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Examination of the Bureau of Land Management's implementation of the Wild, Free-Roaming Horse and Burro Act at Red Rock National Conservation Area

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**Examination of the Bureau of Land Management's Implementation
of the Wild, Free-Roaming Horse and Burro Act at Red Rock
National Conservation Area**

A Thesis submitted in partial satisfaction of the requirement for the degree of
Bachelor of Arts

In

Environmental Studies

University of Nevada

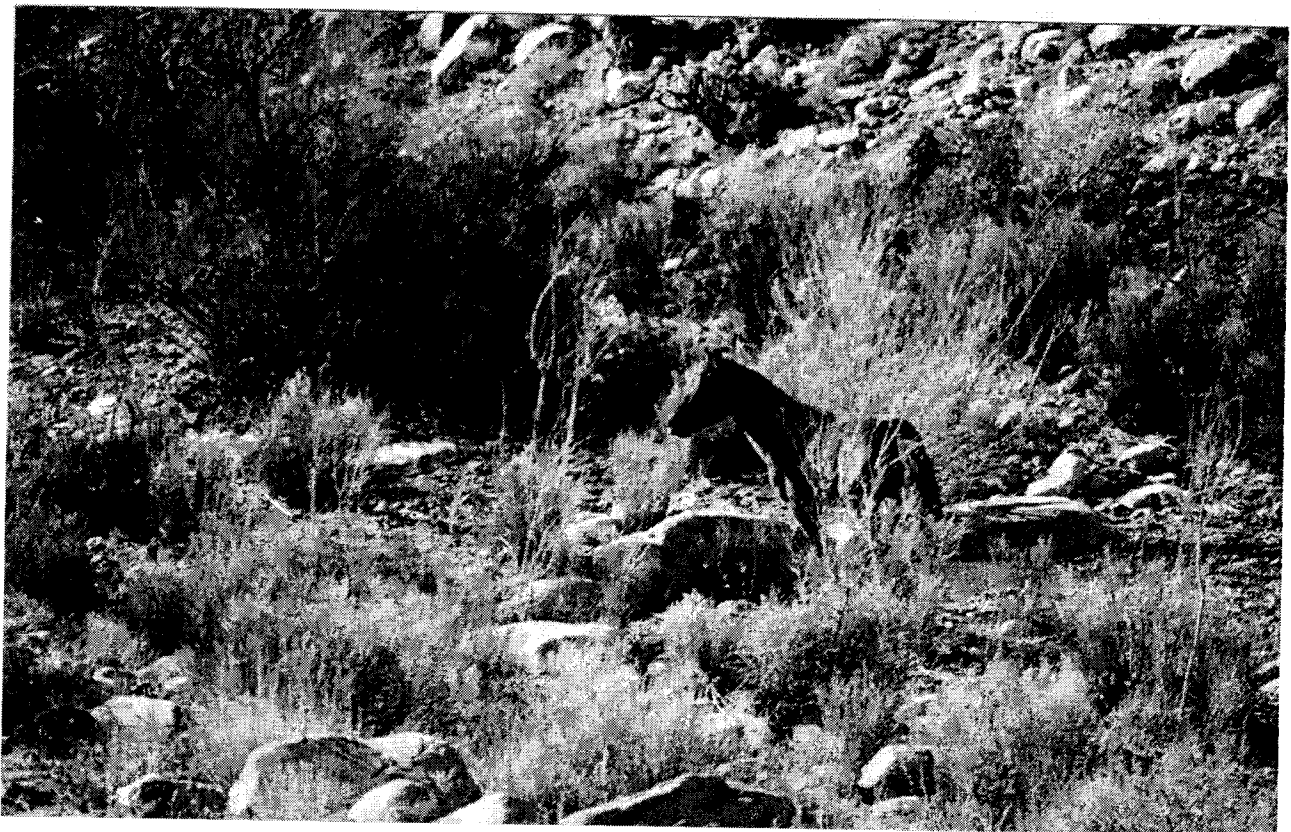
Las Vegas

By

Christine E. Brehm

Spring 2000

Thesis Advisor: Darren Divine



Abstract

For unknown reasons horses went extinct on the North American continent approximately ten thousand years ago and were subsequently reintroduced by Spanish settlers in the 1400's. As European settlers moved westward, horses were perceived as competition for grasslands and their numbers were curtailed. Wild horses were granted Federal protection in 1959 with the passage of the 'Wild Horse Annie' law and further protected with the passage of the Wild, Free-Roaming Horse and Burro Act of 1971. Through the Department of the Interior, the Bureau of Land Management was charged with management of wild horses on public lands. Physical searches of Bureau of Land Management files were conducted to determine if Bureau of Land Management officials were adhering to the tenets of the Wild, Free-Roaming Horse and Burro Act with respect to the Red Rock Herd Management Area. It was discovered that records pertaining to management of the Red Rock herds were incomplete and erratic. Three areas of focus are examined, population, health, and education. It was determined that Bureau of Land Management has conducted population counts, but not as required by the Act. Herd health records have not been kept, and no educational facilities or programs have as of yet been undertaken. Although Bureau of Land Management has been managing the Red Rock herds, its level of adherence to the Wild, Free-Roaming Horse and Burro Act cannot be documented.

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History of the Horse in North America

Wild horses are often viewed as pests by cattle ranchers and hard-core environmentalists who claim horses are feral exotics that have no right to exist on western public lands. A feral animal is defined as a previously domesticated animal that has either been turned loose or escaped from captivity. An example would be feral pigs in Hawaii, which have detrimentally impacted many species of native birds and plants (Mayer and Brisbane, 1991). But horses that inhabit the western U.S. are neither truly feral nor exotic and as Dr. Jay Kirkpatrick contends: 'to label the North American wild horse as an exotic ignores the facts of time and evolutionary history' (Kirkpatrick, 1994).

One of the earliest recognized horses were members of the *Pliohippus* genus, the first one-toed horse which developed about ten million years ago. It is from *Pliohippus* that the modern *Equus* evolved. Fossilized remains of *Equus* have been found as far south as Texas, as far north as Alaska, and as far east as Kansas. Based on fossil evidence in Arizona, it is currently believed that *Equus* was more abundant than bison and second in number only to mammoths in that area (Kirkpatrick, 1994). During this time, *Equus* migrated to Eurasia, probably via the Bering land bridge. There is no fossil evidence of *Equus* evolving anywhere else in the world other than North America (Kirkpatrick, 1994).

