Assessment of Lawful Harvesting & Sustainability of US Hardwood Exports

Prepared for
American Hardwood Export Council

Collaborating Authors:

Alberto Goetzl, Seneca Creek Associates, LLC
Paul Ellefson, PhD, University of Minnesota
Philip Guillery, Tropical Forest Trust
Gary Dodge, PhD, Consulting Biologist/Ecologist
Scott Berg, R.S. Berg Associates

October 1, 2008
Version 1.0

Assessment of Lawful Harvesting & Sustainability of US Hardwood Exports

EXECUTIVE SUMMARY AND KEY FINDINGS

Background

In certain export markets, most notably in Europe and Japan, government procurement policies and private purchasers are requiring that wood products be shown to be from legal and sustainable sources. The US hardwood sector is characterized by a dispersed supply chain involving millions of mostly small individual landowners and a complex network of timber buyers, processors, wood dealers, concentration yards, harvesting contractors and traders that makes chain of custody tracking for certification challenging if not extremely difficult. In lieu of certification, this report evaluates the risk of US hardwood products from illegally (and unsustainably) sourced timber entering this supply chain and being included in the mix of US exports.

Commercial production of US hardwoods is concentrated in states along and east of the Mississippi River with some additional production in the Pacific Northwest. In preparing this assessment, the collaborating analysts reviewed available information regarding the legal frameworks governing timber ownership, forest management and harvests in the thirty-three states that represent the major hardwood producing regions of the US. In aggregate, these 33 states account for 96% of US hardwood production.

Objectives

The main purpose of this study was to review and evaluate data useful in determining the level of risk associated with US hardwood production with respect to its legality and sustainability. In the context of today's global trading environment, it is important for exporters and importers to have access to information that can respond to questions about legal and sustainable sourcing of wood products. Specifically, the objectives of the study were to:

(1) describe and assess the legal frameworks that ensure clear ownership and contractual rights to sell timber in the US hardwood regions;
(2) describe and assess the legal and policy frameworks designed to ensure sustainability in the states where US hardwoods are produced;
(3) evaluate the US hardwood supply situation within the context of:

(a) UK government procurement guidelines for legal and sustainable wood products developed by the Central Point of Expertise on Timber (CPET);
(b) Forest Stewardship Council (FSC) Controlled Wood Standard; and,
(c) Programme for the Endorsement of Forest Certification (PEFC) requirements for the avoidance of the procurement of raw material from controversial sources.

Study Team

Seneca Creek Associates, LLC coordinated the preparation of this study with a team comprised of well-regarded and independent analysts and experts in the field of US forest policy and forest certification. The following individuals collaborated on this project:

Alberto Goetzl	Mr. Goetzl is the founder and president of *Seneca Creek Associates, LLC*, a consulting firm that specializes in resource economics and policy. He has authored widely-regarded studies on US and global forest and forest products trade issues.
Paul V. Ellefson	Dr. Ellefson is one of the most recognized authorities on regulations and voluntary programs that affect forest management at the national and state levels. He teaches and researches at the *University of Minnesota*.
Phil Guillery	Mr. Guillery is currently with the *Tropical Forest Trust*. Mr. Guillery has worked with the Forest Stewardship Council and with private sector clients on certification and controlled wood assessments.
Gary Dodge	Dr. Dodge is an ecologist with *Trailhead Associates*. He has consulted with the Forest Stewardship Council on the FSC Controlled Wood Standard.
Scott Berg	Mr. Berg is President of *R.S. Berg & Associates, Inc.*, a consulting firm that works with forest landowners and timber purchasers in preparing for FSC, SFI, PEFC, ISO 14001 and Tree Farm land management and chain of custody certification.

Key Findings and Observations

(1) Based on the data compiled and analyzed, the weight of evidence strongly indicates that there is very low risk that US hardwood exports contain wood from illegal sources.

(2) There can be high confidence that rights of timber ownership are well-established and respected. Approximately 92% of hardwood produced in the US is sourced from private lands. The vast majority of private landowners own small family forests that average less than 10 hectares in size. Numerous legal processes are available to landowners to resolve disputes involving proper title and/or the unauthorized taking or sale of timber property.

(3) While timber theft occurs and is of concern to private landowners, it not believed to be a pervasive or systemic problem, especially with regards to US hardwood exports. The extent of unlawful timber harvesting across the hardwood producing region is not easily determined and many cases go unreported, although most appear to involve a relatively small numbers of trees. The most commonly reported incidents of timber theft and trespass involve poorly marked or disputed boundary lines. The experience of states with the most detailed information allows an estimate that on the order of 800 to 1,000 significant timber theft cases occur annually in the hardwood region, involving an estimated 20,000 to 25,000 cubic meters (including both softwood and hardwood). Even if half or more were hardwood trees, stolen timber would represent a very small portion of total US hardwood production – very likely less than 1%.

(4) The legal frameworks governing timber ownership, its management and sale vary widely by state. Every state has both regulatory and non-regulatory authorities and programs addressing different aspects of forest management. While resources are limited, and efficiencies and effectiveness can be improved, state programs are responsive in promoting and ensuring sustainable forest practices. When considered in their totality, national and state forest programs contribute to ensuring sustainable and legal hardwood supplies.

(5) Comparisons of international governance indicators, such as those compiled by the World Bank, strongly indicate that the US is perceived as a country with a high regard for the rule of law, an effective environmental, labor and public welfare regulatory environment, and a low level of corruption.

(6) Based on published data, as available, and information complied from state officials and the wood products trade, there can be high confidence regarding adherence to national and state laws in the hardwood sector.

(7) The US re-exports very little imported temperate hardwood products. Most hardwood imports are from Canada, a country with similarly robust governance as the US. With very few exceptions, and involving very low quantities, US temperate hardwood imports from China, Russia and South America are generally not re-exported.

(8) We have addressed each of the five risk categories of wood that should be avoided according to the FSC Controlled Wood standard (FSC-STD-40-005) that applies to the non-certified portion of mixed products. These categories are:

(1) illegally harvested wood;
(2) wood harvested in violation of traditional or civil rights;
(3) wood harvested in forests where high conservation values are threatened by management activities;
(4) wood harvested in forests being converted to plantations or non-forest use; and
(5) wood harvested from forests where genetically modified trees are planted.

We can conclude that hardwood procured from anywhere in the Hardwood States could be considered Low Risk in all five risk categories of the standard. Minor and occasional instances contrary to this finding are present in one or more of the risk categories, and where they do occur, they should be further evaluated by companies procuring wood in those areas. However, we determine the level to be within the threshold for being low risk through our interpretation of the FSC standard and its requirements.

(9) Based on a review of media reports, concerns expressed by stakeholder groups, and other sources examined for this report, there exists a low risk that US hardwoods are produced from controversial sources as defined in the Chain of Custody standard of the Programme for the Endorsement of Forest Certification (PEFC).

(10) We have compiled comprehensive information on federal and state programs, both regulatory and non-regulatory, that describe the frameworks and effectiveness of programs that

relate to timber theft and sustainable forest management. This evidence, when considered in its totality, should qualify under the Central Committee of Expertise (CPET) Category "B" criteria as evidence from "programmes and initiatives other than recognised certification schemes."

(11) In assessing the breadth and effectiveness of various regulatory and non-regulatory programs that bear on the issues of legality and sustainability (and thus relate to the CPET criteria), all states in the US hardwood-producing region can be considered low risk for illegal and non-sustainable hardwood sourcing.

(12) Finally, given the safety-net of national and state regulations and programs that address unlawful conduct and faulty forest practices, the need for traceability, independent chain of custody and/or controlled wood certification to demonstrate legality should not be a crucial consideration for US sourcing of hardwood products.

Opportunities/Recommendations

The study team has arrived at a series of recommendations for the US hardwood industry to consider based upon the findings of the report. These recommendations are advisory only. *The following recommendations are directed at AHEC and affiliated associations:*

(1) Develop and publish (or post) a procurement/environmental policy that would apply to all members or require that members develop a procurement/environmental policy. The policy should describe business practices that ensure hardwood supplies are from legal sources.

(2) Encourage or support a policy that requires exported wood shipments to include a clear indication of the country of origin (i.e. the United States unless the product is a re-export) and, if practical, the state or region in the United States where the timber was produced. This can be accomplished with a stamp or addendum on the shipment's invoice, with a phytosanitary certificate issued by an APHIS authorized certification official in the originating state, or with documentation similar to what will be required of importers if the Lacey Act amendments are enacted.

(3) Participate in public and private sector initiatives at the state and local level to work collaboratively to address timber theft and sustainable forestry challenges in the following ways:

(a) In cooperation with state forestry organizations and/or universities, developing and implementing an information system for tracking reported incidences of illegal activities involving the harvest of hardwood timber.

(b) Where such programs are being considered at the state level, consider supporting licensing or certification of timber harvesters and timber buyers.

(c) At the state level, encourage state forestry organizations to provide clear and concise information to landowners, timber operators and timber buyers as to the legal requirements for selling timber.

(d) At the state level, and where it is not currently provided, encourage state forestry organizations to publish (post) recommendations to landowners on how to minimize risk of being victimized by timber theft and trespass.

(e) At the state level, encourage state forestry organizations to foster cooperative relationships with enforcement agencies to deter timber theft.

(f) Where state agencies may have overlapping responsibilities, encourage state forestry organizations to examine timber and forestry enforcement programs to prevent widespread inconsistencies.

(g) In cooperation with the US Forest Service, state forestry organizations and universities, periodically review the extent of illegal timber harvesting activities occurring nationally and assess the effectiveness of programs used to respond to such activities.

(h) Promote research (nationally and globally) to improve the effectiveness of institutions and programs focused on unlawful timber harvesting and marketing activities.

Additional recommendations for consideration by firms engaged in hardwood exporting:

(1) Develop and publish (or post) a procurement/environmental policy that includes (among its provisions) a description of business practices that ensure hardwood supplies are from legal sources.

(2) Evaluate the feasibility of tracking the chain of custody of wood and fiber from the forest to the customer to be in a position to demonstrate that all harvested wood is legal and in compliance with applicable laws and regulations. Consider third-party certification for tracking the chain-of-custody of hardwood products.

(3) For timber purchasers:

(a) As relevant to the business, ensure that formal contracts exist with contractors to require compliance with applicable laws and regulations and state BMPs.
(b) Consider formalizing BMP monitoring and/or support state efforts for BMP monitoring.
(c) Encourage logging contractors to implement the Master Logger Program requirements and consider independent certification.

(4) For timber owners/managers:

(a) Consider conducting security audits where there is a high risk of timber trespass and illegal harvesting.
(b) Consider certification through one of the recognized certification systems.

(5) Coordinate with law enforcement and association timber security task forces to investigate and resolve timber trespass and illegal harvesting.

(6) Encourage associations and cooperators to conduct sustainable forestry and certification training to increase awareness of the basic requirements of the certification standards.

(7) Encourage the use of existing mechanisms, including the SFI Implementation Committee Inconsistent Practices provision, to report those that do not adhere to the principles of sustainable forestry.

Assessment and Reporting Tools

Finally, to assist AHEC members in evaluating and documenting practices that demonstrate a high confidence that wood products are at low risk of being produced illegally or from controlled/controversial sources, the study team has developed a forest sustainability self-assessment toolkit for use at their discretion. Intended to serve as a guide for companies desiring to examine and document their supply chain with respect to legal and non-problematic sourcing (as defined in procurement and certification schemes), it is provided as an appendix to the report.

TABLE OF CONTENTS

List of Tables

List of Figures

List of Boxes

List of Appendices

List of Abbreviations

AHEC	American Hardwood Export Council
ALI	American Law Institute
APHIS	USDA Animal and Plant Health Inspection Service
ATFS	American Tree Farm System
BMPs	Best Management Practices
CAA	Clean Air Act
CF	Certified Forester
CFR	Code of Federal Regulations
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoC	Chain of Custody
CO	Certificate of Origin
CPET	Central Committee on Expertise in Timber
CPI	Corruption Perception Index
CRP	Conservation Reserve Program
CSA	Canadian Standards Association
CWA	Clean Water Act
EA	Environmental Assessment
ESA	Endangered Species Act
FAS	US Department of Agriculture Foreign Agricultural Service
FIA	Forest Inventory and Analysis
FIFRA	Federal Insecticide Fungicide and Rodenticide Act
FLP	Forest Legacy Program
FLMPA	Federal Land Policy and Management Act
FLSA	Fair Labor Standards Act
FMLA	Family and Medical Leave Act
FTE	Full Time Equivalent
FSC	Forest Stewardship Council
GCB	Global Corruption Barometer
HCP	Habitat Conservation Plan
HCV	High Conservation Value
HCVF	High Conservation Value Forests
ILO	International Labor Organization
MFL	Managed Forest Law
NCCUSL	National Conference of Commissioners on Uniform State Laws
NASF	National Association of State Foresters
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NGO	Non-government Organization
NWOS	National Woodland Owners Survey
OSHA	Occupational Safety and Health Act (or Administration)
PEFC	Programme fore the Endorsement of Forest Certification
PPQ	Plant Protection and Quarantine Service
RPA	Resources Planning Act
SED	Shipper Export Declaration
SFI	Sustainable Forestry Initiative Program
SWPM	Solid Wood Packaging Material
TI	Transparency International;
UCC	Uniform Commercial Code
UCR	Uniform Crime Reporting Program

US	United States
USFWS	US Fish and Wildlife Service
WBI	World Bank Indicators

Assessment of Lawful Harvesting & Sustainability of US Hardwood Exports

SUMMARY & FINDINGS

Background

This research and report was commissioned by the American Hardwood Export Council (AHEC) as part of its effort to ascertain the legitimacy of US hardwoods in international trade. In certain export markets, most notably in Europe and Japan, government procurement policies are requiring that wood products be shown to be from legal and sustainable sources. Private market purchasers are increasingly requesting similar assurances. This report evaluates the risk of illegal hardwood timber being in the mix of US hardwood product exports.

Certification often provides an accepted demonstration of legality and sustainability. However, at the present time, very few of the hardwood products produced in the US are from certified sources. The US hardwood sector is characterized by a dispersed supply chain involving millions of mostly small individual landowners and a complex network of timber buyers, processors, wood dealers, concentration yards, harvesting contractors and traders that makes chain of custody tracking for certification challenging if not extremely difficult. Instead, the current project reviews available data suitable for assessing the probability or risk that US hardwood products might not comply with relevant laws and regulations governing ownership rights, harvests and sustainable forest management. The material presented in this report is not intended to substitute for forest certification, but instead to meet procurement policies that seek acceptable assurances other than certification.

Information in this report covers commercial production of US hardwoods which is concentrated in states along and east of the Mississippi River with some additional production in the Pacific Northwest. Thirty-three (33) states in the North, South and Pacific Northwest form what we define as the hardwood-producing region or Hardwood States. These 33 states account for 96% of US hardwood production; each contributes in varying degrees to the supply of US hardwood exports. As collaborating analysts, we compiled and reviewed comprehensive information regarding the legal frameworks governing timber ownership, forest management and harvests in the Hardwood States. In addition, US hardwood supply, within the context of selected wood procurement guidelines, were evaluated. The main the objectives of the study were to:

(1) Describe and assess the legal frameworks that ensure clear ownership and contractual rights to sell timber in the US hardwood regions;
(2) Describe and assess the legal and policy frameworks designed to foster sustainability in the states where US hardwoods are produced;
(3) Evaluate the US hardwood supply situation within the context of:

(a) Forest Stewardship Council (FSC) Controlled Wood Standard;
(b) Programme for the Endorsement of Forest Certification (PEFC) requirements for the avoidance of the procurement of raw material from controversial sources; and,

(c) UK government procurement guidelines for legal and sustainable wood products developed by the Central Point of Expertise on Timber (CPET);

Study Team

The collaborating authors are a group of highly respected analysts with backgrounds and experience in academia as well as consulting for environmental groups, government and industry. **Mr. Alberto Goetzl** of *Seneca Creek Associates, LLC* is a consulting natural resources economist who has advised government and private sector clients on forestry, market and trade issues. His 2004 report on the competitive impacts of illegal logging is the most widely cited reference on the topic. **Dr. Paul Ellefson** is the most recognized authority on regulations and programs that affect forest management in the United States. He teaches and researches at the *University of Minnesota*. **Mr. Phil Guillery** is currently Director of North American Programs for the *Tropical Forest Trust.* He has been a consultant to FSC and has served on the FSC-US board of directors. **Dr. Gary Dodge** is a consulting biologist/ecologist with *Trailhead Associates w*ho has consulted with FSC and has held positions with US land management agencies and conservation organizations. **Mr. Scott Berg** of *R.S. Berg & Associates, Inc.* is a consulting forest certification specialist who has participated in the development of SFI standards and has prepared pre-audits, internal audits and external audits for forest-based companies seeking certification under SFI, PEFC and FSC standards.

Illegal Wood Sourcing

Definitions of what constitutes unlawful harvesting vary. Some definitions are broad and encompass any violations of national, state or local law governing harvesting and all related activities including transporting, processing, buying or selling of timber. For purposes of this study, we focus on two broad categories of illegal forest activities:

(1) legal ownership and use which relates to timber theft and buyer/seller fraud, and
(2) violations of laws and rules related to forest management (and thus sustainability).

Because certain social welfare issues, such as child labor and health and safety, are of some consequence globally, we address those issues as well. Other legal compliance issues related to energy, transportation and manufacturing of wood products could be examined, but we believe that it is primarily the laws and rules that control timber theft and forest management abuses that are of most interest

Key Findings and Observations

(1) Based on the data compiled and analyzed, the weight of evidence strongly indicates that there is very low risk that US hardwood exports contain wood from illegal sources.

(2) There can be high confidence that rights of timber ownership are well-established and respected. Approximately 92% of hardwood produced in the US is sourced from private lands. The vast majority of private landowners own small family forests that average less than 10

hectares in size. Numerous legal processes are available to landowners to resolve disputes involving proper title and/or the unauthorized taking or sale of timber property.

(3) While timber theft occurs and is of concern to private landowners, it not believed to be a pervasive or systemic problem, especially with regards to US hardwood exports. The extent of unlawful timber harvesting across the hardwood producing region is not easily determined and many cases go unreported, but most appear to involve a relatively small numbers of trees. The most commonly reported incidents of timber theft and trespass involve poorly marked or disputed boundary lines. The experience of states with the most detailed information allows an estimate that on the order of 800 to 1,000 significant timber theft cases occur annually in the hardwood region, involving an estimated 20,000 to 25,000 cubic meters (including both softwood and hardwood). Even if half or more were hardwood trees, stolen timber would represent a very small portion of total US hardwood production – very likely less than 1%.

(4) The legal frameworks governing forest management vary widely. Every state has both regulatory and non-regulatory authorities and programs that address different aspects of forest management. While resources are limited, and efficiencies and effectiveness are debated, state programs are responsive in promoting and ensuring sustainable forest practices. When considered in their totality, national and state forest programs contribute to ensuring sustainable and legal hardwood supplies.

(5) Comparisons of international governance indicators, such as those compiled by the World Bank, strongly indicate that the US is perceived as a country with a high regard for the rule of law, an effective environmental, labor and public welfare regulatory environment, and a low level of corruption.

(6) Based on published data, as available, and information complied from state officials and the wood products trade, there can be high confidence regarding adherence to national and state laws in the hardwood sector.

(7) The US re-exports very little imported temperate hardwood products. Most hardwood imports are from Canada, a country with similarly robust governance as the US. With very few exceptions, and involving low quantities, US temperate hardwood imports from China, Russia and South America are generally not re-exported.

(8) We have addressed each of the five risk categories of wood that should be avoided according to the FSC Controlled Wood standard (FSC-STD-40-005) that applies to the non-certified portion of mixed products. These categories are:

(1) illegally harvested wood;
(2) wood harvested in violation of traditional or civil rights;
(3) wood harvested in forests where high conservation values are threatened by management activities;
(4) wood harvested in forests being converted to plantations or non-forest use; and
(5) wood harvested from forests where genetically modified trees are planted.

We have a high confidence that hardwood procured from anywhere in the Hardwood States could be considered Low Risk in all five risk categories of the standard. Minor and occasional instances contrary to this finding are present in one or more of the risk categories, and where they do occur, they should be further evaluated by companies procuring wood in those areas. However, we determine the level to be within the threshold for being low risk through our interpretation of the FSC standard and its requirements.

(9) Based on a review of media reports, concerns expressed by stakeholder groups, and other sources examined for this report, there exists a low risk that US hardwoods are produced from controversial sources as defined in the Chain of Custody standard of the Programme for the Endorsement of Forest Certification (PEFC).

(10) We have compiled comprehensive information on federal and state programs, both regulatory and non-regulatory, that describe the frameworks and effectiveness of programs that relate to timber theft and sustainable forest management. This evidence, when considered in its totality, should qualify under the Central Committee of Expertise (CPET) Category "B" criteria as evidence from "programmes and initiatives other than recognised certification schemes."

(11) In assessing multiple parameters related to the breadth and effectiveness of various regulatory and non-regulatory programs that bear on the issues of legality and sustainability (and thus relate to the CPET criteria), all states in the US hardwood-producing region score in a low risk range.

(12) Finally, given the safety-net of national and state regulations and programs that address unlawful conduct and faulty forest practices, the need for traceability, independent chain of custody and/or controlled wood certification to demonstrate legality should not be a crucial consideration for US sourcing of hardwood products.

SUMMARY OF SUPPORTING EVIDENCE

US Hardwood Resources (Report Section 2.0)

Statistical information on US forests is collected by the US Forest Service under its Forest Inventory and Analysis program (FIA). These data are highly reliable. The data strongly indicate that US hardwood resources are widely distributed, extensive and not in any immediate or future risk of declining. Annual hardwood growth exceeds removals in each of the 33 states by a substantial margin -- by nearly two to one -- and the hardwood inventory has consistently increased during the past five decades. Although forest area has declined in some of the individual states, in aggregate it has remained stable over five decades and has, in fact, increased by 3% since 1987. While the state, regional and national data may mask local situations where hardwood forests are being converted and/or removals exceed current annual growth, the data for the US overall do not show any worrisome inventory trends. This is also true for any particular US hardwood species analyzed using the FIA data, including red and white oak, American black walnut and black cherry.

US hardwood resources are concentrated in small family forest ownerships of less than 10 hectares on average. Family forest owners harvest irregularly, if at all, and perhaps only once or twice in a generation. Given the large area in small family forest ownerships, the task of tracking chain of custody of American hardwoods is complicated. Hardwood timber operators purchase from hundreds of different landowners each year, usually in small quantities. Much is sold through wood dealers who amass logs from many different sources and merchandize them by species as the market allows. On average, hardwood sawmills and veneer mills purchase between 30 and 50 percent of their supplies at the mill gate. However, those engaged in the export trade report that they only deal with reliable suppliers that they know by reputation or with whom they have a long-standing relationship.

Global Indicators of Good Governance (Report Section 3.0)

The World Bank compiles and annually updates a series of indicators that are a useful tool to assess the effectiveness of governance in over 200 countries. These indicators measure six components of good governance: (1) voice and accountability; (2) political stability and absence of violence; (3) government effectiveness; (4) regulatory quality; (5) the rule of law; and (6) control of corruption. The data supporting the World Bank Governance Indicators (WBI) come from published surveys of firms and individuals, assessments of commercial risk rating agencies, non-governmental organizations, multilateral aid agencies and other public sector organizations. Of the World Bank Governance Indicators that measure government effectiveness, regulatory quality and rule of law, the US ranks in the top 10% of all countries.

The comparative quality of forest resource information can serve as an additional indicator of the attention a country gives to forest resources. The US forest resource data collection and analysis system (FIA) is comprehensive and statistically verified. Relatively few other countries with significant forest resources have similar systems in place that are as sophisticated and allow for broad (on-line) access to detailed forest resource data. Because it relies on actual and multi-period field measurements, is updated annually and is statistically tested and verified, FIA data can be confidently referenced and used for analysis of sustainability trends.

A further indication of the importance given to sustainable forestry in the US is participation in the Montreal Process, a multi-lateral working grouped formed in 1994 to develop and implement internationally agreed upon criteria and indicators for the conservation and sustainable management of temperate and boreal forests. The Montreal Process has developed 7 criteria and 67 associated indicators that characterize sustainable management of temperate and boreal forests. The US has issued a First Approximation Report under the Montreal Protocol entitled National Report on Sustainable Forests – 2003. The development of the Montreal Process assessment has been, and continues to be, a multi-stakeholder process in the US.

Forest Certification Systems (Report Section 4.0)

Forest certification in the US has been expanding since first introduced in the 1990s and currently encompasses over 34 million hectares. The three most prevalent forest certification systems operating in the US are the Forest Stewardship Council (FSC)®, the Sustainable Forest

Initiative (SFI)® and the American Tree Farm System (ATFS)®. The SFI Program is endorsed by the Programme for the Endorsement of Forest Certification schemes (PEFC); the ATFS is in the process of seeking PEFC endorsement. Of the three programs, the SFI is the largest, accounting for 55% of the certified acres in the US. The FSC and ATFS represent 22% and 23% respectively of the certified acres. About 5.8 million hectares are dual certified under SFI and FSC.

States with a high proportion of certified timberland provide an additional assurance that hardwood products are produced legally. In aggregate, an estimated 19% of timberland in the hardwood-producing region is certified and in some states, the area of certified forests approaches one-third or more of the available timberland. States with certified timberland that exceeds 25% are: Minnesota, Maine, Wisconsin, Louisiana, Michigan and Washington.

While the area of certified forest in some states is significantly high, as a practical matter, much of the certified land is not regularly supplying the hardwood timber market. This is due to a high proportion of certified forests in public ownership and the preponderance of small owners who only occasionally harvest timber. Based on average saw log and veneer log harvest per acre of timberland, we estimate that less than 7% of US hardwood (solid wood) products are produced from certified forests. The volume of hardwood lumber (and other hardwood products) that carries a certified Chain of Custody (CoC) product label is even smaller – certainly less than 5% at the present time. Moreover, the supply of certified product is bound to be uneven and of a limited mix of species and grades.

Certification presents certain challenges to the hardwood sector given the structure of forest ownerships. Family forest landowners that supply the vast majority of the hardwood timber consumed in the US are neither generally familiar with certification nor willing to incur its on-going costs. The number of ownerships with certified forests is very small relative to the 9.7 million private landowners (9.1 million family forest owners) in the hardwood-producing region. The SFI program includes certification of procurement systems for firms that are not engaged in land management thus enabling a third-party certification of sustainable wood supply. Although not currently widely used, group certification provides an opportunity for certification of family forests. A program in Wisconsin (Managed Forest Law program) extends ATFS group certification to participating landowners. The FSC Certified Land Manager Program enables FSC certification on behalf of a group managed by a consulting forester.

Occupational Licensing and Certification (Report Section 5.0)

Legality and sustainability issues are partially addressed through programs directed at registering, licensing and/or certifying operators and professionals engaged in forest management, timber harvesting, and in the buying and selling of timber products. These programs are sometimes mandated by state law and sometimes voluntary. When considered in conjunction with other characteristics of the US hardwood supply chain, these various programs contribute to a low risk of illegal or unsustainable forest practices.

Timber harvesters (i.e. loggers) are registered or certified in nearly all states within the hardwood-producing region either through public or private programs (such as the Master

Logger Program). Only New York and New Jersey have not yet established any kind of registration or certification program for timber harvesters.

In five hardwood-producing states, timber buyers are formally licensed (Connecticut, Maryland, Indiana, Illinois, and Iowa) and in three of those states (Indiana, Illinois and Iowa), timber buyers are required to be bonded. Failure of a licensed timber buyer to pay a timber grower can lead to forfeiture of a security bond and other penalties. Maryland's statute requires anyone engaged in a forest products business to be licensed and commercial forest practitioners in Connecticut are required to be state-certified.

The licensing or registration of professional foresters occurs in 14 states within the hardwood-producing region. In addition, professional societies, most notably the Society of American Foresters, sponsor certification programs.

Ownership Rights, Timber Theft and Buyer-Seller Fraud (Report Section 6.0)

Recognizing the legal rights of ownership and the right to sell timber is fundamental to determining legal and lawful use. The US hardwood resource is overwhelmingly privately owned and, except where prohibited or restricted, landowners can transfer those ownership rights freely. Over 90% of US hardwood production is privately supplied. Most of the US hardwood resource is owned by small family forest owners who, as a general rule, are highly protective of their private property. Administrative and judicial options are available to all landowners (and timber buyers) to resolve disputes over title to timber assets. Landowners are always advised to clearly mark property boundaries, obtain bids for timber sales, and have written contracts when harvesting timber. Most timber sales and timber cutting contracts of any significant value are conducted pursuant to written contracts and many of the major timber purchasers check to verify that the timber seller has clear title to the timber being sold.

As with all crime, timber theft and trespass (the unauthorized entry onto private property to remove trees) occurs to some degree throughout the hardwood-producing region. Timber crimes are necessarily of concern to US timberland owners, but the extent of unlawful timber harvesting across the hardwood producing region is not easily determined. Available data suggest that incidents typically involve a relatively small number of trees and are usually linked to poorly marked property or cutting boundaries. Many cases go unreported because they involve a low value or because they go undiscovered for a period of time. Absentee landowners that account for approximately 38% of family forest acreage are at the most risk according to reports and surveys. However, the preponderance of media coverage and interviews with timber security professionals suggest that the most onerous cases of timber theft -- those involving repeat offenders and high value timber – are pursued and the perpetrators prosecuted.

Based on a review of the literature, media reports with supporting information, and interviews with state officials, the frequency of timber-related crimes is likely to be no greater, and probably less, than property crimes involving other stolen goods. State records and studies that are available suggest that perhaps in the range of 800 to 1,000 significant timber theft cases occur annually in the hardwood-producing region. By applying some assumptions about volume and value of stolen timber, we can derive an estimate that hardwood timber valued on the order

of $12 million could be affected annually. This represents a tiny fraction of one percent of all hardwood timber produced in the US (estimated at $4 billion annually). While difficult to ascertain, US hardwood exports are likely affected to an even lesser degree because stolen timber is most likely taken to dealers or processors supplying limited, local markets. This conclusion is not intended to minimize or dismiss the problem of timber theft, but rather to provide perspective on the risk that stolen timber enters the supply chain of US hardwood exports.

Compliance with Federal Statutes (Report Section 7.0)

Several federal environmental laws and statutes governing federal land management have either a direct or indirect impact on forest practices. As a general rule, these laws allow for severe penalties to be imposed on violators, although the federal government relies on the states to enforce many of their provisions except those that require federal permits or establish specific federal requirements on land managers. At the federal level, major environmental laws that regulate activities on public and private forest land include:

Endangered Species Act (ESA): forest landowners and managers cannot cause injury or death by direct harm or through habitat modification to a species listed as threatened or endangered.

Clean Water Act (CWA): control activities in forested wetlands and requires states to have programs to control non-point source pollution, usually accomplished through Best Management Practices (BMPs).

Clean Air Act (CAA): states must have programs to protect air quality and visibility, including controls on prescribed burning and the use of ozone-depleting chemicals.

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA): regulates chemical use in forest stands, whether for insect control or for vegetation management.

Certain federal statutes govern federal land management directly (about 20% of US timberland but less than 1% of US hardwood supply). The most significant of these are: the *National Forest Management Act (NFMA), Federal Land Policy and Management Act (FLMPA),* the *Wilderness Act*, and the *National Environmental Policy Act (NEPA)*. The latter mandates that federal agencies assess the environmental impacts of their activities on government-owned forest land. As result, all federal timber management activities require some form of environmental assessment or impact analysis. Hardwood management is mainly impacted in the national forests of the eastern US that contain significant inventory of hardwood species. Planning and harvest activities on federal forest lands are frequently delayed, altered or cancelled pending completion of administrative or judicial reviews as a result of stakeholder group challenges.

Beyond federal laws that have a regulatory impact on forestry, other federal programs contribute to protecting unique or special environments, encouraging conservation, promoting environmental education, supporting environmental related research or otherwise enhancing environmental values. Among these are Cooperative Forestry, the Conservation Reserve Program (CRP) and Forest Legacy (FL). These programs fund and support technical assistance, afforestation of erodible agricultural land and the conservation of high conservation value forests. Collectively, these non-regulatory programs play a significant role in the sustainability

of US hardwood forests by encouraging forest use, reforestation, and conservation of environmentally sensitive or unique areas.

A compendium of federal laws also governs fair labor, worker safety and health. For example, the *Occupational Safety and Health Act (OSHA)* protects forest workers by prescribing that specific safety measures be taken and safety equipment used while engaged in commercial forestry activity. Detailed records of accidents, injuries, and corrective measures must be maintained. The *Fair Labor Standards Act (FLSA)* establishes minimum wage, overtime pay, recordkeeping, and child labor standards affecting full-time and part-time workers in the private sector and in federal, state, and local governments. The US Department of Labor rigorously enforces labor and worker safety laws usually in cooperation with corresponding state agencies. Websites of state labor and OSHA agencies can be accessed to review enforcement actions that include payment of back wages and civil or criminal prosecutions with attached penalties.

We conclude that the available data indicate a high level of compliance and an aggressive prosecution of violations of federal environmental, labor and worker safety laws.

Compliance with Regulatory Initiatives (Section 8.0)

A large number of state agencies have jurisdiction over various aspects of sustainable forest management in the hardwood producing region. More than 1,000 government entities (variously identified as agencies, bureaus, offices, departments, commissions or councils) are responsible for public programs focused on forest resources, including hardwood forests. Employing more than 4,500 natural resource professionals, these agencies are responsible for implementing more than 800 forestry programs of various kinds. Of these, approximately 155 are regulatory in nature.

Every state (and in many cases, local governmental jurisdictions) has environmental and forestry-centered laws that in some form control the way in which hardwood forests are used and managed. An average of nearly six agencies per state are responsible for regulatory programs focused on forests, over half of which are considered to be extensively or moderately engaged in regulatory matters. An estimated 715 full-time equivalent staff are responsible for administering regulatory programs in the hardwood region.

The number and types of forestry practices that are regulated in each state varies, but some form of regulation over one or more practices exists in most states. The categories of forest practices that might be regulated to some degree at the state level include road and trail practices, timber harvest practices, reforestation practices, silvicultural practices, chemical application practices, and forest protection practices. The probability of all or some forestry practices being regulated in any given state is about 75 percent.

A common focus of state programs is protecting water quality through Best Management Practices (BMPs). Every state in the hardwood-producing region has a regulatory or voluntary program to implement BMPs on forest lands. In 2007, 24 of the 33 Hardwood States also reported having a formal monitoring program for evaluating the extent to which landowners and timber harvesters apply recommended or required forestry practices. The rate of BMP

implementation and compliance are generally high. For states which have initiated monitoring programs, the average range of compliance for all practices is about 70 to 90 percent, depending on the practice or practices being measured. To promote higher levels of compliance, 29 states sponsor education and training sessions for landowners and timber harvesters.

Non-Regulatory Initiatives (Report Section 9.0)

With forest ownership predominantly private, the federal and state governments are engaged in various programs of a voluntary or incentive-based nature to encourage conservation, protection of water quality, wildlife habitat, forest retention and other sustainable forestry practices. In 2007, federal funding of cooperative fire protection, cooperative forestry and related programs approached $130 million. State funding for forestry programs totals approximately $937 million annually, indicating a combined federal/state investment of over $1 billion annually in forestry-related programs. Non-regulatory programs that influence forest practices include technical assistance, education, fiscal incentives and funding for protection of areas with important conservation values. Many landowners avail themselves of federal and state programs. Data from the 2006 National Woodland Owners Survey (NWOS) indicate that 523,000 family forest owners representing 19 million hectares (18% of family forest area) have participated in cost-share programs for implementing forest practices. Through 2006, the Forest Legacy Program (FLP) has protected over 550,000 hectares of forests within the hardwood producing region. Conservation organizations and land trusts also sponsor acquisitions and fund conservation easements that have covered an estimated 5.1 million hectares of private forests. This does not include the addition of large blocks of formerly forest industry lands placed under easements in recent years which has increased substantially the amount of protected area.

We conclude that when considered along with regulatory initiatives, non-regulatory programs contribute to a legal and institutional framework that places a high importance on sustainable forestry and helps to ensure the legality of US supplies.

Tax Policy (Report Section 10)

The US has an income tax that includes special provisions for certain kinds of timber income and expenses. For example, expenses for reforestation and conservation practices are treated favorably (with limits). The federal government also imposes an estate tax that can affect forest properties upon transfer to estate beneficiaries. In turn, the states have various forms of taxation that include income tax, estate and gift tax, property tax and severance or yield taxes. In many states, property taxes are adjusted so that forest properties are valued for current use while some states apply a tax at harvest in lieu of (and sometimes in addition to) annual assessments. Compliance rates to both federal and state tax requirements in general are very high -- at least 84% for compliance to federal income taxes according to government studies. There are no data to suggest that failure to pay assessed taxes on hardwood timber income or property occurs to any significant extent in the US.

Trade Issues (Report Section 11)

Hardwood exports are economically important for US producers, having totaled $2.9 billion in 2007. The largest single market for US hardwood exports is Canada, but the European Union and Greater China account for 31% and 19% of hardwood exports, respectively. The US does not impose any form of export tax on exported goods, including US hardwood exports. The only significant export prohibition for wood products affects unprocessed logs harvested from state and federal lands west of the 100th meridian. This could potentially affect some hardwood log exports from Oregon and Washington, but as a practical matter, the impact is likely very small. A review of information sources did not reveal any allegations that hardwood logs are being exported in violation of the prohibition of log exports from public lands.

Available information suggests that re-exports of temperate hardwood products also represent a very low share of total US hardwood exports and are, in any case, principally sourced in Canada or Europe. Because the volumes are believed to be very small, and the source countries are perceived to have robust governance frameworks, the risk that US re-exports of temperate hardwood products are sourced from suspicious sources is very low.

Since no US temperate hardwood species are listed under CITES, compliance with the convention's permitting requirements have little or no applicability to US hardwood exports. Thus, the risk of US temperate hardwood exports non-conforming to CITES requirements is also very low.

Several documents are commonly required for exporting and phytosanitary certificates are often necessary depending on the product and destination. Not usually required for wood products, but occasionally required or requested, is a statement of origin. Information about the country of origin and species of imported wood products will be required if amendments to the Lacey Act are enacted as expected. Similar documentation for US hardwood exports, while not currently required, may offer some assurance of legality and sustainability accompanying US exported shipments. Many exporters currently provide that information on invoices, packing lists or other documentation that accompanies exports.

Forest Stewardship Council (FSC) Controlled Wood Standard (Report Section 12)

The FSC Controlled Wood standard was written to ensure that wood coming from unacceptable forestry practices is not mixed with FSC-certified wood and included in FSC-mixed certified wood products. The standard, FSC-STD-40-005, applies to the non-certified portion of mixed products and states that wood should be avoided that presents high risk of:

(1) illegally harvested wood;
(2) wood harvested in violation of traditional or civil rights;
(3) wood harvested in forests where high conservation values are threatened by management activities;
(4) wood harvested in forests being converted to plantations or non-forest use; and
(5) wood harvested from forests where genetically modified trees (GMO) are planted.

The policy calls for a risk-based assessment, where forest products coming from areas where there is low risk to the five categories could be considered "controlled" and usable in FSC-mixed certified products. FSC provides guidance for how to conduct the risk assessment and sources that can be used for data and evidence.

We conducted a risk assessment by referencing forest resource data, existing reports and available ecological assessments of the region. For *illegally harvested wood*, *wood harvested in violation of traditional and civil rights* and *wood from GMO trees*, evidence is cited that describes the US situation and enables a straight-forward determination of low risk. The evaluation of forests with high conservation values (HCV) and wood from forest conversion required more detailed analyses of ecological assessments and forest change data.

The analysis revealed ten ecoregions in the study area that were determined to have high concentrations of biodiversity values as defined by WWF Global 200 Ecoregions, Conservation International Biodiversity Hotspots, and Smithsonian/IUCN Center of Plant Diversity designations. However, there is also strong citable evidence that the notable biodiversity values of these ten ecoregions are relatively well-protected or are not threatened by forestry activities.

Based on detailed analysis of changes in forest area, we found two ecoregions in the study area that do not meet the ecoregional threshold (0.5% annual decrease in forest cover) to be determined LOW RISK in relation to threat of conversion through compliance with the FSC Controlled Wood criterion. They are: (1) the Everglades (located in Southern Florida) and (2) the Pacific Lowlands Mixed Forests (comprising the Puget Lowland Forests and the Willamette Valley Forests). While these areas might warrant a more robust controlled wood assessment, additional information strongly suggests that hardwood sourced from these ecoregions are also at LOW RISK. For example, very little hardwood is produced in the Everglades area and the volume represented in US hardwood exports is certainly minor. The most significant hardwood species exported from the Pacific Lowlands Mixed Forests is red alder. A closer examination strongly suggests that the red alder supply region can also be considered to be LOW RISK for the threat of forest conversion. Only the Puget Trough ecosection (also known as the Puget Lowland Forests) is determined to be NOT LOW RISK. While the range of red alder overlaps broadly with the Puget Trough, as well as the Pacific Lowland Mixed Forests province and the adjacent province (M242), most is grown and harvested in managed timber stands, and the data show an increase in forest area in the red alder supply region as a whole. The most recent published studies of timber resources in Oregon and Washington show only minor reductions in forest (or timberland) area between the 1980s and the early part of the current decade. In addition, approximately 20% of the red alder in western Washington is produced from state lands, not at risk of forest conversion. Finally, both Oregon and Washington have comprehensive forest practice rules. In Washington, harvest permit applications require that any forest conversions conform to growth management plans and thus require that the permit be subject to both state and local county approval, processes that require comprehensive review and stakeholder input.

The conclusions from the FSC Controlled Wood analysis is that wood procured from the study area could be considered Low Risk in all five risk categories of the standard. Minor and occasional instances contrary to these findings are present in all risk categories except GMO use

(there is no commercial GMO use in the US). The Controlled Wood standard is a global standard and the risk determinations made in this study are made with a global perspective. Thus, even though there may be occurrences of non-compliance with the Controlled Wood standard in parts of the study area (as noted in the ecoregion assessments), we can conclude it to be non-systematic and low risk in comparison with other areas of the world.

Programme for the Endorsement of Forest Certification (PEFC) Standard for Controversial Sources (Report Section 13)

PEFC has developed a procedure and set of indicators to help ensure that the certified products do not include raw material from controversial sources. PEFC generally defines controversial sources as those where harvesting is unauthorized, legally prohibited or planned to become strictly protected by law. The PEFC standard requires an assessment of risk at the country/region level, and an assessment at the supply chain level addresses the likelihood that the supply chain has not been able to identify a potential controversial source of supply.

The US has very clear delineation of protected forests at both the federal and state/local level. At the federal level, 1964 Wilderness Act established a process by which federal land could be permanently set-aside from all but the most benign hiking and camping experiences in a National Wilderness Preservation System. It currently comprises 43.3 million hectares of roadless areas. Approximately 24 million additional hectares of roadless areas are under various forms of planning review with no timber harvests occurring on roadless areas subject to review. This is in addition to an extensive system of national parks and recreation areas. Similarly, states have various protection designations for forest areas that are protected in parks or reserves. We found no cases where hardwood forests that have been slated for protection are currently subject to timber harvest.

In the international context, under the PEFC indicators, the US is low risk of controversial sources. None of the following PEFC indicators apply:

(1) The country/region is covered by a UN Security Council ban on timber exports.
(2) The country/region is known as a country with low level of forest law, enforcement and high level of corruption.
(3) The country is one where official FAO statistics show a decrease in forest area.

A fourth PEFC indicator would invalidate a low risk finding if an organization has received *comments supported by reliable evidence from their customers or other external parties, relating to its supplies with respect to controversial sources, which have not been disproved by the organization's own investigation.* Well over 100 environmental organizations operate at the national, regional and/or local level in the US with issues ranging from specific development projects at the local level to global issues such as climate change and deforestation. In order to assess possible contentious issues surrounding hardwood product exports, websites of selected US environmental organizations were checked for mention of issues related to hardwood forests and/or hardwood product production. None of the sites indicated a specific concern about hardwood resource management where the sites are naturally regenerated and retained in hardwood species composition. A major concern is the conversion of natural or semi-

natural hardwood forests to commercial fiber plantations and other land uses. As part of the detailed FSC Controlled Wood analysis summarized earlier, the conversion issue was analyzed. The hardwood-producing region was found to be "low risk" of conversion to plantations and other land uses.

Allegations have also been made that specific companies have violated forest practice rules or have not complied with certification standards despite third-party audits. These have generally not involved hardwood timber harvests. However, where allegations are credible, processes within the certification review systems or through state regulatory agencies can and have been triggered to investigate and respond. In some cases, they have led to changes in company policies or prompted further reviews by state authorities. As they involve few hardwood forests, the risk that US hardwood exports include material harvested from these controversial areas is very low.

Based on a detailed analysis we can conclude US hardwood production, and particularly exported hardwood products, are LOW RISK with respect to PEFC controversial sources.

US Hardwoods and CPET Legality and Sustainability Criteria (Report Section 14)

The UK's Central Point of Expertise (CPET) has developed guidelines to ensure that wood products purchased by the UK government originate from legal and sustainable sources. Category "A" evidence is documentation that the wood products are certified under an approved scheme. For products produced in US, both the Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI) certification programs are recognized by CPET as meeting the criteria it has established for evidence of legal sourcing. FSC and SFI certified product lines containing greater than 70% certified or recycled raw material also meet the sustainability standard.

CPET has also developed guidelines for evidence other than certification that may be acceptable for documenting sourcing that is legal and moving toward sustainable. This type of evidence is described as Category "B" evidence. CPET provides four specific criteria that must be met with regard to legality as follows:

(1) The forest owner/manager holds legal use rights to the forest.
(2) There is compliance by both the forest management organisation and any contractors with local and national laws including those relevant to:
    (a) Forest management
    (b) Environment;
    (c) Labour and welfare;
    (d) Health & safety.
    (e) Other parties' tenure and use rights
(3) All relevant royalties and taxes are paid.
(4) There is compliance with the requirements of CITES

For this part of the assessment, we rely on the review in other sections of the report describing the extensive legal and institutional frameworks that influence US hardwood forest

management and production. The category "B" evidence criteria enable using a risk-based approach to evaluating compliance to laws and regulations governing legal compliance and sustainability. Under the CPET criteria, it may be only necessary to show that a country or region has a *low risk for illegality based upon:*

1. *The existence of forestry legislation*
2. *Clear legal use rights for forest areas*
3. *Evidence that the law is effectively enforced (e.g. evidence that prosecutions are carried out)*
4. *No substantive claims of corruption against local, regional or national forestry officials.*

As summarized earlier, a range of federal and state/local laws and regulations address sustainable forest management in the US. The data show that over 90% of the US hardwood timber harvest is from private lands with structured and well-enforced legal use rights. Landowners have legal options to pursue redress if timber is taken without authorization or if less than the full agreed-to payment is made. All public timber harvests – federal and state/local – are subject to comprehensive planning, stakeholder review, written contracts and public oversight. Timber theft and trespass is a concern to landowners, but the data suggest that the problem is localized and not systemic nor significant in the totality of hardwood timber produced and harvested in the US.

Legislative, administrative and judicial records strongly indicate that laws affecting hardwood forest management and production are implemented and enforced. Laws governing labor practices and occupational health and safety are also strictly enforced. Information on compliance rates and occupational hazards/accidents are publicly available. There is evidence from international organizations, including the World Bank, of a high respect for the rule of law and low perceptions of corruption. In addition, the US has an extensive network of federal, state and private programs that are voluntary or incentive-based and that also contribute importantly to ensuring sustainable forestry practices.

While state programs vary widely in their specific objectives and coverage, every state in the hardwood-producing region has a mix of programs designed to foster forest retention and sustainability. The range of programs include: regulation of specific forest practices; certification of timber operators; fiscal incentives for reforestation; technical assistance to landowners; purchasing of development rights on forest land; and many others. When considered in their totality, the various forestry-related laws and non-regulatory programs enable a conclusion that US hardwood products are LOW RISK of being sourced illegally or unsustainably.

Opportunities/Recommendations for AHEC Member Companies (Report Section 15)

The study team has arrived at a series of recommendations for the US hardwood industry to consider based upon the findings of the report. These recommendations are advisory only. *The following recommendations are directed at AHEC and affiliated associations:*

(1) Develop and publish (or post) a procurement/environmental policy that would apply to all members or require that members develop a procurement/environmental policy. The policy should describe business practices that ensure hardwood supplies are from legal sources.

(2) Encourage or support a policy that requires exported wood shipments to include a clear indication of the country of origin (i.e. the United States unless the product is a re-export) and, if practical, the state or region in the United States where the timber was produced. This can be accomplished with a stamp or addendum on the shipment's invoice, with a phytosanitary certificate issued by an APHIS authorized certification official in the originating state, or with documentation similar to what will be required of importers if the Lacey Act amendments are enacted.

(3) Participate in public and private sector initiatives at the state and local level to work collaboratively to address timber theft and sustainable forestry challenges in the following ways:

(a) In cooperation with state forestry organizations and/or universities, developing and implementing an information system for tracking reported incidences of illegal activities involving the harvest of hardwood timber.

(b) Where such programs are being considered at the state level, consider supporting licensing or certification of timber harvesters and timber buyers.

(c) At the state level, encourage state forestry organizations to provide clear and concise information to landowners, timber operators and timber buyers as to the legal requirements for selling timber.

(d) At the state level, and where it is not currently provided, encourage state forestry organizations to publish (post) recommendations to landowners on how to minimize risk of being victimized by timber theft and trespass.

(e) At the state level, encourage state forestry organizations to foster cooperative relationships with enforcement agencies to deter timber theft.

(f) Where state agencies may have overlapping responsibilities, encourage state forestry organizations to examine timber and forestry enforcement programs to prevent widespread inconsistencies.

(g) In cooperation with the US Forest Service, state forestry organizations and universities, periodically review the extent of illegal timber harvesting activities occurring nationally and assess the effectiveness of programs used to respond to such activities.

(h) Promote research (nationally and globally) to improve the effectiveness of institutions and programs focused on unlawful timber harvesting and marketing activities.

Companies and firms directly engaged in the production and export of hardwood products can take other steps to communicate and assure their customers that US hardwood products are sourced legally and sustainably. *Recommendations for consideration by firms engaged in hardwood production and exporting:*

(1) Develop and publish (or post) a procurement/environmental policy that includes (among its provisions) a description of business practices that ensure hardwood supplies are from legal sources.

(2) Evaluate the feasibility of tracking the chain of custody of wood and fiber from the forest to the customer to be in a position to demonstrate that all harvested wood is legal and in compliance with applicable laws and regulations. Consider third-party certification for tracking the chain-of-custody of hardwood products.

(3) For timber purchasers:

(a) As relevant to the business, ensure that formal contracts exist with contractors to require compliance with applicable laws and regulations and state BMPs.

(b) Consider formalizing BMP monitoring and/or support state efforts for BMP monitoring.

(c) Encourage logging contractors to implement the Master Logger Program requirements and consider independent certification.

(4) For timber owners/managers:

(a) Consider conducting security audits where there is a high risk of timber trespass and illegal harvesting.

(b) Consider certification through one of the recognized certification systems, including the American Tree Farm System and its group certification opportunity.

(5) Coordinate with law enforcement and association timber security task forces to investigate and resolve timber trespass and illegal harvesting.

(6) Encourage associations and cooperators to conduct sustainable forestry and certification training to increase awareness of the basic requirements of the certification standards.

(7) Encourage the use of existing mechanisms, including the SFI Implementation Committee Inconsistent Practices provision, to report those that do not adhere to the principles of sustainable forestry.

Assessment and Reporting Tools

Finally, to assist AHEC members in evaluating and documenting practices that demonstrate a high confidence that wood products are at low risk of being produced illegally or from controlled/controversial sources, the study team has developed a forest sustainability self-assessment toolkit for use at their discretion. Intended to serve as a guide for companies desiring to examine and document their supply chain with respect to legal and non-problematic sourcing (as defined in procurement and certification schemes), it is provided as Appendix C in the report.

1.0 INTRODUCTION

1.1 Background

The US is a major producer and exporter of temperate hardwood products. In 2007, US hardwood exports totaled $2.9 billion, nearly half (45%) of all wood exports. Export markets are of critical economic importance to the US hardwood industry and thus meeting requirements of overseas customers is a priority objective of US exporters. In some overseas markets, particularly in Europe and Japan, governments have instituted procurement policies designed to ensure that public sector purchases of wood products stem from legal and sustainable sources. These procurement policies have evolved primarily in response to concerns about deforestation in tropical countries and reports identifying illegal logging as a contributing factor to forest degradation. However, so as not to encumber trade unfairly, government procurement policies apply with equanimity to wood products from all originating countries. Increasingly, in the private market as well, there is increasing attention being given to verifying that products in the production and supply chain are from "legal" sources, if not "legal and sustainable" sources.

Procurement policies accept products certified by one of the recognized certification systems as evidence of legality and sustainability. All require and verify for legal sourcing. To meet standards for certain kinds of mixed sourcing labeling, chain of custody (CoC) requirements also dictate that wood, if not certified, is from "controlled" or "non-controversial" sources. However, for reasons related to landownership characteristics and industry structure, very little of US hardwood production is currently from certified forests and even less is labeled with a CoC certification. In the absence of certification, procurement policies seek other assurances that wood products are sourced legally and sustainably.

This study was commissioned by the American Hardwood Export Council (AHEC) as part of its effort to ascertain the legitimacy of US hardwoods in international trade. AHEC is a national association that represents US exporters of temperate hardwood products. The information evaluated for this project is intended to help satisfy procurement policies that seek acceptable assurances other than certification about the legality and sustainability of US hardwood exports.

The report identifies and describes the legal and regulatory context(s) in which US hardwood timber is produced and looks at various approaches to evaluate risk. For purposes of this assessment, unlawful activity is viewed broadly in two ways. First, as the removal or sale of hardwood timber without permission or lawful authority; and, secondly, if produced in a manner that violates laws and rules governing how forests are harvested, renewed and protected. A variety of data are utilized to assess the risk that wood is produced in variance to applicable laws and regulations.

In addition to an overall review of the legal and institutional frameworks for forest management and timber harvesting in the US, we evaluated the US hardwood supply situation within the context of:

(1) UK Government procurement guidelines for legal and sustainable wood products;
(2) Forest Stewardship Council (FSC) controlled wood standard; and,
(3) Programme for the Endorsement of Forest Certification (PEFC) guideline on controversial sources.

1.2 Objectives

The fundamental objective of this project was to review and evaluate data useful in determining the level of risk associated with US hardwood production with respect to its legality and sustainability. Specifically, the study was designed to:

(1) Describe and assess the legal frameworks that ensure clear ownership and contractual rights to sell timber in the US hardwood regions;
(2) Describe and assess the legal and policy frameworks designed to ensure sustainability in the states where US hardwoods are produced;
(3) Evaluate the US hardwood supply situation within the context of:

(a) UK government procurement guidelines for legal and sustainable wood products developed by the Central Point of Expertise on Timber (CPET);
(b) Forest Stewardship Council (FSC) Controlled Wood Standard; and,
(c) Programme for the Endorsement of Forest Certification (PEFC) requirements for the avoidance of the procurement of raw material from controversial sources.

1.3 Study Team

The collaborating authors are a group of highly respected analysts with backgrounds and experience in academia as well as consulting for environmental groups, government and industry. **Mr. Alberto Goetzl** of *Seneca Creek Associates, LLC* is a consulting natural resources economist who has advised government and private sector clients on forestry, market and trade issues. His 2004 report on the competitive impacts of illegal logging is the most widely cited reference on the topic. **Dr. Paul Ellefson** is the most recognized authority on regulations and programs that affect forest management in the United States. He teaches and researches at the *University of Minnesota*. **Mr. Phil Guillery** is currently Director of North American Programs for the *Tropical Forest Trust.* He has been a consultant to FSC and has served on the FSC-US board of directors. **Dr. Gary Dodge** is a consulting biologist/ecologist with *Trailhead Associates w*ho has consulted with FSC and has held positions with US land management agencies and conservation organizations. **Mr. Scott Berg** of *R.S. Berg & Associates, Inc.* is a consulting forest certification specialist who has participated in the development of SFI standards and has prepared pre-audits, internal audits and external audits for forest-based companies seeking certification under SFI, PEFC and FSC standards.

More complete biographs of the study team and respective contact information are provided in Appendix E.

1.4 Data and Methodology

Data referenced in this report are of different types and from a variety of different sources. Data on conditions and trends in US hardwood resources provide context to several aspects of the assessment. The US Forest Service has recently updated comprehensive data on US forest resources, including forest ownership, inventories, growth and removals by state. These data are compiled from comprehensive field measurements of biophysical attributes using statistically controlled and verified plot sampling techniques. The data are highly reliable and updated regularly (with an annual updating system in process). They are the main reference for quantifying trends in the US hardwood resource, including forest conversions by ecoregions.

A thorough literature search was conducted on illegal logging in the US – more commonly referred to in the US as timber theft and timber trespass – as well as on court cases involving timber theft and fraud incidents. Past studies on federal and state regulatory programs affecting forests management were also reviewed. A compilation of data on state forestry laws and programs is based on a comprehensive canvass of state agencies conducted between June, 2007 and November, 2007 and drawing on previous studies in the literature.

Interviews were conducted with state, federal, citizen group and industry representatives on various aspects of regulations, law enforcement, Native American issues and High Value Conservation Forests. A survey of hardwood producers and exporters was conducted to gauge procurement practices and perceptions about legality of timber supply.

This study focuses exclusively on US hardwoods and US hardwood exports (including in some cases transshipments, i.e. re-exports, of hardwood products sourced from other countries but exported from the US). As such, it is central to the background of this study to characterize the US hardwood producing regions and the legal and institutional frameworks that govern how hardwood timber is managed and produced. US hardwood production is concentrated in the states east of and adjacent to the Mississippi River, and in the states of Oregon and Washington in the Pacific Northwest. A total of 33 states account for 96% of US hardwood production. It is these states that are the focus of this assessment.

For this assessment, we focus on two broad aspects of legality: (1) the legal right to own and sell timber and (2) the legal settings in which timberland is managed and produced. While we examine a range of issues such as taxation and compliance to CITES, the US processes for assuring legal title to timber and compliance with laws and regulations for forest management are of the special interest. While several federal statutes have significant influence on forest management, the US does not have an all-encompassing forestry law. Instead, each state has its own approaches to regulation of forest practices. Relevant federal laws that govern aspects of forest management are summarized and we have assembled information that describes how forest practices are treated in each of the hardwood states.

The use of forest certification programs in the US is increasing. The most recognized certification systems are the Sustainable Forestry Initiative (SFI), the Forest Stewardship Council (FSC), and The American Tree Farm System (ATFS). Data about area certified was drawn from the respective websites of these programs as of June, 2007 and supplemented by other sources.

In a global context, the US is usually viewed as a country without significant political corruption issues, with a robust adherence to the rule of law, and with effective law enforcement. The World Bank Worldwide Governance Indicators is a useful tool to assess the effectiveness of governance in over 200 countries. They measure six components of good governance: (1) voice and accountability; (2) political stability and absence of violence; (3) government effectiveness; (4) regulatory quality; (5) the rule of law; and (6) control of corruption. Since these indicators provide useful context and perspective on US governance, and thus shed some light on the level of risk that might be associated with US products and exports in terms of legality, we report and summarize on where the US scores within these indicators. We also review and comment on the extent and quality of data relative to other countries, as well as US participation in the Montreal Process as it pertains to risk evaluation.

The US imports approximately $3.5 billion of hardwood products in the form of logs, lumber, flooring, siding, molding, plywood and veneer. About 20% of this trade is with Canada, a country with similarly robust legal institutions as the US. However, the US also imports hardwood products from China ($1.1 billion), Russia ($134 million), Europe ($274) and countries in Latin America ($533 million). These figures include both tropical and temperate hardwood products. About one-third of hardwood imports are of temperate species. We examine trade statistics and other sources of information to assess the potential for hardwood from other supply sources entering the supply chain for American hardwood exports. We also review the extent to which phytosanitary certification regulations and procedures may provide assurances of the source of American hardwood products and extent of trade involving CITES listed wood products.

Using the information compiled and evaluated about US forest resources and the legal frameworks that govern timber theft and forest management, we evaluate the US in the context of CPET's Category B evidence for legal and sustainable sourcing. Similarly, we detail data suitable for evaluating the US in the context of the FSC Controlled Wood Standard and PEFC requirements for the avoidance of the procurement of raw material from controversial sources.

As an organizational and research matter, state level information provides the most relevant framework for a national study of this kind. However, an ecoregion level for analysis best met the requirements in the FSC Controlled Wood Standard indicators.

1.5 Legality Defined

Definitions of what constitutes illegal logging in an international trade and forest sustainability setting vary. Some definitions are very broad and would include any violation of national, state or local law related to harvesting, transporting, processing, buying or selling of timber. The difficulty with such a broad definition is that it can encompass both major and minor violations, many of which are not directly linked to maintaining and improving sustainable forest practices. Thus, not obtaining a local burn permit, or exceeding truck weight limits, are technically illegal, but are of less significance with respect to how forests are managed over the long term. The often-cited 2004 Seneca Creek Associates, LLC study on the economic implications of illegal logging set parameters around its definition so that only egregious

violations of laws "that rise to a level of international significance" were considered.[1] These were mainly related to harvesting in protected areas, harvesting without authorization or in excess of legal limits, failing to pay fees, or violating international trading agreements. These kinds of abuses are usually linked to forest degradation and they are the focus of most allegations involving illegal logging in "high-risk" countries.

In the American context, we have elected to focus on two broad categories of illegal harvesting: (1) those involving timber theft and timber buyer/seller fraud; and (2) those involving violations of laws and rules related to forest management (and thus sustainability). While numerous other issues related to tree growing, transportation and manufacturing of wood products could be examined, we believe that it is primarily the laws and rules related to ownership rights and those that govern forest practices that are of most interest and concern to the wood products market. As worker safety and legal protections against labor abuse are also of international interest, we make reference to them also in the US context.

Timber theft refers to the taking of trees or downed timber without consent. Timber trespass refers to the entering onto the property of another without consent for purpose of cutting and taking trees. Timber is real property and, in many states, is treated similarly as theft of other kinds of property. Additionally, some states have statutes that are specific to timber theft and trespass. In the current assessment, the essential questions are:

(1) What are the legal frameworks that ensure clear ownership and contractual rights to sell timber in the US hardwood regions?

(2) What is the extent of and how effective are controls against timber theft and trespass?

As is the case in many countries, the legal and institutional frameworks that regulate or influence forest practices in the US are complex. The US does not have a specific national law or set of policies that affect all forests, but instead there is a fabric of environmental laws at the federal level influence forest management directly or indirectly. Of greater direct impact on forest practices are state laws, regulations and programs. In the current assessment, the essential questions with respect to the legality of managing forests and harvesting timber are:

(1) What are the legal frameworks designed to ensure sustainability in the US hardwood regions?

(2) How comprehensive is adherence to laws and regulations designed to ensure sustainability?

1.6 Literature Reviewed

In addition to using primary sources, an extensive literature search using the internet, a university interlibrary publications network and a search engine for legal filings was conducted. The search was filtered to include only articles pertaining to illegal logging, timber theft, timber

[1] Seneca Creek Associates, 2004.

trespass and violations of forest rules in the US. Unlike countries such as Indonesia, Cameron, Congo Basin, Russia and other countries where illegal harvesting practices receive major attention, in the US the scale of this crime is relatively smaller and of a different nature. The term illegal logging is not as commonly used in the US as the terms *timber theft*, *tree poaching*, and *unlawful logging*. The literature search turned up approximately 75 relevant items that can be grouped in five categories:

(1) academic or professional studies or articles;
(2) media articles, press releases and other news reports;
(3) articles in trade association or state agency bulletins;
(4) publications by environmental advocacy groups; and
(5) reports of court cases

Of the total, 60 were news articles published in various media outlets, 20 were articles in association or state bulletins describing problems and prevention measures, 7 were in academic or professional publications and 5were issued by environmental organizations. The majority of the news articles highlight specific incidences of timber theft. Some quote sources that provide estimates of the extent of a timber theft problem, but none of the estimates are well-supported. For example, an estimate that $1 billion of timber is stolen every year in the US has been reported, but has no originating source or supporting evidence. [2] The state and extension bulletins focus mainly on timber theft and preventive measures for landowners. Some publications, particularly those of environmental advocacy groups, allege violations of state regulations.[3] These include alleged violations by companies that are third-party certified.[4] The academic literature typically discusses timber theft and timber trespass in a state policy context or assesses the effectiveness of US Forest Service enforcement in the National Forest System. For example, one academic article reviews the history of Forest Service law enforcement and argues that law enforcement on national forests is lax.[5] It cites criticism in Congressional hearing records and independent government audits of the agency's procedures and data reporting. Many articles, particularly those published by state agencies and landowner associations discuss techniques and precautions that should be taken to avoid becoming a victim of timber theft and trespass. The most common recommendation made in most is to clearly mark property boundaries. Other publications discuss best management practices and their implementation.

Only a small number of articles estimate and provide a basis for an estimate of the extent of the timber theft problem. A Master's Thesis in 2003 reviewed the legal frameworks

[2] Reported by the Associated Press. "U.S. forests plundered for profit Illegal loggers cut estimated $1 billion a year in trees." May 19, 2003.
[3] For example: Environmental Protection Information Center (EPIC). New Report Details Maxxam/PL's Wholesale Noncompliance with Environmental Protection Standards: Company Racks Up Over 300 Violations in Five Years." May 26, 2004
[4] American Lands Alliance "A Review of the American Forest & Paper Association's Sustainable Forestry Initiative" November, 2003.
[5] Paciello, Lisa. M. "Timber Theft in National Forests: Solutions to Preventing the Widespread, Underprosecuted, and Underpunished Crime." New England Journal on Crime and Civil Confinement. Volume 32:345. Summer 2006.

addressing timber theft and trespass in parts of six states in the Appalachian region.[6] Based on a survey, the author concluded that approximately 1,600 incidences of timber theft occurred in the region during the study period with a timber value of $4 million. A recent comprehensive survey about timber theft in New York resulted in some estimates of frequency and value of occurrences in that state.[7] It found that timber thefts range from a few trees worth about $1000 to several hundred trees valued at $70,000. The average loss for those responding to the questionnaire was $10,650, not including the value of any associated environmental damages.

Numerous sources were consulted to identify and assess state programs that address sustainability. One of the study team members, Paul V. Ellefson is widely published on the subject of state regulatory programs and policies. His earlier publications provided useful compendiums of governmental activities in the hardwood region. Publications of environmental research organizations, government agencies and the relevant state agencies were all consulted. In general, the literature on state forestry programs is fairly extensive. At the national level, publications such as the National Report on Sustainable Forests – 2003, prepared in accordance with the Montreal Process on Criteria and Indicators for Sustainable Forestry, helped to identify data sources and other references.[8] In total, over 150 references in the literature were consulted.

References

American Lands Alliance. "Illegal Logging: Excerpts from "A Review of the American Forest & Paper Association's Sustainable Forestry Initiative"" November, 2003.

Elkins, Cynthia. "New Report Details Maxxam/PL's Wholesale Noncompliance with Environmental Protection Standards: Company Racks Up Over 300 Violations in Five Years." Environmental Protection Information Center (EPIC). May 26, 2004.

Paciello, Lisa. M. "Timber Theft in National Forests: Solutions to Preventing the Widespread, Underprosecuted, and Underpunished Crime." New England Journal on Crime and Civil Confinement. Volume 32:345. Summer 2006.

Seneca Creek Associates, LLC and Wood Resources International, LLC. 2004. ""Illegal" Logging and Global Wood Markets: The Competitive Impacts of the US Wood Products Industry." November, 2004.

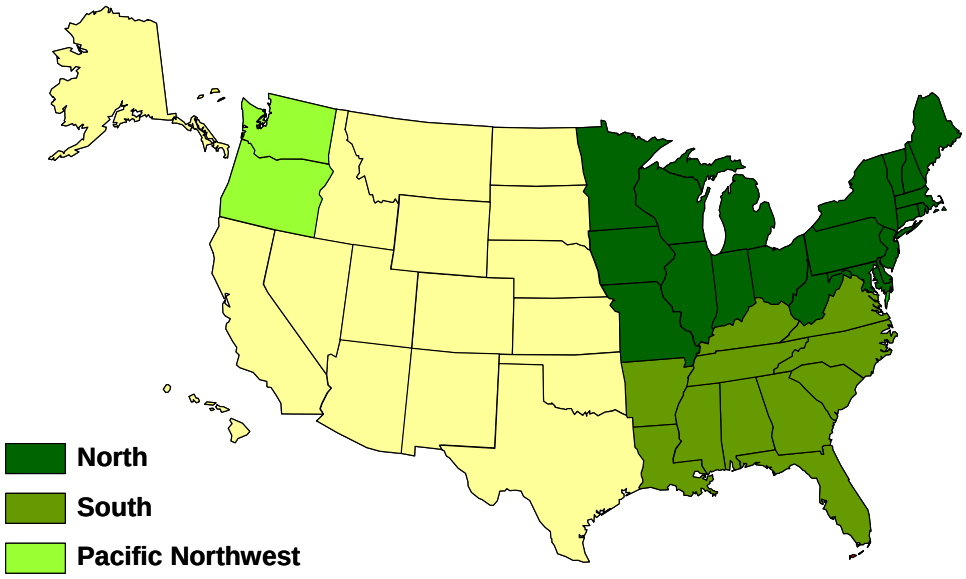
USDA Forest Service. 2004. National Report on Sustainable Forests – 2003. FS-766. February 2004.

[6] Baker, Shawn. "An Analysis of Timber Trespass And Theft Issues In The Southern Appalachian Region. MS Forestry Thesis." Virginia Polytechnic Institute and State University. Blacksburg, VA May 1, 2003.
[7] Canham, Hugh O. and Ronald W. Pedersen. "Timber Theft Analyzed in New York." The Northern Logger and Processor. October 2007.
[8] USDA Forest Service, 2004.

2.0 US HARDWOOD RESOURCES

America's hardwood resources are characterized by a diversity of temperate species in forests that have been shaped over time by natural and human influences. The main expanse of hardwood forests stretch from the Northeast corner of the continental United States to the Southern coast and west to beyond the Mississippi River. They include forests that are both of mixed conifer and deciduous type as well as forests that are primarily of deciduous trees. While natural hardwood or mixed hardwood/softwood forest stands can be found in all 50 states, commercially available hardwood resources are concentrated in 33 states. These states are located east of or adjacent to the Mississippi River and include as well the states of Oregon and Washington in the Pacific Northwest (***Figure 2a***). White and red oak species are the most prevalent hardwoods, followed by hard and soft maples, yellow poplar, hickory, sweetgum and ash. In the Pacific Northwest, red alder is the principal commercial hardwood species produced. For purposes of organizing data, we have grouped the Hardwood States into three regions: North, South and Pacific Northwest.

Figure 2a: The "Hardwood States"



2.1 Data Sources & Reliability

Statistical information on US forests is collected by the US Forest Service under its Forest Inventory and Analysis program (FIA). This is a highly sophisticated data system that annually collects detailed data on forest conditions, ownership, species, size, health of trees, growth, removals, mortality and numerous other attributes about soils, under story vegetation, tree crown conditions, coarse woody debris, and lichen community composition. These data are collected from field plots established across the United States on public and private lands. Data are compiled for each county and aggregated by Survey Unit (a multi-county grouping within a state), by State, by Region and for the Nation as a whole. The thirty-three states in the

hardwood-producing region include approximately 1,175 counties. By law, individual plot data for private lands are kept confidential to protect landowner rights and privacy.

For the past five decades, every forested state has undergone periodic forest inventories to measure and monitor forest conditions. More recently, the FIA program has initiated an annual data collection process for each forested state. Once fully implemented, the new annual inventory system will enable early warnings and faster responses to changes in forest conditions. The program receives annual funding of $72 million and has 580 federal and other employees.

The FIA data are widely recognized as being highly reliable. Sampling errors are calculated and published with the detailed data. A national compilation of the most recent periodic inventories for each state is published every five years, but annual updates for most states are gradually becoming available. Compiled FIA data are accessible through the US Forest Service website. The data can be queried geographically and by attribute. The data are periodically published by state, region and for the nation as a whole per requirements of the Resources Planning Act of 1974 (RPA).[9] The most recently compiled RPA tables referenced and cited in this assessment are for 2007.[10]

2.2 Forest Area and Hardwood Timberland

At 304 million hectares, the area of forest land in the United States has remained relatively stable over the past five decades. Despite development pressure and cropland needs, forest land area actually increased by 4.7 million hectares between 1987 and 2007. Much of this increase was the result of federal and state incentive programs to convert agricultural land to forest use. While hardwoods are not generally planted because of their relatively slow growth and ability to naturally regenerate following a disturbance, these public cost-share programs stimulated hardwood planting in riparian areas and on erodible farmland. Over the past two decades, millions of hectares of hardwoods have been planted on marginal agricultural lands and reclaimed mining lands.

