

**DCR FOREST FUTURES TECHNICAL STEERING COMMITTEE (TSC)  
& ADVISORY GROUP OF STAKEHOLDERS (AGS) JOINT MEETING**

Broad Meadow Brook Conservation Center and Wildlife Sanctuary  
414 Massasoit Road, Worcester, MA 01604  
Joint Meeting #2 – September 16, 2009; 9:00 AM – 3:30 PM

**MEETING SUMMARY**

**TSC Members present:** Matt Burne, Heather Clish (via telephone), Kate Connolly, Andy Finton, Keith Ross, Bruce Spencer, Tom Stevens, Charlie Thompson, Lisa Vernegaard, Joe Zorzin.  
**Absent:** Bill Moomaw.

**AGS Members present:** Whit Beals, Bill Boles, Mary Booth, Ted Cady, Dicken Crane, Alexandra Dawson, Nan Finkenaur, Tim Fohl, Fred Heyes, Claudia Hurley, Cathy Kristofferson, James McCaffrey, Heidi Ricci, Mike Ryan, Peggy Sloan, Bill Van Doren. **Members Absent:** Jay Belanger, Dave Gafney, Becky Kalagher, Carrie Saldo, Jim Sherman, Michael Kellett, Jane Winn.

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

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

**Observers Present:** Charl Heller, Nathan L'Etoile (DOA).

**Welcome, Introductions, Panel Presentation and Discussion**

TSC Chair Lisa Vernegaard welcomed the Technical Steering Committee (TSC) and Advisory Group of Stakeholders (AGS) and introduced the panel. The panelists were each asked to speak to a particular set of ecosystem services and how those services compete with or can be reconciled with other services.<sup>1</sup> The panelists were: Taber Allison of the Massachusetts Audubon Society, Professor Mark Ashton of Yale University, Professor Bill Keeton of the University of Vermont, Dave King of the US Forest Service, Thom Kyker-Snowman of the DCR Division of Water Supply Protection. She noted that Bob Leverett had been invited to discuss old growth and places of significance but had to withdraw for personal reasons. An individual to speak to human dimension/recreation was not available in time for the meeting. At the close of the meeting several participants suggested scheduling this and a discussion devoted to reserves for a future meeting.

Each panelist made brief opening remarks, then the panel discussed a number of questions from chair Lisa Vernegaard followed by discussion with the full TSC and AGS. This summary captures the highlights of those discussions. Where the answer to a question to a panelist fits with their presentation, the answer has been edited into that thread of the presentation portion of the summary.

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<sup>1</sup>Each panelist had provided brief written material in advance which are available with the agenda and documents 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.

**Early Successional Habitat.** Dave King spoke to management for early successional habitat to promote certain bird and wildlife species. He noted logging ancient forests for short term economic gain is not justifiable. However, research shows that modest levels of logging of secondary forests are tolerated by mature forest birds in forested landscapes. He stated that that fauna of early successional habitats are also scarce and threatened like those of ancient forests and their conservation will require active management.

**Drinking Water Supply Protection.** Thom Kyker-Snowman spoke on the potential gains/losses from actively managing forests as they relate to water supply. He focused on 6 major practices to protect water supply:

1. There simply is no better protection for drinking water than forest cover. Keep and maintain forest cover.
2. Create and manage according to zones of hydrologic sensitivity – based mostly on distance from surface water sources, but should also reflect the hydrologic distance to the supply intakes for these sources..
3. Understand subwatershed boundaries and analyze completed and proposed harvesting in order so that not more than 25-30% of the subwatershed forest cover is regenerated in any given 10 year period.
4. Separate roads and staging areas from water resources, either by careful placement or strict adherence to Best Management Practices, including the use of portable bridges for flowing streams, water bars, diversion, detention, and retention structures, etc.
5. Maintain capacity to regenerate itself, primarily by controlling populations of browsing deer and moose and the influence of terrestrial invasive species.
6. Work to diversify species composition and age structure in order to build resistance and resilience and to desynchronize and reduce the magnitude of snowmelt and storm events.

**Biodiversity.** Taber Allison spoke on biodiversity. He noted that Audubon has worked with Dave King on early successional species. Given the enormous array of species he stated that the general consensus/hypothesis is that the best approach is an extensive network of forest reserves of sufficient size and redundancy is to capture biodiversity within that region. The exact size is subject to discussion but he noted The Nature Conservancy's work on the issue. Large reserves capture the biodiversity with sufficient stages and composition and redundancy so that they both protect the stage and allow players to change over time. Therefore he would not recommend active management in most reserves.

