

## Working Toward Common Goals in Sustainable Forest Management: The Divergence and Reconvergence of European and American Forestry

On July 1, 2005, France and the United States pledged to expand their cooperation on forest conservation and management, with one another and with other parts of the world that are still striving to shift from unsustainable exploitation of forest resources to sustainable forest management. Signing the agreement were Jean-Jacques Benezit, Director of International Affairs in the French Ministry of Agriculture, and Dale Bosworth, Chief of the U.S. Forest Service in the Department of Agriculture. Strong support for this renewed high-level cooperation on forestry matters was voiced by Jean-David Levitte, French Ambassador to the United States; John Turner, U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs; Michael Johanns, U.S. Secretary of Agriculture; and Mark Rey, U.S. Undersecretary of Agriculture for Natural Resources and Environment.

This pledge of renewed cooperation between France and the United States is symbolic in many ways. It was signed on July 1, the hundredth anniversary of the signing of the Transfer Act of 1905, which established the U.S. Forest Service in the Department of Agriculture, and transferred the responsibility for managing the federal forest reserves (now National Forests) to the Forest Service from the Department of the Interior. Furthermore, the agreement was signed at the very desk used by Gifford Pinchot when he served as the first Chief Forester of the United States and founding chief of the Forest Service.

Because there were no forestry schools at any university in the United

States in Pinchot's time, he received his professional education at the French national forestry school, the *École Nationale Forestière* in Nancy, in 1889. Like Pinchot, many of the other early leaders in forestry in the United States received their training at European forestry schools. They brought back with them the sum of experience, and knowledge of forest science and forestry practice, developed in Europe over more than a thousand years. Adapting this knowledge to the unique ecological, economic and social circumstances in the United States at the time, Gifford Pinchot and his contemporaries launched not only the U.S. Forest Service, but the profession of forestry itself in the United States. Through Pinchot and others, Europe made a major contribution to accelerating the transition in the United States from our own unsustainable exploitation of

forests to conservation and sustainable forest management as we know it today.

The signing of this agreement, on the centennial anniversary of the founding of the U.S. Forest Service, was in many ways a recognition of this important contribution, and an acknowledgement of thanks to our European colleagues and forestry education institutions. It marked the culmination of an international colloquium organized by the Pinchot Institute, the U.S. Forest Service, and the *École Nationale du Génie Rural des Eaux et des Forêts*,<sup>1</sup> to examine the common roots of forest science and forestry practice, the divergent paths followed by European and American forestry during the 20<sup>th</sup> century, and the reconvergence that is taking place in the 21<sup>st</sup> century around common concerns such as



American and European participants in June at the Biltmore Estate in Asheville, North Carolina

conserving biological diversity, protecting water quality, and promoting sustainable forest management in both developed and developing countries. The colloquium took place in two stages, first in Nancy, France at the École Nationale du Génie Rural des Eaux et des Forêts on March 7-9, and second at Grey Towers National Historic Site in Milford, Pennsylvania on June 27-29. The papers from the colloquium are being published as a book to be released by the Pinchot Institute and the Forest History Society in 2006.

#### DIVERGENCE AND RECONVERGENCE

Forestry in Europe and the United States share common roots, not only in terms of the practice of silviculture, but in the institutional, legal and policy framework that forms the basis for sustainable forest management. Sustainable forest management, as the term is currently applied, explicitly incorporates ecological and social considerations as well as economic ones. European forestry institutions, especially educational institutions such as the École Nationale Forestière in Nancy, France, significantly contributed to the introduction of basic principles of forestry to the United States in the late 19th century. This catalyzed the nation's transition from unsustainable exploitation of its forest resources to the conservation and sustainable management of these resources.

Early American forestry leaders who received their training in Europe, such as Gifford Pinchot, quickly recognized that the silviculture and forest science they had been taught there would have to be adapted to the very different circumstances prevailing in the United States at that time, not only in terms of different forest types, but also to respond to important social, economic, cultural and political differences. The institutional, legal and policy framework for forestry in

the United States developed along distinctly different lines than in Europe, and continued to do so throughout the 20th century. It also evolved at a far faster rate, so that during the last half of the 20th century, forestry in the United States was already struggling to address significant changes in social values and perspectives regarding forests and forestry that are only now sweeping through forestry in Europe.