Within a few thousand years after human arrival, the horse and several other mammals such as the camel, mammoth, and sloth were

extinct on the North American continent. There are many theories regarding this extinction ranging from climatic changes to an insect-borne disease, but the most common theory is that these species declined into extinction due to over-hunting by humans.

While some will argue that, despite a lack of fossil evidence, the horse never became extinct in North America, it is generally accepted that horses did become extinct and were subsequently reintroduced by Spanish explorers. Columbus established horse ranches in San Domingo on his journeys to the New World and in 1504 convinced the Spanish King Ferdinand to grant horses free transport on ships sailing to the New World. Such a large number of horses were brought to the New World that in 1505, King Ferdinand feared depletion of the Spanish stock and forbid further transport. The 30-35 latitudes south are often called the 'horse latitudes' due to large numbers of horses thrown overboard when ships were becalmed for several consecutive weeks on end and shipboard supplies were running low.

The Spanish at the time were recognized as top breeders of horses in the world and thus demand for Spanish bred horses was high. Horses were first reintroduced to the North American continent in what is now Vera Cruz, Mexico as part of Hernando Cortez's exploration (Wyman, 1945). In 1540, Coronado brought 250 horsemen with their horses and another 1000 extra horses to the New World (Wyman, 1945). These horses, along with Coronado, entered Northern Mexico, crossed the Rio

Grande, and entered what is now Arizona. The Spaniards were most likely responsible for reintroduction of horses, but the majority of horses likely escaped from ranches and missions that were settled following these explorations, rather than from the explorations themselves (Amaral, 1977). Natives were enslaved and given care of the horses in what is now the southwestern U.S.. Eventually, they learned to ride and often escaped slavery on horseback. This gave rise to the 'horse culture' of the Plains tribes. By 1775, Indian tribes ranging from the Midwest to California, and Texas and Canada utilized horses.

Modern wild horses have been influenced by many breeds. As settlers moved West, they brought draft horses such as Clydesdales and Percherons, and riding horses such as Thoroughbreds and Morgans. In some isolated areas, such as the Kigers in Oregon, or the Cerbats of Arizona, Spanish traits seem to have remained true and horses found there greatly resemble horses ridden by Coronado and his men (Hendricks, 1995). The mustang¹ was, and is, generally a small animal averaging about 14 to 15 hands (a hand is four inches and height is measured from the ground to the withers), short-backed, muscular, with strong bones and feet. Mustangs have been used by cowboys, Army Cavalry, farmers, and the Pony Express. Not necessarily elegant horses, but their hardiness, intelligence, agility, and endurance have made them highly prized (Wyman, 1945).

As westward expansion continued, wild horses were soon to be viewed as a nuisance, eating grasses prized for livestock grazing and thus wild horses were often shot on sight. With the initiation of the Boer War, and W.W.II, mustangs were rounded up by the thousands and shipped overseas to become cavalry remounts (Wyman, 1945). After the wars it was realized there was still a market for the mustangs, but this time as chicken and dog feed. Mustangs were shipped by the hundreds of thousands to rendering plants. Soon, the herds that had numbered over a million strong at the turn of the century could be counted in the mere thousands.

The 'Wild Horse Annie' Law

In 1959, Congress passed a law to prevent the use of airplanes to hunt wild horses. In honor of Mrs. Velma Johnson ('Annie') who spearheaded the fight to save mustangs, it was called the 'Wild Horse Annie Law'. However, the law still allowed ranchers to use planes to gather up their own escaped horses. Because of this loophole, domestic horses were often turned loose with the mustangs, so that all of the horses could be rounded up. The mustangers could claim the mustangs had been caught by 'accident'. Meanwhile, those 'accidentally' captured mustangs had already been sold and slaughtered.

¹ Note: The terms wild horses and mustang will be used interchangeably throughout this thesis.

The Wild Free-Roaming Horse and Burro Act

In 1970, National Geographic ran an article on mustangs, complete with photos of free-running horses that served to publicize the plight of wild mustangs. A 'pencil war' soon began with people all over the country writing to Congress and urging them to protect the mustangs (Weiss, 1974).

Bills were introduced into the Senate and the House of Representatives to protect mustangs in response to vast amounts of mail received by members of the Senate and the House of Representatives. On June 29, 1971, the Senate bill, S.1116 passed unanimously (Weiss, 1974), A weaker bill, H.R. 9098 was also passed unanimously in the House on October 4, 1971 (Weiss, 1974). Because the House and Senate must pass the same law, the two bills were sent into Conference Committee and combined into a single bill that was again passed unanimously in the House and Senate. This was presented to President Nixon to sign into law (Weiss, 1974). On December 17, 1971, President Nixon signed the bill, creating P.L. 92-195 that states:

Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, That Congress finds and declares that wild, free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West; that they contribute to the diversity of life forms within the Nation and enrich the lives of the American people; and that these horses and burros are fast disappearing from the American scene. It is the policy of this Congress that wild, free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found, as an integral part of the natural system of the public lands (BLM Act).

The law assigned horse management to the Department of the

Interior, which in turn assigned the responsibility to the Bureau of Land Management, the National Park Service, and the United States Forest Service. However, it is the Bureau of Land Management that is primarily associated with management of the herds as most of the Nation's mustangs are found on BLM lands.

When the Wild Horse and Burro Act was passed in 1971 there were approximately 18,000 wild horses confined to 303 Herd Management Areas (HMA's) (Kirkpatrick, 1994). Today there are only 186 HMA's.

Mustang populations are increasing in most areas in large part due to the lack of natural predators. Most mustang populations increase on the average anywhere from 10% to 20% (Kirkpatrick, 1994), depending on a variety of factors such as the severity of the preceding winters and forage availability.