In addressing reserves, he cautioned against treating forests as monolithic and therefore levels of management will vary. For example a reserve in southeast Massachusetts may have to be managed actively to maintain biodiversity (e.g., pitch pine) through silviculture treatments or controlled burns. In addition, agencies may be required by law (Massachusetts Endangered Species Act) to actively manage for certain species in their management plans for reserves and non-reserves.

He noted the need to learn through monitoring forest reserve mechanics and biodiversity to test the hypothesis for reserve designation. This may require some forest reserves be actively managed. He suggested monitoring by use and measurement of surrogate groups of species representing a

broad array of taxa to determine the extent forest reserves are capturing biodiversity. Audubon has surveyed their properties for 40 years using surrogate groups.

Obtaining funding for monitoring is difficult but using volunteers and public/private partnerships can reduce costs. A sampling scheme is needed because an entire large reserve cannot be monitored. Audubon has worked with the Bureau of Forestry to incorporate breeding bird circles which overlap with existing Bureau of Forestry monitoring sites. Later a participant suggested, state foresters could be trained in ecological principles and this would create opportunities to partner with the public on monitoring.

Management decisions for smaller reserves and special places can be difficult, i.e., should ancient hemlock trees be managed to protect them from disease. He also noted the consensus that a wildlands reserve network would not be sufficient for addressing early successional species habitat (grassland/shrub land). Management for these species and habitats should not be in mature forests. The current forest inventory analysis indicates that about 4% of land is in early successional habitat. There is insufficient population data on bird species. However, the Partners in Flight program provides some information concerning birds species increasing/ stable/declining.

**Carbon Storage/Sequestration.** Bill Keeton spoke to the issue of carbon storage/sequestration noting that while some of the dynamics appear intuitive the best management practices (BMPs) are less so. As an example, he noted the focus on rates of carbon intake can be a deceiving and a key factor is terrestrial biosphere carbon sinks/storage. Carbon markets generally look at reforestation and avoided deforestation. He noted that there few large scale reforestation opportunities exist in the northeast. One good carbon storage opportunity is riparian restoration projects. Avoided deforestation has clear and obvious carbon benefits associated with it relevant to the northeast where forest cover began to decrease in the 1990's.

Additionality (a way to ensure added through changes in silviculture practices to ensure that carbon stored is in addition to the business as usual approach) is being examined through research on such things as silvicultural systems, management for old growth characteristics, biomass and carbon storage in late successional/old growth. He stated that the data is clear that older forests have higher carbon storage potential - higher than previously recognized. This indicates longer rotations may increase carbon storage more than previously thought. Some countervailing data, in a Hubbard Brook paper, creates uncertainty because it shows stabilization and decline in biomass earlier than predicted.

Modeling is being done to analyze if more carbon is stored in forests by harvesting less or leaving biomass in forest after harvesting. The data is clear that uneven age forests have higher storage capacity. However, a critical source of uncertainty are the substitution and leakage. If we try to store more by lightly managing and not managing – is the impact displaced to other regions (importing wood, or using steel or materials that increases carbon footprint). For lighter management to be effective there need to be conservation policies in place that promote continued use of durable wood so it is substituting for concrete/steel and increase in recycling/reuse of harvested wood.

**Good Silviculture.** Mark Ashton noted that “Good Silviculture” is in the eye of the beholder and gave his perspective:

1. Silviculture is applied forest ecology which deals with ecological constraints and reflects the knowledge of how forests grow in relation to disturbance.
2. Silviculture is a "Toolkit" that a silviculturist uses to know when to apply a manipulation and when to leave a forest alone or when to rehabilitate given social values. Silviculture principles don't change but social values do. Silviculture is a means to attaining social values – sometimes compatible – sometimes not.
3. Silviculturists are guided by ecology while trying to manipulate to achieve social values and need to understand how far you can push the forest to attain values – constraints vary dramatically among forest types and are often ignored. It is not a one-size fits all "cookbook" but needs to be site-specific and creative to cater to host of social values given constraints. He noted that different species require different ecological conditions for regeneration and therefore both even and uneven age management have a place as tools in the silvicultural toolkit. He cautioned that one needs to be careful about how you regulate because eliminating parts of the toolkit can lose the ability to be creative.
4. He is a firm believe in trying to attain sophistication and hope we can achieve this. Even and uneven age management is dependent on the scale of a stand. Using the Yale Forest as an example he noted that studies show that silvicultural impacts are primarily driven by its agricultural legacy 150 years ago. He noted they tend to manage through episodic disturbance regimes both human and natural.

