

Animal Disease Issues In The National Park System Clarified By Nationwide Survey

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Animal diseases are potentially significant management concerns in a number of units of the National Park System. Some of these diseases are a threat to human health; others are of primary concern because of potential impacts to domestic livestock on adjacent park lands; and still others may threaten native wildlife populations.

Therefore, to identify key animal disease issues, we conducted a nationwide mail survey of national parks, federal and state agencies, and universities. In addition to wildlife diseases in national parks, participants were questioned about the implementation of wildlife and domestic animal health programs including treatment, control, and management of wildlife diseases (e.g. vaccination, medication, herd management, quarantine, and habitat management). Information was also compiled on the use of pack animals and pets, livestock grazing in park ecosystems, and policies and regulations on domestic animal management within the park. In all, 503 questionnaires were mailed to 179 units of the NPS and 324 universities, state, and federal agencies. Overall we obtained a response rate of 70 percent.

Sixty-eight percent (94/138) of the national parks surveyed indicated that at least one animal disease related issue had been of concern in the last 10 years. In general, other agencies' responses indicated that 29 percent (57/196) have reported wildlife disease issues in or adjacent to NPS units in their state. Fish & game agencies were most commonly involved in wildlife disease research and management (54%). State departments of health (42%) reported zoonotic diseases involving wild carnivores and rodents. Sixteen percent (9/55) of Animal & Plant Health Inspection Service (APHIS) respondents reported bovine brucellosis as the greatest concern regarding animal disease issues in the National Park System.

Domestic Livestock Diseases

Serologic studies (13%) demonstrating the presence and prevalence of domestic livestock diseases including bluetongue, bovine respiratory syncytial virus, bovine virus diarrhea, infectious bovine rhinotracheitis, parainfluenza-3, and vesicular stomatitis were reported in wapiti, deer, bighorn sheep, moose, and caribou. Lungworm-pneumonia complex in bighorn sheep and epizootic hemorrhagic disease in white-tailed deer were the most important disease issues affecting wild ungulates in national parks.

Several cases of hemorrhagic disease in deer and bighorn sheep were reported based on clinical signs and lesions; however, no laboratory confirmation was made to differentiate these diseases. Parelaphostrongylosis in elk and deer, psoroptic scabies in bighorn sheep, leptospirosis in deer, and pseudorabies in feral pigs apparently represent an increasing threat to native ungulate populations.

Rabies (22%), sylvatic plague (14%), canine distemper (11%), Lyme disease (9%), and endoparasites (i.e. heartworm and raccoon worm) (9%), were the most common diseases reported affecting carnivores and rodents in national parks. Diseases which may be increasing in zoonotic importance include trichinosis in wild carnivores; tularemia in rabbits and beavers, and leptospirosis, giardiasis, and Rocky Mountain spotted fever in rodents.

We requested information on animal health programs including treatment, control, and management of diseases (e.g. vaccination, medication, herd management, quarantine, and habitat management). The implementation of wildlife health programs was reported by 19/138 (14%) national parks. Treatment and control of sylvatic plague in small rodents, by dusting burrows and closing visitor areas, were the most common practices implemented by park personnel. Treatments were also reported for lungworm-pneumonia complex and psoroptic scabies in bighorn sheep.

We compiled information on the use of pack animals and pets, livestock grazing in park ecosystems, and policies and regulations on domestic animal management within the park. Thirty-two percent of the parks surveyed did not allow or report the presence of pack animals inside their boundaries. Horses (38%), followed by mules/burros (10%), llamas (5%), and sled dogs (3%) were the most common species reported in parks allowing their use as pack animals. Grazing occurred adjacent (36%), inside (11%), and both in and near (13%) national parks. The species grazing inside or adjacent to NPS lands were cattle (60%), horses (21%), sheep (14%), and other species (5%) including llamas, bison, and goats.

Park Policies For Pets

Dogs, cats, and birds were the most common pet species allowed to be kept by park personnel and visitors inside national parks. Seventy-one percent of parks responding allowed pets on a leash with different degrees of restriction. For example, pets could enter the park if confined in a vehicle, kennel, or

restricted to concession areas. Other national parks allowed pets on a five to 6-foot leash within 100 feet of the road or shoreline; in developed areas, pavement, campgrounds or overlooks; or within one-fourth of a mile of developed roads, on trails but not in backcountry, and only during the day. Unrestrained pets were allowed in 3 percent of parks (4/138). No pets were allowed to be kept by visitors or park personnel in 33/138 (24%) NPS units.

Although only 16/138 parks (12%) provided a copy of guidelines, permit requirements, and pet policies; NPS Units generally apply the Title 36 Code of Federal Regulations and Management Policies. Eleven parks (8%) expressed their concerns about free-ranging feral dogs and cats, sled dogs, and unleashed pets. Contact between feral animals, pack animals, or pets and wildlife was reported as frequent, representing an increasing threat or health risk to native species. Carnivore species including wolves, coyotes, foxes, puma, lynx, and bobcat are vulnerable to infectious diseases such as canine distemper, parvovirus enteritis, and feline panleukopenia.

