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Northeastern Region
Late-successional/Old-growth (LSOG) Dialogue
April 27-28, 2005

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Abstract

On April 27-28, 2005, a conference was held in Portland, Maine to present and discuss new information on late-successional and old-growth forest (LSOG) in the Northeast. Over 70 forest decision leaders from the Northeast Region attended. The conference had two goals: (1) to develop a joint understanding of LSOG in the region, and (2) to generate some tangible conservation and management actions, appropriate to the landowner/manager.

The conference was divided into 3 major sections: background information, innovations and strategies, and breakout sessions to develop action items. Some of the major conclusions of the conference were:

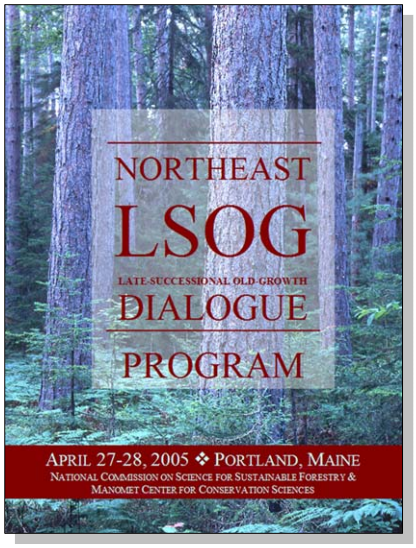
- There is little old-growth remaining in the Northeast; late-successional forest is more abundant but rapidly disappearing in many forest landscapes.
- There is no clear break point (or threshold) between late-successional and old-growth forest.
- Conservation and management for LSOG is subject to the goals of the landowner. Conservation strategies must take landowner goals into consideration. There are a growing number of small non-industrial private forest owners in the Northeast who have conservation goals; strategies to engage these owners will be important.
- There is an inherent conflict between extending rotation length to produce LSOG attributes, and economic viability. For landowners that have economics as a primary motivation for their forestland, new management strategies will be needed that can balance economics with conserving LSOG.
- New tools are being developed to help foresters manage for LSOG: (1) an LS Index that helps foresters screen stands for LSOG content, and (2) new silvicultural strategies that accelerate the development of LSOG attributes.
- Several states (Minnesota, Pennsylvania, Massachusetts) have new, innovative strategies that address LSOG conservation; other states can learn from these experiences.
- There are 4 major strategies to conserve and manage LSOG: reserves, retention, restoration, and rotation length; many landowners are using various combinations of these strategies to achieve some level of LSOG conservation.
- The science of LSOG is still poorly developed in the Northeast. There is relatively little hard information that can explain what species or processes will be lost with these older forest age classes. Using Scandinavia as a guide, we can assume that many species, especially mosses, lichens, fungi, and insects will become threatened with the loss of older forest.
- Basic inventory of LSOG is essential for assessing the LSOG issue. All states should consider developing such an inventory (e.g., follow Minnesota, Sweden examples).
- The level of current action required to conserve LSOG was unclear to the diverse participants; risk-averse participants proposed strong action to conserve LSOG; other participants called for a greater scientific understanding before action should be taken.
- Time is limited for taking action on LSOG in the Northeast. Once LS forest is lost from large areas, it will be very difficult to restore species and processes.

Thoughtful, practical LSOG management plans are needed that balance social and economic goals.

- Greater awareness of the LSOG issue (this conference) is likely to promote more innovation and problem solving.

Introduction

Although the northeastern U.S. is more forested today than it was in the 1800s, the amount of late-successional and old-growth (LSOG) forest has been greatly diminished. In southern New England, New York, and Pennsylvania, a landscape that was mostly cleared for agriculture or pastureland is now returning to a mature forest condition. By contrast, in northern Vermont, New Hampshire, and Maine, the continuity of forest cover has not been broken since the retreat of the glaciers. Here, the forest has been managed continuously for the continuous production of timber for 150 years or more. Remnants of late-successional forest rich with mosses, lichens, and fungi remain, but they are disappearing with changes in modern forest practices.



The northeastern U.S. is characterized by diverse forest types, forest histories, ownership patterns, and landowner goals. Many different strategies are emerging for conserving LSOG forest, and not all strategies are appropriate everywhere. This begs the question: which strategies merit consideration by different landowners in different areas? Can we create a framework that organizes these strategies for LSOG conservation and management in a way that acknowledges the different roles small woodlots, public lands, and commercial forests can play?

Purpose

The conference had two goals: (1) to develop a joint understanding of LSOG in the region, and (2) to generate tangible conservation and management actions, appropriate to the landowner/manager. This was the first meeting in the Northeast at which scientists, stakeholders, and policy makers convened to discuss and evaluate new information on this subject.

Approach

The geographic scope of this conference ranged from Pennsylvania to Maine. In order to facilitate thoughtful, in-depth discussion, we decided to keep the conference small (50-70 people) and by invitation only. Approximately 9 months prior to the conference we formed a Steering Committee (see Acknowledgements) to help identify key forest decision leaders in different parts of the region, develop the conference program, and identify candidate speakers. Because the LSOG issue is relatively new in the Northeast, the conference was designed so that the first day would focus on presenting new information, and the second day would focus on discussion and generating specific conservation and management actions. The conference

proceedings are to be summarized in a brief, semi-popular report, that captures the key points of speakers and the actions for LSOG conservation and management generated by breakout groups.

Summary of Results

Participants

There were 82 pre-registrations for the conference and 76 people attended. We successfully drew participants from throughout the region, though there was a disproportionate number from Maine and New Hampshire due to the conference location. There was a nearly equal balance between scientists and managers/policy makers. Relatively few described themselves primarily as 'stakeholder' and *not* in either the scientist or manager/policy maker category

Table 1. Number of conference registrations, by geographic area.

