WATER SUPPLY CITIZENS ADVISORY COMMITTEE
to the Mass. Water Resources Authority

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WSCAC Meeting
Location: MWRA Facilities
Southborough, MA
November 14, 2017 – 10:00 A.M.

MEMBERS IN BOLD IN ATTENDANCE:

Whitney Beals, WSCAC Chair
Gerald Eves, PV Trout Unlimited
Martha Morgan, Nashua River Watershed
Kurt Tramposch, Wayland Wells
Terry Connolly, Town of Ware
Jean McCluskey, Mission-Focused Alliance
William Copithorne, Town of Arlington
Martin Pillsbury, MAPC
Andrea Donlon, CRWC
Michael Baram, WSCAC
Paul Lauenstein, NepRWA
Bill Fadden, OARS
Janet Rothrock, League of Women Voters

NON-MEMBERS IN ATTENDANCE:

Lexi Dewey, WSCAC staff
Chris Buelow, Natural Heritage Program
Dan Clark, DCR
Bill Kiley, BWSC

WSCAC BUSINESS AND UPDATES

Whitney Beals recounted that in October, WSCAC submitted comments to the Department of Conservation and Recreation, Division of Water Supply Protection (DCR-DWSP) on the Quabbin Reservoir Public Access Management Plan Update and the 2017 Draft Land Management Plan. Lexi also discussed testimony that WSCAC submitted to the Joint Committee on Environment, Natural Resources, and Agriculture. WSCAC submitted testimony regarding H.2943/S.413, an Act Relative to Sustainable Water Conservation Practices and H.2115/S.425, an Act Relative to Drought Management.

Bill Fadden commented on the importance of H.2115/S.425 and its potential impact on MWRA communities. Kurt Tramposch noted the difficulty of enforcing the proposed legislation—if enacted—and discussed the significance of metering in the enforcement effort. Kurt also discussed the significance of monitoring private wells for water quality.

Michael Baram provided an overview of the relationship between property rights, water rights, and the Water Management Act. Kurt added that some towns do have regulations which permit the town to shutdown private wells in a drought emergency. Michael expressed that the complexity of the issues at hand create a level of discomfort with respect to submitting testimony because WSCAC may not have the full picture. Michael stated that in order to certify industry professionals, there must first be standards. Lexi introduced Connecticut as an example of a state in which there are standards. In addition to taking an exam, irrigation professionals must use cutting-edge, efficient technology. The system is Connecticut has been very successful.

PRESENTATIONS AND DISCUSSION

Fire Influenced Communities in the Ware River and Quabbin Watersheds,
By Chris Buelow, Restoration Ecologist
Massachusetts Division of Fisheries and Wildlife, Natural Heritage & Endangered Species Program

Chris Buelow began his presentation by discussing the goal of the Natural Heritage & Endangered Species Program: Protecting the state's wide range of native biological diversity. Chris explained that the Program's highest priority is protecting the vertebrate, invertebrate, and native plants that are listed on the Endangered Species Act in the Commonwealth.

As a Restoration Ecologist, Chris's primary duty is to identify and manage rare species habitat across the state, as well as rare and natural communities. Chris explained that his presentation would focus on early successional habitat (ESH) in relation to the Ware River and Quabbin Watersheds. With respect to the 2017 Land Management Plan, ESH breaks down into two categories: young forest early succession and fire-influenced communities/barrens. Chris stated that his presentation will primarily focus on the barrens aspect of ESH.

There are two primary reasons why the Natural Heritage Program is focused on barrens. The first is that such communities are globally rare amongst themselves. Just as a stand-alone feature on the landscape, barrens really only occur on the Northeast Coastal Plain. The other aspect that makes barrens so important to the Natural Heritage Program is that they support an almost disproportionately large amount of rare and endangered species. Because of the limited distribution of this habitat—and because of the highly specialized nature of this habitat—species that are associated with barrens are almost by default going to be rare themselves. There are just under two dozen barrens occurring in the world. Chris displayed a map of barrens on the Northeast Coastal Plain and highlighted the lack of such communities in the middle of Massachusetts. That absence is what excites Chris and that is what he is focused on—there is enormous potential for barrens restoration in the watersheds.