Human health issues were reported by 61 percent of parks surveyed (84/138). Several confirmed cases of Lyme disease in humans were reported in the following parks: Point Reyes NS, California from 1987-1990 (3/9 cases); St. Croix and Lower St. Croix NSR, Minnesota (high prevalence among human and animal populations; 50 percent of park staff has been diagnosed and treated since 1987); Cuyahoga Valley NRA, Ohio (three cases); Crater Lake NP (one case); Delaware Water Gap NRA (one case) and Valley Forge NHP, Pennsylvania (two cases); Big South Fork NRR and Obed WSR, Tennessee (confirmed in several park employees and visitors); Colonial NHP (one case) and George Washington Memorial Pkwy, Virginia (one case). Giardiasis was reported only in Rocky Mountain National Park, Colorado, and North Cascades NP, Washington, but the disease is undoubtedly present in other parks. Human leptospirosis, possibly acquired from wild pigs, dogs, or cats, was reported in Hawaii Volcanoes NP (three cases). LaCrosse encephalitis was reported in St. Croix and Lower St. Croix NSR, Minnesota and Cuyahoga NRA, Ohio (one case in 1981). Relapsing fever was reported in Grand Canyon NP, Arizona (six cases since 1990). Rocky mountain spotted fever was confirmed in a human fatal case in Cape Cod NS, Massachusetts in 1990.

Avoidance Techniques

In nine percent of national parks surveyed, visitor use and access was restricted to avoid human contact with wildlife and reduce the risk of disease transmission. Management techniques included bearproof garbage cans, closure of visitor use areas (caves, trails, picnic areas, and campgrounds), and restriction of use to developed trails. Interpretive or educational programs designed to inform visitors about risks and/or prevention of wildlife-borne diseases were reported by 43 percent of parks (59/138). These interpretive programs were focused primarily on the prevention of sylvatic plague and rabies. Hunters received information and were asked to report contagious ecthyma in mountain goats and Dall sheep in national parks in Alaska (contagious ecthyma can readily be spread to humans by direct contact). Interpretive and educational programs commonly used included direct contact on an individual basis, warning signs in visitor centers and use areas, slide shows and lectures, posters, pamphlets, brochures, leaflets, and posted information in bulletin boards.

Thirty eight percent (53/138) of NPS respondents considered that the occurrence of diseases and parasites in wildlife in park ecosystems is part of a naturally functioning ecosystem. The general consensus in the survey was that native diseases should be protected even if they are detrimental to wildlife populations. Parasites and diseases should be allowed to perform their natural functions in the ecosystem within the full range of what might be considered natural. Native diseases should only be managed to protect adjacent areas or to preserve ecosystems that have been altered or threatened in part by human influences, for protection of endangered species and species of special concern, for public health reasons, and for "display" populations (those very important for visitor enjoyment), to the extent that treatment does not detract from the appearance of naturalness (NPS 1988).

A number of respondents listed several issues to be considered in making decisions concerning control of diseases in national parks. These include status of the infected animal population, classification of disease as exotic or native, pathogenicity and infectiousness of the etiologic agent, and capacity to infect other hosts (domestic animals and humans). Most parks surveyed concluded that diseases introduced by humans and domestic livestock or pet animals should be eradicated from national parks.

Immediate Disease Issues

National parks, state, and federal agencies were asked to identify the most immediate disease issues that should be addressed in the National Park System, if funding became

available. Highest ranked priorities of NPS respondents were Lyme disease, sylvatic plague, BHS disease, rabies and giardia while brucellosis, Lyme disease, BHS disease, rabies and tuberculosis reflected the relative priorities of other agencies. Differences in priorities between NPS and other agencies undoubtedly result from differing objectives and legal mandates of agencies responding to the survey. For example, NPS respondents were most concerned with diseases related to public health, such as sylvatic plague and Lyme disease. On the other hand, APHIS considered brucellosis the most important issue facing national parks. Although brucellosis can infect humans (undulant fever), pasteurization of milk has reduced its public health threat. However, in some areas, it remains a serious disease in domestic livestock and APHIS is responsible for issues affecting the health of domestic animals.

Because pack animals and domestic livestock are common in and near national parks, disease monitoring programs should be established which could detect transmission of diseases among native wildlife and livestock. Such a program would be of value to managers of parks, as well as those managing adjacent grazing lands.

Pet diseases represent a potentially serious threat to park wildlife populations. Although most parks allow pets only on a leash or in restricted areas, several respondents were concerned that leash requirements often are overlooked by visitors. Pets from different geographic regions represent a health risk to national park wildlife populations, and enforcement of regulations is critical to reduce the likelihood of exotic diseases and parasites entering national parks. With increasing numbers of visitors and pets, and with increased mobility, the potential for introduction of new diseases also is increasing.

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