Location	People
Connecticut	4
Washington, D.C.	2
Europe	1
Massachusetts	6
Maryland	1
Maine	31
Minnesota	2
New Brunswick, CA	2
New Hampshire	10
New York	3
Pennsylvannia	7
Vermont	6
West Virginia	1
Total	76

Conference Results

Presentations

The conference was divided in to several sessions designed to provide background science and examples of on-the-ground LSOG conservation and management. We will be drafting a semi-popular conference synthesis in the next few months. Here we report major points from each of the presentations.

Day 1- Morning Session "LSOG Science and Information Background"

Mac Hunter (University of Maine)- "Defining LSOG"

- There can be no single definition of LS or OG because it will be different for different forest types; some forest types do not reach old-growth due to frequency of disturbance events.
- Reviewing 120 scientific papers, there does not appear to be a threshold at which a forest becomes old-growth. Forest development follows a continuum. Any definition of LS or OG will be somewhat arbitrary.
- Forest stakeholders need to work together to define LS and OG. Science can support discussion, but it is more of a social question to answer.

David Foster (Harvard Forest)- "LSOG in the historical and cultural landscape of southern New England"

- Southern New England went through a forest cover bottleneck (reduction) in the mid 1800s as a result of extensive clearing for agriculture.

- Forest cover rebounded in the 1900s, but forest ecological continuity was broken by the agriculture phase.
- Now, forest loss is again accelerating in Massachusetts as a result of forest conversion, this time to development.
- Prospects for LSOG in Massachusetts are poor unless a thoughtful plan to protect forest cover is initiated.

John Hagan (Manomet Center for Conservation Sciences)- "LSOG in the working forest landscapes of northern New England"

- Most of the northern New England landscape has been under continuous forest cover for the last several thousand years; forest ecological continuity was not broken by agriculture as in southern New England.
- An estimated 2-4% of the industrial forest today is in a late-successional condition (dominant trees in the 100-200 year age class); these stands are rapidly disappearing due to changes in wood markets.
- Species that appear most dependent on LSOG stands are mosses, lichens, fungi. Scandinavia has many red-listed species as a result of loss of LSOG age classes.
- We need new models/incentives for LSOG conservation in the industrial forest or LSOG will likely disappear from most of the Northern Forest landscape within 5-10 years.

Brett Butler (USDA Forest Service)- "Who owns the forest in the northeastern U.S.?"

- Forest ownership is changing in dramatic ways in the Northeast.
- The Northeast has little federal forest land; the vast majority of the forest is owned by small non-industrial private forest (NIPF) landowners (with local exceptions, such as northern New England); the NIPF owners are a rapidly growing landowner type.
- NIPF owners own the land primarily for aesthetics and nature, followed by privacy, hunting/recreation, family legacy, land investment, and finally timber production.
- LSOG conservation and management on NIPF would likely be enhanced by having long-term timber management plans, but NIPF generally cannot afford forest management planning.
- Developing ways to engage NIPF landowners will be the key to any LSOG conservation strategy in the Northeast.

Ken Laustsen (Maine Forest Service)- "What can the Forest Inventory Analysis (FIA) data tell us about LSOG status and trends?"

- FIA is the largest, most comprehensive source of information about U.S. forests. Can it inform us about trends in LSOG forest? Yes.
- In Maine, since 1982, forest has both grown into LSOG age class and been removed from the LSOG age class through harvesting (using Manomet's quantitative definition of LSOG).
- Between 1982 and 2003 there has been a net loss of LSOG; the amount of LSOG in northern hardwoods, spruce-fir (upland), and white/red pine (combine) went from

3.93 million acres to 1.1 million acres. About 6% of Maine is estimated to be in LSOG structural condition in 2003. The trend is toward LSOG loss.

Day 1- Afternoon Session "LSOG Innovations and Strategies"

Andrew Whitman (Manomet Center for Conservation Sciences)- "A conceptual framework for managing and conserving LSOG."

- There are 4 basic ways to manage and conserve LSOG (none are mutually exclusive of the others):
    - Structural retention forestry- retaining some trees in a harvest to keep LSOG attributes.
    - Long-rotation forestry- growing trees longer before harvest.
    - Restoration forestry- accelerating stand development.
    - Reserves- areas off-limits to harvesting so stands can build and/or maintain LSOG characteristics.

  Which of the 4 strategies used depends on landowner goals; different combinations will be used by different landowners.
- LSOG Management Systems (MS) could be developed by each landowner to establish the mix of strategies most suitable to their forest landbase and economic goals. An LSOG MS should include: (1) setting LSOG targets, (2) developing LSOG BMPs, (3) LSOG training for staff, (4) an LSOG decision-making framework, and (5) LSOG monitoring.
- LSOG management and conservation policies can be low cost, medium cost, or high cost; they can be voluntary or mandatory. Practical policy strategies can be developed for each combination (e.g. low cost, voluntary).
- 4 key factors for selecting LSOG policy are: (1) *equity* (balance LSOG conservation with private property rights), (2) *effectiveness* (does the policy work?), (3) *efficiency* (minimum cost for maximum LSOG return), and (4) *political acceptability*.

Day 1- Afternoon Session "State-scale examples for conserving and managing LSOG"

Keith Wendt (Minnesota Department of Natural Resources)- Minnesota

- In 1991, Minnesota developed and implemented a state-wide Old-growth policy to identify and protect the highest quality remaining old-growth forest.
- The policy included several steps: (1) state-wide inventory of all lands for OG, (2) setting state-wide targets for OG, and (3) development of new forest management structures, projects, and databases for OG.
- Minnesota has gone from 0 acres to 40,000 acres of designated OG since the policy was established in 1991.
- Several important lessons were learned in the process:
    - Interdisciplinary management system and clear management authority must be established.
    - Targets must be set, as well as indicators, with stakeholder involvement.
    - Must develop a standardized inventory, evaluation, and database system.

- Strong leadership must be established to deal with conflict and stakeholders.

Dylan Jenkins (The Nature Conservancy)- Pennsylvania

- Pennsylvania has recently developed an LSOG policy. Much of PA's forest is now in the 80-100 year-old age class.
- LSOG acres will be drawn from state forest lands and private lands (voluntarily); about 20-25% of state forest lands will be designated LSOG.
- LSOG goals will be accomplished through (1) establishment of LSOG reserves (public and private), (2) long-rotation forestry, and (3) retention forestry.

