Is It Acceptable to Let a Species Go Extinct in a National Park?

JOEL BERGER

North American Program, Wildlife Conservation Society, P.O. Box 340, Moose, WY 83012, U.S.A., email jbwcs@earthlink.net

Introduction

I once was asked whether it was okay to allow a species to go extinct in a national park. My gut response was no, but I had not thought about the question seriously: whose park and where, and would the extinction have direct or indirect effects on the ecological community? Perhaps I might have couched a reply by suggesting that it was okay for some species to go extinct in some parks but not in others. Whether a single unanimous response fits all possibilities is unclear. Here I address the question by suggesting how preemptive measures might be used to forestall species losses, and I follow up with a real-world case of how an imminent loss can be circumvented. This latter point is highly relevant because it concerns not only the looming extirpation of a species from a national park but also an ecological process of national and international importance: the longest overland mammal migration across the vastness between Tierra del Fuego and Toronto.

Beyond Reserves

Parks, of course, have been established for a variety of reasons, but a de facto consequence throughout the world is that a level of protection of ecosystems, biological processes, and species has been achieved that otherwise would have been impossible. The level to which protection can extend beyond protected borders has never been explicitly clear. That impending losses of species within parks have the potential to be dampened or preempted through proactive measures that supersede park borders is certain. But, whether the political resolve exists to stop or slow these extinction events is an entirely different matter. The basic premise is simple: if species face a high probability of extinction inside a park, then park guardians and federal administrative officers, acting on behalf of the U.S. public, have an obligation to make such expectations clear. In doing so, these actions help fulfill the intent of the 1916 congressional legislation designed to conserve wildlife within parks. Although such issues are at the heart of conservation in parks (Wright 1992), a sense of broader urgency exists.

Not only may the localized loss of species of public concern be swift when habitats beyond parks are altered, but significant biological processes and qualities that affect park experiences may also occur. Such types of change may be rapid when recently elected state or federal government heads designate new officials with the capacity to inextricably alter landscapes. For example, on U.S. public lands adjacent to western national parks or monuments in Utah, Wyoming, Montana, and Colorado there is great zeal to develop petroleum-based resources at a significant biological cost.

A well-known truism is that actions outside parks have major effects on processes within them. Indeed, reserves, biosphere sites, and other forms of protected areas have all lost species or processes as a consequence of management decisions that failed to protect park integrity (Janzen 1983). Understandably, decisions about areas beyond borders are based not on park integrity but rather on the needs of people, agriculture, or economic growth, all of which are highly linked. In southern California, for example, parks may contain a few pumas (*Puma concolor*), but adjacent lands fall under a bewildering array of government and private jurisdictions, none of which may consult the other prior to making decisions or necessarily consider cougar population viability (Beier 1996). Similar patterns are replete worldwide.

What may be different in the United States is that two federal agencies, the National Park Service (NPS) and the Bureau of Land Management (BLM), are each housed under the same cabinet branch of the U.S. Department of Interior and, as agents of the U.S. public, their missions

Paper submitted October 31, 2002; revised manuscript accepted March 20, 2003.

with respect to land health are not radically different. The BLM mission is "to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations" (U.S. Department of Interior 2000), whereas that of NPS, as specified in the congressionally approved Organic Act, is "to conserve the scenery and the natural and historical objects and the wildlife therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (Wagner et al. 1995). From a conservation perspective, neither has as its core mission that ecosystem degradation should be permissible.

Vanishing Species and Extraordinary Phenomena

Given my interpretation of the similarity of their missions, to what extent can the two management agencies combine efforts to accommodate either populations or species that move beyond borders, particularly migratory ones? Clearly, the topic is vexing irrespective of how sympathetic personnel within an agency of mixed mission might be. The BLM, in this instance, is also assigned a "public-use" order that requires more than a purist view of conservation. Nevertheless, the mixed mandate underscores whether management actions that terminate the existence of species or processes within parks are appropriate when events beyond park borders will result in localized extirpation.

The stakes, however, may be even greater for pronghorn (*Antilocapra americana*), North America's sole remaining endemic ungulate. In Grand Teton National Park (GTNP), at the center of the 10.8-million-ha Greater Yellowstone Ecosystem (GYE; Fig. 1), pronghorn have the most extreme long-distance migration of any mammal between Tierra del Fuego and Toronto, areas where the imprint of humans is appreciably greater than in more northern boreal or Arctic landscapes (Sanderson et al. 2002). Although species as large or larger than pronghorn, including Andean tapirs (*Tapirus pincahque*) and guanacos (*Lama guanicoe*), elk (*Cervus elaphus*), and moose (*Alces alces*), also migrate, none of the other 16 mammals for which data exist approximate the round-trip distances of GTNP pronghorn (mean, 430 km; extreme, 550 km; Sawyer & Lindzey 2000) (Table 1). These migratory pronghorn spend winters in the Upper Green River Basin, well beyond park boundaries (Fig. 1), where truly Serengeti-like congregations in excess of 100,000 wintering ungulates occur: approximately 50,000 mule deer (*Odocoileus hemionus*), 40,000 pronghorn, 15,000 elk, 3,500 moose, and several hundred bighorn sheep (*Ovis canadensis*) and white-tailed deer (*O. virginianus*). Although these other species are also migratory, moving between summer ranges at higher elevations and low-