Forest land in the hardwood producing states totals 168 million hectares or nearly half of the land area. About two-thirds (65.8%) of the forest land in the region is comprised oh hardwood and mixed oak-pine forest types (***Table 2A***). As a group, the Hardwood States have been increasing forest area at an average rate of about 0.1% per year, but not all of the individual states have gained forest area. In 19 (over half) of the hardwood producing states, forest area has increased, but forest area has declined in 13 states since 1987. Where forest area has declined, the principal cause is development pressure as population and suburban development has encroached on forested areas. In only two states in the hardwood region -- Rhode Island and Florida – has forest area declined by an average annual rate of 0.5% or more since 1987. These two states together accounted for less than 0.3% of US hardwood log and lumber production in 2007 (see ***Table 2H***).[11]

[9] Smith and others, 2007
[10] RPA 2007 Resource Tables are available at: http://fia.fs.fed.us/program-features/rpa/
[11] A more detailed analysis of forest conversion issues by ecoregion is provided as part of the Forest Stewardship Council Controlled Wood review in Section 12.6 of this assessment.

In US forest resource statistics, *timberland* forms a subset of forest land and is defined as unreserved forest capable of growing at least 0.14 cubic meters per hectare of wood per year. US timberland totals approximately 208 million hectares (68% of forest land). Of that amount, the hardwood producing states represent 159 million hectares and, of that amount, 104 million hectares (65%) are dominated by hardwood species or mixed oak-pine forest types (***Table 2B***).

All commercial timber harvests occur on timberland although, as a practical matter, much of US timberland is either managed for uses other than producing timber or is economically unavailable for commercial use. The long-term trends in timberland area are similar to those of forest land noted above, with timberland area – and timberland of hardwood forest types -- expanding moderately over the past two decades.

The species make-up of US timberland has changed over time because of invasive pests, changes in natural fire regimes, human disturbances and forest management practices. Until the 1930s, the eastern hardwood forests were dominated by American chestnut which has since largely disappeared as a significant commercial species because of accidentally introduced chestnut blight. Other exotic pests and pathogens such as gypsy moth, Dutch elm disease and butternut canker have also had a significant influence on the hardwood resource. Nevertheless, the area in hardwoods and oak-pine has increased over the past half-century. In the US South, the gain in hardwood forest has largely been in upland hardwood types such as oak-hickory and maple-beech-birch. Lowland hardwoods, which include oak-gum-cypress and elm-ash-cottonwood species groups, have experienced a decline in area from as much as 19% of forest land in the early 1970s to 14% in 2007.[12] This change is the result of lowland hardwoods being converted to pine or other land uses. However, in the broader historical context, virtually all of eastern hardwood forests – upland and lowland forest types – had been cleared or altered prior to 1930 and are far more extensive today as the area devoted to cropland and other agricultural activity throughout the 19th century has reverted back to forested condition.

2.3 Ownership Characteristics

Ownership of the US hardwood resource is overwhelmingly private. Approximately 80% of timberland in the hardwood-producing states is privately owned. This private land can be categorized into two broad groupings: corporate ownership and non-corporate ownership (***Table 2C***). Corporate ownerships are legally incorporated entities, typically large ownerships associated with being regularly in the business of growing and producing timber products. Non-corporate ownerships are mainly family forests that harvest timber irregularly or periodically. They tend to be small enterprises that average fewer than 10 hectares in size. Some 11.1 million individuals and other private entities own the 170 million hectares of private US forest land. Of these landowners, 10.4 million are family forest owners and of those, 9.1 million are found in the hardwood-producing states (***Table 2D***).

In 2006, US hardwood timber removals totaled 160 million m^3. Of this total, 92% was produced from private lands with the vast majority supplied by non-corporate, family forest owners. Family forest landowners are not typically in the business of regularly selling timber. In fact, most landowners have objectives other than timber production as the main reason for

[12] Conner and Hartsell, 2002

owning forest land. According to the National Woodland Owners Survey, well over 60% of family forest owners and the acres they represent in the hardwood region consider *to enjoy beauty or scenery* as an important reason for owning forest land (***Table 2E***). Other reasons with high degrees of importance include: *privacy, as part of a home or vacation home, to protect nature and biological diversity, and to pass land on to children or other heirs*. The number of respondents citing timber production (*sawlogs, pulpwood or other timber products*) as an important reason for forest ownership is lower and, not surprisingly, weighted to larger owners. About 11% of family forest owners that collectively account for 34% of the area in family forests in the hardwood-producing region identify timber production as an important reason for owning forest. Of these owners, about 31% have written forest management plans and 57% have received forest management advice from one or more professional and other sources. [13]

Included in private ownership in the hardwood region are 1.5 million hectares of timberland owned by Native American tribes (***Table 2F***). Native American tribes are considered to be Sovereign Nations and accorded rights to independently manage their land and affairs. Out of a total of 556 federally recognized tribes, 48 have significant timberland resources in 21 of the hardwood-producing states. While some tribes have sawmill and other production facilities, they account for only a very small share of US hardwood production (estimated at less than 1%).

2.4 Hardwood Timber Inventory and Trends

In 2007, the US hardwood inventory (i.e. growing stock) was estimated to comprise 11.4 billion m^3. As with timberland in the hardwood region, approximately 80% of the standing hardwood inventory is privately owned. Hardwood species represent 43% of the total growing stock in the United States (softwood species represent 57%). In 2006, hardwood also accounted for 43% of net annual timber growth and approximately 36% of total removals (i.e. harvests). Hardwood sawtimber size classes comprise approximately two-thirds of the total hardwood inventory, suggestive of a forest age structure weighted towards older age classes across the hardwood region.

Over the past five decades, the US hardwood inventory has steadily increased (***Figure 2b; Table 2G***). This is the case nationally as well as in each of the 33 hardwood states individually. Nationally, hardwood growing stock has more than doubled since 1952, having increased by 28% just since 1987. Only in the State of Washington has the hardwood inventory shown some decline over the past twenty years, but only after increasing dramatically in the thirty years prior.[14] While highly variable by state and region, the major hardwood forest types consist of: white and red oaks, soft and hard maples, yellow poplar, ash, hickory, black cherry and alder (***Figure 2c***). These species groupings themselves are highly diversified; oak forest types include as many as 25 or more other species. The two major categories of oak are red and white, with each in turn defining a group of anywhere from 5 to 15 specific oak varieties.

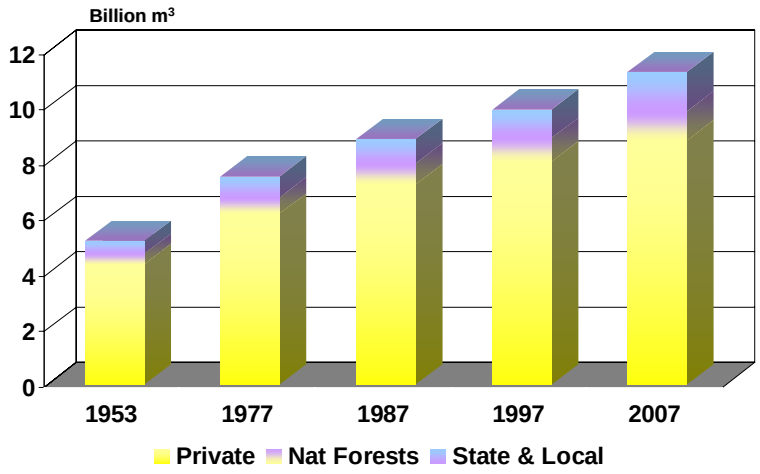
[13] Butler, 2007. The National Woodland Owners Survey (NWOS) is conducted annually by the US Forest Service using a statistically tested sample of US private forest landowners.

[14] According to the Forest Service, changes in the Pacific Northwest inventory may reflect changes in the way data have been collected on the national forests which account for a large share of the timberland in that region.

Net annual hardwood growth exceeds removals by a wide margin both nationally as well as in each of the hardwood states when evaluated individually (***Table 2G***). In 2006, hardwood growth exceeded removals by a factor of 1.9 in the hardwood-producing region and slightly more nationally. Growth exceeds harvest for each of the major commercial hardwood species, including highly valued cherry and walnut. Net annual hardwood growth has exceeded hardwood removals continuously since 1952 (***Figure 2d***).

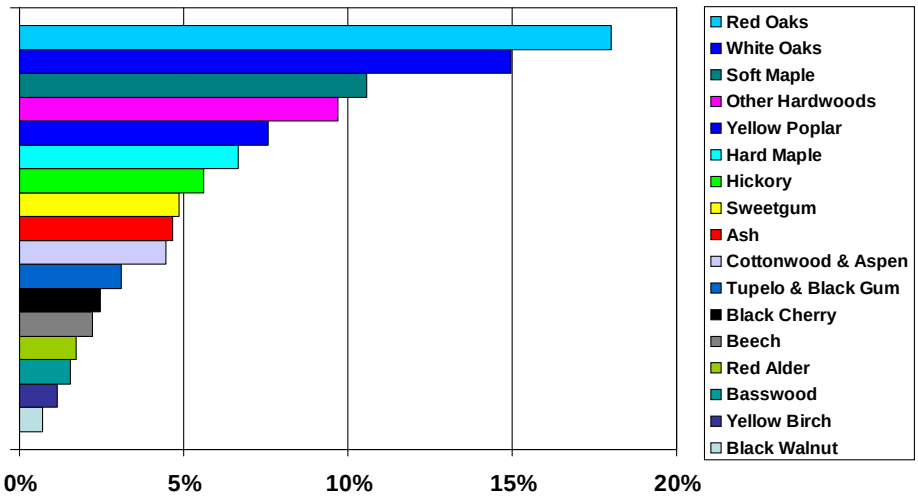
In 2006, US production of hardwood sawlogs and veneer logs totaled 57.5 million m^3 or approximately 40% of the total US hardwood harvest. The other 60% was used for pulpwood, composite products, fuelwood and other products. In 2006, US hardwood lumber production totaled approximately 26 million m^3 but declined to 25 million m^3 in 2007 (***Table 2H***).

Figure 2b: US Hardwood Inventory, 1953 - 2007



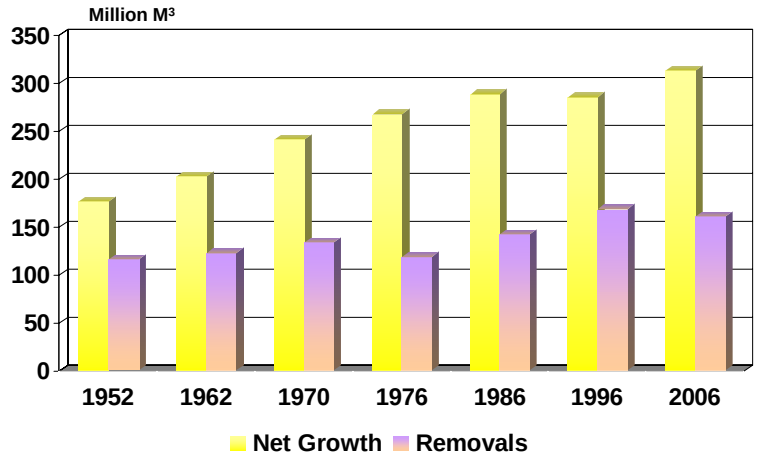
Source: US Forest Service

Figure 2c: Distribution of American Hardwood Species



Source: US Forest Service

Figure 2d: US Hardwood Growth and Removals, 1952 - 2006



Source: US Forest Service

2.5 Supply and Traceability

As previously noted, US hardwood resources are concentrated in small family forest ownerships of less than 10 hectares on average. Family forest owners harvest timber irregularly; perhaps only once or twice in a generation. In fact, timber production ranks well below other reasons (i.e. aesthetics, nature protection, land investment, privacy, etc.) for owning forests.[15] Because ownership is fragmented, and harvests on any given ownership sporadic, tracking individual logs through the supply chain can be a complicated task. Typically, hardwood timber operators purchase from hundreds of different landowners each year, and usually in small quantities. Timber is often purchased by loggers or wood dealers who amass logs from many different sources and merchandize them by species and quality as the market allows.

According to a survey of AHEC members, hardwood sawmills and veneer mills purchase between 20 and 50 percent of their supplies at the mill gate, although the vast majority of mills indicate they only deal with reliable suppliers they know by reputation or with whom they have a long-standing relationship. Sawmills will also purchase production from other mills to augment their own production to meet customer needs. Consequently, the number of landowners feeding into the supply chain of any given mill or concentration yard commonly numbers into the hundreds and changes every year. Given the large area in small family forest ownerships, the task of tracking chain of custody of American hardwoods is complicated. According to the National Woodland Owners Survey, 1.1 million landowners had a timber harvest over the past five years, an average of over 220,000 annually.[16] Only for supplies from large landowners (estimated to be less than 10% of hardwood supply) is the task of tracking chain of custody seemingly more feasible and cost-effective.

[15] Butler, 2007.
[16] Butler, 2007.

2.6 Conclusions

US forest resource statistics are systematically collected, analyzed and publicly available for query or review. They are regarded by stakeholders and international organizations as highly reliable. The data show that US hardwood resources are overwhelmingly privately owned. Nationally, 92% of the hardwood supply is from private lands and the vast majority is supplied from family forest ownerships that average less than 10 hectares in size. In the hardwood region, some 9.1 million family forest owners own 80% of hardwood resources. Most landowners own forests for reasons other than timber production and will harvest timber irregularly if at all. When they do engage in a timber harvest activity, hardwood harvests tend to involve relatively small volumes and thus a large numbers of landowners. On average, in any given year, hundreds of thousands of landowners (more than 220,000) have a timber harvest on their property, making traceability to specific timber sales a difficult task.

At the national or at the state level, the data strongly suggest that the US hardwood resource is extensive and not in any immediate or future risk of diminishing. Hardwood growth exceeds removals in each of the hardwood-producing states and the total hardwood inventory has increased significantly over the past five decades. Although forest area has declined in some states, in aggregate it has remained stable and has, in fact, increased moderately over the past two decades. While the state, regional and national data may mask local situations where hardwood forests are being converted and/or removals exceed current annual growth, the data for the US overall do not show any worrisome inventory trends. The major forest resource statistics (area, inventory, growth/removals, etc.) for the hardwood-producing states support a conclusion that US hardwood resources are at LOW risk of diminishing and, in fact, indicate that the US hardwood inventory continues to expand.

References

Butler, Brett. 2007. Private Forest Owners of the United States: 2006 (draft). National Woodland Owners Survey (NWOS). Northern Research Station. Newtown Square, PA: Forest Service, U . Department of Agriculture. Tables available at: www.fs.fed.us/woodlandowners/nwos_2006.

Census. 2006. Current Industrial Reports. *Lumber Production and Mill Stocks*. MA321T. US Department of Commerce, Census Bureau.

Conner, Roger C. and Hartsell, Andrew J. 2002. Chapter 16: Forest Area and Conditions. In Wear, David N. and Greis, John G. Southern Forest Resource Assessment - Technical Report Gen. Tech. Rep. SRS-53. USDA Forest Service.

Smith, W. Brad and others. 2007. Forest Resources of the United States, 2006 Review Tables. Available at: http://www.fia.fs.fed.us/documents/pdfs/2007_RPA_REVIEW_TABLESv2c.pdf

USDA Forest Service. Forest Inventory Mapmaker 3.0. Tools for accessing and querying forest inventory and timber product output data are available at: http://www.fia.fs.fed.us/tools-data/other/default.asp

Table 2A: Forest Land and Hardwood Forests in the Hardwood Region, 2007

	Forest Land			Hardwood Forest Land		
	Land Area (000 Ha)	Total Forestland (000 Ha)	% of Land in Forest Cover	Hardwood (000 Ha)	Mixed Oak-Pine (000 Ha)	% of Forest Land in Hardwood & Mixed Forest Type
North:						
Connecticut	1,255	726	57.9%	653	28	93.8%
Delaware	506	155	30.6%	120	15	86.9%
Illinois	14,410	1,831	12.7%	1,758	18	97.0%
Indiana	9,299	1,884	20.3%	1,780	47	97.0%
Iowa	14,505	1,165	8.0%	1,083	27	95.3%
Maine	7,993	7,152	89.5%	4,101	145	59.4%
Maryland	2,532	1,038	41.0%	803	93	86.3%
Massachusetts	2,031	1,283	63.2%	836	194	80.2%
Michigan	14,680	7,909	53.9%	5,701	227	75.0%
Minnesota	20,649	6,633	32.1%	4,476	120	69.3%
Missouri	17,844	6,102	34.2%	5,403	403	95.1%
New Hampshire	2,323	1,963	84.5%	1,369	143	77.0%
New Jersey	1,921	863	44.9%	575	84	76.4%
New York	12,228	7,555	61.8%	6,292	273	86.9%
Ohio	10,606	3,195	30.1%	3,004	54	95.7%
Pennsylvania	11,607	6,709	57.8%	6,264	109	95.0%
Rhode Island	271	144	53.2%	116	16	91.4%
Vermont	2,396	1,869	78.0%	1,467	46	80.9%
West Virginia	6,238	4,859	77.9%	4,546	128	96.2%
Wisconsin	14,079	6,586	46.8%	5,102	232	81.0%
Total	167,372	69,622	41.6%	55,448	2,402	83.1%
South:						
Alabama	13,126	9,183	70.0%	4,058	1,258	57.9%
Arkansas	13,486	7,620	56.5%	4,374	838	68.4%
Florida	14,175	6,534	46.1%	2,494	601	47.4%
Georgia	15,019	10,030	66.8%	4,248	1,267	55.0%
Kentucky	10,289	4,844	47.1%	4,108	450	94.1%
Louisiana	11,282	5,755	51.0%	2,695	519	55.8%
Mississippi	12,151	7,941	65.4%	3,865	1,300	65.0%
North Carolina	12,597	7,465	59.3%	3,956	965	65.9%
South Carolina	7,773	5,158	66.4%	2,165	598	53.6%
Tennessee	10,680	5,860	54.9%	4,761	471	89.3%
Virginia	10,370	6,380	61.5%	4,421	647	79.4%
Total	130,949	76,771	58.6%	41,144	8,913	65.2%
Pacific Northwest:						
Oregon	24,759	12,209	49.3%	1,378	0	11.3%
Washington	17,243	9,016	52.3%	1,049	0	11.6%
Total	42,002	21,225	50.5%	2,428	0	11.4%
Main Hardwood Producing States	340,324	167,618	49.3%	99,020	11,316	65.8%
US Total	916,156	304,011	33.2%	122,671	12,013	44.3%

Source: Smith & Others, 2008. US Forest Service. RPA Review Tables, 2007

Table 2B: US Timberland by Forest Type, 2007

	Timberland (000 Ha)	Timberland Forest Type				
		Hardwood Forest Types (000 Ha)	Mixed Oak-Pine (000 Ha)	Softwood (000 Ha)	Non-Stocked & Other (000 Ha)	Hardwood and Mixed as % of Timberland
North:						
Connecticut	701	628	28	38	7	93.6%
Delaware	152	117	15	20	1	86.6%
Illinois	1,766	1,693	18	46	9	96.9%
Indiana	1,834	1,736	45	46	7	97.1%
Iowa	1,143	1,071	25	13	34	95.9%
Maine	6,946	3,987	145	2,773	12	59.5%
Maryland	960	732	93	126	9	86.0%
Massachusetts	1,193	791	175	227	0	81.0%
Michigan	7,698	5,583	221	1,840	53	75.4%
Minnesota	6,116	4,217	100	1,701	98	70.6%
Missouri	5,938	5,271	381	263	23	95.2%
New Hampshire	1,891	1,332	143	408	8	78.0%
New Jersey	759	502	84	164	8	77.2%
New York	6,481	5,416	273	700	92	87.8%
Ohio	3,093	2,916	50	107	20	95.9%
Pennsylvania	6,482	6,063	108	278	33	95.2%
Rhode Island	142	114	16	12	1	91.3%
Vermont	1,814	1,436	46	335	1	81.7%
West Virginia	4,774	4,474	128	138	34	96.4%
Wisconsin	6,492	5,035	231	1,163	63	81.1%
Total	66,376	53,114	2,326	10,399	513	83.5%
South:						
Alabama	9,138	4,040	1,246	3,726	125	57.9%
Arkansas	7,478	4,281	819	2,325	54	68.2%
Florida	6,294	2,347	590	2,951	405	46.7%
Georgia	9,812	4,093	1,231	4,365	123	54.3%
Kentucky	4,714	4,021	437	231	25	94.6%
Louisiana	5,713	2,665	516	2,293	238	55.7%
Mississippi	7,906	3,862	1,300	2,325	29	65.3%
North Carolina	7,251	3,835	941	2,412	62	65.9%
South Carolina	5,116	2,130	598	2,339	49	53.3%
Tennessee	5,630	4,576	457	556	41	89.4%
Virginia	6,195	4,264	631	1,254	46	79.0%
Total	75,246	40,113	8,767	24,778	1,198	65.0%
Pacific Northwest:						
Oregon	9,962	1,137	0	8,578	248	11.4%
Washington	7,637	978	0	6,413	247	12.8%
Total	17,600	2,115	0	14,990	494	12.0%
Main Hardwood Producing States	159,221	95,342	8,767	39,768	1,692	65.4%
US Total	208,095	107,225	10,013	43,494	1,816	56.3%

Source: Smith & Others, 2008. US Forest Service. RPA Review Tables, 2007

Table 2C: US Timberland by Ownership, 2007

	Public			Private				
	Federal (000 Ha)	State & Local (000 Ha)	Total Public (000 Ha)	Private Corporate (000 Ha)	Private Non-Corporate (000 Ha)	Total Private (000 Ha)	% Public	% Private
North:								
Connecticut	0	159	159	95	447	542	22.7%	77.3%
Delaware	0	10	10	43	99	142	6.6%	93.4%
Illinois	142	116	259	87	1,420	1,507	14.6%	85.4%
Indiana	152	112	263	119	1,452	1,571	14.4%	85.6%
Iowa	42	84	126	16	1,000	1,016	11.0%	89.0%
Maine	44	262	306	4,127	2,512	6,639	4.4%	95.6%
Maryland	11	160	171	200	590	789	17.8%	82.2%
Massachusetts	24	312	337	68	788	856	28.2%	71.8%
Michigan	1,074	1,759	2,833	1,065	3,801	4,866	36.8%	63.2%
Minnesota	814	2,477	3,292	471	2,353	2,824	53.8%	46.2%
Missouri	678	304	982	253	4,703	4,956	16.5%	83.5%
New Hampshire	275	164	439	325	1,127	1,452	23.2%	76.8%
New Jersey	22	216	238	201	320	521	31.3%	68.7%
New York	52	645	697	896	4,888	5,784	10.8%	89.2%
Ohio	96	184	280	365	2,448	2,813	9.1%	90.9%
Pennsylvania	218	1,549	1,767	853	3,862	4,715	27.3%	72.7%
Rhode Island	0	21	21	21	100	121	15.1%	84.9%
Vermont	116	140	256	306	1,252	1,558	14.1%	85.9%
West Virginia	440	128	567	1,307	2,900	4,207	11.9%	88.1%
Wisconsin	613	1,416	2,029	576	3,886	4,463	31.3%	68.7%
Total	4,815	10,220	15,035	11,395	39,947	51,341	22.6%	77.4%
South:								
Alabama	368	168	536	2,554	6,048	8,602	5.9%	94.1%
Arkansas	1,191	195	1,386	2,204	3,888	6,092	18.5%	81.5%
Florida	693	993	1,685	2,594	2,015	4,608	26.8%	73.2%
Georgia	520	216	737	3,221	5,855	9,076	7.5%	92.5%
Kentucky	327	90	417	596	3,701	4,297	8.8%	91.2%
Louisiana	366	291	658	2,621	2,434	5,055	11.5%	88.5%
Mississippi	724	187	912	1,907	5,087	6,994	11.5%	88.5%
North Carolina	684	320	1,004	1,564	4,682	6,247	13.8%	86.2%
South Carolina	410	180	590	1,444	3,082	4,526	11.5%	88.5%
Tennessee	411	238	649	894	4,088	4,982	11.5%	88.5%
Virginia	752	189	941	1,177	4,078	5,254	15.2%	84.8%
Total	6,447	3,066	9,513	20,776	44,957	65,733	12.6%	87.4%
Pacific Northwest:								
Oregon	5,619	414	6,033	2,364	1,565	3,929	60.6%	39.4%
Washington	2,638	1,085	3,723	1,959	1,956	3,915	48.7%	51.3%
Total	8,257	1,499	9,756	4,323	3,521	7,844	55.4%	44.6%
Main Hardwood Producing States	19,519	14,785	34,303	36,494	88,425	124,919	21.5%	78.5%
US Total	45,623	18,209	63,832	42,949	101,315	144,264	30.7%	69.3%

Source: Smith & Others, 2008. US Forest Service. RPA Review Tables, 2007

Table 2D: Family Forest Owners in the Hardwood Producing Region, 2006

	Total Forestland (000 Ha)	All Private >0.40 Hectares			Family Forests		
		Thousand Ha	Thousand Owners	Average (Ha)	Thousand Ha	Thousand Owners	Average (Ha)
North:							
Connecticut	726	560	108	5.2	363	101	3.6
Delaware	155	142	51	2.8	82	23	3.6
Illinois	1,831	1,510	184	8.2	1,402	177	7.9
Indiana	1,913	1,596	226	7.1	1,418	220	6.4
Iowa	1,165	1,033	150	6.9	991	147	6.7
Maine	7,152	6,708	252	26.6	2,318	233	9.9
Maryland	1,038	792	158	5.0	575	156	3.7
Massachusetts	1,283	882	293	3.0	682	290	2.4
Michigan	7,826	4,829	444	10.9	3,551	425	8.4
Minnesota	6,597	2,843	200	14.2	2,154	192	11.2
Missouri	5,927	4,864	349	13.9	4,567	330	13.8
New Hampshire	1,963	1,476	128	11.5	954	124	7.7
New Jersey	863	535	100	5.4	264	97	2.7
New York	7,555	5,843	690	8.5	4,554	617	7.4
Ohio	3,195	2,822	345	8.2	2,346	336	7.0
Pennsylvania	6,709	4,750	497	9.6	3,604	469	7.7
Rhode Island	144	123	38	3.2	83	37	2.2
Vermont	1,854	1,503	88	17.1	1,254	88	14.3
West Virginia	4,859	4,216	233	18.1	2,743	227	12.1
Wisconsin	6,523	4,442	361	12.3	3,642	350	10.4
Total	69,280	51,466	4,895	10.5	37,547	4,639	8.1
South:							
Alabama	9,184	8,605	408	21.1	5,986	395	15.2
Arkansas	7,620	6,134	346	17.7	3,800	343	11.1
Florida	6,535	4,624	499	9.3	1,983	395	5.0
Georgia	10,030	9,081	526	17.3	5,803	506	11.5
Kentucky	4,844	4,309	477	9.0	3,684	471	7.8
Louisiana	5,755	5,064	132	38.4	2,353	106	22.2
Mississippi	7,519	6,732	245	27.5	4,972	169	29.4
North Carolina	7,465	6,272	515	12.2	4,530	460	9.8
South Carolina	5,158	4,528	301	15.0	2,962	262	11.3
Tennessee	5,860	4,982	536	9.3	4,037	533	7.6
Virginia	6,380	5,261	447	11.8	4,044	438	9.2
Total	76,351	65,592	4,432	14.8	44,155	4,078	10.8
Pacific Northwest:							
Oregon	12,333	4,505	157	28.7	1,752	150	11.7
Washington	8,951	3,859	216	17.9	1,085	213	5.1
Total	21,284	8,364	373	22.4	2,837	363	7.8
Main Hardwood Producing States	166,915	125,423	9,700	12.9	84,538	9,080	9.3
United States Total	303,423	170,232	11,116	15.3	105,230	10,358	10.2

Source: Butler, 2007. National Woodland Owners Survey (NWOS)

Note: The NWOS covers area defined as forest land which includes timberland

Table 2E: Family Forest Owners Reasons for Owning Forest Land in the Hardwood Producing Region, 2006

Reason for Owning Forest Land [a]	Area (000 Ha)[b]	% of Area	Number (000) [b]	% of Owners
To enjoy beauty or scenery	53,769	63.6%	6,331	69.7%
To pass land on to children or other heirs	50,703	60.0%	4,464	49.2%
Privacy	46,268	54.7%	5,737	63.2%
Part of home or vacation home	44,240	52.3%	5,974	65.8%
To protect nature and biologic diversity	44,133	52.2%	4,931	54.3%
For land investment	40,456	47.9%	3,320	36.6%
Hunting or fishing	38,103	45.1%	2,427	26.7%
Part of farm or ranch	32,455	38.4%	2,609	28.7%
For production of sawlogs, pulpwood or other timber products	*28,692*	*33.9%*	*974*	*10.7%*
For recreation other than hunting or fishing	28,276	33.4%	2,599	28.6%
For production of firewood or biofuel	12,934	15.3%	1,189	13.1%
To cultivate or collect nontimber forest products	8,718	10.3%	695	7.7%
No answer	1,005	1.2%	94	1.0%

[a] Categories are not exclusive
[b] Sampling errors generally range from 1 – 9 percent.
Source: Butler, 2007. National Woodland Owners Survey (NWOS)

Table 2F: Native American Ownership of Timberland in the Hardwood Region

	Timberland (hectares)	Native American Ownership (hectares)	% of Timberland
North:			
Connecticut	701,081	6,950	1.0%
Delaware	151,983	0	0.0%
Illinois	1,765,659	0	0.0%
Indiana	1,834,304	0	0.0%
Iowa	1,142,713	0	0.0%
Maine	6,945,523	86,745	1.2%
Maryland	959,882	0	0.0%
Massachusetts	1,192,541	0	0.0%
Michigan	7,698,268	6,881	0.1%
Minnesota	6,115,903	189,756	3.1%
Missouri	5,938,442	0	0.0%
New Hampshire	1,891,437	4,278	0.2%
New Jersey	759,232	0	0.0%
New York	6,480,960	16,953	0.3%
Ohio	3,093,454	454	0.0%
Pennsylvania	6,482,415	2,748	0.0%
Rhode Island	141,890	2,780	2.0%
Vermont	1,813,994	0	0.0%
West Virginia	4,774,063	0	0.0%
Wisconsin	6,492,036	148,945	2.3%
Total	66,375,780	466,489	0.7%
South:			
Alabama	9,137,610	15,154	0.2%
Arkansas	7,478,421	606	0.0%
Florida	6,293,650	8,397	0.1%
Georgia	9,812,222	13,402	0.1%
Kentucky	4,713,734	0	0.0%
Louisiana	5,712,629	11,865	0.2%
Mississippi	7,905,929	7,226	0.1%
North Carolina	7,250,536	22,920	0.3%
South Carolina	5,115,634	2,930	0.1%
Tennessee	5,630,281	6,854	0.1%
Virginia	6,195,243	0	0.0%
Total	75,245,888	89,354	0.1%
Pacific Northwest:			
Oregon	9,962,080	182,904	1.8%
Washington	7,637,464	778,982	10.2%
Total	17,599,543	961,886	5.5%
Main Hardwood Producing States	159,221,212	1,517,729	1.0%
US Total	208,094,618	4,976,419	2.4%

Source: Smith & Others, 2008. US Forest Service. RPA Review Tables, 2007

Table 2G: US Hardwood Timber Inventory Trends, Ownership, Net Annual Growth and Removals

	Hardwood Inventory, 1953 - 1997				Hardwood Inventory, 2007					Net Annual Hardwood Growth 2006 (000 M3)	Annual Hardwood Removals 2006 (000 M3)	Growth to Removals Ratio
	1953 (Bil M3)	1977 (Bil M3)	1987 (Bil M3)	1997 (Bil M3)	2007 (Bil M3)	% Public	% Private	% Change from 1953	% Change from 1987			
North:												
Connecticut	40	63	65	65	81	23.9%	76.1%	149.2%	24.6%	1,456	147	9.9
Delaware	6	13	13	13	16	8.3%	91.7%	165.1%	23.8%	339	48	7.1
Illinois	68	118	133	133	188	16.9%	83.1%	178.4%	40.9%	9,034	2,192	4.1
Indiana	81	104	142	187	227	15.1%	84.9%	178.4%	59.6%	9,830	2,843	3.5
Iowa	38	29	35	47	87	15.0%	85.0%	127.4%	148.0%	1,649	628	2.6
Maine	152	185	225	261	278	5.4%	94.6%	82.8%	23.9%	7,544	7,942	0.9
Maryland	58	76	104	105	121	18.1%	81.9%	109.0%	16.4%	2,361	604	3.9
Massachusetts	35	69	86	92	111	30.6%	69.4%	216.6%	29.1%	2,063	133	15.5
Michigan	215	371	408	542	541	31.0%	69.0%	151.3%	32.7%	14,672	7,480	2.0
Minnesota	120	226	273	299	285	44.4%	55.6%	136.9%	4.5%	8,948	7,663	1.2
Missouri	154	159	208	230	432	17.6%	82.4%	180.0%	108.1%	11,375	5,010	2.3
New Hampshire	50	106	127	148	147	24.2%	75.8%	194.8%	15.8%	2,965	680	4.4
New Jersey	26	36	38	53	63	23.5%	76.5%	144.0%	68.0%	1,155	90	12.9
New York	220	275	429	465	560	11.7%	88.3%	154.6%	30.6%	15,053	2,780	5.4
Ohio	89	173	205	276	331	10.0%	90.0%	271.5%	62.1%	8,381	1,876	4.5
Pennsylvania	332	612	644	639	764	31.8%	68.2%	130.4%	18.6%	19,674	5,486	3.6
Rhode Island	4	9	10	10	14	12.1%	87.9%	238.4%	33.9%	261	27	9.7
Vermont	63	90	120	164	166	17.4%	82.6%	162.8%	38.3%	3,423	751	4.6
West Virginia	244	370	418	539	603	13.7%	86.3%	147.0%	44.1%	11,972	4,383	2.7
Wisconsin	181	286	348	398	422	28.4%	71.6%	132.3%	21.1%	11,806	9,887	1.2
Total North	1,997	3,086	3,682	4,268	5,438	21.4%	78.6%	173.4%	47.7%	143,961	60,648	2.4
South:												
Alabama	183	269	297	339	420	9.0%	91.0%	129.1%	41.5%	14,641	9,864	1.5
Arkansas	268	256	302	349	429	25.4%	74.6%	60.0%	42.2%	13,494	8,626	1.6
Florida	100	133	160	168	127	29.6%	70.4%	27.6%	-20.8%	2,774	2,200	1.3
Georgia	243	377	422	466	446	10.9%	89.1%	83.1%	5.6%	15,537	8,398	1.9
Kentucky	166	313	382	417	482	11.2%	88.8%	190.8%	26.2%	12,517	7,756	1.6
Louisiana	191	221	239	252	286	18.4%	81.6%	49.4%	19.6%	7,712	7,323	1.1
Mississippi	180	235	285	323	380	15.9%	84.1%	110.8%	33.3%	12,839	9,935	1.3
North Carolina	349	501	560	572	585	18.8%	81.2%	67.8%	4.5%	20,681	12,434	1.7
South Carolina	153	229	252	245	256	14.4%	85.6%	67.4%	1.8%	8,814	4,903	1.8

Table 2G (con't)

	Hardwood Inventory, 1953 - 1997				Hardwood Inventory, 2007					Net Annual Hardwood Growth 2006 (000 M3)	Annual Hardwood Removals 2006 (000 M3)	Growth to Removals Ratio
	1953 (Bil M3)	1977 (Bil M3)	1987 (Bil M3)	1997 (Bil M3)	2007 (Bil M3)	% Public	% Private	% Change from 1953	% Change from 1987			
Tennessee	199	277	328	389	585	14.7%	85.3%	194.6%	78.6%	21,670	8,077	2.7
Virginia	331	478	535	561	568	17.7%	82.3%	71.7%	6.1%	15,558	10,136	1.5
Total South	2,363	3,288	3,761	4,082	4,563	16.1%	83.9%	93.2%	21.3%	146,239	89,653	1.6
Pacific Northwest:												
Oregon	119	136	172	185	190	42.5%	57.5%	59.4%	10.8%	4,621	1,837	2.5
Washington	81	161	196	185	175	33.7%	66.3%	115.7%	-11.1%	3,902	1,580	2.5
Total PNW	200	298	368	370	365	38.3%	61.7%	82.2%	-0.9%	8,524	3,417	2.5
Main Hardwood Producing States	4,560	6,672	7,811	8,720	10,366	19.7%	80.3%	127.7%	31.6%	298,723	153,718	1.9
US Total	5,210	7,531	8,888	9,957	11,402	21.7%	77.5%	118.9%	28.3%	325,543	160,592	2.0

Source: Smith & Others, 2008. US Forest Service. RPA Review Tables, 2007

Table 2H: US Hardwood Log and Lumber Production by State

	Output of Hardwood Sawlogs & Veneer Logs, 2007 [1]			Hardwood Lumber Production [2]		
	Total (000 m^3)	Sawlogs (000 m^3)	Veneer Logs (000 m^3)	2006 (000 m^3)	2007 (000 m^3)	Percent of US Total
North:						
Connecticut	121	121	0	107	103	0.4%
Delaware	24	24	0	22	21	0.1%
Illinois	1,018	1,000	18	406	378	1.5%
Indiana	1,999	1,918	81	793	802	3.2%
Iowa	444	416	28	333	319	1.3%
Maine	1,101	1,101	0	260	231	0.9%
Maryland	366	366	0	394	448	1.8%
Massachusetts	82	82	0	73	59	0.2%
Michigan	2,668	2,451	216	1,074	986	4.0%
Minnesota	597	560	37	281	241	1.0%
Missouri	3,114	3,075	39	1,234	1,114	4.5%
New Hampshire	517	494	24	142	139	0.6%
New Jersey	29	29	0	18	17	0.1%
New York	1,515	1,484	31	1,222	1,251	5.0%
Ohio	1,322	1,319	3	861	793	3.2%
Pennsylvania	3,755	3,210	545	2,570	2,561	10.3%
Rhode Island	19	19	0	7	7	0.0%
Vermont	512	512	0	257	219	0.9%
West Virginia	3,213	2,919	295	1,551	1,404	5.7%
Wisconsin	2,324	2,160	164	1,029	887	3.6%
Total	24,741	23,261	1,480	12,635	11,981	48.3%
South:						
Alabama	2,593	1,954	639	486	498	2.0%
Arkansas	2,674	2,536	138	1,444	1,348	5.4%
Florida	167	126	41	75	72	0.3%
Georgia	2,177	1,852	325	932	847	3.4%
Kentucky	4,141	3,991	150	1,395	1,352	5.5%
Louisiana	1,224	1,206	18	531	524	2.1%
Mississippi	3,195	3,029	166	1,057	1,104	4.5%
North Carolina	3,660	3,191	469	1,515	1,525	6.1%
South Carolina	972	775	197	224	201	0.8%
Tennessee	4,287	4,245	42	2,289	2,136	8.6%
Virginia	3,668	3,429	239	1,933	1,862	7.5%
Total	28,759	26,334	2,425	11,882	11,468	46.2%
Pacific Northwest:						
Oregon	952	952	0	520	497	2.0%
Washington	1,242	1,115	127	564	489	2.0%
Total	2,194	2,066	128	1,084	986	4.0%
Main Hardwood Producing States	55,694	51,661	4,032	25,601	24,435	98.5%
US Total	57,526	53,483	4,044	25,993	24,811	100.0%

Note 1: Total output for all US hardwood products in 2007 was 142.7 million m^3 of which sawlogs and veneer logs accounted for approximately 40%

Note 2: State figures suppressed in Census data are estimated based on TPO sawlog production

Source: US Forest Service Timber Product Output (TPO) Tables (Sawlog and Veneer Log Outputs) and US Census Bureau (Lumber Production)

3.0 THE US IN THE GLOBAL CONTEXT

The determination of risk for illegal and unsustainable wood is somewhat subjective and contingent upon a global perspective. It should be based on an understanding of global conditions and the probabilities that certain conditions exist in any given country relative to others. The US is being evaluated in the context of similar kinds of information that may, or may not be, available for other countries. Where comparative data do exist, they can serve to evaluate the relative risk of the US compared to other countries. Illegal logging is a case in point. Clearly, some degree of timber theft and circumvention of forestry-related management regulation or tax avoidance occurs in the US. As with all countries, the US is not without criminal activity. The critical issue is less a matter of whether or not the problem exists as it is how pervasive it may be and how well the existing legal frameworks and governance structures address it. If processes and systems are effective in addressing problems, the probability, and hence the risk, of their occurrence is lower. Comparisons within a global context can be instructive in that regard.

The UK procurement guidelines (CPET Category B evidence specification) state that information showing "timber originating from forests in countries where legal use rights are clear, forest governance is robust and there are functioning mechanisms for monitoring of compliance and public reporting of non-compliance" may be sufficient evidence to indicate low risk of the occurrence of illegal harvesting.[17] Relative to other countries in the world, the US is generally regarded as a country with robust legal institutions, a high regard amongst its citizenry for the rule of law and very low perceptions of corruption. To support that conclusion, we have identified three metrics to assess the US in terms of its legal environments in a global context. They are: (1) World Bank Governance Indicators, (2) quality and robustness of forest resource information, and (3) participation in multi-lateral efforts to develop criteria and indicators for sustainable forest management.

3.1 World Bank Governance Indicators

The World Bank compiles and annually updates a series of indicators that are a useful tool to assess the effectiveness of governance in over 200 countries. These indicators measure six components of good governance: (1) voice and accountability; (2) political stability and absence of violence; (3) government effectiveness; (4) regulatory quality; (5) the rule of law; and (6) control of corruption. The data supporting the World Bank Governance Indicators (WBI) come from published surveys of firms and individuals, assessments of commercial risk rating agencies, non-governmental organizations, multilateral aid agencies and other public sector organizations. In total, the WBI are compiled from 310 individual variables taken from 33 sources produced by 30 different organizations. Most of the data referenced by the World Bank in developing the indicators are based on perceptions as measured by various surveys. The surveys themselves are not analyses of objective data and many are conducted by organizations that have particular agendas. Nevertheless, the World Bank has placed high priority on furthering improvements in governance around the world and the WBI are an effort to measure and track perceptions about governance over time and in a global context.

[17] CPET, 2006.

Of the World Bank Governance Indicators that measure government effectiveness, regulatory quality and rule of law, the US ranks in the top 10% of all countries. Indicators measuring the Rule of Law are perhaps the most relevant in terms of a risk assessment for illegal behavior in the U.S. The U.S. ranks just below the 92nd percentile amongst 212 countries, meaning that the rule of law is believed by independent observers around the world to be respected by its citizens and business enterprises (***Table 3A***). This compares favorably against Japan in the 90th percentile, Malaysia in the 66th percentile, Brazil in the 41st percentile, China in the 45th percentile, Russia in the 19th percentile, and Indonesia in the 23rd percentile.

Table 3A: US Ranking in the World Bank Governance Indicators

World Bank Indicator	US Percentile
(1) Voice & Accountability	83.7
(2) Political Stability & Absence of Violence	57.7
(3) Government Effectiveness	92.9
(4) Regulatory Quality	93.7
(5) Rule of Law	***91.9***
(6) Control of Corruption	89.3

Source: World Bank

Earlier studies suggest a correlation between high levels of corruption and illegal harvesting-related activities.[18] Countries perceived as having low levels of corruption usually have a correspondingly lower risk associated with illegal logging. The US ranks very high in the WB Control of Corruption indicator, just short of the 90th percentile relative to other countries. One of the data sources used in the World Bank Control of Corruption Indicator, and which is by itself an oft-cited international index on corruption, is the Corruption Perceptions Index (CPI) updated annually by Transparency International (TI). In 2007, the US ranked 20th out of 180 countries, and 2nd in the Americas, just behind Canada. TI's Global Corruption Barometer (GCB) also shows that households in North America (i.e. the US and Canada) have the least experience with petty corruption. That is not to say that the US is totally devoid of graft and corruption in business or politics, but bribes, payoffs or kickbacks are rare. The most notorious corruption cases involving politicians or major businesses seem to get discovered, widely profiled and the perpetrators are brought to justice. The US system allows for legal contributions to political campaigns subject to certain restrictions and prohibitions. While some observers are critical of the US system of political contributions as a way of "buying" influence, reporting of political contributions is, by law, transparent and subject to public review. The media (and NGOs) are quick to comment and criticize any connections between political contributions and politician actions.

America seems to be held in less regard only with respect to political stability and absence of violence. The US ranking below the 75th percentile in this indicator is a little curious being that it is an outlier compared to the other rankings. Possibly, it is a reflection of widely disseminated news coverage of politics and violent crime in the US. Whether that is the case or not, it is arguably the least relevant of the World Bank governance indicators with respect to the risk of illegal timber.

[18] Seneca Creek Associates, LLC and Wood Resources International, Ltd., 2004.

3.2 Quality of Resource Data

The ability to measure and monitor forest conditions is requisite to understanding forest sustainability. The US Forest Service conducts an on-going program of Forest Inventory and Analysis (FIA) as part of its overall research and development mission. Of $278 million appropriated by the US Congress for Forest Service Research and Development in Fiscal Year 2007, the FIA program received $64 million. Additional funds from the state forestry agencies and in-kind contributions from the private sector enables the Forest Service to collect, analyze and (with program enhancements being currently implemented) annually update forest conditions and trends. Data are collected annually from field plots and made available to researchers within and outside of the agency through publications and web postings. In most cases (the privacy of the plot locations and landowners must be protected by law), these data provide detailed information that can be compiled by geographic area in numerous formats. While FIA data users have expressed concerns about the timeliness of data compilation and other measurement issues, the agency is implementing technology and other improvements to respond to stakeholder needs. Relatively few other countries with significant forest resources have similar systems in place that are as sophisticated and allow for broad access to detailed forest resource data. By at least one international measure, the US forest inventory system, because it relies on actual and multi-period field measurements of biophysical attributes, would rank as having high quality and reliability.[19]

3.3 International Reporting of Criteria & Indicators

Finally, the US participates in various international fora that develop protocols for compiling data to evaluate trends in sustainable forest management. For example, the US participates with 11 other countries in the Montreal Process, a multi-lateral working group formed in 1994 to develop and implement internationally agreed upon criteria and indicators for the conservation and sustainable management of temperate and boreal forests. The Montreal Process has developed 7 criteria and 67 associated indicators that characterize sustainable management of temperate and boreal forests. The US is one of 10 participating countries that compiled a First Approximation Report entitled National Report on Sustainable Forests – 2003.[20]

While the report does not suggest any conclusion about the current state of forest sustainability in the US, it provides a compendium of available data, and points to data gaps and interpretations, to describe each of the 67 indicators. The report points out that the total area of forest has remained stable for the past 100 years, varying less than 5 percent. As one measure of sustainability, it cites US Forest Service data showing that the growth of the hardwood forests exceeds removals and mortality by a significant margin. A major study by Ellefson et al focusing on Criteria 7 alone -- "legal, institutional and economic frameworks for conservation and sustainability" -- details the capacities of US federal and state institutions to address sustainability issues. The Ellefson report demonstrates that information about organizations and programs important to monitoring forest sustainability and conservation in the US is transparent

[19] P. Holmgren and L-G. Marklund, 2007.
[20] USDA Forest Service, 2004.

and comprehensive, even if how well they might facilitate or hinder sustainability can be debated. [21]

3.4 Conclusions

By most global measures, the US ranks high with respect to robust governance, low corruption and high reliability of resource data on forest sustainability. A risk-based assessment should incorporate a global perspective and identify countries/areas where forest products are at low risk of coming from illegal or unsustainable sources. Based on World Bank Governance Indicators, the availability of reliable, comprehensive, timely and updated forest resource data, and efforts to monitor and report on forest sustainability, the US can be considered a LOW risk source of hardwood products in a global context.

References:

CPET. 2006. UK Government Timber Procurement Policy: Framework for evaluating Category B evidence, First edition Development Draft 2. December 2006.

Ellefson, Paul V.; Hibbard, Calder M.; Kilgore, Michael A.; Granskog, James E. 2005. Legal, Institutional, and Economic Indicators of Forest Conservation and Sustainable Management: Review of Information Available for the United States. Gen. Tech. Rep. SRS-82. USDA Forest Service, Southern Research Station.

Holmgren, P. and L-G. Marklund. 2007. "National Forest Monitoring Systems: Purposes, Options and Status" in Forestry and Climate Change, Peter Freer-Smith, Mark S.J. Broadmeadow, and Jim M. Lynch, eds. CAB International 2007.

Seneca Creek Associates and Wood Resources International, Ltd. 2004. "Illegal" Logging and Global Wood Markets: The Competitive impacts on the US Wood Products Industry. November, 2004.

USDA Forest Service. 2004. National Report on Sustainable Forests – 2003. FS-766. February, 2004.

USDA Forest Service. Forest Resources of the United States, 2007. RPA Data Tables. Available at: http://www.fia.fs.fed.us/program-features/rpa/

Transparency International. Corruption Indices. Available at: http://www.transparency.org/policy_research/surveys_indices/cpi

World Bank. 2007. Governance and Anti-Corruption. Worldwide Governance Indicators: 1996-2006. Released - July 2007. Available at: http://www.govindicators.org/

[21] Ellefson et al, 2005.

4.0 FOREST CERTIFICATION SYSTEMS

4.1 Certified Forest Area and Trends

Forest certification in the US has been expanding since first introduced in the 1990s. The three most prevalent third-party audited forest certification systems operating in the US are the Forest Stewardship Council (FSC)®, the Sustainable Forest Initiative (SFI)® and the American Tree Farm System (ATFS)®.[22] The SFI is endorsed by the Programme for the Endorsement of Forest Certification schemes (PEFC); the ATFS recently received PEFC endorsement. While SFI and ATFS each have one uniform standard that applies in North America, FSC has a system of 13 regional standards that differ in their specific provisions. In addition to forest management certification standards, the SFI incorporates a procurement standard by which companies can also be third-party certified. The procurement standard requires certain activities and documented assurances about sourcing, but does not require that supplying landowners undergo separate third-party certification of their forests. Both SFI and FSC provide Chain of Custody (CoC) specifications for labeling products, although few solid wood products sold in the US carry CoC labels at the present time. A CoC label is not currently available under the ATFS program. Under the FSC standard, wood that is not specifically sourced from FSC-certified forests must meet the Controlled Wood standard. A separate section of this report discusses FSC controlled wood in terms of the supply risk associated with wood to be avoided under the standard.

As of June, 2007, approximately 34.4 million hectares had been certified in conformance with one or more of the three most recognized certification programs operating in the US. This represents approximately 17% of all US timberland. Of the three programs, the SFI is the largest, accounting for 55% of the certified area. The FSC and ATFS represent 22% and 23% respectively of the certified hectares. This includes about 5.8 million hectares that are dual certified under both SFI and FSC. The largest proportion of FSC certified lands are in public ownership while the majority of certified private lands are enrolled under the SFI Program. In aggregate, some 92 enterprises have certified forests land under the SFI program and 103 have obtained forest certificates from FSC – a total of less than 200. Under the ATFS, 87,870 family forest properties totaling 9.3 million hectares have been certified nationwide. This includes 16 group certifications involving 48,840 properties and 1.5 million hectares. In aggregate, the number of private ownerships that have been certified is very small (less than 90,000 including the ATFS properties) relative to the 9.7 million private land owners in the hardwood-producing region.

The hardwood region (33 states) accounts for a very high proportion -- 87% -- of the total certified timberland in the US. Within the region, 19% (30 million hectares) of the timberland (159 million hectares) is certified under one or more of the three certification schemes (see ***Table 4A***). These lands are widely dispersed but a majority is comprised of softwood forest types, so the availability of hardwood from certified forests is very limited. Much of the certified forest --

[22] The National Woodland Owners Association sponsors the Green Tag certification program for small woodland owners. As of June, 2007, fewer than 30 properties representing less than 30,000 hectares had been certified. The PEFC-endorsed Canadian Standards Association (CSA) forest certification program is the largest in North America, extending to 74 million hectares in Canada.

and particularly hardwood forest -- is in public and family forest ownership so only a small portion of certified lands are regularly supplying hardwood timber. Based on average saw log and veneer log harvest per acre of timberland, we estimate that no more than 7% of US hardwood (solid wood) products are likely produced from certified forests and probably less given the land ownership patterns. See the table below for how this estimate is derived:

Table 4A: Estimated Production of Hardwood Products from Certified Forests, 2007

Variable			Notes/Source
A	Timberland in Hardwood-Producing Region	159.2 million ha	see ***Table 2B***
B	Hardwood Removals in the Hardwood-Producing Region	153.8 million m^3	see ***Table 2G***
C	Estimated Sawlog/Veneer Log Share	39.9%	see ***Table 2H*** (based on US Forest Service TPO reports)
D	Average Sawlog/Veneer Log Removals Per Hectare of Timberland	0.386 m^3/ha	Row B x Row C ÷ Row A
E	Certified Area in Hardwood-Producing Region	29,987,845	see ***Table 4B***
F	Estimated Removals from Certified Hectares	11.6 million m^3	Row E x Row D
G	As % of Hardwood Removals	7.3%	Row F ÷ Row A

Information gathered through a survey of AHEC members, coupled with a review of certified forest enterprises and companies with SFI certification, suggests that the volume of hardwood lumber (and other hardwood products) that carries a certification product label is even smaller than the above-derived estimate – certainly less than 5% at the present time.

The availability of FSC certified supply is also problematic in certain states because few if any FSC certified forests exist within the procurement reach of any given sawmill, making even mixed sourcing unfeasible. This is particularly the case in parts of the South where the FSC regional standard has not gained much acceptance. As of June, 2007, there were no FSC-certified forest management units in 12 of the 33 hardwood-producing states. Eight states located mainly in the central and Mid-Atlantic states lacked any SFI-certified forest area. ATFS participants can be found in each of the states, indicative of the prevalence of small family forest owners for which the ATFS program has the most appeal. However, while collectively important for timber supply, as noted in Section 2.3 of this assessment, any given family forest owner is not regularly harvesting and supplying the timber market.

In Wisconsin, a major hardwood producing state, 37,707 timber properties with over 818 thousand hectares participate in the state's Managed Forest Law (MFL) Program that has been certified under the ATFS Group Certification Program. The MFL program requires landowners to have a management plan and implement certain mandatory practices in return for lower tax benefits. This state-administered program is currently the largest group certification in the US and is in the process of also being audited for a group certification under the Forest Stewardship Council (FSC) standard. In combination with state and county lands that are dual certified to both the SFI and FSC standards, and large private ownerships already certified to one of the standards, a substantial amount of hardwood production in the State of Wisconsin is certified.

Other group certification efforts are underway by ATFS and FSC. Although not widely used at the present time, FSC sponsors a Certified Land Manager Program whereby a consulting forester can manage a group of client properties according to the FSC Regional Standards and achieve FSC certification on behalf of that group.

Another constraint on certified supply is the fact that a significant share of certified forest is public land which accounts for a relatively small portion of annual hardwood supply. As of June, 2007, 35% of the certified area in the hardwood region was publicly owned state and local forest land. State and local public lands supply less than 7% of annual hardwood supply in the region. Area certified by FSC is heavily weighted towards the public sector, with approximately 65% of FSC certified forests on public (all state and local) lands. This compares with about 26% of SFI certified forests that are publicly owned. Many of public lands are dual certified. All of the ATFS certified acreage is private. No federal lands are currently certified. A pilot project on five national forests designed to assess how well federal lands might conform to the standards and indicators of FSC and SFI was recently completed. The project found that management practices generally met or exceeded most of the certification standards, but auditors also found some significant non-conformances.[23]

4.2 SFI Wood Procurement Certification

The SFI Standard is unique among certification programs in that it enables certification of wood and fiber procurement practices, not only forest management practices. Firms certifying to the SFI procurement standards must: ensure that Best Management Practices are implemented on purchased stumpage tracts, sponsor programs for professional training of loggers and foresters, implement adverse weather policies, monitor BMP compliance across their wood supply area and set goals for continual improvement in water quality protection. The SFI procurement certification was developed to address forest sustainability in the context of private, and predominantly non-corporate, US forest ownership patterns. It appears that SFI procurement standard has resulted in measurable increases in logger training and certification as well as in BMP monitoring, based on annual SFI progress reports interviews with state officials. While the literature on certification effectiveness is not very extensive, at least one study has found that the implementation of BMPs was statistically higher on lands harvested to deliver timber to SFI-certified mills.[24]

Two performance measures in the SFI procurement standards focus specifically on procurement outside North America. SFI Program participants are required to ensure that their procurement programs support the principles of sustainable forestry, including efforts to thwart illegal logging and promote the conservation of biological diversity. They must also implement a process to address risks associated with sourcing wood from countries without effective laws that address worker health and safety, fair labor standards, indigenous peoples' rights, discrimination, fair wages, and worker rights to organize. Most SFI companies require overseas suppliers to complete detailed questionnaires regarding their timber sourcing.

[23] Sample et al, 2007
[24] Simpson et al, 2005

4.3 Conclusions

Forest certification and its use in the marketplace are increasing in the US, but it currently represents a small share of total hardwood production. The three most recognized certification programs – the Sustainable Forestry Initiative (SFI), the Forest Stewardship Council (FSC) and the American Tree Farm System (ATFS). All three of these programs include standards or indicators to ensure compliance with all applicable laws and regulations. Third-party auditors verify that measures are taken to meet those standards or indicators. States with a high proportion of certified timberland provide an additional assurance that hardwood products are produced legally. In aggregate, an estimated 19% of timberland in the hardwood-producing region is certified and in some states, the area of certified forests approaches one-third or more of the available timberland. States with certified timberland that exceeds 25% are: Minnesota, Maine, Wisconsin, Louisiana, Michigan and Washington.

While the area of certified forest in some states is significantly high, as a practical matter, much of the certified land is not regularly supplying the hardwood timber market. Based on average saw log and veneer log harvest per acre of timberland, we estimate that less than 7.3% of US hardwood (solid wood) products are produced from certified forests. Information gathered through a survey of AHEC members, coupled with a review of certified forest enterprises and companies with SFI certification, suggests that the volume of hardwood lumber (and other hardwood products) that carries a certification product label is even smaller – certainly less than 5% at the present time. Moreover, the supply of certified product is bound to be uneven and of a limited mix of species and grades. While certification provides some assurance that hardwood products are legal and sustainable, it is clearly not the only mechanism for doing so. Similar assurances about US hardwood supply are possible using other biophysical and programmatic indicators as detailed in other sections of this report.

Certification presents certain challenges to the hardwood sector given the preponderance of wood supply from mostly small owners who only occasionally harvest timber. The structure of forest ownerships is highly fragmented and the millions of small private landowners that supply the vast majority of the hardwood timber are neither generally familiar with certification nor willing to incur its on-going costs. The number of SFI and FSC forest certificates in 2007 totaled less than 200 and only about 88,000 properties participate in the ATFS certification program. This is out of 9.7 million private landowners (9.1 million family forest owners) in the hardwood-producing region. Group certification approaches are just beginning to be organized, mainly through the ATFS scheme which awaits PEFC endorsement. Domestic demand for certified forest products also remains low despite some indications that it is increasing in light of "green" building interest and other market pressures.

References

Butler, Brett. 2007. Private Forest Owners of the United States: 2006 (draft). National Woodland Owners Survey (NWOS). Northern Research Station. Newtown Square, PA: Forest Service, US Department of Agriculture.

Sample, V., Will Price, Jacob S. Donnay, and Catherine M. Mater. 2007. National Forest Certification Study: An Evaluation of the Applicability of Forest Stewardship Council (FSC) and Sustainable Forest Initiative (SFI) Standards on Five National Forests. Pinchot Institute for Conservation. October 22, 2007. Available at: http://www.fs.fed.us/projects/forestcertification/index.shtml

Simpson, Hughes, Jacob Donellan, and Shane Harrington. 2005. Voluntary Implementation of Best Management Practices in East Texas: Results from Round 6 of BMP Implementation Monitoring. Texas Forest Service. College Station, Texas. Available at: http://www.sfiprogram.org/miscPDFs/Texas%20BMP%20Report%202005.pdf

Table 4B: Certification in the Hardwood States (as of June, 2007)

		Certification					Certified Acres as % of Timberland
	Total Timberland (Hectares)	SFI Total (Hectares)	FSC (Hectares)	ATFS (Hectares)	Dual Certified * (Hectares)	Net Total (Hectares)	
Minnesota	6,115,903	2,530,272	2,373,381	84,690	1,994,773	2,993,569	48.9%
Maine	6,945,523	2,316,345	645,854	276,402	590,606	2,647,995	38.1%
Wisconsin	6,492,036	1,289,479	638,001	905,425	636,949	2,195,956	33.8%
Louisiana	5,712,629	1,312,777	0	518,191	0	1,830,968	32.1%
Michigan	7,698,268	1,994,518	1,580,417	299,993	1,517,011	2,357,918	30.6%
Washington	7,637,464	1,950,416	54,100	105,544	0	2,110,061	27.6%
Massachusetts	1,192,541	0	238,587	44,890	0	283,477	23.8%
Alabama	9,137,610	1,267,413	0	627,020	0	1,894,433	20.7%
New Hampshire	1,891,437	76,215	108,232	194,675	0	379,123	20.0%
Georgia	9,812,222	1,081,029	3,199	691,828	0	1,776,056	18.1%
Mississippi	7,905,929	845,200	140,196	445,278	0	1,430,675	18.1%
Florida	6,293,650	510,658	0	621,743	0	1,132,401	18.0%
North Carolina	7,250,536	408,426	765,202	124,773	12,915	1,285,486	17.7%
South Carolina	5,115,634	461,437	0	414,010	0	875,447	17.1%
Oregon	9,962,080	1,015,986	231,832	435,523	0	1,683,341	16.9%
Arkansas	7,478,421	903,403	193,776	359,449	193,776	1,262,852	16.9%
Pennsylvania	6,482,415	57,934	918,457	109,348	0	1,085,738	16.7%
Indiana	1,834,304	60,704	0	239,977	0	300,682	16.4%
Maryland	959,882	23,492	20,875	63,947	11,731	96,582	10.1%
Rhode Island	141,890	0	0	14,157	0	14,157	10.0%
Virginia	6,195,243	258,507	14,084	335,305	0	607,896	9.8%
West Virginia	4,774,063	132,019	11,885	270,460	0	414,364	8.7%
Delaware	151,983	4,556	0	7,229	0	11,786	7.8%
New York	6,480,960	196,887	79,763	268,783	75,039	470,395	7.3%
Connecticut	701,081	3,173	3,944	34,496	3,172	38,441	5.5%
Vermont	1,813,994	117	45,956	52,987	0	99,060	5.5%
Tennessee	5,630,281	171,643	65,812	68,442	65,812	240,085	4.3%
Ohio	3,093,454	0	0	116,278	0	116,278	3.8%
Iowa	1,142,713	0	0	36,893	0	36,893	3.2%
New Jersey	759,232	0	0	22,649	0	22,649	3.0%
Missouri	5,938,442	0	64,555	101,244	0	165,799	2.8%
Illinois	1,765,659	0	0	38,099	0	38,099	2.2%
Kentucky	4,713,734	0	0	89,187	0	89,187	1.9%
Region Totals							
North	66,375,780	8,685,711	6,729,907	3,182,621	4,829,281	13,768,959	20.7%
South	75,245,888	7,220,493	1,182,269	4,295,225	272,503	12,425,485	16.5%
Pacific Northwest	17,599,543	2,966,402	285,932	541,067	0	3,793,401	21.6%
Main Hardwood Producing States	***159,221,212***	***18,872,606***	***8,198,109***	***8,018,913***	***5,101,783***	***29,987,845***	***18.8%***
US Total	*208,183,419*	*21,956,888*	*8,967,011*	*9,320,094*	*5,839,029*	*34,404,965*	*16.5%*

* Dual Certified to both SFI Program and FSC standards
Source: Compiled by Seneca Creek Associates from SFI, FSC and ATFS data

5.0 OCCUPATIONAL LICENSING AND CERTIFICATION

Legality and sustainability issues are partially addressed through programs directed at registering, licensing and/or certifying operators and professionals engaged in forest management, timber harvesting, and in the buying and selling of timber products. Registration involves voluntary placement on a list of persons offering similar services, certification involves recognition of persons that meet certain qualifications (education, experience), and licensing identifies persons that have state government authority to engage in an activity.[25] In most states, the granting of an occupational certificate or license is for a specified period of time, requires some form of initial examination, and requires participation in continuing education opportunities so as to maintain proficiency. ***Figure 5a*** displays states with registration, licensing and/or certification programs for loggers, timber buyers/sellers, and professional foresters as discussed below.

5.1 Logger Certification/Licensing Programs

Most states have established registration, certification and/or licensing programs for timber harvesters. This enables landowners, timber buyers and timber processors to verify their reliability and also allows state officials to monitor those engaged in timber harvesting, where states elect to do so.

Timber harvesters are registered or certified in nearly all states (31) within the hardwood-producing region (***Table 5A***). Their accreditation is granted primarily via educational programs often sponsored as Master Logger Programs by both public (for example, state cooperative extension services) and private concerns (for example, Washington Contract Loggers Association). Some Master Logger Programs are regional in nature (for example, Southern New England Master Logger Program). In 2006, the Washington Master Logger Program certified 908 persons as Master Loggers, while in the same year 1,950 persons were granted recognition as Master Loggers in Tennessee. To become a Master Logger, timber harvesters must attend a comprehensive training course (subjects such as basic forest management, application of forestry practices, logging safety and first aid, basic business practices and increasingly, standards incorporated in the major forest certification systems), and subsequently participate in at least one continuing education course each year thereafter.

The State of Maine has a certification program for timber harvesters through which approximately 120 companies have achieved third-party certification. In 2002, Maine's program was adopted as a national model for logger certification by the 27 state associations in the American Logging Council. As of July 2006, 7 states (Wisconsin, Massachusetts, Minnesota, Michigan, Rhode Island, Vermont and Connecticut) and 3 Canadian Provinces (New Brunswick, Nova Scotia, and Prince Edward Island) have begun implementing Master Logger programs based upon the Maine approach. The Maine Master Logger Certification program was also endorsed by the Rainforest Alliance with a "SmartLogger" Certification. SmartLogger is designed to complement the FSC certification program in recognizing responsible harvest practices. The SmartLogger certified loggers in Maine represent more than 60% of the

[25] Mackay et al, 1995 and 1996.

commercial timber volume in Maine and is being considered for adoption by other logger certification programs across the US.

States within the hardwood producing region are often intent on using their occupational accreditation programs as a means of promoting the application of forestry practices that will ensure the sustainability of hardwood forests. For example, on sites where they are the responsible timber harvesters, Master Loggers in Tennessee are liable (for one year) for compliance with all applicable water quality laws of the state and for the installation and maintenance of recognized forestry best management practices. In Kentucky, every commercial logging operation must have a certified master logger on-site and in charge at all times. Loggers and logging companies that fail to comply with Kentucky state law (specifically, the Kentucky Forest Conservation Act) are added to a "bad actor" list which is available for viewing by the public (more than 120 designations in 2007). Kentucky has reciprocal master logger agreements with Indiana, Ohio, Virginia, West Virginia, Tennessee, Missouri, North Carolina, Mississippi, Alabama and Arkansas.

Timber harvesters must be specially licensed in some states, notably Maryland, Massachusetts, and West Virginia. In Maryland, a license is required for "any person engaged in a forest products business" (including timber harvesting), although the definition of business and subsequent prerequisites for securing the license has reportedly made enforcement of the regulation difficult. Massachusetts has an extensive timber harvester licensing program which prohibits unlicensed persons from harvesting timber for hire or profit on any forest land, while West Virginia law requires timber harvest operations to be directed by persons licensed to do so (called for by Logging and Sediment Control Act). In 2007, West Virginia had more than 1,000 licensed timber operators and nearly 1,500 licensed certified harvesters. Although labeled as licensed (denoted as certified), Connecticut requires that forest practitioners be assigned the title of "certified" and be in possession of documents attesting to mandatory certification as a forest practitioner ("no person shall advertise, solicit, contract or engage in commercial forest practices within [Connecticut] at any time without a certificate"). The latter are broadly defined to include foresters, timber harvesters (supervisory or otherwise) and timber buyers. Among various legal stipulations, they are prohibited from engaging in any fraudulent or dishonest activities involving the harvesting, buying and selling of timber. In 2007, more than 110 practitioners were certified in Connecticut.

5.2 Certification/Licensing of Timber Buyers and Sellers

Timber buyers and sellers are licensed in five states, and must be bonded in three of those five states as follows – Connecticut, Maryland, Indiana (requires bonding), Illinois (requires bonding), Iowa (requires bonding).

Indiana's timber buyer licensing program addresses problems such as failure of timber buyers to pay for purchased timber, harvest by timber buyers (or cause to be harvested) of timber not purchased, and sale or purchase by timber buyers of timber whose ownership is uncertain.[26] As of 2006, Indiana had 646 licensed timber buyers all of whom had a security bond ranging from $2,000 to $20,000 depending on the value of timber they purchased during the previous

[26] McCoy, 2007.

year. Failure of a licensed timber buyer to pay a timber grower (seller) can lead to forfeiture of a security bond. A similar licensing arrangement for timber buyers exists in Illinois, where in 2007 there were 458 licensed buyers (yearly average of about 490 for the period 1997 through 2007). Timber buyers in Illinois are required to retain (for three years) all records involving their purchase and sale of timber. Also implemented in a similar fashion is Iowa's Bonded Timber Buyer Program, where bonded timber buyers are required to have a security bond in an amount equal to 10 percent of their annual timber purchases. As of 2007, there were 343 bonded timber buyers in Iowa, an increase of about 25 percent in the past 10 years.

5.3 Certification of Professional Foresters

The licensing or registration of professional foresters occurs in 14 states within the hardwood-producing region (***Table 5A***). The intent of such licensing is primarily to protect the public from harm and to ensure economic value to the timber owner as well as the application of sound forestry practices (such as reforestation, stand structure, post-harvest site condition).[27] Typically, qualifications for licensing involve requirements for training, education, apprentice or internship, formal examination, or any combination thereof. Some states, such as Maryland, impose penalties for false representation as a licensed professional forester.

Professional societies also sponsor certification programs. The Society of American Forester's Certified Forester Program (CF) is an example. It is designed to recognize excellence in professional forestry and assure the public of an individual's commitment to provide quality resource stewardship. Currently, a person becomes a Certified Forester based on an accredited degree or equivalent, five years of professional experience, and a verified participation in continuing education.

Although not always professional foresters, some states require certification of persons engaged in the management of prescribed fires. For example, the Georgia Forestry Commission is authorized to "promulgate . . . a program whereby practitioners become qualified and registered as certified prescribed fire managers." Similarly in Florida, to become a certified prescribed burn manager a person must successfully complete a Florida Division of Forestry educational program and possess a valid certification number. A certified person who violates the provisions of Florida's prescribed burning laws commits a misdemeanor. Louisiana also has a certification program for managers of prescribed burns.

5.4 Conclusions

Occupational licensing is a fairly common practice for individuals and firms that provide various kinds of consumer or professional services. In the homebuilding industry, for example, plumbers and electricians are almost always required to be licensed. While not as prevalent in the forestry sector, many states have programs for registering, licensing or certifying those engaged in forest management or timber operations. Occupational registration or certification provides a level of confidence that those engaged in providing services to landowners are adhering to all regulations and are trained in applying sound forest practices. These programs are, in some states, voluntary and in other states, legally mandated. Timber harvesters are

[27] Society of American Foresters, 2001

subject to registration, licensing or certification programs in all of the hardwood-producing states except for New York and New Jersey. Two states administer licensing programs for timber harvesters. Professional foresters are registered or licensed in 14 states and the Society of American Foresters administers a certification program as well. Finally, in seven of the hardwood-producing states, timber buyers or sellers must be registered and/or licensed. When considered in conjunction with other characteristics of the US hardwood supply chain, these various programs contribute to a LOW risk of illegal or unsustainable forest practices.

References

MacKay, D. G., P. V. Ellefson, C. R. Blinn, and S.J. Tillman. 1995. Timber Harvester Registration, Certification, and Licensing Programs: A Review of Program Status in Canada and the United States by, Staff Paper Series No 106, St. Paul, MN: Department of Forest Resources, University of Minnesota.