David Foster (Harvard Forest)- Massachusetts

- Harvard Forest has developed a new proposal "Wildlands and Woodlands" for forest conservation in Massachusetts that would protect forest cover, including LSOG forest.
- The overall goal is to establish about 2.25 million acres (~45% of MA) as "woodlands" and 0.25 million acres (5% of MA) as "wildlands." Woodlands will be actively managed for timber and off-limits to development; Wildlands will be off-limits to timber harvesting and development.
- Large tracts of existing forest will be preferentially targeted for wildland or woodland.
- Woodland goal will be accomplished by purchasing "no-development" easements on about 1.5 million acres. Wildland goal will be accomplished by designating large tracts predominately on existing public land.
- The plan encourages leadership and involvement by local communities and landowners ("Woodland Councils") to enable flexibility in the design of forest conservation areas; the plan takes a "collaborative, bottom-up" approach.

Day 1- Afternoon Session "Field and policy examples of LSOG conservation and management.

Andrew Whitman (Manomet Center for Conservation Sciences)- "The late-successional Index: a rapid-assessment tool for foresters."

- The LS-Index was developed to be a simple field tool that foresters could use to identify LS forest.
- A separate LS-Index has been developed for Northern Hardwood and Upland Spruce-fir.
- The LS-Index was derived from a large dataset on forest structure and composition collected in silviculturally mature, late-successional, and true old-growth forest.
- Late-successional stands can be reliably distinguished from silviculturally mature stands by tallying the number of large-living trees per unit area; some additional discriminatory power is added by tallying the number of occurrences of a few easily-identified mosses and lichens.
- The LS-Index takes 20-30 minutes to apply in a stand.

- The LS-Index should enable foresters to identify LS or OG forest for Northern Hardwoods and Upland Spruce-fir. With this information foresters can screen stands for LS attributes, adjust harvest plans accordingly, evaluate harvest effectiveness for LS retention, and build and inventory of LS stands.

William Keeton (University of Vermont)- "Using restoration to accelerate LSOG development."

- Active management (strategic harvesting) can greatly accelerate the development of LSOG characteristics.
- "Crown release" (harvesting to promote the growth of retained 30-40 cm dbh trees) is an effective tool for accelerating the density of large trees > 50 cm dbh.
- Conventional uneven-aged management leads to a decrease in the number of trees > 50 cm dbh; Structural Complexity Enhancement practices lead to an increase in the density of large trees and the volume of coarse woody debris.

Chris LeDoux (USDA Forest Service)- "'Buying rotation length': an easement strategy for conserving LSOG on private forestland."

- The financial optimum rotation length is usually well below the age at which LSOG attributes develop. Maintaining LSOG on private land managed for timber is therefore problematic.
- The cost to the landowner (i.e., "opportunity cost") of growing a stand beyond the financial optimum can be calculated (e.g., from 80 years to 150 years).
- This opportunity cost can be the basis for a new easement strategy which compensates private landowners for the cost of growing stands into an LSOG condition (in the same way landowners are compensated for development rights).

Michael Ferrucci (Interforest)- "Sustainable forestry certification: what does it say about LSOG?"

- Standards in forest certification are relatively new and still evolving; standards are also subject to professional judgment of the certifier; certification can be context sensitive.
- 3 certification standards are used in the U.S.: (1) Tree Farm, (2) Sustainable Forestry Initiative, and (3) Forest Stewardship Council.
- The language for LSOG conservation and management is variable among the 3 programs.
- Tree Farm does not mention LS or OG by name, but refers to the protection of "special sites."
- SFI standards specifically address OG, but not LS.
- FSC standards for the Northeast state that "ecologically mature or late-successional phases (not including old-growth) are generally underrepresented and would qualify as representative sample areas" to be maintained.
- FSC has the most extensive (and context sensitive) guidelines for LSOG.

- Quantitative assessment of LSOG or an LSOG management system is not detailed in any certification system at present.

Bill Ginn (The Nature Conservancy)- "Novel policy models for conserving LSOG"

- There are few economic incentives for private landowners to conserve OG forest.
- Old-growth is expensive to buy.
- There are few opportunities to purchase 10-25,000 acre tracts of forest sufficient to capture the full range of natural disturbances.
- Successful conservation strategies will come from market incentives- company's increasingly appreciate that environmental protection is necessary to stay in business.
- Other market incentives, such as carbon sequestration, may help pay for conservation goals.
- TNC and AMC are testing new conservation strategies by actively harvesting timber and using the revenue to accomplish even greater conservation goals than could be achieved otherwise.
- As market incentives develop, we need to secure the protection of critically important forest areas as reserves.

Day 1- Late-afternoon session "LSOG Management at the local-land-unit scale."

Stacy Lemieux (USDA Forest Service)- "LSOG management in the White Mountain National Forest"

- The White Mountain National Forest (WMNF) has a multiple-use mandate, and therefore and obligation to conserve and maintain LSOG forest.
- LSOG forest is not specifically identified as a management goal, but many WMNF goals will provide for LSOG.
- 53% of the WMNF are allocated for "no timber harvest."
- 90% of existing reserve areas are mature or old-forest.
- Harvest is prohibited in OG forest.
- Harvest practices include retention of large snags, cavity trees, logs, species diversity.

Peter Triandafillou (Huber Resources Corporation)- "Perspectives on LSOG conservation and management from a commercial landowner and manager.

- LS management presents several challenges: (1) financial implications of extending rotation length, (2) unknown impact on forest modeling, (3) unknown ecological benefit of extending rotation.
- Retention and reserve approaches are currently used by Huber to maintain older trees in the landscape.
- Riparian zone management and deer wintering area management may contribute to LS attributes.
- Huber intends to use the LS-Index to screen stands for LSOG value.

Day 1- After dinner session

Håkan Wirtén- "The development of Sweden's policies for LSOG conservation and management."

