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Nevada Wildlife Resource Protection Overview: 2000 through 2003

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ABSTRACT: In January 2000, The Nevada Board of Wildlife Commissioners directed the Nevada Division of Wildlife (NDOW) to contract with the United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services Program (WS) to conduct wildlife damage management (WDM) activities for the protection of certain species of Nevada's wildlife. Responding to the Commission's directive, the NDOW requested WS to initiate protection of a variety of avian and mammalian wildlife resources that they deemed in need of special protection from "excessive predation". Nevada has a greater percentage of publicly owned/managed lands than any other state in the nation – about 86% – so most of the wildlife resources requiring special protection from predators are located on federal lands, usually Bureau of Land Management (BLM) or United States Forest Service (USFS) lands. Because the natural resources to be protected were on public lands, WS was required to develop Annual Work Plans prior to conducting WDM activities that fulfilled WS' mission and conformed to BLM's and USFS' land use plans. Prior to initiating any WDM actions, WS personnel conducted predator avian/mammalian surveys to monitor targeted predator populations. Additionally, WS conducted predator avian/mammalian surveys throughout the ongoing WDM activities, as well as shortly thereafter, to monitor targeted predator population levels. WS personnel directed their actions toward the surgical removal of those species deemed problematic by NDOW (mountain lions, coyotes, common ravens, magpies, and badgers), depending on the resource to be protected, the specific locations where protection was deemed necessary, and during the specific period of the year when damage occurred. Results from WS' WDM activities on these projects were reported by NDOW, the management agency responsible for managing Nevada's wildlife. As an added benefit to the resource protection work, WS took blood samples from all avian and mammalian predators removed during WDM activities in order to monitor wildlife diseases via testing conducted by the Centers for Disease Control or the Nevada Department of Agriculture's Animal Testing Lab.

KEY WORDS: antelope, Bureau of Land Management, *Canis latrans*, *Centrocercus urophasianus*, *Corvus corax*, coyote, disease surveillance, Forest Service, Nevada Department of Wildlife, predation, pronghorn antelope, raven, sage grouse, wildlife damage management, Wildlife Services

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INITIAL CONTACT

In December 1999, the Nevada USDA APHIS Wildlife Services Program (WS) was contacted by a group of concerned citizens who wanted to help protect Nevada's wild ungulate populations from predation caused by injurious predatory wildlife. The main predator of concern was the coyote (*Canis latrans*). This group of citizens included professional hunters, sportsmen, wildlife groups, politicians, lawyers, and various members of the public who had concerns regarding excessive predation on certain wildlife species. The group asked one question of WS: "What would it cost for WS to start a predator control program that could remove 70% of the coyotes in the state of Nevada?" The response WS gave to the group was that WS does not conduct predator control; rather, WS protects resources. More precisely, WS conducts wildlife damage management for the benefit of an identified resource (e.g., agriculture, human health and safety, property, endangered species, and wildlife resources), but WS does not manage predators populations. The group was told by WS, "If you tell us what resource you want protected and where the resource is located, we can talk. But unless you have a resource in need of protection, we can not assist you with predator control across an entire state." That group of concerned citizens went on to get legislation passed (Assembly Bill 291) that collected a \$3.00 fee on every Nevada game tag application, to be used for control of predation on wildlife populations.

OVERVIEW

In January 2000, the Nevada Board of Wildlife Commission (NBWC) directed the Nevada Division of Wildlife (NDOW) to ask WS to conduct wildlife damage management (WDM) activities for the benefit of Nevada's wildlife. Responding to the Commission's directive, NDOW requested WS to provide WDM protection work on 4 separate projects. Subsequently, in the spring of 2001, NDOW also requested that WS protect 2 desert bighorn sheep (*Ovis canadensis*) augmentations (the total number of wildlife projects increased to 6 with the addition of the 2 sheep projects). In August 2002, the NBWC approved the Fiscal Year 2003 Predator Management Plan (PMP), which was the first year of action taken under Assembly Bill (AB) 291 funding. AB 291 required that a \$3.00 fee be collected for each big game tag application from both resident and non-residents applicants. The funding generated by this legislative action allowed for the hiring of an NDOW Liaison Wildlife Biologist, funded one-half the cost of a WS-NV Liaison Wildlife Biologist, and funded 2 full-time WS Wildlife Specialists and 3 part-time WS Wildlife Specialists. A total of 10 wildlife projects were approved by the Wildlife Commission; wildlife species added for protection beyond the original list now included mule deer (*Odocoileus hemionus*), waterfowl, and upland game birds.

