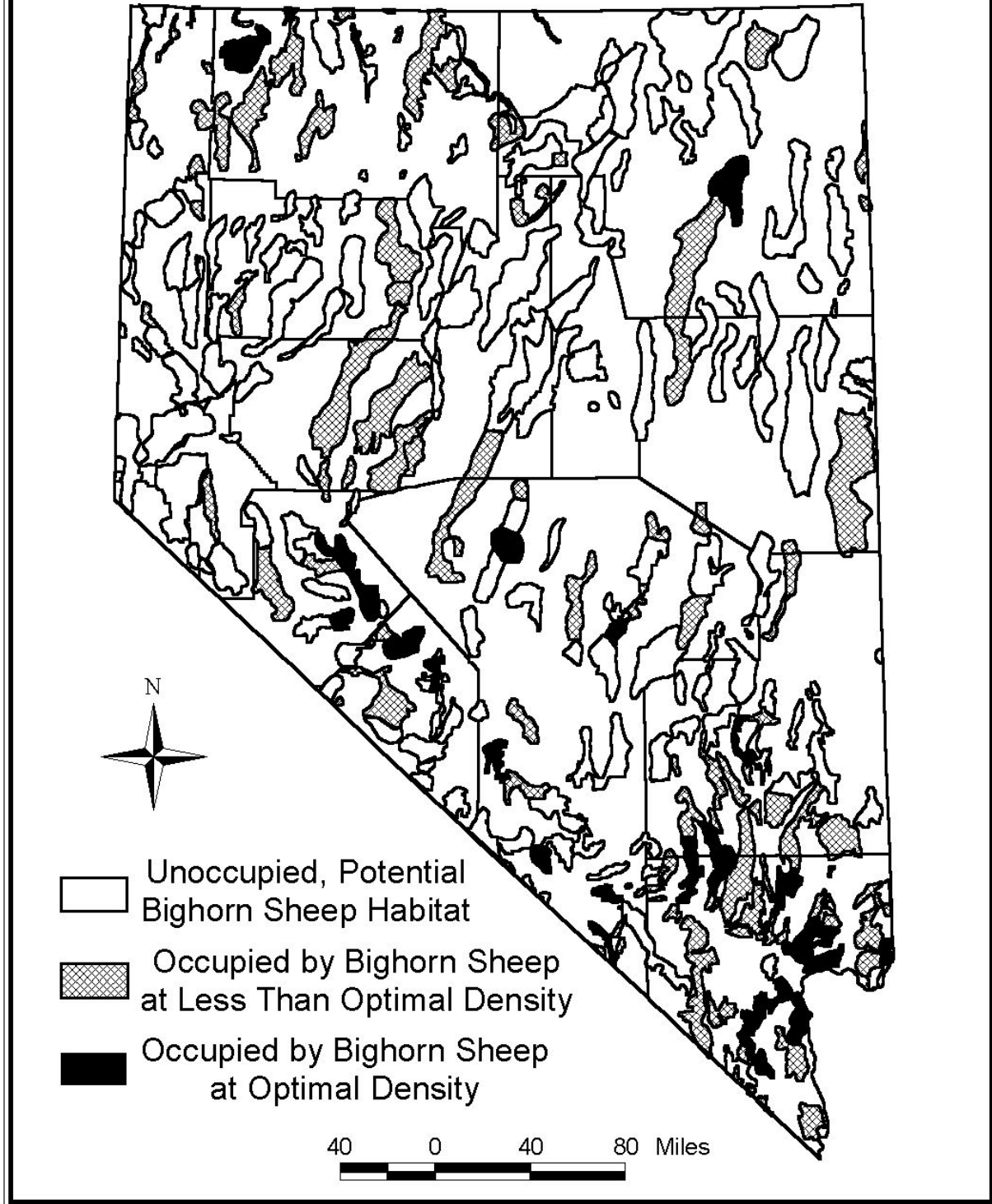
### ***Habitat Delineation***

**Management Action:** All occupied and potential bighorn sheep habitat will be delineated and limiting factors will be identified for each. Information gathered through this activity will then be used as a major tool to identify protection and enhancement activities.

**Strategy:** Biologists will identify all occupied and potential bighorn habitat within their area of responsibility (Figure 2). Factors that limit an area's ability to provide optimal habitat for bighorn sheep will be identified.

**Strategy:** The habitat information that depicts current distribution at optimal and less than optimal levels, potential habitat, and limiting factors will be incorporated into the Geographic Information System (GIS) database.

# POTENTIAL AND OCCUPIED BIGHORN SHEEP HABITAT



**Figure 2. Occupied and unoccupied potential bighorn sheep habitat in Nevada as of 2001.**

**Strategy:** The maps and information will be provided to the land management agencies for incorporation into land use planning documents, and will be used to help facilitate habitat protection and enhancement activities.

### ***Habitat Acquisition***

Thousands of acres of bighorn sheep habitat have been lost in recent years to urbanization in southern Nevada. Thousands of acres of bighorn sheep habitat have been traded from public ownership through land exchanges. None of these land exchanges have acquired additional bighorn habitat to compensate for this loss. In addition, human activity such as highways and reservoirs has fragmented huge expanses of historic bighorn sheep habitat.

Domestic sheep operations pose the largest obstacle to the further expansion of bighorn sheep populations in the State of Nevada due to continued concerns over disease transmission. For example, out of 12 mountain ranges identified in southern Nevada that contain suitable bighorn sheep habitat, but are currently unoccupied, 8 have domestic sheep associated with them. In the past, willing sellers have approached both the Division and conservation organizations with a desire to sell their domestic sheep grazing operations. However, no process has been established to evaluate these offers and therefore, opportunities to secure wildlife habitat for the long-term have been lost.

As directed by Commission Policy (P-62), it is imperative that the Division does everything possible to prevent the loss of habitat. In situations when the loss of habitat is inevitable, replacement or compensatory mitigation is a viable option. Habitat acquisition is one avenue that the Division will pursue to compensate for the loss of habitat. Habitat acquisition, through willing sellers, is also consistent with the Division's strategic plan

**Management Action:** The purchase of conservation easements, property and associated grazing privileges, conversions of Animal Unit Months (AUM's) from domestic sheep to cattle, or acquisition of water rights, will be pursued in order to protect or enhance important sheep habitat.

**Strategy:** Any AUM conversion, acquisition of private land, grazing privileges or easements will only be accomplished through a willing seller. The purchase of conservation easements and AUM conversions would be preferred over the purchase of property.

**Strategy:** The Division will develop guidelines and criteria in order to evaluate potential habitat acquisitions in a timely fashion.

**Strategy:** Potential funding sources and partners will be identified so that when opportunities do arise, they can be acted on in a timely fashion. Funding sources could include mitigation from urban sprawl (such as Southern Nevada Public Lands Management Act), conservation organization partnerships, heritage account, bond revenues and federal aid.

**Strategy:** The Commission's mitigation policy (P-62), will be used to direct Division activities associated with the potential loss of habitat and the associated mitigation alternatives including habitat acquisition.

### ***Special Habitat Designation***

The objective of special habitat designations would be to ensure that large blocks of existing high quality public habitat would be managed and protected, with an emphasis on bighorn sheep for the long-term. An example of an area that could be designated a special bighorn habitat area is the Arrow Canyon, Meadow Valley, Delamar, South Hiko and S. Pahroc Ranges. This is a large, continuous block of sheep habitat that is threatened by development. Maintaining not only the bighorn habitat, but also the migration corridors between these ranges, is essential to the long-term future of bighorn sheep in these areas.

**Management Action:** The Division will work with land management agencies and conservation organizations to designate critical bighorn sheep habitats with the goal of providing long-term protection to these areas.

**Strategy:** Through the use of GIS, evaluate potential threats to bighorn sheep habitat, and other biological and political/social issues to determine and prioritize areas suited for designation.

**Strategy:** Coordinate with land management agencies to determine what designation options would be best suited to protect large, continuous blocks of sheep habitat.

