Natural Resources and Environmental Issues

Volume 10 *Wolves in Utah* Article 7

2002

Potential strategies for managing Utah's wolf-livestock conflicts

T. Adam Switalski
Department of Fisheries and Wildlife, Utah State University, Logan

Trey Simmons
Department of Fisheries and Wildlife, Utah State University, Logan

Shiree L. Duncan
Department of Forest Resources, Utah State University, Logan

Andreas S. Chavez
Department of Fisheries and Wildlife, Utah State University, Logan

Robert H. Schmidt
Department of Environment and Society, Utah State University, Logan

6. Potential Strategies for Managing Utah's Wolf-Livestock Conflicts

6.1. Overview

The United States Fish and Wildlife Service (USFWS) classifies gray wolf populations as either endangered, threatened, or nonessential/experimental. Therefore, if wolves enter Utah under their current legal classification, the USFWS will be the primary agency responsible for wolf management (see Section 2). For the last 30 years, this agency has been responsible for managing recovering wolf populations in other parts of the United States, both in the Great Lakes and the Rockies. Unfortunately, wolves have come into conflict with livestock in all of their recovery areas. As a result, the USFWS has taken various measures to minimize these conflicts, while maintaining their objectives to continue to recover wolf populations.

Some of the measures the USFWS has implemented in the Northern Rockies Recovery Area for reducing wolf-livestock conflicts include (1) drafting the Interim Wolf Control Plan (IWCP) (USFWS, 1988) to serve as a guideline for controlling problem wolves in the northern Rockies; (2) classifying wolves in the Greater Yellowstone and Idaho Recovery Areas as nonessential/experimental populations, which prompts wolf management regulations under separate experimental population rules (Federal Register Vol. 59. No. 224) and allows for more liberal management of problem wolves; and (3) cooperating with the U.S. Department of Agriculture/Animal and Plant Health Inspection Service/Wildlife Services and wolf interest groups (Defenders of Wildlife and Turner Endangered Species Fund) for better wolf depredation management.

The cornerstone of any Utah wolf management plan will clearly be developing strategies for minimizing wolf-livestock conflicts, and instituting mechanisms for dealing with those that do occur. Niemeyer et al. (1994) advocated the protection of rural interests, promotion of public tolerance, and responsible management and protection for wolves as key elements in a wolf management program. Responsible wolf management ensures that the resolution of wolf-livestock conflicts meets the interests of livestock producers, natural resource managers, and the general public. The number of states that have dealt with wolf-livestock conflicts has increased dramatically since wolves were put on the endangered species list in the early 1970s. Originally, Minnesota was the only state that had to address wolf-livestock conflicts; this has now expanded to include Wisconsin, Michigan, Montana, Idaho, Wyoming, Arizona, and New Mexico. We have gleaned information from existing wolf management plans from around the U.S. and from the literature and here offer guidelines for preventing and reacting to wolf-livestock conflicts (e.g., MGWRT, 1997; WWAC, 1999; ID LWOC, 2000; MN DNR, 2001; MT DFWP, 2001). In general, we recommend a two-pronged approach: (1) preventing wolf depredations on livestock and (2) implementing wolf control.

6.2. Preventing Wolf Depredations on Livestock

A number of techniques have been used to minimize livestock depredation; however, they vary widely in effectiveness, selectivity, and humaneness (Cluff and Murray, 1995). Even effective techniques are not applicable in every situation, and therefore effective

predator deterrence requires an integrated approach (Fritts et al., 1992). Some of these methods have only been studied for their effectiveness in deterring predation by coyotes (Wagner, 1988; Cluff and Murray, 1995; and Knowlton et al., 1999), and so their ability to deter wolf predation has not been determined. However, coyotes and wolves share many morphological, behavioral, physiological, and sensory attributes, and therefore the results from studies on coyotes may be applicable for wolves as well, at least in some cases. In addition, various agencies and interest groups are currently testing new techniques, which, although they may prove to be effective, are not reviewed here. With this in mind, the following techniques may minimize wolf depredations on livestock in areas where wolves and livestock may coexist in Utah.

