



# THE PINCHOT LETTER

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Changing Lives Through Advances in Conservation

## Redefining Forest Conservation in the Anthropocene

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*“The fact of the matter is, this Institute is needed more today,  
than at any time in our history.”*

—President John F. Kennedy, 1963

As the Pinchot Institute commemorates its golden anniversary and rededicates itself to the purposes for which it was first established, it seems these words are as true today as when President Kennedy first spoke them in his original dedication of the Pinchot Institute at Grey Towers National Historic Landmark on September 24, 1963 (Lehde 1964). There are several reasons for this.



arcane language of an appropriations bill to engage in or fund any research on a controversial topic. Even at many universities—our very symbols of intellectual freedom and objective scientific inquiry—researchers can find themselves constrained in what they are allowed to study or publish, lest they offend a key legislator and risk jeopardizing future funding for their institutions.

To some extent it is a reflection of the current state of public policymaking in this country, which is characterized more by ideological posturing and political gridlock than by statesmanlike leaders. Few and far between

are politicians who work out their differences through due process and move forward to address critical issues in a timely manner, always keeping in mind the needs and interests of the nation as a whole. Conservation policy too has suffered during this period of unprecedented partisanship and ideological intransigence. Public policymaking has always been as much an art as a science, in that it considers the implications of new scientific findings in light of the prevailing economic and social needs and concerns. Politics is the art of the possible; it is how things get done in a democracy. It is troubling, however, when the political process is used to suppress the creation of new knowledge and better information, as when research agencies are prohibited through the

Today the Pinchot Institute is widely recognized for its commitment to supporting objective, non-partisan research on some of the most crucial and controversial conservation issues of our time, and facilitating the incorporation of sound science in public policymaking processes. More broadly, the Pinchot Institute has established itself as a place where people from widely divergent interests and perspectives can come together in an atmosphere of mutual respect and understanding for productive civil dialogue on important conservation issues. The objective is not to “split the difference” between the most extreme opposing views, but to arrive at a “working consensus” based upon a rational consideration of the longer-term common interests—near-term

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compromises that are agreed upon as steps in the direction of commonly held goals that serve the broad national interest. Gifford Pinchot defined conservation as “the application of common sense to common problems for the common good.” (Pinchot 1911). This philosophy is as relevant today as it was in Pinchot’s time, and it continues to be central to the mission of the Pinchot Institute.

### Renewable Resources Management and Long-Term Sustainability

But there is another reason why Kennedy’s words continue to resonate. Conservation policy today, in this country and worldwide, is on the cusp of fundamental change, not just in terms of methodologies and tools, but also in how we envision the basic conservation goals and purposes toward which we are striving.

We will shortly be a world of 10 billion people, all with needs for food, water, shelter, and energy (United Nations 2010). In Pinchot’s time, when he galvanized the nation to conserve and sustainably manage its forests or face a resource “famine,” the world population was well under 2 billion.

Even when Kennedy spoke at the founding of the Pinchot Institute six decades later, invoking a vision of environmental limits and imminent natural resource scarcity, the world population had not yet reached 3 billion. Advances in technology have pushed back these earlier perceptions of limits, but much of this technology has been directed to accelerating the



Forest clear cut for palm oil plantation in Ecuador

discovery and consumption of energy and other non-renewable natural resources that are no less finite than they were a century ago. The planet has not gotten any bigger in the meantime. The wells and mines have simply gone deeper and been expanded to more places on the planet than at any other time in human history.



**PINCHOT  
INSTITUTE**  
FOR CONSERVATION

*The mission of the Pinchot Institute is to advance conservation and sustainable natural resource management by developing innovative, practical, and broadly-supported solutions to conservation challenges and opportunities. We accomplish this through nonpartisan research, education, and technical assistance on key issues influencing the future of conservation and sustainable natural resource management.*

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Renewable resources—water, forests, agriculture, non-fossil fuel energy—are ever more clearly the key to long-term sustainability in all of its economic and social, as well as environmental, dimensions (Fedkiw et al. 2004). There has never been a more challenging time for the advancement of the science and technology around renewable resource management, suggesting the need for a far greater level of public and private investment than is being made today. This quantum shift, to gradually substituting renewable resources to fulfill needs being met today through the rapid drawdown of fossil fuels 200 million years in the making, will also challenge our existing economic, political, and national security systems worldwide. Forests, water, and arable lands may be renewable, but they are still finite in a world that is becoming hotter, flatter, and more crowded (Friedman 2009).

### Managing for Change in the Age of Man

For forest scientists and the people and organizations charged with conserving and sustainably managing forests, the world is also becoming less predictable, in very unsettling ways. The strident yet ultimately sterile debate over whether or not humanity is responsible for climate change cannot alter the fact that the climate is indeed changing, and in ways that will severely challenge our existing science and practices in renewable resource management.