**Strategy:** Form partnerships with conservation organizations and land management agencies and actively pursue designations in top priority areas.

### ***Movement Corridor Protection***

Bighorn sheep movement can be categorized into two general types. The first is daily movement where bighorns move between watering areas, foraging areas and resting areas. These movements normally do not exceed more than a few miles in a day. The second is seasonal movements where bighorn move to other parts of a range or to other mountain ranges in response to changes in vegetation quality, water availability or weather. These movements can include several thousand feet in elevation and a 20- or 30-mile movement to another range. The impediment of either of these movements can be devastating to a bighorn sheep population.

**Management Action:** The Division will work to maintain bighorn sheep movement corridors.

**Strategy:** The GIS will be used to delineate important movement corridors. This information will be provided to land management agencies and the Department of Transportation.

**Strategy:** The Division will follow Commission Policy 62 (mitigation policy) when reviewing and commenting on movement impediments.

**Strategy:** The Division's first priority will be to minimize fences, roads, ditches and other movement impediments in bighorn sheep habitat. The Division will work with land management agencies and private landowners to consider alternatives to impediments, or to relocate the activity to an area with less impact to bighorn sheep.

**Strategy:** The Division realizes that some fences will be constructed within bighorn habitat. In these instances, the following fence specification should be used: A 39-inch high, three-strand fence with a smooth bottom wire. The wire spacing from ground up would be 20", 15" and 4" (BLM Handbook).

**Strategy:** Any roads built in bighorn sheep habitat or movement corridors must be constructed in such a way as to allow continued bighorn movement. Some strategies could include under or over passes, ramps cut into steep side slopes, alternatives to continuous guard rails and/or fence specifications along roads that allow sheep movement.

## ***Water Development***

Nevada is the driest state in the nation. The southern half of the state is extremely dry, especially in habitats capable of supporting bighorn sheep. To compound this problem, many of the natural water sources have been degraded or eliminated from a wildlife standpoint by human development, livestock use or have been eliminated by the pumping of the ground water for either agriculture or urban development.

The Division has evaluated dozens of Nevada's mountain ranges as to their suitability to support bighorn sheep. Many ranges have the topography and the vegetative resources to support bighorn sheep but lack adequate, available water. The protection and development of water is one of the management activities that can be used to expand both bighorn sheep distribution and population size.

Through December 2000, approximately 240 water developments had been constructed within bighorn sheep habitat. Not only are bighorn sheep dependent on these units, but a whole host of other wildlife species regularly use these waters. It is imperative that these existing developments be regularly maintained and kept in working order. In some years these developments do go dry.

**Management Action:** The Division will actively pursue a program to provide water for bighorn sheep as a means to increase population levels and distribution in water deficient habitats.

**Strategy:** The protection and development of natural water sources will be a high priority. The Division will work with other agencies to protect riparian areas. Conservation



easements will be pursued in order to protect important water sources for wildlife. The acquisition of water rights will be pursued as identified in Commission Policy 61 (Water Rights) including the development of guidelines and procedures for water right filings.

**Strategy:** The Division will aggressively pursue protection of existing water developments against actions or activities that intend to remove or eliminate any water development that is used by bighorn sheep.

**Strategy:** The Division will pursue water developments in water deficient habitats to mitigate for habitat losses in other areas. Consideration must be given for multiple water sources in summer range to moderate impacts from failed water developments and focused predation. When determining water development sites, consideration should be given to provide for winter range or dry areas.

**Strategy:** The maintenance of existing water developments will be a high priority. A combination of approaches may need to be employed to ensure that all waters are maintained. Strategies could include the establishment of a permanent fund whereby the interest from the account would be used to fund a long-term annual maintenance program. Other approaches could include the use of conservation groups, volunteer labor, area biologists and agency fire crews.

**Strategy:** The Division will, where feasible, augment water in those water developments that are deficient in available water. Conservation groups, volunteer labor, area biologists and agency fire crews may be utilized.

**Strategy:** The Division will work cooperatively with federal land management agencies, conservation organizations and private landowners to develop adequate water distribution for bighorn sheep throughout the state.

**Strategy:** The Division will use the best development design for a given site in order to provide adequate water in the most cost efficient and maintenance-free manner. Other factors will be considered when designing developments such as the merits of using one large development in an area verses several smaller units.

**Strategy:** The Division in cooperation with land management agencies will use employees, private contractors, conservation organizations and volunteers for the installation of water developments in order to achieve water development objectives.

## ***Grazing Input***

Livestock, feral horses and feral burros are associated with most of the bighorn sheep habitat within the State. In many instances, livestock, horses, and burros compete directly with bighorns for forage, water, and space. It is important that bighorn sheep habitats are managed to ensure land use objectives are achieved and that habitats are maintained in good to excellent ecological condition.

**Management Action:** The Division will encourage and support land management decisions and resource management techniques that result in the attainment of good to excellent ecological condition on public and private rangelands.

**Strategy:** The Division will encourage and support the management of livestock when such management results in the attainment of land use goals and objectives consistent with wildlife needs. The Division should take appropriate action, including litigation, when these goals and objectives are not obtained.

**Strategy:** The Division will encourage and support the management of feral horses and burros when such management results in the attainment of land use goals and objectives consistent with wildlife needs. The Division should take appropriate action, including litigation, when these goals and objectives are not obtained.

**Strategy:** The Division will encourage and support sound monitoring procedures as the basis to determine the condition of ranges and to assess the amount of use by class of animal. The Division should take appropriate action, including litigation, when these goals and objectives are not obtained.

**Strategy:** The Division will provide comments or take other appropriate action through the land use planning process when poor range conditions exist and are in need of improvement for the benefit of wildlife including bighorns. The Division should take appropriate action, including litigation, when these goals and objectives are not obtained.

## ***Fire***

The effects of fire on bighorn sheep habitat vary depending on the vegetative community impacted. In some of the lower elevation sagebrush habitats, cheatgrass readily establishes after a fire and prohibits the reestablishment of native vegetation. In other areas, primarily dominated by pinyon and juniper trees, fires can be a major benefit to sheep habitat by increasing the productivity of the site through reduction in tree cover and increasing grasses and forbs.

**Management Action:** The Division will evaluate the effects of fire on bighorn sheep habitat on a case-by-case basis. In areas where fire is determined to be detrimental, the Division will work with land management agencies to reduce fire intensity and frequency. In areas where fire may benefit bighorn habitat, the Division will support the burning of some habitats when tiered to a plan which has definable objectives established through a collaborative process.

**Strategy:** The biologist will determine the effects of fire on the bighorn sheep resources and habitats within their areas of responsibility, and the information will be incorporated into GIS.

**Strategy:** The information will be provided to land management agencies to be used in fire suppression decisions. Areas of critical concern will be emphasized.

**Strategy:** In areas where fire will benefit bighorn habitat, the Division may support prescribed fire tiered to a burn plan.

**Strategy:** The Division will maintain a high level of interaction with land management agencies following wildfire in order to develop seed mixes to enhance bighorn forage and cover values. The Division will also encourage and support good grazing management practices following fire.

**Strategy:** The Division will work with the land management agencies to develop green-stripping in strategic locations in order to reduce the frequency and intensity of fires in crucial bighorn sheep habitat.

### ***Roads, Off Road Vehicle Use***

Off-road races will continue to increase throughout Nevada. Land management agencies field numerous requests for new races and route locations each year. Bighorn sheep habitat will be impacted both by the race participants and by the spectators to the event.

The development of new roads, improvement of existing roads, and use of all terrain vehicles (ATVs) will bring more people into bighorn sheep habitat. Often, bighorn sheep will move away from otherwise suitable habitat due to increased human activity.

**Management Action:** The Division will support the development and maintenance of reasonable access to all public lands. In areas where roads and off-road use pose serious impacts to the well being of bighorn sheep, the Division will work with land management agencies and private landowners to reduce these conflicts.