BACKGROUND

WS is the federal side and provides management and

supervision of the cooperative federal/state entity, the Nevada Animal Damage Control Program (NADCP). The NADCP is comprised of federal, state, local, and private entities working together toward the mutual goal of protecting Nevada's resources. The state component of the cooperative program is the Division of Resource Protection within the Nevada Department of Agriculture.

The mission of WS, as stated in the WS Final Environmental Impact Statement (FEIS) of 1995, is to provide leadership in wildlife damage control to protect America's agriculture, industrial, and natural resources, and to safeguard public health and safety. WS is committed to environmental sensitivity, cooperative participation, service delivery, professionalism in the practice of wildlife management, and scientific, technical, and managerial excellence.

WS focuses on the protection of agriculture (including livestock), crops, forests and rangelands. Additionally, WS provides wildlife damage management protection for property and public health and safety through the control of wildlife-borne diseases, of wildlife that threatens humans, and of wildlife hazards to aircraft. WS assists other federal and state agencies in the protection of natural resources, including wildlife species of special concern such as sage grouse (*Centrocercus urophasianus*).

WS is authorized to protect wildlife and other resources from damage caused by other wildlife, when the WDM action is requested by an appropriate management authority. WS activities are conducted in cooperation with other federal, state, and local agencies, as well as with private organizations and individuals. WS is authorized by Congress to provide direct assistance to resource owners who are experiencing loss or imminent risk of loss from problem wildlife. Additionally, WS field activities are conducted within authorizations received from cooperating federal and state regulatory agencies.

PREDATOR CONTROL VS. WILDLIFE DAMAGE MANAGEMENT

Predator control is an action whose primary motivating purpose is the removal of one or more targeted predator species. While the underlying reason for the "predator control" action can be that of abating the damage caused by the predator, predator removal is the primary goal. This was the general rule used during predator control campaigns conducted in the early part of the 20th Century. Today, WS conducts resource protection rather than predator control. The primary goal in WDM activities today is the protection of a resource rather than removal of the predator. To accomplish this goal, WS conducts WDM activities focused on a specific resource being damaged, directed toward a single species affecting the resource, at the location where the damage is occurring, and at the time when the resource is vulnerable. WS uses methodologies that are species-specific; this approach is aimed at stopping the damage with "surgical" precision.

Prior to conducting wildlife damage management protection work, damage to the resource must be documented and verified as to the species responsible. The level of damage becomes the "trigger switch" that justifies initiation of WDM protection efforts.

In the NDOW Project work, WDM activities were aimed at protecting the wildlife resource (e.g., mule deer; pronghorn antelope, *Antilocapra americana*; bighorn sheep; sage grouse; wild turkey, *Meleagris gallopavo*) and were thus focused on the resource, rather than on targeting the predator population. Although the responsible predator population was not targeted for reduction, individual predators causing damage were targeted for removal. Because WDM activities are both localized and of short duration, there is little threat of any lasting effect on the predator population. The mammalian or avian wildlife resource that requires WDM assistance was provided protection during a critical "vulnerable period" (e.g., fawning, nesting).