Environmental Aspects of Herd Management

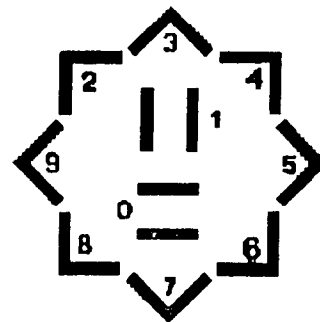
The Wild Horse and Burro Act requires that mustangs on public lands achieve a thriving, natural, ecological balance, and multiple use relationships (BLM Summary, 1996). Multiple use means the land is to be maintained for a wide variety of uses including mining, livestock grazing, and recreational uses. Thus BLM must maintain grass for grazers, 'sport' species for hunting such as elk and bighorn sheep, and habitat for mustangs.

Management Methods

Gathers

The Adopt-A-Horse program began in 1973 with 23 horses removed from the Pryor Mountain HMA in Montana and adopted to private owners (Kirkpatrick, 1994). Since then, when BLM personnel determine the range has reached its carrying capacity, or political reasons dictate, a gather is held. A gather consists of all horses on a given range being rounded up by helicopter and men on horseback. Currently, gathered animals deemed adoptable, usually those animals under the age of five, are kept and placed into the Adoption program, and the remainder are turned back onto the range. However, these gathers are not without their management problems. As a general rule, horses under the age of five, and more females than males, are removed for the adoption program. By removing the more 'desirable' horses, the older, 'inferior' horses are turned back onto the range to continue to reproduce thus skewing the remaining population. Mustangs selected for adoption are loaded into stock trailers and taken to the BLM processing center at Palomino Valley Center in Sparks, Nevada where they are given a veterinary inspection, vaccinations, and a broad spectrum wormer (BLMa, 1996). The animals will also receive a uniquely numbered freeze brand on the left side of their neck that identifies them as U.S. government property, identifies where they were gathered and indicates the approximate year of birth and an ID number (Figure 1).

Read each angle to determine the freeze mark number



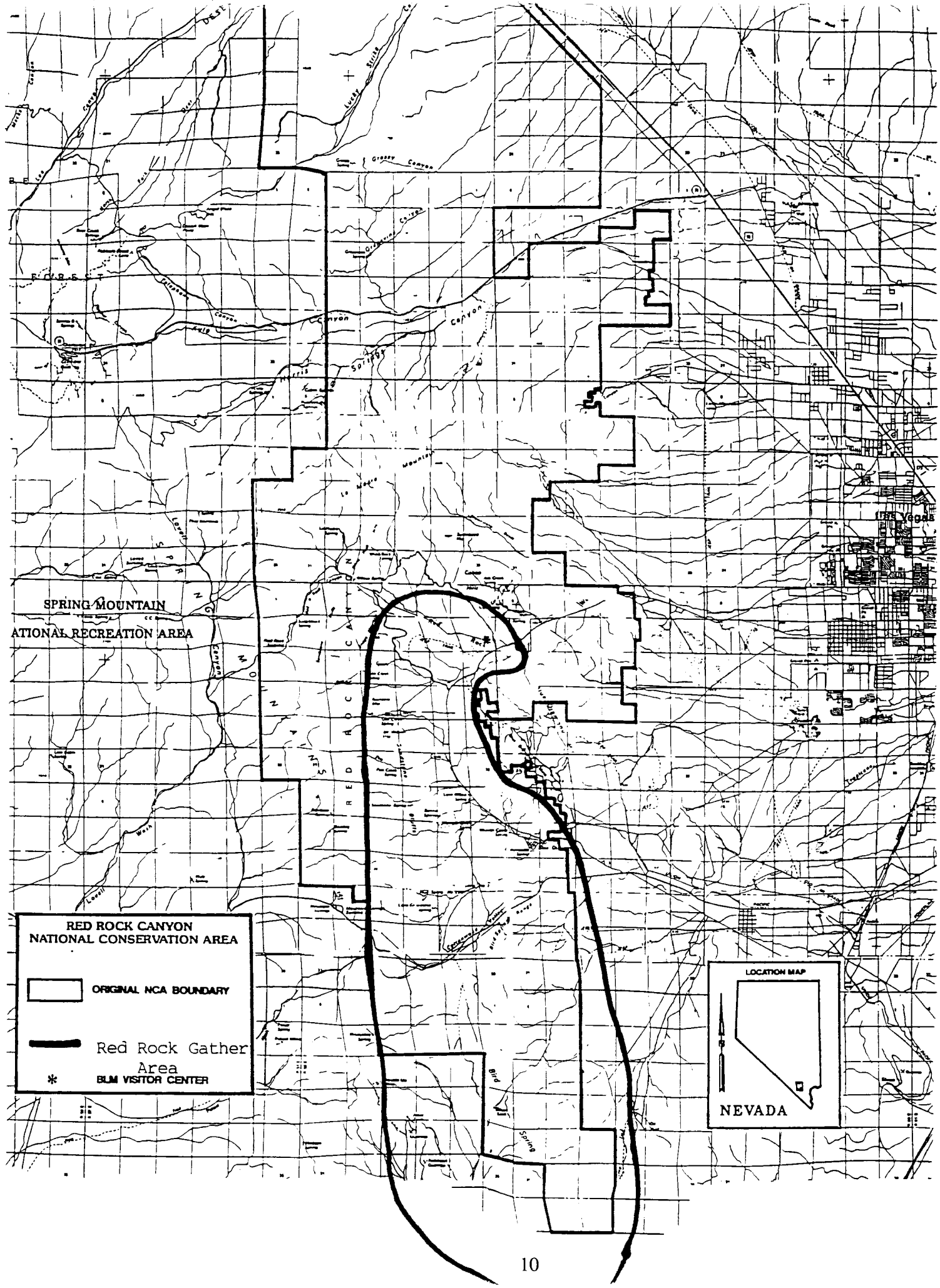
Arizona	80001-160000	California	160001-240000	Colorado	240001-320000
Idaho	320001-400000	Montana	400001-480000	Nevada	480001-640000
New Mexico	640001-720000	Oregon	0- 80000	Utah	720001-800000
Wyoming	800001-880000	Eastern States	880001-880100		

Horses will remain at the processing center for a minimum of thirty days to acclimate to eating and drinking in captivity, being around people and to recuperate from the stress of capture. After thirty days, if the horse is in good health it will be transported to an adoption facility where it will be available to approved members of the public for adoption at a minimum cost of \$125.00. After adoption, the horse remains the property of the U.S. government for one year. After the end of one year, the adopter may apply for title to the animal. Adopters will need a signed certificate from a veterinarian or other horse professional certifying that the horse is healthy and has received adequate care for the past year (BLMa, 1996). Once the adopter has received the title the horse is no longer considered government property and the adopter can do as they like with the horse. This has led to recent publicity as it has been discovered that many of these horses end up in slaughterhouses for human or pet consumption, sometimes within days of adopters receiving title.

