Beyond Hunting: Increasing Options for Effective Wildlife Management in the National Park System

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In natural systems, animal abundance is determined through a complex relationship of environmental factors on natality and mortality rates of animals. Therefore, natural populations normally undergo fluctuations. Wildlife managers often attempt to blunt fluctuations in populations to avoid negative impacts of extremes. So, for example, hunting is employed with the dual goal of achieving sustained yield for human recreation and consumption, and a more generally stable population. And democracy of hunting is one of the cornerstones of the North American model of wildlife conservation.

However, hunting is not implemented in many units of the national park system, so it is obvious that the situation in these units will be different from surrounding areas. Specifically, we can expect the fluctuations to be greater. These wide fluctuations can lead to concern because of side effects that occur. Too many deer lead to traffic accidents, concern over Lyme disease transmission, and impacts on ornamental plants and to the forest understory.

The National Park Service (NPS) goal is to maintain natural processes (NPS *Management Policies 2006,* 4.4.2: "Whenever possible, natural processes will be relied upon to maintain native plant and animal species and influence natural fluctuations in populations of these species"). As mentioned, animal populations can be expected to fluctuate under natural conditions. Some would argue that animal overabundance in parks is just part of this natural fluctuation, and this may be the case in some situations. However, if a system is disturbed, flux may be greater—for example, when predators are removed and populations of prey are released from "top-down" control. So I would argue that fluctuations are currently greater than what was seen historically because of the significant anthropogenic influences on these systems.

Anthropogenic changes, such as loss of habitat and increase in edge due to human development, removal of predators, and landscape modifications that serve as attractants to congregate animals, must play a crucial role in these fluctuations. With the possible exception of parks in Alaska and in the Greater Yellowstone Area, it is difficult to argue that these anthropogenic influences do not affect animal abundance.

Thus, an issue arises: Overabundant wildlife populations need to be managed to minimize negative impacts and return systems to more natural function. Unfortunately, the means to get to this more natural end may not be natural.

In this issue, I am assuming that parks have determined that management is necessary due to one of the factors listed in NPS *Management Policies 2006,* that goals for measuring success (e.g., reduction of negative impacts) have been identified, and that it is the method of animal control that is being discussed—not just that managers have "action bias." Also, from here on we'll be focusing on deer and elk populations.

So once a park has determined that there need to be fewer deer or elk in an area, what are the options to achieve that objective so goals of understory recovery, biodiversity of native species, restoring a cultural snapshot, etc., can be attained? NPS units generally start by looking to policy. NPS *Management Policies 2006* address when actions to remove native animals can be taken in section 4.4.2.1: "Where visitor use or other human activities cannot be modified or curtailed, the Service may directly reduce the animal population by using several animal population management techniques, either separately or together. These techniques include relocation, public hunting on lands outside a park or where legislatively authorized within a park, habitat management, predator restoration, reproductive intervention, and destruction of animals by NPS personnel or their authorized agents. . . ."

A list of actions that have been proposed as alternatives to manage deer or elk to achieve "natural conditions" include one or a combination of:

- No action—not the National Environmental Policy Act (NEPA) term that means "existing management continued," but truly, no management;
- Passive management–monitoring of the system, but no deliberate manipulation to alter it;
- Lethal removal by agency personnel or authorized agent, either in the field or via round-up;
- Fencing;
- Redistribution of deer or elk—to reduce herbivory on an area or to make animals more accessible to hunters outside the park;
- Translocation;
- Fertility control, either in the field or via round-up;
- Intensively managed wolves;
- Wolf restoration;
- Hunting—used here synonymously with "harvest"; and
- Use of public marksmen.

With the exception of wolf reintroduction, none of these could be considered natural. While on the surface, the "no action" approach would appear to be most natural, conditions are not natural due to anthropogenic influences—loss of winter range by development adjacent to a park, loss of predators, supplemental feeding adjacent to a park (by means of intentional illegal feeding or from landscaping). These alterations have led to the issue of deer and elk numbers being outside the range of natural variation (i.e., wide fluctuation) and resultant negative impacts that have served as the impetus for these plans.

Overall, hunting is the most widely applied of these approaches outside the NPS. It has utilitarian application. It is the principal tool used by state wildlife management agencies to

control ungulate populations, and is allowed in some units of the NPS, particularly those units designated as national preserves, recreation areas, rivers, lakeshores, and seashores. However, Congress and the American public have conveyed that hunting is not an appropriate activity in all situations—for example, in the vast majority of our national parks.

So why not hunting? Hunting is not considered an appropriate use or alternative to control wildlife populations in NPS units unless specifically authorized by Congress in the unit's enabling legislation or other federal statute. This conclusion is supported by at least three important indicators.

Direction from Congress. First, the NPS Organic Act (1916) provides authority to the NPS to manage wildlife on NPS lands and, further, to prohibit hunting unless specifically authorized by Congress. Hunting has been authorized by Congress in 69 of the 390 NPS units. However, outside of Alaska, Grand Teton National Park is the only unit designated "National Park" in which hunting is authorized. Congress passed specific legislation in 1950 authorizing controlled reduction of elk for management purposes by licensed hunters deputized as park rangers in portions of Grand Teton National Park.

Long-standing NPS policy. The NPS has maintained a written policy of no hunting in national parks since at least 1918 when Secretary of the Interior Lane sent a memo to NPS Director Mather to reaffirm long-standing management practices in parks, including the prohibition of hunting. In 1963, a report issued by the Advisory Board on Wildlife Management appointed by Secretary of the Interior Udall (i.e., the Leopold Report) concluded that lethal removal by shooting should only be conducted for the sole purpose of animal removal and not recreational hunting.