- Sweden's first Forestry Act passed in 1903 to control forest exploitation.
- Act revised in 1994 to conform to Rio declaration.
- Sweden has equal and explicit emphasis on both economic and environmental goals in forestry.
- Woodland Key Habitat (WKH) program started in 1992 to help protect important forest habitats on public and private land. All forested lands in the country were inventoried by for WKHs. Private landowners paid for their own inventories.
- WKHs make up about 1% of the forested land in Sweden.
- Government will pay landowners to protect small patches in perpetuity.
- Government will pay landowners to extend rotation for up to 50 years.
- Some voluntary reserves are expected without payment from government.

Day 2- Early-morning Session "LSOG Management at the local-land-unit scale." (continued from previous day)

John Scanlon- "MassWildlife strategy for LSOG restoration and conservation."

- MassWildlife state lands currently have a very low amount of late-seral forest cover. The goal is to increase the amount of late-seral forest to about 10-15%.
- MassWildlife will use a combination of reserves and active management areas to achieve late-seral goal; will capitalize on areas that have natural disturbance processes at work.
- Acquiring large reserves will require purchase of easements from private landowners.
- Purchase of development rights is expected to range from $1000/ac to $2500/acre in western Massachusetts.
- Questions remain about what is the minimum protection area needed to maintain ecological values; how much of a buffer is needed and how much of the buffer area needs to be secured by easements.

Ned Karger- "Kane Hardwood's (PA) management strategy for LSOG."

- Kane Hardwood (KH) is a Division of The Collins Pine Company, which was established in 1855.
- KH manages about 126,000 ac in PA; it has been FSC certified since 1994.
- KH has a disproportionate amount of forest in the 70-90 age class; little beyond 120 years old.
- KH used a combination of permanent reserves and "rotational reserves" to maintain LSOG attributes.
- Rotational reserves are designed to maintain connectivity between mature forest blocks; rotational reserves amount to 15-20% of landbase; blocks are > 1000 ac;

limited harvesting allowed while adjacent compartments are regenerated; can be fully managed only after adjacent compartments achieve desired ecological features.

- All harvest planning is designed to maintain ecological connectivity through the ownership; planning done on a 120 year horizon.

Barbara Vickery- "TNC's approach to LSOG conservation and management on the St. John in Maine.

- TNC own 180,000 ac of timberland in the upper St. John river in northern Maine.
- TNC LSOG strategy includes: (1) Identify current LSOG areas and maintain them, (2) establish ecological reserves at the appropriate scale, and (3) within managed stands, retain legacy components modeled after natural disturbance processes.
- The desired future condition for lowland spruce-fir is 20-50% < 75 years old, 25-40% between 75 and 150 years old, and 25-40% > 150 years old.
- In actively managed stands, 10%+ of the stand is retained in 0.10-0.25 acre or greater patches; retention is centered on legacy or wildlife trees; where feasible, leave 5 or more snags or cavity trees per acre; one snag should be 24" dbh if possible, the remainder > 14" dbh.; cut, non-merchantable wood is left near the stump.
- Retention patch density will be higher, farther from reserve areas.
- Many remaining questions exist on whether strategies are effective; what are the most cost effective, ecologically effective strategies.

Day 2- Mid-morning "LSOG Management at the local-land-unit scale."

Breakout Groups

The conference participants were divided into 5 breakout groups: (1) small woodland owners, (2) large woodland owners, (3) state-level policy makers, (4) certification systems, and (5) scientists. The first 4 groups were assigned the same 2 tasks: (1) generate a list of specific actions that 'your' management group might take to conserve and manage LSOG forest, and (2) What information would help you be more effective at management and conservation of LSOG? The Scientist Group had only one task: "What are the most pressing scientific needs regarding LSOG forest conservation and management?" Each group was given about 1 hr to complete their tasks. Each group then reported the results of their breakout session back to the full group. The presentations contained the following points:

<u>Small Woodland Group</u>

(1) Action items:

I. Policy to decide/set LSOG objectives for all lands- include motives and justification.
II. Action Plan – dynamic plan- current day and managing for future LSOG; prioritize and engage largest landowners.
III. Inventory of existing LSOG on all lands and integrate into state lands management.
IV. Allocate resources allocated to the issue and have the will to implement.

(2) information needs

I. Develop criteria for optimum LSOG system design.
II. What are the management thresholds with respect to associated biodiversity needs.
III. What is the ecological value of different patch sizes?
IV. Better define LSOG by/for community types.

Large Woodland Group

(1) Action items:

I. Apply what we know on larger public/conservation lands and test and evaluate.
II. Big O.G. reserves—not a private land owner function; rather public/conservation land.
III. Manage for LS in the matrix of inoperable, regulatory, or riparian zones.
IV. Technical transfer, education, training.

(2) information needs

I. What is really at risk? Are we interested in LS/OG for it own sake? Need to know more? What is our sales pitch?
II. Is buying what exists equivalent to developing LS/OG over time. (Developing larger scale) where do you get the most bang for you buck?
III. Applied research [on LSOG].
IV. LS management in riparian, regulatory zones [what is being provided?].
V. Where does this [LSOG] issue rank in list of threats (invasives, etc.)

State-level Group

(1) Action items:

I. Establish public [state-level] goals for LSOG.
II. Establish LSOG policies to conserve and manage for LSOG (and recognize the time component).
III. Develop a fast-track Action Plan that sets short-term and long-term goals for LSOG (e.g., via a stakeholder group or blue-ribbon panel).
IV. State agencies lead by example [e.g., by initiating LSOG conservation and management plans on state-owned lands].
V. Inventory LSOG at the state level.
VI. Coordinate conservation efforts among landowners and conservation entities.
VII. Assess institutional capacities (in public and private sectors) to implement actions for LS conservation and management.
VIII. Establish LSOG management demonstration areas.
IX. Develop a strategy to engage the public in LSOG.
X. Promote tax incentives for LSOG conservation.