Red Rock Herd Management Area


The Red Rock Herd Management Area is located about fifteen miles from Las Vegas and encompasses the Red Rock National Conservation Area (Figure 2). It is home to one of Nevada's most significant outdoor recreation areas (US, 1979), and offers a unique perspective to horses and rangeland health as there has been no cattle grazing for twenty-five years (US, 1979).


Vegetation found in the area varies widely from desert scrub to




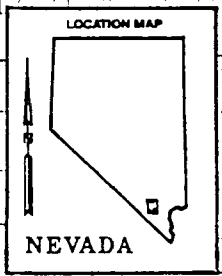
SPRING MOUNTAIN
NATIONAL RECREATION AREA

**RED ROCK CANYON
NATIONAL CONSERVATION AREA**

 ORIGINAL NCA BOUNDARY

 Red Rock Gather
Area

 BLM VISITOR CENTER



riparian to juniper-pinyon at the higher elevations. Commonly found in the desert shrub region are: Spanish Bayonet (*Yucca schidigera*), Blackbrush (*Coleogyne ramosissima*), Mormon Tea (*Ephedra viridis*), manzanita (*Arctostaphylos manzanita*), turpentine bush (*Ericameria laricifolia*) and rabbitbush (*Chrysothamnus viscidiflorus*). Also found is the Mojave Desert's signature species, the Joshua Tree (*Yucca brevifolia*). Grasses in the region are needlegrass (*Stipa comata*), sand dropseed (*Sporobolus airoides*), big galleta (*Hilaria rigida*) and Indian Ricegrass (*Achnatherum hymenoides*). Common plants found in the riparian region along springs, washes, and creeks are the Desert Willow (*Chilopsis linearis*), mesquite (*Prosopis* species), and the invasive salt cedar (*Tamarix chinensis*). In the higher elevations, in addition to the Pinyon-Juniper, grasses such as Nevada Bluegrass (*Poa nauadensis*) and cheatgrass (*Bromus tectorum*) (Nevadab, 1998).

In addition to the horses and burros found in the HMA there exist many other species of wildlife. Carnivores include the coyote (*Canis latrans*), grey fox (*Urocyon cinereoargenteus*), Kit Fox (*Vulpes macrotis*), and bobcat (*Lynx rufus*) (Nevadac, 1998). Large herbivores include mule deer (*Odocoileus hemionus*), and desert bighorn sheep (*Ovis canadensis*) (Nevadac, 1998). There are also abundant small mammals such as the antelope ground squirrel (*Ammospermophilus leucurus*), kangaroo rat (*Dipodomys deserti*), blacktail jackrabbit (*Lepus californicus*) and desert cottontail (*Sylvilagus audubonii*) (Nevadac, 1998).

As mandated by the Wild Horse and Burro Act, horses (and their descendants) found in this area at the time the Act was signed, are considered integral parts of the natural environment and thus protected. For my Thesis, I will examine the efficacy of the Bureau of Land Management's implementation of the Wild, Free-Roaming Horse and Burro Act, on the wild horse herds at Nevada's Red Rock Herd Management Area in regards to population size, health, and educational opportunities for the public.

Materials and Methods

Literature Searches

The focus of this research was the BLM's adherence to the tenets set forth by the 1971 Wild, Free-Roaming Horse and Burro Act in protecting and maintaining horse herds of the Red Rock HMA. Available records provided by the BLM were reviewed for the history of BLM's management, especially census counts and gathers. No information could be found in peer review journals regarding this specific HMA, although articles from peer reviewed journals such as Journal of Wildlife Management, Journal of Animal Science, and Journal of Range Management were reviewed for comparison and additional information of equine behavior.

Field Research

The primary horse observation area in Red Rock HMA was south of

the scenic loop, west of Highway 159, and the north region of HWY160. Over fifty days from April 1998 to February 2000 were spent following horses in the area, identifying individuals, primarily through the use of photos and personal observation, migration routes, following horses on foot with a GPS unit, and observing equine behaviors such as individual interactions, mare/foal relationships and stallion/mare relationships. Notes were taken regarding biotic communities and grazing patterns. Study times were during all seasons, with most of the time spent during spring and summer, weekdays when tourist and user activity was and time of day ranged from just after sunrise to late afternoon.

Results

Horses have been documented in the Red Rock area since 1844 and local ranchers ran horses until the 1950's (BLMc). It is generally accepted that the predominant genetic disposition of the Red Rock herds comes from ranch-bred stock turned loose (BLMc). The Wild, Free-Roaming Horse and Burro Act was passed in December of 1971, yet the Red Rock HMA was not formalized until 1984 with publication of the Management Framework Plan Major Land Use Decision Summary and Environmental Impact Statement Record of Decision (BLM, 1984). The entire area consists of two HMA's, the Wheeler Pass HMA located north of La Madre Mountain and the Red Rock HMA. While the majority of the Red Rock HMA lies within the boundaries of the RRNCA, it also encompasses

part of the Spring Mountain Range and National Forest Service lands
(Figure 3).