Most of what we currently know about how forests and other ecosystems function, and how they respond to management practices and other human interventions, was developed during the past two centuries (National Research Council 1990), during what we now know has been a period of relative stability in the world's climates. Against this backdrop of predictable annual temperature regimes, wet and dry seasons, and their effects on everything from

water availability to insect populations, we've developed entire bodies of science in ecology, agronomy, and silviculture. Upon these foundations of reliable and widely understood science, we have built our standard practices for forest management, farming, and even where we locate our cities and communities.

Now all of that is in flux. The rate at which the world's climates are becoming more variable and thus less predictable is challenging the ability of both natural and human systems to adapt (Ward 2007). Larger and deeper droughts are having major effects on world food production, over such large areas that it is increasingly difficult to mitigate even through an efficient system of international trade and distribution. Forests around the world are experiencing unprecedented expanses of near-total forest mortality from insects, disease, and wildfires. As these trends compound year after year, it is dawning on forest scientists and managers that what they are witnessing may be more than just several years of extraordinarily bad luck. It may simply be the way climate change manifests itself. As the optimal habitat zones for particular tree species and their associated ecosystems shift toward higher latitudes, the existing forests increasingly become relict systems, living out their remaining days rooted where they are as their

progeny follow climate characteristics that are moving steadily further away. These relict populations become subject to increasing environmental stresses from drought and temperature. Eventually they succumb to an insect or disease infestation that instead of killing a few susceptible individual trees kills tens of millions. In these entire landscapes of dead and dying trees, what often follows is wildfire of unprecedented scope and intensity. What grows back is not the forest species that were there before, but species associations more characteristic of warmer and drier climes. In some cases, it is not a forest at all that grows back, but a grassland or some other biome better adapted to the emerging regional climate.

This is reminiscent of how climates have changed in temperate, boreal, and tropical ecosystems for millions of years—*reminiscent*, but at the same time different in fundamental and critically important ways. Geologists, paleoecologists and others whose research focuses on timeframes in the thousands or millions of years have documented the ebb and flow of several glacial periods that have had profound effects not just in the higher latitudes but in the tropics as well (Stager et al.). Through methods such as the analysis of pollen in core samples drawn from ancient lake sediments, scientists have



Fire restoration work on the Gifford Pinchot National Forest

USDA Forest Service



documented how the surrounding landscape was home to succeeding ecosystems—from tundra to coniferous forest, to temperate forest, and back again—during interglacial periods lasting from 20,000–50,000 years. During these periods, various plant and animal species and entire ecosystems migrated, mutated, and otherwise adapted to the gradual change in the regional climate.

Therein lies the major difference for both natural and human systems in our own time. The concentrations of greenhouse gases in our atmosphere today—and increasing in coming decades under even the most optimistic projections for reducing carbon dioxide emissions—mean that many regions of the globe will experience during the next century or so the degree of climate change that would normally take place over thousands of years (Stager 2011). There simply is not enough time for the kinds of ecosystem migration, mutation, and adaptation that has taken place in previous interglacial periods.

The Holocene is the name given to the current interglacial period following the Pleistocene glaciations that ended 25,000 years ago. But in the lexicon of a growing number of scientists, the world is now fully

entered into the “Anthropocene” (Zalasiewicz et al. 2010). This new Age of Man is unlike any the planet has experienced before, wherein the effects of human activities are having an influence on the evolution of natural systems that is at least equal to that of geologic or other natural forces.

If we have indeed entered the Anthropocene, this has profound implications for conservation, renewable resource management, and environmental sustainability. If the course of future evolution in natural ecosystems all over the planet is being fundamentally altered by the effects of human activity, it begs the question of whether we can continue to rely upon “the balance of nature” to set things right (McKibben 1989, 2010), and even whether the balance of nature is any longer a valid concept (Marris et al. 2011) in the way we accomplish conservation. The setting aside of large parks and conservation reserves has long been the primary means of protecting what remains of the planet’s native biodiversity. How can these reserves, with fixed boundaries on a map, continue to protect the intended species and ecosystems when the organisms themselves are continuously on the move in response to changing climates? How “natural” are the

ecosystems and species that remain in these reserves when they are constantly influenced by a human-altered climate, by introduced invasive species, and by the “chaotic re-sorting” of ecological communities by differential abilities among species to migrate in pursuit of receding optimal climate characteristics? A number of leading ecologists have begun to insist that there is a need, perhaps even an obligation, for a greater level of human management intervention in forests and other ecosystems in order to protect native biodiversity and sustain other important values and services from these systems—water, wildlife, fiber, and carbon sequestration to help restrain the rate of further climate change (Kareiva et al. 2011, 2012). It has been suggested that much of the world’s demand for industrial wood and fiber can be met through the intensive cultivation of tree plantations on a relatively small portion of the world’s forests (Sedjo and Botkin 1997; Victor 2005; Paquette et al. 2010). But what does this imply for protecting water resources, wildlife habitat, native biodiversity and other essential resources in protected areas and in the majority of forests that, in practical terms, are today still largely unmanaged? What are the implications for regional economies and indigenous communities whose futures are inextricably intertwined with that of their surrounding forests?