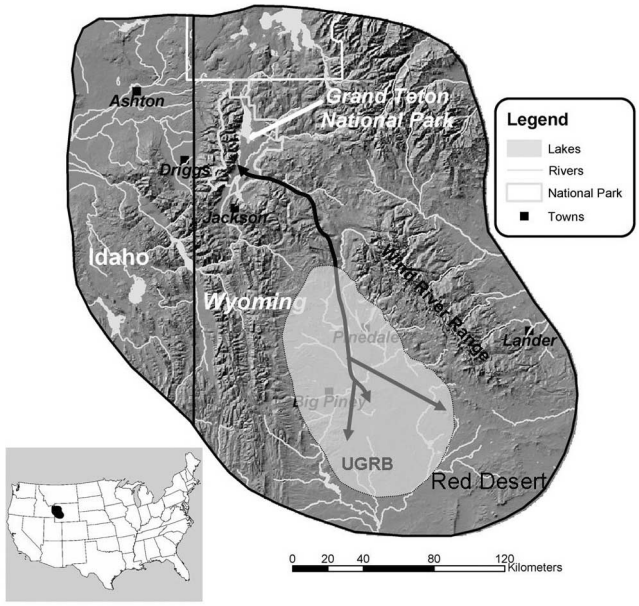

Figure 1. Overview of pronghorn migration route (black line) relative to Grand Teton National Park and the Upper Green River Basin (UGRB, in lighter gray).

elevation winter sites, only about 200 pronghorn rely on GTNP for their summering areas.

Given that half a million pronghorn live in Wyoming alone, why should anyone care about a small group with partial dependency on GTNP? Three reasons come to mind. First, pronghorn represent a Grand Teton megafauna that also includes bison (*Bison bison*), moose, mule and white-tailed deer, elk, and bighorn sheep and that the public expects to view and enjoys viewing. Their loss would further impoverish this park setting. Second, other than barren-ground caribou, this pronghorn migration is the most accentuated of the terrestrial New World mammals (Table 1). Finally, some ecological phenomena, especially the spectacle of overland migration, have been so globally reduced (Berger 2004) and the few that remain are so infrequent that generations of humans around the world now know of such events only from the distant reaches of Asia, Africa, or the Arctic and from watching the Discovery Channel, National Geographic programs, or "Animal Planet." The retention of pronghorn as a migratory species in an accessible national park and the sensational nature of long-distance travel on a global scale represent something of more value than merely one additional event that may vanish.

A Navigable Solution

What can be done? For pronghorn and GTNP the answer is easy. The U.S. Federal government, perhaps through the BLM or a different agency, has the capacity to ensure the pronghorn's migration corridor and winter range and

Table 1. Summary of mean and extreme long-distance (round-trip) migration for mammals between Toronto and Tierra del Fuego.[a]

Species[b]	*Location*	*Mean (km)*	*Longest (km)*
Cougar (1)	Sierra Nevada, California, U.S.A.	60	
Coyote (1)	Teton, Wyoming, U.S.A.	70	
Elk (6)	Jackson Hole, Wyoming, U.S.A.	97	220
White-tailed deer (4)	Algonquin, Ontario, Canada[c]	30	60
Mule deer (14)	Upper Green River, Wyoming, U.S.A.	69	288
Moose (5)	Teton, Wyoming, U.S.A.	24	61
Bison (3)	Yellowstone region, Wyoming, U.S.A.	55	75
Bighorn (5)	Salmon River, Idaho, U.S.A.	38	75
Mountain goats (2)	Barometer Mountain, Washington, U.S.A.		
Pronghorn (6)	Upper Green River, Wyoming, U.S.A.	123	548
Huemal (1)	Patagonia, Argentina	6	
Pudu (1)	Islote, Rupanco, Chile	0	
Taruca (1)	La Roya, Peru	0	
Guanaco (2)	Patagonia, Argentina	12	24
Vicuna (1)	Pampas Galera, Peru	0	
Mountain tapir (1)	Sangay, Ecuador	9	
Black-tailed jack rabbit (1)	Curlew Valley, Utah, U.S.A.	12	