**Strategy:** The Division will monitor the proposed racecourses and will actively work with land management agencies and private landowners to locate races away from bighorn habitat. Bighorn habitat GIS maps will be distributed to various land management agencies in order to assist them in their decision making process. The Division should seek cooperator status with the BLM through a statewide MOU on review of applications for off-road races. Land management agencies should be encouraged to map existing roads designated for off-road races.

**Strategy:** The Division will maintain a high level of interaction with land management agencies regarding the building or maintenance of roads within bighorn sheep habitat. In areas where potential conflict exists, the Division may recommend alternative locations or recommend downgrading the quality of the road. The rehabilitation of roads used for fire suppression, off-road races or mining should be considered.

**Strategy:** The Division will continue to monitor impacts of ATV use on bighorn sheep habitat and bighorn behavior and ATV-related hunter complaints. If significant conflicts arise, the Division will work with appropriate land management agencies to address these conflicts.

## ***Mining***

Mining occurs in several mountain ranges occupied by bighorn sheep. Issues associated with mining include direct habitat loss, indirect habitat loss such as habitat fragmentation from roads, increased disturbances, potential contact with lethal chemicals such as cyanide, and animal entrapment.

The mining industry, for the most part, has demonstrated successful reclamation practices on dumps and roads. In some instances, opportunities may exist to rehabilitate a mine area in order to enhance the area for bighorn sheep. (In Alberta, Canada for example, bighorn sheep inhabit the high walls and the dumps of a coalmine where grass was used to rehabilitate the disturbances).

**Management Action:** The Division will continue working closely with the mining industry and land management agencies in regards to wildlife and wildlife habitat issues associated with mining activity.

**Strategy:** The Division will follow Commission Policy 62 (mitigation policy) when reviewing and commenting on mining activities within bighorn sheep habitat.

**Strategy:** The Division will continue to foster a good working relationship with the mining industry to mitigate the affects of mining on bighorn sheep habitat.

**Strategy:** The Division will, through its mining program, take a pro-active approach to ensure that needs of bighorn sheep are addressed in operation, mitigation and reclamation plans.

## **POPULATION MANAGEMENT**

Population management involves surveying bighorn numbers and distribution, delineating subspecies distribution boundaries, capturing and transplanting bighorns, disease detection and control, and evaluating and controlling predators. The primary factor involved in the management of bighorns is ensuring the proper balance between bighorn numbers and habitat quality and quantity. The underlying goal of this plan is to maintain bighorn herds at optimal population levels. Division biologists will use habitat condition, lamb recruitment, herd health, and past herd history in determining optimal population levels. Though animal density is a common parameter in referencing the proper balance of numbers and habitat, it is highly variable for bighorn sheep throughout Nevada. Because of differences that occur among habitat types, season of use, subspecies, and

water availability for a given amount of surface area, density alone is inadequate as a parameter to determine proper bighorn numbers. Optimal population levels based on a multitude of demographic and ecological parameters allows for bighorn numbers and distribution to be managed at the appropriate level for a given herd and area.

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## POLICY STATEMENT

**The Division will increase bighorn populations of all subspecies statewide to a level where all habitats are occupied and each herd is self-sustaining.**

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### ***Bighorn Sheep Capture and Transplanting***

Reintroductions of bighorn sheep into unoccupied bighorn habitat will largely depend upon the resolution of current limitations and conflicts such as domestic sheep grazing and trailing routes, habitat deficiencies, and the revision of land management agencies' land use plans. The Division supports the release of bighorns from Nevada to bighorn sheep habitats beyond the boundaries of this state. This supports the overall goal of bighorn sheep restoration throughout North America. Conservation organizations, such as NBU, Fraternity, FNAWS, and others, play an extremely important role in the capture and transplant program. The Division will continue to foster excellent working relationships with these groups to increase bighorn sheep populations.

### **Reintroductions**

**Management Action:** Establish bighorn sheep populations in suitable but unoccupied habitat.

**Strategy:** Select reintroduction sites as identified by biologists through the habitat delineation process (see Habitat Delineation section) that have been enhanced through Habitat Management actions and strategies.

**Strategy:** Evaluate the degree of risk involved with transplanting bighorn sheep adjacent to occupied domestic sheep grazing allotments and trailing routes. Consult with the land management agencies and concerned publics to determine the overall long-term implications of a bighorn release with consideration for other multiple uses and potential recreational and scientific values.

**Strategy:** Obtain release site clearance in coordination with the appropriate land management agencies. Conservation groups and outside interests may be solicited to help obtain clearance.

**Strategy:** Incorporate bighorn sheep reintroduction sites into the Big Game Release Plan. The intent of listing sites in the release plan is to provide an adequate

number of optional sites for possible reintroductions at any one time.

**Strategy:** Coordinate at both the biologist and staff levels to annually prioritize reintroduction sites. In-state reintroductions will take priority over out-of-state releases.

**Strategy:** Biologists with predator management expertise will evaluate possible predation on bighorn sheep release. If it is determined that predation is a limiting factor, predator management will be instituted until the population shows an increasing annual trend. If predator control does not result in an increasing annual trend, then other limiting factors will be examined. Commission Policy 25, 'Wildlife Damage Management' will be followed.

**Strategy:** Coordination and notification with land management agencies and other interested parties will occur prior to a reintroduction.

**Strategy:** The preferred number for a release complement will be between 20 and 50 bighorn sheep dependent upon capture stock availability. Some sites may require subsequent reintroduction efforts to attain a viable reintroduction.

### **Augmentations**

**Management Action:** Augment bighorn sheep populations to bolster populations that are below optimal levels and in some cases increase genetic diversity.

**Strategy:** Identify augmentations sites through the habitat delineation process (see Habitat Delineation section) where existing populations are below optimal levels or could benefit from increasing genetic diversity or improving herd health. See Reintroduction strategy regarding augmenting bighorn herds adjacent to occupied domestic sheep grazing allotments and trailing routes.

**Strategy:** Incorporate bighorn sheep augmentation sites into the Big Game Release Plan. The intent of listing sites in the release plan is to provide an adequate number of optional augmentation sites at any one time.

**Strategy:** Coordinate at both the biologist and staff levels to annually prioritize reintroduction sites. High priority in-state augmentations will take priority over out-of-state releases.

**Strategy:** Biologists with predator management expertise will evaluate possible predation on bighorn sheep release. If it is determined that predation is a limiting factor, predator management will be instituted until the population shows an increasing annual trend. If predator control does not result in an increasing annual trend, then other limiting factors will be examined. Commission Policy 25, 'Wildlife Damage Management' will be followed.

**Strategy:** Coordination and notification with land management agencies and other interested parties will occur prior to an augmentation.

### **Capture**

**Management Action:** Capture bighorn to reintroduce into suitable habitat and augment existing populations.

**Strategy:** Annually determine suitable capture stock from both in-state and out-of-state sources. The big game staff biologist will facilitate and coordinate with regional biologists in securing out-of-state capture sources.

**Strategy:** The Division will use bighorn sheep from existing populations that are approaching or exceeding optimal levels. Bighorn sheep may be captured from populations that are below optimal levels if the herd has been surveyed within 12 months of the capture operation and the regional staff recommends that the population is capable of supporting the deficit.

**Strategy:** The Division will consider the potential of disease transmission from a particular capture stock to the release site and adjacent bighorn populations.

**Strategy:** The Division will consider potential capture problems such as bighorn lambing period and conflicts with ongoing hunting seasons.

**Strategy:** The Division will finalize a protocol that identifies recommend procedures for capturing, transporting and transplanting bighorns.

### ***Population Monitoring***

It is essential to maintain an effective monitoring program for bighorn populations that are relatively low in number and are subject to catastrophic events. Bighorn populations are highly sensitive to changes due to the harsh environments they inhabit. Without knowledge of population status and distribution, the Division is unable to make good sound management decisions regarding harvest, augmentations, habitat conservation and enhancement, and incompatible activities in bighorn habitat.

**Management Action:** Bighorn populations will be adequately monitored to assess trends and detect significant demographic changes and/or home range/movement changes.

