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## Private land: Conservation's new frontier in America

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### Abstract

Conservation in North America has proceeded through three discernible stages in the last 125 years. Moving from a response to unregulated commercial harvest and wildlife depletion, it matured into a science based institution that was largely driven by government policy and supported by organized conservation groups. Protecting significant regions by setting them aside as National Parks or otherwise protected landscapes was a significant aspect of conservation throughout its first and second phases. A new and effective paradigm of private lands conservation initiatives has now arisen to face modern conservation challenges in North America.

Keywords: Private lands, Citizens, Conservation, Hunting

### The conservation narrative in North America

The conservation movement is shaped by natural systems knowledge, social requirements for natural resources, predominant philosophies of the day, and socio-political ideologies. Conservation advances subject to constant change. Thus, the practice of protection and sustainable use of the earth's natural resources is one of the most dynamic, complex and crucial engagements in modern society. Furthermore, improvements in scientific understanding, lessons from experience, shifts in the relationship of human beings with nature and natural resources, and the outcomes of social and political discourse exert influence on each other. While this interaction helps drive innovation and progress, major innovations in conservation practice are still relatively rare. As with all social movements there are powerful inertial energies that encourage long periods of stasis.

Significant shifts in the North American conservation framework occur at times of ecological crisis, or when considerable improvements in knowledge (science and philosophy)

coincide with, or indeed effect, change in social values associated with nature. This is not a linear process. Stops and starts occur. But the older ideas come into the present, where they are reconstructed in a contemporary context. Evolutionary leaps can establish new intellectual and operational plateaus, and it is from these that another period of long-term gradual change can be observed.

Solutions of the past, though continually modified, are rarely abandoned, even as new practices are introduced. It is this deep current of preceding ideas that gives conservation its institutional strength and enables it to resist antagonistic imperatives, such as rapid social change, human population growth and the frenzied industrialization, wealth accumulation and environmental degradation that accompany such demographic change. Since the first European contact with North America, there have been two major, perceptible movements of conservation innovation: the first being one of utilitarian-based protection and regulation of resource use; and the second, one of pragmatic, science-based, environmental management. A third movement in conservation is emerging from these traditions – one of citizen-conservation that is based on individualism, private landscape preservation and restoration, and a mosaic of philanthropic and private sector funding models. This may well represent the most important innovation in North American conservation since the mid-twentieth century. It will certainly exert powerful influence on social and political conservation agendas in the twenty-first century.

## The first movement: protection and public allocation

Encouraged by the exotics-hungry economy of Europe and the prevailing notion of a vast and endless wilderness in the new world, early post-colonial North America witnessed a prolonged period of unregulated commercial exploitation of wild resources. The eventual decimation of the bison (*Bison bison bison*), however, coupled with the growing rarity of other commercially valuable wildlife and prime timber, illuminated the finite nature of the wilderness commodity; an awakening underscored a few decades later by the extermination of the passenger pigeon (*Ectopistes migratorius*).

The social significance of these species during both their phase of abundance and their near loss (bison) or extirpation (passenger pigeon) cannot be overestimated. Perhaps more than any other wild species, these animals represented the fruitfulness of the new continent with its wild abundance. With the thundering plains silenced and pigeon-darkened skies reduced to fable, there was, finally, irrefutable evidence that nature was not inexhaustible. If species as numerous as the passenger pigeon and bison could be lost in a matter of decades, were any resources safe from depletion? This question led to the birth of North America's conservation movement, an extraordinary departure in nature valuation and the continent's first wave of new thinking and practice towards wild resources and their use. The focus was on wilderness protection and the regulation of harvest; principles that endure to the present day.

The acknowledgement that collective resources, such as timber and game, had to be

regulated in order to ensure perpetual benefit (including profit), as well as the conscious use of resources at a rate slower than that at which they could reproduce themselves, were perhaps the first expressions of conservation in North America [1]. Such regulation was accompanied by the setting aside of land where this regenerative process could take place unimpeded. Protected areas, such as parks, became both a tool and a tangible symbol of social commitment to conservation, strategically established to preserve natural wonders or provide the public with access to wilderness for recreational purposes, which could include hunting opportunities (such as public hunting access to National Forests). At the same time, fair but restricted access to game species on public and some protected lands for both subsistence and recreational purposes helped drive conservation practices.