- **Altering livestock husbandry practices.** Adjustments in livestock-rearing practices can be beneficial for the protection of livestock from predators, although their effectiveness varies depending on the size and location of pastures and type of livestock. Preventative methods include:
  - Removing livestock carcasses promptly from grazing lands.
  - Calving or lambing in a confined area (e.g, a fenced pasture), to reduce mother-offspring separation and therefore vulnerability of neonate livestock (Wagner, 1988).
  - Stricter human vigilance or closer proximity (e.g., herding) to livestock herds (Davenport et al., 1973a, 1973b), especially during lambing and calving.
  - Adequate fencing when possible, including antipredator electric fencing (Gates et al., 1978; Linhart et al., 1982; Acorn and Dorrance, 1994), to keep predators out of livestock areas.
  - Synchronized lambing and calving to reduce the period of maximum vulnerability in lambs and calves (Knowlton et al., 1999).
- **Using livestock guarding dogs.** For centuries, some breeds of domestic dogs have been bred specifically for the protection of livestock (e.g., Hungarian Komondor and Great Pyrenees). Although they are known to be helpful in minimizing predation by coyotes, little empirical evidence is available demonstrating that livestock-guarding dogs mitigate wolf depredation in the United States (e.g., Coppinger and Coppinger 1995). However, M. Smith et al. (2000) discuss potential strategies for using livestock-guarding dogs effectively with wolves. For coyotes, livestock-guarding dogs work by being attentive to livestock and fending off intruders (McGrew and Blakesley, 1982), whereas for wolves these dogs may establish territories excluding wolves, or may distract wolves and disrupt their normal predatory sequence (M. Smith et al., 2000). It should be noted that few, if any, guard dogs specifically trained to defend livestock against wolf depredation have been used in the United States. Such training might increase the effectiveness of guard dogs in reducing wolf depredations.
- **Relocating livestock into other grazing lands.** It is possible that in some areas livestock will graze in habitats where the management of wolves will be biologically or politically difficult. Therefore, in these cases, it may be beneficial to move

livestock to other grazing areas where the risk from wolf depredations will be smaller or non-existent, or where wolves can be more easily managed.

- **Relocating wolves into other areas or stocking grazing lands with native ungulates.** It is also possible that in some areas livestock may graze in habitats where they may be the most abundant large prey species for wolves. In these cases, removal of wolves might be the best approach. For example, the USFWS recently relocated Yellowstone's Boulder Mountain wolf pack when they denned near a private grazing operation. On the other hand, if the continuing presence of wolves in such an area is the preferred policy, then stocking with native ungulates might reduce the impacts of wolf depredation on livestock. This was recommended for reducing wolf depredations on livestock in northern Portugal, where native ungulates were at very low densities and livestock production was intensive (Vos, 2000). However, given the limited evidence, it is difficult to determine how effective this approach might be for Utah.

6.3. Implementing Wolf Control

In 1999, the revised Interim Wolf Control Plan (IWCP) defined wolf control as the

> (a) application of aversive conditioning techniques to problem wolves; (b) capturing problem wolves on Federal, state or private lands, radio tagging and releasing them on site; (c) relocating problem wolves to remote areas; (d) placing problem wolves in captivity; or (e) killing problem wolves. (USFWS, 1999, p.4)

In order to minimize depredation events following wolf recolonization in Utah, it is vital that a well-planned wolf control program be ready for pending conflicts between wolves and livestock. The IWCP elucidated this argument very convincingly, not only for the northern U.S. Rocky Mountain region but also for any area that has the potential for wolf-livestock conflicts to occur:

> Application of a practical, responsive management program including control is essential to the recovery effort. Implementation of a control program will enhance the general survival of the wolf by showing that responsible Federal agencies will act quickly to resolve depredation problems. Timely response to depredations will alleviate the perception of Government inaction that often results in landowner frustration, which, in turn, may lead to the indiscriminate killing of wolves. Removal of problem animals does more than stop the depredation. It relieves the pressures or antagonisms directed toward the total population by the landowner(s) incurring the losses or other members of the public. Consequently, the local (wolf) population is in less danger from potential nonselective illegal attempts at damage control. In addition, control actions will focus on control of problem wolves and, in doing so, will resolve wolf/human conflicts through removal of a minimum number of wolves. Based on the low rates of livestock depredation in northwestern Montana and the availability of ungulate biomass, the number of wolves killed under this wolf control strategy is not likely to impede overall recovery efforts though temporary reductions in local areas may occasionally occur, as in 1997. The Service's biological opinion on the draft Control Plan,