WDM PROTECTION EFFORTS ON PUBLIC AND PRIVATE LANDS

Prior to conducting WDM work for the protection of wildlife resources, the landowner/manager of the area must be identified. It is WS' responsibility to insure, as per WS policy, that a signed agreement to conduct WDM be executed for all public and private lands. Nevada currently has 86% public lands, a higher percentage of publicly owned lands than any other state. Most of the wildlife resources needing special protection were located on Bureau of Land Management (BLM) or U.S. Forest Service (USFS) lands. To implement WDM programs on such lands, WS and the two land management agencies cooperated in the development of an Annual Work Plan (AWP) that both fulfilled WS' mission and conformed to BLM's and USFS' land use plans. These AWP's included information on WS' WDM activities for the protection of wildlife species.

On wildlife protection units that included privately owned property, landowners were asked if they would allow WDM work to be conducted on their property. To date, all landowners have graciously allowed such efforts; many private landowners also had previously requested WS-NV to protect their livestock. A standard WS private land agreement form was completed prior to any WDM work.

WDM PROTECTION PROJECTS

Prior to initiation of any lethal control work for the protection of wildlife or other natural resources, a number of important questions, such as the following, must be addressed:

1. ***What is the wildlife resource in need of protection?***
It is imperative that the resource to be protected (e.g., mule deer, antelope) be specifically identified.
2. ***Who has management authority over the resource to be protected (federal or state), and what is the "status" of the resource?*** WS cannot initiate activities unless the owner/manager has requested the WDM work. Whether the resource has specific status (threatened or endangered, game animal, migratory bird, etc.) is important, as such status frequently has related restrictions.
3. ***What types of damage/impacts are occurring? What predator(s) are responsible for this damage?***
It is important that the damage be identified both to its "type" and to the species responsible.

4. **Who has the management responsibility for the predator (federal or state)? What is the "status" of the predator species?** Ravens, for example, fall under the authority of U.S. Fish and Wildlife Service, while badgers are under the NDOW. WS cannot conduct lethal actions on a species without permission of the management authority. Whether the predator species has specific status is very important.
5. **Is the wildlife resource located on public or on private land?** If permission to conduct WDM activities is not attainable (e.g., on National Park Service lands or BLM Wilderness Study Areas) the project cannot occur.
6. **What is the "trigger switch" (or "starting mechanism") to initiate WDM work (e.g., a low fawn or chick counts)?** The "trigger switch" can also be termed the "damage tolerance threshold level". Specifically identifying this level will provide the justification to commence WDM activities, as well as defining the consequences of not providing the work. Avoid generalities such as "low"; aim for specific measures such as "current fawn:doe rate is 23:100, which is below the number required for sustainability of the herd".
7. **In what life stage is the wildlife resource in need of protection (juvenile or adult)?** This can assist in determining the specific predator most likely to be responsible, the specific time of the year when the damage is occurring, and perhaps even the location of the damage activities.
8. **When does WDM work need to be conducted (e.g., spring, summer, winter, or fall)?** It is important that WDM activities be conducted during periods of the year when the damage is occurring. WDM activities are expensive and should be limited to as narrow a time period as possible.
9. **What WS tools are permissible for protection the wildlife resources (aerial hunting, traps, snares, toxicants)?** Limitations on WS' tools, methodologies, and procedures occur for any number of reasons and can have a marked affect on the success of the project. Additionally, use of a tool, method, or procedure that is not allowed (or is not advisable for an area) can result in delays and undesirable restrictions, or can cause considerable problems.
10. **What is the "stopping mechanism" that indicates the WDM objectives have been achieved and the project is completed?** As important as the "starting mechanism" is the identification of the "stopping mechanism"—the level at which the resource no longer requires protection. Identifying this "stopping mechanism" at the project's beginning provides both a goal and an endpoint. Here also, it is important that it be specifically defined (e.g., "when the fawn:doe ratio reaches 45:100 for two consecutive seasons", rather than "when there are enough fawns").

Answering these questions will reveal a good understanding of the project, what constitutes success, and whether this project is feasible. By all means, be sure that the identified predator species is the primary cause of the resource's problems. Remember, that predation is a natural facet of life: just because there is evidence of predation does not mean that the predator is the primary cause of the target resource's problem. Predation can be incidental to the actual problem that is pushing the resource into trouble. If the cause of the problem is misidentified, it will be impossible to resolve the problem. Chances are, there are other compounding factors, such as habitat, which may greatly influence the effect of predation on the resource.