(2) information needs

I. Define LSOG forest in layman's and scientific terms (conceptual and operational definitions).
II. Inventory LSOG statewide (public and private) [also listed under Task 1].
III. Understand the trajectory of LS state-wide [including trends by spatial unit/ownership type].
IV. Develop tools for analysis of LSOG in the state (e.g., spatial assessment)
V. Identify species that may be dependent on LSOG.
VI. Inventory species that are believed to be dependent on LSOG.
VII. Identify management thresholds for species persistence in LS stands.
VIII. Identify compatible and incompatible management activities for LS species conservation.
IX. Develop an LS Index for other forest types (in addition to Upland Spruce-fir and Northern Hardwood).
X. Develop criteria for optimum LS design (at the landscape scale).
XI. What is the relationship between patch size and LS ecological benefits?

<u>Certification Group</u>

(1) Action items:

I. Analyze/sort through standards (e.g., FSC) & simplify, better focus & don't be overly prescriptive (avoid).
II. Foster use of LSOG analysis & tools by certified land managers.
III. Make sure certifiers to their job to audit LSOG implementations.
IV. Certification systems should foster creation of LSOG.
V. Establish different expectations for public vs. private managers re LSOG.
VI. Clarify what are the real expectations of commercial forestland managers in terms of LSOG.
VII. LS identification should not focus just age, also structure, composition & function.
VIII. Consider a more prescriptive standard for LS w/minimums.

(2) information needs

I. Assessment of the value, current status, & conservation needs of LSOG.
II. DEFINE:
- What are the structural & functional attributes of OG?
- Which of these can be achieved through late-seral?

III. TARGET:
- What is the acreage target for OG?
- What is the acreage target for LS?

IV. MANAGEMENT QUESTION:
- Is managed OG the same as hands-off OG?
- Is managed LS the same as hands-off LS?

V. Clarify the economics of LSOG.
VI. Establish/clarify definition of LS – seral vs. succession vs. … ?
VII. Do more field testing of LSOG tools to better understand definitions and have clearer ID of LSOG.

Scientist Group

(1) Science needs:

I. What is LS/OG?
II. What is the uniqueness of LS/OG in terms of species, process, structure?
III. What is the range of natural variation of species, structure, and processes for LS forests and OG forests for the region?
IV. How do we manage LS/OG?
- How large do LS/OG conservation units need to be for population viability, life-boating, re-colonization, etc.?
- How do we manage them to maintain LS/OG attributes at the landscape level (context and configuration)?
- What components are needed for what species or process (e.g., trees size versus tree age)?

V. Tools:
- A decision support tool that models structure, composition, and processes to facilitate development of management strategies.
- Develop an index of "old-growthedness".

VI. How can social sciences help inform management of LS/OG?

Full Group Discussion

After the breakout presentations, time was allocated for open comment and discussion. The discussion might be summarized as follows: We are not exactly sure what ecological processes and species are linked to LS or OG forest in the Northeast, but there is not much LSOG and it is diminishing in most parts of the region. Not surprisingly, the participants were split on whether there is an urgent need to maintain or restore LSOG age classes. Those who are environmentally risk-averse were alarmed at the small and diminishing amount of LSOG. Those representing mostly private landowner interests argued that existing LSOG science is too weak to make the case for regulatory policy action at this time. Landowners were concerned about the implications of any new conservation policies to their economic interests. It was pointed out repeatedly that if "we" didn't do something to conserve LSOG, the issue would be largely moot on most private forestlands.

The goals of the conference were achieved—(1) a diverse decision-leader group reached a new level of understanding of LSOG, and (2) many excellent action ideas were generated by the participants. It is now up to the participants to take their own initiatives with the information that was provided to them.

Concluding Thoughts – John Gordon

John Gordon (NCSSF Commissioner) provided some summary comments based on what he heard at the conference. He suggested that we may be placing too much emphasis on defining LSOG, and too much time trying to link particular species to LSOG or to identify indicator species. It is well known that large, old trees are a natural part of most forest types. We should accommodate that fact in our forest management. Public lands should bear the brunt of the responsibility for providing this age class, but in areas that have little public land, private landowners need to be more proactive in providing LSOG. We need to better explain to the public why big, old trees are an important part of a forest ecosystem. We need to pay careful attention to social and economic forest goals as well, and not sacrifice them in pursuit of LSOG goals. We need practical approaches to achieving forest values. We need to put individual innovation to work—let the creativity of the forest manager loose on solving the challenge of LSOG. We will also need money to enact many of the new ideas for building forest reserves throughout the region.

Conference Evaluation

A relatively detailed conference evaluation was handed out at the end of the conference. Some of the results are presented here.

"Please identify which, if any, of the following activities you would be interested in participating:"

Activity	Count
A similar follow-up northeastern regional conference	19
A scientific meeting on LSOG management practices	21
A field-based LSOG management practices training workshop	19
An LSOG conservation and management meeting in your state	19
A meeting with funders to identify LSOG conservation and management policy strategies for testing.	6

Conference Evaluation Questions	Strongly agree=5 Strongly disagree=1		
	n	Mean	Median
The LSOG Dialogue helped me better understand LSOG forest conservation and management for my area.	41	3.9	4
I am likely to talk to others about the content of the LSOG Dialogue sometime in the next month (1=not likely, 5=very likely).	41	4.6	5
I am likely to refer others to information learned in the LSOG Dialogue.	41	4.3	5
My state would benefit from having a meeting on LSOG forest conservation and management.	38	4.1	4
There was a good balance of time devoted to presentations versus discussion.	41	3.8	4

"In the Background Session on Day 1, which idea or concept was the most compelling to you?"