> August 5, 1988, concluded that the proposed action is not likely to jeopardize the continued existence of the wolf. The biological opinion on the modified Control Plan, July 22, 1999, reached the same conclusion. By enhancing the survival chances of those non-offending wolves and removing those wolves that do kill livestock, the control program will contribute to the ultimate recovery of the wolf in . . . the Rocky Mountains. (USFWS, 1999, p.6)

Until the USFWS decides that another agency is responsible, we assume that they will be the primary agency for wolf management in Utah. Furthermore, Wildlife Services has provided wolf control specialists for other wolf recovery areas. Therefore, for the purpose of these recommendations we have assumed that they will continue these services. We recommend a two-step approach for wolf control actions. These recommendations are similar to those in the IWCP. First, it is necessary to identify whether or not wolves are responsible for a given depredation event. If wolves are found to not be responsible, then no wolf control action should take place. If wolf involvement is verified, then conducting wolf control actions will be necessary.

Verification of Wolf Involvement

- Efforts should be directed toward locating, capturing, radio-collaring, and monitoring of wolves in Utah. Intensive monitoring of radio-collared wolves would assist wolf control personnel in anticipating conflicts and in locating depredating wolves. Telemetry information would inform agency personnel of any collared wolves that are in close proximity to a site where livestock were damaged or killed.

- Trained specialists from appropriate agencies should be responsible for prompt responsiveness (within 48 hours) to reports of wolf/livestock or wolf/pet conflicts.

- To ensure proper verification, wounded livestock or remains of a livestock carcass should be present with clear evidence that wolves were responsible for the damage.

- Before initiating wolf control efforts, there should be reason to believe that additional losses would occur in the absence of wolf control.

- Before initiating wolf control efforts, animal husbandry practices should be verified as being reasonably responsible (“best management practices”) for reducing losses to wolves.

Conducting Wolf Control

- It is difficult to offer recommendations for wolf control without clear population objectives for wolves in Utah. Once population objectives have been defined, then recommendations for control should mesh with those management objectives.

- Any non-lethal control, trapping, relocating, or killing of wolves should be conducted by authorized personnel from either the USFWS, Wildlife Services, tribes, and/or other cooperating Utah, tribal, and federal agencies.

- In the northern Rockies, the IWCP recommends that control efforts should be selective for individual problem wolves only, as opposed to local populations. Efforts are restricted to within one mile of the depredation site or to identified activity centers where the probability of capturing the problem animal(s) is maximized within a 10-day period. If depredations reoccur in the area within three months, then control efforts are conducted for up to 21 days. Although it is not possible to predict how effective these particular parameters may be for Utah, we recommend as a first step that Utah adopt similar guidelines for wolf control actions.

- When efforts to use non-lethal techniques fail or are not desirable and depredations continue, lethal control should be used according to USFWS guidelines.

- Areas in which problem wolves are to be released or relocated should be decided by the USFWS with consent from the proper land management agencies or landowners. Relocated wolves should be radio-collared, permanently marked, and monitored.

- There should be some flexibility for non-agency personnel (e.g., individual ranchers) to control wolves if they are frequenting livestock or domestic animal areas and represent a threat as determined by wolf control specialists. For example, permits for the lethal take of depredating wolves could be issued to livestock producers when USFWS and Wildlife Services have not adequately prevented further depredations. Wolf control specialists should evaluate these on a case-by-case basis.

6.3.1. Wolf Control Techniques

Wolf control techniques fit into one of two categories: non-lethal or lethal. Below we list various techniques that have been used by other wolf control specialists in North America and that should be appropriate for Utah too.

Non-lethal

- **Aversive agents.** Aversive agents induce a physiological illness in a predator after attacking livestock, producing a learned avoidance by the predator against future attacks (Wagner, 1988). For example, researchers have conducted captive and field studies using taste aversion with lithium chloride (LiCl), a substance that induces vomiting once consumed. Results were mixed and difficult to apply in a field setting (Gustavson et al., 1982; Conover et al., 1977; Burns et al., 1984). In

2001, there were no aversive agents registered by the Environmental Protection Agency for mammalian predators.

