# The Climate Project Screening Tool Report for the Massachusetts Division of Fisheries and Wildlife's Northeast District

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## Introduction

As the influence of climate change on wildlife and their habitats increases, it is important to consider how adaptation techniques can be integrated into current natural resource management to reduce vulnerabilities to wildlife and their habitats over time. Climate change adaptation in the near term is essential because, owing to inherent time lags in climate impacts, the effects of increased atmospheric greenhouse gases will be felt for decades even if effective mitigation begins immediately (Melillo et al. 2014). However, climate science is a particularly challenging field given the level of technical expertise required, its high degree of uncertainty, and the lack of knowledge of climate change impacts at biologically relevant scales. Thus, climate change adaptation, although understood to be important to resource management, has not been explicitly incorporated into most wildlife management plans or actions.

Some decision-support tools have been developed to aid climate change planning and preparedness in response to the needs of resource managers (Climate Change Resource Center 2017). One such decision-support tool is the Climate Project Screening Tool (CPST) (Morelli et al. 2012), developed initially to aid national forests in the early stages of incorporating climate concerns into operational work and recently modified to aid fish and wildlife management in Massachusetts.

The CPST is a platform that natural resource managers can readily use to assess the potential impacts of climate change on projects and management goals. The CPST is a review and assessment tool that allows managers to explicitly and methodically consider current and impending projects and priorities through the lens of climate change. It provides space to assess whether a specific goal or project is appropriate in light of future climate trends. Through the

CPST process, some projects might be deemed inappropriate as originally designed and be recommended for comprehensive redesign or removal from activity lists.

The CPST is a broad tool that can be modified to accommodate many different working groups and management goals. For the Massachusetts Division of Fisheries and Wildlife (MassWildlife), the tool was modified to focus on projects within the Wildlife Management Areas (WMAs) owned by the agency. Within MassWildlife, there are 5 Districts (Central, Western, Connecticut Valley, Southeast, and Northeast), all with their own - and occasionally overlapping - WMAs for which they are responsible. Information about many of the WMAs, including key target species, can be found on the MassWildlife Lands Viewer, although this information was not available at the time of these discussions.

This report focuses on the results of a meeting with the Northeast District's Management team using the CPST to facilitate a discussion of climate change activities on select WMAs. This report provides specific responses to the discussion and process questions as well as general findings and useful resources. Not all WMAs were discussed during the 3-hour meeting. Those not discussed can be analyzed using this Climate Project Screening Tool at a future date.

## Methods

### Overview of the CPST

The CPST is a table where the first column lists specific project or management activities of interest. Next, the tool provides a summary of climate change impacts relevant to the specific management activity, poses useful discussion and process questions, and provides space for response and record-keeping. Each management activity section concludes with a question of whether to continue with the specific activity or not, and if so, if any portion of the activity should be modified.

CPST Column Descriptions
(See Table 1 for the CPST layout and specific responses by managers at the meeting)

*Project activities of focus for the discussion*

- An important first step is to identify the appropriate scale at which relevant activities will be evaluated. To this end, all management activity categories were identified from the Federal Aid report produced by MassWildlife. District managers were asked to fill out a spreadsheet identifying which activities were being considered or actively done on each WMA. This process allowed the CPST to be tailored to each District and provided a coherent and efficient structure for the meeting.

*General climate change trends and local impacts*

- Information about projected climate and ecosystem responses can be gathered from many sources and summarized for key indicators of relevance to the local environment. The scientific literature (including a report done specifically for the northeastern states, see Useful Resources) and experts at the Department of Interior Northeast Climate Science Center were the primary sources for local climate data for this report. The purpose of this summary is to give managers a broad sense of anticipated and ongoing changes in climate and related ecological responses throughout their District. The local impacts focus on effects at a scale that is relevant to project design and highlight appropriate changes to the project.