**Strategy:** Aerially survey bighorn populations a minimum of every two years. Populations that serve as capture stock will be flown on an annual basis. Populations may be flown more often if downward trend exists. Bighorn rams will be classified as follows: yearlings, 2-3 year-old age, 4-5 year-old age, and 6 year-old and older age group.

**Strategy:** The Division will obtain the necessary Global Positioning System (GPS) and Geographic Information System (GIS) technology and equipment to enable the Division to efficiently collect, display and analyze data.

**Strategy:** Satellite and radio telemetry and GIS technology will be used when necessary to meet monitoring objectives.

**Strategy:** Biologist will document bighorn locations on standardized field forms. GPS technology will be the preferred method.

**Strategy:** The Division will institute hunter logbooks for all tagholders to maintain field observations during scouting and hunting trips. Volunteers may be used to conduct data entry and to plot bighorn sheep observations to assist in determining current bighorn distribution patterns and densities.

**Strategy:** Division biologists while surveying for a certain species or conducting a specific work assignment should take advantage of opportunities to survey and document bighorn sheep while in the same general area.

**Strategy:** Bighorn population modeling will be standardized and used to develop annual estimates of population size, structure, and trend.

### ***Subspecies Delineation***

Bighorn sheep subspecies boundaries in Nevada were originally based on analysis of skull characteristics by Cowan (1940). Recent genetic and morphometric analysis (Ramey 1993, 2000; Wehausen 2000) suggests that the desert bighorn was distributed throughout Nevada and California bighorns that originated in British Columbia are a branch of the Rocky Mountain subspecies. Based on past management action that released California and Rocky Mountain bighorns and the desires of sportsmen, the Division of Wildlife will continue to manage them, but certainly, a strong emphasis will be placed on expanding desert bighorn sheep distribution into currently unoccupied habitats.

California bighorns, now considered a race of Rocky Mountain bighorns, have adapted well to northern Nevada habitats and climate. California bighorn herds in Nevada from the year they were released to 2001 showed a remarkable 14% average annual rate of increase. This fact reveals that contrary to the historic genetic race of desert bighorns, the management decision to restore northern Nevada with California bighorns was a success, because of similar habitat and climate. Strong consideration was made to continue this management philosophy in north central Nevada to reintroduce bighorn sheep that are best suited for the habitat and climate. Based on the overall goal of desert bighorn sheep conservation throughout North America and recognizing their historic distribution, efforts will be made to expand desert bighorn distribution in Nevada, acknowledging previous subspecies management decisions and development of manmade barriers across once contiguous bighorn habitat.

The boundary delineation for future bighorn sheep releases is depicted in Figure 3. Nevada Division of Wildlife's Bighorn Sheep Management Plan



Desert bighorn sheep releases will be restricted to south and west of a line formed by Interstate 80 from the California line to Elko, south along Highway 228/892 to Highway 50, east to Highway 93, south to the Lake Valley Summit and east to the Utah line along the Atlanta Mine/Trough Springs/Big Springs Roads. Rocky Mountain subspecies releases will occur north and east of this line including the line formed by Highway 225/226 north from Elko.

Though the Division acknowledges the scientific determination that California bighorns in Nevada are not a distinct subspecies, for purposes of management, the Division will continue to recognize existing California bighorn herds as a separate subspecies. California bighorns will be released north of the desert bighorn boundary and west of the Rocky Mountain bighorn boundary. The northeastern portion of the state in Elko County excluding Units 101 – 104 and 121 would be where either California or Rocky Mountain bighorns could be released depending on habitat suitability, sheep availability, or the political and social atmosphere at the time (see Figure 3).

It should be noted that this geographic delineation is for the purpose of future releases. Management units will still be used for the purpose of harvest management.

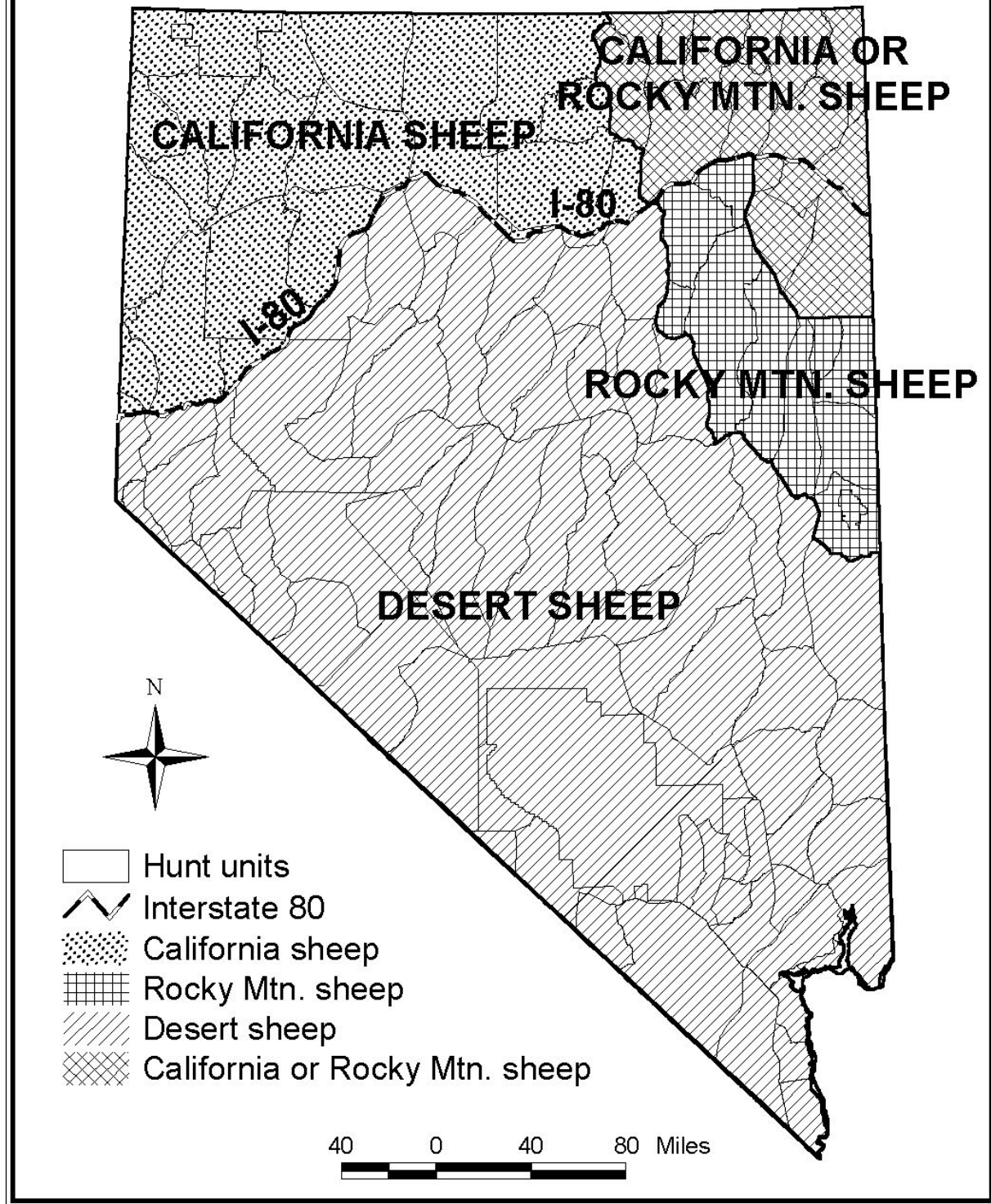
**Management Action:** The Division will follow the revised bighorn sheep subspecies delineation map as a guide in determining which areas receive which subspecies for future re-introductions and augmentations (Figure 3).

**Strategy:** The Division will reference the subspecies delineation map in the development of the biennial big game release plan.

**Strategy:** Desert bighorn herds from mountain ranges with similar topography, habitat, and climate will be the preferred capture stock for releases to mountain ranges in the northern half of the desert bighorn subspecies delineation area.

**Strategy:** Once an area has been established as a particular subspecies management unit, it will remain an area for that particular subspecies regardless of the amount of mixing that has occurred, unless compelling scientific information exists to the contrary.