MacKay, D. G., P. V. Ellefson, and C. R. Blinn. 1996. Creating Better Timber Harvesters: Registration, Certification, and Licensing. Journal of Forestry 94(7): 27-31.

McCoy, D. 2007. Legally Harvested Timber in Indiana: 1999 through 2006. Division of Forestry. Indianapolis, IN: Indiana Department of Natural Resources.

Society of American Foresters, 2001. SAF Task Force Report on Forester Registration and Licensing. Bethesda, MD: Society of American Foresters.

Figure 5a: Professional Registration, Licensing and Certification in the Hardwood Region

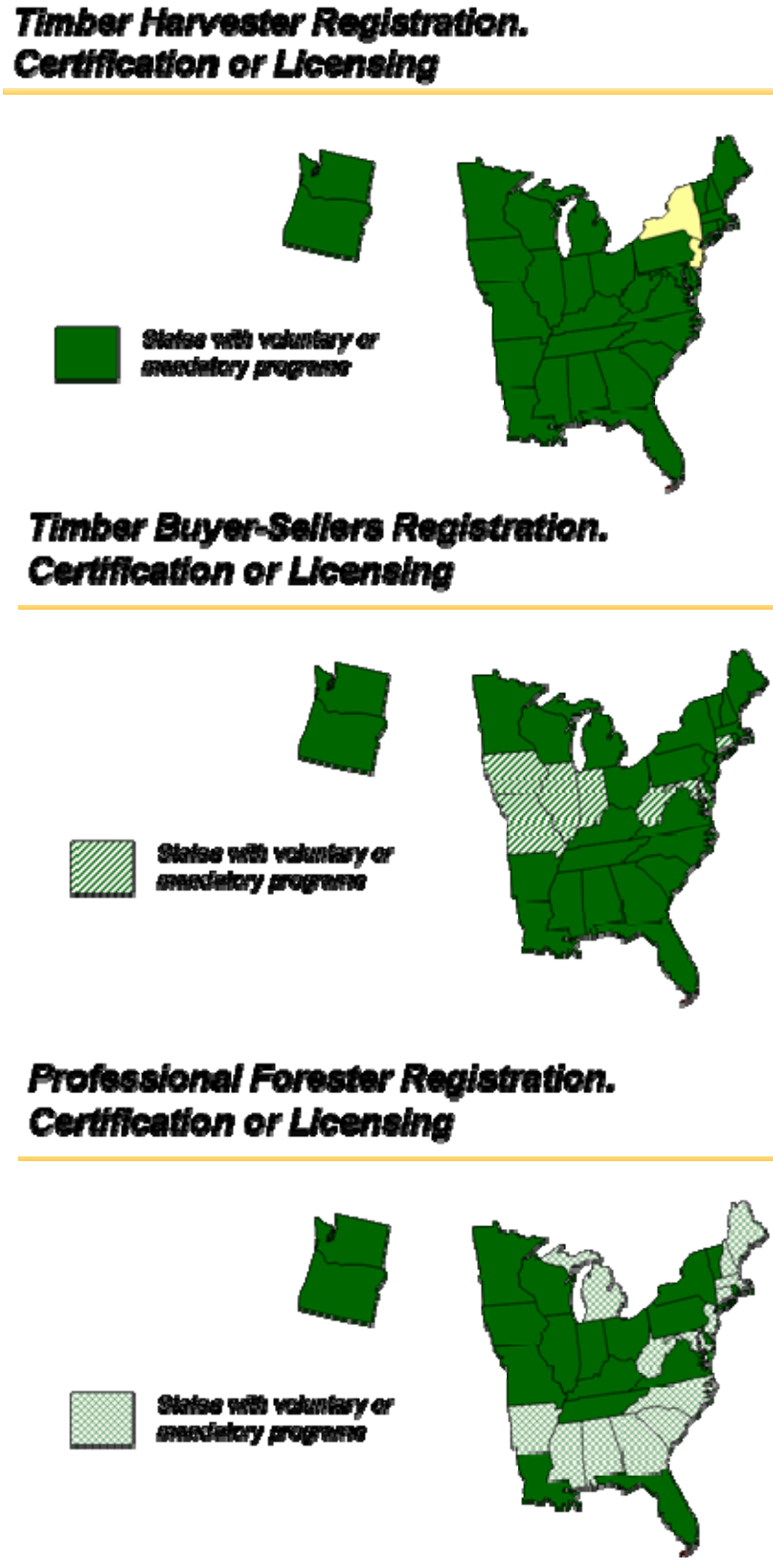


Table 5A: Registration, Certification and Licensing of Professional Foresters, Timber Harvesters, and Timber Buyers-Sellers in the U.S. Hardwood Producing Region, by State and Occupational Category. 2007

State	Professional Foresters			Timber Harvesters	Timber Buyers-Sellers
	Voluntary Registration	Mandatory Registration	Licensed	Registered, Certified or Licensed	Registered, Certified, or Licensed
North					
Connecticut	--	--	YES	YES	YES
Delaware	--	--	--	YES	--
Illinois	--	--	--	YES	YES*
Indiana	--	--	--	YES	YES*
Iowa	--	--	--	YES	YES*
Maine	--	--	YES	YES	--
Maryland	--	--	YES	YES	YES*
Massachusetts	--	--	YES	YES*	--
Michigan	YES	--	--	YES	--
Minnesota	--	--	--	YES	--
Missouri	--	--	--	YES	YES*
New Hampshire	--	--	YES	YES	--
New Jersey	YES	--	--	--	--
New York	--	--	--	--	--
Ohio	--	--	--	YES	--
Pennsylvania	--	--	--	YES	--
Rhode Island	--	--	--	YES	--
Vermont	--	--	--	YES	--
West Virginia	YES	--	--	YES*	YES*
Wisconsin	--	--	--	YES	-
South					
Alabama	--	--	YES	YES	--
Arkansas	--	YES	--	YES	--
Florida	--	--	--	YES	--
Georgia	--	YES	--	YES	--
Kentucky	--	--	--	YES	--
Louisiana	--	--	--	YES	--
Mississippi	--	YES	--	YES	--
North Carolina	--	YES	--	YES	--
South Carolina	--	YES	--	YES	--
Tennessee	--	--	--	YES	--
Virginia	--	--	--	YES	--
West					
Oregon	--	--	--	YES	--
Washington	--	--	--	YES	--
TOTAL	3	5	6	31	7

Note: An asterisk indicates a licensing requirement. In Missouri, only producers-dealers of treated timber are required to have licenses. Prescribed fire managers are certified in Georgia, Florida and Louisiana. Timber harvester registration-certification typically occurs in connection with a Master Logger Program.
Source: Society of American Foresters (2001), National Association of State Foresters (2004), MacKay and others (1995) and various state agency documents and state government personnel responsible for state forestry programs.

6.0 OWNERSHIP RIGHTS, TIMBER THEFT AND BUYER-SELLER FRAUD

6.1 Ownership Rights

The US hardwood resource is overwhelmingly privately-owned. Nearly 80 % of the timberland and 70% of the hardwood inventory in the Hardwood States is privately owned. Approximately 92% of the annual US hardwood harvest comes from privately owned timber. Of the remainder, 1% is harvested from national forests controlled by the US Forest Service and 7% is harvested from lands administered by state or local jurisdictions.

6.1.1 Private Lands

US private forest land or timberland can be categorized into two broad groupings: corporate ownership and non-corporate ownership. Corporate ownerships are legally incorporated entities, typically large ownerships associated with being regularly in the business of growing and producing timber products. Non-corporate ownerships are mainly family forests that harvest timber irregularly or periodically. The vast majority of private land is owned in family forest ownerships that average less than 10 hectares in size. In the hardwood-producing region, some 9.1 million individuals and other private entities own 102 million hectares dominated by hardwood and mixed oak-pine forest types. These private landowners supply 92% of the hardwood timber harvested in the region.

Land tenure and associated private property rights have a long history and tradition in the United States. Land ownership is titled and recorded in public land records, usually at the county or municipality level. Property rights are enforced through this system of land records and through well-established judicial procedures. In conjunction with a property purchase, landowners are always advised to obtain title insurance to protect against unknown liens or encumbrances in the historic land records. While ownership of timber usually transfers with title to land, in some cases, title to land and timber may be recorded separately. If uncertain, a timber buyer can consult local property records to verify title and ownership of timber being sold. Disputes involving private land ownership, if unresolved among the parties, are handled in the courts. Court decisions are enforced through injunctions, liens, or fines and, if necessary, with assistance of local law enforcement officials.

6.1.2 Public Lands

The hardwood-producing region includes approximately 34 million hectares of timberland owned by federal, state and local governments. This includes 52 national forests administered by the US Forest Service in the Southern and Eastern administrative regions. Law enforcement, including protecting against and prosecuting for timber theft and trespass is the responsibility of the law enforcement division of the US Forest Service for the national forests, and the respective agencies with administrative responsibility for state and local forests. With few exceptions, all timber sold from public lands is sold on a competitive bid basis. The US does not use a concession system for production and management of publicly-owned forests. Timber contracting procedures are detailed by law and regulation. Management agencies are responsible for preparing detailed resource and land use management plans well in advance of

any timber harvesting and with opportunities for stakeholder review. Enforcement of contract provisions and regulation of timber sales and harvesting is generally regarded as stringent. Purchasers must be bonded and demonstrate their ability to fulfill the terms of the timber cutting contract.[28] Timber harvesting plans and programs on public lands are also subject to legislative and public review and oversight.

While controversies among stakeholders regarding the appropriate use and management objectives for public lands are not uncommon, legal authorities provide for stakeholder input into management plans and for opportunities to appeal agency management decisions. Public forest lands are managed for multiple uses including objectives related to recreation, wildlife habitat, biodiversity and water quality protection. As the statistics on volume of timber harvested from public lands demonstrate, timber supply from public lands has become a relatively small portion of the national total (8% for hardwood). Even so, stakeholders can and do file appeals and lawsuits against forest plans and specific timber management activities arguing that the agency at issue failed to comply with one or more aspects of laws governing the management of public lands. Public agencies rarely if ever go forward with a planned activity that is being challenged administratively or in court until proceedings are completed. Because planning rules, contract requirements and administrative and judicial review processes are exhaustive and commonly referenced or employed, legal use rights for public lands are thoroughly vetted and protected.

6.2 Timber Theft and Trespass

6.2.1 Background

Breaches of legal use rights of forests in the US revolve mainly around timber theft and timber trespass issues. Timber theft includes occurrences of fraud, not paying for logs harvested, under (or over) scaling, stealing logs from a landing or temporary storage site, and other actions designed to profit illegitimately from timber-related transactions. Timber trespass can be defined as the unauthorized entry onto private or public property for the purpose of cutting trees and stealing timber. Timber theft and trespass occurs in varying degrees throughout the US as it almost certainly does in every country in the world. Timber trespass and theft can have serious consequences, including landowners suffering economic hardships, discrediting of legitimate and law abiding operators and damage to forest resources from unplanned harvest and poor forest practices.

Not all wrongful cutting of trees is intentional and reports indicate that many cases in the US involve the accidental cutting of trees on another's property. While landowners are always advised by professional foresters to have a property survey and carefully mark property boundaries, as a practical matter, many landowners (including public landowners) do not maintain and mark property lines on a regular basis. Without well-marked boundary lines, legally authorized timber cutting on one property may extend onto a neighboring property. This is the most common type of timber trespass as reported in the literature and through surveys for this assessment. Absentee forest owners that account for about 25% of the family forest owners

[28] A detailed description and standard contract forms for the purchasers of timber from the national forests can be found at: http://www.fs.fed.us/forestmanagement/infocenter/newcontracts/index.shtml

and 38% of family forest acreage are at most risk of being victimized by timber theft, particularly when it is the result of harvesting over a property line.[29]

6.2.2 National Property Crime Statistics

National statistics on crime are collected by the Federal Bureau of Investigation using the Uniform Crime Reporting Program (UCR), but the dataset it is not very helpful in determining the extent of timber theft. The system covers crime committed in law enforcement jurisdictions with populations of 100,000 or more. Theoretically, timber theft would be included in the UCR "property crime" category that includes offenses of burglary, larceny-theft, motor vehicle theft and arson. It would be included in the "larceny-theft" designation that would encompass theft-type offenses involving the taking of money or property but where there is no force or threat of force against the victims.[30] Within the larceny-theft category, there are a number of subcategories. Unfortunately, timber-related theft would be reported under "all others," a large miscellaneous grouping. Moreover, in all probability, a high proportion of timber theft occurs in law enforcement jurisdictions with populations of less than 100,000 so would not be included in the data system. The national data show that there were nearly 9,983,568 million property crimes in the US in 2006, a number that reflected a 1.9 percent decline from 2005 and a 13.6 percent decline when compared with 1997. The rate of larceny-theft crime per 100,000 population is, on average, somewhat lower in the hardwood region than for the US as a whole (2,176 compared 2,207), and lower in the North than in the South or Pacific Northwest. There are no data to suggest that timber-related crimes occur any more frequently than other property crimes in the US.

6.2.3 Extent of Unlawful Harvesting

Timber theft and timber trespass are necessarily of concern to US timberland owners, but the extent of unlawful timber harvesting across the hardwood producing region is not easily determined. Where information about the problem exists, the magnitude of its occurrence varies considerably from state to state. Well-documented surveys or assessments have been conducted in a six-state area of the Appalachian region, in New York and in Indiana. Because Indiana has a "Timber Buyer's Law" that licenses and regulates anyone who buys timber from timber growers, the Indiana Division of Forestry tracks and centrally records investigations of wrongfully cut timber. In the most recent five-year period for which data are available, known wrongfully cut timber totaled 2,825 m^3, or 0.04% of the timber harvested.[31] A recent comprehensive survey in New York concluded that incidences of timber theft and trespass were more common, amounting to as much as 3,828 m^3 annually although this equates to a similarly very small fraction of New York's total timber harvest.[32] A survey of law enforcement and forestry officials in the Appalachian region resulted in an estimate of 1,600 incidences in six states with timber valued at $4.4 million.[33] No effort was made to characterize the size or value of the individual infractions,

[29] Absentee landowners are those that do not have their primary residence located on forest land that they own. Data are from the National Woodland Owner Survey, 2006.
[30] Federal Bureau of Investigation, 2006
[31] McCoy, 2007. New York's timber harvest in 2006 was nearly 2.8 million m^3 according to US Forest Service statistics.
[32] Canham and Pedersen, 2007
[33] Mortimer et al, 2005

but the total would also represent a relatively small fraction (certainly less than one percent) of the value of the timber harvest in that multi-state region.

As with most crimes, it is impossible to know with a high degree of certainty the extent of timber theft and trespass that occurs in the hardwood-producing region. Estimates in media reports vary widely and not well-supported. For this assessment, we conducted a canvass of state forestry officials who are in a position to know of and assess the extent of the problem in their respective jurisdictions and supplemental information was obtained from a survey of AHEC members. Not surprisingly, where information about the problem exists, the magnitude of its occurrence varies considerably from state to state (***Table 6A***). For example, in Maryland "we are aware theft-trespass occurs, it is an infrequent and minor event," while in New York there occurs "an estimated 300 cases per year with a timber value of $10,000 per case." The summary of the judgments of state forestry officials is as follows:

Not considered a problem – 11 states
(infrequent, five or fewer cases per year)
Modest problem – 7 states
(occasional, seven to 10 cases per year)
Important problem – 10 states
(big issue, 30 or more cases per year)
Unknown or information not available – 5 states

Timber theft must be viewed in a context with other types of crime, including others that damage forest resources. For example, in some states, forestry officials indicate that arson is a much more severe problem than timber theft. Statistics for West Virginia, for example, show an annual average of 198 prosecutions against arson crimes by the Division of Forestry between 2002 and 2006. The Division also conducted an average of 52 prosecutions for violations of other state forestry regulations and issued 38 tickets for violations of the West Virginia Logging Sediment Control Act.

When asked about the frequency of timber theft, one-third of AHEC members surveyed indicated that timber theft never occurred where they operate and 49% indicated that it occurred rarely or occasionally. The balance of the responses indicated that they had no basis for making or guessing an estimate. None of the responses indicated that timber theft occurred frequently where they operate.

Centralized systems within a forestry agency for reporting the occurrence of timber trespass and theft are known to exist in some states (for example, Indiana, Louisiana, Maine, New Hampshire). More often than not, such information is spread across various jurisdictions, including the offices of state courts (for example, Maryland), county courts (for example, Kentucky [120 county courts]) or the offices of local law enforcement agencies (Missouri [local sheriffs' offices]). In some states, the private sector is assigned responsibility for keeping track of timber ownership records. Such occurs in Louisiana where ownership records involving harvested timber must be kept (as required by law) by processing mills, timber harvesters, and log buyers. Compounding the information problem is that many cases of timber theft go unreported for reasons such as problems in locating thieves, burden of proof resting with the

Box 6-A
Case Study: Berry College Timber Theft

In September, 2006, Robert Lee Parker of Rome, Georgia pleaded guilty to federal charges of conspiracy and interstate transportation of stolen goods. Parker had been the land resource manager for Berry College located in Northeast Georgia and was discovered to be selling timber from college lands for his own personal profit. For at least six years, Parker, who holds a forestry degree, had been allowing a timber company to harvest timber from college lands with proceeds being paid directly to him or to third parties for his benefit. Parker is serving 5 years in a federal prison and has liens against him totaling over $10 million in restitution and penalties.

landowner, high cost of prosecution, and higher priorities assigned by governments to other types of crimes.[34] When the most onerous cases of timber theft -- those involving repeat offenders and high value timber – are pursued and prosecuted, the outcomes are usually widely publicized in the media and trade press (***Box 6-A*** highlights one recent case).

States with the most detailed records offer some insight into the number of timber theft cases that are investigated (***Box 6-B***). The experience of these states allows for making a rough estimate that 800 – 1,000 cases occur annually in the hardwood-producing region. This may not include incidents that are the result of operator error related to uncertain property lines or poorly marked trees, most of which are resolved. The limited statistics that are available suggest that most timber theft cases involve only a small number of trees, contract disputes and/or a relatively small value of damages (at most a few thousand dollars on average).

Assuming that an average incident rate of timber theft or trespass on private lands involves $3,000 of timber value, the potential value of illegally harvested timber would be on the order of $30 million annually in the Hardwood States. This would include timber theft involving all species, both hardwood and softwood. Assuming hardwood represents 40% (approximate share of the annual US harvest), then for hardwood alone, the value of stolen timber might be on the order of $12 million. Assuming also that the value of hardwood timber produced in the US is approximately $4 billion, the value of stolen timber almost certainly represents less than one percent of the total. Thus, without diminishing what can be a significant and very harmful problem for landowners and for the forest resources where timber trespass occurs, the volume and value of stolen timber represents a tiny fraction of the hardwood produced in the US. And while difficult to accurately ascertain, US hardwood exports are likely affected to an even lesser degree because stolen timber is most likely taken to dealers or processors operating only in a local area market.

6.2.4 State Statutory Approaches

State laws address timber trespass and timber theft in various ways (***Table 6A***). Of the 33 hardwood-producing states, six (for example, Connecticut and Missouri) rely chiefly on general statutory directives addressing larceny generally and subsequent decision regarding restitution

[34] Canham and Pedersen, 2007; Wisconsin Division of Forestry, 2007.

Box 6-B
Reported Cases of Timber Theft and Trespass

Indiana: Total wrongfully cut timber 1999 – 50 MBF, 2000 – 300 MBF, 2001 – 125 MBF, 2002 – 160 MBF, 2003 – 175 MBF, 2004 – 150 MBF, 2005 – 225 MBF, and 2006 – 60 MBF. Total wrongful cut timber 1999 through 2006 – 1,245 MBF or 156 MBF per year. Unlawful harvest 1999 through 2003 was 0.04 percent of total statewide harvest during this five-year period.

Maine: Total timber trespass and theft complaints in 2006 were 543, 202 of which resulted in legal actions. In same year, $7,400 total fines and $217,081 in restitution and settlements paid to landowners.

New Hampshire: Total reported timber trespass cases (fiscal year): 2005 – 36 cases; 2006 – 31 cases; 2007 – 17 cases.

New York: Estimates of timber stolen range from less than one MBF to more than 50 MBF with and average of 16.7 MBF. Market value of stolen timber ranges from $1,000 to $70,000, with average value of $19,650; probably 300 cases of timber theft over three year period. One-third of the cases involved poorly defined property boundaries; two-thirds were clearly marked but ignored.

(misdemeanor or criminal, or both), while three states make use of a combination of general statutory directives plus laws specifically focused on timber theft and closely related matters (for example, Iowa and Pennsylvania). All other states in the region have laws addressing larceny in general, but implement laws focused specifically on timber trespass – laws which they view as their primary means of dealing with unlawful matters involving the ownership of timber.

States are also proactive in addressing timber theft in that some require property boundaries to be defined in advance of timber harvest (for example, Arkansas). Others place legal liability on timber harvesters for application of sound forestry practices (for example, Tennessee), while some state laws require that written documentation attesting to ownership of timber to be harvested be made available to law enforcement officials (for example, Maryland). ***Table 6B*** provides examples of states with specific statutory provisions on timber theft and trespass laws.

6.2.5 Timber Buyer-Seller Fraud

The Uniform Commercial Code (UCC) establishes the legal structure that governs most financial transactions and commercial exchanges of goods and services in the US. The UCC, developed by the National Conference of Commissioners on Uniform State Laws (NCCUSL) and the American Law Institute (ALI), is a set of uniform laws adopted and periodically updated by each state to facilitate interstate commerce. It establishes consistent procedures and requirements for dealing with the sale of goods, their transportation, methods of payment, contract breaches and a host of other aspects of business. Buyers and sellers have basic legal

protections in their business transactions under the UCC irrespective in which state they operate and they can depend on consistent treatment from one jurisdiction to another.

Beyond general legal protections afforded business transactions, many state governments have specifically targeted fraud and misrepresentation involving the buying and selling of timber (***Table 6C***). In at least 14 states in the hardwood producing region formalized legal approaches have been established to deal with such matter, most notably in the following areas:

- Misrepresenting ownership or origin of timber (Arkansas, Connecticut, Louisiana, Rhode Island and Tennessee);
- Bonding of timber buyers, as addressed by Iowa and Indiana;
- Deceptive business practices, including payment for timber, as addressed by Georgia, New Hampshire, Louisiana, Maine, South Carolina and West Virginia;
- Deceptive business practices, including payment for timber (Georgia, Louisiana, Maine, South Carolina and West Virginia);
- Record-keeping of transported timber (Ohio, Louisiana and Tennessee);
- Educational awareness of fraud and timber theft (New York).

New Hampshire law regarding deceptive business practices imposes a felony sentence if the loss to either a seller or buyer is more than $1,000. Prohibited is falsification of timber measurements, delivery of less than agreed to timber quantities, taking of more timber than contractually agreed to, failure to a pay forest land owner as specified in contract, and failure of a buyer to provide a seller with verification of the amount of timber removed from a forest landowner's property. South Carolina has similar prohibitions, and depending on the severity of the fraudulent activity, fines of up to $500 and imprisonment of up to 10 years can be imposed. Louisiana and South Carolina have special concern for the financial position of landowners selling timber, in that both states require timber buyers to make prompt payment for purchased timber. In the case of Louisiana, payment to a seller must be made within 30 days after the buyer receives payment from a third party, while in South Carolina, payment must be received within 45 days.

6.2.6 State Timber Theft Enforcement & Remedies

In every state, some form of both criminal and civil penalties is provided for timber theft and trespass either through general statutes covering the unlawful taking of property or under laws with specific references to stolen timber. As with all criminal cases, the legal burden rests with the prosecution to prove guilt "beyond a reasonable doubt." Guilty verdicts typically bear monetary penalties, require double or treble restitution of damages, and may result in incarceration. Injured parties can also file civil lawsuits against known perpetrators to recover damages. For civil cases, the standard of proof is easier to meet and is based on the "preponderance of the evidence."

Enforcement of timber theft and trespass laws is significant, although dependent on state perceptions regarding the magnitude of the problem and the resources available to curb it. Most state laws allow for both civil and criminal prosecution (for example, South Carolina), opportunity for recovery of damages due to loss (for example, triple damages in Maryland, Pennsylvania), payment by defendant of injured party's legal fees (for example, Virginia), payment by defendant of the costs of reforestation (for example, Mississippi, Virginia), and confiscation of property used in timber theft activities (for example, Illinois, South Carolina). The assignment of penalties frequently makes a distinction between willful and intentional theft and unintentional and accidental actions that result in inadvertent theft of timber. In some states, assessment of damages for willful disregard for landowner right is based on the size of trees harvested (for example, Mississippi requires payment of $55 per tree seven inches or more in diameter and $10 per tree less than seven inches in diameter). For criminal violations, prison terms of up to 10 years can be assigned depending on the state and on the value of the timber stolen (for example, South Carolina). Some state governments have authority to impose injunctions on illegal timber harvest activities, most notably when title to timberland is contested by multiple parties (for example, North Carolina). Connecticut and Georgia law authorizes the state government to revoke, suspend or deny certification of timber harvesters or professional foresters that have been convicted of a felony involving the conduct of a regulated forestry practice (including timber theft).

Consistent data on local court cases involving timber theft are unavailable. When prosecuted, most timber theft and trespass cases are handled by courts at the county or municipal levels. A search of the literature and on-line legal databases results in hits on about 350 cases that have been prosecuted or appealed in state courts over the past 6 years -- fewer than 60 per year. An appreciation of enforcement actions regarding timber trespass and theft can be obtained by example. In Connecticut, the Division of Forestry has been involved in at least three high profile timber theft cases:

Case one: Two persons charged with seven counts of larceny and conspiracy involving theft from seven landowners; penalty of four years in jail, six years probation, and $267,000 restitution to landowners.

Case two: One person charged with larceny; penalty of four years in jail and $80,000 restitution to landowner.

Case three: One person charged with larceny; repeat offender assigned jail sentence and $25,000 restitution to landowner.

Other example enforcement actions by states in the hardwood producing region are:

Delaware – no history of court action (15 year period)

Louisiana – arrest and prosecute and average of 60 to 70 persons per year (over 15 year period)

Maine – prosecuted 202 cases in 2006; New Hampshire – 17 cases timber trespass in FY 2007 (two misdemeanors, two court summons violations, nine written warnings, four cease and desist orders)

New York – 22 percent of 2007 cases resulted in charges by district attorney

North Carolina – no prosecuting offense code for all timber trespass statutes (four major) except larceny of pine needles (16 cases per year from 2001 through 2006)
South Carolina – 40 to 50 warrants per year.

Based on a review of the literature, many cases of timber theft go unreported because of the difficulty in locating thieves, the burden of proof resting with the landowner, the high cost of prosecution, and higher priorities assigned by governments to other types of crimes. The forestry agencies in most of the states encourage landowners to take precautions to reduce the risk of being victimized intentionally or unintentionally by timber trespass. Landowners are always advised to clearly mark boundaries, obtain bids for timber sales, always have written contracts and have a professional forester oversee harvesting. Written contracts are always enforceable in courts of law. Maintaining good relationships with neighbors and local law enforcement helps to increase security. A number of large landowners employ timber security firms and/or devote personnel to systems designed to reduce risk of timber theft. Large landowners employ hidden security cameras and log tracking systems to ensure to help prevent losses from theft.

6.2.7 Public Lands: Enforcement & Remedies

On the national forests, the Forest Service's Law Enforcement and Investigations Branch is responsible for investigating timber theft and enforcing the applicable law and rules. A special task force was created in the early 1990s to investigate and prosecute major theft crimes but was disbanded in 1995. A few high-profile cases that resulted in convictions may have served as an on-going deterrent against major incidences of timber theft, but criticism that Forest Service enforcement of timber crimes is lax continues. Agency personnel believe that very few cases of timber theft or trespass go undetected on the national forests given timber theft prevention plans that are in place and regularly reviewed, a view supported by interviews with local operators and local law enforcement officials. Outside the agency, views differ. At least one NGO has published an activist's guide to identifying and reporting timber theft on the national forests.[35] Several articles have argued that law enforcement on the national forests is lax and agency personnel are complicit with loggers.[36] Data to support these kinds of allegations are not very persuasive and charges are often based on a critical interpretation of rules rather than on evidence of purposeful disregard for them.

The Law Enforcement and Investigations branch of the US Forest Service investigates offenses that occur within or have a nexus to the National Forest System. Typically crimes include fire and arson crimes, timber theft, theft and/or destruction of archeological resources, destruction and damage to resources, and contract fraud. Focusing on timber theft and fraud, three major federal laws are especially important, namely illegal destruction, removal and transport of timber (18USC §852), destruction of timber on public land and Indian reservations (18USC §853), and general theft of public money, property or records (18USC §641).[37] Investigations also include other environmental and wildlife crimes, illegal occupancy of National Forest System lands, theft of natural resources, threats and assaults against Forest

[35] Government Accountability Project
[36] Paciello, 2006; Pendeleton, 1997
[37] Citations in parentheses are references to Title 18 of the US Code where most federal criminal statutes are published.

Service employees and drug dealing. Specific sections of the US Code of Federal Regulations (CFR) detail the rules and regulations dealing with timber property crimes on the national forests.[38]

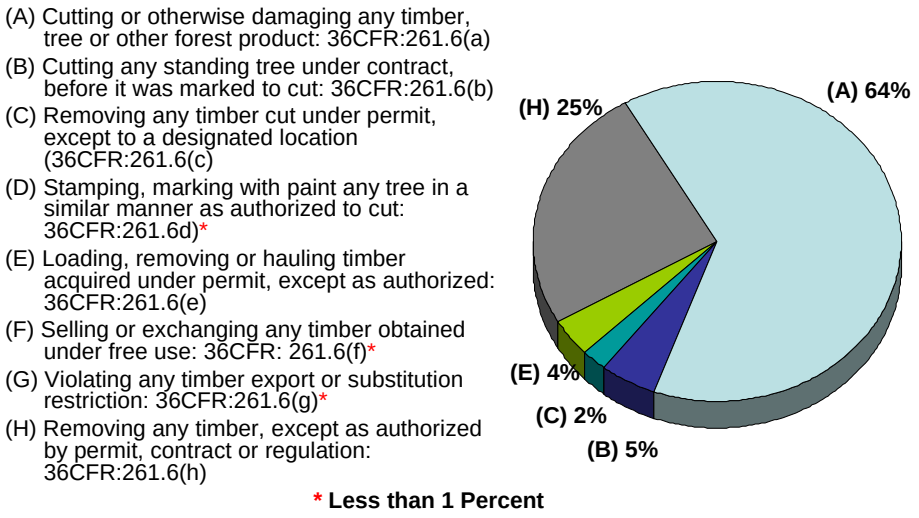
In 2006, the agency employed 660 rangers, investigators and special agents who could execute search warrants, make arrests, and carry firearms if necessary. The Forest Service uses a computerized database – Law Enforcement and Investigations Management Attainment Reporting Program System (LEIMARS) to track and report on crimes and violations on national forest lands. A 2004 audit of the system by the USDA Office of the Inspector General found that the system had a number of deficiencies related to checks and data design so an accurate determination as to the extent of timber theft on national forests was not possible.[39] However, LEIMARS data covering federal lands in the eastern US where almost all of the federal harvest of hardwood takes place provides some insight into enforcement of timber crimes on the national forests.

The LEIMARS data for the eastern national forests show that the number of timber-related violations and incidents averaged 1,419 annually from 2004 through 2007 (including misdemeanors). The types of incidents were distributed as shown in ***Figure 6a***. The value of resource and property damage for which violations were issued and/or prosecutions pursued averaged $104,119 annually. The value of timber harvested from the eastern national forests during the three-period averaged $98,673,755. Thus, timber theft and trespass on the eastern national forests, while important in the local area and circumstance of occurrences, represented a tiny fraction (less than one-tenth of one percent) of the value of timber harvested. In the context of all Forest Service law enforcement, these timber-related violations and incidents represented just 2.5% of all law enforcement activity recorded in the agency's database during the three-year period.

Allegations about violations or non-conformances to planning documents or provisions in timber sale contracts are another matter. As controversies surround the use of federal lands for timber production, NGOs frequently file complaints and appeals to agency decision-making and actions. On the other side, timber purchasers complain that the laws and requirements governing timber sales and harvesting make it difficult if not impossible to operate on federal lands. All federal timber sales are guided by environmental assessments or environmental impact statements and other planning documents that usually include certain restrictions on harvesting and/or mitigation measures. Government audits have found that provisions in environmental analyses are not always implemented and some NGOs have charged that non-conformance to environmental mitigation recommendations or specific contract provisions occur frequently. However, these violations are generally not legally actionable. Moreover, the opportunities for stakeholder inputs into the planning process, including opportunities for administrative reviews and litigation, coupled with the transparency of timber sales and contracts, suggests that significant non-conformances can be identified and usually addressed by the agency.

[38] Title 36 of the Code of Federal Regulations contains the rules promulgated under various federal laws covering the subject area of Parks, Forests and Public Property.
[39] USDA. 2004

Figure 6a: Violations Related to Theft of or Injury to Timber on Eastern National Forests



Source: US Code of Federal Regulations and US Forest Service LEIMARS database

6.3 Conclusions

Recognizing the legal rights of ownership and the right to sell timber is fundamental to determining legal and lawful use. The US hardwood resource is overwhelmingly privately owned and, except where prohibited or restricted, landowners can transfer those ownership rights freely. Over 90% of US hardwood production is privately supplied. Most of the US hardwood resource is owned by small family forest owners who, as a general rule, are highly protective of their private property. Administrative and judicial options are available to all landowners (and timber buyers) to resolve disputes over title to timber assets. Landowners are always advised to clearly mark property boundaries, obtain bids for timber sales, and have written contracts when harvesting timber. Most timber sales and timber cutting contracts of any significant value are conducted pursuant to written contracts and many of the major timber purchasers check to verify that the timber seller has clear title to the timber being sold.

As with all crime, timber theft and trespass (the unauthorized entry onto private property to remove trees) occurs to some degree throughout the hardwood-producing region. While variable, all of the hardwood-producing states have penalties and/or remedies specified in laws addressing timber trespass and theft. Six states in the hardwood-producing region use general larceny provisions to address timber theft; the majority of states have laws with specific provisions that address timber theft or trespass. Available data suggest that incidents typically involve a relatively small number of trees and are usually linked to poorly marked property or cutting boundaries. Many cases go unreported because they involve a low value or because they go undiscovered for a period of time. Absentee landowners that account for approximately 38% of family forest acreage are at the most risk according to reports and surveys. However, the preponderance of information suggests that the most onerous cases of timber theft -- those involving repeat offenders and high value timber – are pursued and the perpetrators are prosecuted.

State personnel and landowner associations provide information on ways landowners can reduce the risk of being victimized by timber crime and trade associations hold meetings where timber security issues are discussed. If evidence of timber theft and a culpable party is found, landowners can seek redress through local law enforcement and restitution in the courts.

Timber crimes are necessarily of concern to US timberland owners, but the extent of unlawful timber harvesting across the hardwood producing region is not easily determined. Based on a review of the literature, media reports with supporting information, and interviews with state officials, the frequency of timber-related crimes is likely to be no greater, and probably less, than property crimes involving other stolen goods. State records and studies that are available suggest that perhaps in the range of 800 to 1,000 significant timber theft cases occur annually in the hardwood-producing region. By applying some assumptions about volume and value of stolen timber, we can derive an estimate that hardwood timber valued on the order of $12 million could be affected annually. This represents a tiny fraction of one percent of all hardwood timber produced in the US (estimated at $4 billion annually). While difficult to ascertain, US hardwood exports are likely affected to an even lesser degree because stolen timber is most likely taken to dealers or processors supplying limited, local markets. This conclusion is not intended to minimize or dismiss the problem of timber theft, but rather to provide perspective on the risk that stolen timber enters the supply chain of US hardwood exports.

Given the data and other evidence compiled in this assessment, the legal right to use the hardwood forest does not pose a significant issue in the US as determined by the prevailing adherence to and respect for property rights, the generally low volumes involved with hardwood timber theft and trespass, and the availability of legal remedies for resolving disputes. It also appears, based on the information garnered primarily through interviews with state officials and the trade, that most suspect timber is processed locally by small operators for local consumption and does not enter the hardwood export supply chain. While timber theft is a matter of concern in the US as elsewhere, we can conclude that the risk that US hardwood exports are sourced from hardwood timber that was stolen (not properly authorized or paid for) is likely to be LOW.

References:

Butler, Brett. 2006. National Woodland Owners Survey. USDA Forest Service. Data tables available at: http://www.fs.fed.us/woodlandowners/nwos_2006/

Canham, Hugh O. and Ronald W. Pedersen. 2007. "Timber Theft Analyzed in New York." The Northern Logger and Processor. October 2007.

Federal Bureau of Investigation. 2006. Uniform Crime Reporting (UCR) Program. Crime in the United States, 2006. See: http://www.fbi.gov/ucr/cius2006/offenses/property_crime/index.html

Government Accountability Project. "Field Guide to Timber Theft: Understanding Timber Sales, the Contract & the Law." Available at: http://www.bark-out.org/resources/files/timberTheft.pdfg.

Hicks, Timothy C. "A Nationwide Survey of Timber Trespass Legislation." Unpublished Master's Thesis. Pennsylvania State University. March 2005.

McCoy, D. 2007. Legally Harvested Timber in Indiana: 1999 through 2006. Division of Forestry. Indianapolis, IN: Indiana Department of Natural Resources.

Mortimer, M. J., S. Baker, and R. M. Shaffer. 2005. Assessing and Understanding Timber Trespass and Theft Laws in the Appalachian Region. Northern Journal of Applied Forestry 22(2): 94-101.

Paciello, Lisa. M. 2006. "Timber Theft in National Forests :Solutions to Preventing the Widespread,Underprosecuted, and Underpunished Crime." New England Journal on Crime and Civil Confinement. Volume 32:345. Summer 2006.

Pendleton, Michael R. 1997. "Looking the Other Way: The Institutional Accommodation of Tree Theft." Michael R. Pendleton. Qualitative Sociology, Vol. 20, No. 3.

USDA. 2004. Office of Inspector General. Audit Report: Survey of Forest Service Timber Theft Controls. Southwest Region. Report No. 08601-2-Te. September, 2004.

Wisconsin Division of Forestry. 2005. Forestry Law Enforcement in Wisconsin: Focus Group Findings. Madison, WI: Division of Forestry, WI Department of Natural Resources.

Table 6A: Timber Trespass and Theft Addressed by State Governments in the US Hardwood Producing Region, by State, Extent and Statutory Authority, 2007.

State	Extent of Violations	Centralized Reporting System	Statutory Directives
North			
Connecticut	"Many complaints concerning illegal timber harvest . . . most involve cutting on neighbor's land to facilitate views"	No	General statutory directives: larceny – CGS.. Chap 950-952
Delaware	"Virtually never receive complaints about illegal timber harvesting (no court cases in 15 years) . . . occasional cutting beyond property boundary	No	Timber trespass statutes: willful-negligent timber cutting on another's property – DL CODE. Chap 14.
Illinois	"Not extensive problem . . . may occur on occasion."	No	Timber trespass statutes: knowingly and intentionally cutting trees without legal right (Wrongful Tree Cutting Act) – IL CODE. Chap. 740.185; transport of forest products without proof of ownership – IL CODE. Chap. 225.740; confiscation and forfeiture of property used in timber theft – IL CODE. Chap. 225.735.16.
Indiana	"162 MBF per year over five year period"	Yes	General statutory directives: Theft, conversion and receiving stolen property --IC. Art. 35-43-4.Licensing and bonding of timber buyers – IC. Art. 36.5.
Iowa	"About five reported cases per year. . ."	No	General statutory directives: damage and trespass on property – IOWA CODE. Chap. 716; Timber trespass statutes: willful injury of timber on land of another – IOWA CODE. Chap. 658.4.
Maine	"Yes, a problem. In 2006, 543 theft-trespass violations . . . fines and settlements of $224,481."	Yes	Timber trespass statutes: proper location of boundaries (civil) – Title 14 MRSA. Chap 739.2.7552A; and timber trespass and marking of property lines (criminal) – Title 17 MRSA Chap 83.4.2511 and 2512.
Maryland	"Although aware theft-trespass occurs it is an infrequent and minor event."	No	Timber trespass statutes: cutting trees without legal right (civil) – MD CODE. NATURAL RESOURCES. Title 5. Chap.5-409.

Table 6A (continued)

:

State	Extent of Violations	Centralized Reporting System	Statutory Directives
Rhode Island	"Very few, most concern arboriculture problems . . . "	No	Timber trespass statutes: unauthorized cutting of wood – RI STAT. Title 34. Chap. 20-1.
Vermont	"No official determination that timber theft is a distinct problem."	Some	General statutory directives: grand and petty larceny (criminal) – VT STAT. Title 13 Chaps. 57.2501 and 57.2502; timber theft statutes: timber cutting without legal right -- VT STAT. Title 13. Chap. 77.3606; transport of stolen trees – VT STAT. Title 13. Chap. 77. 3609; mill operator filing annual report on source of timber VT STAT. Title 10. Chap. 83.2623.
West Virginia	"Yes, a very real concern for WV landowners."	No	Timber trespass statutes: timber cutting and transport without legal right – WV STAT. Chap. 61-3-48 and 61-3-48A; and timber cutting and removal without legal right (criminal) – WV STAT. Chap. 61-3-52.
Wisconsin	Yes, several complaints of timber theft . . . some involve inadvertent property line problems . . . some blatant involving criminal theft charges"	No	Timber trespass statutes: timber cutting and transport without legal right – WI STAT. Chap. 26.05; civil liability for unauthorized removal of timber – WI STAT. Chap. 26.09; transport of timber unlawfully harvested – WI STATE. Chap. 26.06.3; harvest prohibited on forest land for which taxes are delinquent – WI STATE. Chap. 26.03.
South			
Alabama	"Illegal harvesting of timber is a problem"	No	Timber trespass statutes: criminal statute – AL CODE. Chap 9-13-60 through 65.
Arkansas	"Average of about 103 cases per year."	Yes	Timber trespass statutes: damages for negligence specified – AR CODE. Chap. 18-60-102 (considers intent),AR CODE. Chap. 15-32-301 (does not consider intent); boundaries not properly determined before cutting timber – AR CODE. Chap. 15-32-101 and AR CODE. Chap. 5-38-203 (criminal offense).
Florida	"No, outright theft of timber is a rarity in Florida . . . although unintentional cutting across property lines or improper accounting of timber loads from timber sale may occur."	No	General statutory directives: unintentional trespass – FL CODE. Chap 772.104, intentional theft – Chapters 775, 812, 817.

Table 6A (continued)

State	Extent of Violations	Centralized Reporting System	Statutory Directives
Virginia	"Not extensive, but enough of a problem that agency pursued a statutory amendment concerning timber theft"	No	Timber theft statutes: malicious intent-larceny: VA CODE. Chap. 55-334.1, recovery of damages – VA CODE. Chap. 55-331, 55-332, 55-334.
West			
Oregon	"Used to be a big issue . . . bigger issue is fraud and misrepresentations to small woodland owners."	No	Timber theft statutes: Unlawful transport of timber without permit – ORS. Chap 164.813-855; treble damages for removal of trees without lawful authority – ORS. Chap. 105.810-815; branding of forest products – ORS. Chap. 532.01-532.990.
Washington	"Yes, but unsure of magnitude . . . maybe for high-value species . . . often operators take advantage of forest owners. . ."	No	Timber theft statutes: Removal of trees without lawful authority (damages assessed) – RCW. 64.12.030 and RCW. 64.12.40 (unintentional circumstances)

Note: Information is primarily concerned with trespass and theft involving private forest land. Centralized reporting systems refers to existence of a reporting system within a state's lead forestry agency. Louisiana law requires private parties to keep records of harvested timber ownership.
Source: State registries of state laws and codes, and state agency personnel responsible for enforcement of timber trespass laws.

Table 6B: Examples of State Treatment of Timber Theft and Timber Trespass

Arkansas: persons desiring to cut and remove timber shall have the land surveyed prior to harvest and shall acquire documents signed by the landowners (person selling the timber and adjacent landowners) indicating agreement on property boundaries. Violation is a misdemeanor with fine of $25 to $300 and possibly jail sentence of up to six months.

Delaware: willful, negligent or malicious cutting of trees on the land of another without consent of owner shall be subject to payment of damages equal to triple the fair value of the harvested timber. If trespass is unintentional, plaintiff to be awarded damages equal to the fair value of the harvested timber.

Illinois: person found to have intentionally cut timber without full legal cutting right to do so shall pay owner of timber three times its stumpage value.

Kentucky: person guilty of cutting timber on the land of another without legal right shall pay rightful owner three times the value of cut stumpage, three times the value damage to property, and legal cost incurred by owner of timber.

Maine: landowner or harvester shall clearly mark established property lines that are within 200 feet of area to be harvested. Failure of person to do so commits a civil violation with a fine more than $250 but less than $1,000

Maryland: person who willfully, negligently or maliciously enters the land of another without written permission to cut timber is liable for damages in the amount of triple the value of harvested timber plus legal fees. At the request of a law enforcement office, person harvesting timber on the lands of another must display written permission of timberland owner.

Massachusetts: whoever cuts timber on land in which the person has no interest and without license of the landowner shall be punished by imprisonment for no more than six months or by fine of not more than $500.

Mississippi: persons cutting trees without consent of landowner shall pay owner twice the fair market value of the trees and the cost of reforestation (not to exceed $250 per acre). If cutting is done willfully with disregard to landowner rights, payment shall be $55 per tree seven inches or more in diameter and $10 per tree less than seven inches in diameter.

New Hampshire: negligent cutting of trees without permission of landowner is a civil crime involving a penalty of no less than three or more than 10 times the value of the trees cut. Reckless acts of trespass are felonies if loss is greater than $1,000, or are a misdemeanor for other loss amounts.

New Jersey: Persons cutting timber on land to which they have no legal right shall pay a sum of eight dollars per tree cut, half going to landowner and half to persons initiating prosecution.

Pennsylvania: person cutting timber on property of another without consent of property owner is liable for civil damages equal to cost of establishing value of stolen timber; cost of property surveys involving such timber; and three times value of timber if deliberately stolen, two times if negligence is involved, and market value of timber if defendant had a reasonable basis for thinking timber was rightfully to be harvested.

South Carolina: unlawful for person to remove forest products without consent of landowner. Doing so is a misdemeanor if forest products are valued at $1,000 or less ($500 or 30 days or less in prison), and a felony if valued at more than $1,000. Felony fines: up to five years in prison if timber valued at $1,000 but less than $5,000, and up to 10 years in prison if valued at $5,000 or more. Confiscation of property used in timber theft activities.

Tennessee: civil liability in the amount of double the value of timber harvested without consent of landowner.

Virginia: person removing timber from land without legal right to do so, or person authorizing removable of timber without legal right, shall pay landowner three times value of timber, pay reforestation costs (up to $450 per acre), and pay legal costs incurred by landowner.

Table 6B (continued)

West Virginia: illegal to willfully and maliciously (with intent to do harm) to trespass on lands of another and subsequently cut, injure, remove, or destroy timber. Violators are guilty of a misdemeanor and subject to fines of three times the value of stolen or destroyed timber, or confined in jail for 30 days, or both.

Wisconsin: No person may cut, transport, or direct the cutting of timber on forest land without consent of landowner. Violation leads to a fine of not less than $100 or more than $1,000, and liability for costs incurred to establish value of wrongfully harvested timber.

Table 6C: Timber Seller-Buyer Fraud Addressed by State Governments in the US Hardwood Producing Region, by State and Statutory Authority, 2007

State	Program Focus and Statutory Authority
Arkansas	Misrepresenting ownership or origin of timber – AR CODE. Chap. 5-38-203.
Connecticut	Fraudulent sale-purchase of timber (unfair trade practices) – CGS. Chap 735a.
Georgia	Wood load ticket (amount and origin) to landowner – GA CODE. Title 12. Chap. 6. Sec. 23; certificate of pine straw harvest to landowner. GA CODE. Title 12. Chap. 6. Sec. 200-207.
Iowa	Bonded timber buyers program – Iowa Code, Chap. 456A.36 (Adm. Chap. 72).
Indiana	Licensing and bonding of timber buyers – IC. Art. 36.5.
Louisiana	Prompt payment for timber by buyer – LA RS. 14:211; false statements about timber removal and sale – LA RS 14:212; timber transport and record keeping – LA RS. 4278.3 [Rule Title 7, Chap. 15].
Maine	Unfair trade practices involving buyers and sellers of wood – MRSA. Title 5. Chap. 10; proper measurement of wood – MRSA. Title 10. Chap. 501; consumer solicitation of sales – MRSA. Title 32. Chap 69; and failure to pay for harvested trees – MRSA. Title 17. Chap. 83.4,2512
New Hampshire	Deceptive business practices involving buying and selling of wood – NH REV STAT. Chap. 227.J-15
New York	Education and training regarding enforcement of timber theft and trespass laws – NY [Environmental Conservation] LAW. Title 7. Chap 71-0712.
Ohio	Timber buyer trademark proof of timber ownership – OHIO CODE. Title 9. Chap 981.
Rhode Island	Unlawful sale or delivery of wood and timber – RI STAT. Title 2. Chap 20.
South Carolina	Failure to pay landowner for harvested wood – SC CODE. Chap.48-23-265; providing accurate load tickets to seller of timber – SC CODE. Chap. 48-23-97; acquire forest products under false or fraudulent pretenses – SC CODE. Chap. 16-11-580 (A-3); breach of trust with fraudulent intent – SC CODE. Chap. 16-13-230; signatures for property by false pretenses. SC CODE. Chap. 16-13-240.
Tennessee	Timber buyer to obtain bill of sale from seller as evidence of buyer ownership – TN CODE. Title 39. Chap. 14-410.
West Virginia	Violation of contracts (nonspecific to timber) involving buying and selling of timber – WV STAT. Chap. 55-2-8.

Source: Individual state registries of state laws and codes, and state government personnel responsible for enforcement of timber trespass laws.

7.0 FEDERAL AUTHORITIES AFFECTING FOREST PRACTICES

Instead of an all-encompassing national forestry law or policy, an array of federal environmental statutes addresses various aspects of forest management. Some are directed at specific issues, such as the Forest Conservation & Shortage Relief Act of 1990 that imposes certain limitations on log exports from public lands in the western US. Others address the management of federal forest lands specifically, such as the National Forest Management Act of 1976. Still other federal laws focus on other resources but have forestry implications. Examples are the Coastal Zone Management Act and the Wild and Scenic Rivers Act. The federal government also relies on state governments to develop and implement standards for forestry practices pursuant to federal law. ***Tables 7A – 7B*** summarize the coverage and basic thrusts of the federal statutes relevant to forests; ***Table 7C*** displays the basic enforcement actions stipulated in the major laws. The four most significant federal environmental laws that have direct forest management implications on private lands are the Endangered Species Act (ESA), the Clean Water Act (CWA), the Clean Air Act (CAA), and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

7.1 Endangered Species Act

Under the Endangered Species Act (ESA), forest landowners and managers cannot cause injury or death to a listed threatened or endangered species by direct harm or through habitat modification. The Act requires the federal government to provide for the conservation of listed species and this has effectively removed large areas of public lands from commercial exploitation. It has additionally restricted forest management activity on numerous private lands. Several hundred species that are found in either upland or bottomland hardwood forests are listed under the ESA. Among those that have received the most attention are: Eastern Cougar, Canada Lynx, Red Wolf, Indiana Bat, and Louisiana Black Bear. Penalties for "taking" a listed species are severe. The principal enforcement agency for the ESA is the US Fish and Wildlife Service (USFWS). In 2006 alone, USFWS reported 22 prosecutions or settlements involving $5 million in fines, remediation and restitution for illegal take and habitat destruction.[40]

The ESA allows private landowners to prepare habitat conservation plans (HCP) for which they receive an incidental take permit if approved by the federal wildlife or fish agency (depending on the species). To date, no landowner with predominantly hardwood forests has found the need to seek one of these permits, although a half dozen or so landowners with softwood forest types in the Pacific Northwest and in the Southern US have approved HCPs.[41]

7.2 Clean Water Act

The Clean Water Act (CWA) addresses point sources (such as a drainpipe) that have an identifiable discharge into waters subject to federal jurisdiction and non-point sources that are dispersed pollution sources such as sediment and runoff. Farms and forests are examples of

[40] USFWS, 2007.

[41] In the Pacific Northwest, HCPs have been approved for conservation of northern spotted owl and salmon fish species. In the South, HCPs have been approved for conservation of red-cockaded woodpecker. In both regions, the listed species inhabit softwood forest types.

sources of non-point water pollution. Under the CWA, control and enforcement of non-point source pollution is generally delegated to the States. States must have programs to control non-point source pollution, usually accomplished through Best Management Practices (BMPs), and federal regulations control activities in forested wetlands. Each of the Hardwood States has a program of either mandatory or voluntary BMPs for forest lands. Approaches vary, but all have published manuals or sourcebooks with guidance on procedures for such practices as road-building, water crossings, streamside management, use of chemicals, etc. In some states, BMP programs have both required and voluntary elements. For example, they may require notification of timber harvests or submission of forest management plans, but encourage (not prescribe) adherence to specific standards for streamside management zones or culvert sizes. Most states have water quality control laws with strict penalties in the event of onerous sediment and erosion caused by land management activities including forest practices.

Under the CWA, jurisdictional wetlands is the one area that the federal government retains direct control. Except for normal farming, silvicultural, and ranching activities, a permit must be issued by the US Army Corps of Engineers for activities involving dredge and fill in waterways and wetlands. Although most normal silvicultural activities in forested wetlands are exempt from permit requirements, altering water flow or circulation that results in conversion of an existing forested wetland to an upland forest type or a change in the historic land use will trigger a permit requirement. All roads and stream crossings within wetlands and other jurisdictional waters of the US must be constructed and maintained in accordance with 15 specific BMPs prescribed by the US Army Corps of Engineers. The silvicultural exemption is conditional on implementation of BMPs.

The courts have generally held that most forestry practices fall within the normal silvicultural activities that are exempt from CWA permitting requirements, but there have been challenges and decisions on what constitutes normal silviculture. For example, under certain circumstances, the conversion of bottomland hardwood to pine requires a CWA permit. Some environmental groups watch for and have successfully challenged specific plans for development or land use change in forested wetlands and CWA violations are aggressively prosecuted by the regulatory agencies. According to the US Army Corps of Engineers, about 5,500 alleged violations of the CWA are processed in Corps district offices each year. Of these, 75 percent relate to Section 404 permitting (although only a very small number involve silvicultural wetland issues).[42] Compliance with CWA permit requirements can be regarded as high and disputes regarding regulatory interpretations are adjudicated. Consequently, hardwood timber harvested in violation of the CWA presents little or no risk to US hardwood production.

7.3 Clean Air Act

Under the Clean Air Act (CWA), states must have programs to protect air quality and visibility. For forest management, these typically include controls on prescribed burning and the use of ozone-depleting chemicals in forest nurseries. Air quality standards must be met to protect vistas near wilderness areas and to minimize smoke drift. In most states, burning permits are required and landowners are liable for smoke-related accidents.

[42] Corps of Engineers. See overview at: http://www.usace.army.mil/cw/cecwo/reg/oceover.htm.

7.4 Federal Insecticide, Fungicide, and Rodenticide Act

Chemical use in forest stands, whether for insect control or for vegetation management, is regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The US Environmental Protection Agency (EPA) has responsibility for implementing and enforcing FIFRA. All forest-use chemicals must be EPA-registered and forest land operators must follow application guidelines prescribed for each chemical. For some chemicals, use is limited to trained and certified applicators. In some cases, states and local jurisdictions have enacted more stringent requirements for specific chemicals or classes of forest-use chemicals. Enforcement of both federal and state requirements is regarded as effective. Citizen complaints can be filed and agencies can (and have) imposed high penalties on violators.

7.5 Management of Federal Forests

Finally, in terms of the major federal laws that affect forest management, additional statutory authorities govern public forest lands that comprise approximately 101 million total hectares of forest land, and 34 million hectares of timberland in the hardwood-producing region. The most significant of these are: the National Forest Management Act (NFMA), Federal Land Policy and Management Act (FLMPA), the Wilderness Act, and the National Environmental Policy Act (NEPA). These laws affect management planning and decision-making on the national forests as well as lands controlled by the Bureau of Land Management (BLM) and other federal agencies. Administrative and legal challenges to forest planning and timber management activities pursuant to these laws have a long and extensive history. Most of the court cases involve challenges brought by stakeholder groups. Planning and harvest activities on federal forest lands are frequently delayed, altered or cancelled pending completion of administrative or judicial reviews.

7.6 Other Federal Forestry Programs

Other statutes and federal programs contribute to protecting unique or special environments, encouraging conservation, promoting environmental education, supporting environmental related research or otherwise enhancing environmental values. For example, the Conservation Reserve Program (CRP) provides technical and financial assistance to farmers to convert highly erodible cropland or other environmentally sensitive acreage to other vegetative cover, including trees. The CRP has resulted in several million acres of farmland being converted to forests and accounts for the increase in US forest area that has occurred over the past twenty years. Similarly, the Forest Legacy Program encourages and supports acquisition of legally binding conservation easements that restrict development, require sustainable forestry practices, and protect other values.

CRP, Forest Legacy and similar federal programs are examples of federal efforts to promote or provide incentives for good forest management without regulation. Collectively, they play a significant role in the sustainability of US hardwood forests by encouraging forest use, reforestation, and conservation of environmentally sensitive or unique areas. While non-regulatory, landowner participation in these programs is continually monitored and verified by the implementing federal (and state) agencies.

7.7 Federal Statutes Affecting Fair Labor, Health and Safety

The most significant federal law that governs labor is the Occupational Safety and Health Act of 1970 (OSHA) as amended which prescribes very specific safety measures and safety equipment be used while engaged in commercial activity in forest areas. OSHA regulations include "safety practices, means, methods and operations for all types of logging, regardless of the end use of the wood."[43] Detailed records of accidents, injuries, and corrective measures must be maintained. Penalties for violations are severe. About 40,000 inspections are conducted annually by federal and state officials to monitor compliance with federal OSHA regulations.

The Employment Standards Administration of the US Department of Labor implements and enforces US labor law, including ensuring compliance with minimum wages. The Fair Labor Standards Act (FLSA) establishes minimum wage, overtime pay, recordkeeping, and child labor standards affecting full-time and part-time workers in the private sector and in federal, state, and local governments. As of July, 2007, all workers must be paid a minimum wage of not less than $5.85 per hour, with scheduled increases in 2008 and 2009 to $8.25 per hour. Overtime pay at a rate of not less than one and one-half times their regular rates of pay is required after 40 hours of work in a workweek.

In sanctioning violating employers, the Department of Labor may recover back wages either administratively or through court action and violations can result in civil or criminal prosecution. With some exceptions for part-time after school work and other special circumstances, workers in non-farm employment can not be younger than 16 years of age. The FSLA prohibits discriminating against or discharging workers who file a complaint or participate in any proceedings under the Act. The Family and Medical Leave Act (FMLA) requires that employers provide unpaid leave for workers who care for a newborn baby or family member with a serious medical condition.

7.8 Conclusions

Although the US has never formally adopted a national forest policy, several environmental laws and laws governing federal land management have either a direct or indirect impact on forest practices. As a general rule, these laws allow for severe penalties to be imposed on violators, although the federal government relies on the states to enforce many of their provisions except those that require federal permits or establish specific federal requirements on land managers. Numerous court cases have revolved around interpreting the intent of various provisions in the statutes, but affected operators and agencies routinely comply with their requirements.

Some federal statutes govern federal land management directly. Hardwood management is mainly impacted in the national forests of the eastern US that contain significant inventory of hardwood species. About 10 percent of the timberland in the hardwood-producing region is in national forests. While these lands are a significant source of high-quality hardwoods, and are

[43] Code of Federal Regulations (CFR) on Logging operations: 29 CFR 1910.266

economically very important in some communities, in aggregate they represent only about 1% of annual US hardwood production.

By regulating environmental activities, mandating programs to implement sound forest practices on both private lands, and providing strict statutory guidance for the management of public lands, the federal legal framework has an impact on the sustainability of forest management. The federal government also administers incentive based programs to encourage sound forest practices. Provisions of the federal laws that affect forest management are periodically reviewed by the US Congress, subject to agency rule-makings, and/or challenged by stakeholders. The constant legislative and judicial scrutiny of federal oversight is unique to the American political and judicial processes, but can be viewed as contributing to continuing improvements in sustainable forestry practices.

References

Coggins, G. C., C. F. Wilkinson, and J. D. Leshy. 2001. Federal Public Land and Resources Law. New York, NY: Foundation Press.

Ellefson, P. V., C. M. Hibbard, M. A. Kilgore, and J. E. Granskog. 2005. Legal, Institutional, and Economic Indicators of Forest Conservation and Sustainable Management: Review of Information Available for the United States. GTR-SRS-82. Asheville, NC: Southern Research Station, Forest Service, U. S. Department of Agriculture. 221p

USDA Forest Service. 1993. The Principal Laws Relating to Forest Service Activities. Washington, DC.

US Fish & Wildlife Service (USFWS), 2007. Annual Report FY 2006. Office of Law Enforcement. August 2007.

Wear, D. N., and J. G. Greis. 2002. Southern Forest Resource Assessment. GTR-SRS-53. Southern Research Station. Asheville, NC: Forest Service, U. S. Department of Agriculture. 635 p.

West Publishing Company. 1997. Selected Environmental Laws. St. Paul, MN. 1,398 p.

Table 7A: Federal Statutes Requiring Development and Application of Sound Forestry Practices in the US Hardwood Producing Region, by Resource Focus and Landowner Application, 2007

Federal Statute	Major Forest (or Related) Resource of Concern	Federal Statutory Requirements for Application of Sound Forestry Practices		
		Direct Federal Application Only to Federal Land	Direct Federal Application to All Forest Land	Indirect State Action for Practice Development
Clean Air Act of 1990	Air		X	X
Clean Water Act of 1987	Water		X	X
Coastal Zone Management Act of 1972	Comprehensive			X
Endangered Species Act of 1973	Fish and Wildlife		X	X
Federal Insecticide, Fungicide and Rodenticide Act	Comprehensive		X	X
Federal Land Policy and Management Act of 1976	Comprehensive	X		
Fish and Wildlife Conservation Act of 1980	Fish and Wildlife			X
National Environmental Policy Act of 1969	Comprehensive	X	X	X
National Trails System Act of 1968	Recreation		X	X
National Wildlife Refuge System Act of 1966	Fish and Wildlife	X		
National Forest Management Act of 1972	Comprehensive	X		
Occupational Safety and Health Act of 1970	Comprehensive		X	X
Rivers and Harbors Act of 1890	Water		X	X
Soil and Water Conservation Act of 1977	Comprehensive			X
Superfund Act of 1980	Comprehensive		X	X
Surface Mining Control and Reclamation Act of 1977	Comprehensive			X
Wild and Scenic Rivers Act of 1968	Recreation		X	X
Wilderness Act of 1964	Comprehensive	X		

Source: Forest Service (1993), West Publishing (1997) and others

Table 7B: Enforcement Actions Authorized by Selected Federal Statutes Relevant to Forests within the US Hardwood Producing Region, by Statute and Type of Action, 2001

Federal Statute	Type of Actions Authorized to Compel Action or Enforcement			
	Specifies Fines and Prison Sentences To Be Imposed	Authorizes Development of Rules To Be Followed	Specifies Standards, Action or Process To Be Followed	Authorizes Funds Required To Compel Action
Focus Directly and Exclusively on Forests and Forestry				
Forest Conservation & Shortage Relief Act of 1990 (timber exports)	X	X	X	X
Forest & Rangeland Renewable Resources Planning Act of 1974		X	X	X
National Forest Management Act of 1978			X	
Renewable Resource Extension Act of 1978		X	X	
Focus Broad, but Including Forests and Forestry				
Administrative Procedures Act of 1946		X	X	
Archeological Resources Protection Act of 1979	X		X	
Clean Air Act of 1990	X	X	X	X
Clean Water Act of 1987	X	X	X	X
Coastal Zone Management Act of 1972		X	X	X
Endangered Species Act of 1973	X	X	X	X
Federal Insecticide, Fungicide, and Rodenticide Act	X	X	X	X
Federal Land Policy and Management Act of 1976	X	X	X	X
Federal Noxious Weed Act of 1974	X	X	X	X
Fish and Wildlife Conservation Act of 1980			X	
National Environmental Policy Act of 1969		X	X	X
National Trails System Act of 1968			X	X
National Wildlife Refuge System Administration Act of 1966	X	X	X	X
Occupational Safety and Health Act of 1970	X	X	X	X
Public Lands U. S. Criminal Code of 1948	X		X	
Soil and Water Conservation Act of 1977			X	X
Solid Waste Disposal Act of 1986	X	X	X	X
Surface Mining Control and Reclamation Act of 1977		X	X	
Wilderness Act of 1964			X	
Wild and Scenic Rivers Act of 1968			X	X

Sources: Coggins and others (2001), Forest Service (1993) and West Publishing Company (1997)

Table 7C: Penalties and Punishment Authorized by Federal Statutes Relevant to Forestry Activities within the US Hardwood Producing Region, 2001

Federal Statute	Penalties for Violations and Provision for Related Enforcement
Preservation of American Antiquities Act of 1906	• Persons appropriating any object of antiquity on federal government lands subject to penalties of up to $500 or up to 90 days (or both).
Migratory Bird Treaty Act of 1918	• Persons failing to comply with regulations regarding taking, killing, or possessing migratory birds subject to penalties up to $500 or imprisoned up to six months (or both) ($2,000 or two years [or both] for sale of birds)
Bald & Golden Eagle Protection Act of 1940	• Persons possessing or selling eagles subject to penalties of up to $5,000 or imprisonment up to one year (or both) (second violation, $10,000 and two years)
Federal Insecticide, Fungicide & Rodenticide Act	• Persons failing to properly register or use pesticides subject to various penalties ranging from maximums of $1,000 to $25,000 and from maximums of 30 days to three years imprisonment
Public Lands U. S. Criminal Code of 1948	• Persons engaged (on federal public lands) in timber trespass, tree injury, setting of wildfires, destruction of livestock fences, destruction of survey markers, or deception at land and timber sales subject to various penalties ranging from maximums of $500 to $3,000 and from maximums of six months to three years imprisonment.
Occupational Safety & Health Act of 1970	• Person violating safety and health rules subject to civil and criminal penalties ranging from maximum of $7,000 to $70,000 and six months imprisonment.
Endangered Species Act of 1973	• Persons knowingly (civil crime) or willfully (criminal crime) engaged in violations of endangered species law subject to various penalties ranging from maximums of $500 to $50,000 and from maximums of six months to one year imprisonment. Criminal violations also result in loss of any permits or leases authorizing use of federal land.
Federal Noxious Weed Act of 1974	• Persons violating quarantine of noxious weeds or promoting their dissemination subject to penalties of up to $5,000 or up to one year imprisonment (or both)
Federal Land Policy & Management Act of 1976	• Persons violating provision of Act regarding use and protection of public lands subject to penalties up to $1,000 or up to 12 months imprisonment (or both)
Archeological Resources Protection Act of 1979	• Persons damaging, removing, or defacing archeological resource on federal public lands subject to criminal penalties ranging from maximum of $10,000 to $100,000 and from maximum of one year to five years imprisonment. Civil penalties assigned by land manager.
Lacey Act Amendments of 1981 (wildlife)	• Persons importing, exporting, selling, or purchasing wildlife in violation of federal laws subject to civil and criminal penalties ranging from maximum of $250 to $20,000 and up to five years imprisonment.
Solid Waste Disposal Act of 1986	• Persons or organizations violating compliance orders for management of hazardous wastes subject to civil and criminal penalties ranging from maximums of $25,000 to $1,000,000 and from two to 15 years imprisonment.
Forest Resource Conservation and Shortage Relief Act of 1990 (timber exports)	• Persons illegally exporting unprocessed federal timber subject to penalties ranging from maximum of $75,000 to $500,000. Violators may be barred from purchasing federal timber for up to five years.
National Wildlife Refuge Administration Act of 1966	• Persons violating Act's provisions subject to fines prescribed by Title 18 U.S.C. or up to one year imprisonment (or both).

Sources: Coggins and others (2001), Forest Service (1993) and West Publishing Company (1997)

8.0 REGULATORY PROGRAM INITIATIVES

8.1 State Regulatory Agencies

State governments implement a variety of programs to promote the application of sound forestry practices on both private and public lands. Earlier studies by Eleffson and others have detailed the number and types of state entities that influence the use, management and protection of forests in the US[44]. That research has highlighted the complexity and diversity of state administrative authorities over various aspects of forests and their management. In the hardwood-producing states, for example, more than 1,000 government entities (variously identified as agencies, bureaus, offices, departments, commissions or councils) have responsibilities for over 800 public programs focused on forest resources, including hardwood forests.[45] Of these, a total of 155 programs administered by 189 state entities are regulatory in nature (***Table 8A***). An average of nearly six entities per state is thus responsible for addressing a broad range of forest-related concerns. The number of agencies and the extent of their regulatory involvement in forestry are shown in ***Table 8B***. The most frequent focus of state government regulatory programs is the quality of air and water resources, namely 23 percent (44 agencies), but the stated objectives of regulatory interests that affect forest practices include fish and wildlife, rights of way, preservation, recreation and other forest functions.[46] Including the latter, other focal points for agency regulation of forestry practices in 2001 were:

- Air and water pollution control – 23 percent of agencies
- Forest resource management – 19 percent
- Fish and wildlife management – 12 percent
- Soil and resource conservation – 8 percent
- Land use planning and direction – 2 percent
- Park and natural area preservation – 4 percent
- Insect, disease and invasive species – 4 percent
- Economic development and transportation – 1 percent
- Other regulatory focal points – 27 percent

The category "other regulatory focus" (27 percent of total) highlights the diversity of regulatory functions implemented by state government agencies. The regulatory focus of agencies in this category includes reclamation and restoration forested areas, law and rule enforcement, taxation and revenue collection, professional licensing and certification, human health and safety, forest trails and roads, archeology and historic preservation, forested coastal zone management, and regulation of solid and hazardous materials in forested areas.

State regulatory programs focused on forestry practices in the hardwood-producing region require substantial public investment in the form of finances, rule-making, issuance of permits, on-site inspections, enforcement actions, and addressing legal challenges made by the regulated public. In 2004, states in the region employed an estimated 715 full-time equivalent (FTE) staff for regulatory program implementation.[47] Thirty-one percent (about 220 FTEs) of the

[44] Ellefson et al, 2001; 2002; 2004; and 2005
[45] Ellefson et al. 2001 and 2004
[46] Ellefson et al, 2001, 2004 and 2005
[47] Ellefson et al. 2001

staff employed by these agencies are part of an agency whose primary function is forest resource management, while slightly more than 190 of the FTE staff are affiliated with air and water pollution control agencies. State government officials responsible for state regulatory or related programs involving forestry practices in the US hardwood-producing region report that 101 (54 percent) of the 189 agencies are either extensively (17 percent) or moderately (37 percent) involved in the regulation of forestry practices.

In states with relatively few agencies engaged in regulatory activities (for example, Illinois, Florida, Mississippi), regulatory interests are quite narrow and often carefully focused (fish and wildlife, forest management, and air and water quality, respectively). Louisiana is another good example, in that only two subjects (turpentine leave trees, right-of-way reforestation) are the regulatory concerns of the state's Division of Forestry (reportedly the only agency regulating forest practices in the state). However, in states where the number of regulating agencies is high (for example, exceeds six), the combined interests of such agencies can also be high. Such occurs, for example, in Michigan, New York and Kentucky, which each have a regulatory landscape involving five different subjects, and in Oregon, Virginia, New Hampshire, and Indiana where each state has six different subjects of interest to state regulatory agencies.

The following are examples that illustrate the diversity and breadth of state agencies involved in forestry regulation in the hardwood region, most of which report extensive or moderate regulatory involvement with forestry practices.

Forest Resource Management Agencies: New Jersey Department of Environmental Protection's Division of Parks and Forestry, Oregon Department of Forestry, Virginia Department of Forestry, and the West Virginia Bureau of Commerce's Division of Forestry.

Fish and Wildlife Management Agencies: Kentucky Department of Fish and Wildlife Resource's Division of Wildlife, Maryland Department of Natural Resource's Wildlife and Heritage Division, and the Washington Department of Fish and Game's Habitat Program.

Soil & Resource Conservation Agencies: Arkansas Soil and Water Conservation Commission, Delaware Department of Natural Resource's Division of Soil and Water Conservation, Virginia Soil and Water Conservation Board, and the North Carolina Soil and Water Conservation Commission.