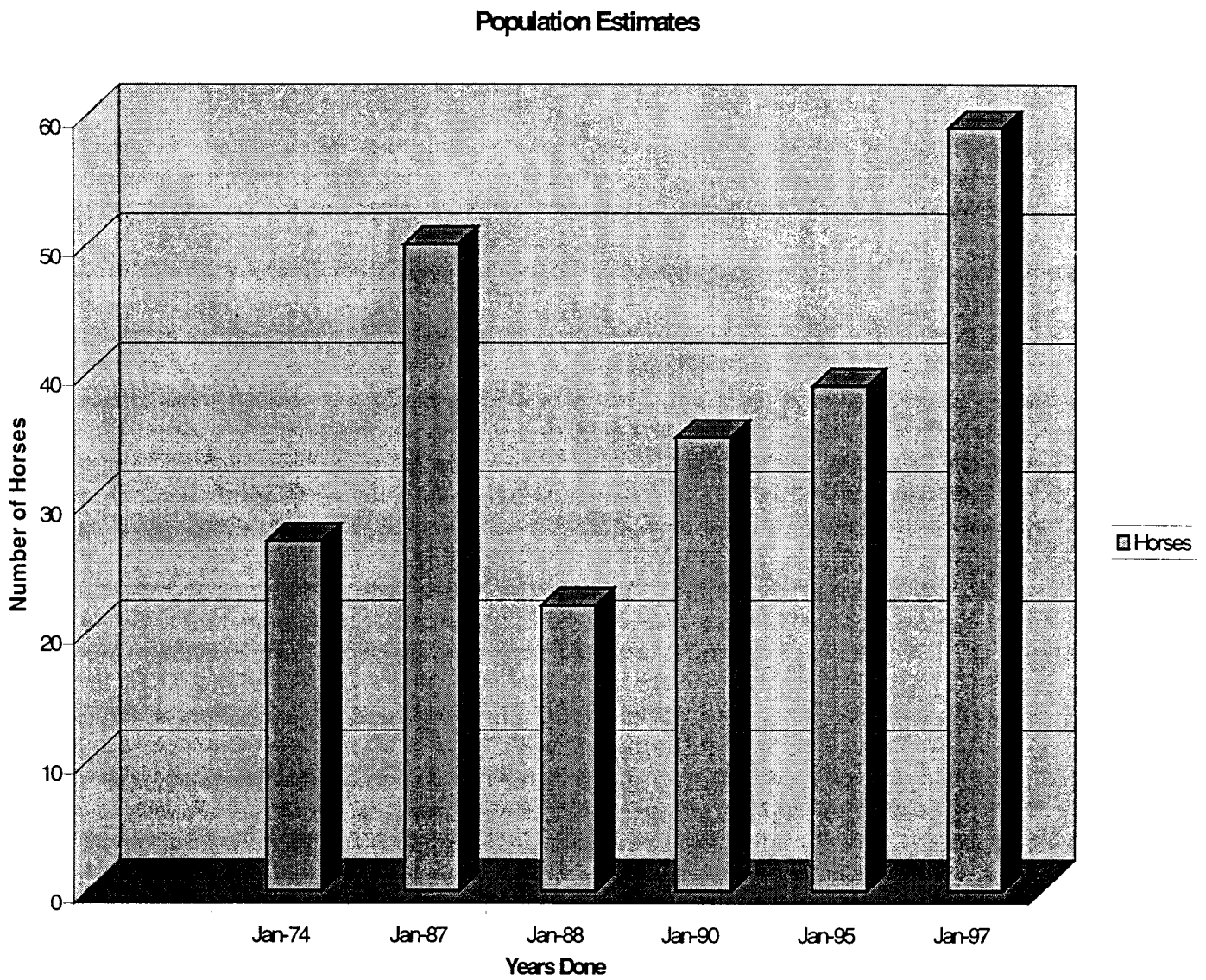


Figure 3

Population

Documentation maintained by the BLM regarding horse herds at Red Rock was extremely sparse, and what was available was in no particular order and most had no dates or signatures. Much of the information was intermixed with information regarding other HMA's managed by the Las Vegas Field Office. Over 30 hours were spent going through file and assorted documents looking for information regarding the Red Rock HMA. There was a great deal of information missing such as records of horses killed by motor vehicles and transplant operations. However, there were a few available population estimates (Figure 3). Population estimates were done via helicopter censusing and on horseback. Census counts should have been done in 1971 at the passage of the Act and every two years following this date. However, as shown in Figure 3 this has not occurred, in part due to lack of money and personnel. The information available showed a low population estimate of 24 in 1974 and a current high of 59 in 1997.

The only formal gather was conducted in August 1996 over a three day span due to emergency measures during a drought and implied threats to the animal's health. During the gather, 54 horses were captured and 35 of those were re-released. This data is displayed in Figures 4, 5, and 6. This data also gives an approximation of the various age groups, color, and sex. Forage utilization was at 65% and precipitation was 91% for the year, yet water sources were failing, most noticeably Wilson Tanks

