



FEEDING THE DEER *WHAT ARE THE FACTS?*

A Report Prepared by Your
Nevada Department of Wildlife



The Practice of Supplemental Feeding - An Overview

Supplemental feeding of deer is an activity that is commonly favored by the general public during unusually heavy winters when observations of stressed deer become frequent. Public support for feeding programs emerges as empathy for the animals' plight transforms into a sincere concern for their survival. Public advocacy for wildlife is a valuable attribute; unfortunately the winter feeding of mule deer is a very complex issue fraught with numerous problems that are often misunderstood or even overlooked in deference to the passion to do good. Realistically, a number of factors must be taken into account before supplemental feeding is chosen as a course of action. This report has been prepared to help explain the management implications of supplemental feeding.

Public Attitudes

There are many good motives behind the desire to invoke a supplemental feeding program for mule deer. These include, but are not limited to the following:

- ✓ People may believe deer cannot survive winter without supplemental food.
- ✓ People may believe that feeding deer in winter will ensure retention of a population that can continue to support hunting.
- ✓ People in urban or suburban locales may believe that placing feed away from home sites may divert damages caused to ornamental vegetation and landscaping by displaced deer.
- ✓ People may simply enjoy the unique opportunity to observe deer at close range.

The Department of Wildlife acknowledges and appreciates that individuals who advocate feeding deer are well intentioned. Their compassion is founded on the basic human desire to moderate suffering. Department personnel have committed their careers to attending to the welfare of the state's wild creatures and the habitat that they occupy. By extension, we harbor the same sympathies. However, as the state agency responsible for the stewardship of Nevada's wildlife resources, we are compelled to notify people of the predicament that winter-feeding may bring about for deer. We also intend for this report to instill in people a greater appreciation and advocacy for the species and its habitat.



The Facts About Deer Biology

Migration

Fact: In early winter, deer normally migrate to winter habitat, in some cases more than 100 miles from the place they had been living in from May to October.

This pattern of behavior has evolved over many generations and represents a strategy for ensured survival. Deer occupy specific types of terrain and vegetation that provide different advantages at different times of the year. *Summer range* typically is at the cooler, higher elevation where denser vegetation, often associated with streams and meadows, provides cover for does and their fawns. Vegetation found in the summer range may occur in abundance and some of the plants yield nutrients important for milk production, creation of fat reserves and other metabolic products necessary for their survival. As winter advances, these elevations receive considerable snow that hinders the animals' search for food. Therefore, deer move to lower elevations, which in Nevada, is generally more open and brush covered. Some brush species, like sage and bitterbrush are highly sought-after by deer in the winter. This seasonally occupied terrain is called *winter range*.

But in some years, snow levels can be deep and cold temperatures can linger on winter range and thus deer have difficulty finding forage and cover. In these circumstances deer seek out what biologists call **critical winter range**. Think of this as a last resort place to go, where deer can still find food and shelter from the elements. When we build homes and roads and schools and other things that society values upon this critical winter range, we reduce deer's *natural* chances for survival by excluding them from the food and cover that they must have. We also expose them to unnatural dangers that their species has not completely adapted to.

“Well then shouldn't we do something about that?” *Of course we should – as an intelligent life form, we have the capacity to use reason to affect life around us. But feeding deer is not really the answer. Please read on.....*

Deer Physiology

Fact: Deer are called ruminants, which mean they have complex, multi-chambered digestive systems designed to convert tough vegetation into energy.

Deer are highly selective foragers due in part to their specialized digestive system. A chamber in their digestive tract called the rumen contains populations of commensal (exist to benefit each other) microorganisms that produce enzymes capable of breaking down the tough exterior cellulose enveloping the nutrients within plant tissue. Specific types of commensals are required to aid in the digestion of specific foods. The type of plants deer utilize on winter range is highly limited and very specific. If deer are forced into a sudden change in diet, it takes time, sometimes weeks, for



these rumen organisms to adapt. An absence of the appropriate microorganisms can cause toxins such as ammonia to accumulate. For deer that are malnourished to begin with, and then become stressed through their exposure to things that they would otherwise avoid – like humans and free-roaming dogs and vehicles – the wait for this adjustment is too long, often fatally long. Truly successful supplemental feeding programs must be initiated when deer are not yet stressed and the dietary transition can occur gradually. Unfortunately, only when circumstances become dire does their plight captivate our attention.

“But I see deer actually eat hay and other foods set out for them.” *Deer will eat other foods, but as explained above, they may not be able to adjust to the items that they consume. Please read on.....*

Hay of any kind, kitchen scraps or cabbage and lettuce trimmings do not provide enough nutrition for deer. Depending upon their condition and level of stress, deer may derive sustenance from apples, oats, or acorns. However, the best supplemental food is a complete horse, dairy, or deer formulation in pellet form. It contains about 14% protein and provides sufficient energy and fiber to support normal digestive function in most deer.

