

DCR FOREST FUTURES TECHNICAL STEERING COMMITTEE (TSC)

Doyle Conservation Center
325 Lindell Avenue, Leominster, MA 01453
Meeting #3 – June 9, 2009; 9:00 AM – 1:00 PM

MEETING SUMMARY

Members present: Lisa Vernegaard, Chair, Matt Burne, Heather Clish, Kate Connolly, Andy Finton, Bill Moomaw, Keith Ross, Bruce Spencer, Tom Stevens, Charlie Thompson, Joe Zorzin.

DCR/EEA Staff: Stephanie Cooper, Bill Hill, Bob O'Connor

Facilitators: Bill Logue, John Goodrich. **TSC Technical Coordinator:** Tom Walker

Observers Present: Mary Booth, Dan Clark (DCR Division of Water Supply Protection), Alexandra Dawson, Claudia Hurley, Heidi Ricci.

Welcome and Introductions

Technical Steering Committee (TSC) Chair Lisa Vernegaard welcomed TSC members. The meeting agenda and documents were briefly reviewed.¹

I. Silviculture Presentation – Matt Kelty, Dept of Natural Resource Conservation, UMass
Professor Matt Kelty explained, often with pictures and graphics, basic silviculture practices and terminology. The *composition* of stands of trees are described as being of single or mixed species. New England forest stands tend to be composed of mixed species. *Species characteristics* are described in terms of shade tolerance – shade intolerant (often called “pioneers”), mid-tolerant and shade tolerant. *Forest structure* describes the sizes and age distribution of trees. Structure descriptions include: even-aged, two-aged, irregular uneven aged, balanced uneven-aged.

Silviculture practices were developed in Europe centuries ago and focused on managing even aged stands. New England even-aged stands are the result of clearing for agriculture several centuries ago. The result is stands that are even aged stratified structure with numerous species that vary in size based on their shade tolerance. Two age stands are often the result of natural disturbances (e.g., hurricanes) that destroy a portion of the trees. In many managed forests in the world this is the desired state. For balanced uneven-aged stands, management is based on complex calculations requiring information on the proportion of the stand in various species and age classes. Because of the complexity, this is less common than irregular uneven age management. For a forest manager a central question is whether to manage for even-age or uneven-age and when/if to switch from one to the other.

The type of regenerative growth after cutting is the result of the size of the forest opening. The size is described in terms of tree height equivalents. For an 80' tree 1-height = 0.1 acre, 2-height = .5 acre, 3-height = 1 acre and 4-height = 2 acres. By determining the size of the opening certain species will be promoted. For instance, less than a single tree height will create only shaded openings favoring shade tolerant species.

¹The agenda and documents are available on the DCR website under the “Past Meeting Schedule and Materials Link” at: <http://www.mass.gov/dcr/news/publicmeetings/forestryfvp.htm>. The documents are listed at the end of this summary. Additional information about the process and upcoming meetings is available on the same webpage.

In reviewing terminology Dr. Kelly noted how silviculturists and foresters often used the terms without explaining them or the goals for the future state of the forest underlying the management practice thereby creating miscommunication, misunderstanding and mistrust with the public, whose focus is typically on the current state not the desired future state.

Dr. Kelly reviewed the terminology of regeneration methods and illustrated the terms with photographic examples. The terms are:

- Even-aged structure: Clear cut, Seed-tree, Shelterwood
- Two-aged structure: Clear cut with reserves, Seed-tree with reserves, Shelterwood with reserves
- Uneven-aged structure: Single-tree selection, Group selection

To a non-forester, a number of these regenerative methods appear to be clear cuts. A seed tree cut leaves a number of trees in an area to drop seeds for regeneration then those remaining trees are cut 5-6 years later. A shelterwood cut provides shade for shade intolerant species. The initial cut is revisited and cut in 10-20 years and will look like a clear cut at that point in time. With reserve cuts a number of trees are left. This can be done for non regenerative purposes and to mimic natural disturbances.

Single tree selection methods may create small gaps, about 1/10th of an acre. This method favors shade tolerant species and, if done with the objective of harvesting only the most commercially valuable trees (referred to as highgrading), is a practice detrimental to the long-term sustainability of the stand. Group selection tends to be more aesthetically acceptable than clear cutting to create gaps in the stand, usually of about .0.5-2.0 acres. Other gaps are then cut a number of years later. He illustrated this with examples from Quabbin Reservoir. This methodology of group selection with reserves was promoted by Bill Leak of the U.S. Forest Service.

Dr. Kelly reviewed strip cutting where bands of trees are cut in sequence over time to allow for seeding and regeneration from the remaining adjacent stand. This is not a frequently used method in Massachusetts but can be used to create even aged stands. Strip cutting may be done with both clear cuts and shelterwood cuts. These methods were used for harvesting/regenerating some of the spruce plantations. The history of the plantations was reviewed with their associated problems of dense planting, poor self-thinning due to equal competition and resulting tall skinny trees. Kelly noted that thinning is necessary in plantations or trees will have reduced resistance to insect, fungi and windthrow.