Be selective. Do not take on projects if you are not sure predation is the true cause. When in doubt, hesitate, and if you cannot eliminate the doubt, eliminate the project. Too much rides on your being able to successful resolution of the problem. Be assured that there are many people who do not want to believe that WDM (through predator control) is a viable action, and they will take every failed project as proof positive that WDM is bogus. A poorly selected project can not only haunt you in the future, but it will likely be recalled and flaunted as 'proof positive' that predator control does not work each time a game agency asks for assistance. Be good to yourself and to others in the field by asking the right questions, and by doing your homework to find the correct answers to those questions.

POTENTIAL WDM PROBLEMS

Within WS' Western Region, few programs routinely conduct wildlife resource protection work. While the Western WS programs have routinely provided efforts aimed at protecting federally endangered species, resource protection efforts aimed at state-managed game species have been largely nonexistent. One exception is the WS Utah program, which has an ongoing program with protection efforts aimed directly at wildlife resources. Prior to being contracted to conduct WDM to protect Nevada's wildlife populations, WS-NV had not conducted this type of wildlife resource protection effort. As with any new program, very little information was readily available on which to base decisions regarding a working wildlife protection program.

In the beginning, lines of communication between NDOW and WS-NV were, at times, confusing, because individual biologists had different ideas about how the protection work should be handled. Communication is very important, but sometimes what appears to be "good" communication is not. For example, in March 2000, an area was selected for WS-NV to protect nesting sage grouse from excessive predation. The direction WS was given was to "protect the sage grouse from predation". WS-NV inspected the area and identified coyotes as a concern for adult sage grouse protection, and also identified badgers (*Taxidea taxus*) and ravens (*Corvus corax*) as concerns for the protection of sage grouse nests. WS targeted coyotes, badgers, and ravens during the project's activity period. WDM activities ceased on the sage grouse project in July 2000, when young sage grouse chicks were large enough to elude capture from most of the targeted predators. After the project was completed, a NDOW biologist informed WS that the project was tainted by WS' failure to limit its activities to

raven control. At this late date, WS was made aware that ravens were the *only* predator NDOW wanted removed from the sage grouse unit. WS had understood "protecting the sage grouse from predators" to mean all identified predators, while NDOW's understanding was that the control work would be aimed only at ravens and not at mammalian predators. This simple misunderstanding could have been avoided by having everything specifically spelled out in writing up front.

It is highly recommended that if a state game department requests WDM work for the protection of natural resources, every detail be put in writing prior to WS conducting any WDM activities, in order to minimize the risk of misunderstanding. The designation of a specific liaison person from each agency can help to avoid confusion; limiting communication to one designated point of contact from each agency greatly reduces the chance of miscommunication. In 2002, NDOW hired a liaison wildlife biologist as the officially identified "point-of-contact" and requested that WS also designate a biologist as liaison.

If a wildlife project is not going as planned, a decision may have to be made to end the project because of circumstances beyond one's control. In March 2000, NDOW requested that WS-NV protect a herd of relocated pronghorn antelope in western Nevada. A WS-NV biologist inspected the area and determined that WDM activities could be conducted in this area. The area had water fixtures (i.e., livestock tanks and troughs) readily available to the relocated antelope herd. However, in June the livestock producers moved their livestock and water fixtures out of the area. Following the water source removal, the antelope immediately migrated out of the area and into remote, higher elevations, inaccessible for WDM work. A WS-NV biologist informed NDOW of the situation, and it was agreed by both NDOW and WS that WDM activity for this herd of antelope was no longer feasible.