Chris then moved on to discuss the characteristics of barrens. Defining features of barrens include low water/dry inhospitable conditions, very little vernal regulation, and very poor soil. Chris explained that the vegetation that pioneers itself in such an environment is very specific. The plants that have established themselves in these communities have evolved to endure such harsh characteristics. For instance, the plants have developed very deep roots in order to obtain as much water and as many nutrients as possible. Another example is the manner in which the plants grow—many grow slowly in order to efficiently use the available resources. The plants have also evolved to be very dense in order to survive fire because barrens are so hot and dry that they are fire prone. The plants also only germinate when they are in contact with mineral soil, meaning when they are under ideal conditions.

Chris briefly explained that fire drives the barren system. Fire acts differently every time it interacts with the landscape, so it ultimately creates a mosaic of different habitat patches. Fire also excludes generalist species that are not designed to withstand the harsh conditions.

Chris discussed several different types of sandplain early successional communities found on the watersheds. Sandplain grasslands, for instance, is a globally rare community found in north Quabbin. This is a community that needs regular disturbance because the generalists need to be removed, but there is also a very low woody content. Sandplain grasslands are dominated by warm season grasslands. Naturally managed, such an area may burn every three to five years. Sandplain heathlands are a similar community. It is a disturbance dependent community—Chris showed the committee an example of a heathland on a powerline cut. Instead of being dominated by warm season grasses, heathlands are dominated by things like lowbush blueberry. Heathlands are also a globally rare community. The northeast is currently the epicenter for such communities.

Lexi asked Chris if it is primarily plant communities that he is trying to encourage. Chris said when he thinks about landscape ecology, he thinks about natural communities and building it up from the vegetation base.

When he is faced with managing for a rare species, almost exclusively, his first thought is, "what community does that species need?" This is Chris's first thought because if he can get that community right, he is not only going to get it right for that species, but the whole other suite of species associated with that.

Kurt asked if Chris ever finds himself at odds with the power companies in terms of management practices for the cuts, specifically in terms of chemical use. Chris said for the most part, no. While power line companies may not be doing the absolute optimum management (i.e. fire), what they are doing is permitting the communities to persist by conducting vegetation removal because without disturbance, the areas will go into a generalized forest.

Michael Baram asked what is wrong with a generalized forest. Chris said there are a lot of different ways to approach that question. The way he looks at the landscape is that because these are such highly specialized communities—rare communities—that support such a narrow niche of very specialized species that only depend upon these communities, it is basically a question of biodiversity. The objective is to keep the legacy of biodiversity on the landscape, so it is imperative that it is managed. Generalized forest constitutes about ninety-eight percent of the forest that exists, so in a sense, the global community is flooded with generalists. So in essence, the Natural Heritage & Endangered Species Program is concerned with the biological legacy.

Chris then continued to discuss another type of barren community: the pitch pine-scrub oak barrens (pine barrens). When people think about pine barrens, they typically think about Cape Cod and the islands. At Quabbin Tower, however, there is an amazing pitch pine barrens community. Chris then introduced the Oak Glade Community. They are typically bedrock communities, but very similar to the other communities in the sense that they are fire influenced. Oak Glade Communities are very big resources in the Quabbin. Chris presented the committee with a number of photos of rare, state listed plants that are current in the watersheds, as well as specialist species that thrive on the barren communities located on the watershed.

Chris returned to his discussion of fire as a management tool and driver of barren communities. Anthropogenic Fire, Chris explained, was widespread and frequent throughout much of the eastern United States before Europeans made their first contact with the continent. Fire was used for over two hundred purposes, including clearing land for agriculture.

Kurt asked if Chris would characterize it as an intentional use of fire or as a result of naturally occurring lightening. Chris said that lightening fires in the northeast are incredibly rare because of the humidity. Chris has spent significant time examining historical records, specifically related to contact, and what was described was not only a fire influenced landscape, but the intentionality of it. There was a seasonal aspect to it: native populations were burning in different places at different times for different results. Chris would characterize such use as prescribed fire.

