

GOVERNOR'S SAGE GROUSE CONSERVATION TEAM

Rangeland Health Subcommittee

LOCAL AREA PLANNING GROUP GUIDE TO ADDRESSING SAGE GROUSE PREDATION

Abstract: Predation is a natural part of all ecosystems. Over time predators have helped to shape prey species attributes. However there are times when natural predator/prey relationships can become imbalanced. This could occur in a highly altered ecosystem where habitat quality for a prey species has declined. All prey species have evolved ways to avoid predation such as coloration that conceals them, behavioral adaptations, and specialized reproductive strategies. In degraded habitats these predator avoidance strategies may become less effective and prey species could be subject to higher predation rates than would normally occur in a healthy or unaltered ecosystem. Habitat alterations can give the predator an unnatural advantage by providing it with alternate food sources, additional perching areas, or reduced cover that allows for greater hunting success. This may be the case in some areas of Nevada where sagebrush ecosystems are known to have declined in extent and quality from pre-settlement conditions. It is of primary importance to first assess whether predation is actually the problem affecting sage grouse or whether some other factor is really what is actually limiting their numbers. If predation is determined to be the main factor affecting a population, then determining what predator(s) are the problem and what stage of the sage grouse life cycle the predator is affecting becomes the next objective. Carefully evaluating the field situation will result in a much more effective project to benefit sage grouse if predation is determined to be a problem.

Purpose: At the request of the Local Area Conservation Planning Groups, the Rangeland Health Subcommittee of the Governor's Sage Grouse Conservation Team has developed this informational leaflet which is a guide to help in determining whether or not predation is a problem for sage grouse in a given area, and to provide information about where to get assistance if it is a problem. This guide also provides a process for determining what predator is responsible for impacts to sage grouse.



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INTRODUCTION

During the late 19th century and the early 20th century, predator control often meant eradicating areas of all predators with the widespread use of poisons and unlimited trapping. In some areas the widespread elimination of predators resulted in large increases of prey populations such as small mammals. In other cases predators from those areas adjacent to the areas where predators were being eradicated simply moved in to fill the void left by the predators that had been removed.

Modern wildlife management requires that wildlife biologists assess and understand the role of predators, prey species, and habitat conditions as important interacting components in each ecosystem. This understanding is essential in order to make sound decisions about whether or not predator control programs are appropriate. In many cases other factors, such as poor habitat or severe changes in weather may actually be the real factor limiting sage grouse population and predation is only a symptom of these other problems. If predation is determined to be the main factor limiting sage grouse populations then there should be a determination about what times the predation is the greatest concern, and what predators are responsible for the decline, before carefully designing a predator control program. In these cases reducing the populations of predators known to be affecting sage grouse should increase their success, and result in increased survivorship and recruitment into their populations.

Predation is a natural factor operating on all sage grouse populations. Sage grouse populations often mitigate impacts to predation through cryptic nesting, increased chick production, re-nesting efforts, and response to annual habitat variation. Adult males and nesting females can be preyed upon by a variety of avian (eagles and hawks) and mammalian (coyotes, foxes, and badgers) predators. Nests can be lost due to destruction or abandonment resulting from harassment or disturbance from humans or domestic or feral animals (dogs, cats, cattle, sheep, horses). Ravens, crows and magpies as well as ground squirrels, foxes, badgers, and skunks can prey upon eggs. Sage grouse chicks can be taken by mammals (cats, fox, weasels, coyotes, etc.), birds (hawks, corvids), and reptiles (snakes).

Sage grouse populations can withstand some predation without this factor affecting population levels. Population characteristics such as low nest success and recruitment may indicate that a predator control program should be initiated, but other parameters such as habitat condition must be measured as well. The purpose of predator control is to protect



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sage grouse during a vulnerable time or stage to improve survivorship and recruitment. But, if the area lacks the capacity to maintain the additional grouse that are recruited into the local population then predator control operations are likely to be futile and cost ineffective.

Another reason for predator problems is that some predator species have become more prevalent in recent years. The number of common ravens has increased significantly throughout the West. Breeding bird surveys have shown substantial increases in the number of ravens for some survey routes over the last 20 to 30 years. The increase in raven numbers is considered to be primarily due to the prevalence of anthropogenic food sources that augment the ravens' natural food sources. Another species, the European red fox (ERF), has recently moved into Nevada from established non-native populations in adjacent states. This invasive species has increased in numbers and has expanded its range in recent years. The ERF is now found throughout eastern and northern Nevada.