In conclusion, Dr. Kelly noted the importance of scale at the gap, stand (20-30 acres) and landscape (1,000's acres) level. It is possible to be diverse at the smaller scale but not at the landscape scale. For many years management goals centered around simplicity; now they are centered on diversity/complexity.

Discussion: Each of the TSC forester members added brief thoughts. Joe Zorzin noted that in developing a plan he strives for what looks good and uses his "1/3rd rule" removing only that amount at any given time. This is reliant on a good logger performing the work. He also looks to enhance the value in all respects – better quality trees for harvest, ecological, wildlife, aesthetics, etc. The regeneration methods do not dominate in his thinking process; with his private clients aesthetics are a primary concern. Bruce Spencer discussed implementation difficulties in regenerative methods. Once the decision is made to regenerate, one has to state what the desired regeneration is and ensure that subsequent cuts protect this stated goal. Growth in stands is dependent on young new trees and logging systems (equipment) often destroy the young trees during subsequent cuts. Spencer suggested that permanent roads should cover no more than 10% of an area. Irregular uneven age management allows more leeway in implementation. Charlie

Thompson stressed the importance of context socially, spatially, and historically for silviculture and that it has to be economically workable with minimum harvest per acre acting as constraints. He noted the tension of forests being a spiritual place for many and harvesting being the equivalent of an open air slaughterhouse. Keith Ross noted that silviculture practices may be applied differently depending on land ownership with private owners concerned about aesthetics and public owners able to manage more easily for the long-term. Ross suggested that conservation restrictions offer an opportunity to improve quality silviculture on private lands, allow for long-term planning and protect more land than fee simple purchases.

The TSC then asked a number of questions and engaged in general discussion. In response to questions, Dr. Kelly noted that Bob Seymour in Maine and the Harvard Forest have experimented with forest management that simulates large scale disturbances. For hurricanes this means a small proportion of large openings and for other disturbances the opening are smaller with a largely intact overstory. He also noted that some studies monitored reserves (some data plots exist on this). The trend in forest management has been towards mimicking some natural disturbance and using a 2-age approach. He noted all disturbances are messy. Some states such as Maine now require that some reserve trees be left. This allows for habitat for birds and other species and spread of local understory flora. It is also more aesthetically pleasing. Several TSC members noted the importance of aesthetics to the public and the shorter term ownership of private lands as influencing silviculture on those lands.

Bill Hill of DCR noted the importance of clear terminology in describing how and why a forest is being managed using a particular approach, but noted that this often is not clearly communicated or explained to the public. The importance of scale and diversity are also factors, especially for DCR with its large areas of forest. Uneven age management may be diverse at a smaller scale but some even-age management may be necessary at times to create diverse forest structure at the larger scale.

An observer asked a number of questions about sustainability and the yield rates for Massachusetts forests as a whole. Dr. Kelly noted that typically sustainable yields were examined at the ownership level not at the stand or patch level.

II. Managing for Forest Carbon – John Gunn

John Gunn, Senior Program Leader at the Manomet Center for Conservation Science² presented on the role of managed forests in forest carbon offset markets and green house gas (GHG) mitigation. He made several overarching points including that storage of carbon in forests is an important part of mitigating GHG emissions; questions exist about what qualifies as a legitimate carbon offset; the carbon market could be abused; and rigor and transparency are critical to ensure that the buyer, and atmosphere, are getting the expected benefits.

There are a number of carbon markets that trade offsets and registries that track tons of carbon (Chicago Climate Exchange- CCX, California Climate Action Registry – CCAR, Regional Greenhouse Gas Initiative- RGGI and voluntary markets, e.g., Voluntary Carbon Standard. The overall voluntary markets grew 87% between 2007 and 2008 with managed forests being about 1% of the overall volume. Avoided deforestation is slightly more than this.

There is now a debate about the role “old” forests vs. managed forests and measurement uncertainty around some carbon stocks, e.g., soil. The debate is also about how to apply and agree on standards,

² The Manomet Center has a report “Forest Carbon Offsets: a Scorecard for Evaluating Project Quality” for evaluating the quality of forest projects.

protocols and rules for carbon storage. He noted that it is highly important to treat a ton of carbon equally across the world. How to ensure or prove that something has or has not happened (afforestation, avoided deforestation or conversion, improved management, enduring wood products/substitution, that a threat existed, etc. is difficult. Market entry requirements are beginning to emerge concerning forests and carbon including: ensuring entity-wide forest holdings are sustainably managed; private owner long-term commitments to maintain carbon stocks; use of approved methods to quantify carbon stocks; and independent third party valuation of carbon measurement.