1996 Emergency Gather Results

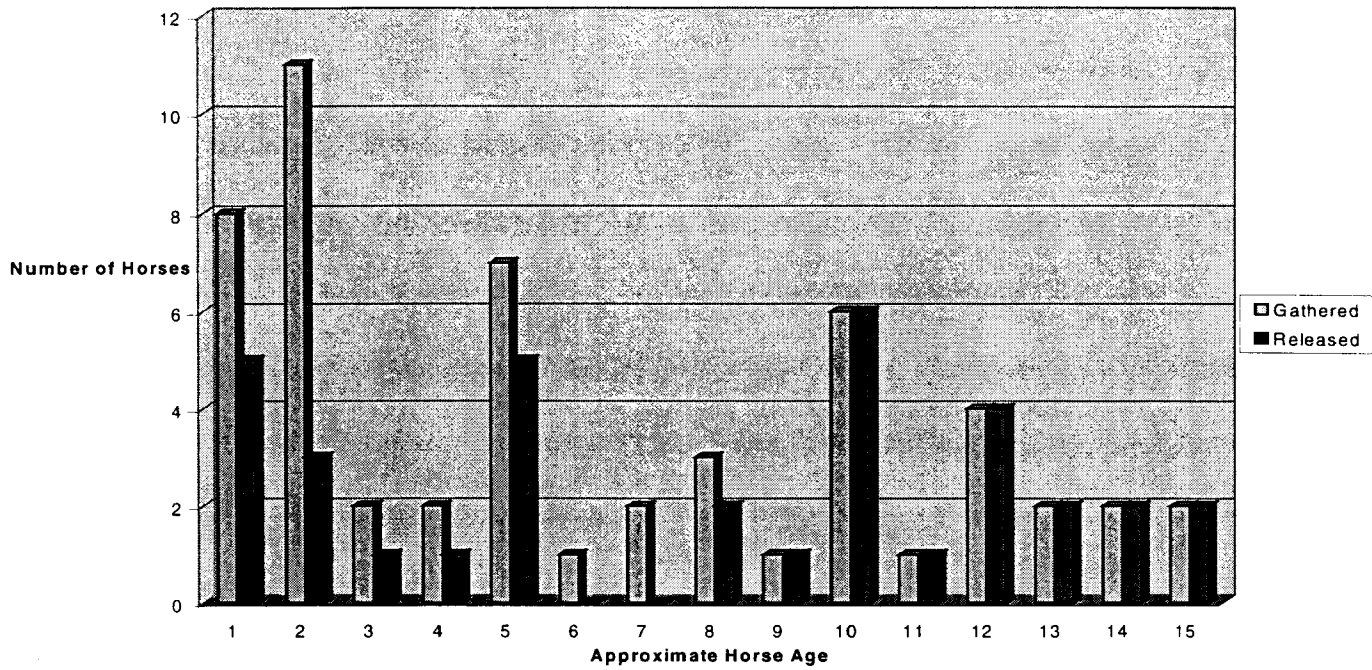


Figure 4

1996 Emergency Gather (Color)

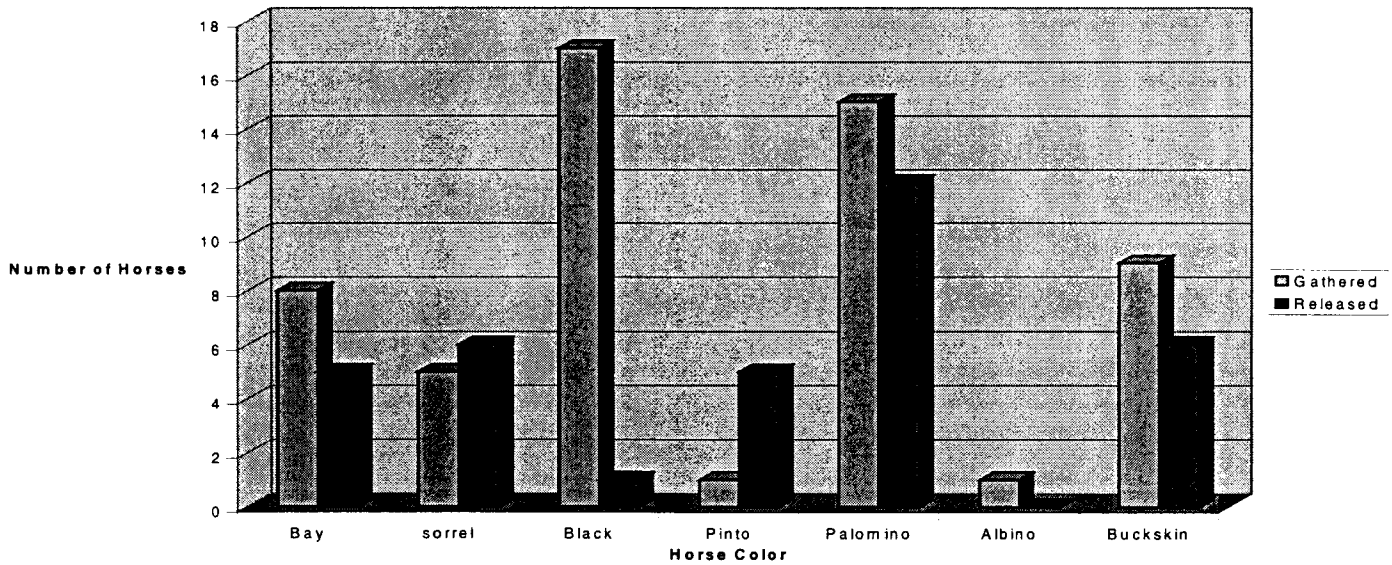


Figure 5

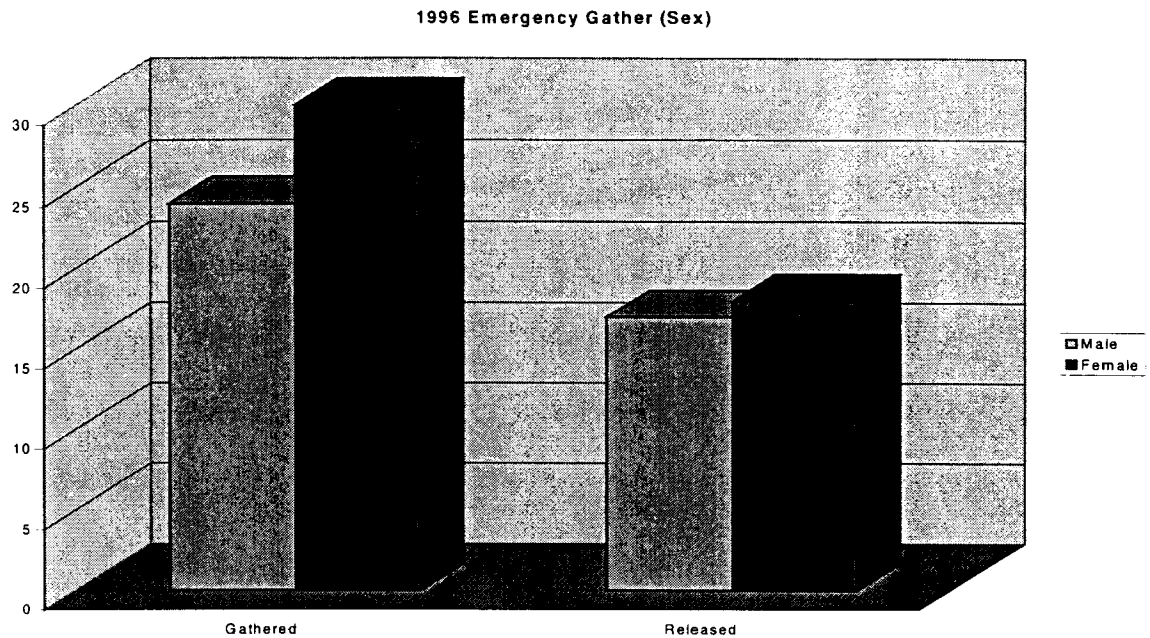


Figure 6

(Tunnel Springs) which was only producing $\frac{1}{4}$ gpm and had over forty horses waiting for hours for water intake (BLMd, 1996). While the 1995 census estimated 39 horses, 54 horses were gathered on August 2, 1996. This would assume a birthrate of 72%, but only 8 of the horses gathered were under 1 year old. Another number discrepancy comes to light when 35 of the 54 horses were re-released, but the 1997 census estimates 59 horses, a birthrate of 59%. Normal birthrates range from 10-20%. These figures indicate a lack of confidence in the census estimates.