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The following presents a model for determining whether or not there really is a predator problem in a particular area. Approach the problem openly recognizing that there may be several problems in a particular area that may be the cause of sage grouse populations not realizing their potential. Predator control should not be viewed as a panacea for fixing problems affecting sage grouse populations that are at low levels or in decline.

Decision Model For Identifying and Addressing Predator Problems

First: Identify that there is a deficiency in the Sage Grouse numbers. Are we sure that there are too few birds? Do we know what is here? Are all the active lek sites known? Are all the nesting grounds known? Example: If we are counting the birds by hunter success, maybe hunting activities are reduced rather than the bird numbers.

Second: Once it is agreed that the resident sage grouse population is diminished, determine that there is sufficient carrying capacity to allow for an increase in bird numbers. If habitat changes (i.e. new subdivisions, cheatgrass invasion following wild fire, pinion-juniper encroachment, etc.) have reduced the carrying capacity for the area then the diminished numbers may now be the "correct" number of birds for the area. If the carrying capacity appears to be higher than the current number of birds in residence then a limiting factor may be involved.

Third: Consider long-term objectives and short-term objectives. Habitat changes are often extremely important in correcting a sage grouse population problem, but these changes generally take a long time (decades rather than years) to show results. However, the quicker the habitat changes are initiated the sooner the result will be seen, so timely action is needed on long term as well as short term projects. Predator control is a short-term action, both in effect and result. Wildlife Damage Management (WDM) activities can result in relatively quick results, but are likely to have a short duration of affect. WDM activities, when properly targeted and monitored, can keep the existing population viable for the period of time needed to realize the effects of long term approaches to rectifying the problem (i.e. habitat enhancement projects).

1. Assess Sage Grouse Populations
 - a. Define the sage grouse population
 - i. Are all leks known? Is it likely more exist than are currently known?
 - ii. Are nesting areas identified?
 - iii. Has a population estimate been established?



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- iv. Has a monitoring strategy been established?
- b. Define stress factors on sage grouse population.
 - i. Are there human-caused factors affecting an area?
 - 1. Grazing
 - a. Wild horse/burro numbers
 - b. Livestock: type, number, when and how long? Is this a change?
 - 2. Off-road vehicle recreation
 - 3. Hunting/trapping
 - a. Sage Grouse?
 - b. Upland Game Birds?
 - c. Other
 - 4. Other factors to consider
 - a. Urban expansion/development
 - b. Mining
 - c. Energy development
 - d. Invasive plant/noxious weed expansion
 - ii. Are there natural factors affecting the population in a given area?
 - 1. Climate
 - 2. Seral stage of plant community
 - 3. Stochastic events such as large wild fire
 - 4. Disease (West Nile Virus)
- c. What is the sage grouse's population trend?



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- i. Is the population trend up, down or holding steady?
 - ii. Is the population trend what was anticipated?
 - iii. Is there any obvious reason for the change in trend?
 - iv. What is the male/female ratio? What is acceptable?
 - v. What is the chick/hen ratio? What is acceptable?
- d. Is the population producing adequate numbers of chicks?
- i. May be determined through harvest if population is currently being hunted.
 - ii. If populations are not hunted, determining chicks per hen requires more intensive efforts (i.e. brood survey routes).
- e. Determine at what life stage losses are occurring.
- i. Adults
 - 1. Leks sites: Is there evidence of predation/harassment?
 - 2. Nesting sites: Is there evidence of predation/disruption?
 - ii. Egg:
 - 1. Are there destroyed or disrupted nests?
 - 2. Is there evidence of successful nests?
 - 3. Are there predators on site?
 - iii. Chicks:
 - 1. Are chicks leaving the nest? Are predators on site?
 - 2. Does fall count show chick production?
 - iv. Juveniles:
 - 1. Are juveniles being lost to predators? Are predators on site?