At the start of the 21st century, European and American forestry institutions are focusing on many of the same concerns—sustainable wood production, biodiversity conservation, protection of water quality, climate mitigation, and promoting sustainable economic development in rural communities, for example. This reconvergence is resulting in increased cooperation in the development of new forest science and technologies among scientists and forestry practitioners; and new strategic alliances among forestry institutions involved with research, technical assistance, and forest management. Not only is this cooperation taking place on European and U.S. soil, but more importantly, in developing countries of Africa, Asia, and Latin America, which are at the point in their own histories where they are struggling to make the transition from unsustainable resource exploitation to resource conservation and sustainable use.

#### HISTORICAL FRAMEWORK

Sustainable forest management in Europe developed over a period of more than a thousand years, dating back to medieval edicts governing woodcutting and the taking of game animals in royal forests. As chronicled in the chapter by David Adams,<sup>2</sup> the framework of legal principles underlying forest use and management goes back at least to the *Corpus Juris Civilis* compiled by the Roman Emperor Justinian in the 6th century. The Romans introduced the concept

of privately-owned forests (*res in patrimonio*) to lands which previously had been treated as commons. Following the fall of Rome, the Barbarians of central and northern Europe enacted the first Germanic forestry laws between the 5th and 7th centuries, promulgating fines and punishments for forest trespass and declaring all forests, except royal territories, commons subject to free public use.

Canute, ruler of England, Denmark and Norway in the 11th century, established laws granting private ownership and use of forests, and also reserved royal forests for the protection of both wild game and the woods themselves. As populations in Europe increased, impacts on the forests also increased, prompting the enactment of forest protection laws in Europe and in Norman England. Tensions over the enforcement of these notoriously strict laws governing the use of forest lands helped give rise to the *Magna Carta* and its accompanying *Magna Foresta* in the 13th century. In the early 19th century, the Napoleonic Code swept away many of the remaining vestiges of feudalism, and opened forests throughout the portion of Europe once conquered by Napoleon to private ownership and use.

Forest science and the practice of silviculture came of age in Europe in the 18th and 19th centuries, as described in chapters by Marie-Jeanne Lionnet,<sup>3</sup> Heinrich Spiecker,<sup>4</sup> Yves Birot<sup>5</sup> and Françoise Houllier.<sup>6</sup> The concept of managing forests for a sustained yield of wood arose out of economic and social problems created by forest exploitation for shipbuilding, charcoal making and other uses that made it difficult for local communities to meet their needs for fuelwood, fodder and food. Selective harvesting systems based on coppicing (regeneration through stump sprouts), coppicing-with-standards (leaving occasional large trees to provide for



forest regeneration from seeds as well as sprouting), and high forests (regenerated primarily through seeding and planting) helped sustain forests for a variety of uses, theoretically in perpetuity. Tree breeding and the introduction of new species brought about higher forest productivity, along with the use of even-age silvicultural systems involving the periodic clearing and regeneration of larger areas of forests under the “regulated forest” concept.

#### CHANGING SCIENCE AND SOCIAL VALUES

In much of Europe during the 20th century, preferred species of trees, such as Norway spruce and European beech, were planted over large areas, often with only a single species represented. In recent years, many problems with this approach have become apparent, including insect outbreaks, severe weather damage, and disease problems. These problems have had major economic impacts, and have caused European forestry to shift back toward mixtures of commercial and native species. As noted in chapters by Franz Schmithüsen,<sup>7</sup> Christian Barthod,<sup>8</sup> and Konstantin Von Teuffel,<sup>9</sup> forestry in Europe is also changing in response to evolving social values and cultural perspectives regarding forests, and the need to provide greater protections to natural characteristics not usually found in large monocultures of non-native tree species.

Ironically, forest scientists and forest managers have, for most of the past two centuries, focused on methods to maximize wood production. Even though these methods were highly successful, European foresters are finding that social goals relating to forests have changed in the meantime. An entirely new set of social and economic challenges have arisen in European forestry, and the traditional institutions of forestry research, forest management, and forestry educa-

tion are struggling to meet these new challenges.

These kinds of challenges are not new to forestry in the United States, where, interestingly enough, these kinds of environmental, economic and social concerns arose decades earlier than in Europe. Chapters by Michael Williams<sup>10</sup> and Char Miller<sup>11</sup> describe some of the unique frontier values that shaped the early American view of forests, and helped drive the wave of deforestation and forest exploitation that swept across America during the 19th century. It was the widespread environmental and economic damage from this exploitation that caused scientists and authors such as George Perkins Marsh, Charles Sprague Sargent, and John Aston Warder to sound the alarm, and call for government action to halt the devastation of the nation’s forest resources.