Parks and Natural Area Management Agencies: Indiana Department of Natural Resource's Division of Nature Preserves, and the Tennessee Department of Environment and Conservation's Division of Natural Heritage.

Air and Water Management and Pollution Control Agencies: Maryland Department of the Environment's Water Management Administration, Rhode Island Water Resource's Board, Tennessee Department of Environment and Conservation's Division of Water Pollution Control.

Economic Development and Transportation Agencies: New Hampshire Department of Resources and Economic Development's Division of Economic Development.

Land Use Planning and Management Agencies: Missouri Commission on Land Reclamation, and New York Department of Environmental Conservation's Division of Solid and Hazardous Materials.

Insect, Disease and Invasive Species Agencies: Indiana Department of Natural Resource's Division of Entomology and Pathology, Michigan Department of Agriculture's Division of Pesticide and Plant Pest Management, Minnesota Department of Agriculture's Exotic Pests Program, and the Virginia Department of Agriculture and Consumers Service's Office of Pesticide Services

In most states, responsibility for forests and forestry is assigned to a particular unit of state government (lead forestry agency). In many cases, these entities (identified variously as bureaus, divisions, services, or departments) have important regulatory responsibilities. In 2004, state government forestry executives in all of the 33 hardwood producing states reported the state's lead forestry agency was responsible for some degree of regulatory program implementation.[48] In the hardwood producing region, examples of lead state forestry agencies involved (moderate to extensive) in the regulation of forestry practices are:

•Delaware:	Section of Forest Service, Department of Agriculture
•Indiana:	Division of Forestry, Department of Natural Resources
•Kentucky:	Division of Forestry, Department of Natural Resources
•Maine:	Forest Service, Department of Conservation
•Maryland:	Forest Service, Department of Natural Resources
•Massachusetts:	Bureau of Forestry, Department of Environmental Management
•Minnesota:	Division of Forestry, Department of Natural Resources
•New Hampshire:	Division of Forests and Lands, Department of Resources and Economic Development
•New Jersey:	Division of Parks and Forestry, Department of Environmental Protection
•North Carolina:	Division of Forest Resources, Department of Environment and Natural Resources
•Oregon:	Department of Forestry
•Vermont:	Department of Forests, Parks and Recreation
•Virginia:	Department of Forestry
•Washington:	Division of Forest Practices, Department of Natural Resources
•West Virginia:	Division of Forestry, Bureau of Commerce.
•Wisconsin:	Division of Forestry, Department of Natural Resources

8.2 Regulation of Forest Practices

8.2.1 State Regulatory Authorities

Regulatory authority over the application of forestry practices on private land can emanate from a specific focus on forests, or from state environmental laws intended to address various resources (air, water, soil, wildlife, wetlands, or coastal zones). In some cases, most of the regulatory authority over forest practices can rest with one state agency; in others, regulatory authority over the application of forestry practices is assigned to a number of different state agencies. However, each of the hardwood-producing states regulates forestry practices in some

[48] Ellefson et al, 2004

form, although each does so in a different manner. Some states have laws that encompass a full range of regulatory authority over the application of forestry practices on private land. States in the hardwood-producing region with such arrangements include Oregon (Oregon Forest Practices Act) and Washington (Washington Forest Practices Act). Other states (and localities) have an assortment of statutory authorities linked to the other resources or to land uses. ***Table 8C*** displays for each hardwood state the major regulatory authorities over various aspects of forest practices.

Statutory authority to regulate forestry practices varies considerably in content, scope and specificity. Some state laws simply authorize the regulation of forest practices, with administrative rules specifying exactly how such is to be accomplished, while statutes in other states specify in great detail the entire structure of a regulatory program, including statutory specification of exacting standards for forestry practices. Examples of the latter in the U.S. hardwood producing region are:

> • Clear-cut defined as any timber harvesting on a forested site greater than 5 acres in size that results in a residual basal area of trees over 4 ½ inches in diameter measured at 4 ½ feet above the ground of less than 30 square feet per acre, unless, after harvesting, the site has a well-distributed stand of acceptable growing stock, as defined by rule, of at least 3 feet in height for softwood trees and 5 feet in height for hardwood trees (Maine) (*ME Law Title 12. Chap. 804. Sec. 8868*)
>
> • Private forest land adjacent to (a Type A water body) and located in a coastal forest of spruce or hemlock . . . , harvest of timber may not be undertaken within 66 feet of the water body (Arkansas) (*AK Sat. 41.17.116*).
>
> •. . . no cutting for commercial purposes any pine tree under 10 inches in diameter unless there is left standing on each harvested acre, 100 or more well distributed pine trees four inches or more in diameter or at least four pine seed trees of ten inches or more in diameter (Mississippi) (*MS Code Title 49. Chap. 19. Sec. 57*).
>
> • No harvest (type three) within a single ownership shall exceed 120 acres (except as provided for); no harvest (type three) shall be allowed within 300 feet of the perimeter of a prior harvest (type three) unit if the combined acreage of the harvested areas . . . would exceed 120 acres (Oregon) (*OR Rev. Stat. Title 44. Chap. 527. Sec. 740*).
>
> • After completion of a logging operation, satisfactory reforestation . . . shall be completed within three years . . . (although) a period of up to five years may be allowed where a natural regeneration plan is approved by the department (ten years for low productivity lands) . . . upon completion of reforestation a report shall be filed with the department . . . within twelve months of receipt of report the department shall inspect the reforestation operation (Washington) (*Rev. Code of WA. Title 76. Chap. 9. Sec. 9.07*).
>
> •Every landowner who cuts . . . timber from ten acres or more of land on which loblolly or white pine, singly or together, occur and constitute twenty-five percent or more of the live trees on each acre or acres, shall reserve and leave uncut and uninjured not less than eight cone-bearing loblolly or white pine trees fourteen inches or larger in diameter on each acre thus cut and upon each acre on which such pine trees occur singly or together . . . Where eight cone-bearing loblolly or white pine trees fourteen inches or larger in

> diameter are not present . . . , there shall be left uncut and uninjured for each such pine two cone-bearing pine trees of the largest diameter present less than fourteen inches in diameter. Such pine trees . . . shall be healthy, windfirm, and of well-developed crowns, evidencing seed-bearing ability by the presence of cones in the crowns. Pine trees which are left uncut for purposes of reseeding . . . shall not be cut until at least three years have elapsed (Virginia) (*VA Code Title 10.1. Chap. 11. Sec. 64 and 65*).

The most common form of regulatory activity at the state level revolves around water quality and tends to shadow the provisions of the federal Clean Water Act. State water quality laws typically outlaw water pollution resulting from nonpoint source activities and impose penalties on persons and organizations that fail to conform to established water quality standards. Comprehensive state water quality laws typically authorize agencies to forthrightly address nonpoint sources that violate state water quality standards, with such implying the use of stop-work orders, judicially prescribed injunctions, civil actions for damages, civil penalties and criminal penalties when willful violation or gross neglect is determined to have occurred. In 2004, all states had comprehensive water quality laws, of which at least 37 had some regulatory provisions focusing directly on nonpoint forest sources of water pollutants.[49] State environmental laws address mine reclamation, use of chemicals, scenic areas, wetlands and development along shores and waterways, and other activities with environmental impacts. Many states also have endangered species acts that mirror and supplement the federal statute by creating a process to list endangered or threatened species within the state. The range of state environmental laws that have regulatory effects on forestry practices in the US hardwood-producing region can best be appreciated by examples:

> • *Timber Harvesting in Scenic River Areas* (South Carolina): Limited harvesting in scenic river areas provided landowners follow best management practices for forested wetlands as approved by the South Carolina Forestry Commission (*SC CODE. Chap. 29. Sec 29-160*).
>
> • *Agricultural and Silvicultural Pollution Abatement* (Ohio): Ohio Division of Soil and Water Conservation to establish enforceable standards to prevent erosion from agricultural or silvicultural activities leading to degradation of waters (*OHIO CODE. Title 15. Chap. 1511*).
>
> • *Coal Mine Reclamation* (Indiana, Pennsylvania): Persons in Indiana must obtain a permit specifying plans for meeting surface standards for coal mined areas (*IC CODE. Chap. 10. Art. 14-34-10*); persons in Pennsylvania conducting or proposing to conduct an earth disturbance activity shall design, implement and maintain BMPs to minimize the potential for accelerated erosion and sedimentation in order to protect water quality (*PA STAT. Title 25. Chap. 102.11*), and vegetative standards for post-mining conditions are established (*PA STAT. Title 25. Chap. 87*).
>
> • *Chemicals and Pesticides* (Delaware, Minnesota): Delaware Department of Agriculture shall regulate the sale and application of pesticides (*DL CODE. Title 3. Chap. 12*); in Minnesota, persons may not use, store, handle, distribute, or dispose of a pesticide, pesticide container, or pesticide application equipment in a way: (a) that is inconsistent with labeling as defined by [federal law]; (b) that endangers humans, damages agricultural products, food, livestock, fish, or wildlife; or (c) that will cause unreasonable adverse effects on the environment (*MN STAT. Chap. 18B Sec. 7*).

[49] Environmental Law Institute 1997, 1998; and Ellefson and et al, 2005

• *Sediment Reduction* (South Carolina): Department of Health and Environmental Control shall promulgate regulations, minimum standards, guidelines, and criteria necessary to carry out the provisions of a . . . [state] sediment reduction program [and shall] assist conservation districts and local governments involved in the development and management of [said program] (*SC CODE. Title 48. Chap. 18. Sec. 70*).

• *Wetlands* (Maine): Application for a permit to undertake activities altering freshwater wetlands up to 15,000 square feet or one acre [with exceptions] must be reviewed in accordance with [specified procedures] . . . alteration must be avoided to the extent feasible . . . area to be altered must be the minimum amount necessary to complete the project . . . erosion control measures must be used to prevent sedimentation of protected natural resources . . . a 25-foot buffer strip must be maintained between the activity and any river, stream or brook. Permit application must be sent by certified mail or hand-delivered to the department (*ME Law. Title 38. Chap. 3. Sec. 480A-480BB*).

• *Timber Harvesting in Scenic Areas* (Connecticut, Tennessee): Connecticut Department of Environmental Protection authorized to establish regulations to preserve scenic landscapes in designated Greenways (*CGS Title 23. Chap 454. Sec 100 through 102*); harvesting in Class I scenic rivers in Tennessee is allowed pursuant to reasonable regulations issued by the commissioner of environment and conservation . . . In Class II and III areas, no timber harvesting within and conservation easement (*TN CODE. Title 11. Chap. 11-13-111*).

• *Endangered Plant and Animal Species* (Maryland, Pennsylvania): Maryland Secretary Department of Natural Resources shall establish rules and regulations to ensure conservation of land or aquatic habitats, necessary for the conservation of nongame, threatened, or endangered species of wildlife or plants (*MD CODE Title 10. Sec. 10-2A-06*); Pennsylvania Department of Environmental Protection establish rules conserving and protecting native wild plants (*PA STAT. Title 17. Chap. 45*).

• *Alteration of Watercourses* (New York, Vermont): New York Department of Environmental Conservation permit required for crossing of certain classified watercourses (*NY[Environ. Conserv.] LAW. Art. 17. Title 3*), Vermont Department of Environmental Conservation permit required for alteration or modification of watercourse with drainage area greater than 10 square miles (*VT STAT. Title 10. Chap. 41*).

• *Mined Land Reclamation* (Arkansas, Missouri): Upon issuance of permit Arkansas Department of Environmental Quality, operators shall condition site for reforestation subsequent and maintenance of forest conditions (*AR CODE Title 15. Chap 57. Sec 315*); with the approval of the commission (Missouri Department of Conservation), operators shall set out or plant on affected land, plants, trees, shrubs . . . such shall be of an appropriate type based on sound . . . forestry principles . . . seeding or planting shall be completed within 24 months after completion of operations (*MO STAT Chap. 444. Sec. 77*).

• *Shoreland Protection Regulation* (Maine, Minnesota): Maine Board of Environmental Protection shall set forth land use guidelines for shorelands (*MRSA Title 38. Sec. - 435-465*); Minnesota Commissioner of Natural Resources may adopt rules in counties failing to adopt ordinances for the conservation of shoreland generally (*MN STAT. Chaps. 103F.215 and 103F.211*), and adopt rules for the protection of shorelands within wild and scenic rivers (*MN STAT. Chap. 103F.321*).

• *High-priority Water Resources* (Florida): Department of Environmental Protection to establish special rule provisions (such as buffers) to protect water bodies worthy of special protection (Outstanding Florida Waters) because of their outstanding natural attributes (*FL CODE. Title 29. Chap. 403. Sec. 27*).

• *Land Use* (Florida, Maine, Oregon, Vermont): Florida Environmental Land and Water Management Act of 1972 (*FL CODE Title 28. Chap380*); Maine Land Use Regulatory Commission (*MRSA. Title 12 Chap. 207A. Sec 681-689*); Oregon State Land Use Act of 1973 (*ORS Chap.197*); . . . . . Vermont State Land Use and Development Act of 1970 (*VT STAT. Title 10. Chap. 151*).

• *Water Quality* (Tennessee): . . . activities (stream bank disturbance and alteration, gravel removal, bank stabilization) involving working in a stream require an aquatic resource alteration permit (Tennessee Water Quality Control Act) (*TN CODE. Title 69. Chap. 3*).

• *Wetlands* (Vermont): Secretary of Department of Environmental Conservation authorized to regulate any persons action or activity that causes discharges into wetlands (waterways) in violation of established policy. Secretary may order proper procedures for control of that action or activity (*VT STAT. Title 10. Chap. 47. Sec. 1272*).

8.2.2 Regulated Practices

Since states differ so widely in the nature and extent of their regulatory authorities, the types of regulated forest practices are more easily analyzed by grouping as follows:

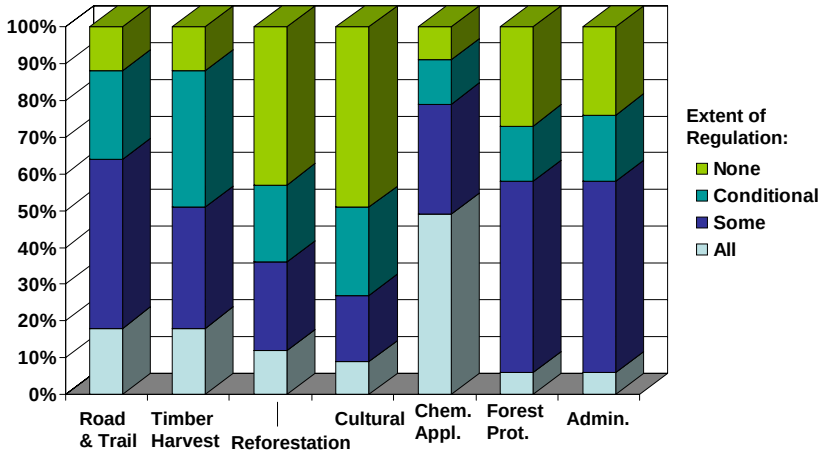
(1) Road and Trail Practices (for example, water crossings, erosion control, material disposal sites, blasting standards, winter use and closures);
(2) Timber Harvesting Practices (for example, landings; skid trails; slash management; equipment; felling, bucking and yarding; residual stand damage; safety);
(3) Reforestation Practices (for example, site preparation, timing, species selection, artificial or natural, regeneration levels, supplemental planting);
(4) Silvicultural Practices (for example, early release treatments, thinning, pruning, stand improvement cuttings, stand health);
(5) Chemical Application Practices (for example, methods of application, intensity, timing, mixing, spill management);
(6) Forest Protection Practices (for example, fuel loads; fire prevention; disease and insect prevention; animal damage prevention, salvage and sanitation cuttings);
(7) Administrative Practices (for example, planning, notifying, reporting, monitoring, evaluating, enforcing).

Depending on the state, forestry practices in the hardwood producing region are either: all regulated, partially regulated, or conditionally regulated (i.e. the regulation of a practice occurs only when certain conditions or thresholds occur). For example, in Washington special consideration must be given to the type and application of forestry practices when critical habitats of some species of wildlife (e.g. Gray Wolf, Silverspot Butterfly) are encountered, or when forest land to be harvested contains cultural, historic or archeological resources. Similar provisions have been made for certain conditions in New Hampshire (harvest operations in wetlands) and Vermont (harvesting above 2,500 feet elevation). Some states (and localities)

require notification and/or a harvesting permit prior to a harvesting operation, and in some states, reforestation is legally required after a timber harvest. Some states stress only one category of forestry practices, while in certain other states one or more forestry practice in all of the aforementioned categories is state regulated. Moreover, it may be only certain specific practices within a category are regulated. For example, Michigan regulates the removal of slash and debris that may occur after timber harvest, but does not regulate most other harvesting practices. Similarly, Pennsylvania regulates silvicultural practices to prevent oak wilt disease but does not regulate other forest treatments. Chemical application practices are the most commonly regulated group of identified practices (30 of 33 hardwood-producing states, or 91%, regulate chemical practices in some form). One or more aspects of timber harvesting are regulated directly or conditionally in 29 (88%) of the hardwood-producing states (***Figure 8a***).

Based on the informed judgment of state government executives responsible for state regulatory or related programs involving forestry practices, all state governments in the US hardwood-producing region regulate at least some forestry practices (***Table 8D***). Of the region's 33 states, 29 regulate road and trail practices, 29 regulate timber harvest practices, 19 regulate reforestation practices, 15 regulated cultural practices, 30 states regulated chemical application practices, and 24 states regulate forest protection practices. The probability of all or some of the forestry practices in any one of these major categories being regulated is about 75 percent.

Figure 8a: Percent of States with Regulated Forest Practices, by Category



Source: Ellefson et al, 2004

8.3 Best Management Practices Authorized by Legislation

Under the federal Clean Water Act, states are required to develop and implement programs to control nonpoint sources of pollution resulting from rainfall and a number of human activities, including forestry. This has largely been accomplished through development of best management practices (BMPs) at the state level involving streamside management, stream crossings, forest roads, waste disposal, chemicals and fertilizers, and harvesting and reforestation. Made mandatory in some states, and instituted as voluntary programs in others, all 33 of the Hardwood States have adopted guidelines for practices related to streamside

management, stream crossings, forest roads, harvesting and reforestation. The majority (25 states) also have BMPs for waste disposal and chemical and fertilizer practices (***Table 8E***).

Most state governments have initiated BMP compliance monitoring programs to measure their effectiveness. State requirements for establishing monitoring programs, what they measure and how frequently they measure vary. For example, in Minnesota, state law requires "a program for monitoring silvicultural practices and the application of timber harvest and forest management guidelines," while in Washington, state law requires "annual assessment of how regulations and voluntary processes are working." In Washington, forestry operations are subject to pre and post-harvest inspections that are used to meet the legal requirement for compliance monitoring. Many states in the Northeast have developed standardized regional protocols for monitoring the application of forestry practices that have potential to impact water resources.[50]

In 2007, 24 of the 33 of the hardwood-producing states reported having a formal monitoring program for evaluating the extent to which landowners and timber harvesters apply recommended or required forestry practices. The specific practices that are measured and the methodologies used vary, as have the reported results of the monitoring programs. The average range of compliance for all practices is about 70 to 90 percent, but the range within a state varies depending on the practice being studied (***Table 8E***). Even where compliance rates are lower, studies show that significant risks to water quality are still low.[51] To promote higher levels of compliance, 29 states sponsor education and training sessions for landowners and timber harvesters.

8.4 Compliance and Enforcement Actions

Government expenditures invested to support state forest regulatory programs totaled an estimated US $40 million in 2004. Although highly variable between states, the average investment per state was about $US 1.2 million.[52] For selected states with comprehensive forest practices laws, the 2003 funding ranged from a low $165,000 to a high of $9.7 million. Examples of funding and staffing by representative state regulatory programs in the region are:

Connecticut Forest Practices Act	$165,000	3.0 FTEs
Maine Timber Harvest Reporting Law	$1,115,000	16.5 FTEs
Massachusetts Forest Cutting Practices Act	$460,000	16.0 FTEs
Oregon Forest Practices Act	$7,800,000	94.0 FTEs
Vermont Heavy Cutting and Water Pollution Acts	$330,000	6.0 FTEs
Virginia Forest Practices Notification Act	$4,000,000	50.0 FTEs
Washington Forest Practices Act	$9,656,000	176.0 FTEs
West Virginia Logging Sediment Control Act	$761,000	66.0 FTEs

Data on citations and other enforcement actions related to violations of state regulatory authorities are a function of enforcement mechanisms and record-keeping requirements that vary depending on specific state statutes. States with regulatory programs typically prepare reports about compliance and enforcement. In West Virginia, for example, under its Logging Sediment

[50] USDA Forest Service, 2007
[51] NCASI, 2007
[52] assumes a full-time equivalent requires an investment of $55,000 annually

& Control Act, 661 compliance orders, 314 suspension orders and 33 tickets were issued in 2006.[53] In Maine, between 2000 and 2003, nearly 22,000 required harvest notifications were filed, of which 55% were inspected and 460 violations of forest practices standards were found (on less than 4% of those inspected). From 2000 through 2003, the Maine Bureau of Forestry negotiated settlement agreements with $53,250 in assigned penalties for violations of forest practices standards. In Oregon, 241 citations were issued in the same three year period and 214 civil penalties were assessed.[54] Comparable statistics are kept and are obtainable in other states with regulatory programs. As noted earlier, many states with voluntary Best Management Programs also engage in some type of monitoring and compliance assessment.

8.5 Conclusions

States in the hardwood-producing region have very complex and diverse legal authorities over various aspects of forests and each state has crafted its own approach to fostering sustainable forest management. Oregon and Washington have the most comprehensive forest regulations and the highest funding levels to support them, but all of the states regulate some forest practices. Many states have implemented voluntary or incentive-based programs to achieve sustainable forestry objectives. Only sporadic information can be found in the formal literature or in media reporting about violations or potential violations of state regulations in the hardwood-producing states. Information that is readily available suggests that state regulatory agencies are not timid about issuing citations or pursuing violators.

While states in the hardwood-producing region take different approaches to regulating harvesting and forest practices, the data suggest that all states direct significant resources to forest sustainability issues. The extent of regulation in a given state is not necessarily an indication of how well forests are managed, but it does relate to legal compliance with state laws and thus the legality of hardwood production. The available data suggest that states in the hardwood region are diligent about enforcing regulations that affect forest practices.

References:

Bailey, P.D., H.L. Haney, D.S. Callihan, and J.L. Greene. 1999. Income Tax Considerations for Forest Landowners in the South: a Case Study on Tax Planning. Journal of Forestry 97(4): 10-15.

Butler, B. J. 2007. Private Forest Owners of the United States: 2006 (draft). Northern Research Station. Newtown Square, PA: Forest Service, US Department of Agriculture.

Ellefson, P. V., C. M. Hibbard, M. A. Kilgore and J. E. Granskog. 2005. Legal, Institutional, and Economic Indicators of Forest Conservation and Sustainable Management: Review of Information Available for the United States by GTR SRS-82. Asheville, NC: Southern Research Station, Forest Service, U.S. Department of Agriculture. 2005.

[53] Information obtained from West Virginia Division of Forestry.
[54] Information obtained from administrators of state forest practices regulatory programs

Ellefson, P. V., M. A. Kilgore, C. M. Hibbard and J. E. Granskog 2004. Regulation of Forestry Practices on Private Land in the United States: Assessment of State Agency Responsibilities and Program Effectiveness. Staff Paper No. 176. St. Paul, MN: Department of Forest Resources, University of Minnesota.

Ellefson, P. V., R. J. Moulton, and M. A. Kilgore. 2002. An Assessment of State Agencies that Affect Forests. Journal of Forestry 100(6):35-41.

Ellefson, P. V., R. J. Moulton, and M. A. Kilgore. 2001. Public Agencies and Bureaus Responsible for Forest Management and Protection: An Assessment of the Fragmented Institutional Landscape of State Governments in the United States. Journal of Forest Policy and Economics 5(2003): 2007-223.

Environmental Law Institute. 1998. Almanac of enforceable state laws to control nonpoint source water pollution. Washington, DC: Environmental Law Institute.

Environmental Law Institute. 1997. Enforceable State Mechanisms for control of nonpoint source of water pollution. Washington, DC: Environmental Law Institute.

National Association of State Foresters. 2001. State Non-Point Source Pollution Control Programs for Silviculture. Washington, DC: National Association of State Foresters. Available at: http://www.stateforesters.org/reports/NONPOINT%20REPORT.htm

National Council for Air and Stream Improvement (NCASI). 2007. Compendium of State and Provincial Forestry Best Management Practices (draft). Research Triangle Park, NC: National Council for Air and Stream Improvement (NCASI).

Natural Resources Conservation Service. 2007. Conservation Programs. Washington, DC: Natural Resources Conservation Service, U. S. Department of Agriculture. http://www.nrcs.usda.gov/NRCSProg.html. [date accessed: November 2007].

Peters, D. M., Haney, H.L., Jr., and Greene, J. L. 1998. The Effects of Federal and State Death and Gift Taxes on Nonindustrial Private Forest Lands in the Midwestern States. Forest Products Journal 48(9): 35-44.

Purdue University. 2002. Tax Management for Timberland Ownership. National Timber Tax. Lafayette, IN: Purdue University. http.://www.timbertax.org. [date accessed: October 2007].

USDA Forest Service. 2007. Best Management Practices (BMP) Monitoring Manual (Field Guide): Implementation and Effectiveness for Protection of Water Resources. NA-FR-02-06. Northeast Area State and Private Forestry. Newtown Square, PA.

Wear, D. N., and J. G. Greis. 2002. Southern Forest Resource Assessment. GTR-SRS-53. Southern Research Station. Asheville, NC: Forest Service, U. S. Department of Agriculture.

Table 8A: State Government Executive Branch Units Exerting Influence over the Use, Management and Protection of Forests and Number of Regulatory Programs in the US Hardwood Producing Region, by State

State	Agency (cabinet) Units	Governing or Advisory Units	Total Units	Number of Agencies Regulating Forestry Practices	Number of Regulatory Programs
North					
Connecticut	21	1	22	1	2
Delaware	12	0	12	4	4
Illinois	40	6	46	1	4
Indiana	28	5	33	9	2
Iowa	26	4	30	2	2
Maine	32	9	41	4	5
Maryland	32	13	45	7	11
Massachusetts	16	1	17	6	3
Michigan	37	9	46	9	1
Minnesota	35	4	39	12	6
Missouri	18	11	29	2	1
New Hampshire	26	6	32	6	11
New Jersey	22	7	29	10	5
New York	24	3	27	7	5
Ohio	25	3	28	2	1
Pennsylvania	26	6	32	0	5
Rhode Island	18	2	20	9	4
Vermont	17	9	26	4	4
West Virginia	30	6	36	4	7
Wisconsin	28	7	35	3	3
Total North	513	112	625	102	86
South					
Alabama	17	2	19	3	3
Arkansas	18	3	21	9	2
Florida	16	1	17	1	2
Georgia	20	1	21	1	2
Kentucky	41	15	56	9	8
Louisiana	23	4	27	1	3
Mississippi	20	2	22	1	6
North Carolina	26	4	30	8	7
South Carolina	22	1	23	7	8
Tennessee	18	1	19	8	5
Virginia	36	8	44	17	6
Total South	257	42	299	65	52
West					
Oregon	34	13	47	13	9
Washington	33	7	40	9	8
Total West	67	20	87	22	17
Regional Total	837	174	1,011	189	155

Source: Ellefson et al, 2001, 2004, 2005, and 2007 and various state agency documents and state government personnel responsible for state forestry programs.

Table 8B: State Government Agency Involvement in the Regulation of Forestry Practices Applied to Private Lands in the US Hardwood Producing Region, by State and by Regulatory Focus and Magnitude, 2004-2005

State	Number of Agencies Regulating Forestry Practices	Major Focus of Agencies Regulating Forestry Practices	Extent of Agency Involvement in Regulating Forestry Practices (number of agencies)			Magnitude of Agency Staff Involved in Regulating Forestry Practices (number of agencies)		
			Extensive	Moderate	Minimal	< 3 FTEs	3 to 7 FTEs	> 7 FTEs
East								
Connecticut	1	a	0	0	1	0	0	1
Delaware	4	a, b ,d	1	2	1	2	2	0
Illinois	1	c	0	0	1	1	0	0
Indiana	9	a, b, c, f, g, i	0	8	1	8	1	0
Iowa	2	b, e	0	0	2	2	0	0
Maine	4	a, b, e	0	1	3	3	0	1
Maryland	7	a, b, c, i	4	3	0	1	4	2
Massachusetts	6	a, b, c, g, i	1	2	3	4	0	2
Michigan	9	a, b, c, g, i	0	4	5	3	2	4
Minnesota	12	a, b, c, g, i	3	7	2	0	8	4
Missouri	2	a, i	0	0	2	2	0	0
New Hampshire	6	a, b, c, g, h, i	1	1	4	4	0	2
New Jersey	10	a, b, c, d, i	5	0	5	7	1	2
New York	7	a, b, c, g, i	0	6	1	2	3	2
Ohio	2	d, f	0	0	2	2	0	0
Pennsylvania	0	--	0	0	0	0	0	0
Rhode Island	9	a, b, c, i	1	5	3	9	0	0
Vermont	4	b, c, i	1	1	2	3	0	1
West Virginia	4	a, b, i	1	0	3	2	0	2
Wisconsin	3	a, b, i	0	2	1	1	1	1
South								
Alabama	3	a, b	0	2	1	0	0	3
Arkansas	9	a, b, c, d, i	0	1	8	9	0	0
Florida	1	b	0	0	1	1	0	0
Georgia	1	b	0	0	1	0	0	1
Kentucky	9	a, b, c, g, i	3	1	5	4	1	4
Louisiana	1	b	0	0	1	1	0	0
Mississippi	1	a	0	1	0	1	0	0
North Carolina	8	a, b, c, d, i	0	1	7	4	3	1
South Carolina	7	a, b, c, i	1	3	3	7	0	0
Tennessee	8	a, b, c, f, i	2	6	0	2	1	5
Virginia	17	a, b, c, d, f, i	1	3	13	14	0	3
West								
Oregon	13	a, b, c, d, e, i	4	4	5	7	4	2
Washington	9	a, b, c, f, i	3	5	1	3	4	2
Total	189	--	32	69	88	109	35	45

Note: Primary regulatory agency functions: a = air and water management and pollution control; b = forest resource management; c = fish and wildlife management; d = soil and resource conservation; e = land use planning and management; f = parks and natural area management; g = insects, diseases and invasive species; h = economic development and transportation; and I = other functions (for example, mined land reclamation, historic and archeological preservation, law enforcement, waste management).

Source: Ellefson and others (2004) and various state agency documents and state government personal responsible for state forest

Table 8C: State Forest-Centered Statutory Authorities Regulating the Application of Forestry Practices in the US Hardwood Producing Region, by State, 2007

State	Forest-Centered Authorities
East	
Connecticut	Connecticut Forest Practices Act (practices, regulations, penalties, municipal actions). *CGS. Title 23. Chap. 451a*.
Delaware	Pine and Yellow-Popular Tree Conservation and Reforestation. *DL CODE. Title 3. Chap. 10-5*. Silvicultural Systems and Sedimentation and Erosion Control. *DL CODE. Title 3. Chap. 10*-6.
Illinois	Stream Debris Adverse to Fish. *IL CODE. Chap. 515.5*. Ginseng Regulation. *IL CODE. Chap. 525.20*. Prescribed burning regulations. *IL CODE. Chap. 525.37.*
Indiana	Local government requirement to comply with accepted forestry practices. *IC. Chap. 2. Art. 36-7-2-10.* Forestry Operation Declared not to be Public Nuisance. *IC. Chap. 6. Art. 32-30-11.*
Iowa	Forestry Practices Meeting NRCS Soil and Water Conservation Standards. *IOWA CODE. Title 5. Chap. 161A (Administrative Code 27-12.84).*
Maine	Forest Practices Act. *MRSA. Title 12. Chap. 805. Sec. 8866-9970.* Slash Disposal. *MRSA .Title 12. Chap. 807. Sec. 9331 - 9338.* Timber Harvesting in Shoreland Areas *MRSA Title 38. Chap. 3. Sec. 438B*; LURC Use Regulation. *MRSA. Title 12. Chap. 206A. Sec. 681 - 689.*Wood Processing Reporting Requirements. *MRSA. Title 12. Chap. 805. Sec. 8881-8888.*
Maryland	Forest Conservation Act. *MD CODE. Title 5. Sec. 1601-1613.* Reforestation. *MD CODE. Title 5. Sec. 103.* Pine Tree Reforestation. *MD CODE. Title 5. Sec. 501-508.* Reforestation after Highway Construction. *MD CODE Title 5. Sec. 103.* Chesapeake Bay Critical Areas Commercial Harvests. *MD CODE. Title 8. Sec. 1808.7.* Fire Hazard Reduction. *MD CODE. Title 5. Sec. 710.* Timber Harvest in Nontidal Wetlands. *MD CODE. Title 5. Sec. 901 - 911*. Roadside Tree Protection. *MD CODE Title 5. Sec. 401- 406.*
Massachusetts	Massachusetts Forest Cutting Practices Act (harvest guidelines, notice of intent). *MGL. Title 15. Chap. 132. Sec. 40-45.* Slash Management. *MGL. Title 7. Chap. 48. Sec. 16 and 16A.*
Michigan	Slash and Debris Removal. *MCL. Chap. 324. Sec. 51901-51905.* Forestry operations exempt as nuisances. *Chap 320. Sec. 2031 through 2036.*
Minnesota	Removal and Transport of Decorative Materials. *MN STAT. Chap. 88.642*. Control and Management of Forest Pests. *MN STAT. Chap. 89.53-57.* Disposal of Slash and Debris. *MN STAT. Chap. 88.14.* Forest Management Practices in Litigation. *MN STAT. Chap. 88.81.*
Missouri	Designated Cropland Forestry Practices. *MO STAT. Chap. 254.*
New Hampshire	Notice of Intent to Harvest Timber. *NH REV STAT. Chap. 227J. Sec. 5*. Operations in Wetlands. *NH REV STAT. Chap. 227J. Sec. 6.* Alteration of Terrain. *NH REV STAT. Chap. 227J. Sec. 7*, and *NH REV STAT. Chap. 485A. Sec. 17*. Cutting Near Certain Waters and Roads. *NH REV STAT. Chap. 227J. Sec. 9.* Slash and Mill Disposal near Waters. *NH REV STAT. Chap. 227J. Sec. 10*. Transport of Coniferous Trees. *NH REV STAT. Chap. 227J. Sec. 11*. Insect and Disease Management Control Areas. *NH REV STAT. Chap. 227K. Sec. 3*. Shoreland Protection Standards (woodland buffer) and Penalties. *NH REV STAT. Chap. 483B. Sec. 1, 9 and 18.* Floating of Timber. *NH REV STAT. Chap. 485B. Sec. 1.*
New Jersey	New Jersey Freshwater Wetlands Act. *NJ STAT. Title 13. Chap. 9B-4.* [also woodlands assessment/plan approval requirements]. Permissible Forestry Activities-Practices. *NJ. STAT. Title 4. Chap. 1C-9.*

Continued….

Table 8C (continued)

State	Forest-Centered Authorities
New York	Reforestation. *NY [Environ. Conserv.] LAW. Art. 9. Title 5.* Removal of Evergreens and Protected Plants. *NY [Environ. Conserv.] LAW. Art. 9. Title 5.* Forest Insect and Disease Control. *NY [Environ. Conserv.]LAW. Art. 9. Title 13.* Freshwater Wetland Permits. *NY [Environ. Conserv.] Law. Art. 24. Title 1-13.*
Ohio	Forest Fire Hazard as a Nuisance. *OHIO CODE. Title 15.Chap. 1503.07.*
Pennsylvania	Fire Protection Nuisance Declarations. *PA STAT. Chap. 3. Sec 302(d).* Erosion and Sediment Control. *PA STAT. Title 25. Chap. 102. Sec. 1-7.* Oak Wilt Disease Protection. *PA STAT. Title 7. Chap. 125. Sec. 46.*
Rhode Island	Registration of Wood Cutting Operations. *RI STAT. Title 2. Chap 5-1 through 4.* Permits for Cutting of Trees. *RI STAT. Title 2. Chap. 15-8.* Forest Fires and Fire Prevention. *RI STAT. Title 2. Chap 2-12. Sec.* 5-13.
Vermont	Regulation of Heavy Cutting Practices. *VT STAT. Title 10. Chap. 83.Sec. 2625.* Treatment of Slash. *VT STAT. Title 10. Chap. 83.Sec. 2648.* Commissioner Authority to Regulate Forestry Practices. *VT STAT. Title 10. Chap.85. Sec. 2622.*
West Virginia	Logging Sediment Control Act (notification, supervision, harvester licensing). *WV STAT. Chap. 19. Art. 1B.* Debris Burning. *WV. Rules. Title 45. Sec. 6.* Forest Insect and Disease Control. *WV STAT. Chap. 20. Sec. 19.* Ginseng Regulation. *WV STAT. Chap. 19. Sec. 1A-3a.*
Wisconsin	Statewide County Notification of Timber Harvest. *WI STAT. Chap. 26.03.* Fire Prevention and Suppression. *WI STAT.. Chap. 26.11.* Forest Insect and Disease Control. *WI STAT. Chap. 26.30.* Forestry Operations Conforming to Generally Acceptable Practices are not Nuisances. *WI STAT. Chap. 823.075 (1,2,3).*
South	
Alabama	Watershed Management Authorities (require use of AL Forestry Commission Developed BMPs) *AL CODE. Title 9. Chap 9-10A-4.* Prescribed Burning Notification. *AL CODE. Chap. 9-13-270 through 274.* Insect and Disease Protection *AL CODE. Title 9. 9-13-120 through 142.* Ginseng Regulation. *AL CODE. Chap. 9-13-240 through 250.*
Arkansas	Notice of Intent to Control Burn. *AR CODE. Title 20. Chap. 22. Sec. 302.*
Florida	Notification for Prescribed Burning. *FL CODE. Title 35. Chap. 590.02* Permit for Sale of Cypress Products. *FL CODE. Title 35. Chap. 590.50.* Certification of Prescribed Burn Managers. FL CODE Title 35. Chap. 590.125.
Georgia	Vegetative Management in Road Right-of-Ways. *GA CODE. Title 32. Chap. 6. Sec. 75.* Uniform Local Government Procedures for Harvesting Notification Permits. *GA CODE. Title 12. Chap. 6. Sec. 24.* Permit for Controlled Burns. *GA CODE. Title 12. Chap. 6. Sec. 90.* Unlawful Harvest of Ginseng. *GA CODE. Title 12. Chap. 6. Sec. 150-157.* Prescribed Burning Permits. *GA CODE. Title 12. Chap 6. Sec. 145-149.* Certification of Prescribed Burn Managers. *GA CODE. Title 12. Chap 6. Sec. 149.*
Kentucky	KY Forest Conservation Act (logger designation, appropriate practices, penalties). *KY CODE. Title 12. Chap. 149. Sec. 342 -350, and 355.*Prescribed Fire Authority. *KY CODE. Title 12. Chap 149. Sec. 400.*
Louisiana	Terpentine Leave Trees. *LA RS. Chap. 3:4293.* Reforestation of Public Land or Right-of-Way Land. *LA RS. 3:4271.*
Mississippi	Forest Harvesting. *MS CODE. Title 49. Chap. 19. Sec. 53.* Leave Trees Involving Harvest of Naval Stores. *MS CODE. Title 49. Chap. 19. Sec. 55.* Pine Tree Stocking After Harvest. *MS CODE. Title 49. Chap. 19. Sec. 57.* Hardwood Tree Stocking After Harvest. *MS CODE. Title 49. Chap. 19. Sec. 59.* Seed Tree Requirements after Harvest. *MS CODE. Title 49. Chap. 19. Sec. 61.* Felling brush or trees in waterways. *MS CODE. Title 97. Chap. 15. Sec. 39 and 41.*

Continued….

Table 8C (continued)

State	Forest-Centered Authorities
North Carolina	Forest Practice Guideline Enforcement (Sedimentation Control Act). *NC CODE.. Chap. 113A-52.1.* Insect and Disease Protection. *NC CODE. Chap. 113-60.4 through Chap. 11360.8.* Prescribed Fire Permits. *NC CODE. Chap. 113-60.40 through Chap. 113-60.45*. Obstruction of Streams and Drainage Ditches. *NC CODE. Chap. 77-13 and Chap. 77-14.* Restriction on Local Government Regulation. *NC CODE. Chap. 153A.452.* Forestry Professional Registration. *NC CODE. Chap. 89B.* [Certain] Riparian Zone Buffer Management. *NC Environmental Mgt. Commission Rules [NCAC 2B]*. Corporate timberland harvesting in accord with established forestry rules. *NC CODE. Chap. 113-72,* Adoption and compliance with Department of Environment and Natural Resource established forest practice guidelines. NC CODE. Chap 113A-52.1
South Carolina	Forest Pest Outbreak Management. *SC CODE. Chap. 48-29-10 through 60.* Emergency Fire Protection Powers. *SC CODE. Chap. 48-31-10 through 40.* Prescribed Fire Management. *SC CODE. 48-34-10 through 60.* Regulation of Certain Fires. *SC CODE. Chap. 48-35-10 through 60.* State precedence over local forest practice ordinances. *SC CODE. Chap. 50-2-10 through 50.*
Tennessee	Stop Work Order Silvicultural Activities. T*N CODE. Title 69. Chap 3. Sec. 133.* Master Logger Liability for Forestry Practices. *TN CODE. Title 69. Chap. 3. Sec. 138*. Ginseng Harvest Regulations. T*N CODE. Title 70. Chap. 8. Sec 201-205.*
Virginia	Conduct of Silvicultural Activities. *VA CODE. Title 10.1. Chap. 11. Sec. 81.1 - 81.7.* Regulation of Prescribed Burning. *VA CODE. Title 10.1. Chap. 11. Sec. 42.* Pine Trees Left for Reseeding. *VA CODE. Title 10.1. Chap. 11. Sec. 64 and 71.* Logging Debris in Streams. *VA CODE. Title 62.1. Chap. 20. Sec. 194.2.*
West	
Oregon	Oregon Forest Practices Act (notification, reforestation, penalties). *ORS. Chap. 527.610-992.* Seeding of Prescribed Burn. *ORS. Chap. 526. 360 and 370.* Integrated Pest Management. *ORS. Chap. 527. 310 through 370.* Permit for Extraction of Tree Pitch. *ORS Chap. 527.260.* Permits for Fires on Forestlands. *ORS. Chap 477.515*. Burning within Limits of Smoke Management Plan. *ORS. Chap. 477.013.* Fire Hazard Abatement. *ORS. Chap. 477.062*. Export of Unprocessed State Timber. *ADM RULE. 629.031*.
Washington	Washington Forest Practices Act (harvest permits, reforestation, penalties). *RCW. Chap. 76.09.010 through 935.* Fire Protection (burning permits, hazard reduction, road closures). *RCW Chap. 76.04.205 through 76.04.495, and 76.04.700 through 900.* Forest Insect and Disease Control. *RCW. Chap. 76.06.010 through 130.* Wood Debris in Navigable Waters. *RCW. Chap. 76.42.010 through 070.* Specialized Products (cedar, evergreen foliage, Christmas trees). *RCW Chap. 76.48.010 through 910.* Forest Practice Rule Authority re Water Quality. *RCW. Chap. 48.420 and 425.* Selective Cutting in Shorelands. *RCW. Chap.90.58.150.* Hydraulics Project Approval. *RCW. Chap. 77.55.010 through 370.*

Note: State statutes focused on state owned forestland and on forest protection activities (wildfire, insects and diseases) are identified in some cases, but are generally excluded as are administrative rules generally.
Source: State registries of state laws and codes, and state government personnel responsible for state forestry programs.

Table 8D: Extent to Which Forestry Practices Applied on Private Forest Land Are Regulated by State Government Agencies in the US Hardwood Producing Region, by State and Major Forest Practice Category, 2004-2005

State	Road and Trail Practices	Timber Harvesting Practices	Reforestation Practices	Cultural Practices	Chemical Application Practices	Forest Protection Practices	Administrative Practices
East							
Connecticut	CONDITIONAL	CONDITIONAL	NONE	NONE	ALL	NONE	NONE
Delaware	SOME	SOME	SOME	NONE	SOME	NONE	SOME
Illinois	NONE	SOME	NONE	NONE	ALL	NONE	NONE
Indiana	SOME	SOME	NONE	NONE	ALL	SOME	SOME
Iowa	NONE	NONE	NONE	NONE	SOME	NONE	SOME
Maine	SOME	SOME	SOME	NONE	ALL	SOME	SOME
Maryland	ALL	ALL	ALL	NONE	ALL	SOME	SOME
Massachusetts	ALL	ALL	ALL	SOME	SOME	SOME	SOME
Michigan	SOME	SOME	NONE	NONE	SOME	SOME	CONDITIONAL
Minnesota	SOME	SOME	NONE	NONE	ALL	SOME	SOME
Missouri	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL
New Hampshire	SOME	CONDITIONAL	CONDITIONAL	SOME	SOME	SOME	SOME
New Jersey	SOME	SOME	SOME	SOME	SOME	SOME	SOME
New York	SOME	CONDITIONAL	CONDITIONAL	CONDITIONAL	ALL	SOME	CONDITIONAL
Ohio	CONDITIONAL	NONE	NONE	CONDITIONAL	NONE	NONE	NONE
Pennsylvania	SOME	NONE	NONE	SOME	ALL	SOME	SOME
Rhode Island	SOME	SOME	NONE	NONE	NONE	NONE	SOME
Vermont	SOME	SOME	NONE	SOME	ALL	NONE	SOME
West Virginia	ALL	ALL	NONE	NONE	SOME	SOME	SOME
Wisconsin	SOME	CONDITIONAL	CONDITIONAL	CONDITIONAL	SOME	SOME	CONDITIONAL
South							
Alabama	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL
Arkansas	NONE	CONDITIONAL	NONE	NONE	SOME	CONDITIONAL	NONE
Florida	SOME	NONE	NONE	SOME	ALL	NONE	NONE
Georgia	SOME	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	SOME
Kentucky	ALL	ALL	ALL	ALL	SOME	ALL	SOME
Louisiana	CONDITIONAL	CONDITIONAL	SOME	CONDITIONAL	ALL	CONDITIONAL	CONDITIONAL
Mississippi	NONE	CONDITIONAL	SOME	NONE	NONE	NONE	NONE
North Carolina	SOME	SOME	SOME	NONE	ALL	SOME	NONE
South Carolina	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	CONDITIONAL	SOME	SOME
Tennessee	CONDITIONAL	CONDITIONAL	NONE	NONE	ALL	SOME	NONE
Virginia	CONDITIONAL	SOME	SOME	NONE	ALL	SOME	SOME
West							
Oregon	ALL	ALL	ALL	SOME	ALL	ALL	ALL
Washington	ALL	ALL	SOME	SOME	ALL	SOME	ALL

Source: Ellefson and others (2004), National Association of State Foresters (2001), and various state agency documents and state government personnel responsible for forest practice regulatory programs.

Table 8E: Forestry Practices Required or Promoted by State Government Programs in the US Hardwood Producing Region, by State, Major Forestry Practice Category and Compliance Rate, 2007

State	Major Category Forestry Practice Category						BMP Training-Education Program	Formal BMP Monitoring Program	BMP Compliance Rates
	Streamside Management	Stream Crossings	Forest Roads	Waste Disposal	Chemicals and Fertilizers	Harvesting and Reforestation			
North:									
Connecticut	YES	YES	YES	YES	NO	YES	YES	NO	NA
Delaware	YES	YES	YES	YES	YES	YES	YES	YES	95% to 99%
Illinois	YES	YES	YES	NO	YES	YES	NA	NO	NA
Indiana	YES	YES	YES	YES	YES	YES	YES	YES	85% to 97%
Iowa	YES	YES	YES	YES	YES	YES	YES	NO	25% to 50%
Maine	YES	YES	YES	YES	YES	YES	YES	YES	72% to 90%
Maryland	YES	YES	YES	NO	NO	YES	YES	YES	75% to 90%
Massachusetts	YES	YES	YES	YES	YES	YES	YES	YES	75% to 90%
Michigan	YES	YES	YES	YES	YES	YES	NA	NO	NA
Minnesota	YES	YES	YES	YES	YES	YES	YES	YES	40% to 85%
Missouri	YES	YES	YES	NO	YES	YES	YES	YES	NA
New Hampshire	YES	YES	YES	NO	NO	YES	YES	NO	NA
New Jersey	YES	YES	YES	NO	YES	YES	NO	NO	NA
New York	YES	YES	YES	YES	NO	YES	YES	YES	59% to 88%
Ohio	YES	YES	YES	YES	NO	YES	YES	NO	70% to 90%
Pennsylvania	YES	YES	YES	NO	NO	YES	YES	NO	NA
Rhode Island	YES	YES	YES	YES	YES	YES	YES	YES	NA
Vermont	YES	YES	YES	NO	NO	YES	YES	YES	70% to 90%
West Virginia	YES	YES	YES	NO	NO	YES	YES	YES	61% to 100%
Wisconsin	YES	YES	YES	YES	YES	YES	YES	YES	86% to 98%

Continued….

Table 8E (continued)

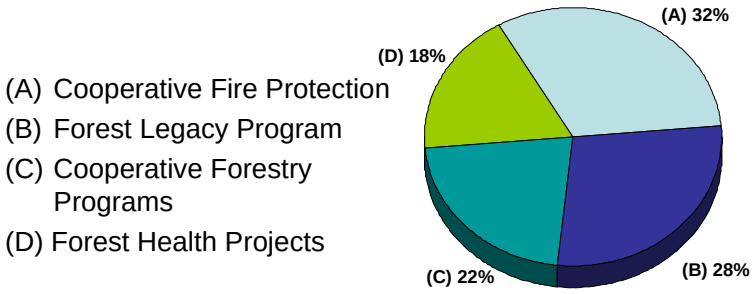
State	Major Category of Best Management Practice						BMP Training-Education Program	Formal BMP Monitoring Program	BMP Compliance Rates
	Streamside Management	Stream Crossings	Forest Roads	Waste Disposal	Chemicals and Fertilizers	Harvesting and Reforestation			
South:									
Alabama	YES	YES	YES	YES	YES	YES	YES	YES	93% to 97%
Arkansas	YES	YES	YES	YES	YES	YES	YES	YES	84% to 96%
Florida	YES	YES	YES	YES	YES	YES	YES	YES	94% to 100%
Georgia	YES	YES	YES	YES	YES	YES	YES	YES	81% to 100%
Kentucky	YES	YES	YES	YES	YES	YES	YES	YES	50% to 60%
Louisiana	YES	YES	YES	YES	YES	YES	YES	YES	70% to 96%
Mississippi	YES	YES	YES	YES	YES	YES	YES	YES	77% to 93%
North Carolina	YES	YES	YES	YES	YES	YES	YES	YES	40% to 85%
South Carolina	YES	YES	YES	YES	YES	YES	YES	YES	78% to 96%
Tennessee	YES	YES	YES	YES	YES	YES		YES	80% to 90%
Virginia	YES	YES	YES	YES	YES	YES	YES	YES	35% to 90%
West:									
Oregon	YES	YES	YES	YES	YES	YES	YES	YES	79% to 100%
Washington	YES	YES	YES	YES	YES	YES	YES	YES	70% to 90%

Note: NA indicates not available. New Hampshire and Pennsylvania do not provide recommendations for managing streamside management zones, although they do recommend limiting soil disturbance in such zones. In some cases, a formal monitoring program is not in place and compliance rates are estimates prepared by agency staff. Also, although a monitoring program many be in place, its design and implementation is sufficiently flawed so as to prevent judgment about compliance rates.
Source: National Association of State Foresters (2005), National Council for Air and Stream Improvement (2007), Wear and Greis (2002), and state government personnel responsible for state forestry programs, and state best management practice monitoring (audit) reports.

9.0 NON-REGULATORY INITIATIVES

With forest ownership predominantly private, the federal and state governments have long been engaged in various programs directed at landowners to encourage conservation, protection of water quality, wildlife habitat, forest retention and other sustainable forestry practices. In 2007, federal investment in cooperative fire protection, cooperative forestry and related programs approached $130 million, distributed programmatically as shown in ***Figure 9a***. About 22 percent of state forestry budgets are supported by these federal programs, although this percentage varies widely by state. At the higher end, they represent 58 percent of forestry budgets in Connecticut and New York, while at the lower end they account for only 4 percent of budgets in Florida, Oregon and Washington (***Table 9A***).[55]

Figure 9a: Federal Funding of Cooperative Forestry Programs



While housed in various departments (Agriculture, Natural Resources, Environment, etc.), every state has an agency with responsibilities for forestry programs. Collectively, these agencies are represented at the national level through the National Association of State Foresters (NASF). Supplementing the federal contribution (and usually exceeding it), state governments make significant investments in forests within the hardwood producing region, both in terms of staff and funding. The state governments employ over 10,000 forestry personnel and in 2004, expended nearly $937 million ***(Tables 9B and 9C***). About half of these investments (54 percent) was focused on fire prevention and control with the balance distributed for landowner assistance, forest health, watershed protection and a diversity of other programs. State service or extension foresters have helped prepare forest stewardship plans on 9.3 million hectares, implemented forest legacy projects on 445,000 hectares and, in 2006 alone, provided 144 thousand technical assists to landowners (***Table 9D***).[56]

Each state in the hardwood region has a program that provides technical assistance on forest practices to landowners either directly or through extension agents employed by the universities. In addition, forests figure into the activities of numerous state agencies beyond the lead state forestry agency. More than 1,000 government entities (variously identified as agencies, bureaus, offices, departments, commissions or councils) have responsibilities for public

[55] National Association of State Foresters, 2007.
[56] National Association of State Foresters, 2007.

programs focused on forest resources, including hardwood forests.[57] These government entities administer more than 650 non-regulatory programs whose purposes ranged from tax incentive initiatives to technical assistance programs and from educational programs to land trust programs (***Table 9E***). Non-regulatory programs that influence forest practices can be grouped into the following categories:

(1) Extension-education programs
(2) Technical assistance programs
(3) Fiscal incentive programs
(4) Land trust and easement programs
(5) Tax incentive programs

9.1 Extension and Technical Assistance

In most states, education and technical assistance programs are the preferred approaches for accomplishing resource objectives of protecting water quality, improving timber harvesting, promoting reforestation, conserving wildlife, reducing impacts from wildfire and invasives and enhancing recreational/aesthetic opportunities. Of the nearly 650 non-regulatory programs reportedly implemented by state government in the Hardwood States, the extension-education programs are most common, followed by fiscal incentives (***Table 9E***). In most states, state personnel provide technical assistance to landowners through informational materials, by sponsoring demonstrations, assisting with management plan preparation and often by providing marketing and utilization assistance. A major federal-state partnership is the Renewable Resources Extension program which has a significant presence in promoting the sustainability of hardwood forests. The 2007 federal financial contribution to that program alone in the hardwood-producing region totaled nearly $2.5 million (***Table 9F***). In 1999, the program sponsored more than 225 staff years of effort within the region distributed as follows: timber productions 37 percent, environmental quality – 16 percent, timber utilization – 20 percent, and continuing education of natural resource professionals – 13 percent (14 percent other areas).

9.2 Fiscal Incentives

Fiscal incentives are used as a policy tool to offset costs associated with forest and conservation investments. Some of these programs are federally-funded; some are funded at the state level. Typically cost-share programs provide a payment to offset the cost of reforestation or afforestation projects, often to address a wide range of forest resource benefits such as wildlife habitat improvement, riparian habitat and productivity.[58] In the hardwood region, 16 states have cost-share programs for reforestation and/or forest conservation practices (***Table 9G***). Preliminary data from the 2006 National Woodland Owners Survey indicate that 523,000 family forest owners representing 19 million hectares (18% of family forest area) have participated in cost-share programs.[59] Their motives for doing so varied widely. Tree planting, for example, requires significant capital expenditure without financial return for very long periods of time, often 60-80 years or beyond. Fiscal incentives can encourage landowners to make these long-

[57] Ellefson et al. 2001 and 2004.
[58] Natural Resources Conservation Service, 2007 and Wear and Greis, 2002.
[59] Butler, 2007.

term investments, investments they might not otherwise.[60] By providing financial payments to offset or reduce these large initial capital outlays, landowners can increase their return on investment and at the same time provide a variety of important goods and services desired by the public in general.

9.3 Land Trusts and Conservation Easements

Land trusts and conservation easements are another example of non-regulatory programs that are used by state governments and private concerns in the hardwood producing region. Among the more widely known that have a direct focus on forest resources is the federally-funded Forest Legacy Program (FLP). FLP supports fee simple acquisition or acquisition of development rights on environmentally sensitive private lands through conservation easements that require sustainable forestry practices, and protect other values. Through 2006, the FLP has protected over 550,000 hectares of forests within the hardwood producing region (***Table 9H***). The hardwood-producing states account for over 70% of the total area captured in the FLP. Conservation organizations and land trusts also sponsor and fund conservation easements. In 2006, an estimated 5.1 million hectares of non-industrial forests were protected, although how much of that is hardwood forest is difficult to determine.[61] With the addition of large blocks of formerly forest industry lands placed under easements in recent years, the total forest area covered by conservation easements is almost certainly much higher.

9.4 Conclusions

State governments operate a plethora of non-regulatory programs focused on promoting the use, management and protection of forests within the hardwood producing region. These programs are widely acknowledged as a complement to each other and to regulatory programs in general. They have evolved over time with stakeholder influence and as society's needs and values have changed. While disagreements exist on substance and objectives, most stakeholders regard state programs as vitally important to the sustainability of hardwood forests and to those that use them.

Some non-regulatory programs are extensions of requirements under federal laws. For example, every state as a program to implement Best Management Practices to reduce water quality impairment quality from non-point sources such as forest practices. As described in the section dealing with regulatory programs, BMPs are often voluntary in many states. Discussed in other sections of this report are other forms of non-regulatory programs coordinated by or with active participation by state governments. They include occupational certification and training, and forest certification (of state lands).

When considered in their totality, state non-regulatory programs meaningfully contribute to a legal and institutional framework that places a high importance on sustainable forestry and helps to ensure the legality of US supplies.

[60] Sampson and DeCoster, 1997
[61] Butler, 2007

References:

Bailey, P.D., H.L. Haney, D.S. Callihan, and J.L. Greene. 1999. Income Tax Considerations for Forest Landowners in the South: a Case Study on Tax Planning. Journal of Forestry 97(4): 10-15.

Bullard, S. H. and T. J. Straka. 1998. Structure and Funding of State-Level Cost-Share Programs. Northern Journal of Applied Forestry 5(1998): 132-135.

Butler. Brett. 2007. National Woodland Owners Survey (NWOS), 2006. Publication in process.

Cooperative State Research, Education and Extension Service. 2007. FY: 2007 Funding Allocations, Renewable Resources Extension Act. Washington, DC: Cooperative State Research, Education and Extension Service, U.S. Department of Agriculture.

Ellefson, P. V., C. M. Hibbard, M. A. Kilgore and J. E. Granskog. 2005. Legal, Institutional, and Economic Indicators of Forest Conservation and Sustainable Management: Review of Information Available for the United States by GTR SRS-82. Asheville, NC: Southern Research Station, Forest Service, U.S. Department of Agriculture. 2005.

Ellefson, P. V., M. A. Kilgore, C. M. Hibbard and J. E. Granskog 2004. Regulation of Forestry Practices on Private Land in the United States: Assessment of State Agency Responsibilities and Program Effectiveness. Staff Paper No. 176. St. Paul, MN: Department of Forest Resources, University of Minnesota.

Ellefson, P. V., R. J. Moulton, and M. A. Kilgore. 2001. Public Agencies and Bureaus Responsible for Forest Management and Protection: An Assessment of the Fragmented Institutional Landscape of State Governments in the United States. Journal of Forest Policy and Economics 5(2003): 2007-223.

National Association of State Foresters. 2007. State Forestry Statistics. Washington, DC: National Association of State Foresters. Available at: http://www.stateforesters.org/SFstats.html [Date Accessed: September 2007].

National Association of State Foresters. 2005. State Non-Point Source Pollution Control Programs for Silviculture: 2004 Progress Report. Washington, DC: National Association of State Foresters. 35 p. (plus appendices). Available at: http://www.stateforesters.org/pubs/WRCSurvey2005/NASFWRCFinalSurveyReport.pdf [date accessed: October 2007].

Natural Resources Conservation Service. 2007. Conservation Programs. Washington, DC: Natural Resources Conservation Service, U. S. Department of Agriculture. http://www.nrcs.usda.gov/NRCSProg.html. [date accessed: November 2007].

Peters, D. M., Haney, H.L., Jr., and Greene, J. L. 1998. The Effects of Federal and State Death and Gift Taxes on Nonindustrial Private Forest Lands in the Midwestern States. Forest Products Journal 48(9): 35-44.

Purdue University. 2002. Tax Management for Timberland Ownership. National Timber Tax. Lafayette, IN: Purdue University. http.://www.timbertax.org. [date accessed: October 2007].

Sampson, R. N., and L. A. DeCoster 1997. Federal Programs for Private Forestry: A Reader on Programs and Options. Forest Policy Center. Washington, DC: American Forests

Wear, D. N., and J. G. Greis. 2002. Southern Forest Resource Assessment. GTR-SRS-53. Southern Research Station. Asheville, NC: Forest Service, U. S. Department of Agriculture.

Table 9A: USDA Forest Service Investment in State Cooperative Forestry Programs in the US Hardwood Producing Region, by State and Program Area, 2006/2007

State	Forest Land Area (thousand. ha)	Federal Investment in State Cooperative Forestry Programs (thousand dollars)					
		Cooperative Fire Protection	Cooperative Forestry Programs	Forest Health Management	Forest Legacy Program	Total	Percent of State Forestry Budget (2006)
East							
Connecticut	726	232	374	299	38	943	58%
Delaware	155	202	319	126	2,030	2,677	41%
Illinois	1,832	643	1,073	148	38	1,902	31%
Indiana	1,914	515	553	123	1,040	2,231	14%
Iowa	1,166	678	438	184	39	1,339	44%
Maine	7,155	1,082	637	316	4,242	6,277	16%
Maryland	1,039	584	1,036	728	19	2,367	25%
Massachusetts	1,284	943	624	206	2,537	4,310	40%
Michigan	7,830	1,692	948	1,917	3,505	8,062	12%
Minnesota	6,600	1,668	1,171	529	790	4,158	6%
Missouri	5,930	1,082	876	158	27	2,143	13%
New Hampshire	1,964	299	500	220	3,040	4,059	36%
New Jersey	863	1,184	578	1,891	40	3,693	58%
New York	7,558	1,419	1,849	351	30	3,649	20%
Ohio	3,196	836	808	398	40	2,082	18%
Pennsylvania	6,711	1,329	1,173	1,267	37	3,806	12%
Rhode Island	144	194	310	77	3,185	3,766	34%
Vermont	1,855	232	525	541	28	1,326	35%
West Virginia	4,861	637	859	776	30	2,302	29%
Wisconsin	6,526	1,659	1,255	389	40	3,343	12%
Total	69,308	17,110	15,906	10,644	20,775	64,435	20%
							0%
South	9,187	1,508	971	980	1,210	4,669	12%
Alabama	7,623	1,378	838	954	25	3,195	17%
Arkansas	6,537	1,838	1,133	1,398	2,275	6,644	4%
Florida	10,034	1,744	1,272	1,790	2,275	7,081	12%
Georgia	4,846	1,265	853	289	25	2,432	29%
Kentucky	5,758	1,601	832	360	0	2,793	13%
Louisiana	7,522	1,553	820	810	25	3208	10%
Mississippi	7,468	1,726	1,065	1,681	25	4,497	10%
North Carolina	5,160	1,535	807	928	5,025	8,295	17%
South Carolina	5,862	1,452	901	313	0	2,666	16%
Tennessee	6,383	1,542	1,122	552	254	3,470	15%
Virginia	76,383	17,142	10,614	10,055	11,139	48,950	14%
Total							0%
							0%
West							0%
Oregon	12,338	3,755	783	1,340	15	5,893	4%
Washington	8,955	3,370	1,452	926	3,606	9,354	4%
Total	21,293	7,125	2,235	2,266	3,621	15,247	4%
							0%
TOTAL	8,987	41,377	28,755	22,965	35,535	128,632	22%

Note: For some states, Forest Legacy Program allocations adjusted downward to more appropriately depict federal share (percent) of total state forestry budget (in 2006) (Delaware, Indiana, Maine, Massachusetts, Michigan, New Hampshire, Rhode island, Alabama, Florida, Georgia, South Carolina, Virginia, Washington, and total percent).
Source: National Association of State Foresters (2007) and federal government personnel responsible for state cooperative forestry programs.

Table 9B: Forestry Personnel Employed by State Governments in the US Hardwood Producing Region, by State and Major Personnel Category, 2007

State	Professional and Managerial	Technical-Administrative Personnel	Total	State	Professional and Managerial	Technical-Administrative Personnel	Total
North				*South*			
Connecticut	20	310	330	Alabama	110	220	330
Delaware	14	11	25	Arkansas	80	272	352
Illinois	35	19	54	Florida	338	917	1,255
Indiana	84	53	137	Georgia	108	500	608
Iowa	28	24	52	Kentucky	103	135	238
Maine	46	112	158	Louisiana	94	211	305
Maryland	51	45	96	Mississippi	120	427	547
Massachusetts	36	71	107	North Carolina	115	593	708
Michigan	173	52	225	South Carolina	102	259	361
Minnesota	198	157	355	Tennessee	87	248	335
Missouri	90	138	228	Virginia	128	145	273
New Hampshire	44	5	49	Total	1,385	3,927	5,312
New Jersey	85	30	115				
New York	138	24	162	*West*:			
Ohio	70	76	146	Oregon	587	125	712
Pennsylvania	235	280	515	Washington	754	166	920
Rhode Island	15	14	29	Total	1,341	291	1,632
Vermont	50	18	68				
West Virginia	79	36	115	TOTAL	4,533	5,838	10,371
Wisconsin	316	145	461				
Total	1,807	1,620	3,427				

Source: National Association of State Foresters (2007) and various state agency documents and state government personnel responsible for state forestry programs.

Table 9C: Forestry Program Expenditures (all sources) by State Governments in the US Hardwood Producing Region, by State and Major Expenditure Category, 2004

State	Forestry Program (thousand dollars)					
	Fire Prevention and Control	Cooperative Forestry and Landowner Assistance	Forest Health	Watershed Management and Protection	Other Programs	Total
North						
Connecticut	1,352	480	8	4	799	2,643
Delaware	1,050	365	140	50	410	2,015
Illinois	148	1,877	220	161	3,577	5,983
Indiana	3,976	4,349	362	51	7,002	15,740
Iowa	2,170	2,857	180	*	212	5,419
Maine	9,198	3,373	3,777	64	4,902	21,314
Maryland	2,735	2,720	650	535	2,550	9,190
Massachusetts	1,023	469	331	372	519	2,714
Michigan	19,374	298	556	84	17,033	37,345
Minnesota	40,663	2,508	698	412	5,077	49,358
Missouri	1,580	555	99	16	1,299	3,549
New Hampshire	1,333	28,848	140	*	425	30,746
New Jersey	7,540	486	220	80	1,114	9,440
New York	9,018	1,791	149	600	8,162	19,720
Ohio	732	1,688	130	*	12,019	14,569
Pennsylvania	46,400	1,558	2,730	5,944	2,584	59,216
Rhode Island	775	995	85	5	852	2,712
Vermont	1,469	961	832	30	1,682	4,974
West Virginia	2,865	2,348	3	566	1,350	7,132
Wisconsin	10,975	7,433	2,236	207	21,243	42,094
Total	164,376	65,959	13,546	9,181	92,811	345,873
South						
Alabama	13,629	5,473	1,959	72	2,622	23,755
Arkansas	9,700	7,278	832	243	3,232	21,285
Florida	76,289	2,709	333	109	6,958	86,398
Georgia	30,411	986	162	*	2,437	33,996
Kentucky	5,356	4,934	496	2,978	4,676	18,440
Louisiana	10,602	7,633	519	*	2,812	21,566
Mississippi	17,363	8,794	503	*	2,056	28,716
North Carolina	40,315	7,223	1	255	15,827	63,621
South Carolina	14,964	1,871	798	334	3,231	21,198
Tennessee	13,385	8,254	871	291	2,289	25,090
Virginia	5,526	10,116	673	2,885	6,510	25,710
Total	237,376	65,271	7,147	7,167	52,650	369,775
West						
Oregon	29,612	3,055	2,367	*	89,276	124,310
Washington	77,737	1,123	398	*	17,624	96,882
Total	107,349	4,178	2,765	*	106,900	221,192
TOTAL	509,265	135,408	23,458	16,348	252,361	936,840

Note: Asterisk indicates investment included in other expenditure category. Estimates (based on 2002-2004 information) for Illinois, Maine, New York, Ohio and Arkansas.
Source: National Association of State Foresters (2007) and various state agency documents and state government personnel responsible for state forestry programs.

Table 9D: Outcomes of Forest Resource Programs Initiated by State Governments in the US Hardwood Producing Region, by State and Major Program Area, 2004 - 2006

State	Forest Land Area Subject to (thousand acres) . . .		Forest Legacy Projects (acres through March 2006)	Landowner Technical Forestry Assists (2004)
	Wildfire Protection (2004)	Forest Stewardship Plans (through 2006)		
North				
Connecticut	1,860	60	10,127	147
Delaware	832	49	1,356	775
Illinois	10,670	763	493	8,800
Indiana	7,328	725	5,196	3,920
Iowa	2,700	391	1,124	1,682
Maine	17,833	650	606,208	4,000
Maryland	2,566	325	1,247	1,761
Massachusetts	3,130	313	4,264	2,304
Michigan	24,100	588	360	1,826
Minnesota	47,818	1,375	6,241	2,975
Missouri	39,710	500	0	3,000
New Hampshire	5,700	683	212,139	1,682
New Jersey	3,700	100	4,169	700
New York	18,336	1,751	44,669	2,700
Ohio	5,900	881	0	3,800
Pennsylvania	17,000	393	1,191	8,812
Rhode Island	450	18	1,690	420
Vermont	4,628	341	60,067	1,556
West Virginia	13,087	651	0	5,166
Wisconsin	34,600	2,564	36,009	12,179
Total	261,948	13,121	996,550	68,205
South				
Alabama	22,991	996	10,127	7,670
Arkansas	18,790	600	0	6,697
Florida	30,000	684	1,671	5,902
Georgia	27,200	1,261	13,790	5,831
Kentucky	15,857	1,721	1,536	1,803
Louisiana	19,900	197	0	3,455
Mississippi	18,600	318	0	16,834
North Carolina	16,034	568	6,515	8,991
South Carolina	13,657	934	30,711	1,452
Tennessee	25,668	492	30,356	1,901
Virginia	17,060	1,057	3,959	12,681
Total	225,757	8,828	98,665	73,217
West				
Oregon	15,740	492	0	1,570
Washington	22,900	387	14,795	1,500
Total	38,640	879	14,795	3,070
TOTAL	526,345	22,828	1,110,010	144,492

Note: Estimates of landowner technical assists (based on 1998, 2002 information) for Illinois, Ohio, Maine, Arkansas and Mississippi.
Source: Forest Service (2007b), National Association of State Foresters (2007) and various state agency documents and state government personnel responsible for state forestry programs.

Table 9E: State Government Programs Available for Promoting Appropriate Use and Management of Private Forests in the US Hardwood Producing Region, by State and by Number and Type of Program, 2006-2007

	Extension-Educational Programs	Technical Assistance Programs	Tax Incentive Programs	Fiscal Incentive Programs	Land Trust & Easement Programs
North					
Connecticut	7	2	1*	5	2
Delaware	7	1	2*	7	1
Illinois	5	2	2*	7	2
Indiana	5	2	5	8	2
Iowa	7	1	2	6	1
Maine	9	3	2*	6	4
Maryland	9	2	2*	6	2
Massachusetts	6	3	3*	5	2
Michigan	7	2	2*	6	1
Minnesota	8	2	2*	6	2
Missouri	6	2	1*	7	1
New Hampshire	8	3	2*	6	3
New Jersey	6	2	1*	6	2
New York	6	1	2*	5	1
Ohio	7	3	2*	6	1
Pennsylvania	8	2	1	6	1
Rhode Island	5	1	1*	4	1
Vermont	7	3	1*	5	3
West Virginia	7	3	1*	6	1
Wisconsin	8	2	2*	7	1
South					
Alabama	7	3	1	7	1
Arkansas	7	3	2	8	1
Florida	8	3	1	7	1
Georgia	9	3	2	7	1
Kentucky	7	2	1	6	1
Louisiana	6	3	1	8	1
Mississippi	7	2	1	6	2
North Carolina	8	3	1	9	1
South Carolina	7	3	1	6	1
Tennessee	9	3	1*	9	1
Virginia	9	3	2*	8	1
West					
Oregon	9	4	5	7	3
Washington	10	2	3*	9	2
TOTAL	241	79	59	217	51

Note: Attention directed to major programs focused primarily on forests and administered primarily by state government organizations, although in some cases private programs may be included. Asterisk indicates a forest management plan is a perquisite to participation in certain tax relief programs. Education programs include USDA-Extension Service programs, USDA-Forest Service Conservation Education Programs; Project Learning Tree; Master Logger Program; Project Wild and Project Wet; Arbor Day and Tree City USA Programs; American Tree Farm System; Smokey the Bear forest protection program; and National Firewise Communities.

