

Aboriginal hunting and burning have serious implications for park management

Charles E. Kay

INTRODUCTION

Western environmental philosophy, which influences how our national parks and natural areas are managed, rests on several assumptions (Kay 1995a). First, conservationists usually assume that, prior to the arrival of Europeans, North America was a wilderness untouched by the hand of man, and that this wilderness teemed with wildlife. Second, some people also think that the aboriginal peoples of North America were either poor, primitive, starving savages whose numbers were too low to have any impact on the "pristine" landscape or that native peoples were conservationists who were too wise to overuse their environment (Kay 1994).

According to this view, pre-Columbian North America was filled with uncountable numbers of ungulates, wolves, and other wildlife and Europeans were the evil that destroyed this idyllic state of nature. Under such a paradigm, all that is needed to restore our ecosystems to their original condition is to eliminate European influences. This is known as "letting nature take its course" and is often referred to as "hands-off" or "natural regulation" management. The beliefs formed by these assumptions are so strongly held by many that they seldom bother to consider whether they are, in fact, valid. If they are not true, then managing environments according to their precepts

will not lead to the protection of biological diversity or ecological integrity. That is to say, if these underlying assumptions about nature are false, then management based on those beliefs will not produce the desired result; *i.e.*, the original ecosystems will be neither restored nor protected (Wagner and Kay 1993; Kay 1995).

Moreover, before ecological integrity can be preserved, as required by Parks Canada legislation, long-term ecosystem states and processes must first be quantified. As Aldo Leopold noted over 40 years ago, "If we are serious about restoring [or maintaining] ecosystem health and ecological integrity, then we must first know what the land was like to begin with." Historical journal observations, archaeological evidence, repeat photographs, and data on current ecosystem states and processes can be used to determine what factors structured ecosystems in earlier times (Kay *et al.* 1994; Kay and White 1995).

LACK OF WILDLIFE

Historical records do not support the view that the Rocky Mountains once teemed with wildlife. Between 1835–72, for instance, 20 different parties spent a total of 765 days traveling through Yellowstone National Park on foot or horseback, yet reported seeing elk only once every 18 days—today there are nearly 100 000 elk in that ecosystem (Kay 1994). The same was true in the Canadian Rocky Mountains

where early explorers reported seeing elk only once every 31 days despite spending 369 days in the mountains between 1792 and 1872 (Kay *et al.* 1994, Kay and White 1995). Additionally, archaeological evidence indicates that elk and other ungulates were rare in pre-Columbian times.

Carnivore predation and aboriginal hunting are two factors that could have limited ungulate numbers. The age of their respective kills, however, indicates that aboriginal peoples were very different predators than wolves (Kay 1994, 1995). Unlike carnivores, which tend to kill the young, the old, the unfit, and the males, aboriginal hunters killed a predominance of prime-age females.

A preference for prime-age females runs counter to any conservation strategy. It is often claimed, however, that it was the aboriginal peoples' religious belief systems, and not a conscious ecological philosophy, that prevented them from over-hunting their prey. The native people of North America viewed wildlife as their spiritual kin: success in the hunt was obtained by following prescribed rituals and atonement after the kill. A scarcity of animals or failure in the hunt were not viewed as biological or ecological phenomena, but rather as a spiritual consequence of social events or circumstances. If an aboriginal hunter could not find any game, it was not because his people had over-harvested the resource, but because he had done something to displease his gods. Since they saw no connection between their hunting and wildlife num-

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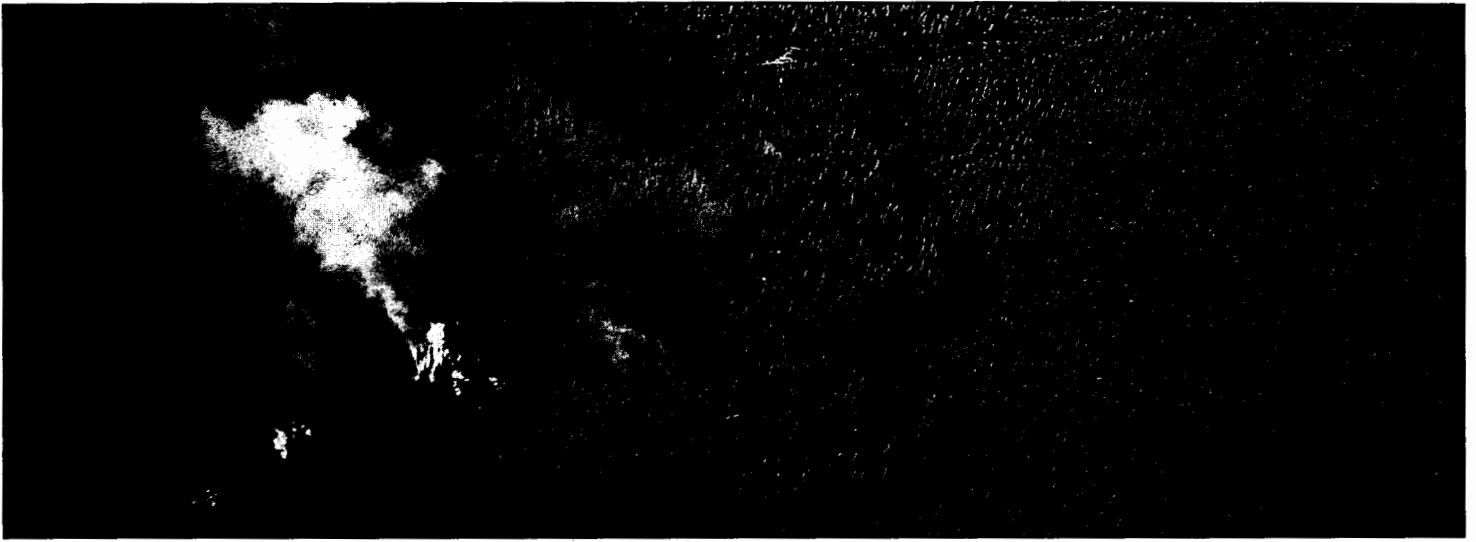
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The extent to which aboriginal peoples managed their environment, through hunting, burning, and other actions, is a crucial and, to date, unresolved, issue