### Discussion among panelists.

TSC Chair Lisa Vernegaard initiated the discussion by posing several questions to the panelists.

**Diversity and resilience through intervention vs. natural disturbances.** Lisa Vernegaard noted that forest diversity/resilience is seen as an important feature and asked when this should be achieved through intervention and when it should occur through natural disturbances.

Mark Ashton stated that northeastern forests are not pristine nature and that being passive has consequences because of the number of influences that are chronic and related to humans – disease/pathogens – and which may have more of an impact on forests than "active" management. "Cutting" tends to be visible while climate/climate change, deer browsing, and recreation are chronic impacts not easily seen.

Taber Allison "explicitly and violently agreed" that a decision to set aside a reserve is an active decision with consequences. He encouraged people to think more broadly than forest/trees to the thousands of other species that occupy these forests and our limited knowledge of their collective needs and habitat requirements. Large reserves for biological diversity will protect against this limited knowledge. In contrast we know how to manage to promote grassland birds.

Dave King noted that natural processes do not appear to be really effective for early successional habitat. The amount of early successional habitat has decreased range-wide more than 90% since 1955 and continues to decrease. Much of this is because natural disturbances have moved off the landscape due to human use and occupation, i.e. fire prevention, building near shores where hurricanes would naturally disturb the landscape. Although precise values are not available, we estimate that 78% of early successional habitat in New England is due to silvicultural activities.

Birds will occupy an area for 15 years after a disturbance, so in the absence of management, >3/4 of our shrubland birds will be gone.

Taber Allison raised the question of managing for community types given the legacy of human use. Early successional birds have declined due to a cessation of activities that created those habitats. He pondered whether the use of fire to manage heath lands on Martha's Vineyard and Nantucket created by past grazing is really effective because it is different than what initially created the landscape. He also questioned whether we can create shrub land habitat by logging forests. Patch cuts are not the same as wildlife openings and are managed very differently. He noted this as an important question when we're talking about early successional management.

Bill Keeton noted the theory that mature forest cover confers resiliency by dampening effects of climate on under story plants/community. He has studied this in the Green Mountains and is documenting an upward migration of species and changes in plant distribution because of climate change. Therefore, maintaining canopy slows the rate of change.

**Managing for Carbon.** Lisa Vernegaard asked how panelists might advise a land owner to manage for carbon storage as one of several values.

Bill Keeton reiterated that there is strong consensus that light management, extended rotation cycles, and leaving more bio-mass in the forest will increase the amount of carbon storage. If this is done using silvicultural systems for larger diameter trees with lower frequency/lower intensity of management and results in durable wood products, it will increase the carbon sink in wood products. However, the substitution effect and leakage need to be addressed to ensure the benefit associated with changed forest managed are real and this has not been done properly yet.

Mark Ashton stated that reserves will change over time. The human perspective and human decisions tend to be over a 10-15 year time frame – a short time from a tree's perspective. Reserve management is a dynamic process and a matrix may switchover between active and reserve over time. We need to maintain flexibility in decision making spatially and temporally because social values change more rapidly than forests grow.

## **Discussion among panelists TSC and AGS members**

### **Biomass**

In response to a comment and question about the potential demand for biomass from state lands from proposed large biomass plants and the implications for carbon sequestration, Bill Keeton noted that Vermont was beginning to address this issue legislatively. He has a team modeling biomass by looking at types of fuels and how are they harvested. He noted a study from the University of Toronto which states that if biomass comes from an additional margin of harvest it will push the landscape back to lower carbon storage and results in a large influx of carbon into the atmosphere – not offset for 80-100 years. If biomass comes as a byproduct of current activities it can be an offset of fossil fuel emissions. Ecologically a lot depends on the silvicultural method. A work group for the Vermont legislature may recommend lower intensity approaches, putting procurement standards in place, mitigating impacts and encouraging local use to prevent over harvesting for biomass and the trucking of material long-distances.

Mark Ashton expressed concern about large-scale biomass plants and felt smaller could be better. If smaller diameter trees are harvested it can change the species composition in a negative way. He stated that fuel wood can be very efficient. He also noted that whole tree harvesting had a negative impact on nutrients and soil fertility and is inadvisable in most of the northeast. One participant noted an exception where the intent was to degrade the soil to create other conditions. There appeared to be broad consensus among all present that whole tree harvesting was not a good practice on state lands.