Source: Ellefson and others (2004 and 2005), Forest Service (2007d), Greene and others (2007) and various state agency documents and state government personnel responsible for state forestry programs.

Table 9F: Renewable Resources Extension Program Funding and Staffing in the US Hardwood Producing Region, by State and Major Extension Program Area, 1999/2007

State	Federal Funding ($ thousands) (2007)	Staff Years by Renewable Resources Extension Program Area (1999)					
		Timber Production	Environmental Quality	Timber Utilization	Continuing Education	Other Areas	Total
North							
Connecticut	46.5	0.0	0.0	0.0	0.0	0.0	0.0
Delaware	57.7	0.0	0.0	0.0	0.1	0.0	0.1
Illinois	55.8	0.3	0.4	0.1	0.8	1.0	2.6
Indiana	52.7	1.6	0.4	0.8	2.3	0.0	5.1
Iowa	46.5	1.0	0.0	0.0	0.0	0.9	1.9
Maine	66.5	1.0	0.5	1.0	1.0	1.0	4.5
Maryland	57.7	0.8	0.8	0.5	0.5	0.1	2.7
Massachusetts	46.5	0.1	0.3	0.1	0.3	0.1	0.9
Michigan	80.3	2.0	1.5	1.5	2.5	0.0	7.5
Minnesota	60.4	0.3	1.3	1.0	0.6	0.7	3.9
Missouri	82.2	5.0	3.2	3.2	0.9	3.0	15.3
New Hampshire	46.5	3.4	2.3	0.8	1.0	2.0	9.5
New Jersey	46.5	1.7	0.1	0.0	0.2	0.0	2.0
New York	92.6	3.0	0.8	1.7	0.7	0.8	7.0
Ohio	66.0	3.3	0.5	2.7	0.0	0.0	6.5
Pennsylvania	88.0	1.8	1.8	1.1	0.7	1.0	6.4
Rhode Island	46.5	0.2	2.0	0.2	0.3	1.5	4.2
Vermont	46.5	1.0	0.0	0.8	0.2	1.0	3.0
West Virginia	70.0	1.5	0.6	2.0	0.3	1.0	5.4
Wisconsin	77.2	1.5	0.6	2.0	1.0	0.3	5.4
Total	1,232.6	29.5	17.1	19.5	13.4	14.4	93.9
South							
Alabama	119.5	2.5	2.0	1.0	1.3	3.0	9.8
Arkansas	96.1	1.5	0.5	0.8	0.8	0.5	4.1
Florida	97.6	1.0	1.0	0.4	0.0	1.0	3.4
Georgia	110.0	5.0	5.5	7.0	2.0	1.0	20.5
Kentucky	80.7	2.7	0.2	2.8	1.5	1.0	8.2
Louisiana	93.0	5.0	0.0	2.0	2.3	0.0	9.3
Mississippi	105.3	16.0	3.0	1.0	1.0	1.0	22.0
North Carolina	106.8	5.0	3.0	4.0	2.0	5.6	19.6
South Carolina	85.3	5.0	0.5	0.5	0.2	0.5	6.7
Tennessee	86.8	1.0	0.1	0.5	0.5	1.0	3.1
Virginia	100.7	2.6	0.4	1.7	1.0	1.5	7.2
Total	1,081.8	47.3	16.2	21.7	12.6	16.1	113.9
West							
Oregon	91.1	4.6	1.0	3.9	2.0	1.0	12.5
Washington	78.8	1.6	1.1	1.0	1.6	1.0	6.3
Total	169.9	6.2	2.1	4.9	3.6	2.0	18.8
TOTAL	2,484.3	83.0	35.3	46.1	29.6	32.5	226.6

Source: Cooperative State Research, Education and Extension Service (2007) and Ellefson and others (2005)

Table 9G: Forestry Cost-share Programs Implemented by State Governments in the US Hardwood Producing Region, 2001

Program Title and Description
• *Alabama Agricultural and Conservation Development Program* (1985): Sixty percent for tree planting, site preparation, and timber stand improvement; funding level – $750,000 per year; funding source – general state revenue.
• *Illinois Forest Development Programs* (1983): Eighty percent for tree planting, site preparation and timber stand improvement; funding level – NA; funding source – 4 percent timber harvest fee.
• *Iowa Woodland Fencing Program* (1985): Fifty percent for fencing of forest land subject to soil loss from grazing; funding level – NA; funding source – general state revenue.
• *Louisiana Forest Productivity Program* (1998): Fifty percent for reforestation and timber stand improvement; funding level – $4.1 million per year; funding source – timber severance tax.
• *Maine Forestry Direct Link Loan Program*: Financial incentive (low interest loan) to encourage increase application of forestry best management practices and use of environmentally friendly logging equipment.
• *Maryland Woodland Incentives Program* (1986): Fifty percent for reforestation and timber stand improvement; funding level – NA; funding source – four to 5 percent tax on wooded lands transferred to nonagricultural use valuations for property taxes.
• *Minnesota Forestry Improvement Program* (1985): Sixty-five percent for fencing and firebreaks and 50 percent for road construction; funding level – NA; funding source – general state revenue.
• *Mississippi Forest Resources Development Program* (1974): Fifty to 75 percent for reforestation and timber stand improvement; funding level – $3 million; funding source – timber harvest tax.
• *Missouri Soil and Water Conservation Program* (1985): Seventy-five percent for tree planting and fencing; funding level – NA, funding source – one-tenth percent sales tax fee.
• *New Jersey Farmland Preservation Program* (1986): Fifty percent for plantation establishment, site preparation and strand improvement; funding level – NA; funding source – state bond fund.
• *North Carolina Forest Development Program* (1978): Forty to 60 percent for tree planting, site preparation and stand improvement; funding level – $2.2 million per year; funding source – timber harvest tax and general state revenue.
• *Ohio Silvicultural Direct Link Loan Program*: Financial incentive (low interest loan) to encourage increase application of forestry best management practices and use of environmentally friendly logging equipment.
• *South Carolina Forest Renewal Program* (1981): Forty percent for reforestation, stand improvement and prescribed burning; funding level – $660,000 per year; funding source – timber harvest tax and general state revenue.
• *Tennessee Reforestation Incentives Program* (1997): Fifty percent for reforestation and timber stand improvement; funding level – $160,000 per year; funding source – real estate transfer receipts.
• *Virginia Reforestation Timberlands Act* (1970): Forty percent for site preparation, tree planting and stand improvement; funding level – $2.2 million per year; funding source – harvest tax and general state revenue.
• *Wisconsin Forest Landowner Grant Program* (1980s): Sixty-five percent for land management plans, tree planting, stand improvement; funding level – NA; funding source – NA.

Source: Bullard and Straka (1998), Meeks (1982), and Wear and Greis (2002).

Table 9H: Forest Legacy Program Purchases in the Hardwood-Producing States, 1997-2006

	Conservation Easements (Ha)	Fee Simple Acquisitions (Ha)	Total (Ha)
North:			
Connecticut	2,529	445	2,974
Delaware	368	314	682
Illinois	200		200
Indiana	2,086	17	2,104
Iowa	439	103	542
Maine	226,256	31,671	257,928
Maryland	505		505
Massachusetts	1,419	129	1,549
Michigan		146	146
Minnesota	3,336	52	3,388
Missouri			
New Hampshire	83,729	717	84,446
New Jersey		2,174	2,174
New York	17,295	733	18,028
Ohio			
Pennsylvania	482		482
Rhode Island	654	30	684
Vermont	574		574
West Virginia			0
Wisconsin	48		48
Total	339,920	36,532	376,452
South:		4,100	4,100
Alabama			
Arkansas		677	677
Florida	4,466	1,117	5,583
Georgia		622	622
Kentucky			
Louisiana			
Mississippi	1,050	342	1,391
North Carolina	4,890	7,544	12,434
South Carolina	1,744	12,934	14,678
Tennessee	770	1,566	2,336
Virginia	5,231	11,701	16,931
Total			
Pacific Northwest:		10	10
Oregon	5,086	798	5,885
Washington	2,059	327	2,387
Total			
Main Hardwood Producing States	347,210	48,560	395,769
US Total	473,438	81,413	554,849
% Represented by Hardwood States	73.3%	59.6%	71.3%

Source: USDA Forest Service

10.0 TAX REQUIREMENTS AND INCENTIVES

10.1 Federal Tax

Tax policy can encourage (or discourage) behavior that leads to production of goods and services provided by hardwood forests. Special tax provisions in the US federal income tax system apply to income derived from certain timber investments. Credits and deductions are also available in some cases for income-producing and investment activities including reforestation and conservation. For example, currently, there is a 10% tax credit and amortization opportunity for the first $10,000 of reforestation expenses incurred by a taxpayer. Nine separate federal tax provisions can make forest management more cost effective.[62] However, tax rules can be complicated depending on a particular taxpayer's situation and the nature of the production or conservation activity. Not all taxpayers avail themselves of the various federal tax provisions on forest management. Suffice it to note that all US taxpayers must file and report income on an annual basis.

All taxpayers are subject to audit and penalties for not reporting or falsifying income. The US Internal Revenue Service applies stiff penalties on tax abusers and interest on late payments. By most accounts, compliance with paying income taxes is high. In 2001, the US Internal Revenue Service estimated that taxpayers paid about 84 percent of the taxes that should have been paid on time and under the law.[63] While US decision-makers frequently deliberate ways to increase the compliance rate, compliance is high by international comparison, according to available studies.[64] There are no data that suggests tax compliance rates among entities and individuals engaged in hardwood timber activities are any different than for the population as a whole.

Other types of federal taxes also affect the use and management of US forests. For example, the US estate and gift tax can affect the transfer and use of forest properties. Currently, the first $2,000,000 of estate value is exempt. Over that amount, tax rates progressively increases. Many argue that estate taxes are not always conducive to sustainable forest management because estates must sometimes sell land or timber prematurely in order to pay estate tax liabilities.

10.2 State Tax

In addition to the federal tax system, states impose various kinds of taxes including income taxes, property taxes and estate taxes. Timber-related taxes usually have one or more basic public purposes including to: encourage private forest landowners to invest in activities that result in increased timber supply and encourage the flow of capital from outside sources into the forestry sector; compensate private forest landowners for the many non-timber values provided by forests from which society as a whole benefit; and provide an equitable basis for

[62] Smith, 2004

[63] The US Internal Revenue Service last estimated the tax gap, i.e. the difference between taxes paid and taxes owed, in 2001. See: http://www.irs.gov/newsroom/article/0,,id=137246,00.html.

[64] See http://www.cato.org/testimony/ct-ce02162007.html.

investment due to the long-term nature of forest investments.[65] While a number of different types of taxation exist, the most common forms impacting forest investment and management decisions within the hardwood producing region are:

> *Income tax*: All but seven states in the US impose income taxes on individuals and corporations. As with federal income tax, provisions can impact forest investments and management.[66]
>
> *Estate tax*: Twenty-nine states in the US impose inheritance taxes. As with the federal estate and gift tax, provisions can have a significant effect on forest investment and management.[67]
>
> *Property tax*: All of the Hardwood States have property tax programs which are often adjusted to discourage conversion of forest land to other uses and to encourage investment in forest management activities (***Table 10A***). Major program types are: current-use programs, ad valorem tax programs, flat tax programs, tax exemption programs, and severance tax programs.[68]

At least 20 states in the hardwood-producing region require a written management plan to be eligible for favorable property tax treatment. For example, Vermont landowners can voluntarily participate in the state's forest tax incentive program, but upon doing so they must adhere to forest practice standards set forth in a management plan (including its implementation) and must agree to periodic onsite inspections. Penalties apply for failure to comply with the agreed to forest practice standards. In Ohio and Minnesota, a prerequisite for favorable treatment of property taxes assigned to private forests requires landowner willingness to comply with a state approved forest management plan or the state's forestry practices guidelines. Failure to do so can result in forfeiture of the tax advantage. In Wisconsin, the Managed Forest Law (MFL), which gives landowners lower property taxes provided they are compliant with management plans, has recently been recognized and third-party audited under the American Tree Farm System certification standard. The Wisconsin program is currently the largest group certification in the US involving some 38,000 family forest owners and 2 million acres. The MFL Group is also in the process of being audited for a group certification under the Forest Stewardship Council (FSC) standard.

10.3 Conclusions

Tax policy is sometimes used to encourage preferred behavior or stimulate investment in forest production and/or conservation. Tree-planting and other conservation activities are given tax preferences in the federal income tax as well as in the income and property tax systems of many states. Tax incentives also encourage landowners to donate to conservation easements or environmentally important forest tracts to conservation organizations. In most states, property taxes on forest properties accommodate its use value and thus encourage forest retention.

[65] Bailey et al, 1999
[66] Bailey et al, 1999
[67] Peters, 1998
[68] Purdue University, 2007

From a legality standpoint, by most measures and perceptions, the US tax system is tightly enforced. The effectiveness of Internal Revenue Service enforcement of tax collections is a subject frequently debated in the US Congress and commented upon in the media. However, there is no reason to believe that there is any significant or pervasive failure to pay tax liabilities on the part of sellers of any timber products sold in or from the US. Export taxes are not an issue as they are not permitted under the US Constitution.

References:

Bailey, P.D., H.L. Haney, D.S. Callihan, and J.L. Greene. 1999. Income Tax Considerations for Forest Landowners in the South: a Case Study on Tax Planning. Journal of Forestry 97(4): 10-15.

Ellefson, P. V., C. M. Hibbard, M. A. Kilgore and J. E. Granskog. 2005. Legal, Institutional, and Economic Indicators of Forest Conservation and Sustainable Management: Review of Information Available for the United States by GTR SRS-82. Asheville, NC: Southern Research Station, Forest Service, U.S. Department of Agriculture. 2005.

Peters, D. M., Haney, H.L., Jr., and Greene, J. L. 1998. The Effects of Federal and State Death and Gift Taxes on Nonindustrial Private Forest Lands in the Midwestern States. Forest Products Journal 48(9): 35-44.

Purdue University. 2002. Tax Management for Timberland Ownership. National Timber Tax. Lafayette, IN: Purdue University. http.://www.timbertax.org. [date accessed: October 2007].

Smith, Nathan Ryan. 2004. Federal Timber Income Taxes and Private Forest Landowners in the US. Master of Science Thesis. Virginia Polytechnic Institute and State University. Blacksburg, Virginia. July 19, 2004.

Wear, D. N., and J. G. Greis. 2002. Southern Forest Resource Assessment. GTR-SRS-53. Southern Research Station. Asheville, NC: Forest Service, U. S. Department of Agriculture.

Table 10A: State Government Forest Property Tax and Severance (Yield) Programs in the US Hardwood Producing Region, 2000

State	Eligibility Requirements				Penalty for Early Withdrawal	Yield or Severance Tax Applicable
	Minimum-maximum Acreage Required	Management Plan Required	Minimum Forest Income Required	Minimum Forestland Stocking Required		
North						
Connecticut	YES	YES	NO	NO	NO	YES
Delaware	YES	YES	NO	NO	YES	NO
Illinois	YES	YES	NO	NO	NO	YES
Indiana	YES	NO	NO	YES	NO	NO
Iowa	YES	NO	NO	YES	NO	NO
Maine	YES	YES	NO	NO	NO	NO
Maryland	NO	YES	NO	NO	YES	NO
Massachusetts	YES	YES	YES	YES	YES	YES
Michigan	YES	YES	NO	YES	YES	YES
Minnesota	YES	YES	NO	NO	YES	NO
Missouri	YES	YES	NO	NO	YES	YES
New Hampshire	YES	YES	NO	NO	YES	YES
New Jersey	YES	YES	NO	NO	YES	NO
New York	YES	YES	NO	NO	YES	YES
Ohio	YES	YES	YES	NO	YES	NO
Pennsylvania	YES	NO	NO	NO	YES	NO
Rhode Island	NO	YES	NO	NO	NO	NO
Vermont	YES	YES	NO	NO	YES	NO
West Virginia	YES	YES	NO	YES	YES	YES
Wisconsin	YES	YES	NO	NO	YES	YES
South						
Alabama	NO	NO	NO	NO	YES	YES
Arkansas	NO	NO	NO	NO	NO	YES
Florida	NO	NO	NO	NO	NO	NO
Georgia	YES	NO	NO	NO	NO	YES
Kentucky	YES	NO	NO	NO	NO	NO
Louisiana	YES	NO	YES	NO	YES	YES
Mississippi	NO	NO	NO	NO	NO	YES
North Carolina	YES	NO	NO	NO	YES	YES
South Carolina	YES	NO	NO	NO	YES	YES
Tennessee	NO	YES	NO	NO	NO	NO
Virginia	YES	YES	NO	YES	YES	YES
West						
Oregon	NO	NO	NO	NO	NO	YES
Washington	YES	YES	NO	NO	YES	YES

Source: Ellefson and others (2005), Wear and Greis (2002), and state government personnel responsible for state forestry programs.

11.0 TRADE ISSUES

11.1 US Hardwood Exports

Since the 1990s, US hardwood exports have steadily increased to reach approximately $2.9 billion in 2007 (***Table 11A***). Over 70% of hardwood exports are value-added products with lumber accounting for nearly half of the total. Canada is the largest single market for US hardwood exports, accounting for 28% of the total in 2007. Other major markets include the EU which accounts for 31% of US hardwood exports and Greater China (China, Hong Kong and Taiwan) which represents 19% (***Table 11B***). Over the past several years, US hardwood exports have been also increasing to developing countries in Southeast Asia and the Middle East.[69]

Hardwood lumber comprises about half of total US hardwood exports in value and are generally of higher grade and quality than those used domestically. White and red oak are the major exported lumber species followed by maple and yellow poplar, although walnut exports have experienced the largest increase over the past five years. Hardwood lumber exports are estimated to represent approximately 13% of the volume and as much as 25% of the value of all US hardwood lumber production. Thus, hardwood lumber exports, as well as exports of all US hardwood products, are economically important to the US. A small volume of tropical hardwood logs and lumber is re-exported from the US (less than one percent of export value), and some tropical species are used in plywood that may be exported.

11.2 Export Taxes

The US Constitution contains a clause that specifically prohibits the imposition of export taxes. The prohibition applies to all exported goods and services. Thus, there is no risk that any US hardwood export has been assessed an export duty that has gone unpaid.

11.3 Wood Export Restrictions

The only significant export prohibition for wood products affects unprocessed logs harvested from state and federal lands west of the 100th meridian.[70] The restriction was put into effect primarily to bolster the processing industries in the western US by reducing the volume of exported logs. Timber harvested from federal lands and state lands cannot be exported in unprocessed form, nor can private timber produced west of the 100th meridian be exported in unprocessed form if it inn effect substitutes for public timber that is restricted. The only hardwood species materially affected by this ban is red alder that is grown and harvested in Oregon and Washington. The majority of red alder produced in the Pacific Northwest is harvested on private lands, so the export ban is of little impact and consequence in terms of the legality of hardwood exports. As far as can be determined, there have been no allegations that red alder logs are being exported in violation of the prohibition of log exports from public lands. Thus, the risk of hardwood logs subject to the ban being exported is extremely low to negligible.

[69] US wood product export data can be accessed and queried at FASonline: http://www.fas.usda.gov/ustrade/

[70] The prohibition was enacted in the Forest Resources Conservation and Shortage Relief Act of 1990. The 100th meridian essentially demarks the western from the eastern half of the US

The US, along with most of its trading partners requires that all solid wood packaging materials (SWPM), such as pallets and crates, be heat treated or fumigated according to International Standards for Phytosanitary Measures Guidelines for Regulating Wood Packaging Material in International Trade (ISPM 15). The regulation requires that SWPM display a visible, legible, and permanent mark certifying treatment. Enforcement of this regulation is the responsibility of the importing governments. There is no legal issue with respect to US exports, only imports. The US enforces the rule for imported solid wood packaging.

Beyond SWPM, many *importing* countries require certification that US wood products meet other phytosanitary requirements. The Plant Protection and Quarantine (PPQ) service of the USDA Animal and Plant Health Inspection Service (APHIS) provides certification of commodities as a service to US exporters. APHIS will issue an export certificate that attests that the products conform to foreign quarantine import requirements. For example, the European Union (EU) requires a phytosanitary certificate for most US shipments of US hardwood logs and lumber certifying that they are bark-free, kiln-dried, or have been fumigated with methyl bromide. As phytosanitary requirements are imposed by the importing country, there is again no legal compliance issue in the US with respect to these exports.

11.4 Export Documentation

Depending on the product and destination, a number of documents may be required to meet either US exporting or country of destination importing requirements (***Table 11C***). All exported shipments require an invoice, bill of lading, and export packing list. The specific form and content of these documents can vary, but the invoice is what is typically used to determine the value of the shipped goods for assessing any applicable duties by the receiving importer. With very few exceptions, exporting wood products from the US does not require any type of export license.[71] While not generally needed for wood products, a Certificate of Origin (CO) may be required because of treaty arrangements, varying duty rates, or preferential duty treatment related to the shipment's origin. Some importers are requesting certificates of origin for wood products as verification for legal and sustainable sourcing. A statement printed on a company letterhead or included on an invoice may suffice for this purpose in many cases. The US government has also available a generic CO form that requires an authorized signature and seal of the local Chamber of Commerce to reinforce the declaration (***Figure 11a***).

Additionally, all US exporters must complete, for each shipment valued over $2,500, a Shipper Export Declaration Form (SED) that details information about the product being shipped, its quantity, value, etc. (***Table 11C***). The SED is used by the US Department of Commerce to statistically record the product classification and value. The majority of the time, this form is completed electronically through the Automated Export System (AES), an electronic data interchange available to approved exporters or agents authorized by the U.S. Bureau of Customs and Border Protection (Customs). Census and Customs have authority to impose monetary penalties ranging from $1,000 per day or $10,000 per violation and imprisonment for failing to file the SED information, filing the information late, or filing it with false or misleading information. While several hundred cases involving reporting failures are referred each year, they are mainly related to national security export controls. It is impossible to know

[71] A few exceptions may exist having more to do with the destination of shipments rather than the product itself.

the extent or frequency of errors contained in SEDs for hardwood product exports, but they are not likely to be significant or meaningful from a legality perspective. As there is likely to be little or no benefit associated with a falsified or incomplete SED filing for a hardwood product, the risk that an improper SED was filed with any given hardwood export shipment is very low.

11.5 Re-Exports of Temperate Hardwoods

The US imports an estimated $2.9 billion of temperate hardwood products in the form of logs, lumber, plywood and building joinery. US trade statistics are not sufficiently detailed to determine the volume of temperate hardwood that may be imported and subsequently re-exported from the US. While some re-exporting undoubtedly occurs, almost always after remanufacturing, the volumes are believed to be relatively small – very likely on the order of less than 5% based on an examination of trade data, interviews with the trade and other information.

The major supplier of US temperate hardwood imports is Canada. As in the US, Canadian wood products are generally perceived as being similarly low risk with respect to illegal logging or harvesting. Canada scores very high on global indices related to good governance and low corruption. The only significant concern is that NGOs have charged that Canadian timber harvests violate rules in some circumstances, and conflicts over aboriginals rights have been (and continue to be) contentious (mostly in the West).[72] These issues receive much media and bureaucratic attention. Stakeholders can (and do) influence government processes that address these issues.

The US has been importing increasing quantities of temperate hardwood lumber, veneer and plywood from China. Russia is also a significant supplier. However, as far as can be determined, very small quantities of these products are re-exported. Some specialty plywood is produced in the US from imported birch veneers and the re-exported to markets in Europe or elsewhere, but the volume is known to be very small.

The US also imports eucalyptus lumber, primarily from South America, but again very little is known to be re-exported. Some imported veneers and lumber may be re-manufactured into plywood and/or flooring products and subsequently exported from the US, but the volumes are believed to be very small. US plywood and flooring exports are comprised mainly of North American species. US wood furniture exports are not considered here, but given the high end of furniture manufactured in the US, they are very likely to be manufactured from North American sources if made from temperate species.

For a product that has been imported into the US and subsequently slated for re-export, APHIS will issue a certification that, based on an original foreign phytosanitary certificate and/or an additional inspection, the plants or plant products officially entered the United States, are considered to conform to the current phytosanitary regulations of the importing country, and have not been subjected to the risk of infestation or infection during storage in the United States.

[72] For example, the Sierra Legal Defence Fund and Earthworks issued a report in 2002 that charged the Ministry of Natural Resources in Ontario of approving clear-cutting in excess of limits in environmental guidelines. (Sierra Legal Defence, 2002).

Finally, legislation is currently pending in the US Congress that would provide additional enforcement tools against imports from illegal sources by prohibiting the importation of wood products that violate foreign laws. Known as amendments to the Lacey Act, the law, if enacted, will require importers to document, for each shipment, the source country and the wood species in the shipment, including species contained in secondary processed products such as wood furniture.

11.6 CITES

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regulates international trade of animal and plant species listed as threatened or endangered because of their scarcity. CITES lists species in one of three appendices based on the degree of needed protection. Approximately 45 timber species or species groups are currently listed under CITES. None of the listed species are native to the US and very few are temperate hardwood species.

Responsibility is shared between US Customs and Border Protection (Customs), the Animal and Plant Health Inspection Service (APHIS) and the US Fish and Wildlife Service (USFWS) for enforcing CITES trade controls. USFWS is the official U.S. CITES management authority. The USFWS issues permits, makes scientific and management determinations, monitors trade and trade impacts, and participates with other CITES signatories in deliberations and decision-making regarding species status and trade.

A CITES certificate of origin or export permit must accompany products listed on Appendix III. US Customs now requires, and USDA issues, general permits for importers regularly engaged in commercial trade of CITES listed species. APHIS inspectors physically examine shipments of CITES listed species and products to determine compliance. They check for the accompanying CITES certificate, ensure that the certificate is valid and certify the imports by stamping the CITES documentation. All CITES documents are transmitted to the USFWS. Several challenges to permitted CITES imports of wood products are currently pending, but they all involve tropical species, most notably big-leaf mahogany (*Swietenia macrophylla*).

A re-export certificate is required for exporting CITES-listed specimens that were previously imported, including items subsequently converted to manufactured goods. While trade in most CITES listed species is legal provided permitting requirements are met, and some tropical species are imported into the US and, in some cases, re-exported, that does not appear to be the case with imported temperate species. As far as can be determined, there have been no recorded re-exports of a CITES-listed temperate timber species and, in any event, no American hardwood species is listed under CITES.

11.7 Conclusions

The US hardwood exports totaled approximately $2.9 billion in 2007 and have generally been increasing over the past five years. Very few legal restrictions are applied to US exports of wood products. The most significant export control is a prohibition against unprocessed log

exports from public lands in the western US. This potentially affects hardwood log exports from Oregon and Washington which are primarily of red alder. However, a review of harvest and trade statistics suggests that less than 3% of red alder log production is exported. Moreover, the literature does not show and we are unaware, of any allegations that red alder or any other hardwood produced in the Pacific Northwest violates the log export ban. Thus the risk that any red alder exports from the US Pacific Northwest violate the export ban is very low to negligible.

Available information also suggests that re-exports of temperate hardwood products represent a very low share of total US hardwood exports and are, in any case, principally sourced in Canada or Europe. Because the volumes are believed to be very small, and the source countries perceived to have robust governance frameworks, the risk that US re-exports of temperate hardwood products are sourced from suspicious sources is very low.

Since no US temperate hardwood species are listed under CITES, compliance with the convention's permitting requirements have little or no applicability to US hardwood exports. The risk of US temperate hardwood exports non-conforming to CITES requirements is very low to negligible.

Finally, several documents (invoice, packing list, bill of laden, SED) are commonly required for exporting. In addition, phytosanitary certificates are often necessary depending on the product and destination. Not usually required for wood products, but occasionally required or requested is a statement of origin (for a CITES-listed product, a CITES Certificate of Origin is required). If enacted, amendments to the Lacey Act will require US importers to provide information about species and country of origin for imported wood products. Similar documentation for US hardwood exports, while not currently required, may offer some assurance of legality and sustainability accompanying US exported shipments.

References

USDA Foreign Agricultural Service, 2006. A Guide to Exporting Solid Wood Products. Forest and Fishery Products Division. Agricultural Handbook No. 662. Revised: October 2006.

USDA Foreign Agricultural Service. US Trade Internet System. FASonline at: http://www.fas.usda.gov/ustrade/

Table 11A: US Hardwood Product Exports, 2003 - 2007

	2003	2004	2005	2006	2007
Hardwood Logs	*thousand dollars*				
White Oak	53,107	75,442	81,518	96,315	204,735
Walnut	52,131	69,703	80,438	90,499	141,422
Red Oak	90,060	119,542	93,489	91,822	104,523
Cherry	84,760	93,884	91,797	101,500	87,251
Maple	87,621	90,795	109,756	95,417	69,738
Yellow Poplar	23,906	28,224	31,629	38,204	50,445
Ash	10,358	13,836	13,573	14,566	33,656
Western Red Alder	6,414	5,016	5,722	5,570	21,031
Birch	19,964	18,352	18,432	13,102	12,442
Paulownia	893	966	804	1,166	845
Beech	504	414	216	63	104
Other Temperate	57,811	53,529	61,685	69,883	79,789
Tropical	344	136	247	302	808
Total All Species	487,872	569,840	589,305	618,410	806,787
Hardwood Lumber					
White Oak	272,407	328,955	347,377	376,773	339,050
Red Oak	261,891	280,128	225,810	221,003	196,068
Maple	166,661	194,126	222,413	240,216	180,266
Yellow Poplar	90,493	113,500	106,646	155,980	156,745
Other Temperate	126,372	122,219	144,195	161,213	125,963
Walnut	59,007	69,170	72,756	92,663	111,279
Cherry	114,920	127,187	125,614	120,861	92,763
Ash	69,384	79,815	81,239	85,544	87,860
Western Red Alder	83,483	103,054	121,257	108,071	77,917
Hickory	8,874	9,216	9,535	12,477	17,718
Birch	13,834	14,386	11,503	13,515	14,877
Beech	3,966	3,337	3,654	3,698	2,817
Tropical	13,057	13,960	13,546	26,484	18,055
Total All Species	1,284,349	1,459,053	1,485,545	1,618,498	1,421,378
Hardwood Veneers	416,046	467,717	442,840	428,245	446,687
Hardwood Plywood	66,986	73,976	72,667	77,646	87,742
Hardwood Flooring	78,174	83,394	92,468	99,364	92,202
Hardwood Molding	16,215	17,248	20,195	24,032	29,421
Hardwood Siding	2,121	2,904	3,098	6,560	1,657
Hardwood Chips	45,744	45,279	47,518	53,278	54,079
Total - Hardwood Products	2,397,507	2,719,411	2,753,636	2,926,033	2,939,953

Source: US Census Bureau

Table 11B: Destination of US Hardwood Exports by Product and Major Region, 2007

	Lumber	Logs	Veneers	Plywood	Flooring	Molding	Siding	Chips	All Hardwood Products	% of Total
	thousand dollars									
EC - Total	436,848	284,372	193,037	2,531	4,946	532	127	1,561	923,954	31.4%
Italy	111,314	58,874	30,046	433	213	253	0	344	201,477	6.9%
Spain	83,503	48,235	54,613	109	46	0	0	292	186,798	6.4%
United Kingdom	64,404	41,561	5,747	186	607	62	49	21	112,637	3.8%
Portugal	34,923	23,626	10,197	0	111	72	0	115	69,044	2.3%
Germany	31,542	51,523	53,946	753	559	11	71	211	138,616	4.7%
Ireland	20,125	8,107	3,535	0	252	26	0	0	32,045	1.1%
Sweden	16,757	5,671	3,068	763	2,319	0	0	17	28,595	1.0%
Belgium-Luxembourg	16,482	7,727	14,392	40	0	20	0	0	38,661	1.3%
Greater China	263,998	248,773	44,514	2,232	4,664	490	0	3,671	568,342	19.3%
Southeast Asia	127,974	51,943	14,569	1,213	525	119	0	20	196,363	6.7%
North America - Total	468,196	148,958	163,816	72,648	77,716	27,110	1,338	28,690	988,472	33.6%
Canada	369,796	135,361	143,978	56,191	77,085	25,247	165	28,669	836,492	28.5%
Mexico	98,402	13,597	19,838	16,457	631	1,863	1,173	21	151,982	5.2%
South/Central America	26,562	3,507	4,692	7,488	1,685	688	98	2,103	46,823	1.6%
Other Regions	97,800	69,234	26,059	1,630	2,666	482	94	18,034	215,999	7.3%
TOTAL	1,421,378	806,787	446,687	87,742	92,202	29,421	1,657	54,079	2,939,953	100.0%

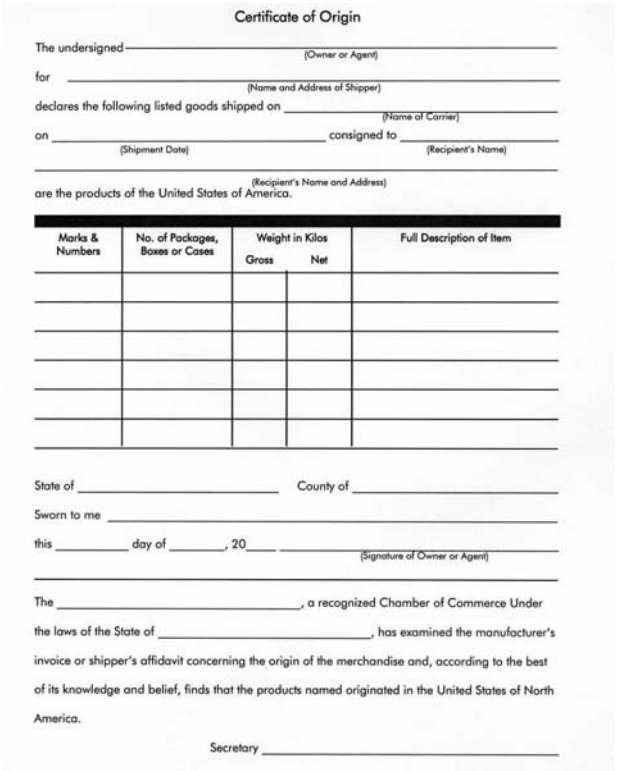
Source: US Census Bureau

Table 11C: Shipping Documents Required for US Exports

Documentation	Prepared by
Export License – issued upon application to the U.S. Department of Commerce. Currently no export license is required for exporting solid wood products with the exception of Western red cedar.	Exporter
Destination Control Statement – prevents export to unauthorized destinations	Freight Forwarder
Shipper's Export Declaration (SED) – for compiling U.S. statistics/enforcing U.S. export controls	Freight Forwarder
Banking Papers	Freight Forwarder
Letter of Transmittal – for items eligible for duty drawback	Freight Forwarder
Notice of Exportation – for items eligible for duty drawback	Freight Forwarder
Certificated of Origin – for items eligible for duty drawback	Freight Forwarder
Export Packaging List – itemizes products shipped	Freight Forwarder
Domestic Packaging List – itemizes products shipped	Exporter
Insurance Certificate	Freight Forwarder
Pro Forma Invoice – a formal price quotation with a detailed account of individual costs	Exporter
Letter of Credit – a promise to pay a specific amount of money upon receipt by the bank at the buyer's request in favor of the seller	Importer
Bill of Lading – a detailed description of the cargo including destinations. Two types are necessary, an inland and an ocean bill of lading	Freight Forwarder
Phytosanitary Certificate – a certificate stating that the goods are free of disease and infestation	APHIS

Source: USDA FAS, 2006. A Guide to Exporting Solid Wood Products. US Department of Agriculture Foreign Agricultural Service, Forest and Fishery Products Division. Agricultural Handbook No. 662. Revised: October 2006

Figure 11a: Generic Certificate of Origin Form with Verifying Signature



Certificate of Origin

The undersigned _____ (Owner or Agent)

for _____ (Name and Address of Shipper)

declares the following listed goods shipped on _____ (Name of Carrier)

on _____ (Shipment Date) consigned to _____ (Recipient's Name)

_____ (Recipient's Name and Address)

are the products of the United States of America.

Marks & Numbers	No. of Packages, Boxes or Cases	Weight in Kilos Gross	Weight in Kilos Net	Full Description of Item

State of _____ County of _____

Sworn to me _____

this _____ day of _____, 20____ _____ (Signature of Owner or Agent)

The _____, a recognized Chamber of Commerce Under the laws of the State of _____, has examined the manufacturer's invoice or shipper's affidavit concerning the origin of the merchandise and, according to the best of its knowledge and belief, finds that the products named originated in the United States of North America.

Secretary _____

Source: Available at: http://www.export.gov/static/cert_of_origin_generic.pdf

12.0 FSC CONTROLLED WOOD STANDARD ASSESSMENT

ASSESSMENT OF THE HARDWOOD PRODUCING REGIONS OF THE UNITED STATES FOR COMPLIANCE WITH THE FOREST STEWARDSHIP COUNCIL CONTROLLED WOOD STANDARD

12.1 Background

The FSC Controlled Wood standard was written to ensure that wood coming from poor forestry practices is not mixed with FSC-certified wood and included in wood products that carry the claim of "FSC Mixed Sources." The standard, FSC-STD-40-005, applies to the non-certified portion of mixed products and states that wood should be avoided that presents high risk of: 1) illegally harvested wood; 2) wood harvested in violation of traditional or civil rights; 3) wood harvested in forests where high conservation values are threatened by management activities; 4) wood harvested in forests being converted to plantations or non-forest use; and 5) wood harvested from forests where genetically modified trees are planted.

The policy calls for a risk-based assessment, where forest products coming from areas where there is low risk to the five categories could be considered "controlled" and usable in products certified as coming from FSC Mixed Sources. Some guidance is provided in Annex 2 of the standard for how to conduct the risk assessment and sources that can be used for data and evidence. This section of the report addresses the five risk categories of the Controlled Wood standard by conducting a risk assessment for the hardwood-producing regions of the US This area is referred to as the study area. The risk assessment was conducted by referencing existing reports and assessments of the study area conducted by field experts. Determinations of risk were then made based on the research.

The Standard, FSC-STD-40-005, applies to all Chain of Custody (CoC) certificate holders who use a proportion of non-FSC certified wood in any product labeled or claiming to be from FSC Mixed Sources or traded between businesses as FSC Controlled Wood. The Controlled Wood standard was developed in order to ensure that products bearing the FSC label did not contain wood harvested from the most socially and environmentally destructive forestry practices. The Controlled Wood standard is what applies to the non-certified proportion of wood used in a product labeled as an FSC mixed source or that is used in business-to-business transactions of FSC Controlled Wood.

12.2 General Methodology

The FSC Controlled Wood standard is an international measure to ensure that wood used by an FSC-certified company does not include unwanted wood sources. Compliance with the Standard is done by risk assessment. Wood that comes from areas where there is low risk of illegal harvest and sale, respect for traditional and civil rights, protection of High Conservation Value Forests (HCVF), no trend of conversion from natural forests, and no use of GMOs in forest management can be designated as "low risk". Wood that comes from areas where there is a lack of evidence in support of the indicators, then the areas are considered to be "not low risk" and certificate holders must develop a verification program to demonstrate that their wood sources are "low risk". Details of these requirements can be found in Annex 3 of FSC-STD-40-005.

All five categories of the Controlled Wood standard are subject to some level of interpretation by the FSC, the CoC certificate holder, and the auditor. Every CoC certificate holder is required to develop a company verification program that applies a risk-based approach to avoid unacceptable sources.[73] Details of methodologies for each particular risk category (legality, violation of rights, HCVF, conversion, and GMO use) can be found within each category below (sections 12.3-12.7).

The FSC Controlled Wood standards are therefore based on a stepped approach to avoiding unacceptable sources. In the first step the buyer must identify the general area (district) from which the wood is sourced. This district is then classified as being either "low risk" or "not low risk" with respect to each of the FSC Controlled Wood categories.

If the area is determined to be low risk for all categories, then no further evaluation is required and the wood source can be considered to be controlled. Only if the area is "not low risk" for one or more categories it is necessary for the buyer to seek verification at the level of the particular forest management unit that the wood complies with the requirements of the standard.

The assessment we perform addresses hardwood extraction from all states adjacent to and east of the Mississippi River, plus Oregon and Washington. The following steps are required for making a Controlled Wood assessment:

1. Identify the general area from which wood is sourced (county or zip code, or equivalent, is ideal but less precise information such as state of origin can work).
2. Determine if each area is "low risk" or "not low risk" by making an assessment of the risk criteria found in Annex 2 of FSC-STD-40-005 (Standard for Company Evaluation of FSC Controlled Wood).
3. For areas that are found to be "not low risk", verify that the source meets the criteria found in the FSC-STD-30-010 (FSC Controlled Wood Standard for Forest Management Enterprises).

12.3 Illegally Harvested Wood

The Controlled Wood Standard (FSC-STD-40-005 v2-1) states:

1. The district of origin may be considered low risk in relation to illegal harvesting when all the following indicators related to forest governance are present:
1.1 Evidence of enforcement of logging related laws in the district
1.2 There is evidence in the district demonstrating the legality of harvests and wood purchases that includes robust and effective systems for granting licenses and harvest permits.
1.3 There is little or no evidence or reporting of illegal harvesting in the district of origin.
1.4 There is a low perception of corruption related to the granting or issuing of harvesting permits and other areas of law enforcement related to harvesting and wood trade.

[73] A company verification program is not necessary if the CoC holder is purchasing from another CoC certificate holder with FSC Controlled Wood included in its certificate scope.

FSC requires that the wood used in products containing the FSC label is harvested in a legal fashion. Legality has been hard to define for the FSC. Forestry laws are not consistent across political borders. Further, illegal logging varies in both depth and breadth. For example, a large percentage of harvests in a region could be found to have many minor infractions that have little impact on forests or communities while in other districts, there could be relatively few infractions, but be to a level that they lead to irreparable harm to communities and forests. FSC has stated that the goal for this criterion is to avoid wood from areas where systematic illegal logging takes place, and systematic illegal logging is unlikely in areas of "good" governance. Thus, controlled wood can be purchased from areas determined (by the purchaser and auditor) to be of sound legal structure and wood purchased from high risk areas would have to be accompanied by documentation demonstrating legality.

12.3.1 Assessment of the Study Area

Reference can be made to other sections of this report specifically addressing legal use rights and legality of hardwood products in the hardwood-producing region. A company can make a determination of risk of non-certified wood based on if the wood comes from an area where there is low risk for systematic illegal logging or if the wood is accompanied by credible documentation of its legality. Based on available data and information obtained through surveys and interviews, there are concerns about timber theft in many areas of the US. However, incidents of timber theft or trespass more often than not involve small numbers of trees and the volume very likely represents only a small proportion of the total volume of hardwood timber produced. Furthermore, the US is generally regarded as a having good governance with respect to rule of law, level of corruption and regulatory enforcement (see sections 3.1 and 3.2 of this report).

The determination of illegality in the context of the FSC Controlled Wood standard is subjective. FSC assumes that the determination will be based on an understanding of the global perspective to establish what level of risk is acceptable and what is not. Clearly there is some illegal aspect of logging in every country.

While in some developing nations illegal logging refers to major operations involving road construction and hundreds of acres harvested without permission, in the US illegal logging generally refers to logging activities that impact small acres usually with existing access. As a general rule, the term illegal logging is not as commonly used in the US as are the terms timber theft, tree poaching, and unlawful logging. Although unlawful takings of timber occur, the scale of the activity is usually not large enough to be of import in assessing the wood procurement of a major forest enterprise or be considered to contribute to a violation of civil or traditional rights.

Furthermore, the United States is not identified as a country with issues related to illegal harvesting in any of the sources of information referenced in FSC-STD-40-005 section B.1, and the evidence compiled by the World Bank indicates that the US is recognized for effective governance and regulatory quality.[74]

[74] World Bank, 2006.

12.3.2 Conclusions

We conclude that the study area is ***LOW RISK*** in relation to the risk of illegal harvesting through compliance with Criteria 1.1-1.4. This determination is based on the following:

(1) The evidence suggests that, while timber theft occurs, illegal logging is not a systemic problem in the study area and various enforcement and adjudication processes exist for government agencies and private landowners to seek redress; and

(2) The US is a country recognized for good governance.

This assessment incorporates a global perspective. There are cases of illegal logging of many sorts including timber theft and logging in violation of local and national laws. The FSC Controlled Wood standard leaves the determination of risk of illegal logging open to interpretation and since the standard is a global standard, the assessment is concluded at a global level, using global assessments to determine risk of illegality.

12.4 Violation of Traditional and Civil Rights

The Controlled Wood Standard (FSC-STD-40-005 v2-1) states:

2. The district of origin may be considered low risk in relation to the violation of traditional, civil and collective rights when all the following indicators are present:
2.1 There is no UN Security Council ban on timber exports from the country concerned;
2.2 The country or district is not designated a source of conflict timber (e.g. USAID Type 1 conflict timber);
2.3 There is no evidence of child labor or violation of ILO Fundamental Principles and Rights at work taking place in forest areas in the district concerned;
2.4 There are recognized and equitable processes in place to resolve conflicts of substantial magnitude pertaining to traditional rights including use rights, cultural interests or traditional cultural identity in the district concerned;
2.5 There is no evidence of violation of the ILO Convention 169 on Indigenous and Tribal Peoples taking place in the forest areas in the district concerned.

The requirement for Controlled Wood is to avoid wood that is associated with civil rights issues such as child labor, slave labor, conflict timber (wood that is harvested and sold to finance civil war), UN Security Council bans, conflicts of ownership rights (traditional use, spiritual use, and cultural identity), and violations of ILO Convention 169.

Determination of risk is based on evidence that the wood does not originate from areas where there is a UN Security Council ban, where conflict timber is an issue, where there is evidence of child or slave labor, where there is no equitable process of conflict resolution for issues surrounding traditional and cultural rights, and where there is no evidence of systematic violation of use rights, cultural interests or traditional cultural identity (as in ILO Convention 169).

As in legality, the determination of risk is subjective and contingent upon a global perspective of the issues in order to make a judgment based on the relative risk of these issues

and their impacts on local culture and society. A key component of determining risk in the Criterion is assessing if a country or region has structures and processes for resolving traditional and cultural rights that are accepted by indigenous peoples, workers, communities and government.

12.4.1 Assessment of the Study Area

Within the study area there is no UN Security Council ban on timber exports, the areas are not designated as a source of conflict timber, and child labor does not occur systematically. Forest employment in the US is regulated under federal and state laws and codes, which prohibit child labor and are consistent with the ILO Fundamental Principles and Rights at work. In addition, the US is recognized as having equitable processes in place to resolve conflicts of substantial magnitude pertaining to traditional rights including use rights, cultural interests or traditional cultural identity.

Indigenous people in the US are a diverse group, encompassing 556 federally recognized tribes. In the study area, American Indians with a land base are recognized as Sovereign Nations and accorded rights to manage their land and affairs. 48 federally recognized tribal organizations in the study area have significant timberland resources. While it is difficult to determine the exact status of the forest resources on these lands, assessment of Indian forest management in the United States indicates that significant progress has been made toward closing the gap between tribal goals for their forests and the ways they are managed.[75]

There are different mechanisms or processes that allow Native American tribes, as well as any private citizen, to deal with disagreement and conflict related to decisions affecting natural resources, and forests in particular that are considered to equitable. These include: lawsuits at both the state and federal level; scoping and public comments within the National Environmental Policy Act (NEPA); initiatives of the federal and state governments to collaborate with local and tribal communities; coalitions that allow interested parties to advocate for specific positions; consultations between designated representatives of the federal and tribal governments; and, lobbying directly with legislators and government entities.

12.4.2 Conclusions

We can conclude that wood procured from the study area is LOW RISK in relation to threat of violation of traditional and civil rights through compliance with Criteria 2.1-2.5. The determination is based on the following:

(1) Within the US hardwood producing regions there is no UN Security Council ban on timber exports, the areas are not designated as a source of conflict timber, federal and state laws and codes prohibit child labor and are consistent with the ILO Fundamental Principles and Rights at work. In addition, the US has recognized and equitable processes in place to resolve conflicts of substantial magnitude pertaining to traditional rights including use rights, cultural interests or traditional cultural identity.

[75] Intertribal Timber Council. 2003.

(2) National Forests in the US have a clear and detailed process for conducting timber sales that includes consultation with all potentially affected communities, tribal nations and other civil society groups. While there may be conflict over these sales, the appeals process is transparent and available to all parties.

(3) There are equitable processes and mechanisms in place that allow Native American tribes, as well as any private citizen, to deal with disagreement and conflict related to decisions affecting natural resources and forests.

It is important to keep in mind that this assessment incorporates a global perspective. There are, from time to time, reported cases of human rights violations including within the timber industry. The FSC Controlled Wood standard leaves the determination of risk of violation of these rights open to interpretation and since the standard is a global standard, the assessment is concluded at a global level, using global assessments to determine risk. In a global context, the study area is low risk of threat of violation of these rights.

12.5 Threat to High Conservation Values (HCVs)

The Controlled Wood Standard (FSC-STD-40-005 v2-1) states:

3. The district of origin may be considered low risk in relation to threat to high conservation values if: a) indicator 3.1 is met; or b) indicator 3.2 eliminates (or greatly mitigates) the threat posed to the district of origin by non-compliance with 3.1.
3.1 Forest management activities in the relevant level (eco-region, sub-eco-region, local) do not threaten eco-regionally significant high conservation values.
3.2 A strong system of protection (effective protected areas and legislation) is in place that ensures survival of the HCVs in the ecoregion.

It is very important to note that there are two paths for an area to be classified as low risk for threat to HCVs. First, wood that originates from an area that is not of ecoregionally significant high conservation value can be considered low risk. Second, wood that originates from a region (e.g. state, nation), even ones where significant high conservation values are present, can be considered low risk if a strong system of protection that ensures environmental and cultural conservation is in place. A strong system of protection includes a strong legal system, protected areas, conservation easements, and other conservation mechanisms. Wood that originates from an area that is both identified as High Conservation Value Forest (HCVF) and does not have a strong system of protection is classified as “not low risk”.

In the US there are federal legal structures that influence conservation values (e.g. the Clean Water Act, Endangered Species Act, National Historic Preservation Act, and Resource Conservation and Recovery Act). However, although these structures address components of HCVF such as individual endangered species, water quality, and particular historic sites, they do not capture the entirety of HCVF, which includes concepts such as environmental intactness, rare assemblages of species, and areas of cultural and social importance. For this reason, and to conduct a robust assessment of HCVs in the US the strategy in this assessment is to identify the HCVF in the area of study, determine the level of threat forest operations present, and, if necessary, investigate the level of protection afforded to the HCVF at an ecoregional level.

12.5.1 Interpretation of the Requirements

High Conservation Value Forests (HCVF) is a term coined by the FSC to include those forests that contain important biodiversity (endemic species, rare or endangered ecosystems, and intact landscape-level forests) or that are important for environmental services (erosion control or watershed protection) or that are important for human needs (cultural, economic, or religious). The Controlled Wood standard states that wood coming from management activities that threaten "ecoregionally significant" conservation values must be avoided in FSC labeled products.

Timber extraction in ecoregions that have higher densities of High Conservation Values (HCVs) will have, in general, a higher risk associated with threat to those HCVs than timber extraction in ecoregions with lower densities of HCVs. Following that logic, presumed risk is elevated in areas identified by conservation organizations as priority due to significant accumulations of HCVs. These include high measures of biodiversity, high measures of endemism, unique assemblages of species, habitat for concentrations of endangered species, or the quality of the landscape as a large and intact landscape-level forest. According to the FSC Controlled Wood standard[76], examples of sources of information for determination of risk include:

- Those regions identified by Conservation International as a Biodiversity Hotspot (or) those ecosystems and communities that are explicitly identified by Conservation International as a key component of a Biodiversity Hotspot.
- Those forest, woodland, or mangrove ecoregions identified by World Wildlife Federation as a Global 200 Ecoregion and assessed by WWF as having either an endangered or critical conservation status. If the Global 200 Ecoregion comprises more than a single terrestrial ecoregion, an ecoregion within the Global 200 Ecoregion can be considered low risk if the sub-ecoregion is assessed with a Conservation Status other than "critical/endangered."
- Those regions identified by the World Conservation Union (IUCN) as a Centre of Plant Diversity.
- Those regions identified by Conservation International as a High Biodiversity Wilderness Area that are forests or contain contiguous forest ecosystems greater than 500 km2.
- Those regions identified by the World Resources Institute as a Frontier Forest.
- Those forests identified by the World Resources Institute as a Low Access Forest tract larger than 500km2 or identified by Greenpeace as an Intact Forest Landscape.

The intent of Criterion 3.1 is to ensure that large-scale logging does not pose risk to forest areas that are a global, regional, or national high conservation priority. The intent, however, is not necessarily to eliminate logging from these areas. For example, well-managed forests can provide both habitat security and a proactive conservation effort for these areas – especially in areas where major threats to ecoregions are not forestry-based (e.g. agricultural conversion, urban and suburban development, mineral extraction, etc.).

The second intent of Criterion 3.1 is to ensure that large-scale logging does not pose a risk to the cohesion of the large, landscape-level forests that represent or are part of native, large-scale ecosystems with limited direct human impact. These forests represent habitat for native species in historically natural or nearly natural patterns of distribution and abundance. This includes habitat for both species populations that require large land tracts and for those that are sensitive to human activities and human-caused forest fragmentation. Logging in these areas must be determined to be of no reasonable threat to the qualities stated above that define these

[76] Hoekstra et al, 2005.

forests. The term "large, landscape-level forests" is defined in the glossary of the standard (FSC-STD-40-005).

Criterion 3.2 is included in the controlled wood standard to recognize that in many regions of the world strong systems are in place to protect global environmental conservation priorities. If Criteria 3.1 cannot be met, or it is determined that it is more difficult for a certificate-holder to measure compliance with Criterion 3.1, compliance with Criterion 3.2 can demonstrate that a district or region may be considered low risk for HCVF threat.

The intent of Criterion 3.2 is to ensure that comprehensive legal systems and effective enforcement are both present to regulate the "survival of the globally significant concentrations of biodiversity values, ecosystems, and/or services of nature present." However, in the context of the US, a "strong protected areas system," as stated in Criterion 3.2 of the Controlled Wood standard, is not representative of the entirety and efficacy of the legal system. A system of other environmental laws may actually lead to the meeting the intent of the Criterion. This includes legislation such as the Endangered Species Act and environmental protection measures such as the Clean Air Act and the Clean Water Act. These laws may provide sufficient biodiversity value protection within the preserves, parks, wilderness areas, and conservation easements to long term protection of the values of concern.

A strong protected areas system is one in which a high proportion of the landscape, the biological diversity, and ecosystems are protected physically or through legal mandates from conversion, over-exploitation of resources, and destructive extraction practices. Highest level protection comes from areas that ensure maintenance of a natural state and processes (e.g. National Parks, Wilderness Areas, Preserves). The proportion protected in full protection schemes can be augmented by less-stringent protection that may allow multiple uses but explicitly does not allow the extraction or conversion that affects key species or ecosystems (e.g. State Parks, National Wildlife Refuges, and National Recreation Areas, forests enrolled in land trusts).

12.5.2 Assessment of the Study Area

To provide a robust assessment of the study area, ecoregions of high conservation value were identified using guidance from the FSC standard, threats to these ecoregions were identified, and these ecoregions were flagged for further assessment relating to their conservation levels. Conservation levels were assessed using GAP-style assessments of protection (percentage of land base in different protection schemes). Additionally, threat to each ecoregion was referenced to an index of "crisis level" where the ratio of protected area to converted area was used as an index of conservation concern.[77]

To determine HCVFs in the study area, global assessments for conservation priority were referenced, including Conservation International (CI) Biodiversity Hotspots and High Biodiversity Wilderness Areas, WWF Global 200 Ecoregions, IUCN/Smithsonian Centres of Plant Diversity, WRI Forest Frontiers, and Greenpeace Intact Forest Landscapes. There was no overlap between CI High Biodiversity Wilderness Areas and WRI Frontier Forests and the study area, so these designations are not included further in the assessment (see ***Figures 12b – 12e***).

[77] Hoekstra et al, 2005.

Please note that since these referenced conservation priority schemes use WWF ecoregional delineations, for this section of the report, we conducted the assessment using WWF delineations. There are analogous TNC/USFS ecoregional delineations that share many similar properties and it is highly likely that the delineations used resulted in no differences in the outcomes of the study (Figure 12a displays the USFS ecoregions delineations).

12.5.3 Identification of HCVF in the Study Area

Through assessment of CI Biodiversity Hotspots and High Biodiversity Wilderness Areas, WWF Global 200 Ecoregions, Smithsonian/IUCN Centres of Plant Diversity, WRI/Global Forest Watch Frontier Forests, and Greenpeace Intact Forest Landscapes, the ecoregions were tagged for containing high densities of high conservation values and, thus, were flagged for further investigation. ***Table 12A*** presents an overview of the relationship between the conservation schemes presented in the FSC Controlled Wood Standard and the study area. It shows the ecoregions that have been flagged for containing a concentration of High Conservation Values (HCVs) and thus required further analysis as potentially high risk for threat to HCVF. All of the ecoregions were then assessed for levels of protection and compliance with Criterion 3.2. of the FSC Controlled Wood Standard.

Table 12A: Ecoregions flagged for containing a concentration of High Conservation Values (HCVs) and thus requiring further analysis as potentially being high risk for threat to HCVF. All of the ecoregions were subsequently assessed for levels of protection and compliance with Criterion 3.2. of the FSC Controlled Wood Standard.

Ecoregion Name	WWF G200	CI Hotspot	SI/IUCN CPD	WWF Assessment	Flagged to assess at Criterion 3.2
Klamath-Siskiyou Coniferous Forests	Klamath-Siskiyou Conifer Forests	California Floristic Province	California Floristic Province; NA Serpentine Flora	Critical/ endangered	Yes
Central Pacific Coastal Forests	Pacific Temperate Rainforests	None	None	Critical/ endangered	Yes
British Columbia Mainland Coastal Forests	Pacific Temperate Rainforests	None	None	Critical/ endangered	Yes
Appalachian Mixed Mesophytic Forests	Appalachian Mixed and Mesophytic Forests	None	None	Critical/ endangered	Yes
Appalachian-Blue Ridge Forests	Appalachian Mixed and Mesophytic Forests	None	NA Serpentine Flora	Vulnerable	Yes
Southeastern Mixed Forests	Southeastern Conifer and Broadleaf Forests	None	None	Critical/ endangered	Yes
Southeastern Conifer Forests	Southeastern Conifer and Broadleaf Forests	None	Central Highlands of Florida	Critical/ endangered	Yes
Florida Sand Pine Scrub	Southeastern Conifer and Broadleaf Forests	None	Central Highlands of Florida	Critical/ endangered	Yes
Everglades	Everglades Flooded Grasslands	None	None	Vulnerable	Yes
South Florida Rocklands	Everglades Flooded Grasslands	None	None	Critical/ endangered	Yes

12.5.4 Summary -- Protection of Biodiversity-Based HCVF in the Study Area

The protected area assessment was conducted through consulting with published conservation assessments, GAP analyses, and publications of protected areas.[78] Each ecoregion was investigated for area under:

- Protection: IUCN protected areas categories I-VI. Category VI, the least protective of accepted categories is defined by IUCN as follows[79]:
  Category VI: ***Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural resources*** – area containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while also providing a sustainable flow of natural products and services to meet community needs.
- Converted: areas calculated to be converted from the natural habitat type (ECJRC as reported in Hoekstra 2005).[80]

Table 12B presents an overview of the protection between the conservation schemes presented in the FSC Controlled Wood Standard and the study area. It shows the ecoregions that have been flagged for containing a concentration of High Conservation Values (HCVs) and thus potentially as being high risk for threat to HCVF. All of the ecoregions were then assessed for levels of protection and compliance with Criterion 3.2. of the FSC Controlled Wood Standard using a crisis classification methodology. The Everglades and South Florida Rocklands ecoregions were combined for this assessment due to the lack of available data on the levels of protection for these ecoregions individually. In this case the two were combined and the quantification of converted and protected areas is based on the very closely aligned and analogous USFS delineated Tropical Florida ecoregion.

Table 12B: Overview of the protection between the conservation schemes presented in the FSC Controlled Wood Standard and the study area.

Ecoregion Name	Percent Protected	Percent Converted	Crisis Classification[81]	Risk to HCVF
Klamath-Siskiyou Coniferous Forests	62.4%	4.3%	None	Low
Central Pacific Coastal Forests	25.4%	2.5%	None	Low
British Columbia Mainland Coastal Forests	18.5%	0.4%	None	Low
Appalachian Mixed Mesophytic Forests	14.1%	14.8%	None	Low
Appalachian-Blue Ridge Forests	31.8%	26.5%	None	Low
Southeastern Mixed Forests	4.9%	26.4%	Vulnerable	Low
Southeastern Conifer Forests	7.5%	30.0%	Vulnerable	Low
Florida Sand Pine Scrub	27.8%	32.2%	None	Low
Everglades and South Florida Rocklands*	61.0%	28.4%	None	Low

[78] Hoekstra, et al, 2005; Conservation Biology Institute, 2003a; Conservation Biology Institute, 2002; and WDPA Consortium, 2004.
[79] IUCN, 2002.
[80] Hoekstra et al, 2005 and ECJRC, 2002.
[81] Hoekstra et al, 2005.

The Crisis classification is a ratio of the converted area in an ecoregion to the level of protection of the ecoregion and ranges from "*vulnerable*" to "*endangered*" to "*critical*".[82] All ecoregions that have a ratio less than that of "vulnerable" were not classified (stated as "none" in the above table). The use of this index as a measure of protection is very valuable for this assessment given that for the most part, conservation in the US depends on the habitat provided from unprotected areas as well as protected areas. Since there is no magic percentage that each ecoregion would need in a protected area system for protection of its HCVs, this assessment provides an objective and relational comparison of protection to a prominent indicator of HCV threat. It is very important to note that the index reflects the conditions in 2005 and could change over short periods of time due to changes in legislation and land use.

All ecoregions flagged above and the risk determinations are discussed in more detail in Appendix A. The only two ecoregions that were identified in this protection phase of the assessment were the Southeastern Mixed Forests and Southeastern Conifer Forests (both of which are part of the WWF Southeastern Broadleaf and Conifer Global 200 ecoregion. Both of these ecoregions were classified as vulnerable (i.e. the lowest category in the classification – other than not classified).

Forest management in the Southeastern Conifer Forests ecoregion can be considered low risk because the major threats identified to the HCVs in the ecoregion have been identified as fire suppression, highway development; urban sprawl, suburban development, and introduced species. If the loss of natural forest cover due to conversion is a risk issue, it will be uncovered in the following section directly related to conversion. Forestry is not mentioned as a threat to ecoregional conservation values in the WWF assessment, and **it could be argued that promoting forestry as a viable land use will help preserve the HCVs associated with forests**.[83]

A similar argument is presented for the Southeastern Mixed Forests ecoregion. Conversion to agriculture for growing tobacco and peanuts was the primary threat to the ecoregional values when the forests were converted long ago.[84] However, forestry was identified as a threat in the WWF assessment because there are few remaining natural forests, and most of the significant remaining forest blocks are in National Forests, where they are can be subject to logging. However, due to the current climate of national forest management in the Southeastern Mixed Forests, wood coming from this ecoregion can be considered low risk (see Appendix A for more discussion). ***Figures 12f – 12j*** display federal land ownership in the Pacific Northwest and Southeast with a high degree of protection.

12.5.5 Other Ecoregional HCVs

The Mississippi Lowland Forests ecoregion is not recognized by any of the international assessments presented in the Controlled Wood standard for high levels of HCVs, and through narrow interpretation of the standard, can be considered low risk. However, it should be noted that WWF has assessed the conservation status of the ecoregion to be *critical/endangered* [85] and it has been noted to have insufficient levels of protection with high levels of conversion.[86]

[82] Hoekstra et al, 2005.
[83] World Wildlife Fund, 2001a.
[84] World Wildlife Fund, 2001b.
[85] World Wildlife Fund, 2001c.
[86] Hoekstra et al, 2005.

Logging continues to be noted as a threat in the Mississippi bottomland forests and more robust compliance with the standard could be achieved through guarded procurement from this ecoregion.

The Willamette Valley Forests ecoregions are also not recognized by any of the international assessments presented in the Controlled Wood standard for high levels of HCVs. However, it also was assessed to be in *critical/endangered* [87]and to have insufficient levels of protection with high levels of conversion.[88] Forestry is not considered a threat to the ecoregional HCVs and, therefore, procurement from this ecoregion is Low Risk.

12.5.6 Identification and Protection of Large, Landscape Level HCVFs

There are no forests identified by WRI as Frontier Forests in the study area.[89] Greenpeace has identified multiple Intact Forest Landscapes in the study area including areas in Washington, Oregon, Minnesota, New York, North Carolina, Tennessee, Georgia, and Florida.[90]

Assessment of these forest areas revealed that each of these areas was protected nearly in its entirety in highest level protection schemes (e.g. wilderness areas). For example, Intact Forest Landscapes in New York were entirely within the Adirondack Park, in North Carolina and Tennessee they were all within the Great Smokey Mountains National Park Wilderness, and in Georgia they were all within the Okefenokee National Wildlife Refuge Wilderness. Details of the assessment can be found in Appendix B. It is clear that harvest activities pose little threat to HCVF determined by the Intact Forest Landscapes designation.

12.5.7 Conclusions

We conclude that the study area can be considered LOW RISK in relation to threat to High Conservation Values through compliance with Criterion 3.1 and/or Criterion 3.2 (see item 3). The determination is based on the following:

(1) There are ten ecoregions in the study area that are determined to have high concentrations of biodiversity values as defined by WWF Global 200 Ecoregions, Conservation International Biodiversity Hotspots, and Smithsonian/IUCN Center of Plant Diversity designations.

(2) The flagged ecoregions are the Klamath-Siskiyou Coniferous Forests, Central Pacific Coastal Forests, British Columbia Mainland Coastal Forests, Appalachian Mixed Mesophytic Forests, Appalachian-Blue Ridge Forests, Southeastern Mixed Forests, Southeastern Conifer Forests, Florida Sand Pine Scrub, Everglades, and the South Florida Rocklands ecoregions. There is strong evidence through assessments of protect areas in the ecoregions that the notable biodiversity values of these ten ecoregions are at a low level of threat due to studies assessing the levels of protection in ecoregions (see Appendix A for further information).

[87] World Wildlife Fund, 2001c and 2001d.
[88] Hoekstra et al, 2005.
[89] Bryant, 1997 and World Resources Institute, 2007.
[90] Greenpeace, 2006a and Greenpeace. 2006b.

(3) The Southeastern Mixed Forests and Southeastern Conifer forests were classified as vulnerable through the protected areas assessment (less than critical or endangered). WWF Identified threats to the Southeastern conifer forests include development, fire suppression, and exotic species and did NOT include forestry. Identified threats to the Southeastern Mixed Forests included forestry due to the fact that the most noted remnants of native forest exist on National Forest Service land. Recent changes in Forest Service management of these areas that are not captured in the referred to assessments indicate that wood coming from this ecoregion can be considered low risk to HCVs. Despite the Low Risk determination, threat can be further mitigated with guarded procurement from this ecoregion.

(4) Further investigation of the Appalachian Mixed Mesophytic Forests ecoregion establishes that this ecoregion has a level of protection that reduces threat to HCVF. Not only is there a high percentage of the land under a conservation scheme, this percentage is increasing in volume and effectiveness with new conservation initiatives in the Cumberlands area of the ecoregion. A recent (2007) collaborative conservation project in the Cumberlands Plateau resulted in conservation of 128,000 acres of the area. An index of protection versus threat indicates that the area is relatively stable and forestry was not identified as the primary threat to the HCVs of the ecoregion.

(5) The Florida Sand Pine Scrub and South Florida Rocklands ecoregions were identified by WWF to be in "*critical/endangered*" conservation status, but this designation was not due to forestry activities. The most prominent threat to the ecoregional HCVs is development. Additionally, the areas contain a relatively high level of protection and an index of threat of "*none*" (less than vulnerable).

(6) None of the areas which make up the study area are included in assessments of large landscape-level forests by WRI/Global Forest Watch Frontier Forests.

(7) There are multiple sites of Greenpeace identified Intact Forest Landscapes in the study area and these sites are nearly entirely incorporated into the highest level protection, including National Park and National Forest Wilderness Areas (see Appendix B for details).

Our conclusion is based on the determination that areas determined to be of highest biodiversity value according to WWF, CI, and Smithsonian/IUCN are all relatively well protected. Additionally, those areas that were determined to hold large, landscape-level forests were exceptionally well-protected. The level of legislative protection, combined with the levels of compliance with regulations (see the sections on regulatory compliance elsewhere in this study) provide strong evidence that logging and the associated activities with logging pose a mitigated threat to HCVF within the study area. This is a subjective statement, but the FSC Controlled Wood standard is open to a broad interpretation of determination of HCVF and of what constitutes adequate protection.

This assessment incorporates a global perspective. There are likely locally important areas in all ecoregions that are not assessed in this report. The FSC Controlled Wood standard leaves the determination of HCVF open to a broad interpretation and since the standard is a global standard, the assessment is concluded at a global level, using global assessments to determine HCVF areas and using global indices to determine levels of protection.

12.6 Threat of Conversion

The Controlled Wood Standard (FSC-STD-40-005 v2-1) states:

> *4. The district of origin may be considered low risk in relation to conversion of forest to plantations or non-forest uses when the following indicator is present: [NOTE: the change from plantations to other land uses is not considered as conversion].*
> *4.1 There is no net loss AND no significant rate of loss (> 0.5% per year) of natural forests and other naturally wooded ecosystems such as savannahs taking place in the eco-region in question.*

The FSC definition of plantations is:

> *Forest areas lacking most of the principal characteristics and key elements of native ecosystems which result from the human activities of either planting, sowing or intensive silvicultural treatments*

Conversion, and its use in FSC-STD-40-005, is interpreted to be a direct, human-induced land-cover change from forest to non-forest. Conversion does not include natural or non-human-induced processes such as volcano eruptions, desertification, lowering of the water table, eustatic change, erosion, etc. Conversion results in change of use and management of naturally forested land to agriculture (including plantations, crops, animal husbandry, industry, and urban and suburban development). This is consistent with its interpretation in the FSC Principles and Criteria and in its use in standards for certification.

This means that plantings can be, and often are considered to be natural forests. For example, longleaf pine plantings in the southeast are likely being managed for long rotations and for restoration purposes. Since this is a native species and the plantings are restoring a natural forest, such a planting is not considered to be a plantation.

The term, “trend of net loss of natural forest cover” needs to be interpreted for temporal, spatial, and statistical ambiguities before it can be functionally and consistently measured. Temporally, the interpretation of the intent of the Criterion is such that “net loss of natural forest cover” is measured over a relatively short, but multi-year time frame. Thus, the trend should be measured over the recent history, optimally over a five-year or ten-year period, or at the availability of data and assessment. For example, the net loss of forest cover over New England states since the 1600s is not of concern for this assessment.

12.6.1 Assessment of the Study Area

Data for the assessment were provided by the US Forest Service Forest Inventory and Analysis Data Center.[91] Data were provided at the point level and then grouped by ecoregion. Although there may be substantial error and variation involved in the data at the point level, by

[91] www.ncrs2.fs.fed.us/4801/FIADB/index.htm

grouping the data points together we minimize the standard error associated with our estimates. The number of points included in ecoregional assessments ranged in forested ecoregions from 1,021 to 49,129. Original FIA Data for Oregon and Washington were unusable due to recent changes in collection methods. In these cases, FIA technicians working for the Forest Service provided resampling of the data for this report in a manner that allowed sound estimation of forest cover trends. For the Pacific Lowlands Mixed forests and Cascade Mixed Forest--Coniferous Forest--Alpine Meadow ecoregions (242 and M242 in Washington and Oregon), the assessments were conducted at a finer scale to accommodate FIA data issues particular to these areas.