Chris then explained how a fire-adapted system works in order to demonstrate the reasoning behind the current management approach. The system consists of four steps. The first step is a high-integrity fire influenced community. The second step is the building up of fuel in the community over time. The fuel begins to retain water, collect nutrients, and regulate temperatures. In the third step, the new fuel load creates conditions for fast-growing, non-fire adapted species—such as white pine—to establish. In the fourth step, a fire event occurs, killing the non-fire adapted species and removing the built up fuel. The process then begins again. Alternatively, no fire occurs and the community is lost to generalist species.

Kurt asked if there is an issue with opportunistic exotics taking advantage of the burn to get established. Chris said yes, there are some. But in most cases, the barrens are in such harsh places and have such poor soil that traditional invasives do not really become established. There are others, however, that are very dangerous in situations like this. Early detection and rapid responses are necessary. Kurt asked what the response would be. Chris said if the ability exists, chemical. If not, it is a matter of vigilance and staying on top of it.

Kurt asked if foams are ever used by the fire department on the burns. Chris said that the Division does not use foams for their prescribed burns. Wildfire response occasionally will use foam. For prescribed fire, the Division consults with responders over a year in advance and work out the details. Kurt asked if Chris monitors persistent PFOAs in the foam that is used. Chris stated that he did not know what a PFOA is. Kurt explained that they are fire suppressant chemicals and they are very bad to have in your ground water. Chris reasoned that that is likely why they never use foam on prescribed burns.

Chris continued by raising the next relevant question: How are these communities managed? Disturbance must be brought back. In a lot of these areas, the Division is taking what looks like seemingly ordinary forests and bringing the disturbance back through two primary methods. The first method is through timber harvest; the objective is to remove the generalists. The Division is using machinery in effect to mimic the structural effects of fires. Then, the Division follows up the disturbance with maintenance: prescribed fire.

Following the presentation of background material, Chris displayed a map of potential barrens habitat restoration opportunities in central Massachusetts. Quabbin offers a major opportunity: 13,500 acres of potential barren habitat. The Ware River Watershed also offers 6,500 acres of potential habitat. The opportunity to design the landscape on the watershed is huge.

Chris provided an overview of the five barrens management areas on the Quabbin Watershed. The first area is located at Gate 43/Greenwich Road in Hardwick, Massachusetts. The area is relatively small (300-400 acres). However, it is one of the most significant because it connects with a huge area known as Muddy Brook Wildlife Management Area. For the past three years, Chris and the Division have been managing over 800 acres at Muddy Brook. Chris explained the global significance of connecting these areas and conducting early successional management.

Over the course of several years at Muddy Brook, seven species of state-listed moths have been found and tied to the barrens. The Division is working with UMASS to conduct bee monitoring. The Division has witnessed an enormous spike of native pollinators in the barrens, as well as a boom in plant species. The monitoring results reflect how incredibly resilient these communities are—there is evidence that the species were waiting fifty years to flourish.

The second area is the Fairview Hill Area. This area is waiting to be managed. Gays Hill, the third area, is in a similar situation as Fairview Hill Area. There are both pitch pine and heathland communities waiting to be managed. Windsor Dam, the fourth area, has the potential to be a very special grasslands sampling. Quabbin Hill, the fifth, is a classic pitch pine struggling community.

Chris then discussed the barren communities on Ware River Watershed. Barre Heathland is one of the Division's established projects. Management at Barre Heathland has also demonstrated the resiliency of barren communities—they are built for disturbance. Muddy Pond is the last section in Ware River Watershed. The Division is working on pitch pine-oak forests at Muddy Pond. The site has hundreds of acres of oak forests just waiting to be released and burned.

Chris concluded his slide presentation and opened the floor to questions.

Kurt asked if Chris must conduct and inventory of rare items before initiating management of an area. Chris said absolutely. Pre- and post-monitoring is a huge part of the process. Typically, the Division finds that rare species are not associated with the areas—it is more so generalist species. Based on what the Division finds in their pre-monitoring, they will restructure their management plan.

Michael stated that the Division is intervening in the natural vegetation process, and in order to be successful in that intervention, they must have hands on management. The hands on management includes chemicals—so is that compatible with managing watershed land? Where, Michael asked, are the points of conflict between the

management goals? Chris agreed that that is the key question that he and Dan will be considering moving forward. Chris mentioned that runoff is a concern. At Muddy Brook, he has been surprised by the stability of these environments, despite their sand and gravel composition. The other aspect is, with respect to the vegetation structure, the Division is shifting biomass from the canopy to the ground. So, instead of one tree root mass, there are ten thousand lowbush blueberry root masses—the landscapes are stable.