### **Carbon sequestration**

Bill Keeton noted that a no management approach is most effective in sequestering carbon. If substitution and leakage are addressed, managing for old growth characteristics will achieve 91% of that storage capacity over 50 years. Other selection systems are about 70%, and 30-50% for shelterwood cuts. Therefore it is possible to improve on business as usual but a no management approach will store more carbon.

A question was raised as to whether lighter management assumes less timber cutting and could result in displacement over time and if this could be addressed by allowing the forest to become larger with a percentage of growth harvested thereby allowing both additional sequestration through growth *and* continued harvesting. Mark Ashton disagreed noting that trees grown more slowly with age and that thinning will eventually lead to decelerating volume growth and decreased uptake even though carbon storage will continue. Taber Allison noted that carbon storage in forests is important but should not overshadow other ways of reducing CO<sup>2</sup> levels.

### **Reserves/Resilience/Diversity**

A question was raised as to whether policies could promote reserves and forests being more adaptable to climate change impacts such as drought. Mark Ashton noted that trees only “move” over time through regeneration. Therefore, if acceleration is desired there should be an increase in episodic disturbances. To tone down climate impacts one should promote shade species and deal with edge effects. The management decision depends on the goal, spatial and temporal components.

Thom Kyker-Snowman noted that a big question is: is there agreement about resilience and is it in fact improved by diversity? DCR has taken the position that increases in diversity will increase resilience in a general way against disturbances and there is a responsibility to address this through management.

Taber Allison noted the resilience of northeastern forests from past use/abuse and current efforts to protect them. Northern hardwoods come back quickly and diversely from harvesting, given appropriate soil and other conditions, and can take advantage of disturbances. However, this should not be taken for granted.

Mark Ashton noted the natural regenerative capacity but stated multiple values drive management and the need to decide how to manage complementary values across public and private lands. He expressed concern about species loss and a desire for a diverse portfolio to protect against great risk. Therefore, he recommends maintaining the full silvicultural toolkit and aiming for a landscape with a diverse array of species. Including examples of less-diverse stands within a system that

increases diversity overall. This will maximize how forests will be able to withstand impacts such as invasives, exotic diseases/pests that are removing the ability to maintain resiliency.

Thom Kyker-Snowman noted that deer herds are reducing diversity. After studies about controlling the Quabbin deer population they sought advice from a broader audience. This led to a series of public suggestions – hiring sharpshooters, dogs, etc. and resulted in a well-managed, and effective public hunt.

### **Wood Products**

The groups and panelists discussed various aspects of wood products being derived from forests and from state lands in particular. Mark Ashton noted that the Yale Forest is managed at a profit and pays taxes which benefit the local town. He also mentioned the costs of managing a forest such as maintaining bounds. In addition to educational and financial goals Yale is guided by maintaining the ecosystem dynamic - the nature of the diversity/increase of diversity. They have no hunting and hunting zones, 1/3 in reserves guided by ecological/hydrological considerations and the legacy of the land use.

A comment raised what the public views as clear-cuts and the consequent aesthetic impact and how DCR has justified large opening based on native species and natural habitat restoration. The criticisms contained in the SCS report on green certification were cited as support. The question was posed as to whether this is an appropriate justification from a scientific or social perspective. Dave King noted that the aesthetics of cutting are a concern he shares but has come to see that these cuts create places for unique bird populations during regeneration. He suggested that some recreationists are bird watchers who would appreciate this. He noted that establishing early successional habitat and the aesthetic issues immediately following a cut were a choice that had to be made between competing values. Modest size opening become aesthetically acceptable within a few years and are inhabited by early successional bird species for 5 to 15 years after the cut. Taber Allison noted that cultural values need to be considered in harvesting decisions.

There appeared to be broad agreement that biodiversity is an important value for reserves and the group discussed if and how biodiversity values might managed for in woodland properties where wood products are also a stated value. In response to a question about the impacts of mechanized harvesting on organisms, disturbance, and ATV use, Dave King stated that this is well studied. He noted that logging will favor some species and be a detriment to others and needs to be done intelligently to balance competing values. Some species and areas, such as wetlands and turtles need clear buffer zones. A participant commented that this demonstrated the need for site-specific inventories and plans and the role of citizen volunteers in assisting in proactive management. Another participant commented that sensitivity to the context of recreation is important, i.e., not logging adjacent to a cross-country race course.