US Forest Service Ecoregions were used to assess risk for conversion due to the availability of data on forest cover change over time.[92] US Forest Service ecosystem districts or provinces meet the elements of this definition. A risk assessment at the district level would be valid to assess the criterion for conversion; however, for this risk assessment, the analysis was performed at the finer or province scale.

The data were re-projected from Lambert Azimuthal Equal Area to Decimal Degrees using ArcTools (need citation from ESRI). Baileys Province level ecoregion polygons were derived from the data set and, using ArcView with XTools, intersected with ESRI USA County polygon shapes to determine the counties that fall into each of the USFS Bailey Ecoregion provinces. Counties with less than 75,000 acres falling inside of the ecoregion boundary were excluded in order to eliminate most of the situations where the majority of a county would be best characterized as part of the neighboring ecoregion. The resulting county list was forwarded to the USFS Forest inventory & Assessment lab for processing in a custom SQL query to derive, by Ecoregion, State and major forest-type-group the beginning inventory for natural forest and planted forest, and an ending inventory for natural forest and planted forest.

There is some disparity between the FSC definitions for natural and plantation forests and the definitions used by the USFS in categorizing forestland. For example, in the US South hardwood plantings are virtually all of a restoration nature rather than for the purpose of single-species high-yield fiber farming. Past efforts to create hardwood high yield plantations have been effective. Therefore, planted hardwood and oak-pine acres found in the data were considered to be natural forests.

Negative trends in natural forest cover were found for about half of the ecoregions in the study area, but only two, the Pacific Lowland Mixed Forests and the Everglades, were found to be above the risk threshold of 0.5% annual loss. See ***Table 12C*** for calculations for all ecoregions in the study area. The most significant hardwood species exported from forests in the Pacific Northwest is red alder. While the FIA data show a decline in forest area above the FSC Controlled Wood threshold in a portion of its range, they show an increase in forest area in the red alder supply region as a whole.[93] Thus, for red alder specifically, the forest loss rate is not likely to be as significant as for some softwoods and other, mostly non-commercial, hardwood species. Similarly, in the Everglades, little or no commercial hardwood is produced. Thus the forest loss experienced in that ecoregion is likely to be of less significance for hardwood than for softwood.

[92] ECJRC, Institute for Environment and Sustainability, 2002.

[93] Although not specifically applicable to the FSC Controlled Wood Standard which is based on forest area per ecoregion, FIA data also show a significant increase over the past two decades in growing stock volume of red alder across its range.

12.6.2 Conclusions

We conclude that only two of the ecoregions in the study area do not meet the ecoregional threshold (0.5% annual decrease in forest cover) to be determined LOW RISK in relation to threat of conversion through compliance with Criterion 4.1. They are:

(1) The Everglades (located in Southern Florida) is determined to be NOT LOW RISK

(2) The Pacific Lowlands Mixed Forests (located in Western Washington and Oregon. Only the Puget Trough ecosection (also known as the Puget Lowland Forests) in this ecoregion is determined to be NOT LOW RISK. The Willamette Valley Forests section can be considered LOW RISK.

The determinations are based on the following:

Ecoregions in the study area that are determined to have rates of loss of natural forest cover higher than the threshold 0.5% are considered NOT LOW RISK, as established in the standard.

A more robust Controlled Wood Assessment of any wood sourced from the aforementioned ecoregions would include implementing steps outlined in Annex 3 of FSC-STD 40-005. In evaluating hardwood sourcing specifically from these ecoregions, additional information should be taken into account. In the Everglades area of Florida, little or no commercial hardwood is produced. One major species of potential concern that is marketed in conjunction with hardwoods is cypress (technically a softwood species but sold into hardwood markets). The volume of cypress commercially produced and exported is very small, very likely less than 1 percent of timber produced in Florida. This should be considered in assessing the risk under 4.1 of the standard.

The Pacific Lowlands Mixed Forests ecoregion (242) is located in western Washington and Oregon. Since standard FIA data were unusable in the ecoregion, conversion in the province was investigated at the section level with the assistance of USFS FIA technicians. The province comprises two sections in the US (the Puget Trough in the north and the Willamette Valley in the south. These are discussed below.

Non-National Forest lands were surveyed in the Puget Trough section in 1989 and again in 2000. National Forest and other public land in the ecoregion were estimated to have no forest loss. Net loss of (natural) forest land across the section, including all public and private ownerships, was estimated at 170,000 acres over the eleven year period, equaling 0.74% annual loss of natural forest cover.[94]

Given the evidence that this is higher than the low risk threshold set by FSC, there are risk mitigation considerations that could accompany a risk assessment for hardwood purchases from within the Puget Trough ecosection. The most significant hardwood species exported from the Puget Trough is red alder. While the range of red alder overlaps broadly with the Puget Trough, as well as the Pacific Lowland Mixed Forests province and the adjacent province

[94] Personal communication with Andrew Gray, USDA Forest Service PNW Station, 2008.

(M242), most is grown and harvested in managed timber stands. The most recent published studies of timber resource statistics grouped for all counties in the eastern and western portions of Washington show only minor reductions in forest (or timberland) area between the late 1980s and the early part of the current decade.[95] In addition, approximately 20% of the red alder in western Washington is produced from state lands, not at risk of forest conversion.

The State of Washington has comprehensive forest practice rules. Under the regulations, harvest permit applications require that any forest conversions conform to growth management plans and thus require that the permit be subject to both state and local county approval. This additional information should be considered in assessing the risk under 4.1 of the standard.

The Oregon portion of the Pacific Lowlands Mixed Forests ecoregion is the Willamette Valley. The US Forest Service, jointly with the Oregon Department of Forestry published an assessment of land use in Western Oregon spanning from 1973 to 2000 and found that there was less than 0.1% annual loss of forest cover during that time span and most of that occurred in the 1970s.[96] A similar assessment for eastern Oregon showed only slight losses of forest area (less than FSC Controlled Wood threshold of 0.5% annually) during the period between 1986 and 2001.[97] Additionally, research into the Willamette Valley sub-ecoregion indicates that over the past ten years, the Willamette Valley portion of the ecoregion has experienced a loss of forest cover of less than 0.5% annually.[98]

To pursue FSC certification or to supply wood to companies asking if wood can be considered to be low risk under the FSC Controlled Wood standards, companies operating in the Everglades ecoregion and in the Pacific Lowland Forests ecoregion might consider further analysis to ensure that wood is not sourced from forests being converted from natural stands to other uses. However, given the other considerations noted, the risk in relation to threat of conversion with respect to hardwood is likely to be Low. All of the other ecoregions studied can be considered LOW RISK with respect to hardwood.

12.7 Threat from Genetically Modified Forest Products

The Controlled Wood Standard (FSC-STD-40-005 v2-1) states:

> *5. The district of origin may be considered low risk in relation to wood from genetically modified trees when one of the following indicators is complied with:*
> *a) There is no commercial use of genetically modified trees of the species concerned taking place in the country or district concerned. OR*
> *b) Licenses are required for commercial use of genetically modified trees and there are no licenses for commercial use OR*
> *c) It is forbidden to use genetically modified trees commercially in the country concerned.*

A Genetically Modified Organism is defined in the FSC Principles and Criteria:

[95] Gray et al, 2006 and Gray et al, 2001.
[96] Azuma et al, 2002.
[97] Azuma et al, 2004.
[98] Personal Communication with Dave Azuma, FIA Research Forester, USDA Forest Service, 2008.

Genetically modified organism (GMO). Biological organism which has been induced by various means to consist of genetic structural changes (FSC Principles and Criteria, Feb 2000).

The FSC has determined that the use of GMOs is to be avoided in all products containing the FSC label. FSC's reasoning for this is that there is little known of the risks of creating and cultivating GMO plants and trees. For example, airborne tree pollen is known to be able to travel hundreds of miles – therefore there is risk of gene transfer from GMO plantations to native trees. With this consideration and a lack of evidence that traditional breading systems can not achieve necessary productivity increases in fiber production, FSC takes a precautionary approach to the use of GM trees.

Identifying a country as an area of forest GMO activities does not necessarily define a region as high risk. The Controlled Wood risk criteria identify an area as high risk if commercial use of a tree species is used. If no commercial use is in place and licensing is required for commercial use, then countries where experimental trials are taking place can be identified as low risk.

International groups have general consistency regarding the term GMO to ensure that it is not confused with hybrids, cultivars, and breeds, which are derived from traditional breeding programs – not direct manipulation of genes. A GMO is an organism that has been transformed by the insertion of one or more genes (called transgenes).[99] Often the inserted genes are from a different species than the recipient organism. Genetic modification does not include traditional breeding or natural hybridization, i.e. GM trees cannot be obtained through conventional tree breeding methods. Because of this, the formulation and use of GM trees in applied forestry has increasingly drawn attention from the scientific and non-scientific communities as there is concern about the potential impacts on human health, the environment and the international trade.[100]

12.7.1 Assessment of the Study Area

There is a single synthesis document that provides an up to date (as of 2004) evaluation of forest GMO (Genetically Modified Organisms).[101] At this point the only commercial user of GMO trees is China and only a single species, *Populus nigra* (Black Poplar, Lombardy Poplar). Since it is purportedly uncontrolled, this species should be flagged regardless of its source in China.

It is noted that the majority of GMO tree research takes place in the US and that most research of GMO trees takes place in the US.[102] As of 2004, there were field trials of multiple genera, but no commercial plantings. While this does not affect the current risk assessment, it does imply that the determination of the assessment could change rapidly.

[99] World Wildlife Fund, 2001a.
[100] World Wildlife Fund, 2001b and 2001c.
[101] World Wildlife Fund, 2001d
[102] World Wildlife Fund, 2001c and 2001d

12.7.2 Conclusions

Since there are no commercial plantings of GMO trees in the study area, the study area is low risk for GMOs.

There is a relatively straightforward and accepted definition of the term "Genetically Modified Organism" that results in a low level of variability in interpretation of the standard. Further, the commercial use of GMO trees is tracked closely in the study area. Since there are no commercial plantings of GMO trees in the study area, the study area is Low Risk for GMOs.

This assessment captures the climate of GMO use in the study area at the time of completion. There are multiple studies and testing of multiple species current in the United States, and the commercial use of these GMOs may change in short time. It is important to ensure that all claims are made current by verification with the listed and most recent sources.

12.8 FSC Controlled Wood Standard Risk Ratings

The FSC Controlled Wood Standard necessitates an analysis of the risk associated with wood that comes from five unacceptable sources. Based on available data for the ecoregions as delineated by the US Forest Service and WWF, all hardwood producing areas can be assessed as low risk. ***Tables 12D and 12E*** describe and display a rating scale derived from the FSC criteria. While the ratings approach shows some variability, none of the ecoregions examined are judged to be "not low risk."

References:

Azuma, David L., David L. Azuma, Kevin R. Birch, Andrew A. Herstrom, and Lettman, Gary J. 2004. Land Use Change on Non-Federal Land in Eastern Oregon, 19753-2001. USDA Forest Service, Oregon Department of Forestry. August 2004.

Azuma, David L., David L. Azuma, Kevin R. Birch, Andrew A. Herstrom, Jeffrey D. Kline and Lettman, Gary J. 2002. Land Use Change on Non-Federal Land in Western Oregon, 1973-2000. USDA Forest Service, Oregon Departments of Forestry, Land Conservation and Agriculture. May 2002.

Bryant, D., D. Nielsen, and L. Tangley. 1997. The last frontier forests: ecosystems and economies on the edge. World Resources Institute.

Conservation Biology Institute. 2003. Pacific Northwest Conservation Assessment. Corvallis, OR.

Conservation Biology Institute. 2002. Heilman, G.E.J. and J.R. Strittholt (authors). Klamath-Siskiyou Private Lands Conservation Assessment. Corvallis, OR.

Conservation International. 2005. Biodiversity Hotspot Map. Washington, DC. Available from: http://www.biodiversityhotspots.org/ImageCache/Hotspots/content/resources/maps/cihotspotmap_2epdf/v1/cihotspotmap.pdf.

European Commission Joint Research Centre (ECJRC).2002. Institute for Environment and Sustainability. GLC 2000: Global Land Cover Mapping for the Year 2000. Available at: http://www.gvm.sai.jrc.it/glc2000/defaultGLC2000.htm.

Gray, Andrew N., Jeremy S. Fried, Glenn Christensen, and Larry Potts. USDA Forest Service. 2006. Timber Resource Statistics for Forest Land in Eastern Washington, January 2002. Resource Bulletin PNW-RB-251. December 2006.

Gray, Andrew N., Charles F. Veneklase, and Robert D. Rhoads. 2005. Timber Resource Statistics for National Forest Land in Western Washington, 2001. USDA Forest Service Resource Bulletin PNW-RB-246. May, 2005.

Greenpeace. 2006a. Roadmap to recovery: The World's Last Intact Forest Landscapes. Washington, DC. Accessed online: January 31, 2007. Available from: http://www.intactforests.org/.

Greenpeace. 2006b. The World's Last Intact Forest Landscapes - concepts and criteria. Washington, DC. Accessed online: January 31, 2007. Available from: http://www.intactforests.org/concept/concept.htm.

Greenpeace. 2006c. World Intact Forest Landscapes GIS coverage in ESRI Shape format - data files. Washington, DC. Accessed online: January 31, 2007. Available from: http://www.intactforests.org/download/download.htm.

Hoekstra, J.M., et al. 2005. Confronting a biome crisis: global disparities of habitat loss and protection. Ecology Letters. 8.

Intertribal Timber Council. 2003. Second Indian Forest Management Assessment Team. An Assessment of the Indian Forests and Forest Management in the United States: Executive Summary. Portland, OR.

IUCN. 2002. IUCN Protected Area Management Categories. Available from: http://www.iucn.org/themes/wcpa/wpc2003/pdfs/outputs/pascat/pascatrev_info3.pdf.

IUCN - Smithsonian Museum of Natural History. 2001a. Centres of Plant Diversity - North America Map. Washington, DC. Available from: http://www.nmnh.si.edu/botany/projects/cpd/namap.htm.

IUCN - Smithsonian Museum of Natural History. 2001b. Centres of Plant Diversity. Washington, DC. Accessed online: January 31, 2007. Available from: http://www.nmnh.si.edu/botany/projects/cpd/introduction.htm.

Olson, D.M. and E. Dinerstein. 2002. The Global 200: Priority Ecoregions for Global Conservation. Annals of the Missouri Botanical Garden. 89.

USDA Forest Service 2002. Pacific Northwest Research Station and the Oregon Department of Forestry. Lettman, G.J., et al. "Land use change on non-federal land in Western Oregon, 1975-2001." Salem, Oregon.

WDPA Consortium. 2004. 2004 World Database on Protected Areas. Available from: http://maps.geog.umd.edu/WDPA/index.html.

World Bank. 2006. Kaufmann, D., A. Kraay, and M. Mastruzzi (authors). Governance Matters V: Governance Indicators for 1996–2005; World Bank Policy Research Working Paper 4012. Washington, DC. Available from: http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469382&piPK=64165421&menuPK=64166093&entityID=000112742_20060927175408.

World Resources Institute. Bryant, D., D. Nielson, and L. Tangley (authors). 1997. Last frontier forests: Ecosystems and economies on the edge. Washington, DC. Accessed online: January 31, 2007. Available from: http://forests.wri.org/pubs_description.cfm?PubID=2619.

World Wildlife Fund. 2001a. Southeastern Conifer Forests (NA0529). Washington, DC. Accessed online: May 9, 2007. Available from: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0529_full.html.

World Wildlife Fund. 2001b. Southeastern Mixed Forest (NA0409). Washington, DC. Accessed online: May 9, 2007. Available from: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0413_full.html.

World Wildlife Fund. 2001c. Mississippi Lowland Forest (NA0409). Washington, DC. Accessed online: May 9, 2007. Available from: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0409_full.html.

World Wildlife Fund. 2001d. Willamette Valley forests (NA0417). Washington, DC. Available from: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0417_full.html.

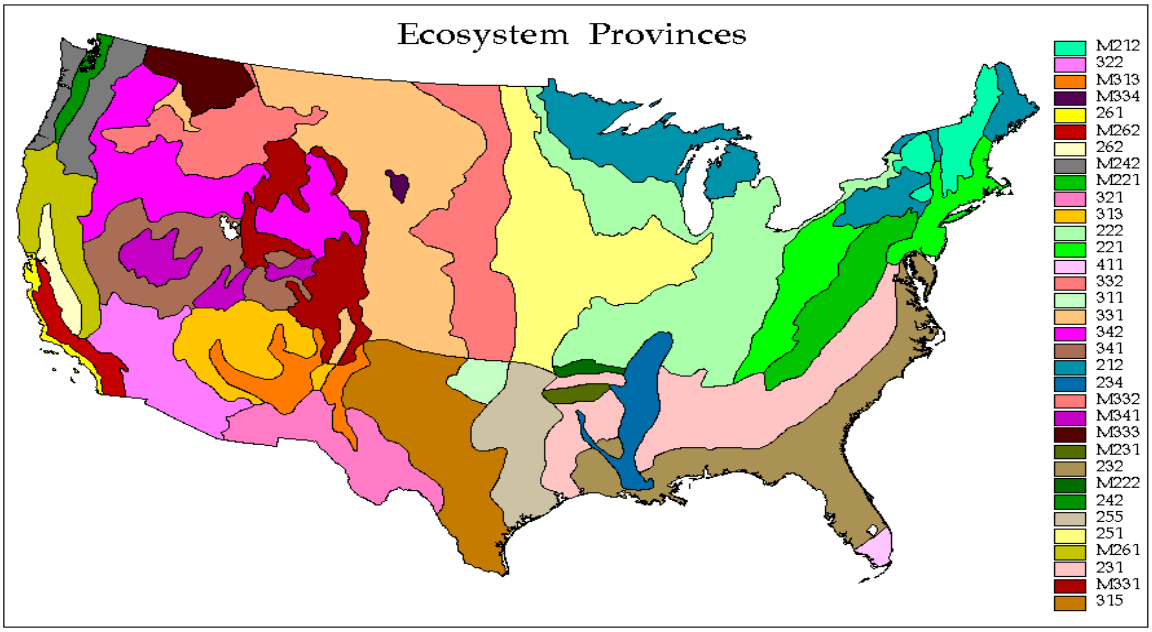
World Wildlife Fund. 2001e. Global 200 Map. Washington, DC. Accessed online: January 26, 2007. Available from: http://www.worldwildlife.org/science/pubs/g200.pdf.

Table 12C: Ecoregional summaries of forest cover data from the US Forest Service Forest Inventory and Analysis Data Center. Data represent the change in measured forest cover across varying periods (depending on data) and are averaged for an annual trend in change of natural forest cover. Forest cover data representing natural forests can be distinguished from data representing plantation forests, so assessments are distinct. Two of the ecological provinces in the study area are assessed to have a negative trend in natural forest cover of greater than 0.5% percent annually (see second to last column).

Ecoregion	Current Natural Forest (acres)	Current Plantation Forest (acres)	Annual Change in Natural Forest	Annual Change in Plantation Forest
212 - Laurentian Mixed Forest	39,142,906	2,214,690	-0.10%	0.16%
221 - Eastern Broadleaf Forest (Oceanic)	34,401,630	1,122,658	-0.14%	0.09%
222 - Eastern Broadleaf Forest (Continental)	15,779,005	567,974	0.36%	0.05%
223 - Central Interior Broadleaf Forest	29,744,778	401,052	-0.02%	-0.04%
231 - Southeastern Mixed Forest	45,926,973	12,397,306	-0.36%	0.54%
232 - Outer Coastal Plain Mixed Forest	50,581,870	24,251,402	-0.44%	0.86%
234 - Lower Mississippi Riverine Forest	5,209,643	628,883	-0.25%	0.60%
242 - Pacific Lowland Mixed Forest – Puget Trough*	2,102,000	Not included	-0.74%	
*242 - Pacific Lowland Mixed Forest – Willamette Valley***	785,633	Not included	0%	
251 - Prairie Parkland (Temperate)	9,175,523	83,213	1.42%	0.02%
255 - Prairie Parkland (Subtropical)	2,161,642	107,537	0.46%	0.06%
331 - Great Plains- Palouse Dry Steppe	6,436,044	10,363	1.13%	-0.01%
342 - Intermountain Semidesert	6,512,142		1.60%	0.00%
411 – Everglades	637,005		-3.14%	0.00%
M211 - Adirondack-New England Mixed Forest-Coniferous Forest-Alpine Meadow	21,021,980	242,565	1.37%	0.05%
M221 - Central Appalachian Broadleaf Forest--Coniferous Forest—Meadow	28,418,304	606,202	-0.15%	0.03%
M223 - Ozark Broadleaf Forest	2,554,426	86,057	-0.08%	-0.12%
M231 - Ouachita Mixed Forest--Meadow	2,479,773	807,667	-0.03%	0.01%
M242 - Cascade Mixed Forest--Coniferous Forest--Alpine Meadow – Oregon non-federal lands**	5,873,378	Not included	0%	
M242 - Cascade Mixed Forest--Coniferous Forest--Alpine Meadow – Washington State all lands*	14,885,000	Not included	0.1%	
M261 - Sierran Steppe--Mixed Forest--Coniferous Forest--Alpine Meadow	27,931,695		8.54%	0.00%
M332 - Middle Rocky Mountain Steppe--Coniferous Forest--Alpine Meadow	28,089,674	79,826	3.35%	-0.05%
M333 - Northern Rocky Mountain Forest-Steppe--Coniferous Forest--Alpine Meadow	18,979,137	253,678	0.77%	-0.05%

* Personal communication with Andrew Gray, USDA Forest Service, 2008.
** Personal communication with David Azuma, USDA Forest Service, 2008.

Figure 12a: Ecoregions of the United States: Provinces



Source: http://www.fs.fed.us/colorimagemap/ecoreg1_provinces.html

Figure 12b: Conservation International Biodiversity Hotspots in the study area.[103] The single representation of CI Hotspots in the study area is the portion of the California Floristic Province Hotspot that extends into Southern Oregon and is part of the Klamath-Siskiyou Coniferous Forests Ecoregion.

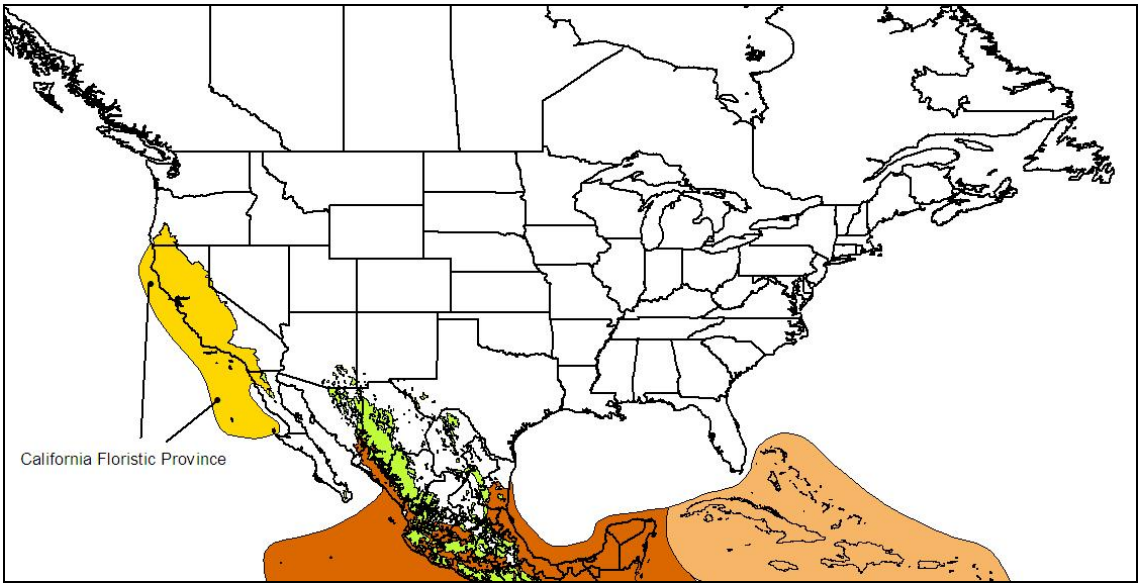
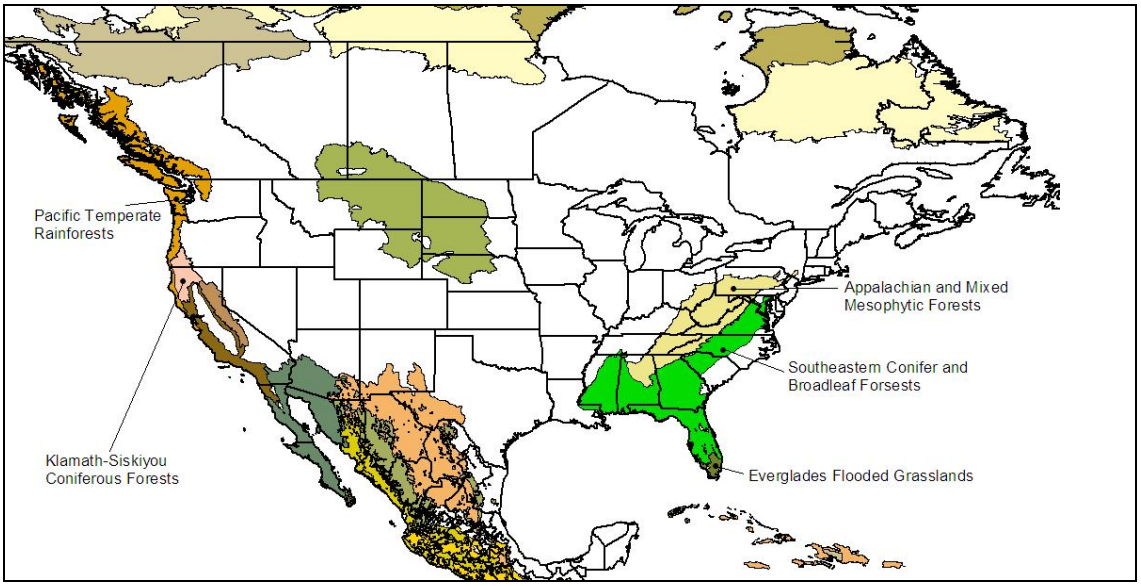


Figure 12c:. World Wildlife Fund Global 200 Ecoregions with representation in the study area.[104] The five Global 200 ecoregions in the study area are the Pacific Temperate Rainforests, the Klamath-Siskiyou Coniferous Forests, the Appalachian and Mixed Mesophytic Forests, the Southeastern Conifer and Broadleaf Forests, and the Everglades Flooded Grasslands.



[103] Conservation International, 2005.
[104] Olson and Dinerstein, 2002; World Wildlife Fund, 2001e.

Figure 12d: Smithsonian Institution / IUCN Centers of Plant Diversity for North America.[105] The overlap with the study area includes the California Floristic Province and Klamath-Siskiyou Region (NA16 and NA16c), North American Serpentine Flora (NA16e); North American Serpentine Soil Habitats (NA25), and the Central Highlands of Florida (NA29).

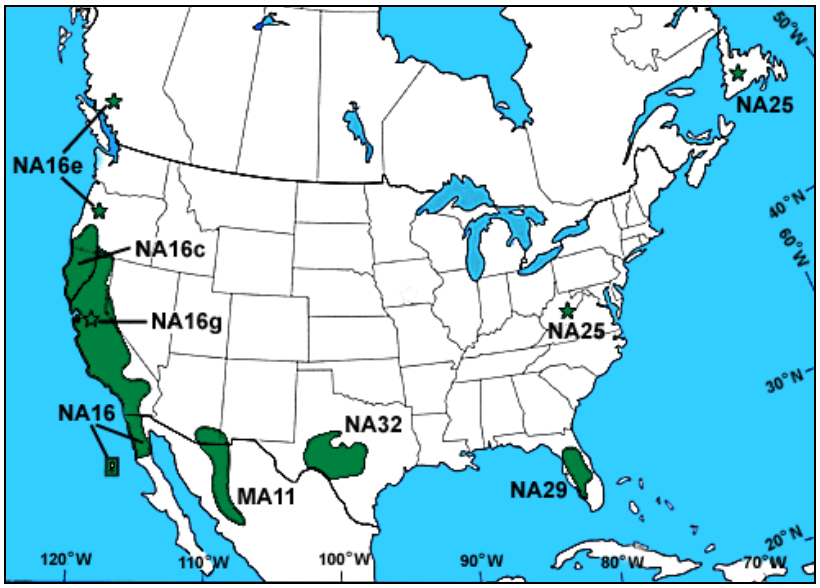
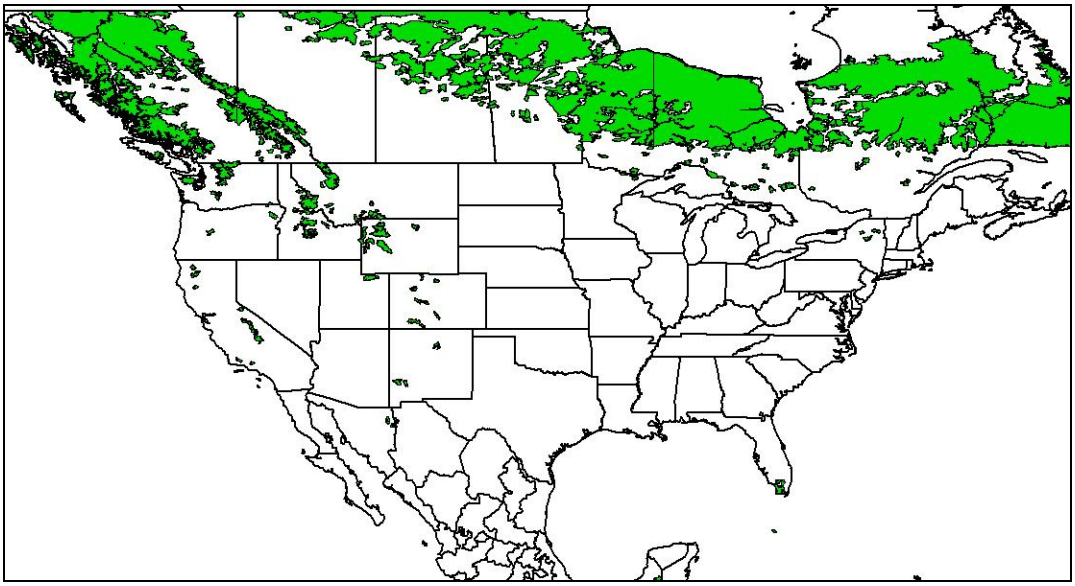


Figure 12e: Identified Greenpeace Intact Forests within the study area [106] The Intact Forests are the green-shaded areas and small remnants are found in Washington, Oregon, New York, North Carolina, Tennessee, Georgia, and Florida.



[105] IUCN – Smithsonian Museum of Natural History, 2001a and 2001b.
[106] Greenpeace, 2006c.

Figure 12f: Federal land ownership in the Klamath-Siskiyou Forests ecoregion. The ecoregion is outlined in red, fully protected designation (national park, wilderness, etc) is dark-green shaded, national forest is light-green, national recreation area is cream-shaded, and BLM is yellow-shaded.

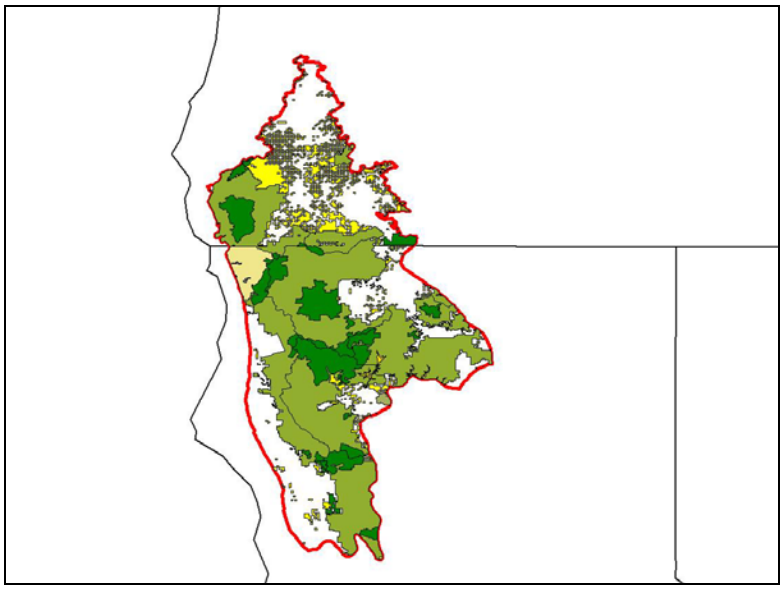


Figure 12g: Federal land ownership in the US portion of the Central Pacific Coastal Forests ecoregion. The ecoregion is outlined in red, fully protected designation (national park, wilderness, etc) is dark-green shaded, national forest is light-green.

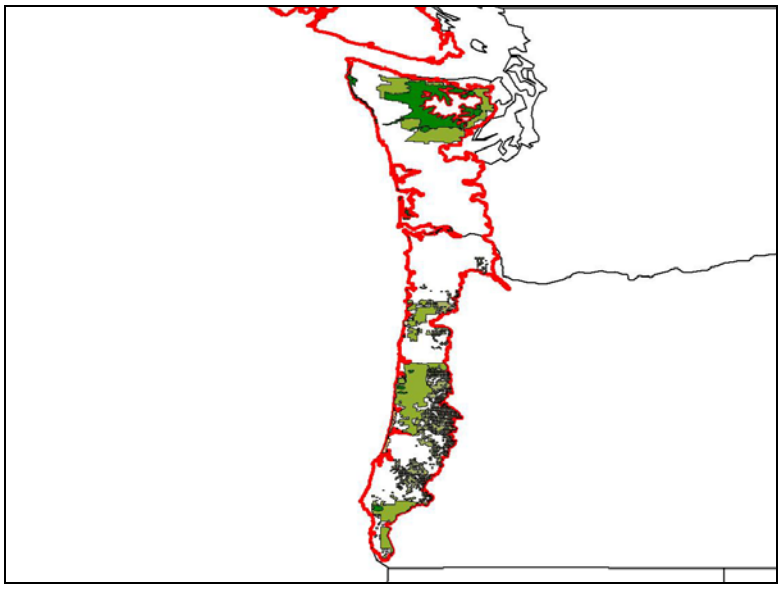


Figure 12h: Federal land ownership in the US portion of the British Columbia Mainland Coastal Forests ecoregion. The ecoregion is outlined in red, fully protected designation (national park, wilderness, etc) is dark-green shaded, national forest is light-green, and Department of Defense is cream-colored.

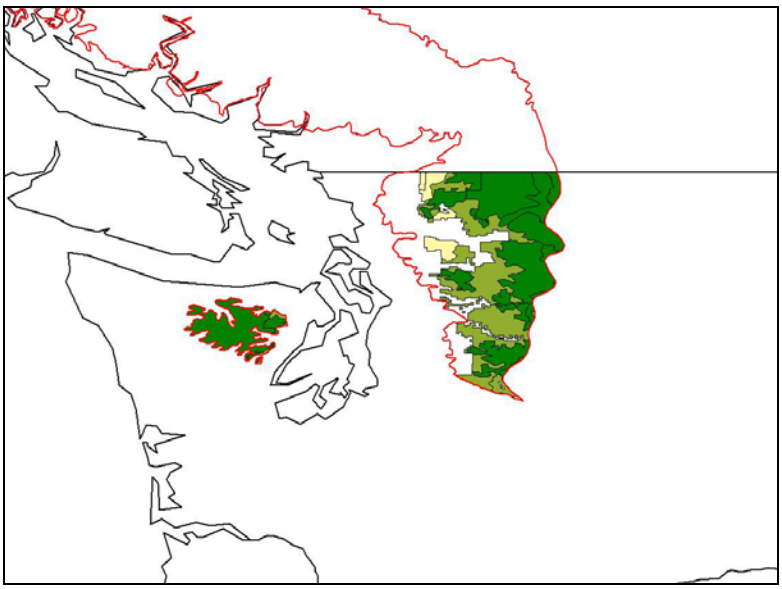


Figure 12i: Federal land ownership in the Appalachian and Mixed Mesophytic Forests G200 ecoregion (which comprises both the Appalachian Mixed Mesophytic Forests and Appalachian-Blue Ridge Forests ecoregions). The ecoregion is outlined in red, fully protected designation is dark-green shaded, and lesser protection (e.g. national forest) is light-green.

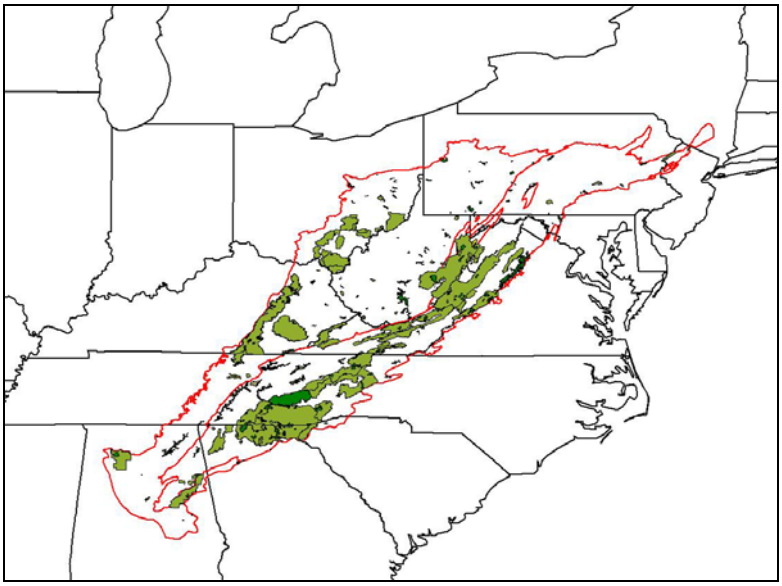


Figure 12j: Federal land ownership in the Southeastern Broadleaf and Conifer Forests G200 ecoregion (which comprises both the Southeastern Mixed Forests and Southeastern Conifer Forests ecoregions). The ecoregion is outlined in red, fully protected designation is dark-green shaded, and lesser protection (e.g. national forest) is light-green.

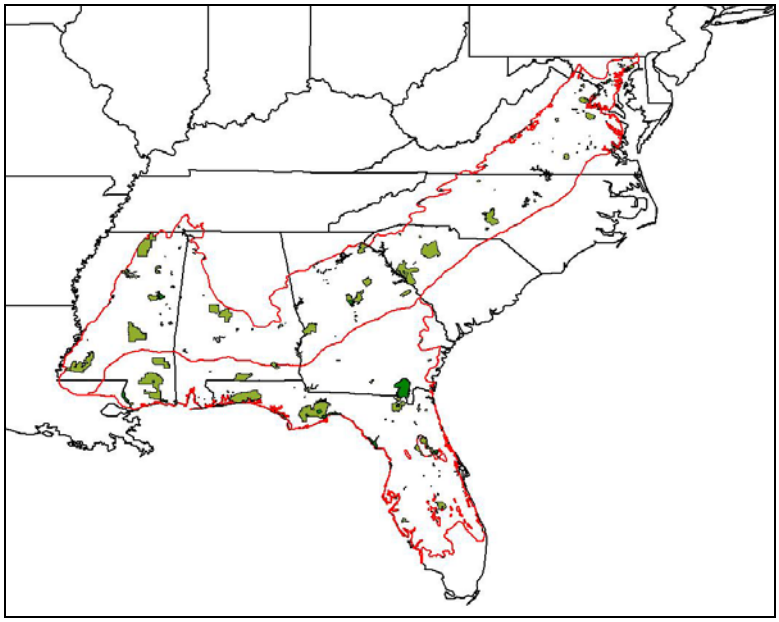


***Table 12D*:** FSC Controlled Wood Parameters

Important note: We consider Medium-Low to be compliant with the FSC Controlled Wood standard

RISK OF ILLEGAL HARVESTING

Score from Previous Table and interpretation from the FSC Controlled Wood Standard (FSC-STD-40-005 v2)

High – Known extant issues of systematic illegal logging and/or very limited knowledge of the regulatory process

Medium – Few known extant issues of systematic illegal logging and limited knowledge of the regulatory process

Low - Few known extant issues of systematic illegal logging and good knowledge of the regulatory process; or, no known extant issues of systematic illegal logging and limited knowledge of the regulatory process

Very Low - No known extant issues of systematic illegal logging and good knowledge of the regulatory process

RISK OF VIOLATIONS OF TRADITIONAL OR CIVIL RIGHTS

as interpreted through the Controlled Wood standard

High – Known extant issues of systematic violations of traditional or civil rights or very limited knowledge of the protection of traditional or civil rights

Medium – Few known extant issues of systematic violations of traditional or civil rights and limited knowledge of the protection of traditional or civil rights

Low - No known extant issues of systematic violations of traditional or civil rights and limited knowledge of the protection of traditional or civil rights; or, few known extant issues of systematic violations of traditional or civil rights and good knowledge of the protection of traditional or civil rights

Very Low - No known extant issues of systematic violations of traditional or civil rights and good knowledge of the protection of traditional or civil rights

RISK TO HCVF FROM HARVESTS

High – Identified or poor knowledge of assemblages of HCVF in the area with identified threat or poor knowledge of threat from logging operations.

Medium – Identified assemblages of HCVF in the area with mitigated threat from logging operations due to protection levels.

Low – Identified assemblages of HCVF in the area with strongly mitigated threat from logging operations due to high levels of protection; or, few or no identified assemblages of HCVF in the area with mitigated threat from logging operations due to protection levels.

Very Low - Few or no identified assemblages of HCVF in the area with strongly mitigated threat from logging operations due to protection levels.

RISK OF HARVESTS FROM CONVERTED FORESTS

High – Rate of change in natural forest area >0.05% annual decline or poor knowledge of trends in natural forest cover.

Medium – Moderate decline in natural forest area (< 0.05% annual rate) based on limited data collection and assessments.

Low – Moderate decline in natural forest area (< 0.05% annual rate) based on scientifically strong data collection and robust assessments; or, no decline in natural forest area based on limited data collection and assessments.

Very Low – No decline in natural forest area based on scientifically strong data collection and robust assessments.

RISK OF GMOS

High – GMOs closely related to the species of interest are in commercial production in the area.

Low – GMOs closely related to the species of interest are not in commercial production in the area..

Table 12E: Risk of Supply from FSC Controlled Wood

	Ecoregion Delineations		Risk of Illegal Timber	Risk of Violations of Traditional or Civil Rights	Risk of harvests from HVCF	Risk of forest conversion from harvesting	Risk of GMOs
	WWF Ecoregion(s) represented [Part or all of state]	USFS Ecoregions (Provinces)					
North:							
Connecticut	NA0410, NA0411	221, M211	Very Low	Very Low	Low	Low	Very Low
Delaware	NA0411, NA0517	221, 232	Very Low	Very Low	Low	Very Low	Very Low
Illinois	NA0404, NA0409, NA0415, NA0804, NA0805	222, 223, 231, 234	Very Low	Very Low	Low	Very Low	Very Low
Indiana	NA0404, NA0414, NA0804	222, 223, 251	Very Low	Very Low	Low	Very Low	Very Low
Iowa	NA0415, NA0804, NA0805	222, 251	Very Low	Very Low	Low	Very Low	Very Low
Maine	NA0410, NA0411, NA0605	211, 221, M211	Very Low	Very Low	Low	Low	Very Low
Maryland	NA0402, NA0403, NA0411, NA0413, NA0517	221, 232, M221	Very Low	Very Low	Low	Low	Very Low
Massachusetts	NA0410, NA0411, NA0504	221, M211	Very Low	Very Low	Low	Low	Very Low
Michigan	NA0414, NA0415, NA0416, NA0804	212, 222	Very Low	Very Low	Low	Very Low	Very Low
Minnesota	NA0415, NA0416, NA0802, NA0805, NA0812	212, 222, 251	Very Low	Very Low	Low	Low	Very Low
Missouri	NA0404, NA0409, NA0804, NA0805	223, 234, 251	Very Low	Very Low	Low	Very Low	Very Low
New Hampshire	NA0410, NA0411	221, M211	Very Low	Very Low	Low	Low	Very Low
New Jersey	NA0401, NA0403, NA0411, NA0504	221, 232	Very Low	Very Low	Low	Very Low	Very Low
New York	NA0401, NA0403, NA0406, NA0407, NA0410, NA0411, NA0414, NA0504	211, 221, 222, M211	Very Low	Very Low	Low	Very Low	Very Low
Ohio	NA0401, NA0402, NA0404, NA0414	221, 222, 223	Very Low	Very Low	Low	Very Low	Very Low
Pennsylvania	NA0401, NA0402, NA0403, NA0410, NA0411, NA0413, NA0414	211, 221, 222, 232, M221	Very Low	Very Low	Low	Low	Very Low
Rhode Island	NA0411	221	Very Low	Very Low	Low	Medium	Very Low
Vermont	NA0406, NA0407, NA0410, NA0411	211, 221, M211	Very Low	Very Low	Low	Very Low	Very Low
West Virginia	NA0402, NA0403	221, M221	Very Low	Very Low	Low	Low	Very Low
Wisconsin	NA0415, NA0416, NA0804, NA0805	212, 222	Very Low	Very Low	Low	Very Low	Very Low
Total			Very Low	Very Low	Low		Very low
South:							
Alabama	NA0402, NA0403, NA0404, NA0413, NA0529	223, 231, 232	Very Low	Very Low	Low	Very Low	Very Low
Arkansas	NA0404, NA0409, NA0412, NA0523, NA0804	223, 231, 234, M223, M231	Very Low	Very Low	Low	Very Low	Very Low
Florida	NA0513, NA0529, NT0164, NT0904	232, 411	Very Low	Very Low	Low	Low	Very Low

Table 12E: Risk of Supply from FSC Controlled Wood (con't)

Georgia	NA0402, NA0403, NA0413, NA0517, NA0529	231, 232, M221	Very Low	Very Low	Low	Very Low	Very Low
Kentucky	NA0402, NA0404, NA0409, NA0414	221, 223, 231, 234	Very Low	Very Low	Low	Low	Very Low
Louisiana	NA0409, NA0413, NA0523, NA0529, NA0701	231, 232, 234	Very Low	Very Low	Low	Very Low	Very Low
Mississippi	NA0404, NA0409, NA0413, NA0529, NA0701		Very Low	Very Low	Low	Very Low	Very Low
North Carolina	NA0403, NA0413, NA0517	231, 232, M221	Very Low	Very Low	Low	Low	Very Low
South Carolina	NA0403, NA0413, NA0517	231, 232, M221	Very Low	Very Low	Low	Very Low	Very Low
Tennessee	NA0402, NA0403, NA0404, NA0409, NA0413	221, 223, 231, 234, M221	Very Low	Very Low	Low	Very Low	Very Low
Virginia	NA0402, NA0403, NA0413, NA0517	221, 231, 232, M221	Very Low	Very Low	Low	Low	Very Low
Total			Very Low	Very Low	Low	Low	Very low
Pacific Northwest:							
Oregon	NA0417, NA0505, NA0508, NA0510, NA0512, NA0516, NA0519, NA0524, NA0813, NA1305, NA1309	242, 263, 331, 342, M242, M261, M332	Very Low	Very Low	Low	Low	Very Low
Washington	NA0417, NA0505, NA0506, NA0507, NA0508, NA0510, NA0512, NA0518, NA0522, NA0524, NA0524, NA0813, NA1309	242, 331, 342, M242, M332, M333	Very Low	Very Low	Low	Low	Very Low
Total			Very Low	Very Low	Low	Low	Very low
Main Hardwood Producing States			Very Low	Very Low	Low	Low	Very low

Note: Risk is assessed at the ecoregion level so the HCVF or conversion risk at a state level indicates, but does not dictate, if a source is low risk.

13.0 Assessment of the Hardwood Producing Regions of the United States for Compliance with the PEFC criteria for controversial wood risk assessment

13.1 Background

PEFC has developed a procedure and set of indicators to help ensure that the certified products do not include raw material from controversial sources. PEFC generally defines controversial sources as those where harvesting is unauthorized, legally prohibited or planned to become strictly protected by law. The PEFC standard is two-tiered. It requires an assessment of risk at the country/region level, and an assessment at the supply chain level. For the latter, the standard addresses the likelihood that the supply chain has not been able to identify a potential controversial source of supply.

The policy calls for a risk-based assessment for raw material procured from controversial sources for all supplies of forest based products which do not include raw material classified as certified raw material. This raw material is classified as "low" or "high" risk categories. The organization shall determine the risk, based on the combination of the likelihood at country/region level and the likelihood at the supply chain level and classify all supplies as "high" risk where both the likelihood at the country/region level and the likelihood at the supply chain are assessed as "high".

PEFC has developed the following indicators for assessing the likelihood of a source at a country/region level being considered "high" risk:

(1) The country/region is covered by a UN Security Council ban on timber exports.
(2) The country/region is known as a country with low level of forest law enforcement and high level of corruption.
(3) The country is one where official FAO statistics show a decrease in forest area.
(4) The organization has received comments supported by reliable evidence from their customers or other external parties, relating to its supplies with respect to controversial sources, which have not been disproved by the organization's own investigation.

13.2 Forest Protection in the US

The US has very clear delineation of protected forests at both the federal and state/local level. At the federal level, 1964 Wilderness Act established a process by which federal land could be permanently set-aside from all but the most benign hiking and camping experiences in a National Wilderness Preservation System. It currently comprises 43.3 million hectares including 30 million hectares of forest land. Approximately 24 million hectares of additional forest is in roadless areas are under various forms of planning review. No timber harvests occur on roadless areas subject to review. The area in designated Wilderness is in addition to an extensive system of national parks and recreation areas. Similarly, states and local jurisdictions have various protection designations for forest areas that are protected in parks or reserves. We found no cases where hardwood forests that have been slated for protection are currently subject to timber harvest.

13.3 Concerns of Environmental NGOs

Well over 100 environmental organizations operate at the national, regional and/or local level in the US. Their issues range from specific development projects at the local level to global issues such as climate change and deforestation. In order to assess possible contentious issues surrounding hardwood product exports, websites of selected US environmental organizations were checked for mention of issues related to hardwood forests and/or hardwood product production (***Table 13B***). None of the sites indicated a specific concern about hardwood resource management where the sites are naturally regenerated and retained in hardwood species composition. The major issue of concern is the conversion of natural or semi-natural hardwood forests to commercial fiber plantations and other land uses. However, all hardwood eco-regions assessed in this report are "low risk" of conversion to plantations and other land uses, according to the criteria contained in the FSC Controlled Wood Standard (FSC-STD-40-004 V2-1).

In 2005, a major pulp and paper producer with timberland and processing facilities in the Appalachian region entered into a Memorandum of Understanding (MOU) with two environmental organizations. The MOU committed the company to forest practices consistent with the FSC regional standard. The 2007 NGO-issued progress report concluded that the company had honored its commitments under the MOU, including the phasing out of conversion of natural forests.[107] A more recent report issued by the same NGO describes threatened biological diversity in the Mid-Atlantic Coastal Forests. While critical of pulp and paper operations, the report notes that large areas of HVCF and sensitive wetlands are already protected.[108] Hardwood product producers and exporters are not implicated in the report.

13.4 Summary of findings

Indicator 1: A UN Security Council ban on timber exports.

There is no UN Security Council ban on timber from the United States.

Indicator 2: Low level of forest law enforcement and high level of corruption.

Based on information reviewed and analyzed in other sections of this report, the US is not a country with a low level of law enforcement and a high level of corruption. Particular reference is made to the World Bank Indicators (WBI) discussed in Section 3.1. The US ranks in or very near the top 90th percentile in the two relevant WBI indicators: Rule of Law and Control of Corruption.

Indicator 3: Official FAO statistics show a decrease in forest area.

FAO statistics show that the extent of forest and other wooded land increased in the US between 1990 and 2000 by 365,000 ha/yr and between 2000 and 2005 by

[107] Dogwood Alliance, 2007
[108] Dogwood Alliance, 2008

159,000 ha/yr. Thus, the area of forest has experienced a positive change of 0.1% positive change.[109]

Indicator 4: Comments from customers or other external parties relating to supplies from study area.

There are no known external parties (i.e., governments, non-government organizations) that consider the study area "high risk" based on the above three indicators. Based on a review of major environmental organization websites, controversies over US hardwood forests do not appear to be significant.

We conclude that wood procured in the US hardwood-producing region can be considered "low risk" as a controversial source based on PEFC risk assessment procedures and risk indicators (***Table 13A***).

Table 13A: Risk of Supply from PEFC Defined Controversial Sources

	Risk of Controversial Sources in Hardwood Producing States Because of:				
US Region	UN Security Ban	Ineffective Forest Law Enforcement	Corruption	Decline in Forest Area	Customer or External Party Evidence of Controversial Sourcing
North	N/A	VERY LOW	VERY LOW	LOW	LOW
South	N/A	VERY LOW	VERY LOW	LOW	LOW
West	N/A	VERY LOW	VERY LOW	LOW	LOW
US Hardwood Producing States:	NONE	VERY LOW	VERY LOW	LOW	LOW

References:

Dogwood Alliance. 2008. Southeastern Swamplands and Paper Packaging: A Report on the World-Class Biological Diversity of the Region Threatened by Big Paper Companies and Their Corporate Customers. February, 2008. Available at: http://pressroomda.greenmediatoolshed.org/attached-files/1/109/10950/DogWReport08%2epdf

Dogwood Alliance. 2007. Southern Forests and Bowater, Incorporated. Progress Report: July 2006 to July 2007. Available at: http://pressroomda.greenmediatoolshed.org/attached-files/0/96/9616/SouthernForestsProgressReport%2epdf

Food and Agriculture Organization of the United Nations (FAO). 2005. Forest Resources Assessment 2005 Global Tables. Available from: http://www.fao.org/forestry/site/32178/en/.

[109] FAO, 2005

Table 13B: Issues of Concern for Selected US Environmental NGO Groups

Dogwood Alliance www.dogwoodalliance.org	The Dogwood Alliance is a southern US environmental activist group that opposes industrial forestry practices. One of its issues is the preservation of the Cumberland Plateau, an area that contains High Conservation Value. The organization's efforts are directed against the pulp and paper industry. It opposes conversion of natural forests to pine plantations and the use of hardwoods for pulp and paper. It recently released a report alleging damage to Mid-Atlantic Coastal Forests from conversion of natural forests to plantations by the pulp and paper industry. A suggested solution to this issue, as per the report, is to use less packaging and more recycled materials.
Greenpeace www.greenpeace.org	In the US, Greenpeace directs its forest-related concerns to the US National Forests managed by the Forest Service and the affects on environmental systems. No specific issue was found relating to hardwood management or manufacturers.
Sierra Club www.sierraclub.org	The Sierra Club website highlights concerns about commercial logging and clearing of natural mixed hardwood forests and replacing them with fast growing loblolly pine as well as non-native slash pine.
The Nature Conservancy www.nature.org	The Nature Conservancy focuses on a broad range of conservation issues including global climate change, marine ecosystems, fresh water, fire, exotic species and forests. The forest issues primarily deal with the deforestation of tropical forests and the implications for global climate change. No issues were found specifically relating to North American hardwood forest management.
World Wild Fund for Nature www.wwf.org:	This World Wide Fund for Nature web site is primarily focused on the organization's campaigns against unsustainable and illegal logging that is contributing to rapid deforestation around the globe. No issues were found concerning natural hardwood forest management.
Environmental Defense www.environmentaldefense.org	The Environmental Defense Fund focuses on tropical deforestation, illegal logging, and soil erosion and the affect on local and global climate, water cycles, and species diversity. No issues were found relating to mismanagement of the hardwood forests in the United States.

Table 13B (continued)

Rainforest Action Network www.ran.org:	The Rainforest Action Network (RAN) website addresses concerns over the clearing of the world's rainforests to accommodate the expansion of soy and palm oil plantations, as well as the clear-cut logging and resource extraction activities in Canada's Boreal forest. RAN is active in several First Nations' campaigns against Canadian Provinces and the licensing of areas that are claimed by native indigenous peoples. No specific reference was made to issues with natural hardwood manufacturers.
Forest Ethics www.forestethics.org:	The Forest Ethics website highlights concerns with the deforestation of endangered forests such as those in the Canadian Boreal, British Columbia's Temperate Rainforest, Chile, the US South, and on US Public Lands. As with the other web sites, there are not stated concerns with natural hardwood forest management.
Friends of the Earth www.foe.org:	The Friends of the Earth web site is primarily concerned with logging activities in the U.S. National Forests and Public Lands. No issues were found relating to hardwood forest management.
Conservation International www.conservation.org:	The Conservation International web site focuses on the preservation of forests in 5 general wilderness areas located in the Congo Basin, Amazon, New Guinea, North American Deserts, and Southern Africa as well as biodiversity hotspots. No reference was made to hardwood management or hardwood manufacturing in the North America.

Sources: Websites as shown: accessed February 15, 2008

14.0 CENTRAL POINT OF EXPERTISE ON TIMBER (CPET)

14.1 Introduction

This section examines the legal frameworks and programs involved in the production of US hardwood products in the context of requirements of Category "B" evidence of legality and sustainability as developed by the United Kingdom's Central Point of Expertise on Timber (CPET). CPET is responsible for developing government timber procurement policy in the UK and has formulated policies that are also being referenced by the European Commission and by other governments throughout the EU. Category B evidence is defined by CPET as all forms of credible evidence other than certification schemes. A fundamental objective of the current assessment is to compile and present information to meet the evidentiary standard of Category B with respect to hardwood products from the United States.

The CPET Category B evidence criteria are designed to ensure that wood purchased and used by the UK government does not originate from illegal or unsustainable sources. Absent certification, which under most schemes allows for a risk-based approach with respect to legality, compliance to the CPET Category B criteria is similarly best achieved through a risk assessment. CPET lists three issues for determining the adequacy of Category B evidence:

(1) The requirements for legality and/or sustainability at the forest source are met, represented by the evidence.
(2) The requirements for traceability from the forest source are met, represented by the evidence.
(3) The credibility of the evidence.

With respect to the first issue, wood that comes from areas where there is low risk of illegal harvest and where attention to sustainability is evidenced through robust governance can be designated as "low risk." CPET provides for using a risk assessment approach for this purpose, particularly for countries where the risk is low due to robust governance. The Timber Procurement Policy notes that:

> *If there is known to be little possibility of illegal and/or unsustainable forest management practices in the locality of the forest source, then the risk is low…Robust forest governance, meaning that levels of illegality are low, is necessary for a forest source to be categorised as low risk for illegality. This is defined as the following:*
>
> *1. The existence of forestry legislation*
> *2. Clear legal use rights for forest areas*
> *3. Evidence that the law is effectively enforced (e.g. evidence that prosecutions are carried out)*
> *4. No substantive claims of corruption against local, regional or national forestry officials.*[110]

CPET guidelines indicate that it may be sufficient to demonstrate that the risk of illegal or unsustainable forest practices is low with evidence supporting each of the above criteria.

[110] CPET, 2006: Page 25.

However, CPET further provides four specific criteria that must be met with regard to legality as follows:

(1) The forest owner/manager holds legal use rights to the forest.
(2) There is compliance by both the forest management organisation and any contractors with local and national laws including those relevant to:
(a) Forest management;
(b) Environment;
(c) Labour and welfare;
(d) Health & safety.
(e) Other parties' tenure and use rights
(3) All relevant royalties and taxes are paid.
(4) There is compliance with the requirements of CITES [111]

This would suggest that evidence supporting each of the above second tier criteria is also necessary to achieve approval for Category B evidence.

The second issue regarding the adequacy of Category B evidence relates to traceability. CPET specific criteria with regard to traceability are as follows:

1.1 Is the supply chain clearly described and complete from point of supply back to the forest source(s)?
1.2 Has an adequate mechanism for preventing uncontrolled mixing or substitution been described for each stage in the supply chain?
1.3 Has information been provided on how mechanisms in 1.2 are checked/verified and is the approach used adequate to confirm the mechanisms described are in place and functional?
1.4 Is the evidence provided or available adequate to confirm the information provided is accurate?[112]

The traceability requirement implies that Chain of Custody tracking might also be necessary to meet Category B evidence. However, since Category B evidence is credible evidence other than certification, it should be sufficient to demonstrate that wood material simply derives from areas that are at low risk. As a practical matter, chain of custody tracking is not widely used in the US wood industry, and creates a number of challenges given the supply chain characteristics of US hardwoods. The vast majority of timber transactions involve small volumes of hardwood roundwood purchased from family forest owners. Any given landowner will likely sell timber only once in a generation so that log purchasers are interacting with a different set of landowners each year. Typically, log buyers – be they timber harvesters, dealers or processors -- combine supplies from multiple timber purchases for merchandizing individual species to highly varied hardwood markets.

While specific traceability for each log throughout the supply chain may have some usefulness for certification purposes, for purposes of a risk assessment, it should be sufficiently meaningful to examine traceability within the context of the overall risk

[111] CPET, 2007a: Section 4.1, Page 15.
[112] CPET, 2006: Page 4.

associated with illegally-produced or procured wood. If the overall risk for illegal hardwood is low from a given country or area, then specific traceability or chain of custody tracking with respect to potentially illegal material should be of less consequence. Therefore, it should be sufficient within the context of a risk assessment for Category B evidence to proffer (with confidence) that the material is derived from a country (or area) where the risk of illegal product is low.

Lastly, the third criterion for determining adequacy of evidence relates to credibility. CPET guidance is found in the two types of Category B evidence that can be used:

> *(1) Evidence from programmes and initiatives other than recognised certification schemes*
> *(2) Ad hoc evidence provided by information such as audit statements, government documentation or supplier declarations.*

CPET acknowledges that Category B type evidence "can vary greatly and needs to be judged on a case-by-case basis," [113] and the two types of Category B evidence need not be mutually exclusive. For purposes of the current assessment that relates to US hardwoods generally, information that derives from both types of evidence, and from both government (state and federal) and private sector sources can be suitably referenced.

14.2 General Methodology

The thrust of this section is to review the US hardwood supply situation in terms of a risk-based approach, drawing from information gathered for the entirety of the report including information dealing with resource ownership and use, timber theft, legal frameworks, controlled wood and controversial sources. For each of the four major CPET criteria with regard to legality, we summarize the data and information analyzed in further detail in others sections of this report that speak to the risk of illegal wood being included in the US hardwood mix and, particularly, the US hardwood export mix of products. We review the laws and regulations at the federal and state levels that bear on hardwood management and production and then summarize information about non-regulatory programs because they also have some bearing on reducing risk of illegal and non-sustainable hardwood production. Every state in the hardwood-producing region has a mix of programs (that vary depending on the state) designed to foster forest conservation, retention and sustainability. They include programs such as: implementing specific forest practices; certification of timber operators; fiscal incentives for reforestation; technical assistance to landowners; purchasing of development rights on forest land; and many others. When considered in their totality, the various forestry-related laws and non-regulatory programs bear on the risk of both illegal sourcing as well as non-sustainable production of hardwood products. By identifying the various programs (detailed by state in other sections of this report) and their effectiveness using available data, inferences about the risk or probability of unlawful as well as non-sustainable activities can be made.

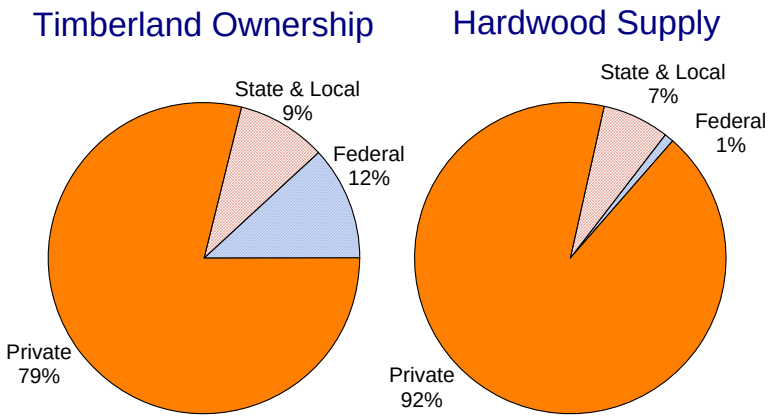
[113] Introduction to CPET Other Evidence of Compliance found at: http://www.proforest.net/cpet/evidence-of-compliance/other-evidence-as-assurance/category-b-evidence

14.3 *Legal Use Rights to the Forest*

To ensure that "*the forest owner/manager holds legal use rights to the forest*," the critical issues to be examined are the characteristics of hardwood timber ownership, the legal framework that governs how land and timber are owned, and the risk that illegal harvesting in violation of ownership or tenure rights occurs.

In the hardwood-producing region, the vast majority of forest area is privately owned by some 4 million landowners. Privately-owned lands account for 92% of annual US hardwood removals. These lands are predominately owned by family forest owners with an average holding of less than 15 hectares. Public lands supply less than 8% of the annual US hardwood production -- 1% is harvested from national forests controlled by the US Forest Service and 7% is harvested from lands administered mostly state and local jurisdictions (***Figure 14a***). Because forest land and timber supply is so heavily concentrated in private hands, legal use rights are well established, structured and enforced through a system of records and legal review.

Figure 14a: US Hardwood Timberland and Supply



Source: US Forest Service

All US land ownership is titled and recorded in public land records, usually at the county or municipality level. These records are generally open to public review and can be used to verify the current status and history of ownership. Disputes involving private land ownership (title or boundary lines) occur at various frequencies depending on the locality. Most are resolved between parties without intervention; otherwise, they can be adjudicated in the judicial system. The most common problems involving legal title to land or timber arise from disputes among family members or disputes over boundary lines.

Property and civil rights of indigenous Americans are generally respected and protected in the courts. American Indians are legally recognized as Sovereign Nations and accorded rights to independently manage their land and affairs. In 21 of the 33 hardwood-producing states, Native American groups own timberland that averages less than 1% of the total across the region. Only in Minnesota and Washington do tribal lands represent highs of 3% and 10% of the total timberland, respectively. While some tribes have sawmill and other production facilities, they account for only a small share of US hardwood production (estimated at less than 1%). Based on a search of available information, there are no known issues with respect to the legality or ownership rights affecting US hardwood supply. Some historic Native American land claims

continue to be contested, but many have been settled over the past three decades. Those that are on-going typically involve complex restitution issues or tribal recognition to enable economic development.

Section 12.4 of this report found that the US is LOW RISK with respect to the FSC Controlled Wood risk criteria for violation of traditional and civil rights. No areas in the US are designated as a source of conflict timber and federal and state laws and codes are consistent with the ILO Fundamental Principles and Rights at work. In addition, the US has recognized and equitable processes in place to resolve conflicts of substantial magnitude pertaining to traditional rights including use rights, cultural interests or traditional cultural identity. Legal use rights with respect to private and public lands are discussed separately below.

14.3.1 Private Lands

The most relevant issue with respect to legal use rights in the US revolves around timber theft and timber trespass. Most often this involves the taking of trees without permission or proper payment. It can also involve fraud or misrepresentation or other actions designed to profit illegitimately from timber-related transactions. Timber theft and timber trespass are necessarily of concern to US forest owners, but the extent of unlawful timber harvesting across the hardwood producing region is not easily determined. Most incidents involve a small numbers of trees and/or unclear or disputed property or cutting boundaries. Many incidents go unreported, although cases involving major breaches of property rights and timber theft are generally publicized.

A detailed review of timber theft and trespass and how the states specifically address the issue is provided in Section 6.2 of this report. Also as part of this assessment, we conducted a canvass of information sources on timber theft and trespass. Where information about the problem exists, the magnitude of its occurrence varies considerably from state to state. Officials in seven states expressed that timber crimes were an important problem or big issue (defined as 30 or more cases per year). State records and studies that are available suggest that perhaps in the range of 800 to 1,000 significant timber theft cases occur annually in the hardwood-producing region. By applying some assumptions about volume and value of stolen timber, we can derive an estimate that hardwood timber valued on the order of $12 million could be affected annually. This represents a tiny fraction of one percent of all hardwood timber produced in the US (estimated at $4 billion annually). While difficult to ascertain, US hardwood exports are likely affected to an even lesser degree because stolen timber is most likely taken to dealers or processors supplying limited, local markets.

Landowners and timber buyers can take measures to reduce the risk of being victimized by timber theft. Landowners are advised by state and local officials to clearly mark and maintain property boundaries. For their part, timber purchasers are advised by attorneys to verify the seller's ownership and right to sell timber before entering into a sales or harvesting agreement. Some associations sponsor timber security workshops and large landowners often retain timber security specialists.[114]

[114] Forest Resources Association maintains standing timber security committees and regularly sponsor workshops around the country.

In every state, some form of both criminal and civil penalties is provided for timber theft and trespass either through general statutes covering the unlawful taking of property or under laws with specific references to stolen timber. The most onerous cases are usually discovered and vigorously prosecuted in local, state and, on occasion in federal court (certain types of fraud are federal crimes as is transporting stolen goods across state lines). A search of the literature and on-line legal databases produced information on about 350 cases that have been prosecuted in state courts over the past 6 years.

Without diminishing what is a very disturbing problem for those affected, the risk that stolen timber is included in US hardwood products generally, and US hardwood exports specifically, appears to be very low. Operators in the US hardwood export business we surveyed overwhelmingly indicated that they work only with reliable and proven suppliers and, if they are a primary producer, more often than not, know the landowners and timber operators who are selling timber in their procurement area. We found no significant evidence in the literature or in other avenues of inquiry that suggests timber theft, as it occurs in the US, is associated with deforestation or systemic forest degradation. For that reason, and because laws protecting private property rights are clear and enforceable, we conclude that the risk of stolen timber being included in the hardwood production and export mix is low.

14.3.2 Public Lands

Public forest lands in the US are managed for multiple uses including objectives related to recreation, wildlife habitat, biodiversity, wilderness values and water quality protection. Only about 8 percent of the annual US hardwood supply originates on public lands, but these lands are nonetheless important to US hardwood supply as timber supplied from these lands is often of high-valued species. For federal lands as well as state lands, land management agencies prepare detailed resource and land use management plans well in advance of any timber harvesting and with opportunities for stakeholder review. In many states where state forests are important sources of hardwood, the state lands have undergone forest certification. Examples include: Maine, Minnesota, Wisconsin, Pennsylvania, Tennessee, Oregon and Washington. The US does not have a concession system for harvesting trees from public lands. With few exceptions, all timber sold from public lands is sold on a competitive bid basis. Contracting procedures are detailed by law and regulation. Depending on the jurisdiction, enforcement of contract provisions and regulation of timber sales and harvesting is generally regarded as effective and almost always subject to public scrutiny. For sales of federal timber, purchasers must be bonded and demonstrate their ability to fulfill the terms of the timber cutting contract.[115]

Land management agencies typically have dedicated enforcement branches (some states rely on their state police). Data for federal lands in the eastern US (where most hardwood is produced) are representative of the degree of timber-related crime that may occur. They show the number of timber-related violations and incidents, including misdemeanors, averaged 1,419 annually from 2004 through 2008. The value of resource and property damage for which violations were issued and/or prosecutions pursued averaged $104,119 annually. These timber-related violations and incidents represented approximately 2.5% of all law enforcement activity recorded in the agency's database during the three-year period (most crimes involve drugs, arson

[115] A detailed description and standard contract forms for the purchasers of timber from the national forests can be found at: http://www.fs.fed.us/forestmanagement/infocenter/newcontracts/index.shtml

or other non-timber related crimes).[116] The value of timber harvested from the eastern national forests during the three-period averaged over $98 million. Thus, timber theft and related criminal issues on the eastern national forests, while important in the local area and circumstance of occurrence, represent a tiny fraction of the value of timber harvested.

Allegations about violations or non-conformances to planning documents or regulations for conducting timber harvests are a separate matter from law enforcement. Controversies often surround the use of federal lands (and state lands) for timber production and NGOs frequently file complaints and appeals to agency decision-making. On the other side, timber purchasers complain that the laws and requirements governing timber sales and harvesting make it too difficult if not impossible to operate on federal lands. All federal timber sales are guided by Environmental Assessments (EA) and other planning documents that usually include various restrictions on harvesting and/or necessitate mitigation measures. Government audits have found that not all provisions in EAs are always implemented and environmental groups have charged that non-conformance to EAs or specific contract provisions occur frequently. However, these violations generally need to be addressed through law or rule changes. Ample opportunities exist for stakeholder inputs into the planning process, including opportunities for administrative reviews and litigation. As a consequence of policy changes brought by stakeholder litigation and political influence, annual wood supply from public lands has decreased by 80% over the past two decades.