# BIGHORN SHEEP SUB-SPECIES DELINEATION



**Figure 3. Bighorn sheep subspecies delineation boundaries for future transplants of desert, California, and Rocky Mountain bighorn sheep.**

## **Disease**

Bighorn sheep have been known to experience periodic epizootics resulting in wide fluctuations in population levels (Buechner 1960). Recently, these epizootics have been diagnosed as pneumonia-related epidemics (Onderka and Wishart 1984; Coggins 1988; Festa\_Bianchet 1988; Cassirer et al. 1996; Ward et al. 1997). The Division recognizes the inherent susceptibility of bighorns to certain disease agents such as *Pasteurella*. Attempts to vaccinate bighorn sheep to combat this disease have been unsuccessful (Cassirer et al. 2001).

**Management Action:** The Division will investigate and address all disease related problems in a timely fashion.

**Strategy:** The Division will develop a protocol for disease sampling and testing and adapt it each year to incorporate the most up-to-date methods and information available.

**Strategy:** The Division will provide each bighorn sheep biologist in addition to each region, a sufficient number of sampling kits and instructional video in preparation of potential disease events.

**Strategy:** If an unusually high number of mortalities occur during a capture event and the consensus is that it may be disease related, any living bighorn already captured will not be transported to another site. One live sheep should be taken to a wildlife diagnostic laboratory for surveillance.

**Strategy:** Following the discovery of a disease event, either a ground or aerial survey will be initiated to investigate the potential impact to the rest of the population.

**Strategy:** The Bighorn Sheep Interaction With Domestic Sheep and Disease and Health Assessment protocols will be followed.

**Strategy:** The Division may initiate a disease prevention or health enhancement program for a particular population if the costs and benefits are justified.

**Strategy:** The Division will minimize domestic farm flock sheep/wild sheep interactions through all possible means. This could include entering into cooperative agreements with willing landowners, education, and cooperating with Department of Agriculture.

**Strategy:** The Division will encourage and support disease research when objectives are clearly outlined and results can be applied directly to management activities.

## ***Predator Management***

**Management Action:** The Division will evaluate and if necessary conduct science-based (treatment-control study design, monitoring and documentation of results) predator management to enhance survival of bighorn sheep.

**Strategy:** For existing herds, the Division will use criteria to determine if predator management should be initiated. Criteria include but are not limited to the following:

- Continued low recruitment or population trend (stagnant or below maintenance levels)
- Predator-caused bighorn sheep mortalities are located.
- Evidence suggests that a predator has targeted a certain segment of the bighorn herd.
- Hunter/Public observations
- Benefits of a predator control program can be measured and successfully implemented.
- Environmental conditions (i.e., reduction in alternative prey or water sources) that may cause added vulnerability to predation.

**Strategy:** The Division will monitor and document the effectiveness of predator management.

**Strategy:** Biologists will evaluate possible predation on bighorn sheep release. If it is determined that predation is a limiting factor, predator management will be instituted until the population shows an increasing annual trend. Commission Policy 25, 'Wildlife Damage Management' will be followed

**Strategy:** The Division will use the most appropriate and effective agency or individual to conduct predator management. (i.e., designated Division employee, Wildlife Services, private individual, etc.)

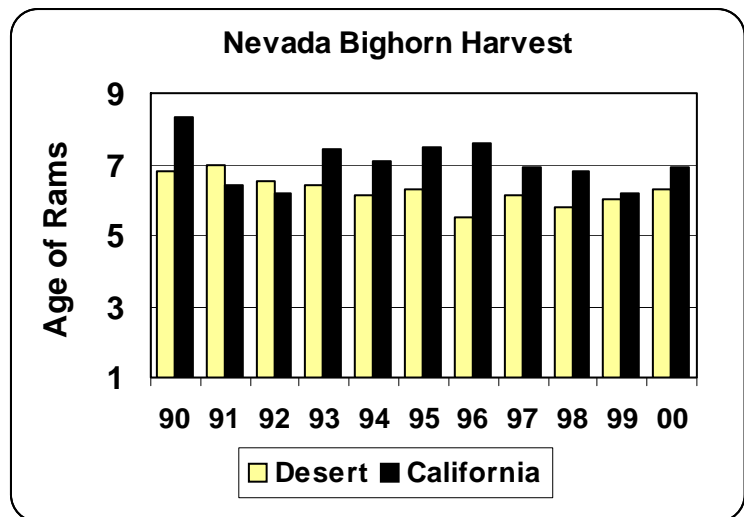
# HARVEST MANAGEMENT

## POLICY STATEMENT

**Bighorn sheep hunting is a legitimate and desirable use of the bighorn resource.**

### ***Quota Criteria and Tag Requirements***

Hunting bighorn sheep in Nevada is a rare privilege. The average odds of drawing a resident or nonresident tag for the 2001 sheep season were 68 to 1. The first regulated desert bighorn sheep hunting season was held in the spring of 1952. In 1966, a significant change in desert bighorn hunting regulations occurred with the passage of the trophy ram regulation. This regulation replaced the three-quarter-curl law and required hunters to harvest a ram at least 7 years of age or with a Nevada horn score of 144 points. In 1996, the trophy ram regulation was replaced on a statewide basis with the any ram regulation allowing hunters to harvest any male bighorn. The first California bighorn sheep hunting season was in 1984 and has been under the any ram regulation since its inception. Figure 4 shows that the average age of harvested rams has declined only slightly since the implementation of the any ram regulation but has averaged between 5 and 7 years of age. Therefore, it would seem a reasonable strategy for the Division to manage for an average age of harvested rams. With input from the public, this target age could be easily measured and met with adjustments in quotas and season structure.



**Figure 4. Average age of harvested desert and California bighorn sheep rams in Nevada from 1990 – 2000.**

**Management Action:** Division biologists will develop annual quota recommendations for review by the public. The majority of Nevada’s sheep hunters would like to have an opportunity to harvest a mature bighorn ram. Quota recommendations will reflect this expectation by striving to obtain a statewide average age of harvested rams of 6 years.

**Strategy:** Quota criteria for tag numbers will be based on 8% of the total rams not to exceed 50% of the estimated number of mature rams 6 years of age or older from each unit group’s population model. Hunter success rates will not be used

to generate quotas.

**Strategy:** Eligibility restrictions for applying for a bighorn sheep tag (subspecies specific) will be a 5-year wait after receiving a tag and 10-year wait after harvesting a bighorn sheep of that subspecies.

**Strategy:** Hunters must attend a mandatory indoctrination course provided by the Division as a requirement of receiving their tag. Guides must attend once every 5 years. Guides will be able to attend indoctrination for client.

**Strategy:** Maintain the any ram regulation.

**Strategy:** Maintain mandatory checkout of harvested sheep to estimate ram age and horn score.

**Strategy:** Bighorn sheep populations are susceptible to a large-scale die-off. The Division cannot be accountable to tagholders for this occurrence.

**Strategy:** Nonresident hunters will be allowed up to 10 percent of annual tag numbers. Distribution of these tags will be based on a fair and equitable cross section of bighorn hunting opportunity within the state.

## ***Season Structure***

Nevada is a large state diverse in both topography and weather patterns. Sheep seasons have been conducted during almost every month of the year, with the majority held during the late fall and early winter period. There has been considerable experimentation with season lengths, with the trend in recent years toward longer seasons. Lengths have varied since 1952 from a 4-day to 60-day seasons. With the success of bighorn reestablishment program in northern Nevada, season timing and lengths have become more diverse. A bighorn-hunting season designed for desert bighorn in the southern part of the state may be less desirable for bighorn hunting in the northern portion of the state.

**Management Action:** Sheep seasons will remain flexible to take into account the biological needs of the animal and to allow for a quality hunting experience.

**Strategy:** Split seasons or extended seasons may be used to reduce the number of hunters in the field when hunter congestion becomes an issue.