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2. Determine what predator or predators may be causing impacts
 - a. Lek area/strutting period
 - i. Evidence of damage or presence? Plentiful or just present?
 1. Predation or harassment?
 - b. Nesting area/nesting season (egg)
 - i. Evidence of damage or presence? Plentiful or just present?
 1. Predation or harassment?
 - c. Brood rearing area/brooding season (juveniles)
 - i. Evidence of damage or presence? Plentiful or just present?
 1. Predation or harassment?
3. Determine expertise and management authority for identified predator species
 - a. Avian Predators
 - i. Is the predator a protected species? Who has management authority (Federal or State)?
 - ii. Is lethal take needed or will non-lethal methods suffice?
 - iii. Are there viable control methodologies available? Is there expertise available?
 - b. Mammalian Predators
 - i. Is the predator a protected species? Who has management authority (Federal or State)?
 - ii. Is lethal take needed or will non-lethal methods suffice?
 - iii. Are there viable control methodologies available? Is there expertise available?
 - c. Other Predator types



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- i. Is the predator a protected species? Who has management authority (Federal or State)?
 - ii. Is lethal take needed or will non-lethal methods suffice?
 - iii. Are there viable control methodologies available? Is there expertise available?
4. Land Management Authority
 - a. Identify land management status (BLM, USFS, Private, Other):
 - i. Will land managers cooperate with control projects?
5. Determine availability of funding for control options
6. Develop a treatment regime
 - a. Determine/set parameters of WDM project area (where damage is occurring)
 - b. Determine/set parameters of WDM project time (when resource is vulnerable)
 - c. Establish species to be targeted and methods/techniques which are acceptable
 - d. Determine what constitutes a "corrected" situation (when does WDM project end)
7. Establish WDM Monitoring Regimes
 - a. Pre-treatment monitoring of predator numbers (frequency, number & type).
 - b. Treatment monitoring of predator numbers (frequency, number & type).
 - c. Post-treatment monitoring of predator numbers (frequency, number & type).
8. Establish Sage Grouse Monitoring Regimes
 - a. Monitor sage grouse population trends to determine effectiveness of WDM practices.



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Discussion

Throughout the implementation of this stepwise process it is important to identify the entities that are responsible and/or can assist with carrying out a predator control project. The Nevada Department of Wildlife (NDOW) has management authority over sage grouse populations in Nevada. If a Local Area Conservation Group (LACP) has identified predators as a problem, then the NDOW will work with the (LACP) to determine if action is necessary. If there is reasonable evidence to suggest that predator control would offer sage grouse added protection in a specific area, then the NDOW will approach USDA Wildlife Services or the appropriate management agency to assist. Wildlife Services can assist with most problems involving predators except feral animals such as dogs, cats and even pigs. Problems involving feral dogs and cats are handled by the appropriate county agencies. These animals are mainly associated with urbanized areas; however, there may be real impacts to sage grouse from these animals.

In a sense, humans can also be considered predators because of hunting and in some cases, poaching. Most hunting seasons in Nevada are now structured to inflict the least amount of impact as possible with low bag limits and season dates that coincide with other species' seasons, distributing hunting pressure. Hunting seasons have been closed in several Nevada counties that traditionally had hunting seasons. These seasons were closed because it was estimated that the breeding population of sage grouse males was less than 300 individuals. In some areas such as the Sheldon National Wildlife Refuge, sage grouse hunting is limited to a special sage grouse season in which the hunter must enter a lottery to acquire a permit. Through the local planning process, if a population is considered to be at risk from additive mortality due to hunting, recommendations should be made within the plan that hunting seasons need to be structured differently or closed.

In 2001, The Nevada State Legislature mandated that the Nevada Department of Wildlife initiate a predator management program. A predator management plan has been written and is available by contacting the NDOW. In addition, USDA Wildlife Services also has a predator management plan available.

It is important to realize that predator control project results may not fully be realized for several years. Saving one female grouse today could result in additional benefits in the future. Sage grouse tend to be a relatively long lived bird species and if a hen is successful in raising a brood for consecutive years, then that extended benefit should be accounted for.



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Predators can pose a real threat to sage grouse populations in some areas under some conditions. Imbalances in ecosystems can favor predator species over sage grouse. This imbalance may legitimately need to be offset with a carefully designed and controlled predator management program to provide sage grouse with improved survivorship and recruitment. Predator control should generally be thought of as a carefully designed application of specific measures, applied to a specific population, to provide a specific benefit for a limited period of time. It should not be thought of as a long-term program. However, if it has been determined through use of the guidance provided in this leaflet that sage grouse are: 1) being limited by predators, and 2) that their populations could benefit by controlling predators, then it is appropriate to implement a predator control program.