Because of comprehensive planning rules, contract requirements and administrative and judicial review processes, and because numerous opportunities exist for stakeholder review and challenges, we conclude that timber harvested from public lands poses LOW RISK of illegal US hardwood supply.

14.4 *Forest Management* – National Laws

Instead of an all-encompassing national forestry law or policy, the US has several overarching environmental laws that address aspects of forest management, and several laws that address the management of federal forest lands specifically. In most cases, federal environmental laws rely on state governments to develop and implement standards for forestry practices. Section 7 of this report includes more detailed information and several tabularized listings of federal laws related to forest management. For purposes of this summary, the four most significant federal laws that have direct forest management implications on private lands are the Endangered Species Act (ESA), the Clean Water Act (CWA), the Clean Air Act (CAA), and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Agencies with purview over federally-owned forests must also conform to specific requirements of laws governing their management and are subject to Congressional review and stakeholder challenges.

Endangered Species Act (ESA

Under the Endangered Species Act (ESA), forest landowners and managers cannot cause injury or death to a listed threatened or endangered species by direct harm or through habitat modification. The Act requires the federal government to develop recovery plans for listed species and thus has effectively removed large areas of public lands from commercial

[116] Data provided by the US Forest Service from the LEIMARS database.

exploitation.[117] It has additionally restricted forest management activity on numerous private lands. Several hundred species that are found in either upland or bottomland hardwood forests are listed under the ESA. Among those that have received the most attention are: Eastern Cougar, Canada Lynx, Red Wolf, Indiana Bat, and Louisiana Black Bear. Penalties for "taking" a listed species are severe. The principal enforcement agency for the ESA is the US Fish and Wildlife Service (USFWS). In 2006, USFWS reported 22 prosecutions or settlements involving $5 million in fines, remediation and restitution for illegal take and habitat destruction (USFWS, 2006). Under certain circumstances, the ESA allows private landowners to prepare habitat conservation plans (HCP) which allows them some management flexibility consistent with the recovery of a listed species. About half dozen HCPs on private lands have been approved in the Pacific Northwest and the US South, but all involve ESA-listed species that inhabit softwood forest types. To date, no landowner with predominantly hardwood forests has found the need to seek one of these permits.[118]

Clean Water Act (CWA)

The Clean Water Act (CWA) addresses point sources (such as a drainpipe) that have an identifiable discharge into waters subject to federal jurisdiction and non-point source pollutants that are of a dispersed nature such as sediment and runoff. Farms and forests are examples of sources of non-point water pollution. Under the CWA, control and enforcement of non-point source pollution is generally delegated to the States and most often accomplished through the use of Best Management Practices (BMPs). Each hardwood-producing state has a program of either mandatory or voluntary BMPs for forest lands. Approaches vary, but all have published manuals or sourcebooks with guidance on procedures for such practices as road-building, water crossings, streamside management, use of chemicals, etc. In some states, BMP programs have both required and voluntary elements. For example, they may require notification of timber harvests or submission of forest management plans, but encourage (not prescribe) adherence to specific standards for stream buffers or culvert sizes for stream crossings. With few exceptions, compliance monitoring programs implemented by state governments clearly indicate that these forestry practices are being applied by landowners and timber harvesters at very high rates. In addition, most states have water quality control laws with strict penalties in the event of onerous sediment and erosion caused by land management activities including forest practices. Sections 8.2 and 8.3 of this report discuss regulation of forest practices in more detail.

Under the CWA, jurisdictional wetlands is the one area that the federal government retains direct control through the US Army Corps of Engineers. Although most normal silvicultural activities in forested wetlands are exempt from permit requirements, altering water flow or circulation that results in conversion of an existing forested wetland to an upland forest type or a change in the historic land use will trigger a permit requirement. All roads and stream crossings within wetlands and other jurisdictional waters of the US must be constructed and maintained in accordance with 15 specific BMPs prescribed by the regulatory agency (in this case, the US Army Corps of Engineers). The silvicultural exemption is conditional on implementation of BMPs.

[117] The northern spotted owl and red-cockaded woodpecker or two well-known forest dwelling endangered species that have warranted establishing large-scale habitat protection zones. These two examples are mainly softwood species dependent.

[118] In the Pacific Northwest, HCPs have been approved for conservation of northern spotted owl and salmon fish species. In the South, HCPs have been approved for conservation of red-cockaded woodpecker. In both regions, the listed species inhabit softwood forest types.

The courts have generally held that most forestry practices fall within the normal silvicultural activities that are exempt from CWA permitting requirements, but there are exceptions. For example, under certain circumstances, the conversion of bottomland hardwood to pine requires a CWA permit. Some environmental groups watch for and have successfully challenged specific plans for development or land use change in forested wetlands and CWA violations are aggressively prosecuted by the regulatory agencies. According to the US Army Corps of Engineers, about 5,500 alleged violations of the CWA are processed in Corps district offices each year. Of these, 75 percent relate to Section 404 permitting (although only a very small number involve silvicultural wetland issues).[119] Compliance and enforcement of CWA permit requirements is stringent and disputes regarding regulatory interpretations are adjudicated. Consequently, hardwood timber harvested in violation of the CWA presents little or no risk to US hardwood production.

Clean Air Act (CAA)

Under the Clean Air Act (CWA), states must have programs to protect air quality and visibility. For forest management, these typically include controls on prescribed burning and the use of ozone-depleting chemicals in forest nurseries. Air quality standards must be met to protect vistas near wilderness areas and to minimize smoke drift. In most states, burning permits are typically required and landowners are liable for smoke-related accidents stemming from controlled burning. Controlled burning is usually a practice applied in conifer stands to eliminate competing vegetation; it is not usually used hardwood management.

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)

Chemical use in forest stands, whether for insect control or for vegetation management, is regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The US Environmental Protection Agency (EPA) has responsibility for implementing and enforcing FIFRA. All forest-use chemicals must be EPA-registered and forest land operators must follow application guidelines prescribed for each chemical. For some chemicals, use is limited to trained and certified applicators. In some cases, states and local jurisdictions have enacted more stringent requirements for specific chemicals or classes of forest-use chemicals. Enforcement of both federal and state requirements is regarded as effective. Citizen complaints can be filed and agencies can (and have) imposed high penalties on violators.

Management of Federal Public Lands

Specific statutory authorities govern the management of federal lands comprised of 101 million hectares of forest land, of which 46 million hectares is classified as timberland (potentially available for commercial use). The majority of federal forest area is administered by USDA Forest Service within the National Forest System (NFS). While other federal agencies have some forests within their purview, the national forests are the most important in the hardwood region. About 10 percent of the timberland in the hardwood-producing region is in national forests; although (as noted earlier) only about 1% of the annual US hardwood supply is derived from them.

[119] Corps of Engineers. See overview at: http://www.usace.army.mil/cw/cecwo/reg/oceover.htm.

The most significant laws governing federal forest management are: the National Forest Management Act (NFMA), Federal Land Policy and Management Act (FLMPA), the Wilderness Act, and the National Environmental Policy Act (NEPA). These laws affect management planning and decision-making on the national forests. Administrative and legal challenges to forest planning and timber management activities as violating one or more of these laws have an extensive history. Planning and harvest activities are frequently delayed, altered or cancelled pending completion of administrative or judicial reviews.

For the national forests, the US Forest Service Law Enforcement and Investigations Branch is responsible for investigating incidents of illegal destruction, removal and transport of timber. The agency's law enforcement budget and staffing in 2007 were $110 million and 737 employees, respectively, roughly a doubling as compared with the early 1990s. Section 6.2.6 of this report provides further detail of Forest Service enforcement activity, but according to the most recent data available, resource and property damage related to timber theft averages a little over $100,000 annually in the eastern National Forests where most of the federal hardwood production is found. This compares with annual timber sales valued at $98 million. Thus, while timber theft on the national forests is an important issue for both the agency and for legitimate timber operators, it appears to represent a tiny fraction of the value of timber harvested. Moreover, by accounting for only one percent of US hardwood supply, the risk of illegal timber from the national forests entering the hardwood supply chain is mathematically very low.

14.5 *Forest Management* -- State Laws & Programs

The state governments are engaged in a variety of programs to promote the application of sound forestry practices on both private and public lands. Many activities are regulatory in nature; others are voluntary or incentive-driven. A more complete and detailed discussion of state forestry-related programs can be found in Sections 8 and 9 of this report.

In one form or another, every hardwood state has implemented regulations over the application of forestry practices on private lands. Some states in the hardwood-producing region have comprehensive regulatory programs focused principally at forest practices; other states have an assortment of statutory authorities. The forestry practices that are subject to state regulatory programs typically include one or more aspects of the following activities:

(1) Road and Trail Practices (water crossings, erosion control, material disposal sites, blasting standards, winter use and closures);
(2) Timber Harvesting Practices (landings; skid trails; slash management; equipment; felling, bucking and yarding; residual stand damage; safety);
(3) Reforestation Practices (site preparation, timing, species selection, artificial or natural, regeneration levels, supplemental planting);
(4) Cultural Practices (early release treatments, thinning, pruning, stand improvement cuttings, stand health);
(5) Chemical Application Practices (methods of application, intensity, timing, mixing, spill management);
(6) Forest Protection Practices (fuel loads; fire prevention; disease and insect prevention; animal damage prevention, salvage and sanitation cuttings);
(7) Administrative Practices (planning, notifying, reporting, monitoring, evaluating, occupational licensing, enforcing).

Regulations vary widely by state, but all states in the US hardwood-producing region regulate some forestry practices in one or more of the above categories. In some states, notification and/or a harvesting permit is required prior to a harvesting operation. In other states, reforestation is legally required after a timber harvest. Some require that specific BMPs be used. Still others require certification of timber operators. The range of regulatory interest is quite broad. Details on state regulatory programs, their extent and breadth are reviewed and tabularized in Section 8 of this report.

Pursuant to both federal and state laws, all 33 states in the hardwood-producing region have adopted mandatory or voluntary programs addressing best management practices (BMPs) for streamside management, stream crossing practices, forest road practices, and harvesting and reforestation practices. The majority (25 states) also have guidelines on waste disposal and chemical and fertilizer practices. In 2007, 24 of the 33 of the hardwood-producing states reported having a formal monitoring program for evaluating the extent to which landowners and timber harvesters apply recommended or required forestry practices. The average range of compliance for all practices is about 70 to 90 percent, but the range within a state varies depending on the practice being studied. Studies have shown that the risk of significant water quality impairment from forest practices is low even where BMP compliance rates are at the lower range.[120]

Data on citations and other enforcement actions related to violations of state regulatory authorities are available in each state, although record-keeping requirements vary depending on specific state statutes. Only sporadic information can be found in the formal literature or in media reporting about violations or potential violations of state regulations in the hardwood-producing states. Information that is readily available suggests that state regulatory agencies are not timid about issuing citations or pursuing violators. In West Virginia, for example, under its Logging Sediment & Control Act, 661 compliance orders, 314 suspension orders and 33 tickets were issued in 2006.[121] In Maine, between 2000 and 2003, nearly 22,000 required harvest notifications were filed, of which 55% were inspected and 460 violations of forest practices standards were found (on less than 4% of those inspected). From 2000 through 2003, the Maine Bureau of Forestry negotiated settlement agreements with $53,250 in assigned penalties for violations of forest practices standards. In Oregon, 241 citations were issued in the same three year period and 214 civil penalties were assessed.[122] Comparable statistics are kept and are obtainable in other states with regulatory programs. As noted earlier, many states with voluntary Best Management Programs also engage in some type of monitoring and compliance assessment.

Also suggestive of enforcement efforts is the public investment in state regulatory programs. In 2004, states in the region employed an estimated 715 full-time equivalent (FTE) staff for regulatory program implementation (Ellefson and others 2001). Thirty-one percent (about 220 FTEs) of the staff employed by these agencies are part of an agency whose primary function is forest resource management, while slightly more than 190 of the FTE staff are affiliated with air and water pollution control agencies. State regulatory programs in the hardwood producing region in 2004 were funded at an estimated $US 40 million.

[120] NCASI, 2007
[121] Information obtained from West Virginia Division of Forestry
[122] Information obtained from administrators of state forest practices regulatory programs

Given available information on state regulatory programs and enforcement capacity gleaned from state reports, media articles and in consultation with state officials, US hardwood production can be considered LOW RISK of non-compliance with state regulatory programs.

14.6 *Environment* – National Laws & Regulations

National environmental laws with the most direct influence on forest sustainability are briefly summarized earlier in this section and in more detail in section 7 of this report. However, numerous other federal statutes and programs contribute to protecting unique or special environments, encouraging conservation, promoting environmental education, supporting environmental related research or otherwise enhancing environmental values. For example, the Conservation Reserve Program (CRP) provides technical and financial assistance to farmers to convert highly erodible cropland or other environmentally sensitive acreage to other vegetative cover, including trees. Since its implementation in 1985, the CRP has resulted in several million acres of farmland being converted to forests and accounts for the increase in US forest area that has occurred over the past twenty years. Similarly, the Forest Legacy Program (FLP) encourages and supports acquisition of legally binding conservation easements that restrict development, require sustainable forestry practices, and protect other values. Implemented in 2005, the FLP has protected over 550,000 hectares in the hardwood-producing region.

CRP, Forest Legacy and similar federal programs are examples of federal efforts to promote or provide incentives for good forest management as opposed to being regulatory in nature. Collectively, they play a very significant role in the sustainability of US hardwood forests by encouraging forest use, reforestation, and conservation of environmentally sensitive or unique areas. While non-regulatory, landowner participation in these programs is monitored and verified by the implementing federal (and state) agencies.

14.7 *Environment* – State Laws & Programs

State environmental laws and regulations are varied and numerous. Many mirror or go beyond federal laws. Often, local ordinances also regulate one or more aspects of land use, waste collection, water conservation and other activities with environmental impacts. The principal goals of most state/local environmental laws are protecting watersheds, reducing air pollution, conserving wildlife, protecting unique natural areas, and preserving open space. Comprehensive water laws administered by state agencies are an example, especially those laws that seek to curb nonpoint sources of water pollution (see Section 8). Typically, these laws impose penalties on persons and organizations that fail to conform to established water quality standards or land use requirements. In some states, permits are required for sediment control from forest road-building or for timber harvesting. In 2004, all states had comprehensive water quality laws, of which at least 37 had some regulatory provisions focusing directly on nonpoint forest sources of water pollutants.

State water quality laws typically enforce violations through stop-work orders, judicially prescribed injunctions, civil actions for damages, civil penalties and criminal penalties when willful violation or gross neglect is determined to have occurred. By all accounts in the literature and based on informed judgments of state officials, state water quality, endangered species and similar environmental laws are stringently enforced. In the hardwood-producing region, only occasional serious violations of a state environmental law are reported in the media and they only very rarely involve a forestry practice. Forestry-related issues that arise typically involve

disagreements (rather than violations) over interpretations of rules or controversial permitting applications (such as for development along water bodies or within undeveloped forested areas).

Given little evidence that violations of state environmental laws occur due to forest practices, we conclude that there is a LOW RISK that wood from the US hardwood-producing region is produced in violation of state environmental laws or regulations.

14.8 *Labour and Welfare* -- National Laws

US law embodies labor standards consistent with international principles. The US has several major national labor welfare laws that address fairness, non-discrimination, child welfare, minimum wage and other labor issues. Perhaps the most important and relevant statute for legal and sustainable forestry is the Fair Labor Standards Act (FLSA) which establishes the basic rules that employers must follow in terms of wages and general working conditions. FLSA establishes minimum wage, overtime pay, recordkeeping, and child labor standards affecting full-time and part-time workers in the private sector and in federal, state, and local governments. As of July, 2007, all workers must be paid a minimum wage of not less than $5.85 per hour, with scheduled increases in 2008 and 2009 to $8.25 per hour. Minimum overtime rates are set and with some exceptions for part-time after school work and other special circumstances, workers in non-farm employment cannot be younger than 16 years of age. The FSLA prohibits discriminating against or discharging workers who file a complaint or participate in any proceedings under the Act. An additional national statute enacted in 1993 -- Family and Medical Leave Act (FMLA) – also requires that employers provide unpaid leave for workers who care for a newborn baby or family member with a serious medical condition. The US has several national laws that require employers to accommodate workers with disabilities and others that outlaw discrimination based on race, sex, age, religion or national origin.

The Employment Standards Administration of the US Department of Labor is the lead federal agency that implements and enforces US labor law, but other federal agencies have enforcement roles as do state labor agencies. Violating employers are subject to penalties, back wages and civil or criminal prosecution. Compliance with US labor law can be regarded as high. Data on enforcement actions are generally available on the websites of state labor agencies; they offer no evidence to suggest that forest or wood products employers are any more likely to be subject to an enforcement action than employers in other sectors.

14.9 *Labour and Welfare* -- State and Local Laws

Almost every state has enacted labor laws that re-enforce or supersede federal standards. For example, twenty-three states (23) in the hardwood-producing region have established minimum wages higher than the federal standard. Some states provide greater leave benefits for maternity care or medical conditions than do the federal requirements. In most states, employers, including logging contractors, must by law maintain workman's comprehensive insurance to cover medical and disability expenses for injuries occurred on the job.

Based on information available from state and other internet sources, the degree or intensity of enforcement of state labor laws varies by state, mostly as a function of state size. Thus, states such as California and New York have numerous publicized enforcement activities. State enforcement agencies respond to worker complaints and conduct random checks to ensure compliance with employment regulations. Typical is a recent crack down on wood pallet

producers in California (not a major hardwood producing state) involving the issuance of 49 citations and $567,000 in fines for safety and labor violations including failure to pay minimum wage and provide required worker's compensation insurance.[123] Between 2001 and 2004, companies in Massachusetts were fined $4.8 million in wage enforcement actions.[124]

While wood products businesses undoubtedly get cited by enforcement agencies from time to time (as in the California reference above), there is no evidence to suggest that violations of state or local labor and welfare laws are anymore common in the forestry or wood products sector than in other manufacturing or service sectors. Based on available information and interviews with hardwood exporters, labor and safety issues are addressed well in advance of any potential enforcement actions and enforcement issues involving violations of labor, health, and safety regulations among hardwood producers are rare.

14.10 *Health & Safety* -- National Laws

The most significant federal law that governs labor is the Occupational Safety and Health Act (OSHA) which prescribes very specific safety measures and safety equipment be used while engaged in commercial activity in forest areas. OSHA regulations include "safety practices, means, methods and operations for all types of logging, regardless of the end use of the wood."[125] Detailed records of accidents, injuries, and corrective measures must be maintained. Penalties for violations are severe. About 40,000 inspections are conducted annually by federal and state officials to monitor compliance with federal OSHA regulations. Although a relatively dangerous occupation, injury and accident rates in the logging industry have shown a steady decline over the past fifteen years, according to Labor Department data.

14.11 *Health & Safety* -- State and Local Laws

Under the federal statute, states can develop and operate, with federal OSHA approval, their own job safety and health programs. At least 16 of the Hardwood States have state OSHA programs. Over the past several years, in cooperation with the states, the federal OSHA has instituted Local Emphasis Programs (LEPs) designed to focus training and enforcement strategies on industries with high risks of injuries. Logging is one of several sectors that have an LEP which, among other things, has sponsored safety seminars for timber operators, increased inspections and provided training programs for enforcement officials.

Logging remains an occupation with one of the highest safety risks. For that reason, both federal and state agencies tend to vigilantly monitor and inspect timber operators for compliance with health and safety rules. Trade associations representing timber operators sponsor safety programs on an on-going basis which help keep operators current on changing regulations and innovations in safety equipment. Tighter inspections and more logger safety programs would appear to be effective. Labor Department statistics show that fatality and injury rates in logging have declined since the early 1990s.

[123] California Economic Employment Enforcement Coalition (EEEC). February 18, 2008
[124] See: http://www.masslawyersweekly.com/reprints/shepherd061404.htm
[125] Code of Federal Regulations (CFR) on Logging operations: 29 CFR 1910.266

14.12 *Other Parties' Tenure and Use Rights*

In the US context, other parties' tenure rights can refer to public access to forests generally, or to the ownership and use of forests by Native Americans. With respect to public access, each state has different liability laws and cultural traditions in dealing with rights of access to private property for such things as recreation and hunting. Many private landowners allow the public to access their property for recreational or hunting use without charge. That is usually the case in the northeastern states. Others lease property to hunting clubs or individual hunters (usually the case in the South). These types of leases serve the dual purpose of also providing protection against theft and property damage by unauthorized trespassers. As a general rule, private property is legally protected from unauthorized intrusions unless specifically allowed for in state law (access to a shoreline, for example).

Access to public lands for recreation or other uses is generally unencumbered. Permits may be required for certain activities, such as firewood cutting, camping or mushroom collection. Various use rules apply to specific facilities or areas.

With respect to Native American forest use rights, Native Americans, as sovereign entities, control and regulate forest lands that they might own. They are a diverse group, encompassing 556 federally-recognized tribes with ownership of 12.3 million acres of US timberland. About 48 federally-recognized tribal organizations with 3.4 million acres have significant timberland resources in the hardwood-producing region. While it is difficult to determine the exact status of the forest resources on these lands, assessment of Indian forest management in the United States indicates that significant progress has been made toward closing the gap between tribal goals for their forests and the ways they are managed.[126] A more detailed discussion on Native American forest lands and land claims can be found in Sections 6.1 and 12.4 of this report. In general, conflicts involving Native American forest ownership or use claims are not considered a significant issue for US hardwood supplies and exports. As part of the review of the FSC Controlled Wood Standard, we found that the US was LOW RISK with respect to threat of violation of traditional and civil rights.

14.13 *All Relevant Royalties and Taxes are Paid*

As noted earlier, 92 percent of US hardwood is supplied from private lands. Timber transactions are thus between private parties. Only about 8 percent of the annual hardwood timber harvest is from public lands. Timber sales from public lands are almost always competitive bid sales. The US does not have a concession system and thus payment of royalties is not relevant for public timber harvesting.

There are prescribed procedures for enforcing terms of timber sale contracts on public lands. Failure to make all payments due to the respective government entity results in contract cancellation, forfeitures and penalties. Timber purchasers must post bonds and make required deposits during the contract period (the time allowed for operating the sale) which typically is limited to no more than three to five years. When necessary, civil and criminal prosecutions are sought if laws or regulations are violated during the contract period (such as unauthorized cutting or damages to government property).

[126] Intertribal Timber Council, 2003

The US Federal Income Tax is applied to most forms of personal and business income, including income from private timber sales. The compliance rate for paying income taxes exceeds 84% for the general population, high by international comparison, and stiff penalties are imposed on tax abusers. [127] The US Internal Revenue Service, charged with collecting revenue and enforcing the US tax code, has a well-deserved reputation for pursuing tax deficiencies. There is no evidence or reason to believe that the tax compliance rate among entities and individuals in hardwood timber activities differs from national averages.

States and localities impose various kinds of taxes including income taxes, property taxes (or severance or yield taxes) and estate taxes. In at least 20 hardwood-producing states a written management plan is required to be eligible for favorable property tax treatment. As with federal income taxes, there is no evidence or reason to believe that hardwood producers are not compliant with state and local tax requirements. The US does not impose export taxes, thus no duties are assessed on hardwood product exports.

We conclude that there is a LOW RISK that any tax liability is unpaid on US hardwood products sold domestically or for export.

14.14 *Compliance with CITES Requirements*

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regulates international trade in animal and plant species listed on three appendices according to their scarcity and degree of needed protection. Approximately 45 timber species or species groups are currently listed under CITES. However, few of the listed species are temperate hardwoods and none are native to the US. US re-exports of temperate hardwood products are not significant in volume. A re-export certificate is required for the export of CITES-listed specimens that were previously imported, including items subsequently converted to manufactured goods, but re-exports of CITES-listed temperate timber species are not known to occur. While trade in most CITES listed species is legal provided permitting requirements are met, and some tropical species are imported into the US and, in some cases, re-exported, temperate hardwood species are not affected. Thus, the risk that US temperate hardwood exports include CITES-listed species is LOW.

14.15 Conclusions

The US has a complex system of federal, state and local laws that affect forest practices in the hardwood-producing region both directly and indirectly. The federal government has a direct role in establishing specific environmental standards that affect forests (such as endangered species and wetlands), mandating development of state approaches for addressing environmental impacts (such as controlling non-point source water pollution) and for managing public forests to meet multiple objectives. The federal government also sets direction and minimum standards for labor and workplace safety. All indications are that capacity for enforcement of federal law is robust and enforcement itself is stringent. The same can also be said for enforcement of state laws and regulations affecting unlawful timber harvesting and sustainable forest management. State laws and regulations vary as do the approaches states take to addressing unlawful harvesting and forest activities. Non-regulatory and incentive-based programs contribute equally to reducing the risk of illegal activity and to promoting sustainable

[127] See http://www.cato.org/testimony/ct-ce02162007.html

forestry practices and conservation. Laws governing labor practices and occupational health and safety are also strictly enforced.

Hardwood supply derives mainly from private forest ownerships. Legal use rights of private landowners are well-established and clear. Disputes involving title to land or timber are relatively infrequent and, in any case, can be resolved through well-established administrative or judicial procedures. Boundaries and uses of public forests are equally as clear and dictated by statutes that are strictly enforced and supported by well-funded agencies. Native American rights are protected by law and defended in the courts. There is no evidence or substantive claims of corruption against forestry officials. And when compared to other countries where illegal logging has been identified as a pervasive problem, unlawful harvesting of hardwood forests is almost certainly of such a small magnitude and frequency in the United States that it cannot be considered a systemic problem.

Criteria for CPET Category B evidence are very clear about using a risk assessment approach for determining that a country is low risk with respect to illegal or unsustainable sources. When considered in their totality, the effectiveness of various forestry-related laws and non-regulatory programs enable a conclusion that US hardwood products and temperate hardwood exports are LOW RISK of being sourced illegally or unsustainably.

References

CPET. 2006. CPET: UK Government Timber Procurement Policy: Framework for evaluating Category B evidence, First edition Development Draft 2. December 2006.

CPET. 2007a. Practical Guides: Category B Evidence. Forest Source Information. January 2007.

CPET. 2007b. Practical Guides: Category B Evidence. Supply Chain Information. January 2007.

Ellefson, P. V., R. J. Moulton, and M. A. Kilgore. 2001. Public Agencies and Bureaus Responsible for Forest Management and Protection: An Assessment of the Fragmented Institutional Landscape of State Governments in the United States. Journal of Forest Policy and Economics 5(2003): 2007-223.

Intertribal Timber Council. 2003. Second Indian Forest Management Assessment Team. An Assessment of the Indian Forests and Forest Management in the United States: Executive Summary. Portland, OR.

National Council for Air and Stream Improvement (NCASI). 2007. Compendium of State and Provincial Forestry Best Management Practices (draft). Research Triangle Park, NC: National Council for Air and Stream Improvement (NCASI).

15.0 RECOMMENDATIONS/OPPORTUNITIES FOR AHEC

The study team has arrived at a series of recommendations for the U.S. hardwood industry to consider based upon the findings of the report. These recommendations are advisory only and may not apply in all situations. Individual companies and their affiliated associations should consider the recommendations as ways to address the various public and private sector procurement polices addressing sustainable forestry.

15.1 For Consideration by AHEC, Producers and Exporters

The study team has arrived at a series of recommendations for the US hardwood industry to consider based upon the findings of the report. These recommendations are advisory only. *The following recommendations are directed at AHEC and affiliated associations:*

(1) Develop and publish (or post) a procurement/environmental policy that would apply to all members or require that members develop a procurement/environmental policy. The policy should describe business practices that ensure hardwood supplies are from legal sources.

(2) Encourage or support a policy that requires exported wood shipments to include a clear indication of the country of origin (i.e. the United States unless the product is a re-export) and, if practical, the state or region in the United States where the timber was produced. This can be accomplished with a stamp or addendum on the shipment's invoice, with a phytosanitary certificate issued by an APHIS authorized certification official in the originating state, or with documentation similar to what will be required of importers if the Lacey Act amendments are enacted.

(3) Participate in public and private sector initiatives at the state and local level to work collaboratively to address timber theft and sustainable forestry challenges in the following ways:

(a) In cooperation with state forestry organizations and/or universities, developing and implementing an information system for tracking reported incidences of illegal activities involving the harvest of hardwood timber.

(b) Where such programs are being considered at the state level, consider supporting licensing or certification of timber harvesters and timber buyers.

(c) At the state level, encourage state forestry organizations to provide clear and concise information to landowners, timber operators and timber buyers as to the legal requirements for selling timber.

(d) At the state level, and where it is not currently provided, encourage state forestry organizations to publish (post) recommendations to landowners on how to minimize risk of being victimized by timber theft and trespass.

(e) At the state level, encourage state forestry organizations to foster cooperative relationships with enforcement agencies to deter timber theft.

(f) Where state agencies may have overlapping responsibilities, encourage state forestry organizations to examine timber and forestry enforcement programs to prevent widespread inconsistencies.

(g) In cooperation with the US Forest Service, state forestry organizations and universities, periodically review the extent of illegal timber harvesting activities occurring nationally and assess the effectiveness of programs used to respond to such activities.

(h) Promote research (nationally and globally) to improve the effectiveness of institutions and programs focused on unlawful timber harvesting and marketing activities.

Companies and firms directly engaged in the production and export of hardwood products can take other steps to communicate and assure their customers that US hardwood products are sourced legally and sustainably. *Recommendations for consideration by firms engaged in hardwood production and exporting:*

(1) Develop and publish (or post) a procurement/environmental policy that includes (among its provisions) a description of business practices that ensure hardwood supplies are from legal sources.

(2) Evaluate the feasibility of tracking the chain of custody of wood and fiber from the forest to the customer to be in a position to demonstrate that all harvested wood is legal and in compliance with applicable laws and regulations.

(3) ***For timber purchasers:***

(a) As relevant to the business, ensure that formal contracts exist with contractors to require compliance with applicable laws and regulations and state BMPs.
(b) Consider formalizing BMP monitoring and/or support state efforts for BMP monitoring.
(c) Encourage logging contractors to implement the Master Logger Program requirements and consider independent certification.

(4) ***For timber owners/managers:***

(a) Consider conducting security audits where there is a high risk of timber trespass and illegal harvesting.
(b) Consider certification through one of the recognized certification systems, including the American Tree Farm System and its group certification opportunity.

(5) Coordinate with law enforcement and association timber security task forces to investigate and resolve timber trespass and illegal harvesting.

(6) Encourage associations and cooperators to conduct sustainable forestry and certification training to increase awareness of the basic requirements of the certification standards.

(7) Encourage the use of existing mechanisms, including the SFI Implementation Committee Inconsistent Practices provision, to report those that do not adhere to the principles of sustainable forestry.

15.2 Assessment and Reporting Tools

Finally, to assist AHEC members in evaluating and documenting practices that demonstrate a high confidence that wood products are at low risk of being produced illegally or from controlled/controversial sources, the study team has developed a forest sustainability self-assessment toolkit for use at their discretion. Included as Appendix C, it is intended to serve as a guide for companies desiring to examine and document their supply chain with respect to legal and non-problematic sourcing (as defined in procurement and certification schemes).

APPENDIX A

FSC Controlled Wood Risk Assessment for threat to High Conservation Value Forests (HCVF)

Assessment of Lawful Harvesting & Sustainability of US Hardwood Exports

Prepared for
American Hardwood Export Council

October 1, 2008
Version 1.0

Appendix A: FSC Controlled Wood Risk Assessment for threat to High Conservation Value Forests (HCVF)

I. Identification of Study Area

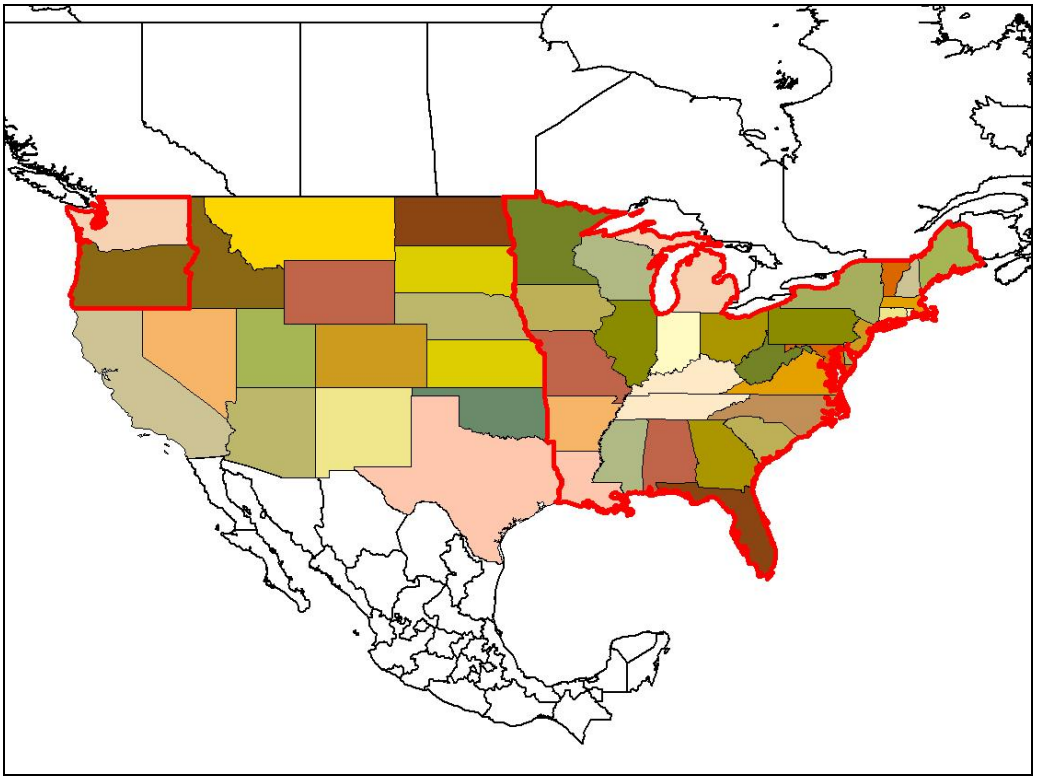


Figure 1. The identified study area, as defined by AHEC, includes: all states adjacent to or East of the Mississippi River, Oregon, and Washington.

II. Summary of Findings

One can conclude that the districts of origin as described as the AHEC study area are LOW RISK in relation to threat to High Conservation Values through compliance with Criteria 3.1 and 3.2 of Annex 2 of the FSC Controlled Wood standard (FSC-STD-40-005). This determination is based on the following:

1. Thirty of the forty ecoregions in the AHEC study area were NOT identified to be part of areas designated for measurements of high biodiversity, endemism, or accumulations of rare or endangered species.

2. Ten ecoregions were flagged for further investigation because of inclusion in WWF G200, Conservation International Biodiversity Hotspot, or IUCN/Smithsonian Center of Plant Diversity prioritization. These ecoregions are: Klamath-Siskiyou Coniferous Forests; Central Pacific Coastal Forests; British Columbia Coastal Mainland Forests; Appalachian Mixed Mesophytic Forests, Appalachian-Blue Ridge Forests, Southeastern Mixed Forests,

Southeastern Conifer Forests; Everglades Flooded Grasslands, Florida Sand Pine Scrub, and South Florida Rocklands.

3. These ten ecoregions were assessed for their levels of protection and the degrees to which forestry presented a threat to ecoregional HCVs. In no cases was the level of protection, when assessed to level of threat, at a status of higher than vulnerable, the second lowest classification in the metric used. Forestry was identified as a minor threat to some HCVs in some of these ecoregions, but in no cases was it the primary threat. In the Southeastern ecoregions, the few and last remnants of natural forest are mostly in public lands. Given the current climate of use in public lands and conservation, the level of protection for these areas is increased. Additionally, the success of current conservation initiatives in the Appalachian Cumberland area indicates significant progress in collaboration of conservation in that ecoregion.

4. None of the areas which make up the study area are included in assessments of large landscape-level forests by WRI/Global Forest Watch Frontier Forests.

5. There are multiple sites of Greenpeace identified Intact Forest Landscapes in the study area. The US sites are nearly entirely incorporated into the highest level protection, including National Park and National Forest Wilderness Areas.

III. Identification of priority ecoregions and HCVF

Identification of Ecoregions

There are forty terrestrial ecoregions in the AHEC study area (see Figures 1 and 2) [1, 2]. The study area is defined as all states adjacent to or East of the Mississippi River, Oregon, and Washington.

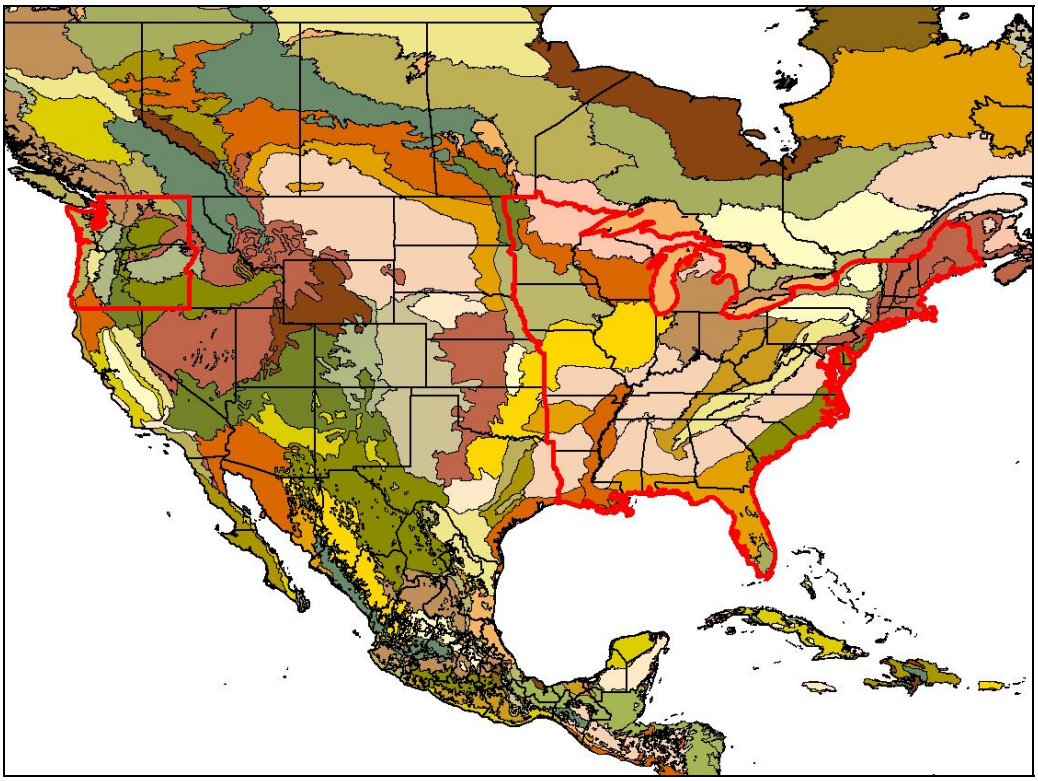


Figure 2. The forty WWF terrestrial ecoregions in the AHEC study area include [1, 2]: Allegheny Highlands forests; Appalachian mixed mesophytic forests; Appalachian-Blue Ridge forests; Atlantic coastal pine barrens; Blue Mountains forests; British Columbia mainland coastal forests; Cascade Mountains leeward forests; Central and Southern Cascades forests; Central forest-grasslands transition; Central Pacific coastal forests; Central tall grasslands; Central U.S. hardwood forests; Eastern Cascades forests; Eastern forest-boreal transition; Eastern Great Lakes lowland forests; Everglades; Florida sand pine scrub; Great Basin shrub steppe; Klamath-Siskiyou forests; Middle Atlantic coastal forests; Mississippi lowland forests; New England-Acadian forests; North Central Rockies forests; Northeastern coastal forests; Northern California coastal forests; Northern tall grasslands; Okanagan dry forests; Ozark Mountain forests; Palouse grasslands; Piney Woods forests; Puget lowland forests; Snake-Columbia shrub steppe; South Florida rocklands; Southeastern conifer forests; Southeastern mixed forests; Southern Great Lakes forests; Upper Midwest forest-savanna transition; Western Great Lakes forests; Western Gulf coastal grasslands; and Willamette Valley forests.

WWF Global 200 Ecoregions

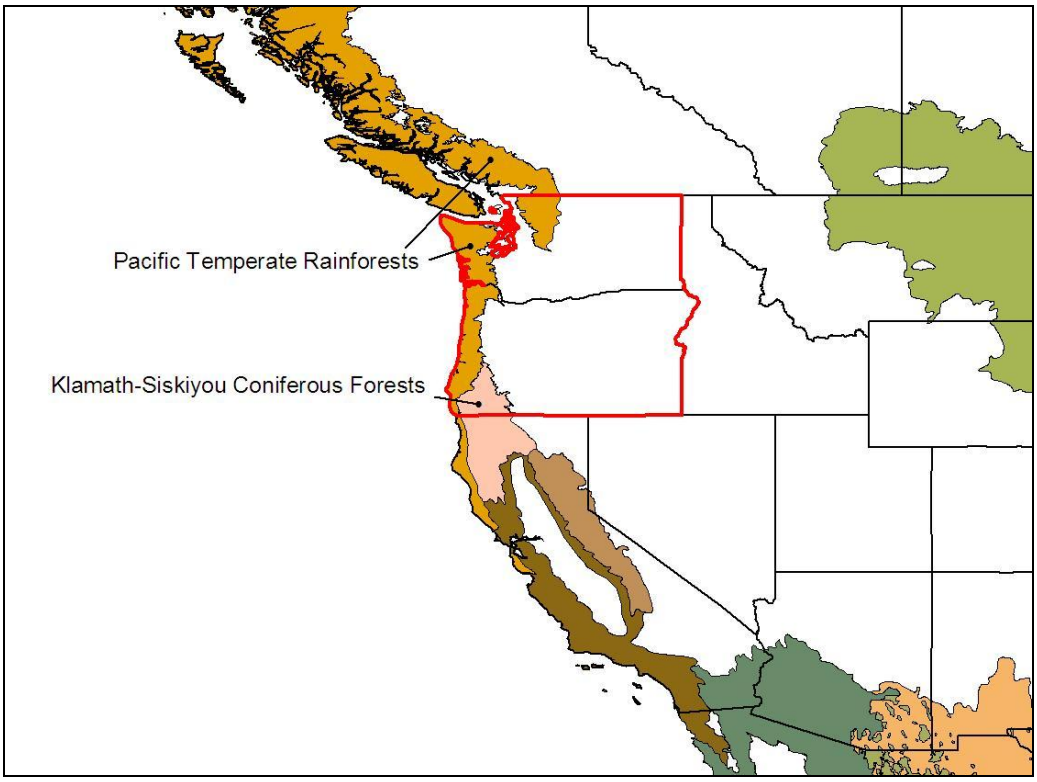


Figure 3a. There is overlap of the AHEC study area and the WWF Global 200 Ecoregions in the Western US. The AHEC study area is outlined in red and overlaps with the Pacific Temperate Rainforests and Klamath-Siskiyou G200 ecoregions [3].

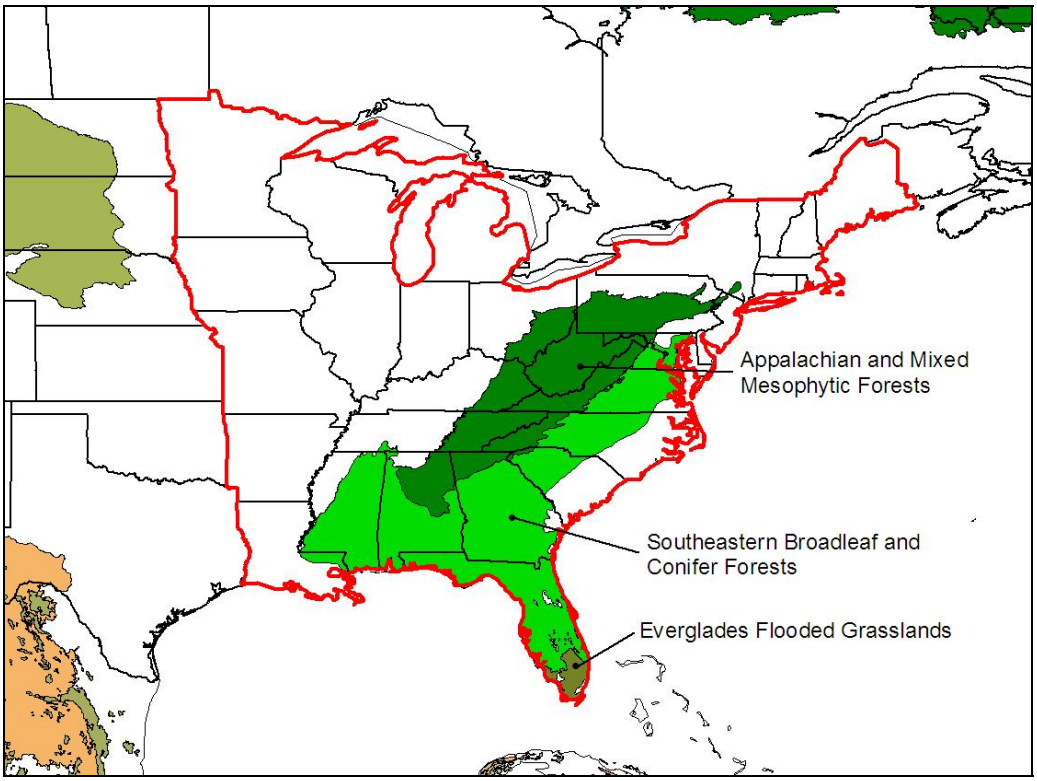


Figure 3b. There is overlap of the AHEC study area and the WWF Global 200 Ecoregions in the Eastern US. The AHEC study area is outlined in red and overlaps with the Appalachian and Mixed Mesophytic Forests, Southeastern Broadleaf and Conifer Forests, and Everglades Flooded Grasslands G200 ecoregions [3].

Conservation International: Global Biodiversity Hotspots

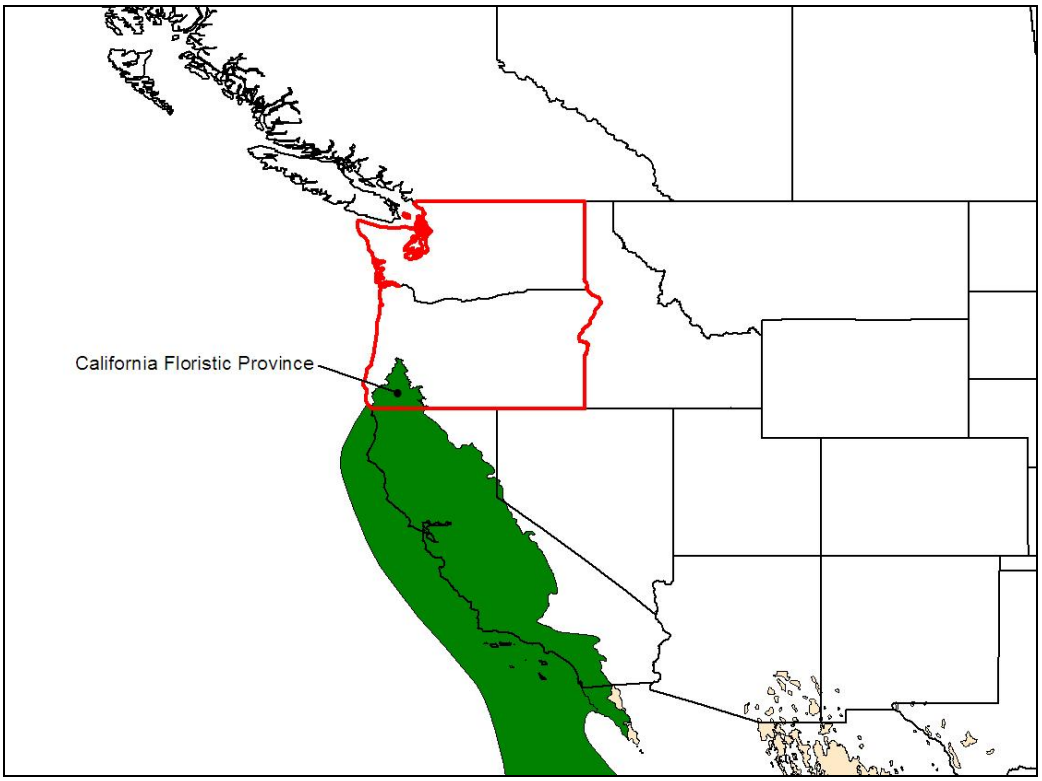


Figure 4. There is overlap between the ANEC study area and the Conservation International Biodiversity Hotspots designation in the Western US [4]. The study area, outlined in red, overlaps with the California Floristic Province in Southern Oregon. This designation, comprising the Klamath-Siskiyou Coniferous Forests ecoregion, is captured in the WWF G200 designation (see Figure 3a).

IUCN – Smithsonian Centres of Plant Diversity

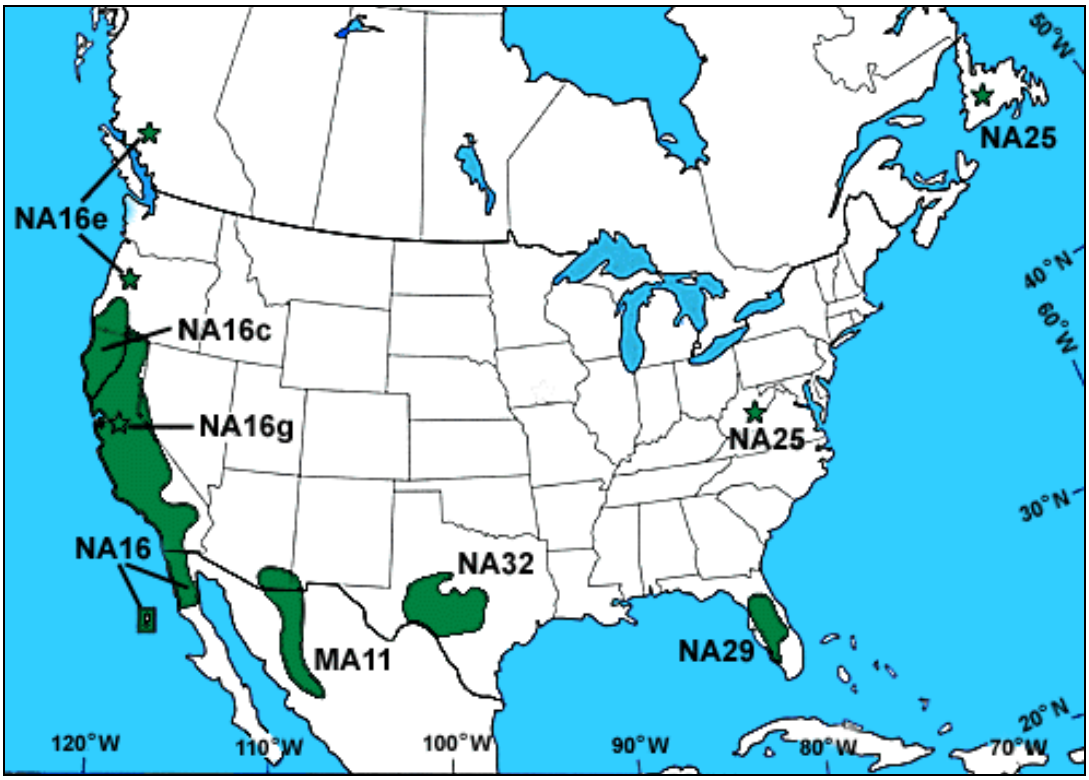


Figure 5. The areas of overlap with Smithsonian Institution / IUCN Centers of Plant Diversity for North America and the procurement area consist of the California Floristic Province in Southern Oregon, North American Serpentine Flora in Oregon and West Virginia (NA16e and NA25) and the Central Florida Highlands in Florida [5-9]. The California Floristic Province and Serpentine Flora Centers of Plant Diversity in the assessment area are captured in other priority classifications (Hotspots and G200 ecoregions). The Central Florida Highlands are addressed below.

WRI/Global Forest Watch Frontier Forests

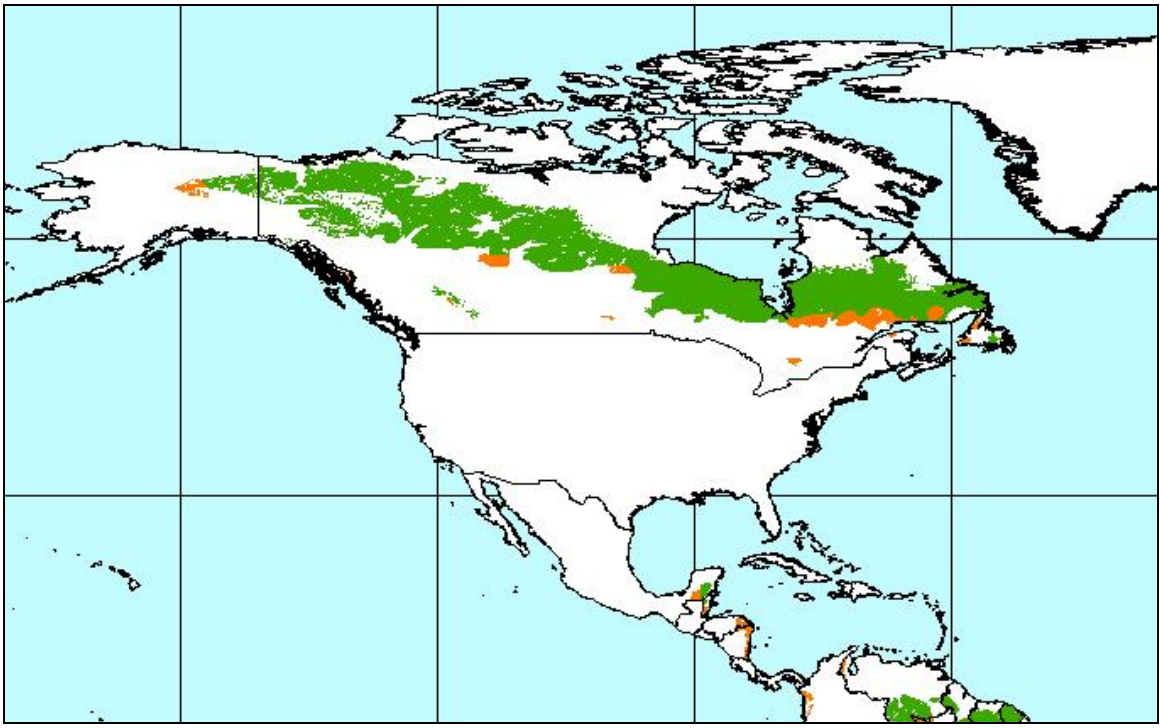


Figure 6. Global Forest Watch Frontier Forests in North America. The areas in green are designated as low/no risk by Global Forest Watch. The areas in orange are designated as high risk [10].

Greenpeace Intact Forest Landscapes

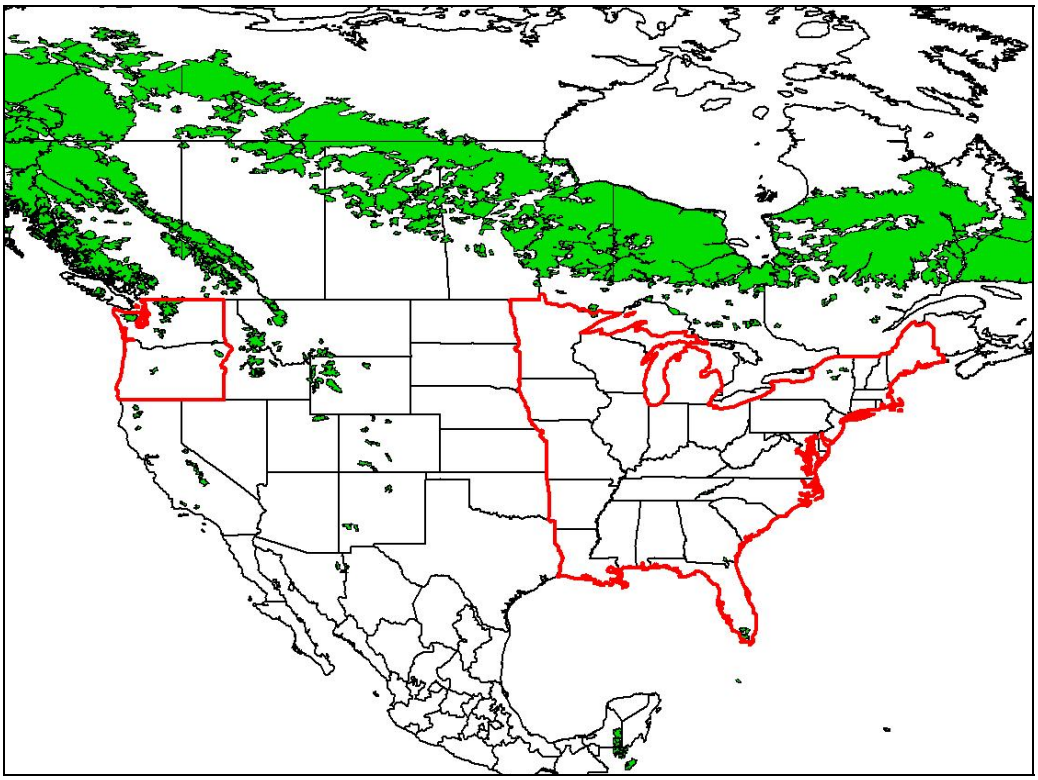


Figure 7. Greenpeace identified Intact Forests within the AHEC study area [11]. The Intact Forests are green-shaded areas. There are intact forest vestiges in the states of Oregon, Washington, Minnesota, New York, Tennessee, North Carolina, Georgia, and Florida. These intact forests are nearly completely protected in highest levels of protection as National Parks or Wilderness (see Appendix B for details).

IV. Discussion of priority ecoregions

The Klamath-Siskiyou Coniferous Forests Ecoregion

Conservation Values of the Ecoregion

The Klamath-Siskiyou Coniferous Forests ecoregion has to be considered of highest conservation priority as it is recognized in all of the referenced conservation priority schemes [3-5, 7, 8, 12-15]. The ecoregion overlaps with the study area in Southern Oregon. WWF has assessed the conservation status of the ecoregion to be "critical/endangered" [16, 17]. The Klamath-Siskiyou ecoregion is recognized as one of the four richest temperate coniferous forests in the world with very high species richness, high levels of endemism, and exceptional community assemblages. Currently, 25% of the ecoregion is determined to be intact. Due to its inclusion in the above conservation schemes and classification as endangered, wood procurement from the ecoregion is flagged for potential high risk to HCVF.

Protection of the Ecoregion

The primary threats to the ecoregion have, in the past, included logging, and the associated road building. The Klamath-Siskiyou Forests ecoregion covers 50,299 square kilometers,

approximately 63% of which are publicly owned (see Figure 8). Complete and near-complete protection afforded through designations such as wilderness and national park service covers 12.44% of the ecoregion, and an additional 44.8% of the ecoregion is offered permanent protection from conversion [17].

Although there are mixed reports regarding the level of policy to protect HCVs in the Klamath-Siskiyou Forests ecoregion, the area has to be considered relatively well protected [17]. Current harvest practices by the Forest Service (the largest land manager in the region) favor protection of HCVs on public land. Private land owners in the region have some responsibility for protection of HCVs (private land accounts for 37% of the ecoregion), but strict Forest Practice Rules have been passed in both Oregon and California that mandate protection of forest resources and ecosystem values, including retention of wildlife and heritage trees, maintenance of wetland and riparian zones, protection of state and federally listed animal and plant species [18]. The Forest Practice Rules also limit opening sizes.

There is additional supportive scientific evidence that the ecoregion is relatively well-protected. An assessment of the ratio of converted lands to protected lands states that 4.6% of the ecoregion has been converted and 58.6% of the land is protected. The converted/protected ratio of 0.08 is relatively low and the ecoregion was ranked in the least critical classification (note: the published assessment was done on the analogous TNC/USFS ecoregional delineation – the Klamath Mountains Ecoregion) [19].

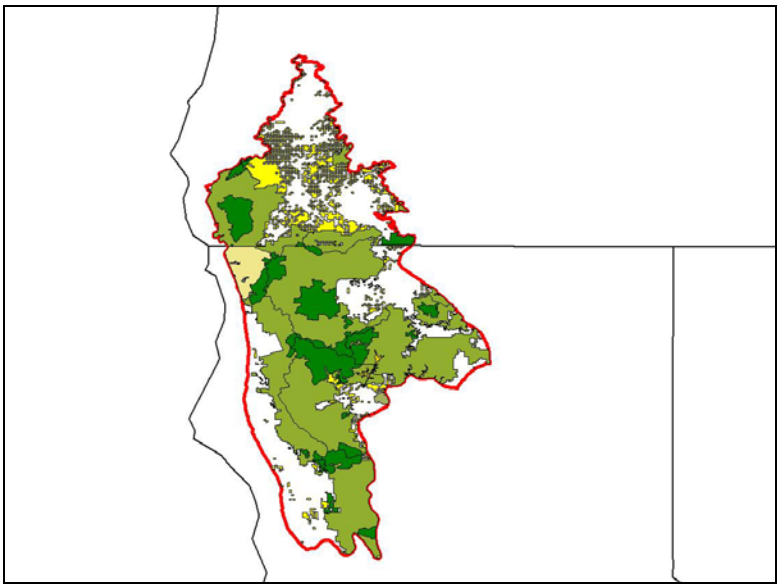


Figure 8. Federal land ownership in the Klamath-Siskiyou Forests ecoregion. The ecoregion is outlined in red, fully protected designation (national park, wilderness, etc) is dark-green shaded, national forest is light-green, national recreation area is cream-shaded, and BLM is yellow-shaded.

The Central Pacific Coastal Forests Ecoregion

Conservation Values of the Ecoregion

The Central Pacific coastal forests ecoregion is included in the WWF Global 200 ecoregional conservation priority setting as part of the Pacific Temperate Rainforests G200 configuration [3, 12, 13] but not in any of the other schemes for biodiversity values [4, 5, 9, 14, 15]. WWF has assessed the conservation status of the ecoregion to be "critical/endangered" [20]. The ecoregion is included in the Global 200 ecoregional conservation strategy due to outstanding biodiversity, especially in amphibians and birds. It is also an exceptionally productive forest characterized by lush undergrowth and woody debris. Due to its inclusion in the above conservation schemes and classification as endangered, wood procurement from the ecoregion is flagged for high risk to HCVF.

Protection of the Ecoregion

The primary threats to the ecoregion at one time were logging, but now are more associated with pollution, grazing, introduced species, road building, and recreational impacts. Just more than half of the Central Pacific Coastal forests (55%) is located in the US and the rest is Vancouver Island, in British Columbia, Canada. The US section is mostly privately held (55%) (see Figure 9). Federal lands make up 31% and state and county lands make up 12% of the ecoregion. The Canadian portion is 75% Crown Land.

The ecoregion is relatively well-protected. Complete and near complete protection cover 9.4% percent of the ecoregion [17]. Note that this does not include the core portion of Olympic National Park, which falls in a different ecoregion. An additional 15% are granted moderate protection, and an additional 76% is granted protection from issues such as conversion and division. There are some issues with the level of conservation in the ecoregion, but given the legal ownership in the ecoregion and the current forest practices of both Crown Lands in BC and US Forest Service in the US, it is very unlikely that forest practices currently contribute great threat to ecoregional HCVs.

There is additional supportive scientific evidence that the ecoregion is relatively well-protected. An assessment of the ratio of converted lands to protected lands states that 2.1% of the ecoregion has been converted and 29.2% of the land is protected. The converted/protected ratio of 0.07 is low. (note: the published assessment was done on the analogous TNC/USFS ecoregional delineation – the Pacific Northwest Coast) [19].

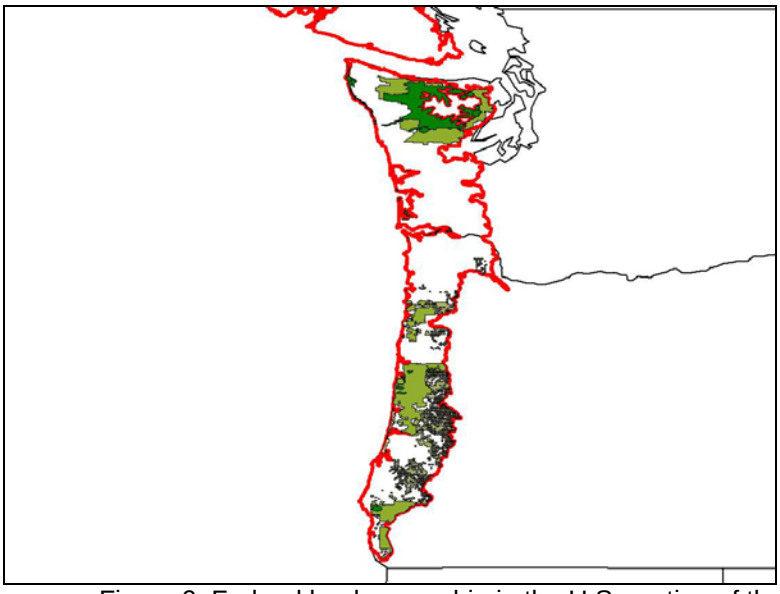


Figure 9. Federal land ownership in the U.S. portion of the Central Pacific Coastal Forests ecoregion. The ecoregion is outlined in red, fully protected designation (national park, wilderness, etc) is dark-green shaded; national forest is light-green.

The British Columbia Mainland Coastal Forests Ecoregion

Conservation Values of the Ecoregion

The British Columbia Mainland Coastal forests ecoregion is included in the WWF Global 200 ecoregional conservation priority setting as part of the Pacific Temperate Rainforests G200 configuration [3, 12, 13] but not in any of the other schemes for biodiversity values [4, 5, 9, 14, 15]. WWF has assessed the conservation status of the ecoregion to be "critical/endangered" [21]. The ecoregion is included in the Global 200 ecoregional conservation strategy due to diverse habitat. The ecoregion encompasses the latitudinal range limits (either northern or southern) of many species. Additionally, the ecoregion has relatively intact habitat for large mammals. Due to its inclusion in the above conservation schemes and classification as endangered, wood procurement from the ecoregion is flagged for high risk to HCVF.

Protection of the Ecoregion

The primary threats to the ecoregion involve logging. Only about 10% of the ecoregion is located in the US – the rest is in Canada. The US section (see Figure 10) is very well protected. 22.5% of the ecoregion in total is considered protected [19]. About 40% of the US portion of the ecoregion is fully protected [17] – most notably the North Cascades and Olympic National Parks. The Canadian portion of the ecoregion is less well-protected; about 13% of the entire ecoregion is at least moderately well protected (i.e. GAP 2 level protection). Given the legal ownership and protection levels of the ecoregion in the US, it is very unlikely that forest practices currently contribute great threat to ecoregional HCVs.

Additional supportive scientific evidence that the ecoregion is relatively well-protected. An assessment of the ratio of converted lands to protected lands states that 0.5% of the ecoregion has

been converted and 22.5% of the land is protected. The converted/protected ratio of 0.02 is very low. (note: the published assessment was done on the analogous TNC/USFS ecoregional delineation – the North Cascades) [19].

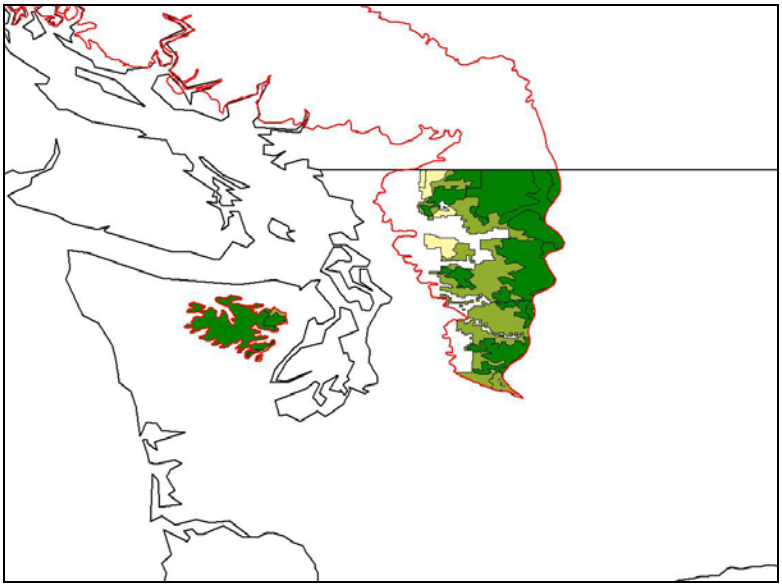


Figure 10. Federal land ownership in the U.S. portion of the British Columbia Mainland Coastal Forests ecoregion. The ecoregion is outlined in red, fully protected designation (national park, wilderness, etc) is dark-green shaded, national forest is light-green, and Department of Defense is cream-colored.

The Appalachian Mixed Mesophytic Forests Ecoregion

Conservation Values of the Ecoregion

The Appalachian Mixed Mesophytic Forests ecoregion is included in the WWF Global 200 ecoregional conservation priority setting as part of the Appalachian and Mixed Mesophytic Forests G200 configuration [3, 12, 13] but not in any of the other schemes for biodiversity values [4, 5, 9, 14, 15]. WWF has assessed the conservation status of the ecoregion to be "critical/endangered" [22]. WWF Global 200 includes the Appalachian Mixed Mesophytic Forests ecoregion due to the high species and generic richness of temperate broadleaf trees, as well as understory plants, songbirds, salamanders, land snails, and beetles. Due to its inclusion in the above conservation schemes and classification as endangered, wood procurement from the ecoregion is flagged for high risk to HCVF.

Protection of the Ecoregion

The primary threats to the ecoregion at one time included logging, conversion to agriculture, and mining. As of 2005, approximately 14% of the ecoregion was in a conservation scheme (this has increased since – see below) and the converted/protected ratio of 1.05 is low [19]. Thus, the area is not identified as in imminent need of higher protection. The larger remaining blocks of "natural" forest in the ecoregion are found in federal and state-owned lands. Although logging still remains a potential threat due to the potential of large-scale and damaging logging activities in these areas, there are multiple collaborative conservation initiatives that address these risks.

These projects that incorporate private and public land managers have been developed since the WWF assessment of 2001 and provide evidence for a more secure protection.

The most notable recent conservation priority of this ecoregion is known as the Cumberlands. The Cumberlands is an area of Eastern Tennessee and Eastern Kentucky that is not only a center of ecological values, but also a center of cultural values. There is a current initiative of state and federal agencies along with private groups and NGOs that aims to create a National Heritage Area in the area that would form a encompass cultural and environmental HCVs (supported by the governor of Tennessee). The feasibility study has been completed and demonstrates advancement of the projects and effective collaboration in conservation of the area [23]. Additionally, the Alliance for the Cumberlands has developed a thorough compilation of information on the region that includes a conservation action plan that highlights areas of assemblages of rare species (a central component of HCVF) [24].

The most notable single conservation activity in the region occurred in the ecoregion happened in November of 2007 when TNC announced completion of the initiative to connect private and public forestlands that included acquisition of timber rights on public lands, conservation easements, and transfer of lands to state management [25]. The project resulted in conservation of 128,000 acres in the region.

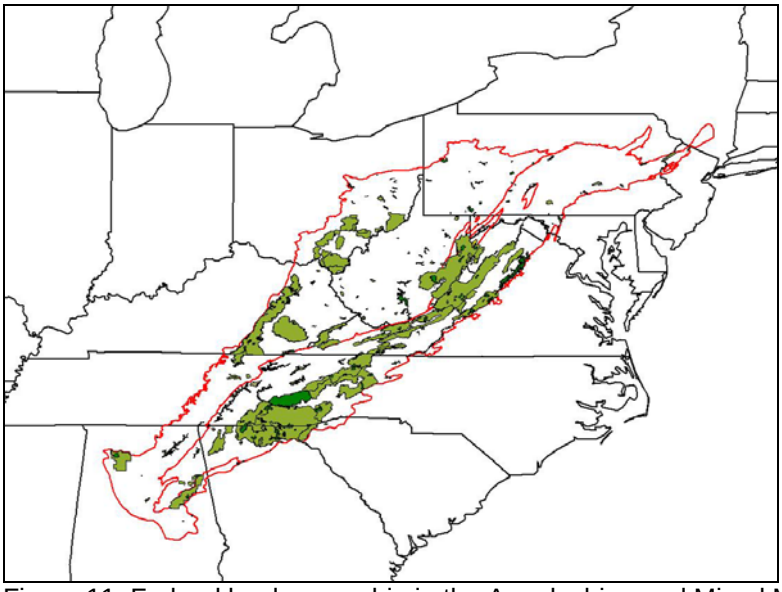


Figure 11. Federal land ownership in the Appalachian and Mixed Mesophytic Forests G200 ecoregion (which comprises both the Appalachian Mixed Mesophytic Forests ecoregion on the west side and the Appalachian-Blue Ridge Forests ecoregion on the east side). The ecoregions are outlined in red, wilderness/national park designation is dark green and national forest (and similar protection) is light-green.