- Foster's perspective on history/future
- how do we explain the economics of LSOG
- Ken Laustsen's data and trends on loss of OG/LS
- Foster's vision for MA
- evidence of impending loss
- the current inventory and distribution of LSOG
- our overall lack of knowledge on the topic-in particular
- the use of FIA data for state-wide assessments
- Hagan's disappearing "red bits" (remnant LS in industrial landscape) and Laustsen data
- no data, broad science in vague terms
- just LS in general
- lack of info on the values of LSOG
- purchasing rotation length
- that we really don't know how much LSOG is out there now and is likely to be there in coming decades-some discrepancies between Hagan, Laustsen, Si Balch.
- the dynamic of in-growth acres versus loss acres
- LS Index
- Average NIPF owner is 63-imminent land transactions are at hand and FIA can tell us a lot about LS but no much about OG
- buying rotation length
- management toward LSOG
- Ken Laustsen
- extinction debt
- immediate need to protect southern NE lands due to development
- sense of urgency
- there is not enough definitive information on the topic-what is it and why does it matter? LS is still largely conceptual and lack the definition need
- Andy Whitman's framework
- assumption that land managed for LS traits mixed with intensive harvest is sufficient
- what is known and what is not-known
- Hunter
- Harvard forest wildlands and woodlands
- apparent disappearing nature of LS

"What concerns you most about LSOG conservation and management?"

- definition of less importance than how managers can realistically manage for it
- no clear single statement on why [conserve LSOG]
- involuntary taking, political pressure
- urgency of need for action in ME
- there's little public mandate for conserving LSOG, needs are really based on social not biological science
- threat to LSOG
- so much to do, so little time
- social pressures and challenges
- the general lack of LSOG across the landscape and its apparent decline
- that it may take attention/capacity away from land conservation (sprawl issues, invasive, etc.)
- we need to engage rural forest communities in the discussion
- financial imperatives of commercial ownership that work against LS conservation and the idea that we need science to answer every question before action can be taken.

- My rave reviews immediately above come from the recognition that our science in not compelling and that our challenge is a social challenge more than scientific.
- lumping LS with OG and people expecting strict preservation of both, and failure to understand both market and biological implications.
- How scarce and disappearing it is (at least in Maine)
- as before, we don't know concrete values
- lack of awareness with the professional and academic forestry professions
- lack of knowledge on what it is and its importance
- the fiddling while Rome burns question! Of course it is important but in many places there are much bigger issues for biodiversity conservation.
- it is still evolving, I share concern but not the chicken little risk
- lack of rationale for conservation/management
- Arguing about indicator species-point is want to protect "special" habitats. Let's id them and then let managers decide how.
- it's being lost quickly
- regulatory proposals, loss of timber income/value
- very poor science to support LS need
- ensuring that land managers buy into both the needs and methods for LSOG mgmt/conservations, while retaining the ability to provide timber revenue
- there is no common consensus--too many opinions/approaches
- it's disappearing
- having the existence of LSOG becomes a liability triggering a great rush to "get rid" of it
- a more unified, coherent strategy based on scientific, social, and market values

"How did the mix between scientists, policy makers, and practitioners help you develop a clearer understanding of LSOG forest conservation?"

- it helped but perhaps could have been more structured
- needed more reps from small landowners, loggers, and government policy workers
- see the interaction between biologic and social goal oriented people. Social people use biology to further their goals and visa versa
- good to have cross/fertilization. Scientists and policy folks need each other to accomplish their goals
- definitely
- great..I had the impression we were a bit heavy on "the converted" but that may be inevitable
- it was a useful mix
- I think we could have used a stronger voice for policy makers to understand what might be achieved on the necessary state, regional, and natural scale
- a good mix-wonderful folks I could learn a great deal from
- the mix was very helpful
- worked well but would have liked to have greater representation of commercial landowners
- tons of knowledge and incisive? Minds
- good balance. Stimulated productive dialogue
- always good to be exposed to different views
- the mix of scientist, etc, etc high caliber, experience, expertise, etc of the people in the room-breadth
- nice blend
- this was an excellent mix! And everyone was very open and respectful of differing viewpoints
- good
- not enough on economics/social sciences
- needed more small land owners
- helpful
- it was good
- there was a good mix of theory and practice-though the long-term effects of practices were lacking (and probably unknown)

- good mix, good discussion, did not result in clear goals? Due to variety of approaches
- good mix
- great variety of experience, knowledge and opportunity for listening
- It clearly illustrated the reasons behind the crisis and leaves me convinced that there is no meaningful solution to this problem
- different perspectives-good
- It was good to hear about concerns, ideas, etc. for industrial and states that don't deal with LS.
- science itself is not the answer, it might be able to be applied. But the field needs good science to apply
- helped understand practical issues in applying the science
- Still felt that LS needs much better definition -very complex issues i.e. management in Acadian forests

"Overall, what did you like best about the conference?"

- people and discussion
- in 24 hours, great wealth of talent and information exchanged
- diversity of group
- lots of info
- regional (not just local) mix of attendees
- Quality of speakers/expertise, organization/structure of conference- both excellent
- hearing thoughtful and insightful concepts from the diverse perspectives
- very challenging issues being discussed-particularly challenged by own ability to articulate the importance of LSOG on the landscape
- the mix of attendees, broad range of presentation topics/views
- the free interchange of ideas
- good program, tight schedule, opportunity for discussion
- the discussion
- structure and participants
- diverse approaches to a focused issue
- mix of participants
- excellent presentations and excellent conversation
- the variety and quality of the presenters
- much more time for discussion, fewer presentations, and better distinction between LS and OG between a true LS stand and LS components in a non LS stand
- the case studies of states and landowners
- The open, frank exchange of ideas
- breakout group, good mix of stakeholders
- highlighted importance of issue-shared issues among states
- good, polite, insightful conversations
- pacing-short and intense
- good brains
- the chance to learn cutting edge info from major players in the LSOG field
- variety of approaches, limit of speakers to key information
- the excellent mix of people
- good discipline on time allocated per speaker
- the open discussions and breaks for individual one on one discussion
- brilliant minds sharing ideas. If we're going to fiddle while Rome burns, this is an excellent group to fiddle with.
- benchmark of current thinking
- array of participants to talk to
- quick pace, good balance of opinion, experience
- diversity of presenters and participants
- good mix of people (academics/public/private managers etc.)
- opportunity to learn and network
- Well structures. Appreciated the adherence to time limits

- good mix of people

"How could the conference have been improved?"