With respect to chemicals, it is something that must be looked at on a specific case-by-case basis. Chris said that the Division uses chemicals on their own property in some of the most sensitive ecosystems. The Division feels very comfortable with this. They use chemicals that bind to the soil quickly and breakdown quickly. In terms of public perception, it is a matter of making sure everyone is comfortable with it. Chris expressed his opinion that chemical application can be done in ways that is compatible with watershed management.

Kurt asked that Chris reevaluate his position because the information the state has been working with is from the 1970s and 1980s and the Massachusetts Department of Agriculture has essentially ignored anything else that has been done since. The most recent information is pretty damning. Chris stated that the Division is continually self-evaluating and his objective is not to promote the use of chemicals.

Whit asked if the state has established a goal for the number of acres of early successional habit it would like to see. Chris replied that the state has not identified a numeric goal.

Kurt asked how Chris works around cold water brooks. Chris said that the thing about prescribed fire is that you have control over it. If you are trying to exclude an area, it is often very easy. Basically, you identify the resources that you want to protect and build that into your plan.
Kurt referenced the beetle that was released to deal with blue loosestrife—he asked if the beetle was specific to loosestrife. Have the beetles moved on as loosestrife has disappeared? Chris said the beetles have not moved on significantly. Chris said that the Department has found a tiny bit of the beetle feeding on multiflora rose—another invasive.

Lexi asked what effect large mammals have upon this management strategy—will they decimate the habitat? Chris replied that although he spoke about a large number of acres for early successional habitat, it is still a small portion of the overall landscape. Moose, for example, are still in the greater landscape and will likely not have much of an impact on the habitat. Bears particularly love these areas because they are full of blueberries and acorns.

Kurt asked what kind of environmental concerns must be taken into account for populated communities—for example, burning poison ivy or the wind blowing smoke into neighborhoods. Chris said the Department must account for wind, lift, field type, and containment. Plans contain very tight prescriptions. The burn plan is a very technical document. It is peer reviewed by several different people from several different entities. The Department does not take such matters lightly. If one mistake was made, the Program would shut down; the concerns Kurt referenced are always taken very seriously. Chris explained that although he focused on the ecology of prescribed burns, public safety is a significant component of the process.

Whit asked Dan Clark if he could provide a little information on how he is interfacing the management of Quabbin with early successional habitat. Dan agreed, and explained that early successional habitat management complements the DWSP goal of water supply protection. He is confident that this type of management can be done in the context of good watershed management. The prescription is different and provides a wide range of secondary benefits that DWSP's typical silviculture would not provide.

In addition to DWSP's responsibility to protect water supply, the agency is also responsible for land stewardship in central Massachusetts. The DWSP's watershed lands include a large number of rare species and their habitat, so the division feels strongly that if the opportunity presents itself, it is the agency's responsibility to provide

good stewardship. As a state agency with stewardship responsibility, DWSP thinks that supporting early successional planning is the perfect vehicle to deliver this type of habitat in cooperation with Mass Wildlife.

Bill Fadden asked what the thought was behind the red pine plantations. Dan said when the reservoir was created, the agency planted a great deal of things—spruce, red pine, white pine, and scotch pine. The thought at the time was, "we need to get forest cover back here quickly." Red pine grows quickly. At that time, there was probably not a lot of thought about native versus non-native forest cover. The agency has been actively trying to eliminate the remaining red pine plantations in order to transition to a more diverse forest with native species.

Dan then explained that Mass Wildlife has very specific goals for different types of forests. Mass Wildlife is shooting for ten to fifteen percent of agency land in some stage of young forest habitat. Currently, Mass Wildlife has four percent. DWSP does not have the same specific goal. The first step has been to identify focus areas. The focus areas are a relatively small percentage of the land that DWSP owns and manages. Some might criticize the agency for not doing enough, but DWSP thinks this is a good, significant first step.

The next WSCAC Meeting will be held on December 12, 2017 at the MWRA Facilities in Southborough at 10:00 AM.