

## Intervention versus natural regulation philosophies for managing wildlife in national parks

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*Key-words:* Conservation, overpopulation, restoration ecology, wildlife management

„Wildlife Conservation in National Parks“ was the topic of a symposium sponsored by The Wildlife Society at the North American Wildlife and Natural Resources Conference in Edmonton, Alberta, Canada on 25 March 1991. The symposium included 11 papers by 18 authors from Canada, United States, and South Africa, chaired by Frederic H. Wagner (Utah State University) and Cliff J. Martinka (Glacier National Park, Montana, USA). The papers presented at the symposium will be published in 1992 in the *Transactions of the North American Wildlife and Natural Resources Conference*.

Many of the papers included examples of human influences having altered natural systems such that it would appear necessary for management to intervene to retain the ecological features of the national park. These examples include the effects on wildlife caused by hydrological changes in Everglades National Park (USA) presented by John C. Ogden and Robert A. Johnson. In another paper, S. C. J. Joubert argued that fencing of Kruger National Park (South Africa) eliminated the possibility of dispersal thereby making it necessary to cull elephants (*Loxodonta africana*) and buffalo (*Syncerus caffer*) to protect vegetation and restore „stability“. In Canada, agricultural interests are demanding total depopulation of Bison (*Bison bison*) from Wood Buffalo National Park because of the threat of transmission of brucellosis (*Brucella abortus*) and bovine tuberculosis from bison to domestic livestock (William A. Fuller). And Robert J. Warren claims that "overpopulation" by White-tailed Deer (*Odocoileus virginianus*) in Catoctin Mountain Park (Maryland, USA) has threatened a number of rare plant species. Cliff Martinka reminded us how elk (*Cervus elaphus*) were previously culled in Yellowstone National Park to prevent herbivore-driven changes in plant communities, while L. David Mech and Alistair J.

Bath offered insight into the prospects of resolving the elk problems in Yellowstone by restoring wolves (*Canis lupus*) to the ecosystem.

The theme of the conference that we should be more receptive to management intervention in national parks was highlighted by closing remarks from Frederic H. Wagner. Wagner makes the point that national parks have been so changed by human influences that they are unlikely to function properly, and consequently we must assist natural systems with adroit management.

Indeed, it might be argued that there is nowhere on earth today where man's influence cannot be seen. This is particularly evident as we attempt to anticipate the consequences of increasing CO<sub>2</sub> and other greenhouse gases in the atmosphere. Some have argued that national parks in North America should be managed to be as much as possible in the state seen by the first European settlers (Houston 1982). If we are to maintain national parks as „vignettes“ of the past, I certainly agree with Professor Wagner that it will require management intervention.

But often it is not clear that such intervention is necessary or appropriate. As our understanding of ecological systems has matured during recent decades, we have come to appreciate that ecological systems are truly dynamic. A vignette of a natural landscape is a fleeting view, even with no human interference whatsoever. Ecological processes such as fire, predation, herbivory, and succession create a spatial mosaic which is always changing (Knight 1991). Although we may have the technology and expertise to intervene in various ways to keep a park in a "desired" state, one might question whether such status or intervention is desirable.

Perhaps more important is to recognize the role which national parks play in providing baseline ecological preserves (see Sinclair 1983). Where else in the world but in our national parks can we allow ecological processes to play their course? Where else can we actually monitor the ecological consequences of human perturbations on a large scale but in areas which have seen minimal interference by humans. It is imperative that such monitoring and research be encouraged (Clait Braun *et al.*), but arbitrary interference may do more harm than good.

There are instances where management intervention can restore ecological processes. And I believe that most ecologists would concur that natural processes should be allowed to function in national parks. Fires should be allowed to burn whenever possible. Wolves should be allowed to prey on elk, moose, and deer. Seasonal floods should be expected on natural watercourses, unimpeded by dams or diversion structures.

But we do not always know to intervene or in other cases it may not be possible to restore an ecological process. For example, we cannot be sure how to intervene in a manner which will counteract climate change. Likewise, our understanding of predator-prey systems is not yet sophisticated enough to anticipate the effects that wolves might have on elk population in Yellowstone National Park. Nor can we reconstruct the dynamic interaction between vegetation and White-tailed Deer in Gettysburg National Park (USA) or Saratoga National Historical Park (USA) as discussed by H. Brian Underwood and William F. Porter.

I believe that national parks offer the greatest benefits to society as ecological baseline preserves. As emphasized in this symposium, there are certainly instances where management intervention is necessary to restore an ecological process which has been perturbed by human activities. It also may be necessary to intervene to ensure the survival of an endangered or threatened

species of animal or plant. However, in most cases we will do best to allow ecological processes to function unhampered by human intervention. Otherwise we will never know how ecological systems might function on their own.

### Acknowledgements

I thank Fred Wagner for sending for me prepublication drafts of manuscripts for each of the papers presented at the symposium, and the University of Wyoming and the U.S. National Park Service for financing my travel.

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*Received 14 August 1991; accepted 29 August 1991*