bers, the aboriginal system of religious beliefs actually fostered over-exploitation of ungulate populations—religious respect for animals does not equal conservation.

Aboriginal hunters were essentially opportunistic and tended to take high-ranking ungulates regardless of the size of prey populations or the likelihood of those animals becoming extinct. They did not seem to have a concept of maximum sustained yield and did not manage ungulate populations to produce the greatest off-take. In addition, human predation and predation by carnivores are additive and work in concert to reduce ungulate numbers. Moreover, competition from carnivores tended to negate any possible conservation practices. Because aboriginal peoples could prey-switch to small animals, vegetable foods, and fish, they could take their preferred ungulate prey to low levels or extinction without any adverse effect on human populations. In fact, as ungulates populations declined, human populations actually rose.

ABORIGINAL BURNING

Aboriginal peoples also had a major impact on ecosystems by repeatedly burning the vegetation (Kay 1995a) to modify plant and animal communities for human benefit.

Determining how fires started is critical because fires set by hunter-gatherers differ from lightning fires in terms of seasonality, frequency, intensity, and ignition patterns (Kay 1995b). Most aboriginal fires were set in the spring, between snow melt and vegetation green-up, or late in the fall when burning conditions were not severe. Unlike lightning fires, which tend to be infrequent, high-intensity infernos, aboriginal burning produced a higher frequency of lower-in-

tensity fires: aboriginal burning and lightning fires create different vegetation mosaics, and in many instances, entirely different plant communities. Moreover, aboriginal burning reduces or eliminates the number of high-intensity, lightning-generated fires. Once aboriginal fires opened up the vegetation, subsequent lightning fires behaved like those set previously by humans (Kay 1995a/b).

Historical journals, repeat-photographs, and fire-history studies all indicate that the Rocky Mountains and the western plains burned frequently in the past, and other data suggest that the majority of those fires were set by aboriginal peoples, not started by lightning (Kay 1995a/b). In the Central Canadian Rockies, critical montane habitats were once maintained by aboriginal burning (Kay *et al.* 1994, Kay and White 1995), while on the Canadian prairies, native-set fires swept so frequently that aspen in adjoining parklands were held in check (Kay 1995b).

CONCLUSION

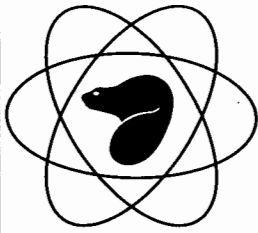
Most national parks, wilderness areas, and nature reserves are managed to represent conditions that existed in pre-Columbian times; *i.e.*, so-called natural or pristine conditions. But what is natural? If the native people of North America determined the structure of entire plant and animal communities by firing the vegetation and by limiting ungulate numbers, then they created a completely different situation than the one we have today (Wagner and Kay 1993). A “hands-off” or “natural regulation” approach by modern land managers will not duplicate the ecological conditions of 500 years ago. Since aboriginal predation and burning created those ecosystems, the only way to maintain

what we call “natural areas” today is to duplicate aboriginal influences and processes.

Moreover, the idea that North America was a wilderness untouched by the hand of man prior to 1492 is a myth, a myth created, in part, to justify appropriation of aboriginal lands and the genocide that befell native peoples. North America was not a wilderness waiting to be discovered, but home to as many as 100 million aboriginal North Americans before European-introduced diseases (and other, more deliberate means) decimated their numbers.

Aboriginal peoples were the ultimate keystone species, and their removal has completely altered ecosystems, not only in the Rocky Mountains but throughout North America. Setting aside an area as “wilderness” or a national park today, and then letting nature take its course will not preserve some remnant of the past but instead create conditions that have not existed on this continent for the last 10 000 years. That is to say, the Americas as first seen by Europeans were not as they had been crafted by Nature left to her own devices, but as they had been created by aboriginal peoples. Unless the importance of aboriginal land management is recognized and modern management practices changed accordingly, our ecosystems will continue to lose the biological diversity and ecological integrity they once had.