- more time
- need clear responsibility for next action steps
- more social goal oriented input
- it was good
- broaden beyond biological science 1) qualitative managers 2) social
- Structure mixer (like breakout groups) earlier to make contact with each other on first day. Breakout longer 1.5 hour
- could have used more time in the breakout sessions
- nothing to add
- need more opportunity for discussion-especially across groups
- have more state foresters, policy makers, and rural community
- stronger review of the science
- market perspectives/implications of LS
- more opportunity for group discussion, a couple less presentations
- no- it was ok
- in future years consider a field trip to a demo site
- coffee on day one in the morning; free parking
- too tight on presentations 15-20 minutes is too little, go 20-30 for more breadth but staying on time is mandatory
- More time for discussion and hashing out of ideas e.g. certification, research needs, financial strategies.
- more breakout group time-small discussion groups were very good but time too short
- more on economic impacts/considerations
- need more small land owners
- none
- slightly less breadth and more focus/discussion- probably this is more a recommendation for any follow up meetings than a critique of this one
- shorten the first day a bit (start at 9) add diff to day 2
- I'm not sure, perhaps to have made a stronger case of the problem but the data simply may not yet exist.
- more time for fewer presentations; a breakout session on both days
- more time for discussion
- I did not think the break-outs were very effective
- more time on breakout: ending at 4pm would have been fine
- more exploration of policy and legal options for long term permanent protection/restoration of LSOG on public lands
- better scientific definition of the issue to begin the conference
- more discussion time

Deliverables

1. Conference
2. Report to NCSSF (this report)
3. Popular Summary of the Conference (PDF format)

Acknowledgements

We thank the conference Steering Committee for helping to create the LSOG Dialogue program: Stephen Blackmer, Richard Donovan, Alec Giffen, Dylan Jenkins, David Kittredge, and Peter Triandafillou. We thank Mac Hunter, Dylan Jenkins, David Kittredge, Richard Donovan, Peter Triandafillou for leading the breakout groups. We also thank all of the speakers who clearly took great effort to produce the highest quality presentations, and within the time

limits allowed. Ethel Wilkerson and Amanda Farris both provided essential conference logistics, including projection, breakout materials, and registration. Thanks to Linda Damon for assistance in organizing conference registration and accounting. Chris Bernabo provided valuable advice in how to organize the breakout sessions. Aaron Lien organized the conference facility logistics and helped with the breakout session recording. Finally, thanks to John Gordon, who's even keel and great wisdom guided us from the very beginning to the very end.

Attachments

Conference Program
Conference Evaluation Form
C10 PPT NCSSF Report presentation (June 15, 2005)

LSOG Dialogue
Conference Program

8:00 AM	Welcome: *John Gordon*, Commissioner, National Commission on Science for Sustainable Forestry (NCSSF). About NCSSF *Chris Bernabo*, NCSSF Director. Goals of the LSOG DIALOGUE *John Hagan*, Manomet Center for Conservation Sciences. Introductions of Participants
8:45 AM	Morning Session: LSOG Science and Information Background— Moderator: John Gordon, NCSSF Defining LSOG. *Malcolm Hunter*, University of Maine.
9:00 AM	LSOG in the historical and cultural landscape of southern New England. *David Foster*, Harvard Forest.
9:30 AM	LSOG in working forest landscapes of northern New England. *John Hagan*, Manomet Center for Conservation Sciences.
10:00 AM	Open discussion: the science of LSOG conservation and management. *Question to Participants: How does land-use history inform you about current strategies for LSOG conservation and management?*
10:30 AM	Break
10:50 AM	Who owns the forest in the northeastern U.S.? *Brett Butler*, USDA Forest Service. *Question to Participants: What are the implications of landowner patterns in the Northeast for LSOG conservation and management?*
11:20 AM	What can the Forest Inventory Analysis (FIA) data tell us about LSOG status and trends? *Ken Laustsen*, Maine Forest Service *Question to Participants: How well does the FIA inform you about LSOG status and trends?*

Noon	Lunch (in Louise Nevelson Greenhouse)
1:00 PM	Afternoon Session: LSOG Innovations and Strategies—Moderator: David Kittredge, UMass Amherst A conceptual framework for managing and conserving LSOG. *Andrew Whitman*, Manomet Center for Conservation Sciences.
1:20 PM	State-scaled examples or proposals for conserving and managing LSOG at the state scale. • Minnesota: *Keith Wendt,* Minnesota Department of Natural Resources. • Pennsylvania: *Dylan Jenkins*, The Nature Conservancy, Pennsylvania. • Massachusetts: *David Foster,* Harvard Forest Open Discussion: Managing and Conserving LSOG at the state scale. *Question to Participants: What are the common elements of state-level plans for LSOG?*
2:40 PM	Break
3:00 PM	Field and policy tools for LSOG conservation and management. • The Late-successional Index: a rapid-assessment tool for foresters. *Andrew Whitman*, Manomet Center for Conservation Sciences. • Using restoration to accelerate LSOG development. *William Keeton*, University of Vermont. • "Buying rotation length:" an easement strategy for conserving LSOG on private forestland. *Chris LeDoux,* USDA Forest Service, and John Hagan, Manomet Center for Conservation Sciences. Discussion • Sustainable forestry certification: what does it say about LSOG? *Michael Ferrucci,* Interforest • Novel policy models for conserving LSOG. *Bill Ginn,* The Nature Conservancy. Discussion
4:30-5:15 PM	Late-afternoon Session: LSOG Management at the local-land-unit scale—Moderator: Alec Giffen, Maine Forest Service

- LSOG management in the White Mountain National Forest. *Stacy Lemieux*, USDA Forest Service.
- Perspectives on LSOG conservation and management from a commercial forest landowner and manager. *Peter Triandafillou*, Huber Resources Corporation.

Discussion

Question to Participants: How do landowner goals influence LSOG conservation and management?