- **Light and sound repellents.** Repellents are different from aversive agents, in that they don't require a learned avoidance, but rather rely on a novel disturbance that irritates specific sensory systems to repel predators away from livestock. Strobe lights, propane exploders, sirens, and recorded sounds all have been tested with coyotes and recently with wolves. Light and sound repellents work by discharging a novel frightening-stimulus (Linhart et al., 1984), scaring away intruding wolves. Results have been ambiguous when tested on wolves in Minnesota (Fritts, 1982). Further research on these devices is being conducted in Montana by the USFWS, in cooperation with Wildlife Services and the Turner Endangered Species Fund. These techniques have been shown to be effective in the short term, but habituation may reduce their effectiveness in the long term.
- **Other techniques.** Relocation of problem wolves may also be a non-lethal control technique (see Section 6.2). Additionally, aversive conditioning is currently being tested by the Turner Endangered Species Fund. Furthermore, many ranchers in the northern Rockies are authorized to use non-lethal munitions, including "bean bags," rubber bullets, and "cracker" shells, to harass potentially depredating wolves.

Lethal

- **Traps and snares.** Foothold traps and foot snares do not kill animals and require a specialist to kill or release the animal once it has been caught. Neck snares can be set to kill an animal by strangulation. They can also be set to capture an animal by placing a stop on the snare that restricts closure of the cable. Trap tranquilizer devices have been developed to reduce foot injuries to wolves captured in foothold traps (Sahr and Knowlton, 2000).
- **Aerial gunning.** Since wolves are difficult to locate on the ground, aerial shooting has been used occasionally as a selective method for removing livestock-killing predators (Connolly and O'Gara, 1988).

6.4. Conclusion

When wolves recolonize Utah, some conflict with livestock producers is inevitable. Although we do not expect to see significant wolf depredations on livestock in the near future, a proactive, integrated approach to reducing any conflicts will be necessary if wolves are to be accepted, not only by livestock producers but also by members of the general public who may share their antipathy. None of the techniques we discussed has been shown to be 100% effective. Instead, each should be thought of as "one tool in the toolbox." A concerted effort to evaluate how and when to apply various methods should facilitate the development of a successful, cost-effective program to minimize livestock losses. On the other hand, when depredations inevitably occur, it will be just as important to have in place an effective program for controlling problem wolves. Such a program should include a full range of management options that will be implemented in a timely

fashion, and involve a concerted effort to involve livestock producers in each step of the process.

7. Education and Public Involvement

7.1. Wolf Education Programs

The goals of a Utah wolf education program should be to provide science-based, factual information about wolf ecology and management. Wolf management issues are likely to be highly publicized and volatile, and it is important that the information being disseminated is accurate and consistent with the goals of the agencies involved. Educational programs should be multifaceted and address all of the relevant issues. We recommend a program that educates the public about wolf-related issues and concerns in Utah in order to compliment viewpoints based on common myths (both pro and con), as well as on personal opinions, experiences, and biases. If such a program is implemented, people should become more knowledgeable and objective about wolves and wolf management in Utah.

We recognize that particular audiences have unique educational needs. For example:

- Campers should know what to do to prevent negative interactions with wolves and how to avoid attracting wolves to their campsites.
- Hikers may want to be able to identify wolf tracks and howls.
- Hunters will need to know what they can do when they encounter a wolf.
- Ranchers will need to know different preventative measures that they could take in order to reduce livestock predation.
- The Utah Division of Wildlife Resources should know the attitudes of Utahns toward wolves.

Education programs should be a collaborative effort between agencies, nonprofit organizations, and other stakeholders. One of the most important aspects of an education program that is targeted toward a controversial topic is that people agree on the information being taught. An effective education program should consider all sides of the issues involved and include information from the different stakeholders that participate.

Although there are many unique educational needs, there are also educational themes that pertain to many audiences, including:

- **General wolf ecology.** In order to discuss wolf management we believe stakeholders should have fundamental knowledge of wolf foraging habits, social structure, and behavior, as well as their role in Utah’s ecosystems.