*Key questions for managers*

- The purpose of this column is to facilitate thinking about the potential impacts of climate change on a specific project type. The questions used to guide the discussion were originally developed through meetings with US Forest Service resource specialists and then modified with MassWildlife staff. Additionally, information on some project

activities was gathered from the MassWildlife website. After the questions were used in the first meeting (with the Central District), modifications were made to enhance relevance in future meetings.

*Response narrative*

- The response narrative in the fourth column is the centerpiece of the CPST, where managers or facilitators record their answers to the questions and thus their thinking about the interaction between climate change and the project. Users are encouraged to identify and document sources for their answers.

*Continue with project?*

- The last column is where the user concludes whether to proceed with, modify, or cancel the project given the response narrative. It is intended as a recommendation regarding whether or not climate change impacts are likely to be: 1) insignificant enough to proceed as originally designed, 2) substantial enough to require modification to the proposed activities, or 3) whether the project cannot be adequately modified given relevant climate change effects and thus should be withdrawn. Selection and documentation of one of the three recommendations can then become part of a public report on how resource managers considered climate change prior to project implementation.

**Table 1. Climate Project Screening Tool with responses from the Northeast District**

| Project Activity | Climate Change Trends and Local Impacts (for more information: climateactiontool.org) | Key Questions for Managers | Response Narrative (please complete) | Continue with Project? |
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| Vegetation Control – mowing, hand cutting, herbicide | **Trends** – Increased fuel buildup and risk of wildfire; increased interannual variability in precipitation, leading to fuels build up and causing additional forest stress; increased stress to forests during periodic multi-year droughts;<br><br>**Local Impacts –** Densification of vegetation; increased invasive aquatic, plant, and forest pests; earlier and longer growing season | • Will the activity be sufficient to control invasives that grow larger and more abundantly? | • No, it's difficult to control invasives as they are now. Not even enough time to monitor and record what invasives there are, let alone control them | □ Yes<br>□ No<br>□ Yes, with modification: |
| | | • Does the project area include anticipated future vulnerable areas (i.e. higher elevation sites, riparian areas, soil types or ecosystems not previously recorded as invaded)? | • No, though increased wetland loss is occurring. Also, less water will cause expansion of *Phragmites* and other invasives. | |
| | | • Will the treatment season need to be adjusted for the earlier growing season? | • Yes<br>• Treatment currently in spring and fall (Japanese knotweed & Phragmites) | |
| | | • Will additional invasives require more work hours to control? | • Yes, as stated above, not enough hours currently to control them | |
| Prescribed Burning | **Trends** – Increased fuel buildup and risk of wildfire; increased interannual variability in precipitation, leading to fuels build up and causing additional forest stress; | • Are there techniques that can be used to effectively manage a burn considering increased fuel loads and droughty conditions? | • Training required, and more information would be needed.<br>• Most burns happen because youths start fires<br><br>Crane Pond WMA: | □ Yes<br>□ No<br>□ Yes, with modification: |

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| | increased stress to forests during periodic multi-year droughts;<br><br>**Local Impacts –**<br>Increased risk for erratic fire behavior; decreased window of opportunity for prescribed fire conditions; flashier, drier fuels; decreased water storage in soils | | • Controlled burn is a goal, but has not been done yet<br>• Not a priority because there are so many people around<br>• Have a burn prescription. Have been waiting 10 years do the burn | |
| | | • In what ways do the increased droughty conditions factor into a prescribed burn (or lack of one)? | • May mow instead | |
| | | • Will the timing of prescribed burns need to be adjusted given climate trends (arrival of migratory species, bud break, etc.)? | • Yes. Can't burn in the spring b/c of Blanding's turtle, which are moving around earlier by 2 weeks – coming out in mid-May.<br>• Turtles are coming out more as a trickle which makes it harder to assess their status.<br>• Burning only in the fall | |
| Aquatic and Wildlife Species Restoration | **Trends –**<br>Loss of seed and other germplasm sources as a result of population extirpation events; increased water temperatures in rivers and streams and lower water levels in late summer; reduced snowpack; longer, drier summers, decreased water quality as a result of increased watershed erosion; general shifts in temperature ranges; chance of fire; increased | **Aquatic**<br>• Are the plant/wildlife species currently present viable in the future given changes in temperatures and precipitation? | • For some yes, others possibly not. Gypsy moth destroying life zone around vernal pools (450')<br>• Blanding's turtle – vernal pools more dry than usual. All pools dry up at some point in the year but the drying is happening earlier and earlier. Drying in June.<br>• Affecting life cycle also of American toad, tree frog, spring peeper<br>• Trends benefit fairy shrimp b/c | □ Yes<br>□ No<br>□ Yes, with modification: |