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Research Links

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FIRE IN PROTECTED AREAS

Fire management challenges the very fundamentals of Parks' policy and purpose

Stephen Woodley

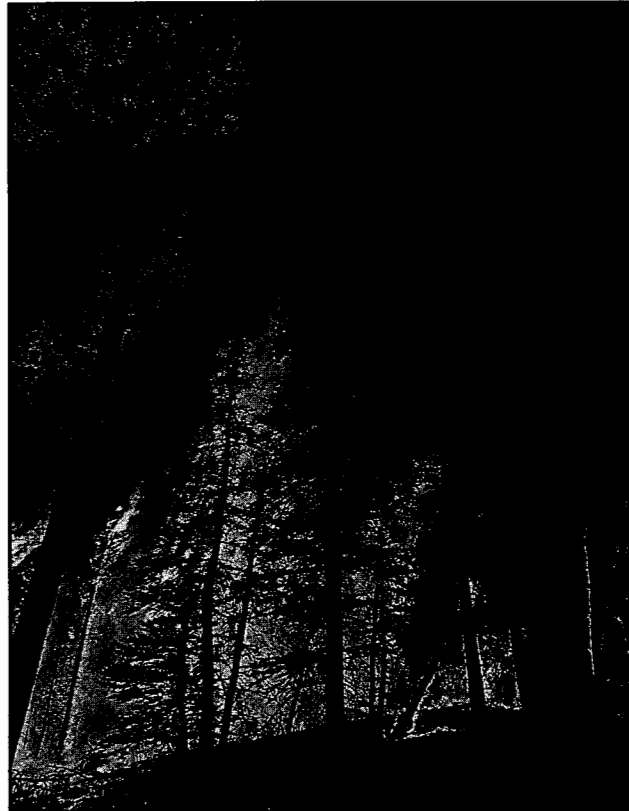
Possibly nothing in the entire spectrum of managing protected areas causes so many difficulties as dealing with wildfire. It is a force of nature that can be absolutely terrifying, transforming forests to ashes, and green nature to black devastation. Wildfire can destroy property and even take lives. As small children, we are all taught to be careful with fire, to protect nature and ourselves by carefully extinguishing our campfires. As adults, when the fire weather index goes up in our parks, we leap into preparedness. Specially trained crews stand at the ready, aircraft are hired, campfires banned, and the public gravely warned of the danger. The beast of wildfire lurks nearby.

Yet, the science of ecology tells us a completely different story. Most of the ecosystems of Canada have evolved with, and been formed by, wildfire. Wildfire is as "natural" as wind or rain. Ecosystem science shows that many of the ecosystems we seek to protect within national parks are fire-adapted—they need wildfire. To eliminate fire from those systems is as direct an ecological insult as damming a river or shutting out rain. Yet that is exactly what we have done to the vast majority of protected areas over the past 50 years.

How can we possibly reconcile our management of protected areas with the reality of wildfire? How can park visitors, adjacent land owners, managers, and park staff be brought into the solution and convinced that wildfire is essential? What policy options is Parks Canada pursuing to ensure wildfire plays its essential role in maintaining ecological integrity? I will try to address these questions in this article.

A BRIEF HISTORY OF WILDFIRE MANAGEMENT

The development history of the fire policy and current practices has been well reviewed (Woodley 1995; Lopoukhine 1993; Westhaver 1992; Day *et al.* 1988; Van Wagner and Methven 1980). While there have been some notable exceptions, the most



A new way of thinking: fire as a natural and necessary process

common reaction has been to suppress all wildfire. One of the main reasons for the development of the Warden Service in the Rocky Mountains was to control wildfire. The service was so successful in its job, the annual area burned during the last 60 years has been reduced to three percent of the previous, long-term average. The vast majority of fire researchers believe that the lengthening of the fire cycle is substantially due to fire prevention and suppression. The elimination of native burning is also a critical (but unresolved) issue (*see Kay, p. 20*).

After 1945, in response to a dramatic increase in the number of visitors to Canadian national parks, Parks Canada embarked on a "protection" stage of management. Parks were considered natural and wild, and the job of park management was seen as protecting parks from threats such as poaching, trampling, and fire. Fire suppression became much more effective, and it is likely that, during this period, fire control began to alter the historical fire regime.

In the '70s, there was a growing realisation that parks were not always self-regulating, natural ecosystems. Instead of "natural," park ecosystems were increasingly seen as "impaired" and management was deemed necessary to correct this condition. Fire was increasingly viewed as an important dynamic element in ecosystems, and research clearly demonstrated that some ecosystems were fire-dependent. Parks Canada responded to these changing attitudes with a 1979 policy permitting, under certain conditions, active management or manipulation of the ecosystem. This was the beginning of Parks Canada's "fire management" era. With a new directive produced in 1986 and a comprehensive fire policy review, Parks Canada embarked on a new relationship with fire. Fire was officially recognized as an important element in the ecosystem and it was to be restored to its "natural role" by active management. Unregulated wildfire was considered impossible in most parks because of the values—public safety, protection of property, protection of rare species or habitat—at

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