This solution to a crisis of exhaustible resources was influenced by several important social values, especially the beliefs that social policy should provide the greatest benefit to the greatest number of people, that all people should have a right to access wilderness and wild resources, and that human beings could control nature and natural processes. The legislative form of this was the principle of natural resources held in common by the populace, and in trust by government. The resources of most interest, of course, were those that provided material value (food, shelter, trade), and early conservation efforts naturally favoured these. Accordingly, the focus on the protection and nurturing of game populations created a system which appeared to show ambivalence towards other species. Predators, for example, may have gained some benefit from land [2], but were generally viewed as detrimental to the conservation of more desirable game, such as deer, and were subject to wide persecution. Continued encouragement of predator harvest likely helped gain acceptance for conservation measures, however, by appeasing livestock owners, while permitting personal economic benefit through the still lucrative harvest of pelts.

This first wave of conservation was marked by profound achievements: capturing the imagination of the populace and engendering affection for nature, establishing a system of land set-aside for protection and enjoyment of nature, introducing the primary wildlife population management tool of regulated harvest, recovering previously diminished populations of game animals, and founding a basic principle of shared public ownership of natural resources.

At the same time, the general emphasis of this first phase of conservation on constraint, coming after unrestrained exploitation, seemed to imply that conservation and economic growth are competitors: that profit is necessarily limited in order for conservation to be achieved. This notion continues to reverberate within conservation debates in North America.

## The second movement: science and environmental regulation

Despite the successes of the first movement, the utilitarian, iconic species approach offered little protection to wilderness components and species that were neither useful nor attractive; and some species, particularly non-consumable ones, failed to thrive. Attempts to

control nature through the introduction of desirable species to new regions failed (or worked too well at the expense of existing species), and mitigation of migratory bird exploitation [3] failed to stop the decline in bird populations. Growing evidence that early efforts in conservation were not sufficient sparked the second major shift in conservation practices. While the efforts of the first wave continued and grew, new solutions began to emerge. These were characterized by science-based actions, a shift to community and ecosystem-level approaches, prescriptive government regulation, and the rise of coordinated non-government organizations (NGOs) with conservation objectives.

In the early twentieth century, natural history was evolving into the science of biology, and along with other sciences was gaining general acceptance as a way of knowing. With the rise in the social validity of biology came a common acknowledgement that humanity is part of nature and recognition that wilderness is a whole, not simply a collection of independent parts.

Biological study showed the reliance of living nature on abiotic factors, and influenced the emergence of the fields of ecology and environmental science. This science-focused era also produced a wave of evidence-based popular writing, particularly Aldo Leopold's 1949 *Sand County Almanac* [4] and Rachael Carson's 1962 *Silent Spring* [5], that resonated with the general population. Such books helped to arouse the public to the human causes of degradation of the environment and wildlife populations.

At the same time, increased industrialization and affluence in North America reduced society's reliance on wilderness for sustenance, thus narrowing the gap in the relative social value ascribed to useful and unusable species. These changes in the relationship between people and wilderness had two important consequences. First, fewer people gleaned resources directly, so criticisms of the exploitative nature of hunting, angling, and other types of harvest became more prominent – despite the role of the hunting public in early conservation efforts. Second, conservation priority was extended to non-harvestable components of nature. This opened a broad, new front of conservation dialogue and debate.

In consequence, there were many pieces of legislation governing land use, environmental regulation and protection, mitigation of environmental damage, wildlife management, migratory wildlife, and the protection of imperiled non-game species. These were eventually entrenched in US and Canadian governments at all levels. The need to implement legislation, the enforcement of regulations, and the science required to advise conservation policy and determine best practices prompted governments to identify or create new sources of funding for conservation. This included specific recreational taxes and fees, as well as levies on industry, to compensate for, or investigate, environmental impacts. These new taxes and fees may have reduced access to hunting and the recreational enjoyment of nature for some portion of the public. Behavioural obligations across industrial sectors, in addition to new public and private land management policies resulting from environmental protection legislation, deepened the ideological divide between economic progress and

conservation.

This second conservation movement also produced highly organized NGOs, adept at fundraising from both private and public sources. Many of these organizations began as groups of hunters or anglers with a common interest in the conservation of habitat for game and fish. Although some still argue that it is contradictory to conserve for the purpose of exploitation, as these NGOs began to protect and restore wild lands, many of them found support at large in society. Other NGOs with no hunting dimension had also undertaken many of the same activities: securing land by purchase, gift or binding agreement, and preserving or restoring the land. Although often aimed at particular species or specific habitat-complexes, these efforts resulted in the support of functioning ecosystems. Imperiled species legislation and resulting obligations, which emphasize the importance of habitat quality and availability, have likewise resulted in conservation efforts for a particular species that benefit whole systems.