**Strategy:** General seasons will not occur during the peak of the rut.

**Strategy:** Hunting seasons will not be structured to reduce hunter success.

**Strategy:** Season lengths will not be shorter than 21 days. Season length may be less in units controlled by Department of Defense.

**Strategy:** Any legal weapon will remain as a means of harvesting bighorn sheep during all seasons.

**Strategy:** The harvest of ewes may be considered as a population management tool if all other options for population control have been exhausted. Harvest and eligibility regulations for ewe hunts will be developed prior to 2003.

**Strategy:** The initial hunt on a reintroduced population or rebounding population will be based on survey observations of rams that meet the quota criteria.

## **LAW ENFORCEMENT**

Bighorn sheep are a highly regarded and sought-after big game species. Within the big game hunting community, bighorn sheep have an additional, unique value associated with a hunter's recognition for harvesting a "grand slam". A "grand slam" refers to harvesting all races of North American thin-horn and bighorn sheep: Dall, Stone, Rocky Mountain (including California), and Desert. There is a need to protect them from a small segment of society that will go to extremes to harvest a bighorn sheep.

In addition, the desert bighorn holds the distinction of being Nevada's state animal. Whether for the protection of bighorns for future harvest or simply for their intrinsic values, the Nevada Division of Wildlife has the responsibility to protect bighorn sheep for all to enjoy.

**Management Action:** The Division will continue to protect and ensure enhancement of bighorn sheep populations by gaining awareness and compliance of the public through education and appropriate enforcement of pertinent wildlife laws and regulations.

**Strategy:** Game wardens will participate in bighorn sheep indoctrination classes for the purposes of promoting the safe and lawful pursuit of bighorns and enhancing the sportsmen's knowledge of pertinent hunting laws and regulations.

**Strategy:** Conduct special investigations whenever sufficient grounds or evidence exists which indicates that a bighorn sheep has been unlawfully taken or possessed.

**Strategy:** Conduct frequent field patrols during bighorn sheep hunting seasons, thereby increasing contact with bighorn sheep hunters and hunting guides.

**Strategy:** Conduct frequent field patrols in areas where bighorn are particularly vulnerable to opportunistic poaching.

## **ECONOMICS**

### ***Hunter Expenditures***

The Nevada Division published a “Survey of the Economic Value of Trophy Big Game and Deer Harvest” in 1986, which is the only known attempt at assigning dollar values to Nevada’s bighorn sheep resource (Fenton Kay 1988). This study queried sheep hunters about the amount of money they spent on their sheep hunts during 1984 and 1985. Costs included in this survey were guide fees, license and tag fees, fuel, equipment, lodging, food, taxidermy and miscellaneous costs such as phone calls and broken equipment. The current consumer price index was used to convert dollar values from 1986 to 2000. Based on this study and the current average days hunted, it was assumed that a total of 11 days were expended on travel, scouting, and hunting bighorn sheep. Based on these inputs, resident and nonresident hunters expended an average of \$2,924 and \$10,077 per hunt, respectively in 2000. Expanding these figures to all the 2000 bighorn sheep hunters, 159 resident hunters expended \$465,000 and 20 nonresident hunters expended \$201,000 for a total of \$666,000

A complete evaluation of the economic values of bighorn should also include consideration of nonconsumptive values. Nonconsumptive values would include the value of the resource to the non-hunting public. These values could include just knowing the resource existed even if the person had no expectation of using the resource and knowing the resource will exist into the future. No data exists to estimate these values. The dollar value of bighorn sheep to the nonconsumptive users of the state of Nevada may be higher than that of the hunting public.

### ***Division Revenue***

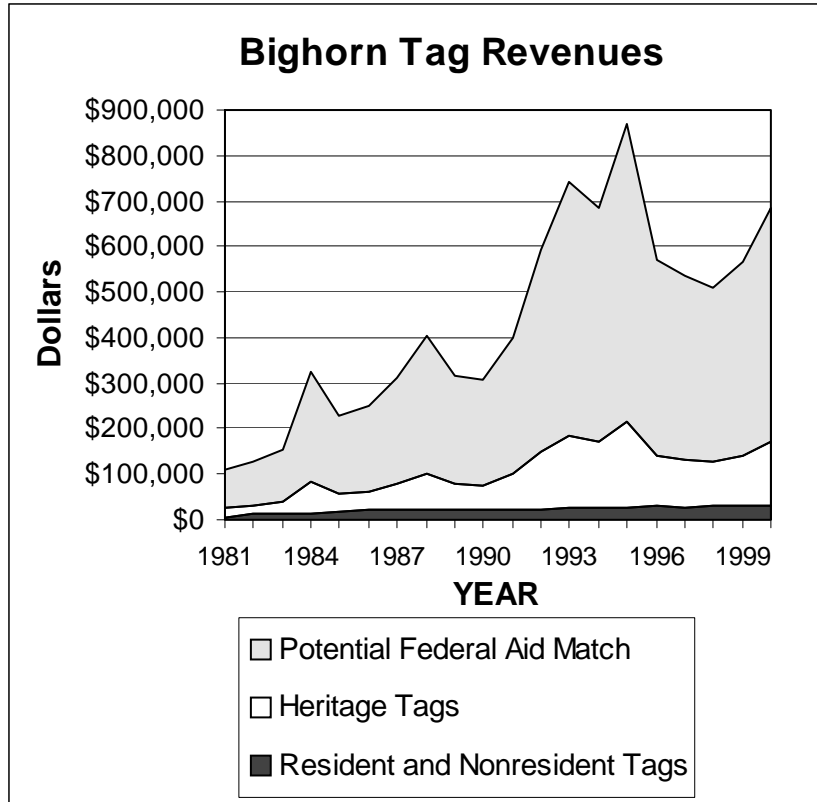
Division revenue to manage bighorn sheep is derived from a number of sources. These sources include tag and license revenue, federal aid derived from the Pittman and Robertson or Wildlife Restoration Act (Congressional mandate that apportions proceeds of an excise tax on firearm and ammunition to each state wildlife agency) and funding from sportsmen and conservation groups.

Figure 5 displays funds generated from resident and nonresident tags, heritage tags, and the potential federal aid match for the last 20 years. Since the first sheep season in 1952, sheep hunters have spent \$2,232,332 on tag fees to hunt bighorn in Nevada. Bighorn sheep heritage tag hunters have contributed the lion’s share of this figure spending \$1,730,202 for the privilege of pursuing bighorn (Figure 5). A new program named Partnership In Wildlife (PIW) allows hunters to donate part of their tag fee for a second chance at drawing a sheep tag if unsuccessful in the first drawing. Since 1996 this program has generated \$108,151 that has been deposited into the



Heritage Account to fund special projects.

Sportsmen and conservation groups have contributed a significant amount of funds to bighorn sheep management in Nevada. For example, through 2000, FNAWS has donated \$144,000, and the Fraternity of the Desert Bighorn has donated \$1,200,000 since 1984 to the Division and to land management agencies for bighorn sheep population and habitat management. Other organizations such as the Nevada Bighorns Unlimited chapters have also contributed a significant amount toward bighorn sheep management.



**Figure 5. Nevada bighorn sheep tag sales revenue and its potential federal aid match from 1981 – 2000.**

In addition to the monetary contributions, these organizations have also donated endless number of volunteer hours during habitat improvement and capture projects. The Fraternity of the Desert Bighorn has estimated their members to work 52,000 hours worth \$800,000.

### ***Division Expenditures***

The expenditure of money by the Division to manage bighorn sheep includes salaries for personnel, flight charges for aerial composition surveys and telemetry work on newly introduced populations and operating costs including travel and mileage. Table 2 shows these costs by region for fiscal year 2000.

**Table 1. Annual Division bighorn sheep management expenditures for FY2000.**

Region	Salaries	Flight Charges	Operating – Travel- Mileage	Total Cost
Western	\$45,931	\$1,978	\$3,128	\$51,037
Eastern	\$9,097	\$1,617	\$676	\$11,390
Southern	\$53,616	\$23,244	\$2,895	\$79,755
Capture Costs*				\$35,797
<b>Total Cost</b>	<b>\$108,644</b>	<b>\$26,839</b>	<b>\$6,695</b>	<b>\$177,979</b>

\*Includes netgun company and veterinarian contract costs only.