That guidance stands in NPS *Management Policies 2006*, which state: "hunting, trapping, or any other methods of harvesting wildlife by the public will be allowed where it is specifically mandated by federal law."

Further, the concept of appropriate use must be considered. In managing the national park system the NPS must consider the impact of uses on park resources, including cultural and natural. The NPS must determine appropriate uses in fulfilling its obligation to provide for the enjoyment of the parks by the public. An "appropriate use" has been defined as a use that is suitable, proper, or fitting for a particular park or portion of a park. Providing enjoyment to the public is a critical component of the Organic Act. The types of enjoyment that NPS units provide are "uniquely suited and appropriate to the superlative natural and cultural resources found in the parks." Congress and the American public have recognized that national parks are special places. Hunters have access to many other federal lands that provide appropriate, multiple-use opportunities. In contrast, outside of Alaska, national parks comprise an extremely small proportion of the public land. In these limited areas, national parks provide high-quality opportunities for every segment of American society to enjoy an atmosphere that is open, inviting, and accessible. Hunting is not an appropriate activity in these locations because the activity of a small segment of the public would have a significant impact on access to and enjoyment of park resources by the larger public.

Case law. NPS interpretation of the Organic Act to provide authority over management of wildlife in NPS units has been challenged, but maintained in several court decisions (e.g., New Mexico State Game Commission v. Udall). In 1984, the NPS enacted regulations stat-

ing that hunting shall be allowed in park areas where such activity is specifically mandated by federal law. In a challenge of this regulation (NRA v. Potter), the court ruled that NPS' interpretation of the Organic Act—that the primary management function with respect to wildlife is its preservation unless Congress declares otherwise—was reasonable.

So unless already mandated, hunting will not be pursued as a management approach in NPS units. But if not hunting, then what? If the primary tool used in other areas is not available, what are some of the other options? Let's return to the list of options we looked at earlier. None of these options is clearly the best. All have drawbacks, particularly when you consider that they will need to be implemented over the long term … there is no end in sight. However, without this management the natural system will continue to deteriorate due to anthropogenic changes.

While the methods may help us meet our objectives for population size or vegetation condition, fencing will have significant aesthetic impact as well as impacts on movement of a variety of species; the ability to successfully redistribute deer and elk in a way in which vegetation goals can be met is questionable—one elk can eat a lot of new aspen shoots in a short period; fertility control is still in the experimental stages and a logistically feasible agent is not yet available; round-up treats deer and elk like domestic animals and detracts from their true wildness; wolves still evoke strong opposition from livestock producers, and even pet owners; translocation of animals as "biological packages" complete with pathogens is not a prudent approach for wildlife health management; sharpshooters are thought of as "hired guns," regardless of whether they are agency personnel and authorized agents, and carcass disposition is more of an issue when individuals (i.e., hunters) do not shoot and take possession of an individual animal.

Although very intensive, lethal removal of ungulates by sharpshooters to meet NPS management goals is not contrary to NPS authority or long-standing policy. It is hypothesized that sharpshooting would be more effective in meeting management goals and reducing indirect impacts to park resources and direct impact upon visitors than hunting. Further, sharpshooting may be necessary to achieve the desired level of management, particularly if the national trend in decreased hunter participation continues.

Who does this sharpshooting is the most recent wrinkle in the lethal removal saga. The initial assumption was that would be agency staff or contractors. But what about tribal personnel or volunteers—could they be "authorized agents"? Whether or not this is within policy is a matter of current discussion. But regardless, even if it were, would it present advantages over agency personnel or contractors? Would these volunteers reduce costs to the government? Be as effective in controlling the population? Be as acceptable to other stakeholders?

These are questions that need to be answered. While decisions may need to be made initially with incomplete data, it is imperative that if they are implemented, they are done so in a way that can be evaluated. Just as we plan experiments to measure changes to impacts on vegetation or effectiveness of fertility control, we need well-designed studies to answer these questions about cost and effectiveness of approaches (such as different groups of sharpshooters) and also inquiry to understand public perception of methods of management we use and our justification for it. We also need to continue to think outside the box to find

unique options—even if those options aren't "preferred alternatives" today. Ideally, these options would return systems to natural function, and would be applied proactively to prevent negative impacts from even occurring.

I think I can speak for NPS's Biological Resource Management Division in that we appreciate the opportunities that come from parks seeking, or at least being willing to listen to, input on new alternatives and approaches. Through discussions that our division chief, Jerry Mitchell, is leading with our collaborators in Environmental Quality Division and Cornell University Human Dimensions Research Unit, we've speculated that perhaps development of a tool that would allow a way to commonly approach the issue of management of overabundant wildlife might be very useful. It might take the form of a matrix, with management options on one axis and, on the other, considerations or factors such as efficacy, cost, duration of artificial action, naturalness, etc. This is likely contributing to the way decisions are currently being made, but through illustration of this conceptual model it may make decision-making more transparent to all and may serve as a tool that others can refer to without reinventing the wheel.

If management is necessary to prevent the occurrence of, or to reduce, overabundant native wildlife species, and if hunting is not an option in NPS units where Congress has not already deemed it so, then our work is not done. It is imperative that work must continue in the biological and social sciences to identify effective and acceptable approaches to provide long-term solutions. Ideally, the means used would be "natural," but this may not always be the case. However, inability to use a "natural" approach, or inability to use a technique that our neighbors have used for decades (i.e., hunting), does not justify doing nothing if population fluctuations, and resultant negative consequences, are occurring due to the ever-increasing impact of civilization.