The focus on science-informed decisions and the importance placed on system-level efforts has particularly benefitted predators, as the understanding of their ecological role improved. Highly successful predator conservation efforts, which resulted in improved ecosystem function, such as the re-introduction of wolves in Yellowstone National Park [6], could not have occurred during the first wave of conservation, when predators were assumed to have only negative impacts on prey species. From a hunting perspective, the reintroduction of predators is always controversial.

As with the first conservation phase, the second also resulted in significant gains in conservation knowledge and application. The second movement emphasized the interconnectedness of ecosystem components, and reliance on evidence-based knowledge, while it acknowledged the influence on and from human populations. Conservation efforts now received the increased strength of social and individual responsibility for conservation.

The North American Model of Conservation first described by Geist [7] results from uniting these two distinct conservation movements, and shows how progress in conservation practice can retain the successes of the past while embracing innovation. Wildlife management in North America respects the underlying principles of public trust within and across borders, encourages fair and democratic access to game, calls for the elimination of unregulated or gratuitous commercial trade, and relies primarily on science to inform management practices [8]. On the basis of these strong principles, great progress in wildlife conservation has been achieved. Again, however, the North American Model assigns priority to game species; non-game species and other aspects of conservation are less emphasized. While the benefits of the Model have been far-reaching, its focus has certainly been relatively specific.

**The new realities of 21st century conservation demand new approaches**

Like conservation's first phase, the second works to shape conservation practice while at the same time confronting and slowly responding to new challenges. In recent decades, scientific revelations have identified new conservation requirements for biodiversity, genetic diversity, and landscape functionality. Ecosystems interact with each other, and functioning wilderness requires a spatial scale not previously conceived in order to maintain ecological function, biodiversity and adequate connectivity. Climate change, the ever-increasing human population, and increased global economic interdependence have resulted in social requirements for sustainable development at a range of political scales.

Once more, evidence that current conservation efforts and tactics are insufficient is accumulating. Despite legislation to protect against environmental degradation, anthropogenic climate change has become a defining public policy issue. Despite legislation to protect endangered species, lists of imperiled species and populations grow, extirpations occur, and habitat continues to be fragmented. Despite the generally positive attitude of the public toward nature, the context of the long-standing conflict between economic progress and conservation restrains social thinking around options for conservation and sustainability. Despite the success in establishing a system of protected areas and the positive extension of land protection by NGOs, the set-aside of land remains insufficient to address the landscape-level requirements for connectivity.

Obviously, landscape function requires land – adequate amounts of it. Parks, reserves, and other land set-asides were generally established for the preservation of natural wonders, the prevention of landscape degradation associated with unregulated resource extraction, and the preservation of wilderness for public recreational use. These lands were established before our knowledge of natural systems had matured to its current level, and have proven inadequate to meet some fundamental changes in conservation needs. Formally and legally protected areas comprise a fairly small portion of the land surface of North America, and function ecologically as islands [9], disconnected by expanses of urbanised and fragmented landscape [10] Land corridors are needed.

Governments and NGOs have limited ability to protect additional, or sufficient, land. More than 60% of land in the United States is privately owned and about three-quarters of endangered species rely on private lands for habitat [11]. Furthermore, while in Canada, only 11% of land is privately owned [12], substantial portions of public lands are at least partially privatized through allowable leases for resource extraction by private industry. The most valuable land for conserving biodiversity is that with high soil productivity; this is also most attractive for human settlement, development, and ownership [13]. Private lands, and private landowners, have enormous potential to contribute to conservation's future requirements and progress.

In reality, private landowners have always participated in conservation through land purchases or donations (e.g. the Rockefeller donation of Grand Teton National Park in Wyoming), or through land trusts for conservation in perpetuity (e.g. Baxter State Park in Maine) [14]. More recently, private citizen donations to NGOs have allowed for the protection

and restoration of local ecologies (e.g. Carolinian Canada), or specific habitat types over extensive regions (e.g. Coastal America Partnership). These models often rely on a close relationship with government, accomplished through transfer to the state of ownership or management of private lands; or by reliance on grants, landowner incentive programs, or training programs. Because of this close government association, conservation easements and landowner stewardship programs necessitate complex relationships between rights and obligations, and between freedom and regulation [15]. Although tax incentives work to garner enrolment, compliance is difficult to enforce and the arrangement is often easy to project for the future generation [15]. Nevertheless, programs that aid landowners to enact conservation activities have been applied with success [16]; but they are very costly to the public purse [17], and can impose, or be perceived to impose, unwanted intrusion on landowners and private property rights in general [18].