### ***Trapping and Transplanting Costs***

Since the late 1960's, a total of 1,293 Desert Bighorn, 587 California Bighorn and 265 Rocky Mountain Bighorn have been released into 58 different mountain ranges within the state. Based on the best available records the Division has expended just over \$930,000 dollars on this program. This cost can be broken down by subspecies totaling \$520,000 for Desert bighorn, \$288,000 for California bighorn and \$124,000 for Rocky Mountain bighorn. This program has been a huge success in terms of both public support and the establishment of new and viable sheep populations.

## **CONSERVATION EDUCATION**

The desert bighorn sheep is Nevada's state animal; yet, the general public has very little knowledge about bighorn sheep. The hunting public has more knowledge about bighorn sheep but lacks an understanding of the threats to bighorn sheep habitat.

Most sportsmen do not know the process for involvement in population and habitat management decisions. Support for bighorn sheep is lacking in significant decisions affecting bighorn sheep habitat. It is believed that an increased awareness and educational program could enhance the support for bighorn sheep in land management, legislative, and local government decisions.

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## **POLICY STATEMENT**

**The Division will increase public awareness and appreciation for bighorn sheep and their habitats in order to facilitate decisions favorable to their long-term well being.**

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## ***Educating Nevada's Youth***

Nevada's youth is the key to the future well being of the State's wildlife. Extensive efforts are already being implemented in many of Nevada's schools to educate students in basic ecological principals. The Division, in conjunction with conservation organizations, should provide support materials for this program that will enhance the understanding and appreciation of bighorn sheep and their habitat. An effort should also be made to teach kids the role that sportsmen play in the conservation of Nevada's wildlife. The conservation of bighorn sheep habitat is the most important element of this public awareness program

**Management Action:** The Division will continue to support wildlife education in the school system and will provide material that will teach kids about bighorn sheep and their habitat.

**Strategy:** Develop a compact disc (CD) program about bighorn sheep and their habitat to be used in schools similar to the BLM produced program "The Magnificent Ram".

**Strategy:** Build portable boxes or "wildlife trunks" that contain bighorn and other wildlife furs, horns and hoofs to be used in schools and other youth group events for hands-on interactions. Eventually, every community would have one of these boxes.

**Strategy:** Develop a video/CD that tells the story of bighorn sheep extirpation from Nevada's mountain ranges and the efforts of sportsmen and Division to bring them back.

**Strategy:** Encourage sportsmen groups to provide educational materials (books, brochures, posters, etc.) to youth and schools.

## ***Educating the General Public***

Nevada's general public, for the most part, is indifferent towards Nevada's wildlife. It is believed that a major contributor towards this attitude is the lack of a consistent medium needed to bring wildlife issues to the forefront of the public. A combination of strategies will need to be implemented over a long period of time in order to bring greater awareness to Nevada's wildlife. The conservation of bighorn sheep habitat is the most important element of this public awareness program.

**Management Action:** Continue to use all of the means available to educate the general public on issues pertaining to bighorn sheep and other wildlife.

**Strategy:** Support and participate, where appropriate, with conservation organizations in

habitat improvement projects that are within view of the general public.

**Strategy:** Construct kiosks with interpretive materials along roadsides adjacent to bighorn sheep habitat and bighorn sheep viewing opportunities.

**Strategy:** Develop additional bighorn sheep dioramas and interpretive displays in public facilities such as airports.

**Strategy:** Encourage sportsmen groups to advertise in newspapers and other media to portray bighorn sheep conservation efforts and solicit involvement in such efforts.

**Strategy:** Conduct “ride alongs” with influential individuals during aerial surveys to gain support of the bighorn sheep conservation efforts.

**Strategy:** Pursue Department of Tourism for sponsoring advertisements and stories about bighorn sheep viewing and conservation.

### ***Educating Hunters***

Educating hunters on issues relating to wildlife is probably the easiest because we have mediums that consistently reach them. These sources include the Sportsmen Almanac, the Division’s web page and hunter indoctrinations. Unfortunately, very few hunters realize the importance of habitat and even fewer get directly involved in the decision-making processes that impact wildlife and habitat.

**Management Action:** Continue to use all available sources to educate hunters on issues relating to bighorn sheep. Emphasis should be placed on the importance of habitat and the decision-making processes that affect bighorn sheep and their habitat.

**Strategy:** Develop a video of bighorn sheep (ecology and conservation) to be used in the hunter indoctrination classes. This video could be produced in such a way as to be used in schools and civic presentations.

**Strategy:** Update and improve the “Hunting the Desert Bighorn Sheep” pamphlet. Funding for this could include conservation organization partnerships or advertisements.

**Strategy:** Have the bighorn sheep conservation groups sponsor articles in the Almanac and other Division publications dedicated to bighorn sheep and their habitat.

## **PLAN EVALUATION**

Original team members will meet August 2004 to evaluate the plan’s implementation. A

written report will be developed and presented to the Commission.

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# Appendix A

## Laws and Regulations pertinent to Bighorn Sheep Management

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### ***Appropriate Federal Laws, Policies and Agreements Pertinent to Bighorn Sheep Management in Nevada***

**Taylor Grazing Act, 1934.** As amended, provides for wildlife management on public lands.

**Executive Order 7373, 1936.** Created the Desert National Wildlife Range for the protection of resident desert bighorn sheep.

**50 CFR .** Code of Federal Regulations pertaining to wildlife

**Fish and Wildlife Coordination Act of 1956.** Encourages the development of cooperative agreements for a variety of fish and wildlife programs on Federal lands.

**National Wildlife Refuge System Administration Act, 1966.**

**National Environmental Policy Act, 1968 (1981).** - 42 U.S.C. 4321-4347. Requires that actions taken or permitted by Federal agencies be analyzed to determine their effects on the environment.

**Master Memorandum of Understanding Between the Nevada Department of Fish and Game and the Bureau of Sport Fisheries and Wildlife, Department of the Interior, 1970.**

**Master Memorandum of Understanding Between the Nevada Department of Fish and Game and the Bureau of Land Management, Department of the Interior, 1970.**

**Master Memorandum of Understanding Between the Nevada Department of Fish and Game and the National Park Service, Department of the Interior, 1971.**

**Wild Free-Roaming Horse and Burro Act, 1971.** Sec.3.(a) "... All management activities shall be at the minimal feasible level and shall be carried out in consultation with the wildlife agency of the State wherein such lands are located to protect the natural ecological balance of all wildlife species which inhabit such lands, particularly endangered wildlife species. Any adjustments in forage allocations on any such lands shall take into consideration the needs of other wildlife species which inhabit such lands. ...” and (b) in determining the number of horses and burros on the public lands and

appropriate management levels ...”the Secretary shall consult with the United States Fish and Wildlife Service, wildlife agencies of the State or States wherein wild free-roaming horses and burros are located ....”

### **Endangered Species Act, 1973.**

**Sikes Act, 1974.** “Section 201. (a) The Secretary of the Interior and the Secretary of Agriculture shall each, in cooperation with the State agencies and in accordance with comprehensive plans developed pursuant to section 202 of this title, plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game. ...”

### **Master Memorandum of Understanding Between the Nevada Department of Fish and Game and the U.S. Department of the Agriculture, Forest Service, Region 4, 1971.**

**Federal Land Policy and Management Act, 1976** - Sec.102. (a) “The Congress declares that it is the policy of the United States that .... (8) the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals;.... “, “(11) regulations and plans for the protection of public land areas of critical environmental concern be promptly developed; . . . .”,

Sec. 103. (j) “The term “withdrawal” means withholding an area of Federal land from settlement, sale, location, or entry, under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program;

**Five Party Cooperative Agreement. 1977.** U.S. Department of Defense (Air Force), U.S. Department of Energy (Nevada Test Site), U.S. Department of the Interior (Fish and Wildlife Service and Bureau of Land Management) and Nevada Department of Fish and Game. Provides for cooperative management of the Nellis Air Force Range and the Nevada Test Site.