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| | insect and disease<br><br>**Local Impacts –**<br>Historical availability of food and water sources may be altered geographically and temporally; suitable range of habitat may alter with changing forest stand structure (wildfire, species extirpation) | | they require the pool to completely dry up.<br><br>William Forward and Crane Pond WMA:<br>• large portion predicted to be underwater due to future sea level rise | |
| | | • What is the future range of flow? Will the hydrologic system change from a perennial to an intermittent system? | • Have seen intermittent to dry, more changes are predicted to occur<br>• Beaver dams present and considered a benefit | |
| | | • Given increase in extreme weather events, how will the hydrologic regime change? Will it go from a snowmelt system to a rain on snow regime? | • Snowmelt isn't a real concern in the District. Most water is groundwater.<br>• Water temperature effects for trout – water getting too hot in summer<br>• May soon not stock trout b/c of water levels and temperature rises<br>• Timing of stocking will change | |
| | | • Is the restoration area vulnerable to increased extreme events and erosion? | • Watershed is developed so it is inherently more vulnerable due to level of impervious surfaces<br>• Increased potential for pollutants to run into pond<br><br>Crane Pond WMA:<br>• Crane pond is in a large wetland area so water has room to go under large flow events. | |

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| | | **Terrestrial**<br>• Are the plant/wildlife species viable in the future given changes in food and water availability, as well as the range of future habitat? | • Mammals aren't high risk to extirpation – mast is a big predictor of presence.<br>• Oaks affected by gypsy moth.<br>• Amphibians will be affected.<br>• Blanding's turtle will probably disappear. | |
| | | • What is the future range of habitat for the target species? | • Uncertain, some species are behaving differently than previously observed<br>• Blanding's can just move somewhere else but then meet cars and other threats<br><br>Crane Pond WMA:<br>• Surrounded by people and development so hard for species to go anywhere. | |
| | | • How will breeding, young, and forage seasons be altered with the changing habitat and climate? | • More habitat care and modification will be needed.<br><br>Crane Pond WMA:<br>• Goal is to create Blanding's turtle habitat where they already are to encourage them to not move and run into people and other terrestrial threats. | |
| Nesting Structures – Development and | **Trends –**<br>Reduced snowpack; earlier green-up; longer, drier summers, general shifts in temperature | • Are the plant/wildlife species viable in the future given changes in food and water | • Wood ducks will persist as long as water/beaver are present.<br>• Thinking of changing projects away from duck boxes to | □ Yes<br>□ No<br>□ Yes, with modification: |

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| Maintenance | ranges; increased insect and disease<br><br>**Local Impacts –**<br>Historical availability of food and water sources may be altered geographically and temporally; suitable range of habitat may alter with changing forest stand structure and temperature and precipitation regimes | availability, as well as the range of future habitat? | something else (to be done in the winter)<br>• Going to change projects to something else in response to climate change<br>• Potentially could put out kestrel boxes | |
| | | • Are target species arriving earlier? | • Uncertain, ask state wildlife biologist H. Heusmann | |
| | | • Are target species using different habitats? | • Inventory is needed to assess but lacking time for such projects | |
| | | • Will the future habitat of the focus species still consist of the current location? | • Yes, though plans to change to a new species that utilizes/benefits from nest boxes.<br>• Ice too thin to manage wood duck boxes in winter.<br>• Wood ducks not utilizing boxes much | |
| Maintenance and Construction: Roads and Trails, Dams, Bridges, Parking Lots, Blinds, Signs, Boundary Markers, Gates/Access Management | **Trends –**<br>Increased interannual variability in precipitation; more extreme flood and other weather events; decreased water quality as result of increased watershed erosion and sediment flow; increased likelihood of severe flood; increased risk of fire<br><br>**Local Impacts** –<br>Changed hydrologic regimes; soil disturbance due to increased runoff and movement of | • Given that hydrologic regimes are changing, are your crossings designed and engineered to withstand the predicted changes? | • Lots of parking lots – keeping them open. Possible re-grading.<br>• Lots develop ruts/mud<br>• Hopes of having some roads closed as they flood frequently<br><br>Crane Pond WMA:<br>• One road, with culvert, is maintained because it leads to control burn site. No concern regarding erosion or damage<br>• Culvert under the road, future plans to add boulders to control entry. Gate installation | □ Yes<br>□ No<br>□ Yes, with modification: |