It was into this set of circumstances that young Gifford Pinchot was thrust, urged by his father to go to Europe to study forestry, and bring back to America a more enlightened approach to utilizing its forests. The notion that a forest could be cut and at the same time preserved was a foreign concept to 19th-century America, as it rushed to open its last frontiers, to capitalize on its natural assets, and to join the industrial revolution sweeping through Europe at the time. Pinchot’s family itself had once made its fortune in the lumber business, clearing timber and abandoning the land in the style that was customary and accepted at the time, a fact that may have had some bearing on Pinchot’s choice of profession.

Pinchot’s conservationist tendencies are compared in a chapter by John Perlin<sup>12</sup> to those of another icon of the American conservation movement: John Muir. Conventional wisdom holds that Muir regarded Pinchot’s utilitarian approach to forests as anathema to his own preser-

vationist approach, and that the feeling was mutual. In fact, Perlin points out many of Pinchot’s writings and public pronouncements at the time reveal a strong tendency toward forest protection. Use of the federal forest reserves and other public lands by local individuals was inevitable, Pinchot reasoned, so the most practical approach is to allow such uses, but regulate them to prevent resource depletion or long-term damage to the land’s productivity. Perlin likewise examines Muir’s writings at the time, and finds that he too understood this approach, but also regarded some landscapes as almost sacred in their pristine form, to be held inviolate by any human exploitation. Unfortunately for history, and for the relationship between these two early conservation leaders, they differed over one particular landscape—Hetch Hetchy Valley in Yosemite. Particularly ironic is that, long after Muir’s death in 1914, Pinchot increasingly favored strong governmental intervention to protect forests on private as well as public lands in the United States, eventually becoming highly critical of the close association between the lumber industry and his beloved U.S. Forest Service.

The evolution of the Forest Service to being the nation’s largest single timber producer by the mid-20th century had a major impact on the National Forests, and on the public perception of the Forest Service itself, as noted in the chapter by Paul Hirt.<sup>13</sup> With Europe still reeling from the devastation of World War II, the U.S. economy was the fastest growing in the world at mid-century. The American spirit was one of unflinching optimism and confidence that, with a combination of economic resources and technological know-how, anything was possible. Forest science and the practice of forestry in the United States focused almost entirely on maximizing wood production, and were very successful in achieving that goal. But as in Europe, social values



Al Sample (US), Dominique Danguy des Deserts (FR), Heinrich Spiecker (DE), Franz Schmithüsen (CH), and Paul Sisco (US) at a chestnut tree planting and dedication in the Cradle of Forestry.

and public preferences shifted in the meantime. Forestry found itself out of step with the rest of society, and subject to a storm of public criticism that foresters—most of whom considered themselves to be conservation-minded—struggled to understand. Hirt observes that after nearly four decades of controversy over timber harvesting and other forest practices, forestry in the United States seems to have come full circle. Timber harvesting on the National Forests has declined from previous unsustainable levels, and the focus has shifted more toward what it was a century ago—watershed protection, ecological restoration, forest health, maintaining forest extent, and wood harvesting mostly by regional and community-based firms for local processing and economic development.

#### ANTICIPATING THE FUTURE

European and American forestry are now facing similar challenges and opportunities in the 21st century. At no time in history has there been

greater public interest in the conservation and sustainable management of forests—in Europe, in the United States, and throughout the world—than at present. There is widespread recognition that maintaining forests is an essential prerequisite to conserving biological diversity, including threatened or endangered plant and animal species, as well as game species. Protecting water quality from forested watersheds has become a critical need in many parts of the world as an increasing proportion of the population becomes concentrated in urban centers. Increasingly urbanized populations also mean that forests and other natural areas are becoming more important for outdoor recreation and relief from the pressures of urban life. More people are coming to understand the value of wood as a renewable resource, and that it can be substituted for other kinds of building materials whose mining or manufacturing have a far greater impact on the natural environment. Most recently, there is growing recognition of the important role forests play in mitigat-

ing global climate change, either through sequestration of carbon dioxide, or by substituting “biofuels” for fossil fuels in energy production, a major source of greenhouse gases.