### Emergence of a New Paradigm in Forest Conservation?

When President Kennedy came to Grey Towers to dedicate the Pinchot Institute, along with the Pinchot family, the Secretaries of Agriculture and Interior, the Chief of the Forest Service, and many of the leading conservation thinkers of the time, none of them really knew what lay ahead. It would be several more years before the full-scale political and legal battles that brought forth most of the nation’s major environmental legislation: the Clean Air Act,



USDA Forest Service

Low-intensity prescribed fire on the Custer National Forest



Western Thimbleberry and Mountain Ash on Caribou-Targhee National Forest

Clean Water Act, Environmental Policy Act, Endangered Species Act, Wilderness Act, Forest & Rangelands Renewable Resources Planning Act, and National Forest Management Act were all signed into law between 1970 and 1976.

But what they did know was that something new, different, and highly significant was unfolding. They didn't know exactly what it was or where it was leading, but they somehow sensed that conservation as we had conceived of it from Pinchot's time up through most of the 20th century was about to change, that it was increasingly out of step with new and emerging circumstances, and that the future would look very different. Little did they know in 1963 that they were standing at the threshold of what would become known as the Environmental Movement, or how it would play out against the backdrop of quantum changes in civil rights, geopolitics, technology, economic globalization, and the elevation of environmental concerns to the planetary scale.

In his landmark book *The Structure of Scientific Revolutions*, Thomas Kuhn introduced the concept of the "paradigm shift." Scientific

institutions and science itself make innumerable small course corrections in response to new information and new circumstances. There are intervals in history, however, when there comes a growing sense of disequilibrium in which the fundamental tenets of the existing system are inconsistent with observations and the latest research results. It becomes increasingly clear that minor course corrections are no longer adequate, and what is needed is the plotting of an entirely new course toward a completely different destination. A paradigm shift is more revolution than evolution. The process involves the rejection of established concepts and methods in favor of new ones, often resisted by a vigorous defense of these conventions by those whose professional standing or personal legacy is at stake.

Like economic recessions, paradigm shifts are often more readily apparent in hindsight than when they are in the midst of occurring. Thus it was during the shift from the early Conservation Movement to the Environmental Movement—and thus it may be today as the norms of the Environmental Movement fade before the dawning of the next era of conservation.

In considering the potential implications of conservation in the Anthropocene, some of the most respected ecologists and conservationists of our time have taken passionate issue with one another over what the ubiquitous influence of humanity in natural ecosystems means for the future of conservation. Accomplished conservation biologists state flatly that biodiversity conservation as it is currently practiced is failing (Kareiva et al. 2011); while conservationists' ambitious goals for the designation of protected areas around the world have largely been achieved, species extinctions continue at an alarming rate. Habitat con-

tinues to be lost to commercial deforestation in parks and protected areas whose boundaries and restrictions cannot be enforced. But habitat is also being lost to local populations and indigenous communities who have no other place to go, and whose expulsion often results in their own demise—not only of individuals but of entire communities. Other scientists strongly caution against running up the white flag of surrender (Lovejoy and Hannah 2005; Caro et al. 2011; Hannah 2012); they do not want to appear to be suggesting that the point of no return has been reached, and that there is no longer any point in worrying about conservation (Anderson et al. 2010, 2011).


This is just the sort of impassioned debate among leading thinkers that presages a paradigm shift. Some acknowledge the stark reality that what once seemed to be the key to success is now failing. Others fear what could happen in the vacuum that develops when the old approaches and their associated practices are put aside, and there is not yet a fully-formed successor system to take its place. It is only natural. It is the way of science, and the way of human societies.



## The Importance of Rational Civil Dialogue—Especially Now

Where conservation science and management finds itself today in many ways parallels where it stood fifty years ago. There is initial resistance and then gradual acknowledgement that conventional methods are no longer successful. There is a sense that something new, different, and highly significant is happening. Changes are beginning to take place but it is not yet clear what they are or where they are leading. There is a need to bring together thoughtful scientists, natural resource managers, and conservationists, in an atmosphere of mutual respect and understanding, to work out their differences on the most critical conservation issues of our time. There is a need for objective, non-partisan research, and the incorporation of new findings into current science, practice, and policy. There is a need for someone to facilitate a rational and productive civil dialogue about the future of conservation, acknowledging the value and legitimacy of all points of view throughout society. After all, we are all in this together, and there is literally no one whose life will not be somehow affected.

President Kennedy's words from fifty years ago are even more poignant today. The stakes for conservation and resource sustainability were high then—but they are significantly higher now in a hotter, flatter, and more crowded world. Given the unique mission, goals, and approach of the Pinchot Institute, it truly is “needed more today than at any time in our history.” By no means will these needs be met by the Pinchot Institute alone, and building strong conservation partnerships at the national, international, and community levels will continue to be a hallmark of its work. As we strive to create new knowledge, and to build a stronger understanding and public consensus around conservation in the future, Gifford Pinchot's observation a century ago, describing conservation as “the application of

common sense to common problems for the common good” continues to guide the work of the Pinchot Institute, and will remain our enduring touchstone. 

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