When a game department contracts with a WS Program to conduct WDM work, it is strongly encouraged that the WS manager make contact with other WS programs that have conducted (or are planning to conduct) work for protection of wildlife resources. While there is no penalty in WS for copying information from other WS programs, there may be severe repercussions if a new program fails. Due to the scrutiny these projects receive, a failed program can have negative effects on the entire federal WS program. These two aforementioned examples are no longer issues for WS-NV; they are now classified as "learning experiences" and not as failures. Cooperative efforts between NDOW and WS-NV have progressed to a point where there is an excellent working relationship between these two very different agencies working together to protect Nevada's wildlife resources.

RESULTS

WDM protection work continues in Nevada. Outcomes for most of the ongoing wildlife projects will become known in the fall 2004, when NDOW conducts their annual aerial fall surveys for mule deer, antelope, and bighorn sheep. When WS first began conducting WDM for NDOW in 2000, it was decided that most of the resource protection work would continue for a 5-year period in order to allow

biologists time to gather sufficient data by which to make better management decisions on these projects. The goal of NDOW's monitoring efforts is to document a difference—positive, negative, or indifferent—in the wildlife resource's status, so that future management decisions can be made based better information.

Anecdotal information collected to date by NDOW biologists indicates that some of the projects have been very successful, especially the Vya Antelope Project. In 2003, it was determined by NDOW's fall aerial counts that antelope fawns (fawns were the protected resource in this project) averaged 61 per 100 does in the WDM area. In comparison, the study control site (the Sheldon Antelope Refuge, where fawns were not protected) had 36 fawns per 100 does. The Vya Project area has experienced nearly a 115% herd increase since WDM protection efforts were initiated (R. Woolstenhulme, NDOW, pers. commun.). While results are pending for most of the avian projects, one WDM project in Lincoln County documented a 22-fold Canada goose gosling increase following WDM protection work, which removed offending ravens and coyotes (Bowers 2004).

Secondary Benefits of WDM Work

Producers having livestock in areas where NDOW requested wildlife protection work received livestock protection without having to request it. One domestic sheep producer in Nye County reported that in the 5 years prior to WDM activities, he lost approximately 45 adult ewes annually to coyote predation. An antelope project was initiated in the same area as his domestic sheep, and during the 2 years of WDM activities to protect relocated antelope (2000 through 2001), the livestock producer reported losing fewer than 5 ewes each year. The reduction in sheep lost to coyotes is believed to be a direct result of added coyote removal efforts in this area.

There also appears to be a residual effect experienced by livestock producers following the end of the project. The previously mentioned Nye County livestock producer reported that after antelope protection efforts ceased in his area, the number of domestic sheep killed by coyotes once again increased to historic loss levels, but only by small increments over time. This residual effect is thought to be caused by the removal of older, territorial, experienced coyotes that are familiar with the area and are more specialized at killing larger prey animals. Coyotes removed from this area during WDM work in the later years appeared to be younger age-class, transient coyotes that are more specialized at taking small prey animals. In areas where ravens are targeted for removal to protect upland game birds, endangered species such as juvenile desert tortoises may benefit from raven removal.

Disease Surveillance

WS employees collected blood samples from both avian and mammalian predators from each project area. The raven blood samples were tested for the presence of West Nile virus, and St. Louis and western equine encephalitis. WS continues to work closely with the state health department, Washoe County Vector Control, the Nevada Department of Agriculture's Animal Testing Laboratory and Veterinary Services, and the Centers for Disease Control. To date, no

West Nile virus has been detected in any of the samples WS has taken in Nevada, but several instances of positive titers for encephalitis have been found. Corvids are excellent avian species to monitor for West Nile virus, as they are a susceptible host and their territories encompass large geographical areas.

Blood samples were also collected from coyotes and tested for the presence of plague. Approximately 8% of the sampled coyotes had positive plague titers.

Throughout the projects, personnel were instructed that safety gloves should be worn at all times when handling samples, and field personnel were cautioned to avoid direct contact with blood. Nubuto strips were used for collection of the blood samples. When possible, Global Positioning System (GPS) readings were taken at the collection locations.

Agencies responsible for disease monitoring are often more than willing to receive and test random samples from free-roaming wildlife; however it is advisable to make the proper contacts prior to securing samples so that the proper collection protocols are followed.

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