The analogous USFS ecoregions for the Appalachian and Mixed Mesophytic Forests G200 ecoregion (combined Appalachian Mixed Mesophytic Forests and Appalachian-Blue Ridge Forests ecoregions) are the Western Allegheny Plateau, Cumberlands and Southern Ridge and Valley, Central Appalachian Forests, and Southern Blue Ridge ecoregions. A 2005 study of crisis ecoregions created a metric of threat by looking at the ratio of converted area to protected

area. This metric can be used to help determine the adequacy of protection. Hoekstra et al. created four categories (*none* (= less threat), *vulnerable*, *endangered*, and *critical*). Data for these four ecoregions establish that these are, at most, vulnerable – the second lowest category [21].

USFS ecoregional designation	ID	Area Converted	Area Protected	Protection Ratio	Classification
Central Appalachian Forest	NA0401	28.4%	19.1%	1.49	-
Cumberlands and Southern Ridge Valley	NA0403	17.6%	7.8%	2.26	-
Western Allegheny Plateau	NA0420	30.8%	4.7%	6.55	Vulnerable
Southern Blue Ridge	NA0416	9.4%	34.5%	0.27	-

(Adapted from Hoekstra et al. 2005)

Additionally, per guidance provided in the standard, a GAP assessment was conducted on the Appalachian and Mixed Mesophytic Forests G200 ecoregion as a unit and found that 16.7% of the G200 ecoregion is under protection from overexploitation and conversion, and 5.4% of the ecoregion is under high levels of protection including parks and wilderness areas. The level of protection is well above the generally accepted goals for conservation – although these goals should be adjusted per details of the ecoregion [26].

The Appalachian-Blue Ridge Forests Ecoregion

Conservation Values of the Ecoregion

The Appalachian-Blue Ridge Forests ecoregion is included in the WWF Global 200 ecoregional conservation priority setting as part of the Appalachian and Mixed Mesophytic Forests G200 configuration [3, 12, 13]. Parts of the ecoregion have been recognized by the IUCN and Smithsonian Institution as a Centre of Plant Diversity in areas of serpentine influence [5, 7, 9]. It is not recognized in the Conservation International Biodiversity Hotspot assessment [4, 14, 15]. WWF has assessed the conservation status of the ecoregion to be ""vulnerable" [27]. WWF Global 200 includes the Appalachian-Blue Ridge Forests ecoregion due to the high species and generic richness of temperate broadleaf trees. It also holds the highest number of endemic flora species in North America. The Smithsonian/IUCN designation is of North American Serpentine Habitat, which also correlates to high levels of species richness, diversity, and endemism.

Protection of the Ecoregion

The primary historic threat to the ecoregion once was conversion to agriculture – approximately 83% of the ecoregion has been altered and 27% has been converted from natural forests. Current threats (as of 2001) include timber and mineral extraction but are mostly centered around urban/suburban development" [27, 28]. Approximately 32% of the ecoregional land base is in a conservation scheme and the protection/conversion ratio of 0.83 is very low (see Figure 11). Since the area has been determined to be currently under less threat (based on the conservation assessment of "vulnerable") and following guidance provided in Annex 2 of the controlled wood standard (FSC-STD-40-005), the ecoregion can be considered "low risk".

Additional evidence of sufficient conservation initiative and action to merit a "low risk" designation for this ecoregion is evidenced by the thorough study and assessment of environmental HCVs in the ecoregion [28]. Additionally, studies of priority conservation in the ecoregion reveal that approximately 65% of the prioritized areas for conservation are on publicly owned land. Due to the current climate in forestry on public lands, these areas are generally protected from major degradations.

The Southeastern Mixed Forests Ecoregion

Conservation Values of the Ecoregion

The Southeastern Mixed Forests ecoregion is identified as a priority ecoregion for global conservation via the WWF Global 200 ecoregional conservation priority setting [3, 12, 13]. It is not recognized in the Conservation International Biodiversity Hotspot assessment, and it is not recognized by the IUCN and Smithsonian Institution as a Centre of Plant Diversity [4, 5, 9, 14, 15]. The freshwater ecosystems found within this ecoregion are among the richest in the temperate latitudes. The Southeastern Mixed Forests ecoregion is prioritized in conservation due to globally exceptional species richness of amphibians, reptiles, insects, and birds. Additionally, it is the most diverse ecoregion for herb and shrub plant species in North America. WWF has assessed the conservation status of the ecoregion to be "critical/endangered"[29].

Protection of the Ecoregion

Conversion to agriculture for growing tobacco and peanuts was the primary threat to the ecoregional values when the forests were converted long ago. Nearly all of the ecoregion has undergone conversion or severe disturbance and there are very few remnant forests left. Forestry remains a secondary threat to ecoregional values – primarily as a threat to the little remaining natural forest blocks. Most of the significant remaining forest blocks are those in National Forests in North and South Carolina, Mississippi, and Alabama, and therefore, under current policy, are very unlikely to be significantly altered.

Protection in the ecoregion is not as robust as that of the other ecoregions examined here, but it has improved greatly over the past few years and is above generally accepted goals for conservation. An assessment producing a conversion/protection ratio, published in 2005 indicated that only 4.9% of the ecoregional landbase was in permanent protection and it was classified as "vulnerable" – note that "vulnerable" is the second lowest threat category (none, vulnerable, endangered, critical).

The published study was on the analogous USFS ecoregions for the Southeastern Mixed Forests and the Southeaster Conifer Forests – these are the Piedmont, the Upper East Gulf Coastal Plane, and the East Gulf Coastal Plane, the South Atlantic Coastal Plain, and the Florida Peninsula ecoregions. Data for these five ecoregions establish that these are at vulnerable – the second lowest category [21].

USFS ecoregional designation	ID	Area Converted	Area Protected	Protection Ratio	Classification
Upper East Gulf Coastal Plain	NA0419	35.8%	3.3%	10.88	Vulnerable
East Gulf Coastal Plain	NA0507	26.3%	9.7%	2.71	Vulnerable
South Atlantic Coastal Plain	NA0520	30.2%	8.6%	3.50	Vulnerable
Piedmont	NA0414	25.5%	3.4%	7.48	Vulnerable
Florida Peninsula	NA0508	33.7%	18.8%	1.79	-

(Adapted from Hoekstra et al. 2005)

A more recent GAP assessment that included conservation initiatives and local protection such as conservation easements was conducted on the Southeastern Conifer and Broadleaf Forests G200 ecoregion and found that 12.3% of the ecoregion is under protection from overexploitation and conversion, and 4.9% of the ecoregion is under high levels of protection (see figure 13 below). Although this assessment was not available for each ecoregion alone (the assessment was at the G200 ecoregion level), it indicates a higher, and perhaps increasing protection. The level of protection is above the generally accepted goals for conservation – although these goals should be adjusted per ecoregion [26].

Logging currently taking place in the ecoregion is from heavily altered forests and plantations. Since nearly the entire ecoregion was converted long ago, and the few vestiges of natural forest that form the core of ecoregional HCVs are in public lands under generally sound protection, the wood coming from the ecoregion can be considered low risk to threat of the HCVs.

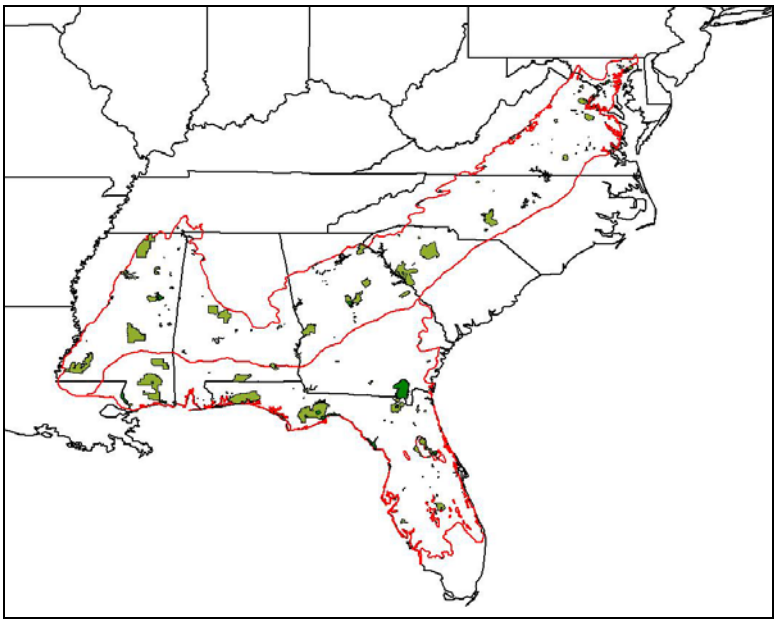


Figure 12. Federal land ownership in the Southeastern Broadleaf and Conifer Forests G200 ecoregion (which comprises both the Southeastern Mixed Forests and Southeastern Conifer Forests ecoregions). The ecoregion is outlined in red, fully protected designation is dark-green shaded, and moderate protection (e.g. national forest) is light-green. Note that this map shows only the federal lands in the ecoregion and offers a minimized representation of conservation in these ecoregions.

The Southeastern Conifer Forests Ecoregion

Conservation Values of the Ecoregion

The Southeastern Conifer Forests is identified as a priority ecoregion for global conservation via the WWF Global 200 ecoregional conservation priority setting [3, 12, 13]. Additionally, a part of the ecoregion is also recognized by the IUCN and Smithsonian Institution as a Centre of Plant Diversity [5, 6, 9]. It is not recognized in the Conservation International Biodiversity Hotspot assessment [4, 14, 15]. The ecoregions is outstanding in richness, diversity, and endemism of tree species, herbaceous plants, and animals (especially amphibians, reptiles and birds). WWF has assessed the conservation status of the ecoregion to be "critical/endangered" [30].

Protection of the Ecoregion

Major threats are identified as fire suppression, highway development; and urban sprawl and suburban development. Other threats mentioned include introduced species. Forestry is not mentioned as a threat to ecoregional conservation values [30]. Most of the native conifer forests were fire maintained and have since undergone change to hardwood forests. As with the Southeastern Mixed Forests, Protection in the ecoregion is not as robust as that of the other ecoregions. An assessment producing a conversion/protection ratio, published in 2005 indicated that 7.5% of the ecoregional landbase was in permanent protection and it was classified as "vulnerable" – the second lowest threat category.

A revised GAP assessment was recently conducted at the G200 ecoregional level (encompassing both the Southeast Mixed Forests and Southeast Conifer Forests) and found that a much higher percentage of land is under at least moderate protection (see above for discussion).

The Central Highlands of Florida have been identified by the Smithsonian Institution / IUCN as a Center of Plant Diversity [6]. Please note that that the finer resolution map provided (see reference 6) differs from the general map provided (note the change in shapes). The Central Highlands of Florida comprises a series of remnant beach and dune habitats resulting in a high level of endemic or near endemic plant species and a wide array of plant families (27) that have endemic representation in the area. Additionally, there are 16 federally-listed plant species represented in the Central Highlands. Rapid and intense development, along with conversion of the scrub habitat to citrus plantations has resulted in conservation concern for this area. Forestry is not identified as a threat to the area. Rapid and intense development, along with conversion of the scrub habitat to citrus plantations has resulted in conservation concern for this area.

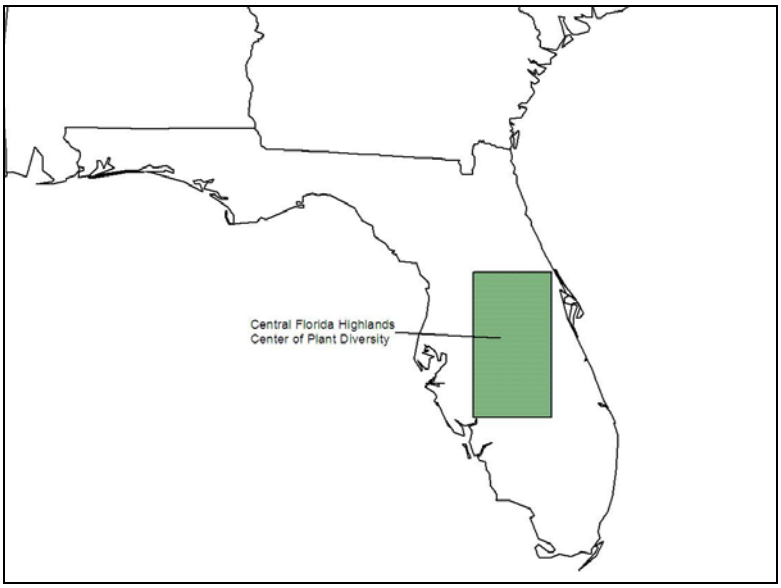


Figure 13. The Central Highlands of Florida have been identified by the Smithsonian Institution / IUCN as a Center of Plant Diversity. Note that the finer resolution map provided differs from the general map provided (note the change in shapes). Above, we show the finer scaled map.

The Florida Sand Pine Scrub, Everglades, and South Florida Rocklands

These ecoregions have been grouped because of their smaller size, proximity, and similar conservation situations.

Conservation Values of the Ecoregions

The Florida Sand Pine Scrub, Everglades, and South Florida Rocklands have all been identified as priority ecoregions for global conservation via the WWF Global 200 ecoregional conservation priority setting [3, 12, 13]. A portion of the Florida Sand Pine Scrub has been recognized by the IUCN and Smithsonian Institution as a Centre of Plant Diversity [5, 6, 9] (see assessment above with Southeastern Conifer Forests). None have been recognized in the Conservation International Biodiversity Hotspot assessment [4, 14, 15]. The Florida Sand Pine Scrub ecoregion is noted as Florida's most unique ecosystem and all have is outstanding and unique features that merit conservation priority. WWF has assessed the conservation status of the Florida Sand Pine Scrub and South Florida Rocklands ecoregions to be "critical/endangered" [31, 32] and the Everglades to be "vulnerable"[33].

Protection of the Ecoregion

Conversion to agriculture for citrus plantations was the primary threat to the ecoregional values when the forests were converted long ago. Now the major threat is conversion to residential and commercial uses [6]. Forestry is not identified as a threat in reports by either IUCN/Smithsonian or WWF for any of the ecoregions.

All three of the ecoregions have high percentages of landbase in protected areas. The Florida Sand Pine Scrub ecoregion has approximately 28% in moderate to strong protection and the Everglades/South Florida Rocklands ecoregions have 61% in protection. In all cases, conversion of the ecoregion is high, but all have been classified to be less than vulnerable for protection ratio [19].

V. Determination of Criteria 3.1 and 3.2

One can conclude that the districts of origin as described as the AHEC study area are LOW RISK in relation to threat to High Conservation Values due to compliance with a combination of Criteria 3.1 and 3.2. This determination is based on the following conclusions:

1. Thirty of the forty ecoregions in the AHEC study area were NOT identified to be part of areas designated for measurements of high biodiversity, endemism, or accumulations of rare or endangered species. These ecoregions are: Allegheny Highlands forests; Atlantic coastal pine barrens; Blue Mountains forests; Cascade Mountains leeward forests; Central and Southern Cascades forests; Central forest-grasslands transition; Central tall grasslands; Central U.S. hardwood forests; Eastern Cascades forests; Eastern forest-boreal transition; Eastern Great Lakes lowland forests; Great Basin shrub steppe; Middle Atlantic coastal forests; Mississippi lowland forests; New England-Acadian forests; North Central Rockies forests; Northeastern coastal forests; Northern California coastal forests; Northern tall grasslands; Okanagan dry forests; Ozark Mountain forests; Palouse grasslands; Piney Woods forests; Puget lowland forests; Snake-Columbia shrub steppe; Southern Great Lakes forests; Upper Midwest forest-savanna transition; Western Great Lakes forests; Western Gulf coastal grasslands; and Willamette Valley forests. Wood harvested in these ecoregions can be considered low risk following guidance from Annex 2. This assessment was carried out through comparisons with WWF Global 200 ecoregions, CI Biodiversity Hotspots, CI High Biodiversity Wilderness Areas, and Smithsonian/IUCN Centres of Plant Diversity – as stipulated in Annex 2 of the standard.

2. Ten ecoregions were included in WWF G200 prioritization due to high levels of species diversity. These ecoregions are: Klamath-Siskiyou Coniferous Forests; Central Pacific Coastal Forests; British Columbia Coastal Mainland Forests; Appalachian Mixed Mesophytic Forests, Appalachian-Blue Ridge Forests, Southeastern Mixed Forests, Southeastern Conifer Forests; Everglades Flooded Grasslands, Florida Sand Pine Scrub, and South Florida Rocklands. The Appalachian Blue Ridge forests and Everglades ecoregions were assessed by WWF to be at a condition less than "critical/endangered" status and thus, per Annex 2 guidance, can be considered low risk (the primary historic threat to both ecoregions was conversion to agriculture). The other eight ecoregions have been assessed to be in "Critical/endangered" status by WWF. All of these raise flags for risk to HCVF and require further investigation at Criterion 3.2 – see below (nos 4 and 5).

3. Further investigation of the Appalachian Mixed Mesophytic Forests ecoregion establishes that this ecoregion has a level of protection that reduces threat to HCVF. Not only is there a high percentage of the land under a conservation scheme, this percentage is increasing in volume and effectiveness with new conservation initiatives in the Cumberlands area of the ecoregion. A recent (2007) collaborative conservation project in the Cumberlands Plateau resulted in conservation of 128,000 acres of the area. An index of protection versus threat indicates that the area is relatively stable and forestry was not identified as the primary threat to the HCVs of the ecoregion.

4. The Southeastern Broadleaf and Conifer Forests G200 ecoregion (comprising the Southeastern Mixed Forests and Southeaster Conifer Forests ecoregions) also has been shown to be relatively well protected – given the fact that tremendous degradation to the ecoregion occurred many decades ago. Current primary threats to the ecoregions include urban/suburban development and

fire suppression. The remnant intact forests in these ecoregions are in public lands that, in the current climate of use, are protected from major impacts of logging. Nearly all of the logging Southeastern Conifer Forests ecoregion comes from land that has been converted (through fire suppression) to mixed hardwoods or from plantations. The index of protection of the ecoregions indicates that these ecoregions are "vulnerable" (the second lowest classification).

The section of Florida that is included in the Central Florida Highlands – IUCN/Smithsonian Center of Plant Diversity is under threat from conversion of lands to agriculture as well as urban/suburban development. This area, which also includes sections of the Florida Sand Pine Scrub ecoregion (see below), is not under threat from forest-related activities.

5. The Florida Sand Pine Scrub and South Florida Rocklands ecoregions were identified by WWF to be in "*critical/endangered*" conservation status, but this designation was not due to forestry activities. The most prominent threat to the ecoregional HCVs is development. Additionally, the areas contain a relatively high level of protection and an index of threat of "*none*" (less than vulnerable).

6. Nearly all of the Intact Forests in the study area are in the highest level of protection as national park or wilderness (see Appendix B for details).

7. There are no WRI Frontier Forests in the study area.

References:

1. World Wildlife Fund. 2006. Global ecoregions. Washington, DC. *Available from*: http://www.panda.org/about_wwf/where_we_work/ecoregions/ecoregion_list/index.cfm.
2. Ricketts, T.H., et al., Terrestrial ecoregions of North America: A conservation assessment. 1999, Washington, DC: World Wildlife Fund, Island Press.
3. World Wildlife Fund. 2001. Global 200 Map. Washington, DC. *Accessed online*: January 26, 2007. *Available from*: http://www.worldwildlife.org/science/pubs/g200.pdf.
4. Conservation International. 2005. Biodiversity Hotspot Map. Washington, DC. *Available from*: http://www.biodiversityhotspots.org/ImageCache/Hotspots/content/resources/maps/cihotspotmap_2epdf/v1/cihotspotmap.pdf.
5. IUCN - Smithsonian. 2001. Centres of Plant Diversity - North America Map. Washington, DC. *Available from*: http://www.nmnh.si.edu/botany/projects/cpd/namap.htm.
6. IUCN - Smithsonian. 2001. Centres of Plant Diversity - Central Highlands of Florida. Washington, DC. *Available from*: http://www.nmnh.si.edu/botany/projects/cpd/na/na29.htm.
7. IUCN - Smithsonian. 2001. Centres of Plant Diversity - North American Serpentine Flora. Washington, DC. *Available from*: http://www.nmnh.si.edu/botany/projects/cpd/na/na16e-25.htm.
8. IUCN - Smithsonian. 2001. Centres of Plant Diversity - California Floristic Province. Washington, DC. *Available from*: http://www.nmnh.si.edu/botany/projects/cpd/na/na16.htm.
9. IUCN - Smithsonian Museum of Natural History. 2001. Centres of Plant Diversity. Washington, DC. *Accessed online*: January 31, 2007. *Available from*: http://www.nmnh.si.edu/botany/projects/cpd/introduction.htm.
10. Global Forest Watch. 1997. Frontier Forests - Interactive Map of North America. Washington, DC. *Accessed online*: January 31, 2007. *Available from*: http://www.globalforestwatch.org/english/interactive.maps/northamerica.htm.
11. Greenpeace. 2006. World Intact Forest Landscapes GIS coverage in ESRI Shape format - data files. Washington, DC. *Accessed online*: January 31, 2007. *Available from*: http://www.intactforests.org/download/download.htm.
12. Olson, D.M., et al. 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. Bioscience. **51**(11).
13. Olson, D.M. and E. Dinerstein. 2002. The Global 200: Priority Ecoregions for Global Conservation. Annals of the Missouri Botanical Garden. **89**.
14. Mittermeier, R.A., et al. 1998. Biodiversity hotspots and major tropical wilderness areas: approaches to setting conservation priorities. Conservation Biology. **12**: p. 516-520.
15. Myers, N., et al. 2000. Biodiversity hotspots for conservation priorities. Nature. **403**: p. 853-858.
16. World Wildlife Fund. 2001. Klamath-Siskiyou forests (NA0516). Washington, DC. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0516_full.html.

17. Conservation Biology Institute. 2003. Pacific Northwest Conservation Assessment. Corvallis, OR.
18. Conservation Biology Institute. Heilman, G.E.J. and J.R. Strittholt (authors). 2002. Klamath-Siskiyou Private Lands Conservation Assessment. Corvallis, OR.
19. Hoekstra, J.M., et al. 2005. Confronting a biome crisis: global disparities of habitat loss and protection. Ecology Letters. **8**.
20. World Wildlife Fund. 2001. Central Pacific Coastal forests (NA0510). Washington, DC. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0510_full.html.
21. World Wildlife Fund. 2001. British Columbia Mainland Coastal forests (NA0506). Washington, DC. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0506_full.html.
22. World Wildlife Fund. 2001. Appalachian Mixed Mesophytic Forests (NA0402). Washington, DC. *Accessed online*: February 12, 2007. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0402_full.html.
23. Alliance for the Cumberlands. Medlock, K. (author). 2006. The Cumberland Plateau Heritage Corridor - Feasibility Study and Assessment of Impacts for National Heritage Corridor Designation. Knoxville, TN. *Accessed online*: January 20, 2008. *Available from*: http://www.state.tn.us/environment/recreation/cumberlandplateau.pdf.
24. Alliance for the Cumberlands Medlock, K. (author). 2007 (est). Conservation Action Plan for the Cumberlands in Tennessee and Kentucky: A crosswalk of the State Comprehensive Wildlife Conservation Strategies
25. The Nature Conservancy. 2007. News Release: State, Conservancy Connect the Cumberlands, Saving 200 Square Miles of Forest. Nashville, TN. *Accessed online*: January 20, 2008. *Available from*: http://www.nature.org/wherewework/northamerica/states/tennessee/press/press3199.html.
26. Tear, T.H., et al. 2005. How much is enough? The recurrent problem of setting measurable objectives in conservation. Bioscience. **55**(10).
27. World Wildlife Fund. 2001. Appalachian-Blue Ridge forests (NA0403). Washington, DC. *Accessed online*: February 12, 2007. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0403_full.html.
28. The Nature Conservancy. 2001. Central Appalachian Forest Ecoregional Plan. *Available from*: http://tncweeds.ucdavis.edu/products/handbook/15.Hexazinone.doc.
29. World Wildlife Fund. 2001. Southeastern Mixed Forest (NA0409). Washington, DC. *Accessed online*: May 9, 2007. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0413_full.html.
30. World Wildlife Fund. 2001. Southeastern Conifer Forests (NA0529). Washington, DC. *Accessed online*: May 9, 2007. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0529_full.html.
31. World Wildlife Fund. 2001. Florida Sand Pine Scrub (NA0513). Washington, DC. *Accessed online*: August 14, 2007. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na0513_full.html.
32. World Wildlife Fund. 2001. South Florida Rocklands (NT0164). Washington, DC. *Accessed online*: June 21, 2007. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/nt/nt0164_full.html.

33. World Wildlife Fund. 2001. Everglades (NT0904). Washington, DC. *Accessed online*: June 21, 2007. *Available from*: http://www.worldwildlife.org/wildworld/profiles/terrestrial/nt/nt0904_full.html.

APPENDIX B

Protection of Greenpeace Intact Forest Landscapes in the Hardwood Region

Assessment of Lawful Harvesting & Sustainability of US Hardwood Exports

Prepared for
American Hardwood Export Council

October 1, 2008
Version 1.0

Appendix B: Protection of Greenpeace Intact Forest Landscapes in the Hardwood Region

Summary

There are lands in the Eastern US that have been identified by Greenpeace to be an Intact Forest Landscape (Eastern US is defined to be all states east of and including MI, IN, KY, TN, and MS) (see Figure 1). All Intact Forests in this region are fully protected from logging and any extractive industry or extraction); thus, all logging operations in the Eastern U.S. can be considered low risk as a threat to these areas.

There are also lands in the Pacific Northwest have been identified by Greenpeace to be an Intact Forest Landscape (Pacific Northwest is defined to be Oregon, and Washington) (see Figure 2). Nearly all Intact Forests in this region are fully protected as Wilderness Areas and nearly all of the small pieces of Intact Forests that are not fully protected as wilderness are federally owned and managed. Since the great majority of Intact Forests in the Pacific Northwest are designated Wilderness and only very small and peripheral sections are open to extractive industries, and that nearly all of these areas are federally owned and managed, one could argue as well that logging in the Pacific Northwest is low risk of threat to these Intact Forest Landscapes.

Additional Information

The designation of a piece of land by Greenpeace as an *Intact Forest Landscape* is determined by human economic (extractive) activity and settlements. In this manner, plantations are excluded and agriculture lands other than small, isolated community plots.

Greenpeace supplies the following definition [1]:

> An intact forest landscape is a territory within the forest zone, which contains minimally disturbed by human economic activity forest and non-forest ecosystems with an area of at least 500 sq. km and with a minimal width (diameter of the inscribed circle) of 10 km

Spatial data for the Intact Forest Landscapes in this paper are available from Greenpeace at: http://www.intactforests.org [2]. Spatial data on federal land ownership are available from USGS at www.nationalatlas.gov [3].

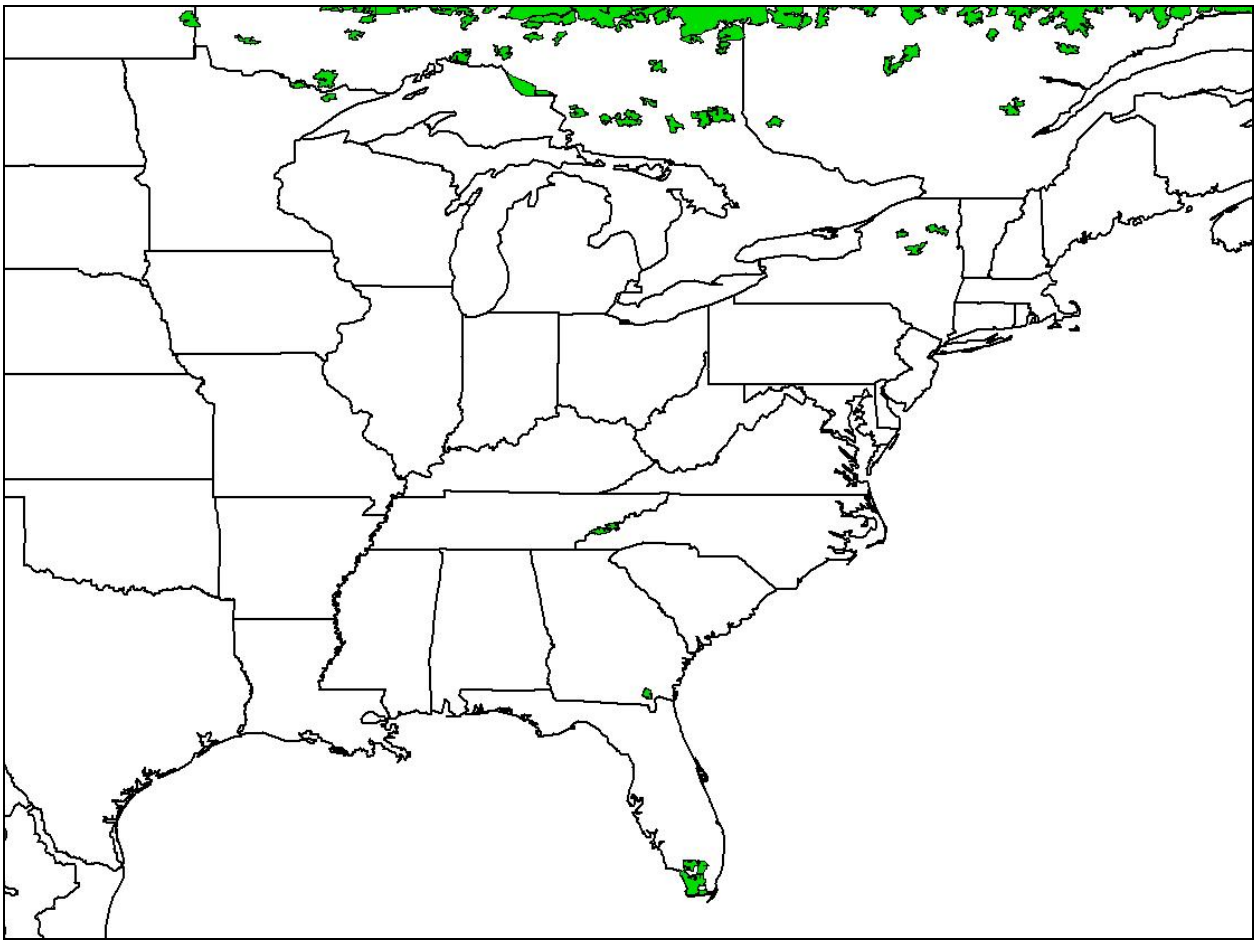


Figure 1. Intact Forest Landscapes of the Eastern US are the bright green areas in the above map. There are identified Intact Forests in Minnesota, New York, on the Tennessee-North Carolina border, Georgia, and Florida that are within the study area.

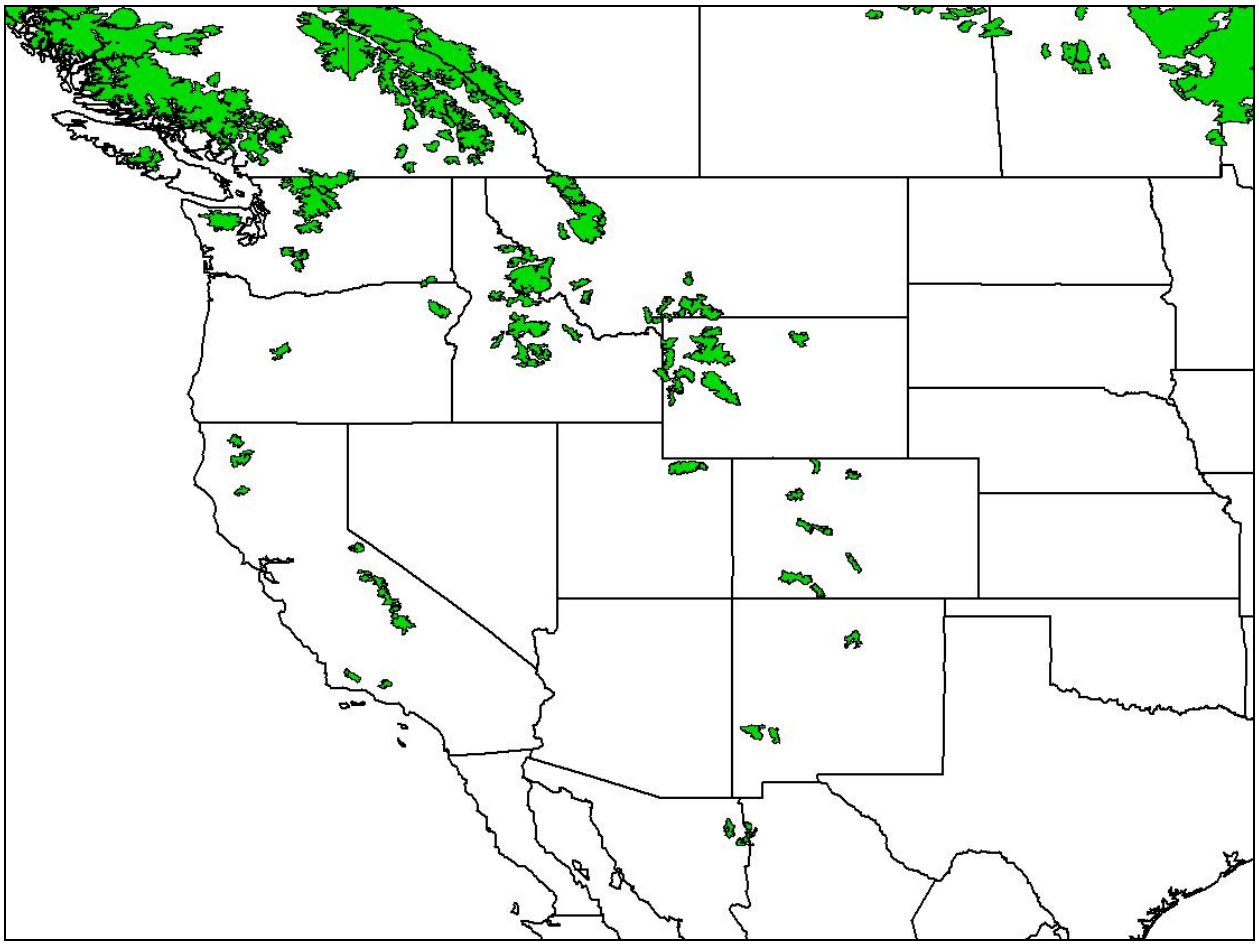


Figure 2. Intact Forest Landscapes of the Pacific Northwest and Northern Rockies of the US are the bright green areas in the above map. There are identified Intact Forests in Oregon and Washington that are within the study area.

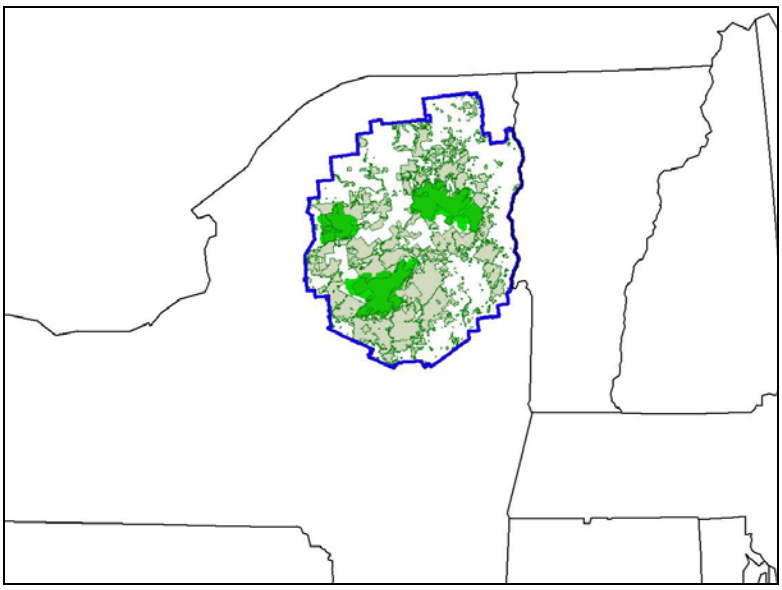


Figure 3. Greenpeace identified Intact Forests in New York. The Intact Forests are the bright green areas. New York State lands are dark-green-shaded and the Adirondack Park is outlined in blue. The identified Intact Forests all lie within the Adirondack Park and are fully protected. Nearly all of the Intact Forest areas are state-owned.

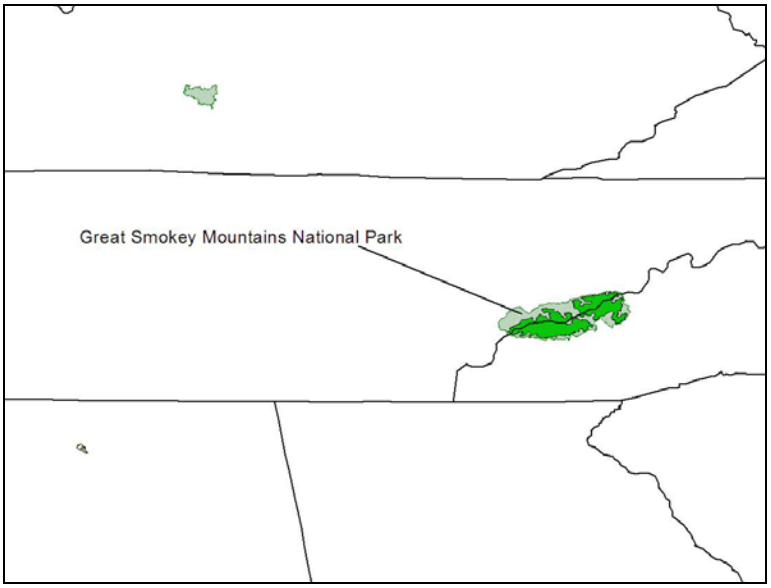


Figure 4 - Greenpeace identified Intact Forests in Tennessee and North Carolina. The Intact Forests are the bright green areas. National Park Service lands are dark-green shaded. The identified Intact Forests in the Tennessee and North Carolina area all lie within the Great Smokey Mountains National Park and are fully protected.

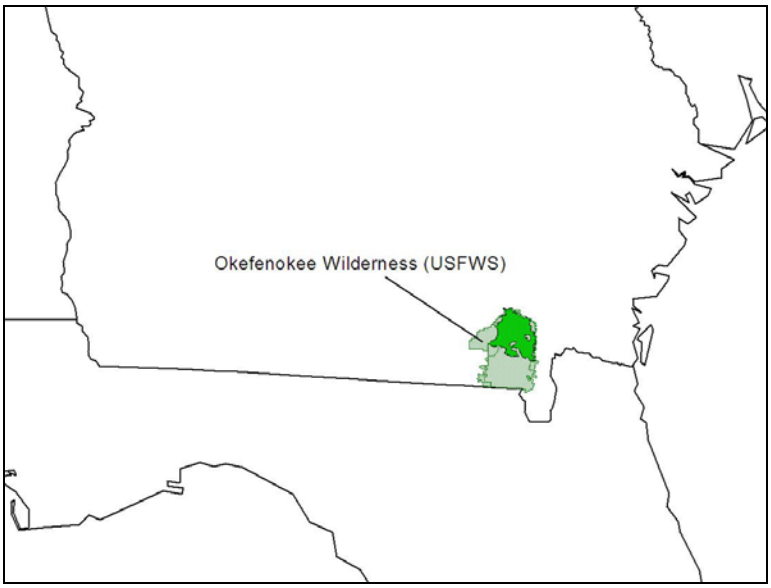


Figure 5 - Greenpeace identified Intact Forest Landscapes in Georgia. The Intact Forests is the bright green area. The Okefenokee Wilderness (USFWS) is dark green-shaded. The intact forests identified in Georgia are all under federal ownership and in a high level of protection as wilderness.

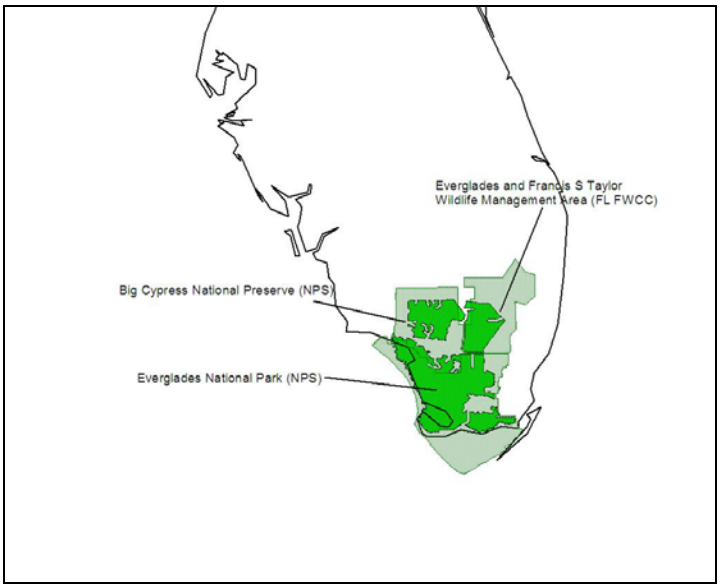


Figure 6 - Greenpeace identified Intact Forest Landscapes in Florida. The Intact Forests is the bright green area. Federal and state lands are dark green-shaded. The intact forests identified in Florida under both federal and state ownership are afforded high level of protection. The federally-managed parts are within the National Park system and the state managed section (as part of the Everglades and F.S. Taylor Wildlife Management Area – Florida Fish and Wildlife Conservation Commission) is open to motorized vehicle use, but the tree islands that comprise the forest parts of this intact forest are not logged.

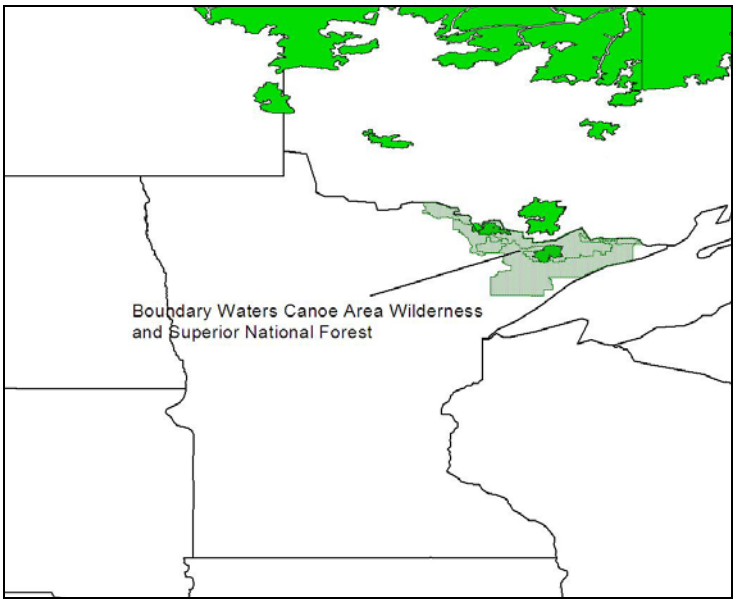


Figure 7 - Greenpeace identified Intact Forest Landscapes in Minnesota. The Intact Forests is the bright green area. Forest Service and National Park Service lands are dark green-shaded. The intact forests identified in Minnesota are all under federal ownership and in a high level of protection as wilderness.

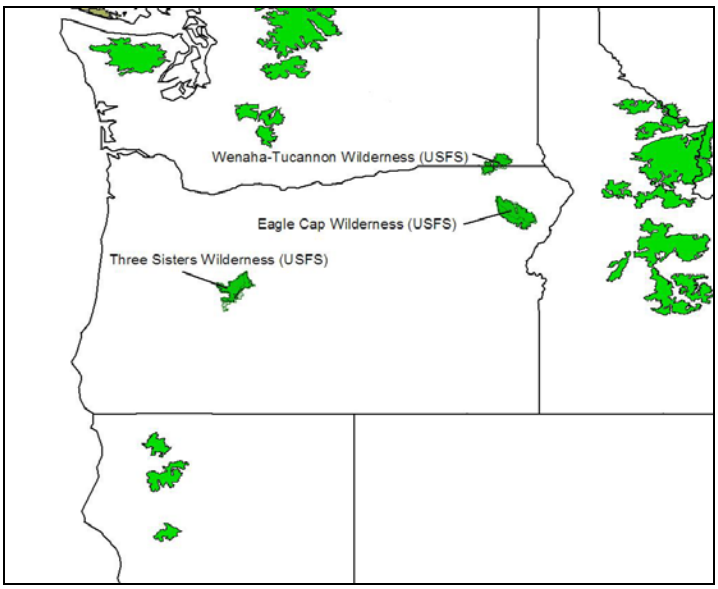


Figure 8 - Greenpeace identified Intact Forest Landscapes in Oregon. The Intact Forests is the bright green area. Forest Service Wilderness Areas lands are dark green-shaded. The intact forests identified in Oregon are all under federal ownership and in a high level of protection as wilderness.

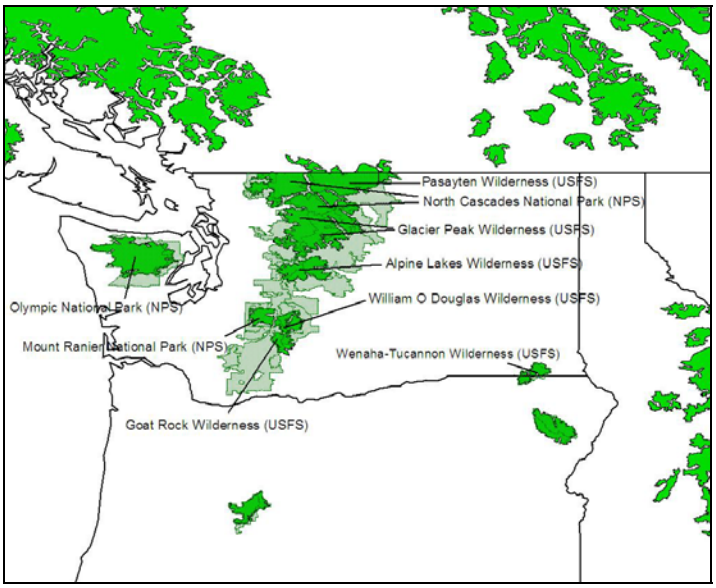


Figure 9 - Greenpeace identified Intact Forest Landscapes in Washington. The Intact Forests is the bright green area. Forest Service and Park Service lands in the vicinity of the Intact Forests are dark green shaded. The Intact Forests identified in Washington are nearly all under federal ownership and in a high level of protection as wilderness. The area labeled as Olympic Wilderness is primarily under Park Service management, but the area includes Forest Service Wilderness areas that are unlabeled (Mount Skokomish Wilderness, The Brothers Wilderness, Colonel Bob Wilderness, and Buckhorn Wilderness). The area labeled as Glacier Peak Wilderness (USFS) is adjacent to the unlabeled Mount Baker Wilderness (NPS) and Noisy-Diosbud Wilderness (USFS). There are small portions of the Intact Forest that are not designated wilderness and that pertain to National Forests (Okanogan NF, Mount Baker NF, Snoqualmie NF, and Wenatchee NF).

References

1. Greenpeace. 2006. The World's Last Intact Forest Landscapes - concepts and criteria. Washington, DC. *Accessed online*: January 31, 2007. *Available from*: http://www.intactforests.org/concept/concept.htm.
2. Greenpeace. 2006. World Intact Forest Landscapes GIS coverage in ESRI Shape format - data files. Washington, DC. *Accessed online*: January 31, 2007. *Available from*: http://www.intactforests.org/download/download.htm.
3. USGS. 2007. National Atlas of the US. Reston, VA. *Accessed online*: December 15, 2007. *Available from*: www.nationalatlas.gov.

APPENDIX C

Forest Sustainability Self-Assessment Tool-Kit

Assessment of Lawful Harvesting & Sustainability of US Hardwood Exports

Prepared for
American Hardwood Export Council

October 1, 2008
Version 1.0

Appendix C: Forest Sustainability Self-Assessment Tool-Kit

Purpose:

U.S. Hardwood producers may wish to use this Forest Sustainability Self-Assessment Tool-Kit to conduct an internal risk assessment against the various forest sustainability procurement policies and criteria. The Tool-Kit is strictly intended to provide assistance in anticipating and responding to public and private sector wood procurement policies.

Background:

Public and private sector procurement policies addressing the international trade in hardwood products have established criteria for forest sustainability. Those criteria established by the UK Government's Central Point of Expertise on Timber (CPET) include the legality of wood procurement and compliance with legal and regulatory requirements. Other private sector chain of custody and controlled wood standards (FSC, PEFC, and SFI) specify the avoidance of wood from "unacceptable" and "controversial sources." Customer procurement policies address a number of sustainable forestry aspects that hardwood producers are being asked to respond to.

The combination of public and private sector procurement policies are fast becoming a condition of doing business and exporting wood products into many parts of the world. Thus, there is a growing requirement for North American hardwood forest products exporters to respond to the procurement polices contained in the following Annexes.

Members of the American Hardwood Export Council (AHEC) may wish to use the attached Forest Sustainability Self-assessment Tool-kit to address the major criteria of acceptability and be in a position to better respond to those customer inquiries.

Self-Assessment Tool-Kit:

AHEC Members may wish to address the sample procurement policies contained in the Self-Assessment Tool-Kit with a simple (Yes/No) answer. Where more explanation is appropriate, you may wish to provide a narrative response in the space provided.

The Annexes addressing the criteria of acceptability encompass:

(1) Forest Land Management and Chain of Custody Certification;
(2) Illegal Logging & Timber Trespass;
(3) Legal and Regulatory Compliance;
(4) Conversion of Natural Forests to Plantations or Other Land Uses;
(5) Traditional and Civil Rights; and
(6) High Conservation Value Forests.

Independent certification to one or more of the major internationally accepted certification programs (ATFS, CSA, FSC, PEFC, and SFI) generally provides the highest level of assurance of compliance with forest sustainability criteria. Lacking independent certification, the "weight of the evidence" could be used by AHEC Members to identify and confirm

acceptable sources of hardwoods and provide reliable assurance that their hardwood originates from legal and acceptable sources. The Self-Assessment Tool-Kit also provides assistance to those companies that may be developing their own Controlled Wood Risk Assessment and Verification Program.

(Note: This Forest Sustainability Self-Assessment Tool-Kit provides helpful information and is intended for information purposes only.)

Annex 1
Forest Land Management and Chain of Custody Certification

1. Do you own and manage forest land? (Yes/No) If yes, are you independently certified to one or more of the following land management certification Standards?

    a. American Tree Farm System (ATFS) (Y/N)
    b. Canadian Private Woodlot (Pan-Can) (Y/N)
    c. Forest Stewardship Council (FSC) (Y/N)
    d. Sustainable Forestry Initiative (SFI) (Y/N)

(Note: If your forest land base is certified to one of the above Standards, you can assume that there is a low risk of sourcing unacceptable wood from that property)

2. If you are in the process of preparing for independent land management certification, when do you anticipate receiving your land management certificate? Date:_____

3. If you do not own forest land and just procure wood, are you SFI Wood Procurement Certified? (Y/N)

4. Have you sponsored a Group Certification Organization for family forest owners that supply you with wood and is it independently certified? (Y/N) If Yes, to which Group Certification Program:

    a. Group Tree Farm Program (ATFS) (Y/N)
    b. Group Canadian Private Woodlot (Pan-Can) (Y/N)
    c. Group Forest Stewardship Council (Y/N)

5. If you do not own forest land and just procure wood, are you "Chain of Custody" certified to one of the following certification Standards?

    a. Forest Stewardship Council (FSC) (Y/N)
    b. Sustainable Forestry Initiative (SFI) (Y/N)
    c. Program for the Endorsement of Forest Certification (PEFC) (Y/N)

(Note: If your Chain of Custody Program is certified to one of the above Standards, you can assume that there is a low risk of sourcing unacceptable wood as defined by that Standard)

6. If you own land, are your forest management operations certified to the FSC Controlled Wood Standard? (Y/N)

(Note: If your lands are FSC Controlled Wood Certified, your land base is considered low risk of supplying unacceptable/uncontrolled wood into the marketplace)

7. Are your Contract Loggers certified to a Master Logger Certification Standard (Y/N) If Yes, please name the logger certification program:_____

8. Are you certified to the ISO 14001 Environmental Management System (EMS) Specification? (Y/N)

9. Is the EMS in place to implement one of the major forest certification standards (CSA, FSC, and SFI)? Circle which one!

10. Have your wood suppliers provided a "self-declaration" statement that they will not knowingly provide you with illegal and unacceptable wood? (Y/N)

11. Do you conduct regular audits to verify the authenticity of the self-declarations or specified documentation to confirm the country and district of origin of the wood? (Y/N).

Annex 2
Illegal Logging & Timber Trespass

1. Is there evidence of active enforcement of timber trespass and related laws in your wood supply region/district of origin? (Y/N)

2. Is there evidence of robust and aggressive enforcement of permit and license requirements in your wood supply region/district of origin? (Y/N)

3. Is there evidence of illegal harvesting or timber trespass in your wood supply region? (Y/N)

4. Is there evidence of corruption in the granting of harvesting permits or other areas of law enforcement related to harvesting and trade in wood products? (Y/N)

5. Do you source hardwoods from countries outside of the North America where illegal logging is a concern? (Y/N) If yes, have you assessed the risk of procuring illegally harvested wood?

6. Do you have a formal written contract requiring legal compliance with wood producers that supply you with wood? (Y/N)

7. Have any loggers/wood producers that supply you with wood products been convicted of illegal logging or timber trespass? (Y/N)

8. If loggers that supply you with wood products have been convicted of timber theft, have you (discontinued) or (continued) your business relationship with them? (Circle one)

9. Has your company ever been convicted of illegal logging or timber trespass? (Y/N)

10. Have you every had a complaint from landowners or other forest products companies about accepting illegally obtained logs or wood products? (Y/N)

11. Do you have a complaints mechanism in place to address concerns about illegal logging or timber trespass? (Y/N)

Annex 3
Legal and Regulatory Compliance

1. Is there evidence of active enforcement of forestry and environmental laws in your wood supply region? (Y/N)

2. Is there evidence of robust and aggressive enforcement of forest practices, stream crossing or other environmental permit requirements in your wood supply region? (Y/N)

3. Is there evidence or reporting of violations of forestry and environmental laws in your wood supply region? (Y/N)

4. Is there evidence of corruption on the part of forestry and environmental regulatory officials in the granting of forest practices or other permits? (Y/N)

5. Do you source any tree species listed under the Convention on the International Trade in Endangered Species (CITES)? (Y/N)

6. Have any loggers that supply you with wood products been convicted of violations of forestry or environmental protection laws and regulations? (Y/N)

7. If loggers that supply you with wood products have been convicted, have you (discontinued) or (continued) your business relationship with them? (Circle one)

8. Have you ever been convicted of violating any applicable forestry or environmental laws and regulations? (Y/N)

9. Have you ever had a complaint from landowners or other forest products companies about violations of applicable laws and regulations? (Y/N)

10. Do you have a mechanism in place to address concerns or complaints about violations of forestry or environmental laws and regulations? (Y/N)

11. Do you use phytosanitary certification regulations and procedures to provide reliable assurances of the source of hardwood products? (Y/N)

Annex 4
Conversion of Natural Forests to Plantations or Other Land Uses

1. Are there natural or semi-natural forests remaining in your wood supply area outside of parks, wilderness areas and other preserves? (Y/N)

2. Are there sufficient representative samples of natural forest types in protected areas within your wood supply region? (Y/N)

3. Is there a significant rate of loss of natural forests and other natural wooded ecosystems taking place within your wood supply region? (Y/N)

4. Does your use of wood products contribute to a significant rate of conversion of natural forests to plantations or other land uses? (Y/N)

5. Have any government agencies or private conservation organizations identified any of your hardwood timber types as being in short supply or underrepresented across your wood supply region/district of origin? (Y/N)

Annex 5
Traditional and Civil Rights

1. Is there evidence of child labor or violations of ILO Fundamental Principles and Rights 169 on Indigenous and Tribal Peoples in the wood supply region/district of origin of the wood? (Y/N)

2. Are there recognized and equitable processes in place to resolve conflicts of substantial magnitude pertaining to traditional rights including use rights, cultural interests or traditional cultural identity in the district concerned? (Y/N)

3. Has your organization been convicted of violations of civil rights, anti-discrimination, anti-harassment, or other traditional/civil rights? (Y/N)

Annex 6
High Conservation Value Forests

1. Do eco-regionally significant high conservation value forests (HCVF) exist in your district of origin? (Y/N) (Note: Check the U.S. Forest Service ecoregional delineations at http://www.fs.fed.us/rm/analytics/publications/eco_download.html).

2. Do forest management activities in your wood supply region/district of origin threaten eco-regionally significant high conservation values? (Y/N)

3. Is there a strong system of protected areas (national & state parks, wildlife refuges, wilderness areas, national recreation areas) in place that ensures survival of the HCV's in the eco-region? (Y/N)

4. Are there threatened and endangered species and water quality laws and protections in place to protect terrestrial and aquatic threatened species and communities? (Y/N)

5. Are there private sector protection programs (conservation easement, land trusts and legacy programs) in place across the district of origin to provide adequate protection of high conservation values? (Y/N)

6. Have your Gap Analyses been conducted to identify if adequate protections exist to avoid threats to HCVFs? (Y/N) If yes, is there adequate protection?

7. Has your company been convicted of violating any wildlife or species protection laws or regulations? (Y/N)

APPENDIX D

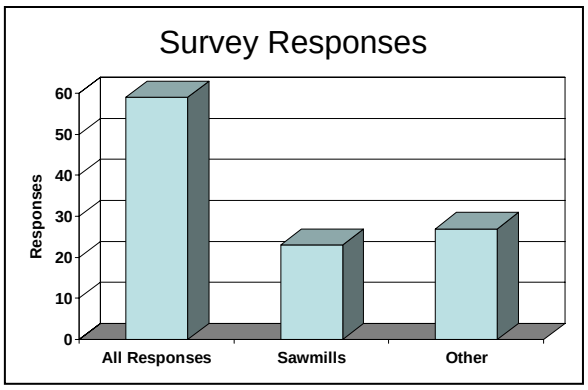
Survey of AHEC Members – Summary

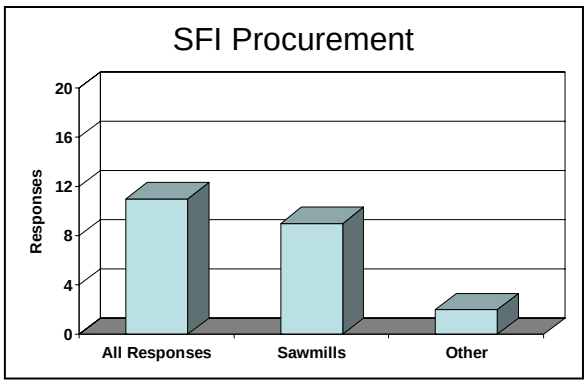
Assessment of Lawful Harvesting & Sustainability of US Hardwood Exports

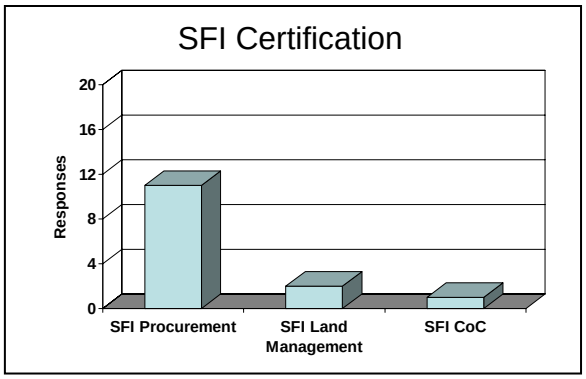
Prepared for
American Hardwood Export Council

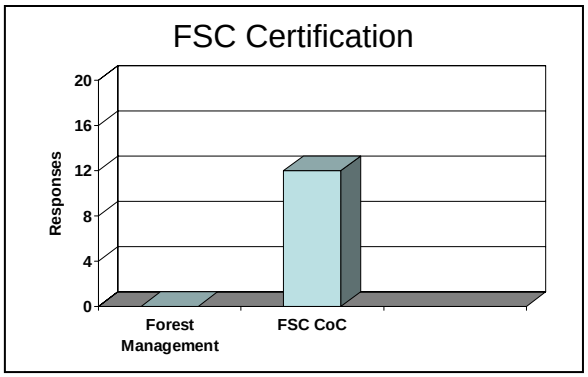
October 1, 2008
Version 1.0

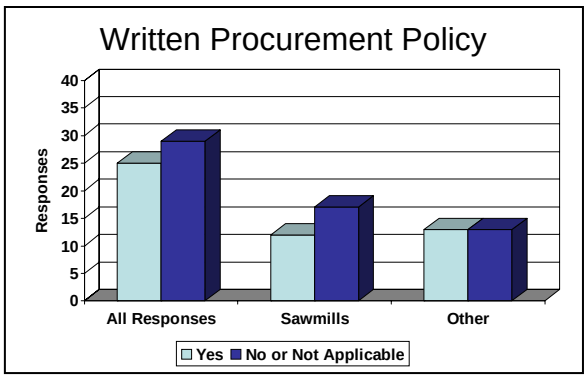
Appendix D: Survey of AHEC Members – Summary

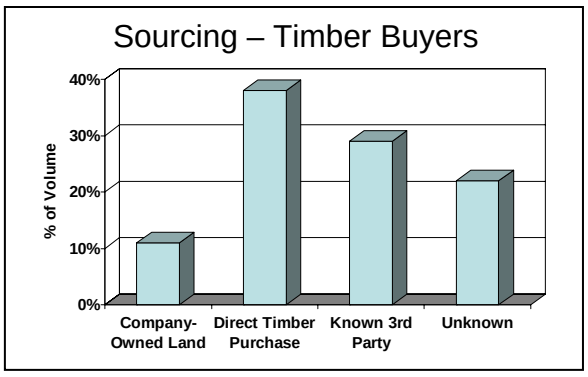


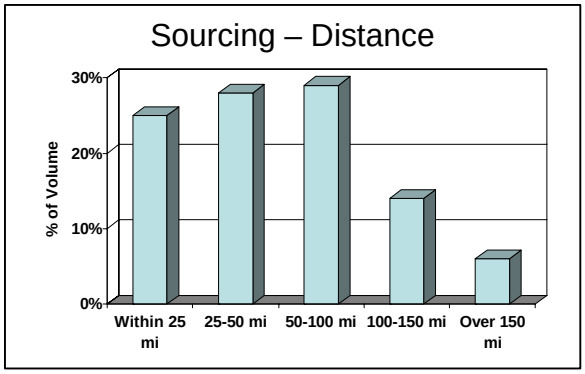


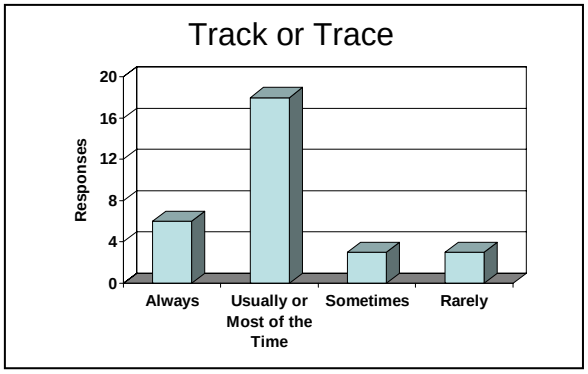


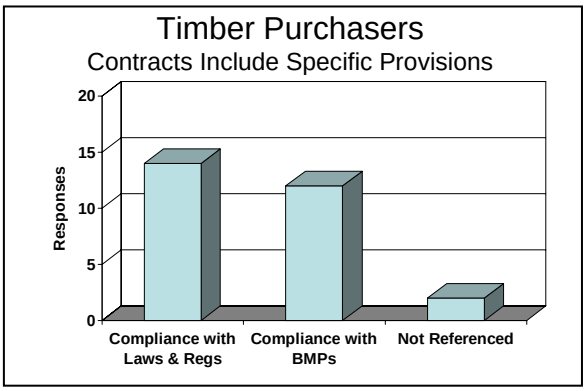


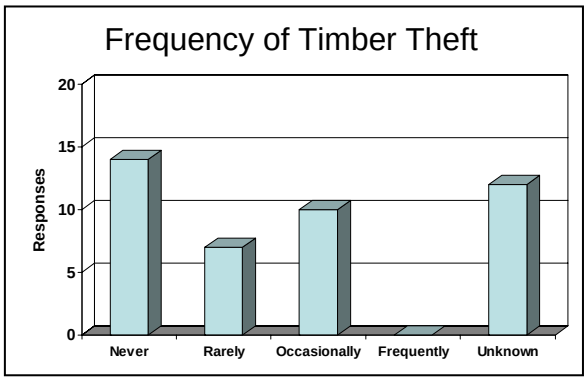


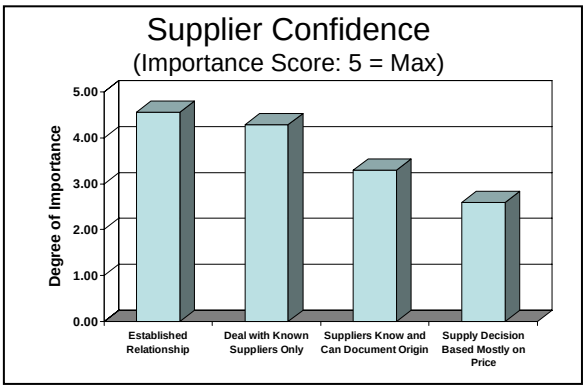


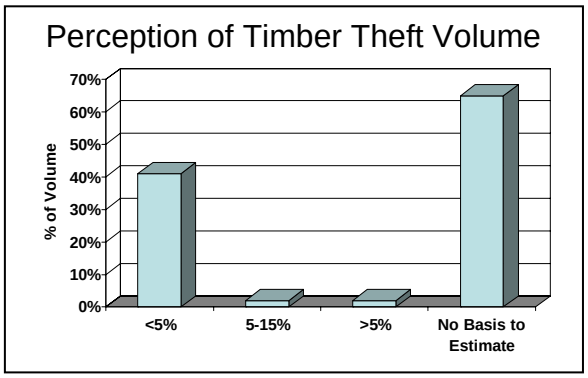

Sourcing – Distance
% of Volume
30%
20%
10%
0%
Within 25 mi
25-50 mi
50-100 mi
100-150 mi
Over 150 mi


Track or Trace
Responses
20
16
12
8
4
0
Always
Usually or Most of the Time
Sometimes
Rarely


Timber Purchasers
Contracts Include Specific Provisions
Responses
20
15
10
5
0
Compliance with Laws & Regs
Compliance with BMPs
Not Referenced


Frequency of Timber Theft
Responses
20
15
10
5
0
Never
Rarely
Occasionally
Frequently
Unknown


Supplier Confidence
(Importance Score: 5 = Max)
Degree of Importance
5.00
4.00
3.00
2.00
1.00
0.00
Established Relationship
Deal with Known Suppliers Only
Suppliers Know and Can Document Origin
Supply Decision Based Mostly on Price


Perception of Timber Theft Volume
% of Volume
70%
60%
50%
40%
30%
20%
10%
0%
<5%
5-15%
>5%
No Basis to Estimate

APPENDIX E

Project Study Team

Assessment of Lawful Harvesting & Sustainability of US Hardwood Exports

Prepared for
American Hardwood Export Council

October 1, 2008
Version 1.0

Appendix E: Project Study Team

Alberto Goetzl **agoetzl@sencreek.com** **202-463-2713**	**Project Responsibilities:** Overall project management. Review and coordinate all risk assessment phases. Review certification schemes. Provide data analysis and trade-related assessment. Serve as liaison with AHEC and other agencies. Draft and coordinate report writing. **Experience & Background:** Mr. Goetzl is the founder and president of Seneca Creek Associates, LLC, a consulting firm specializing in resource economics and policy. He has nearly 30 years experience in the forestry and wood products sectors. Clients have included industry firms, forest landowners, associations, US government and international governmental agencies. He is known for his work in evaluating the economic implications of illegal logging and numerous other issues related to US wood products markets and trade. In 1998, he co-authored a *Resources for the Future* publication entitled: Sustainability of Temperate Forests that compared forest regulations in several temperate forested countries. More recently, he authored a major US market assessment on tropical timber products. He received his Master's Degree from the Duke University Nicholas School of the Environment (formerly School of Forestry and Environmental Studies).
Paul V. Ellefson **pellefso@umn.edu** **612-624-3735**	**Project Responsibilities:** Major project responsibilities are to identify and evaluate (a) legal and institutional frameworks governing management and harvest of American hardwoods, and (b) to assess risk of American hardwoods being derived from illegal sources; assess perceptions of corrupt harvesting practices and enforcement of relevant laws; and contribute to preparation of final project report. **Experience & Background:** Among other notable achievements, Dr. Ellefson is the most recognized authority on regulations and voluntary programs that affect forest management at the national and state levels. He teaches and researches at the University of Minnesota.
Phil Guillery **phil.guillery@gmail.com** **612-235-4476**	**Project Responsibilities:** Coordination of FSC and PEFC risk assessments, review of FSC Controlled Wood Standard and PEFC Controversial Sources; contributions to report writing. **Experience & Background:** Mr. Guillery is currently Director of North American Programs for the Topical Timber Trust. He has nineteen years experience working in fields of forestry and sustainable development. During the past twelve years the focus of his work has been on developing sustainable forestry management systems and implementation of forest certification systems. Mr. Guillery has a unique association with the FSC having worked as a developer of the US regional standards, as an assessor of FSC certificate holders, as a consultant for businesses seeking certification and as a member of the FSC-US board of directors. Recently, he has worked as a consultant to the FSC on the Controlled Wood standards and evaluating the impact of the organization's programs. His clients have included the FSC, wood and paper manufacturers, and international government agencies. Mr. Guillery has an MS degree in forest management and MA degree in extension education from the University of Minnesota.

Gary Dodge **gjdodge@gmail.com** **530-621-3249**	**Project Responsibilities:** Development of the FSC and PEFC risk assessments, mapping and contribution to report writing. **Experience & Background:** Dr. Dodge has approximately twenty years of professional experience as a conservation biologist and ecologist. For the past year and a half, he has been working as a consultant for the FSC, most recently in developing the environmental components (HCVF and Conversion) of the new Controlled Wood standard. Dr. Dodge also has been working on development and actualization of the FSC Controlled Wood Risk Register – a tool for FSC certificate holders to assess risk of wood purchased based on the district of origin. He recently directed a review of the nine FSC-US regional standards. Prior to working with FSC, Dr. Dodge worked with the Rocky Mountain Biological Laboratory, National Park Service, and Forest Service as a biologist and for Conservation International in the Conservation Awareness Program. He also served two years in Honduras in the Peace Corps working to initiate management of a newly legislated national park. He holds an M.S. in Sustainable Development and Conservation Biology and a Ph.D. in Plant Ecology from the University of Maryland.
Scott Berg **Skookumsb@aol.com** **904-277-4596**	**Project Responsibilities:** Review risk assessments of legal compliance and conformance with FSC/PEFC/SFI controlled wood standards. Prepare a formal review document to allow AHEC members to assess and self-declare their compliance with applicable legal and certification requirements. Support the review of federal and state laws and regulations, certification standards, and report writing. **Experience & Background:** Scott Berg has 30 years of experience in the forest industry addressing compliance with laws and regulations and voluntary certification standards. Mr. Berg has prepared over 100 forestry organizations for FSC, SFI, PEFC, ISO 14001 and Tree Farm land management and chain of custody certification. He has also conducted over 30 internal and external audits to the above standards. He has been on contract to the Sustainable Forestry Board to serve as the Standards Writer for the SFI 2005-2009 revisions, the American Forest Foundation to prepare the Group Tree Farm Standard, and served as Co-chair of the Writing Committee for ISO TR 14061. He has conducted several analyses of state forest practices acts and federal laws and regulations at the American Forest & Paper Association. He has represented the U.S. forest and paper industry before a number of international standards bodies including the ISO Technical Committee 207, the Economic Commission for Europe Team of Specialist on Forest Certification, and the Pan European Forest Certification Council (PEFCC). Mr. Berg also served as Co-chair of the second SAF Task Group on Forest Certification.