### The third movement: citizen initiated conservation on private lands

Thus, we arrive at the ecological crisis driving the emergence of a third phase of conservation practice in North America: the best available science shows that there is an urgent need to create or restore very large scale wild lands to North America. These must provide corridors for species movement and connect ecosystems to maximize wilderness function at the landscape level. Yet, historic practices resulted in a patchwork of protected public lands disconnected by privately owned and/or multiple-use lands with varying degrees of development and degradation. It is imperative therefore that ecologically productive private lands with a high potential to support diversity are used for conservation. Yet private lands often must generate revenue for their own maintenance: this means the apparent contradiction between conservation and economic prosperity must be re-examined. They need not be mutually exclusive activities. A new paradigm shift is required within the North American conservation arena.

Landowners tend to have a genuine interest in the protection of wildlife and wilderness [18], and have now begun to address the new conservation challenges in a more integrated and self-directed way. Where public land conservation was traditionally used in part as a way to mitigate a lack of private land conservation, the reverse is occurring [19]. Mainly in the United States, the combined social, environmental, and economic context is working strongest to catalyze this shift in conservation practice. Issues such as limited fossil fuel reserves, climate change, and sustainable development have become part of the general cultural consciousness.

Because most of the land in the US is in private ownership, any geographically extensive conservation activities must include private land. Throughout the US, the growing social pervasiveness of values associated with private ownership and political independence creates the cultural expedient for citizens to conduct activities traditionally considered to be the role of government. Landowners are determining the shape of conservation on their own properties without ceding authority to conservation agencies.

Thus, there is now a strong private lands conservation system.

In contrast, the perceived urgency for private lands conservation may be less in Canada where vast expanses of Crown (public) land are still available to governments for conservation action. Yet private lands conservation practices are appearing north of the 49th parallel, and will likely converge with U.S. models. Land-use history, such as communal grazing of prairie rangelands, is currently facilitating cooperative efforts in Canadian private land conservation (e.g. Southern Alberta Land Trust Society).

In addition to the socio-political underpinnings that facilitate a movement toward owner-directed conservation on private lands in both the US and Canada, there exists a wide variety of personal motivations compelling landowners to engage in conservation activities. There is a complex array of values (e.g. specific-animal or specific-system protection, recreational opportunity, aesthetics, wilderness romanticism, etc.) associated with private lands conservation, and any individual participant will make conservation decisions according to personal choice. Nonetheless, these multiple distinct efforts arrive at a similar model, which provides an avenue for private citizens to engage in conservation without the frustration of government processes, policies, and regulations.

## The new private land models are revolutionary in nature

This new model of conservation practice builds both directly and indirectly from North America's conservation history and is varied in implementation, but displays some fundamental characteristics: participation is voluntary and autonomous; conservation can (and in some cases must) include multiple-use land/working lands; and, individual efforts are viewed as part of a larger conservation mosaic.

Self-motivated and self-directed individual landowner efforts, collaborations, and networks have grown out of the previous conservation traditions, and developed side by side while emerging now as a powerful and discrete force for North American conservation. These new citizen conservationists are, in many cases, simultaneously employing diverse conservation practices (e.g. land set-aside, habitat restoration, alternative energy production) with varying levels of external participation (e.g. enrolment in government or NGO programs, expert advice from private or public sectors). Although land owners or collaborative land owner groups may take advantage of incentives and restoration programs, or may recruit private consultants or reputable scientists, ultimately the efforts are owner-directed, and the lands are owner-managed [20].

This new movement of private lands conservation refutes the idea that conservation and land use for resource development, or revenue generation, cannot co-exist. Although some individuals fully dedicate their land to wilderness conservation, the greater trend is toward multiple, but coordinated, land use. To accomplish successful conservation while maintaining working lands, there is an emphasis on ecologically resilient systems as a final product, lands that are able to persist with anticipated stresses of mixed land-use, and also



some degree of orchestrated fragmentation, which results in conservation that supports locally-adapted (i.e., native) species, diversity, active natural processes, and complete trophic webs [21].

Private lands conservation is successful in numerous ways. In some cases, land owners place sufficient value on wilderness that land conservation set-asides that are not exceptionally costly to them are acceptable as part of their business model [22] and/or personal ethic. These 'harmless benefits' require little to achieve and are, at worst, revenue-neutral. In other cases, land owners are finding that with some creativity, ecologically sound conservation can actually increase profitability by conferring benefits to land health [23] by diversifying lines of business [22], or as an investment in future options [24].

Thus, working lands embracing a diversity of uses (e.g. agricultural production, resource extraction, or alternative energy production) are contributing to conservation while the conservation of those lands is contributing to long-term profitability.