Several horses have been lost in recent years to illegal killings and horse/vehicle interactions. In January of 1987, eleven horses were found

shot and killed. The killers received a fine of \$250.00, 120 hours of community service work, and placed on a one-year probation (UAG-88-0164-M, US District Court). In 1991 five horses were killed in another shooting incident. This incident is not yet solved and there is an outstanding reward of \$10,000.00. One additional horse may have been a victim of a shooting in August, 1999 at Tunnel Springs. There have also been many losses due to horses being hit by vehicles while attempting to follow historic migratory routes and cross Highway 160.

In 1972, Drs. John Turner and Jay Kirkpatrick were approached by the BLM to find a way of halting mustang reproduction. In 1982 it was discovered that equine zona pellucida showed common antigens with porcine zona pellucida (Liu, 1982) and immunocontraception began.

One challenge of PZP is remote delivery. When dealing with large, wild species, captive related stress should be kept to a minimum. In the past, darts were used to administer vaccine, but recent technology has led to the development of the bio-bullet. A bio-bullet is a biodegradable bullet filled with vaccine. The bullets are accurate for <25 meters and bullets that miss the target degrade into the environment (Muller et al., 1997).

Another challenge of PZP is to develop vaccine so that one injection will last an extended time without the need for booster injections. Currently, PZP must be followed up by a booster four weeks later.

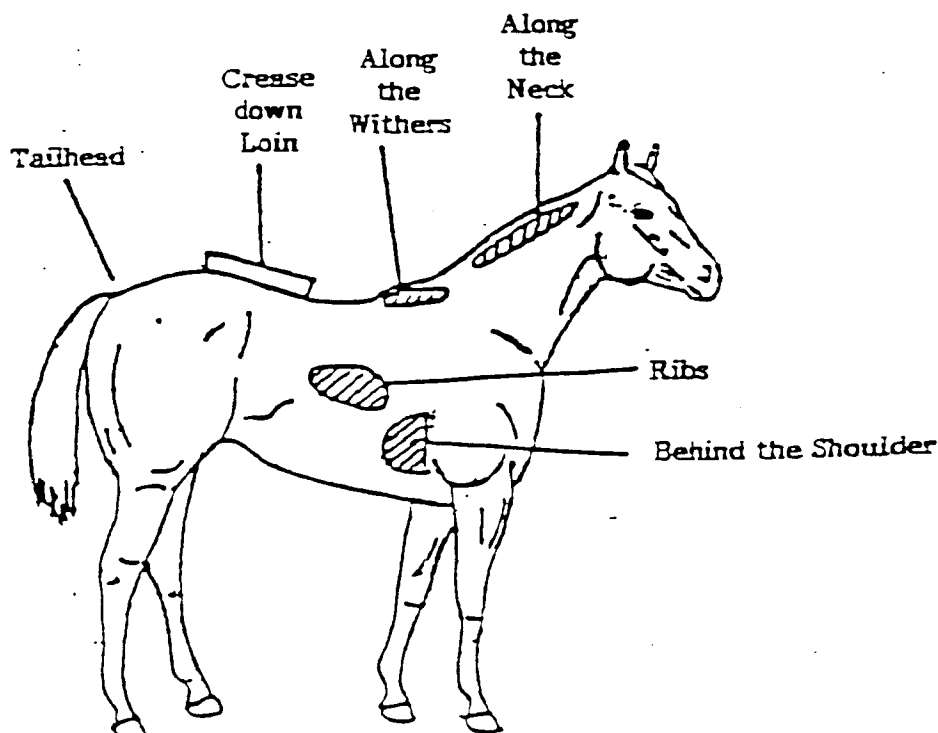
There have been no observable health effects of PZP other than mares treated for a prolonged period may take up to two years to conceive

(Gillis, 1994). Because it is a protein, PZP cannot pass into the food chain (Kirkpatrick, 1996), which was a concern on earlier methods of birth control measures for the horses.

Health

There is no official data regarding herd health or condition but the BLM does use a nine-point scale to determine health (Figure 7) and through personal observation the herds have seemed to maintain good health, generally a class 4 or 5 or 6. The second issue examined was the overall health of the horses. Again, no data could be located, except in the EIS for the 1996 gather which stated most of the horses were in a condition 5 or 6. By personal observation, this is still generally true. Stallions generally appear in better condition than the mares. According to Gary McFadden, Wild Horse and Burro Specialist at the Las Vegas Field Office, mares generally do not survive past the age of ten due to the harshness of the environment and repeated pregnancies.

CONDITION	NECK	WITHERS	LOIN	TAILHEAD	RIBS	SHOULDER
1 POOR	Bone structure easily noticeable Animal extremely emaciated no fatty tissue can be felt	Bone structure easily noticeable	Spinous processes project prominently	Tailhead (pigeon) and hook bones projecting prominently	Ribs projecting prominently	Bone structure easily noticeable
2 VERY THIN	Faintly discernable Animal Emaciated	Faintly discernable	Slight fat covering overbase of spinous processes. Transverse processes of lumbar vertebrae feel rounded. Spinous processes are prominent.	Tailhead prominent	Ribs prominent	Faintly discernable
3 THIN	Neck accentuated	Withers accentuated	Fat building halfway on spinous processes but easily discernable. Transverse processes cannot be felt	Tailhead prominent but individual vertebrae cannot be visually identified. Hook bones appear rounded, but are still easily discernable. Pin bones not distinguishable	Slight fat cover over ribs. Ribs easily discernable.	Shoulder accentuated
4 Moderately THIN	Neck not obviously thin	Withers not obviously thin	Negative crease along back	Prominence depends on conformation. Fat can be felt. Hook bones not discernable	Faint outline discernable	Shoulder not obviously thin
5 MODERATE	Neck blends smoothly into body	Withers rounded over spinous processes	Back level	Fat around tailhead beginning to feel spongy	Ribs cannot be visually distinguished but can be easily felt	Shoulder blends smoothly into body
6 Moderately FLESHY	Fat beginning to be deposited	Fat beginning to be deposited	May have slight positive crease down back	Fat around tailhead feels soft	Fat over ribs (feels spongy)	Fat beginning to be deposited
7 FLESHY	Fat deposited along neck	Fat deposited along withers	May have positive crease down back	Fat around tailhead is soft	Individual ribs can be felt, but noticeable filling between ribs with fat	Fat deposited behind shoulder
8 FAT	Noticeable thickening of neck Fat deposited along inner buttocks	Area along withers filled with fat	Positive crease down back	Tailhead fat very soft	Difficult to feel ribs	Area behind shoulder filled in flush with body
9 Extremely FAT	Bulging fat Fat along inner buttocks may rub together. Flank filled in flush	Bulging fat	Obvious positive crease down back	Bulging fat around tailhead	Patchy fat appearing over ribs	Shaggy fat