It is difficult to keep grains dry outdoors. Special feeders, which protect feed from rain and snow, may help, but none are foolproof. Moisture promotes fungal growth. Hence, much feed is typically wasted. There are some molds deer may not detect; consequently, they may ingest toxins that can be fatal. Sometimes supplement-fed deer may die from eating too much feed at one time. Deer that gorge themselves could cause their systems react badly – their digestive tract may be affected by “compaction”. Physiological reaction to this condition could consume the very energy they are trying to gain; in severe cases it could lead to death. Losses of this nature have been observed at winter deer feeding sites. Mature bucks seem to be most prone to overeating high-energy supplemental foods.

“OK, so there is food on the market that one can obtain for them?” *There is, but just feeding the deer can create problems that can harm the population. Please read on.....*



What Problems Does Deer Feeding Cause?

Deer Behavior

Fact: Deer have evolved a number of simple and complex behaviors that are integral to their coexistence and their survival.

Spatial Relationships: Mule deer are herd animals – herding is a strategy some animals use to gain advantage in detecting predators and to establish a breeding hierarchy. Under normal circumstances you can witness deer putting a little space between each other while they are foraging. Not only does spacing put individuals at ease with each other it broadens the visual capabilities of the herd itself. But when stressed and forced to crowd, deer will act aggressively towards one another. Stronger, often dominant individuals will gain access to the food set out for them. Frequently, more aggressive members of the herd deny to those deer most vulnerable to starvation access to supplemental feed.

How Crowding Can Foster Disease: When deer become concentrated and their movements are relatively confined, their vulnerability to disease increases. Deer concentrations equivalent to 350 deer per square mile at some feeding sites have been documented. This level of crowding produces ideal conditions for outbreaks of infectious diseases. Examples include bovine tuberculosis, chronic wasting disease and proliferation of various parasites. These examples and many others pose a serious threat to deer populations and livestock in the affected area.

How Crowding Affects Their Natural Behavior Toward Predators: Supplemental feeding may actually promote an unnatural increase in predation. Concentrated supplemental food sources cause deer to alter their normal distribution patterns – deer usually cover lots of ground to find food. Concentrated deer, particularly those surrounded by deep snow, have to use a limited number of escape trails, since they often bed near the feeding area. It is not unusual to observe predation on deer within sight of supplemental feeding stations. Predators attracted to these situations include mountain lions, bobcats and coyotes.

In urban and suburban situations, when people want to feed the deer they typically do so within close proximity to homes or roads – the sites have to also be relatively easy for humans to get to. In these locations, deer are victimized by free-roaming dogs, which at the very least can cause additional stress by chasing and at the most cause death should they catch a deer. People are disinclined to believe their beloved pet could be capable of such behavior but these instincts are strong and many a biologist and warden have witnessed a collared, pedigreed pet acting like their wild cousins. When snow is deep and crusted, the canines have the clear advantage.



Other Losses: Additionally, placing food near roadsides creates an attraction that could expose deer to vehicle collisions. Deer-vehicle collisions are very common where our roads and highways intersect their migration corridors. But when the snow level is deep and they have a feeding site to go to next to a road, the situation becomes exacerbated, sometimes intolerably so when a collision results in human death.

How Consistent Supplemental Feeding Can Modify Normal Distribution Patterns:

Annual supplemental feeding can alter normal deer behavior. Deer don't have the capacity to reason – they cannot discern the difference between natural forage and that placed by the hand of man. They simply become conditioned to finding forage at certain locations and in so doing, may alter normal seasonal distribution patterns. Over time they can become reliant on artificial food sources and become less familiar with wild food distribution and natural foraging activities. Deer "short-stopped" by supplemental feeding operations are often more vulnerable to malnutrition, because they do not have access to the right type and amount of foods found in traditional wintering habitat.

One other thing: Deer are naturally wary of human beings. But deer behavior is dynamic and has undergone many adjustments as human interaction has increased from the time a small number of aboriginal humans pursued them for food to the present time where urban expansion has pushed them out of their former habitat. We don't normally prey upon deer and our methods of killing them with our hunting implements are very dissimilar to the trauma of a predator attack. Accordingly, deer that come to associate the presence of forage with the presence of humans could easily discard their natural instincts. This is not a good thing for individuals, herds or even populations.

“So if food is spread out will this mitigate these concerns?” *It will, but unless it is done right, it might cause other problems. Please read on.....*

Public Endangerment

Fact: The vast majority of deer do not exist in proximity to humans. Mule deer and modern humans have not co-evolved therefore conflicts between the two are inevitable.