The controversies and public debates over timber harvesting and other forest practices in Europe and the United States have stimulated many different efforts to define “sustainable forestry.” The chapter by Al Sample<sup>14</sup> describes how these many separate efforts have led to a remarkably consistent identification of “generally accepted principles of sustainable forest management.” These principles are increasingly finding their way into international trade in forest products through new mechanisms, such as independent third-party certification. “Green” certification gives confidence to the purchaser of a wood product that it is from a well-managed forest, whether the purchaser is an individual consumer or a company intent on demonstrating its commitment to environmental stewardship. Over time, certification will reward conscientious forest managers with greater market share, while gradually eliminating market access to wood from exploited or endangered forests.

These basic principles are becoming the core of forest management planning for the future, both in Europe and the United States, as described in chapters by Jean-Jacques Benezit,<sup>15</sup> Cyrille Van Effenterre,<sup>16</sup> Michel Vernois,<sup>17</sup> and Dennis LeMaster.<sup>18</sup> Internationally, they are increasingly being manifested in the influences that European and American forestry professionals are having on key institutions such as the United Nations Food and Agriculture Organization (FAO) forestry program, as described in the chapter by Jean-Paul Lanly.<sup>19</sup> Gérard Buttoud<sup>20</sup> expands further upon this in his discussion of the new concepts and policies emerging from the broader international dialogue on forestry, which increas-



ingly involves private and nonprofit organizations as well as government entities. Author Jeff Burley<sup>21</sup> gives further emphasis, stressing that multi-lateral and multi-sectoral (e.g., private enterprises and nonprofit organizations, not just governments) cooperation and action will be needed if forest conservation and sustainable forest management is ever to be achieved at the global level. Sustainable forest management has a key role to play in poverty alleviation in developing countries, not only through maintaining community supplies of fuelwood and fodder, but in protecting water supplies and water quality in rural areas often devastated by drought and water-borne diseases. As the local economies are increasingly drawn into the global economy, developing countries are becoming the fastest growing sources—and markets—for wood and wood-fiber products. Ensuring that these develop in way that can be sustained over the long term will be a major challenge for the developing countries themselves, but also for multi-lateral development banks and sources of private capital that fund major forest development projects.

All of this has significant implications for forestry education in Europe, in the United States, and throughout the world. This colloquium was inspired by the important contributions that forestry education at European universities made to the United States at a critical stage of its development as a nation, by educating Gifford Pinchot and other early forestry leaders. Having recognized the importance of the United States-developing forestry education programs of its own, Pinchot helped establish a new forestry school at Yale University. More than 50 additional forestry programs have since developed in the United States, mostly at state universities. But as Patrice Harou,<sup>22</sup> Ed de Steiguer<sup>23</sup> and Terry Sharik<sup>24</sup> observe, the enrollments in forestry programs at universities in both Europe and the United States

have been steadily declining for several years. Forestry programs at many universities have been blended into broader programs in agriculture or environmental sciences. At other universities, the forestry programs have simply disappeared altogether.

What is particularly ironic is that this decline in university-based forestry programs is coming at a time of unprecedented world-wide public concern over forest conservation, when there has never been a greater need for competent, well-trained forestry professionals. These professionals are needed in the field where they can develop a first-hand understanding of resource problems and their underlying causes, and find effective means by which to address these problems. But experienced, knowledgeable and articulate forestry professionals are also needed at the highest levels of governments and private enterprises, to guide policymaking so that it is practical and effective, and so that unintended negative consequences are avoided.

Forestry education in Europe and the United States has made important contributions to sustainable forestry over the past century. But in many cases, these institutions are not capable of preparing the next generation of forestry professionals for the new set of challenges they will be facing. How can forestry education adapt to these changing needs? Creative partnerships and strategic alliances that allow university-based forestry programs to combine their strengths and share resources internationally—such as “distance learning” programs that allow students around the world to take on-line classes with top professors at many different universities in a single degree program—will be essential to meeting the world’s changing needs for forestry education.

## CONCLUSION

This colloquium marked the cen-

tennial of the U.S. Forest Service, and acknowledged the important role of European forestry educators in fostering the development of forest science and the practice of forestry in the United States. As Françoise Le Tacon<sup>25</sup> points out in his chapter, scientific and technical exchange in forestry between the United States and Europe has been going on for more than a century. But today’s challenges in forest conservation and sustainable forest management will require far more than developed countries assisting one another and learning from one another’s experiences. There are many countries in the world that are today striving to make that same transition that was so important to the United States at the time of Gifford Pinchot—from unsustainable exploitation of their forests to conservation and sustainable management.