### **Full Group Discussion**

During the morning Mark Ashton and Bill Keeton had to depart, the other panelists stayed.

Lisa Vernegaard recapped some of the themes she had heard during the discussion:

1. Extensive Network Reserves for Resiliency/Biodiversity - Large special places, parks, etc.
2. Continued question/tension between active management/passive management recognizing both are decisions

3. Managing carbon as a value
4. Discussion about how we make decisions about what is most valuable – setting priorities among values
5. DCR planning/decision-making – public process & transparency issue

She asked the group if they saw any significant gaps in the draft outline circulated among TSC and AGS members. The following possible gaps were raised:

- Funding, cost and overall economic issues including:
  - recreation and tourism
  - forest products
  - how to replace municipal revenue from any decrease in forestry activities
  - volunteer engagement opportunities
- Social, human and cultural aspects/recreational and parkland reserves.
- Context for decisions where forest land is being permanently converted to other uses.
- Legal implications of recommendations.
- Industry expectations for biomass extraction from state lands and implications/inefficiencies of large scale biomass plants when compared to small combined heat and power plants.

During the discussion a number of more substantive suggestions for further discussion or as potential recommendations were made including:

- Reserves:
  - Permanency of reserves through legislation
  - Partnerships with other land owners such as Audubon and the Trustees of Reservations to permanently protect their land holdings.
  - Several allocations of reserves were suggested in addition to those in the AGS reserves work group report and the straw proposals put forth by Andy Finton at the August meeting. These include:
    - 80% reserves, 20% woodlands
    - 20% reserves, 20% managed for old growth through extended rotation of 180+ years, and 10% limited harvesting
    - Rather than identifying reserves, assume all lands are reserves and identify areas for active management for wood products.
    - To shorten the timeframe for creation of reserves because a long timeframe and acquisition will not sufficiently address permanent deforestation and fragmentation.
- Alternative suggestions were made to address biomass:
  - By forbidding extraction for biomass plants.
  - Through silviculture practices and defining the desired future state of forests because it is hard to dictate or influence in advance what the wood product is used for.
  - By requiring that tops be left in the forest which makes it uneconomical for the large plants.
  - A participant stated that the biomass developers had told him they did not have an expectation of obtaining fuel from state lands.

- All appeared to agree that some recommendations need to be made concerning biomass from state lands the public will feel the process has not been creditable.
- Having woodlands that are managed for forest products to act as examples of BMPs and demonstration forests which model practices for private forests.
- Acquiring land for forest product production as well as reserves. With a desired set of goals, important biodiversity hotspots and recreation areas can be identified and prioritized as soon as possible and account for budgetary constraints.
- Looking to lands for early successional habitat at airports, power line corridors, military reservations, and possible windturbine sites.
- Address the tension between planning and harvesting at DCR by doing site specific/stand level plans with public input for areas to be harvested for the next few years. This would allow harvesting to go forward while other planning and implementation move forward.

Other comments offered caution to the group, these included:

- Avoiding an either/or approach to forest management and looking to the full continuum.
- Ensuring that management is science driven, which is starting to happen with carbon management in response to climate change, and being aware of how this will impact future logging practices.
- Maintaining an awareness of the long timescales of forest management.
- Concern that essential information was not available that could inform the process and the public including the proposed forestry regulations and the potential for corporate and political influence in biomass decisions and in the study being developed by the Department of Energy.
- Ensuring that the recommendations will encourage the necessary cultural and policy changes within DCR so that they will be implemented – “instilling the will” to implement.
- Ensuring that the recommendations are credible so as to address the concerns being raised through the proposed referenda.
- Not to remove a tool from the “silviculture toolkit”.
- Considering the needs of small rural towns that host DCR lands. The Warwick planning board has contacted all of the other towns that have 35% land area in state holdings - all have expressed particular concerns with PILOT payments. The downs have a natural resources base and losing both PILOT payments and logging will severely impact them. Hawley has contacted legislators to suggest legislation that would not allow the state to acquire any more land in their town without their permission.
- Having the definition of a reserve such that a low quality stand as a result of past practices could be managed to create ecological reserve characteristics.
- The reduction in activity from state lands could have a negative impact if private lands are not managed according to standards.

The group agreed that further discussion is needed on special places, small and large reserves, and recreation.