In many cases, this model of conservation and restoration of wildlife habitat occurs partly because the owners offer guided or paid-access hunting and angling opportunities.

Thus the wider social debate over hunting's modern relevance also plays out within these new private lands initiatives. Conservation of land and restoration efforts require a revenue source. When other revenue-generating activities, such as agriculture, are reduced to setting more land aside for conservation purposes, to see landowners benefitting economically from the wildlife that thrives as a consequence is often seen as reasonable.

This trend may have implications for deeply held convictions in the North American Model of Conservation, specifically that fair access to wildlife is a right of all, and that commercial use of wildlife contravenes the spirit of a common resource. While access to wilderness for hunting opportunities remains available through other means, such as public lands, if private lands that previously allowed hunters unimpeded access (through neighbourly agreements or local cultural practices), become unavailable to them because of cost or other impediments, conflicts may arise. Similarly, whether financial gain through access to wildlife for harvest will be viewed by society as a commercial use of wildlife may not be clear until larger numbers of landowners adopt such strategies.

The multiple-use model within private properties (or across networked private properties) is echoed at a scale outside private lands. Land owners and land owner groups engaged in conservation recognize the imperative of private land contributions to conservation, and view their own efforts as valuable, but part of a system of conservation that is larger than the sum of its parts. Private citizens have sometimes purchased land to bridge gaps between public reserves, so as to connect landscapes and ecosystem function. For example, the Nokuse Plantation in Florida comprises 48,000 privately owned acres, purchased explicitly to establish a wildlife corridor between the protected areas of Conecuh National Forest in Alabama and Okefenokee Swamp in Georgia. The Plantation effectively links together approximately 1 million acres for conservation.

## Private lands conservation is visionary in scope

Private lands conservation belongs to a broad mosaic. For those with both the means and the vision, localized conservation efforts legitimized and supported through the involvement of public or private conservation experts, and even the planning and development of complex regional connectivity models, are just first steps. Influential and active participants are exhibiting genuine conservation accomplishment, while demonstrating leadership in the private lands conservation movement by planning for conservation in perpetuity, and proving a commitment to science-based decision-making, and continuing innovation. Some of the more sophisticated land operations have even established or laid detailed plans for institutes emphasizing scientific research (e.g. High Lonesome Ranch's High Lonesome Institute) or education (e.g. Nokuse Plantation's E.O. Wilson Biophilia Center).

The High Lonesome Ranch is one of the best examples of private lands conservation on a visionary scale. The Ranch consists of nearly 300,000 acres of combined privately owned and permitted lands. A functioning cattle ranch, the High Lonesome also develops natural gas resources, and offers for sale recreational opportunities (tourism, adventure, guided hunting and angling). High Lonesome's mission is to apply ecological research to inform best practices for sustainable land use and to develop a financial model that will ensure both that the landscape is preserved in perpetuity and also restored to full resilience. Thus, the Ranch is fully committed to ecological research and ecological restoration of extensive areas of degraded habitats.

The benefits of activity in scientific research on the ranch, coupled with the growing need for an organized approach to this research, spurred the decision to create a non-profit ecological research body to 'create, apply, and extend knowledge that inspires and engages people to practice a contemporary land ethic' [25]. Undoubtedly one of the High Lonesome Ranch's most significant contributions will be to develop scientifically validated best practices for conservation and sustainable resource use that can be adopted by both private and public conservation efforts, both within the western United States and elsewhere. Turner Enterprises' Vermejo Park Ranch in New Mexico is another excellent example of private lands conservation in action. A working agricultural operation, this ranch offers year-round eco-tourism, complete with service and retail operations, along with guided hunting and angling. The Ranch also houses a photovoltaic electric generation plant. Major conservation efforts at Vermejo Park Ranch include extensive stream restoration and species recovery of the endangered black-footed ferret (*Mustela nigripes*).

## Conclusion

Through networks and collaborations, the potential scale and impact of private lands conservation efforts in North America have greatly expanded. The Wildlands Network, for example, is working toward an ambitious plan that will provide continental-scale wildlife corridors of connected conservation lands. A project of this magnitude would be unimaginable without great confidence in both the capacity of private lands conservation and the

willingness of private land owners and conservationists to realize it at a continental scale. If this third movement in conservation practice continues to expand, the private lands initiative may well become the manifestation of Aldo Leopold's vision of conservation: human beings in harmony with the land [4]. Beyond any question the movement is now transforming North American conservation, borrowing from past innovations and facing the emergent challenges of today.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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