**Public Rangelands Improvement Act, 1978.** Directs that the condition of the public rangelands be improved so that they become as productive as feasible for wildlife habitat and other rangeland values. The Act provides for on-the-ground funding of wildlife habitat protection, improvement and maintenance projects.

### **The Fish and Wildlife Conservation Act of 1980.**

**43 CFR 24.3. General jurisdictional principles.** “(a) In general the States possess broad trustee and police powers over fish and wildlife within their borders.....” (b) “.... Congress has, in fact, reaffirmed the basic responsibility and authority of the States to



manage fish and resident wildlife on Federal lands.”

**43 CFR 1610.3-1 Coordination of planning efforts.** “(b) State Directors and District Managers shall provide other Federal agencies, State and local governments, and Indian tribes opportunity for review, advise and suggestion on issues and topics which may affect or influence other agency or other government programs.”

**Rangewide Plan for Managing Habitat of Desert Bighorn Sheep on Public Lands. 1988.**

BLM plan.

**Grazing Guidelines for Management of Domestic Sheep in Bighorn Sheep Habitats. 1992. Revised 1998.**

Recognizes the need for spatial separation of domestic sheep and bighorns, and continued cooperation between all affected interests and agencies.

**Mountain Sheep Ecosystem Management Strategy in the 11 Western States and Alaska. 1995.** BLM Plan.

***Nevada Revised Statutes Pertinent to Bighorn Sheep Management***

**1952.** Commission authorizes first hunt.

**Nevada Legislature designates desert bighorn sheep as official state animal. 1973.**

**NRS 501.182.** The Commission may enter into cooperative agreements with adjacent states for the management of interstate wildlife populations.....

**NRS 503.584.** “1. The legislature finds that: (a) The economic growth of the State of Nevada has been attended with some serious and unfortunate consequences. Nevada has experienced the extermination or extirpation of some of her native species . . . . .

2. The purpose of NRS 503.584 to 503.589, inclusive, is to provide a program for the: (a) Conservation, protection, restoration and propagation of selected species of native fish and other vertebrate wildlife, including migratory birds; and (b) Perpetuation of the populations and habitats of such species.”

**NRS 503.587.** “The commission shall use its authority to manage land to carry out a program for conserving, protecting, restoring and propagating selected species of native fish, wildlife and other vertebrates and their habitats which are threatened with extinction and destruction.”

**NRS 533.023.** As used in this chapter, “wildlife purposes” includes the watering of wildlife and the establishment and maintenance of wetlands, fisheries and other wildlife habitats.

**NRS 533.367.** Before a person may obtain a right to the use of water from a spring or

water that has seeped to the surface of the ground, he must ensure that wildlife which customarily uses the water will have access to it. The state engineer may waive this requirement for a domestic use of water.

### ***Nevada Administrative Code Pertinent To Bighorn Sheep Management***

Season dates set under the authority of sections 501.181, 502.140, 502.250, 503.120 and 503.140 of NRS. Includes indoctrination requirements, Wildlife Heritage tags and Partners in Wildlife tags.

#### **NAC 502.403.**

#### **NAC 503.020. Game mammals.**

9.	Sheep	Bighorn.....	<i>Ovis canadensis canadensis</i> <i>Ovis canadensis nelsoni</i> <i>Ovis canadensis californiana</i>
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**NAC 503.094. Scientific permit for collection or shipping of wildlife: Application; contents; term or permit; reporting requirement; conditions and restrictions.**

**NAC 503.101. Factors for classification of wildlife as game.**

#### **NAC 503.110. Restrictions on importation, transportation and possession of certain species.**

1. Except as otherwise provided in this section and NAC 504.486, the importation, transportation or possession of the following species of live wildlife or hybrids thereof, including viable embryos or gametes, is prohibited:

(d) Mammals

(30) Barbary (Aoudad) Sheep.....*Ammotragus lervia*

(31) Mouflon sheep, Urial, Bighorn and Argali.....All species of the genus *Ovis*, except domestic sheep, *Ovis aries*.

**NAC 503.173. Cape and horns or antlers or wildlife must be maintained with carcass.**

### ***Commission Policies Pertinent To Bighorn Sheep Management***

**Commission Policy Number 22.** Establishes direction for the introduction, transplant, release and re-establishment of fish and wildlife into the State and exportation of the same out of the State as guided by NRS 501.181.

**Commission Policy Number 25.** To inform the public and guide the Division in actions relating to mammalian predator management.

**Commission Policy Number 60.** Water application guidelines.

**Commission Policy Number 61.** Guides the Division in securing water for the preservation, maintenance and enhancement of wildlife and their habitats.

**Commission Policy Number 62.** Guides the Division in mitigation activities which have the potential to adversely impact fish and wildlife resources in Nevada.

### ***Department of Agriculture Regulations on Lost Or Trespass Domestic Sheep And Goats***

Definitions: “Estray” means any livestock running at large upon public or private lands in the State of Nevada, whose owner is unknown in the section where the animal is found. (NRS 569.005)

“Livestock” means: (d) All goats or animals of the caprine species; (e) All sheep or animals of the ovine species;... (NRS 569.005)

All estrays are the property of the Department of Agriculture (NRS 569.010).

NDA is not responsible for any trespass or damage caused by those estrays.

A written notice must immediately be sent to NDA by . . . any individual who impounds any livestock (NRS 569.020).

NDA or its authorized agent (usually the brand inspector) will attempt to determine ownership by following NRS 569.060-.070.

. . . NDA may dispose of the estray (usually through sale to defer expenses incurred (NRS 569.080).

NDA may destroy livestock infected with or exposed to disease: Procedure; owner's compensation (NRS 571.190)

## **43 CFR (BLM)**

### **SUBCHAPTER B - LAND RESOURCE MANAGEMENT (2000)**

#### **Group 2000–Land Resource Management; General**

#### **PART 2070–DESIGNATION OF AREAS AND SITES**

#### **Subpart 2070–Designation of Areas and Sites**

##### **S 2070.0-1 Purpose.**

This subpart defines the circumstances and procedures under which specific areas of public and other Federal lands exclusively administered by the Secretary of the

Interior through the Bureau of Land Management may be designated and identified.

**S 2070.0-3 Authority.**

- (a) Section 1 (b) (1) of the Classification and Multiple Use Act of September 19, 1964 (78 Stat. 986, 43 U.S.C. 1411)
- (b) Section 2478 of the Revised Statute (43 U.S.C. 1201)

**Subpart 2071–Type and Effect of Designations**

**S 2071.1 Areas or sites that may be designated.**

(a) No lands may be designated under the regulations in this subpart unless they are either (1) classified for retention for multiple uses management under the regulations and criteria in Group 2400 of this chapter, or (2) withdrawn or reserved under the regulations in Group 2300 of this chapter or other appropriate authority, or (3) given special status by act of Congress .....

(b) The following types of areas and sites may be designated under the regulations in this subpart:

- (1) *Recreation lands*. . . .Scenic areas of natural beauty . . .

Recreation lands will contain one or more of the six classes adopted by the Bureau of Outdoor Recreation. . . .

- (i) Class I - High density recreation areas: .....
- (ii) Class II - General outdoor recreation areas: .....
- (iii) Class III - Natural environment areas: . . . .
- (iv) Class IV - Outstanding natural areas: . . . .
- (v) Class V - Primitive areas: . . . . .
- (vi) Class VI - Historic and cultural sites: .....

- (2) *Recreation sites*. Small tracts, intensive recreation, facilities.
- (3) *Resource conservation areas*. These are relatively small areas of land which include a variety of resource management activities demonstrating multiple use and sustained yield conservation action.
- (4) *Natural resources experiment and research areas*. These are relatively small areas of land which are used for research and experimental purposes.
- (5) *National resource lands*. Large areas, multiple use management, emphasis on products (minerals, timber, etc.)