We have already talked about how the attracting of deer near roadsides can result in deer-vehicle collisions. This is a concern anywhere feeding sites occur but is particularly problematic near cities. We also briefly touched on the fact that deer attracted to a feeding site may also find landscape vegetation attractive – and in the doing result in considerable cost to the afflicted homeowner.

When large carnivores like mountain lions exist near human habitat, the likelihood for a person to actually witness the act of predation increases. The residue of a lion or coyote kill is often unmistakable and has literally occurred in peoples' yards along the Carson Front. For many people, this experience is traumatizing and could provoke them to demand action from the Department or other agencies. These



predators are opportunistic and once they have established a territory based around deer feeding sites they are inclined to view pets or livestock as supplemental prey. Moreover, the possibility of an attack on humans magnifies. This can have tragic consequences.

Some deer attracted to a feeding site will die at or near the site, creating an attractant for scavenging animals. At the least this can be considered an annoyance and at the most a threat as described in the preceding paragraph. Sanitation concerns have to be assumed as well for the site and smell of decomposing deer is not a pleasant experience for most people.

And Back to Public Attitudes: People's attitudes toward deer change after initiation of supplemental feeding projects. That is the reason this report has been prepared. Those who feed deer often become protective of "their" deer. They tend to lose sight of the fact that deer are wild animals managed in trust for all of Nevada's citizens. Concentrating deer at feeding sites treats deer more like livestock than wildlife. Likewise, attitudes toward the predators attracted by concentrations of deer often become overstated – these animals are simply following their instincts and demand for their removal is a request to further disrupt the natural order.

“Well, the Department should still do something about the situation.”

*Some wildlife management agencies do take action to supplement the winter diet of deer. Considerable analysis has been committed to this subject, and the prevailing opinion from the scientific community is that the practice has **little or no long-term benefit for deer** (and we are referring to all species of deer). For the Nevada Department of Wildlife, several facts are taken into account in our decision not to embark on a feeding program and our recommendation to the public not to feed deer. These have been previously described but there are other considerations as well. Please, read on.....*



More Facts About Deer Biology

Carrying Capacity

Fact: Living things exist in numbers or at population levels that are limited by the ability of their surrounding habitat to support them. This is called carrying capacity.

Like every other living thing, deer survival is factored on the ability to obtain three basic needs: food, water and cover. Lack of any one item will lead toward an adjustment in the population. The Department and its partners expend considerable effort and funding to protect and enhance these needs. We work with land management agencies to protect high elevation riparian habitats to provide screening cover for fawns and good forage for their mothers. We place water developments in areas where water is either naturally lacking or compromised due to human intervention. We work particularly hard to guard against degradation of winter range:

- ✓ We rehabilitate burned lands by planting seeds and seedlings that will grow into the former vegetative component that provided food and cover.
- ✓ We regulate the time of the year when hunters can pursue deer so that disturbance during particularly stressful times is minimized.
- ✓ We appeal to decision-makers to consider the needs of deer and other wildlife before allowing projects that convert important deer habitat for our own uses.

It is quite easy to understand that when severe winters occur, the capacity of the winter range to support the population is greatly diminished. Even if we have made every effort to improve winter range forage and cover, sometimes snow depth and lingering cold are just too much for the animals. The natural reaction under these circumstances is a reduction in numbers – where, as the old adage goes, the strong survive and the weak perish.

In many circumstances throughout the west, mule deer habitat has been so greatly diminished by urban expansion that winter range carrying capacity is a fraction of its former extent. This is often a subtle process unknown to the people that occupy the land. Furthermore, the impact upon the population remains hidden during normal winters when deer live on the slopes above our cities. It is only when severe winters strike that the people witness the starvation, and the vehicle collisions and the predation in their front yards and the chewed up hedges – it is then that most people come to understand the situation. Unfortunately, the death of the deer is a *natural* reaction to an *unnatural* circumstance (the conversion of brush lands into concrete, stucco and asphalt along the urban interface or into monotypic stands of cheatgrass in our wild open spaces).

Biologists understand this ecological principle well. It doesn't mean that they are unsympathetic, and it doesn't mean they are complacent about the decisions that are



made that negatively affect these and other wildlife. The decision not to feed the deer should not be interpreted by others as an unwillingness by the Department to support these creatures in a time of great need.

“Even though these arguments against feeding make sense, we are still capable of saving them, aren’t we?” *One cannot ignore the natural considerations surrounding this issue. However, sometimes one needs to consider the economic costs. Please read on.....*



What are the Economic Considerations?

Expense

Fact: Supplemental feeding is expensive.