Key concepts will define the available carbon market for managed forests (voluntary vs. regulatory). These include:

- Baseline – what is measured against e.g.: base year, business as usual scenario, forest inventory data.
- Additionality – what is eligible above the baseline, more than what would have happened without the project or payment.
- Leakage – when an apparent offset is really shifted elsewhere. Internal leakage: occurs when an owner shifts activities within their ownership. External leakage: displaces activity to other forests locally or globally. Leakage is difficult to measure.
- Permanence (enforceable) – Questions include: for how long does an offset last? What happens when there is intentional conversion or natural disturbance? How are offsets legally enforced.

Several of these concepts were illustrated with graphs and a chart comparing how each of the major standards handles the issues. Uncertainty is inherent in all these program measures.

“Improved” forest management options include: extended rotation lengths that increase average stand age, enhance structural complexity and reduce frequency of harvesting emissions resulting from site disturbance; reduce fuels to minimize catastrophic fire risk; reduce logging impact to minimize soil disturbance by shifting more work to frozen conditions and to minimize damage to the residual stand; create late successional/old growth or other reserves; increase stand level retention of large trees; and reduce acreage of high intensity silvicultural practices. Studies suggest New England forests have significant additional potential for carbon storage.

Additional sound science is needed to guide market standards and responsible policy and to achieve intended effects. Manomet is working on carbon life cycle assessment and the carbon dynamics of old forests.

Questions and Discussion. In the ensuing discussion, TSC members made a number of comments. Several comments and questions raised the issue of the viability or underlying assumption of the cap and trade market and the financial impacts of these on forest landowners. Dr. Gunn noted that landowners will be asking foresters about the issue of carbon offsets more frequently and that, if caps are set properly, it will provide some value depending on the cost to measure, monitor and certify. He suggested that, based on experience in Maine at \$5/ton of carbon, a land owner could cover the program costs and property taxes. A TSC member noted that recently the Chicago Board price was \$5/ton and that the European rate \$25/ton. The question was raised of sequestration in the soil and the impact of silviculture. Dr. Gunn noted a recent Nova Scotia study that showed a clear cut of spruce took 60 years before the carbon in soils at a depth below 20cm returned to baseline. He also noted that increasing the complexity of a stand increases the carbon/acre.

An observer commented that biomass for energy was a significant issue not included in the RGGI rules that apply to emissions from the energy sector. If a carbon market exists, money for sequestration might exist whereas there is no financial incentive to not harvest trees. Dr. Gunn replied that the carbon market was \$120 billion in 2008 (corrected from meeting when \$280 billion was mentioned) and that to function it needs to encompass as many sectors as possible. The right incentives need to be created and life cycle, accounting, and avoidance of leakage analyzed. He emphasized concerns about leakage. Bob O'Connor stated he was unsure if \$10/acre price for carbon would be attained. He noted that the literature indicates that thinning results in a shift of biomass to larger trees and that longer rotation cycles and the ability of larger trees to store more carbon should be examined. He also noted the potential benefits of keeping forest products local with high quality wood products and a Forest Industry Analysis indicating that 30% of Massachusetts forests are understocked, perhaps through past highgrading practices. A presenter from the department of Energy Resources will be invited to a future meeting.

III. Vision Discussion

The TSC briefly reviewed the initial internal draft of a vision statement that is to be used as a working hypothesis designed to guide the TSC's work. The draft will not be finalized until late in the process and will have a number of iterations.

The group discussed how the document could clarify or delineate where it was speaking about: all forests and DCR forests; and woodlands, wildlands, and reserves. The concept and implications of focusing on locally used wood products, the market for them, and the relationship of DCR and private lands with respect to this issue was raised. The difficulty of translating a vision to implementation was mentioned. The group also discussed the need to be careful with terms, their implications and potential subjective interpretations (e.g., "significant", "actively managed", tree v. timber). TSC members agreed to send email comments/suggestions to Tom Walker by June 19.

At the outset of the vision discussion, an observer encouraged the TSC to look carefully at the ecosystem services model and to seek input on the supporting services especially biodiversity given the number of rare and endangered species of DCR forest lands. She encouraged the TSC to involve the Department of Fish & Game and Natural Heritage program.

IV. Planning for Next Meeting

Tom Walker briefly reviewed the planning status for DCR presentations/information at the June 23 meeting. Members suggested additional areas for information they would from DCR including: green certification, economics of harvesting/types of wood products, wildlife habitat/biodiversity, insights of past chief foresters, and the values behind DCR decision making. The ability to do scenario based planning or projections based on modeling were also raised as possible methods to assist the TSC in its deliberations or DCR in its decision-making. The group discussed whether to have work groups or to continue working as a full group. No decision was made.

Meeting Materials

The following materials were distributed to TSC members and observers at or before the meeting:

- Meeting Agenda
- Revised Framing Questions – revision June 3, 2009
- Ecosystem Services – revision June 3, 2009
- Vision - Internal draft prepared for TSC (not distributed to public)