Education

Although the Las Vegas Field Office currently has no educational programs for the public in place at Red Rock, plans are now being considered. This would potentially consist of an interactive booth at the Red Rock Visitor Center. This is made up of poster displays, and an interactive computer that uses a CD-ROM developed by the BLM. A similar exhibit has been used successfully at the Kentucky Horse Park. The National BLM Program Office has offered the use of this display to the Las Vegas Field Office to use in the Red Rock Visitor Center. The booth would also have changing displays regarding the wild horse past and present.

Discussion

The BLM appears to have done a poor job documenting population trend at Red Rock HMA. The first census in Red Rock was conducted in 1974, three years after the passage of the Act. There was no data locatable for the area prior to this time. Although additional censuses occurred in 1987, 1988, 1990, 1995, and 1997 (Figure 3), according to general Wild Horse Program guidelines a census should ideally be done twice yearly. Minimum requirements for census must be done at least every four years.

Instead of using gathers as a way of controlling the wild horse population it has been proposed that the BLM implement the use of PZP on horses in Red Rock. This will allow the horses to maintain genetic

diversity yet keeps the population from increasing at unmanageable levels.

Health

The health of the horses is directly related to the health of the range. Healthy range conditions are when sufficient forage and water sources are available. Prime forage species in Red Rock HMA are: winterfat (*Krascheninnikovia lanata*), groma (*Bouteloua barbata*), fluff grass (*Erioneuron pulchellum*) big galleta (*Hilaria rigida*), sand dropseed (*Sporobolus airoides*), and Indian ricegrass (*Achnatherum hymenoides*) (McFadden, 1999).

A 1991 memo from then wild horse specialist Bob Stager stated the HMA 'had an upward trend with cool and warm season forbs and grasses showing excellent vigor and an increase of Indian ricegrass'. A 1999 memo from Gary McFadden to then RRNCA manager Dave Wolf stated 'currently 95% of the HMA is in PNC or late seral condition and overall utilization is light' (BLMc, 1999).

In addition to forage, a healthy range must have reliable water sources. As noted earlier, the northern portion of the HMA has more dependable water sources than the south. Mud Springs a water source in the north, is popular with mountain bikers and equestrians. Increased use around the spring will sometimes cause the horses not to come in to drink. There have been other unfortunate incidents at Tunnel Springs, where

one of only two water sources on the south side of the HMA, was shot at by illegal target shooters. Tunnel Springs is the water source for the majority of the wild horses in the Red Rock HMA. Tunnel Springs frequently runs dry in July/August and BLM/NWHA (National Wild Horse Association) will haul water out in barrels to refill it. As part of the Draft Management Plan released in the summer of 1999, it has been proposed that new wells be drilled and installed in the southern portion of the HMA.

Another threat to the horse's overall health, the number of bikers and hikers in the area. Former horse trails are now being utilized by people for recreational uses cause the horses to stop using that specific trail and break new ones, thus increasing the number of trails in the area. Because all of the trails lead to water sources and through feeding grounds, this increases the human activity in the area and can add stress to the horses if they are unable to access their feeding grounds and water sources. There are a number of businesses in the Las Vegas area that make a profit by taking groups of people out to see the wild horses, whether by motor vehicle tours (i.e.: HumVees) or on bicycle. These groups for the most part are intent on showing their customers what they have paid for, and don't understand equine behaviors. Tour leaders have been seen throwing rocks and honking auto horns at horses to get them to run so the customers may see horses running free across the desert. This is a stress and causes the horses to use energy they might not be able to spare. Currently there are no legal limitations to activity in the area.

However, the main parking area is adjacent to the underpasses and may interfere with the horse's use of the underpasses. In a Draft Management Plan released in 1999, in one of the proposed options is to no longer allow motor vehicle traffic in the study area. If this is the management decision, this may reduce horse stress.

Education

The third perspective examined was the availability of educational programs about the Red Rock Herds to the public. The RRNCA receives over a million visitors a year from around the world. This provides a prime opportunity to educate, not just Southern Nevadans, but the world, about America's Wild Horses. In spite of horses existing in Red Rock prior to it becoming a National Conservation Area, there is no mention of the horses in the Red Rock Visitor Center. However, there are many items for sale in the Gift Shop depicting the horses. One of the most frequently asked questions, as stated by BLM personnel, is 'Where are the horses?' Yet, there are no educational displays at the Visitor's Center to answer questions visitors might have. Because there are wild horse displays available through the National BLM Office, and these displays can also be found at the Kentucky Horse Park in Lexington, KY, and the Buffalo Bill Center in South Dakota, it seems that the lack of a display at the Red Rock Visitor Center is the result of inaction by BLM personnel, not a result of inadequate resources.

Summary

Despite erratic management practices by the BLM, the Red Rock horses appear to be fairing well. Red Rock herds have maintained adequate population and health. This in part is due to natural die-off, and natural and human predators

As far as health, the range overall is in good condition and so are the horses. Generally, the stallions are in better physical shape than the mares due to the stress of repeated pregnancies and nursing foals on the mares.

Educational opportunities still await. However, there is new management in the Las Vegas District Office and hopefully that is an area that will improve. The materials exists, it is just a matter of getting it into the Red Rock Visitor Center. With educational tools available to the public, the public may better understand management decisions that must be made to ultimately protect and preserve the horses in the Red Rock HMA. A healthy range, healthy horses in manageable numbers, and an educated public are the keys to Red Rocks HMA future.

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