The most promising winter food supplements for mule deer (a highly specialized formula), is recommended to be fed at a rate of 3 to 3.5 lbs. per deer per day. This formula can be produced at a cost of \$270 per ton. The food production costs for 1,000 deer are approximately \$500 a day. Food delivery costs will vary depending on the nearest location of a credible food producer. However, the most significant financial costs will likely be associated with the distribution of the food (away from people) and the continued maintenance of the food supplies at the selected feeding stations (before the snow flies to the time that adequate spring forage emerges). In order to feed 1000 deer for a period of just two weeks, costs for man-time, fuel, food production and delivery may be between \$15,000 and \$20,000. Once a feeding program is begun, it should not be terminated until early spring. Ending a feeding operation prematurely, or providing inadequate amounts of feed, will lead to nutritional problems for deer that have become dependent on supplemental feed. Attracting deer to feeding sites, while failing to provide adequate amounts of supplemental food can actually promote malnutrition.

The logistics of feeding may also complicate the potential for success. Nevada has over 100,000 mule deer wintering on well over 50 recognized winter ranges. The logistics of feeding on one winter range are significant. While emotionally appealing to those concerned for the welfare of deer, the logistics of feeding deer on multiple winter ranges rapidly becomes unwieldy and cost prohibitive. Supplemental feeding of mule deer associated with large urban areas can be especially problematic. In this situation critical deer winter range has been fragmented or entirely lost due to development. Locating and feeding small groups of deer in an urban situation is difficult at best.

The Department's budget for all management programs for deer is considerable. The program derives revenue from sportsmen through the sale of hunting licenses and tags and from taxes on the equipment that hunters buy. Our partners are federal land management agencies and other agencies and conservation organizations. The latter are comprised of sportsmen that unselfishly provide their time and money toward the enhancement of our natural resources.

Given the facts presented above, the Department and its partners are in agreement that funding devoted to supplemental deer feeding is not well spent. These dollars would have far greater long-term value if applied to other management activities. And they have been. We already spend significant sums on rangeland rehabilitation projects, particularly in areas where wildfire has consumed important winter range. These activities have occurred in remote areas of the state and along the urban interface with the Carson Range. These projects have met with success but long-term



value to the herds won't be realized until these plants reach maturity and reproduce and expand naturally. In the interim the deer are at the mercy of the climate.

“So what can I do to help the deer?” Thanks for reading to this point. We appreciate it and we hope we have helped you understand the problem better. So for one last time, please read on.....



Promoting a Greater Public Advocacy

Fact: Human beings are the one animal that can purposefully affect the environment around them to suit their own needs.

It is highly likely that you have read this lengthy report to this point because you have a concern, even a compassion for the predicament facing mule deer in Nevada. As stated earlier, the Department appreciates the fact that the public has empathy for these and other animals. The Department also comprehends that the public's desire to intervene on the behalf of wildlife is the cornerstone of our duties. For if we were to not care about our natural resources, our actions might have even greater impact upon the natural order.

In some instances the plight of deer in the face of a heavy winter is the inevitable product of a calamitous event like a wildfire. In other instances, deer face starvation as the result of public policy or decision. In either case, people who might advocate for winter feeding to address an immediate concern are encouraged to devote their attention to actions that could yield long-term benefits for deer and other wildlife. To this end, the Department offers the following suggestions:

- 1. Join or Contribute to a Conservation Organization.** These groups raise funds for wildlife habitat enhancement and education projects and volunteer their services to accomplish work that benefits wildlife. There are many groups of local origin along with others that are active nationally, continentally and worldwide. Go to our website and click on Hunt, then Hunter Resources, then the *Conservation, Hunting and Wildlife Organizations* link.
- 2. Contact Land Management Agencies.** Nevada is comprised of a large percentage of public land. These lands are mostly administered by either the Bureau of Land Management or the United States Forest Service. You can let them know how you feel about the management of your resources. They are always pleased to receive input into their decision-making processes.
- 3. Get Involved in Local Planning.** If you share the Department's concern about the elimination of winter range for human use, then contact your county or city offices and request to be notified of future proposals that might impact deer habitat. You will be invited to testify at public hearings before the decision-makers.
- 4. Buy a Hunting License.** Sounds peculiar to those readers that aren't hunters or are opposed to hunting. The dollars spent on licenses will be matched by sportsmen's dollars pooled into an entitlement fund called *Federal Aid in Wildlife Restoration*. These dollars will be spent on wildlife management activities including the enhancement of deer habitat.



Conclusion

There are better approaches than supplemental feeding to ensure the health and survival of deer during heavy winters. The key is to maintain sufficient amounts of high-quality wintering habitat. Rather than expending limited Department resources on quick fixes, such as emergency feeding programs, we will achieve better long-term benefits by ensuring that deer have access to high-quality wintering habitat. This, in the long run, will mitigate the effects of severe winters, reduce deer losses during normal winters, and provide for a more sustainable population of deer to be enjoyed by all of Nevada's people.