In his 1911 book, *The Fight for Conservation*, Pinchot wrote: “A nation deprived of its liberty may win it; a nation divided may reunite; but a nation whose natural resources are destroyed must inevitably pay the penalty of poverty, degradation and decay.” In our interconnected global society, no individual nation can suffer such a fate without affecting other nations halfway around the world. On the other hand, a nation that achieves success in sustaining its resources and its people becomes a positive force in the global economy and contributing citizen in the global community.

Addressing the new and growing cadre of forestry professionals in the United States that he helped to inspire, Gifford Pinchot also wrote, “Our responsibility to the Nation is to be more than just good stewards of the land. We must be constant catalysts for positive change.” Today, our responsibility is to the global community, and it is in part through expanded international cooperation that we will fulfill that responsibility to be constant catalysts for positive

change, and continue to advance conservation and sustainable forest management.

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## NOTES

1. Other sponsoring organizations included: the Swiss Federal Institute of Technology (ETH), Forest Research Institute of Baden-Wuerttemberg, University of Freiburg, Forest History

Society, Pennsylvania Bureau of Forestry, National Forest Foundation, Society of American Foresters, Stihl, Blooming Grove Club, American Chestnut Foundation, and the Biltmore Estate.

2. North Carolina State University.
3. École Nationale du Génie Rural des Eaux et des Forêts, Nancy.
4. Université de Freiburg-en-Brisgau, Freiburg.
5. Institut National Recherche Agronomique, Nancy, France.
6. Institut National Recherche Agronomique, Nancy, France.
7. Swiss Federal Institute of Technology, Zurich, Switzerland.
8. Ministère de l'Écologie et du Développement Durable, Paris.
9. Forest Research Institute of Baden Wurtemberg.
10. Oxford University.
11. Trinity University, San Antonio, Texas

12. Santa Barbara, California
13. Arizona State University, Tempe, Arizona
14. Pinchot Institute, Washington, DC
15. Ministère de l'agriculture et de la Pêche, Paris.
16. École Nationale du Génie Rural des Eaux et des Forêts, Paris.
17. École Nationale du Génie Rural des Eaux et des Forêts, Nancy
18. Purdue University (ret), West Lafayette, Indiana.
19. Académie d'agriculture de France, Paris.
20. École Nationale du Génie Rural des Eaux et des Forêts, Nancy
21. Oxford Forestry Institute, Oxford University.
22. World Bank, Washington, DC.
23. University of Arizona, Tucson.
24. Utah State University, Logan.
25. Institut National Recherche Agronomique, Nancy.

## High School Students Learn Hands-On about Pennsylvania Forestry Issues

On May 31, a group of students from Delaware Valley High School (DVHS) took part in a field studies course on the history and practice of forestry. The course was held at Grey Towers National Historic Site and the nearby Milford Experimental Forest. Students learned about the history of conservation and took part in a field class re-creating the lessons about forestry and land management techniques taught at the Yale School of Forestry a century ago. The Milford Experimental Forest was one of the sites where forestry was first taught in the United States. The workshop was the first time since 1927 that the site has been used to teach students about forest management.

This program has been developed by staff at Grey Towers and Milford Experimental Forest, in partnership



High school students learn how to identify trees.

with DVHS. Last year, project partners developed a curriculum that includes several types of courses, including: how to measure trees and practice forestry and how to assess the health of forest ecosystems. Ecosystem assessment will focus on how deer impact the diversity of plant life and the regeneration of forests.

These courses will continue to be

offered to students at local high schools thanks to generous gifts from the Wayne Bank, which donated \$45,000 and The Dime Bank, which donated \$10,000. Wayne Bank President and CEO Bill Davis noted, "Wayne Bank has long valued the conservation of natural resources as well as the well-rounded education of our communities' youth. We're proud to help foster progress in forest management through our partnership with Pinchot Institute for Conservation and with area young people."

The Pinchot Institute and the Forest Service at Grey Towers are grateful for the generous support of Wayne Bank and the Dime Bank. This program is made possible through a collaborative partnership between the Pinchot Institute for Conservation and Grey Towers National Historic Site.