6:00-7:15 PM — Social (cash bar) in Louise Nevelson Greenhouse

7:15 – 9:00 PM — Dinner (and presentation) in Longfellow A

The development of Sweden's policies for LSOG conservation and management. *Håkan Wirtén,* Deputy Director General, Swedish National Board of Forestry.

Thursday, April 27 (DAY 2)

8:00 AM — LSOG Management at the local-land-unit scale—Moderator: Alec Giffen, Maine Forest Service

(session continued from previous afternoon)

- MassWildlife strategy for LSOG restoration and conservation. *John Scanlon*, Massachusetts Wildlife.
- Kane Hardwood (The Collins Pine Company) Pennsylvania. *Ned Karger*, Kane Hardwood
- TNC's approach to LSOG conservation in the St. John area of Maine. *Barbara Vickery*, The Nature Conservancy, Maine Chapter.

8:55-9:05 AM — Discussion

Introduction to Breakout Sessions: Chris Bernabo, NCSSF

9:10-10:10 AM — *Concurrent Breakouts*: Developing specific LSOG management recommendations for different decision makers.

1. Large forest units: Facilitator, Peter Triandafillou
2. State-level policies: Facilitator, Dylan Jenkins
3. Certification systems: Facilitator, Richard Donovan

	4. Small woodlot owners: Facilitator, David Kittredge 5. LSOG science needs: Facilitator, Mac Hunter
10:10 AM	Break
10:30 AM	**Breakout Reporting**—Moderator: Chris Bernabo, NCSSF All groups will present their suggested LSOG conservation practices to the full group.
11:50-12:05 AM	**Concluding Thoughts**—Moderator: John Gordon, NCSSF Suggestions or comments on conference follow-up.
12:10-1:00 PM	Lunch, adjourn

LSOG Dialogue - Evaluation Form

Portland, Maine – April 27-28 2005

1. What group do you best represent (✓box)? ❑ a. stakeholder ❑ b. technical/science person ❑ c. resource manager/policy maker

2. Which single geographic region best describes where you mostly work (✓box)? ❑ a. Northern forest (ME, VT, NH, ne NY, NB) ❑ c. Southern New England (MA, RI, CT) ❑ b. Mid-Atlantic (PA, NJ, MD, WV, southern NY) ❑ d. Other_____

3. Which single land ownership "landscape" best describes where you mostly work (✓box)?

❑ a. State-wide policy arena ❑ c. NIPL in communities facing sprawl ❑ e. Large private landowner (>10,000 acres)
❑ b. Rural NIPL ❑ d. Public lands (local, state, or federal) ❑ f. Other_____

4. Which best describes the portion of the meeting that you attended (✓box)? ❑ a. 1st ½ day ❑ b. 1st day ❑ b. 2nd day ❑ d. entire meeting

5. Please identify which, if any, of the following activities in which you would like to participate (✓ all that apply)?:

❑ a. a similar, follow up northeastern regional workshop in 1 year.
❑ b. a scientific meeting on LSOG management practices.
❑ c. a field-based LSOG management practices training workshop.
❑ d. an LSOG conservation and management meeting in your state.
❑ e. a meeting with funders to identify LSOG conservation and management policy strategies for testing.
❑ f. Other: _____

LSOG Science and Information Background Session (day 1) (circle the appropriate number)	Strongly disagree				Strongly agree
6. Talks of the *Background Session* (day 1) had the right amount of scientific background material about LSOG forest ecology.	1	2	3	4	5
7. I learned new, interesting ideas about LSOG forest ecology from the *Background Session* (day 1).	1	2	3	4	5

8. In the *Background Session* (day 1), which idea or concept was the most compelling to you and why?

a. _____

… because _____

_____

_____

LSOG Innovations and Strategies Session (PM day 1 and AM day2) (circle the appropriate number)	Strongly disagree				Strongly agree
9. Andy Whitman's framework for LSOG forest conservation practices and policies significantly helped me organize my thoughts about LSOG forest conservation and management.	1	2	3	4	5
10. The *Innovations and Strategies Session* identified useful approaches for LSOG forest conservation and management.	1	2	3	4	5

11. Which state (Minnesota, Pennsylvania, or Massachusetts) LSOG forest strategy did you like the most?

_____

… because _____

_____

12. In the *Innovations and Strategies Session*, which tool, management practice, or policy was the most compelling to you and why?

a. _____

… because _____

_____

_____

Breakout Groups (circle the appropriate number)	Strongly disagree				Strongly agree
13. My breakout group identified practical actions for LSOG forest conservation and management.	1	2	3	4	5
14. My breakout group identified important information needs for LSOG forest conservation and management.	1	2	3	4	5

15. Which breakout group were you in?

❑ a. Large forest units ❑ c. State-level policies ❑ e. Certification systems

❑ b. Small woodlot owners ❑ d. LSOG science needs

16. Based on your conference experience, what single suggestion would you have for LSOG forest conservation and management regarding…

a. State level policies:_____

_____

b. Certification systems:_____

_____

c. Large industrial lands:_____

_____

d. Small woodlot owners:_____

_____

17. Please list your top information needs for LSOG forest conservation and management:

a. _____

b. _____

c. _____

Overall	Strongly disagree				Strongly agree
18. The LSOG Dialogue helped me better understand LSOG forest conservation and management for my area.	1	2	3	4	5
19. I am likely to talk to others about the content of the LSOG Dialogue sometime in the next month (1=not likely, 5=very likely).	1	2	3	4	5
20. I am likely to refer others to information learned in the LSOG Dialogue (1=not likely, 5=very likely).	1	2	3	4	5
21. My state would benefit from having a meeting on LSOG forest conservation and management.	1	2	3	4	5
22. There was a good balance of time devoted to presentations versus discussions.	1	2	3	4	5

23. What concerns you most about LSOG forest conservation and management?

_____

_____

24. How did the mix between scientists, policy makers, and practitioners help you develop a clearer understanding of LSOG forest conservation and management?

_____

_____

25. Overall what did you like best about this conference?

_____

_____

26. How could the conference have been improved?

_____

_____