[a] *Values reflect migratory segments. Source: J.B., unpublished.*
[b] *Numbers in parentheses are frequency of studies upon which mean is based; longest is that for designated location.*
[c] *Algonquin is north of Toronto.*

ultimately protect pronghorn in GTNP by establishing measures beyond park boundaries. A formal national migration corridor should be established to protect the length of the route and associated bottlenecks that narrow to only 100–300 m (Sawyer & Lindzey 2000; Berger 2004). Precedence exists in the designation of national scenic byways, waterways, and historic trails. Whether the management responsibilities should be assumed primarily by state or federal authorities may prove contentious, but in the end what is of more conservation relevance is the assurance of on-the-ground protection. Alternate defensive measures might conceivably be put in place, but whether their efficacy would be as great is doubtful. For instance, the BLM could designate some areas as critical habitats for pronghorn or perhaps follow the lead of the Wyoming Game and Fish Department, which facilitates the closing of some federal lands to the public to protect ungulate winter habitat. The last suggestion is moot, however, because pronghorn migrate in spring and fall, not winter. Further, these latter measures would do little to bring the spectacular long-distance pronghorn migration to the public beyond Wyoming's borders.

Nevertheless, the designation of a national migration corridor is not a straightforward endeavor, particularly because huge energy-extraction projects are being developed on both private and public lands in the Upper Green River Basin and Red Desert (Fig. 1). Here, the issue is that federal permitting processes are being fast-tracked under Executive Order 13212, which remands the U.S. Department of Interior and U.S. Department of Agriculture to "expedite review of permits or take other actions necessary to accelerate the completion of energy-related projects" (U.S. Executive Office 2001). In the Upper Green River Basin, it is only a matter of time until the cumulative effects of increasing roads, trucks, heavy machinery, extraction, housing, poaching, people, and habitat alterations truncate a migration corridor in a park and, ultimately, an unprecedented migration that has existed for more than 6000 years (Miller & Saunders 2000) and that is of national value.

My hope, of course, is that my prediction is wrong. To assure that I am indeed incorrect, park superintendents, other federal employees, professionals, nongovernmental organizations, and the public at large will have to be powerful advocates on behalf of national park policy—that is, to fight for ecological integrity even when the border between park and public land is far away. Distance should not excuse silence, and no federal or state employee or concerned citizen should fail to act on behalf of a park mission. Examples of gutsy and bold action exist. During the 1970s, declining air quality in the Grand Canyon caused by industrial pollutants and airborne particulates prompted NPS executives to formally request improvement to air quality from distant sources. And, in the late 1990s, mining interests on public lands outside Yellowstone National Park posed threats to water quality within the park. The former superintendent, Mike Finley, moved the NPS to request support from President Clinton, who subsequently intervened to facilitate removal of adjacent mining interests.

Although federal lands are managed by agencies whose missions may sometimes conflict, this is not always the case, as illustrated by the similar BLM and NPS philosophies on the sustenance of land and lack of biological impairments. Whether pronghorn or poppy, musk ox or mollusk, it does not seem right to allow species to be extirpated, especially in national parks. Obviously, not all populations, species, or ecological processes can be maintained in perpetuity. But when senior administra-

tors, agency scientists, high-level elected officials, and the public fail to speak, one outcome is guaranteed: our wonderment about what else we will lose.

Acknowledgments

K. Berger asked the question. My colleagues at the Wildlife Conservation Society—K. Berger, K. Redford, S. Zak, and B. Weber—were constructively brutal in their comments on an earlier version. J. Rieck provided the map, and H. Sawyer and F. Lindzey selflessly shared data and knowledge on migration.

Literature Cited

Beier, P. 1996. Metapopulation models, tenacious tracking, and cougar conservation. Pages 293–324 in D. R. McCullough, editor. Metapopulations and wildlife conservation. Island Press, Covelo, California.

Berger, J. 2004. The longest mile: survival for transitional mammalian migrations. Conservation Biology **18:**in press.

Janzen, D. H. 1983. No park is an island: increase in interference from outside as park size increases. Oikos **41:**402–410.

Miller, M. E., and P. H. Saunders. 2000. The Trapper's Point Site (48SU1006): early Archaic adaptations and pronghorn procurement in the Upper Green River Basin, Wyoming. Plain's Anthropologist. **45:**39–52.

Sanderson, E. W., M. Jaiteh, M. A. Levy, K. H. Redford, A. V. Wannebo, and G. Woolmer. 2002. The human footprint and the last of the wild. Bioscience **52:**891–904.

Sawyer, H., and F. Lindzey. 2000. Jackson Hole pronghorn study: final report. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie.

U.S. Department of Interior. 2000. Final environmental impact statement for the Pindeale Anticline Oil and Gas Exploration and Development Project. Sublette County, Wyoming.

U.S. Executive Office. 2001. Executive order 13212. Actions to expedite energy-related projects. Federal Register **66:**28357–28358.

Wagner, F. H., R. Foresta, R. B. Gill, M. R. Pelton, W. F. Porter, and H. Salwasser. 1995. Wildlife policies in the U. S. national parks. Island Press, Covello, California.

Wright, R. G. 1992. Wildlife research and management in the national parks. University of Illinois Press, Urbana.