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| | waterways; likelihood of road washouts and closures increase; storm events exacerbate sedimentation and erosion from burned areas | | William Forward WMA:<br>• Not currently but want to replace the bridge<br>• Bridge stops up water that feeds into 47-acre salt marsh and causes waterlogging.<br>• The salt marsh is not keeping pace with sea level rise.<br>• District secured money for restoration and for replacement the bridge.<br>• Project to help salt marsh and water flux to keep track with climate change sea level rise | |
| | | • Is the project located at the right location to reduce watershed erosion and sediment flow or other impacts? | William Forward WMA:<br>• Yes, the current bridge has 2 current scour pools which are not working and causing erosion of the salt marsh.<br>• The project will eliminate this issue.<br>• Predicted that the pools will fill after bridge is replaced | |
| | | • Will current road structures/surface treatments be able to withstand the more severe flood events (and possible erosion) predicted in the future? | Crane Pond WMA:<br>• J.B. Little Road: town owned land but blocked off. High Blanding's turtle habitat. Will be further affected by climate change by being under water frequently.<br>• Goes right through the wetland and disrupts the habitat anyway<br>• Maintenance needed but not | |

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| | | | exacerbated by climate change; elevation even<br><br>William Forward WMA:<br>• No, current bridge will not | |
| | | • How is the surrounding topography and vegetation being considered regarding future climate trends? | Crane Pond WMA:<br>• Surrounding land owned and managed WMA already<br><br>William Forward WMA:<br>• Yes, planning to refill scour pools which will reduce erosion of the salt marsh and allow it to absorb the larger and less predictable influxes of water<br>• Will act as a buffer | |
| Public Access Management | **Trends –**<br>Increased interannual variability in precipitation; more extreme flood and other weather events; decreased water quality as result of increased watershed erosion and sediment flow and warmer waters; increased likelihood of severe flood; increased risk of fire<br><br>**Local Impacts** –<br>Changed hydrologic regimes; soil disturbance due to increased runoff and movement of waterways; likelihood of road washouts and closures increase; storm events exacerbate | • Is current infrastructure resilient given increased extreme events (floods and potentially hurricanes)? | • Yes, from what is known currently<br><br>Crane Pond WMA:<br>• Except for culvert off of Bear Hill Road, no other structures. | □ Yes<br>□ No<br>□ Yes, with modification: |
| | | • Will flooding, drought, and other extreme weather events make it more difficult to manage public access? | • No, makes access easier to control. More issues with trail creation and use.<br>• Drier weather = more trails; generally more use if land is drier | |
| | | • Will more personnel hours be needed to manage public access given future climate trends? | • yes | |

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| | sedimentation and erosion from burned areas; suitable range of habitat may alter with changing temperatures, precipitation, and forest stand structure (wildfire, species extirpation) | • For hunting, have shifts in target species distribution, vulnerability, and phenology (timing of reproduction, migration) been considered? | • Pheasants stocked; deer move from upland to dense forest and food mast. See changes in deer presence and location.<br>• Large-scale decisions of hunting dates decided by others | |

## Results

Overview

The facilitator team met at the Northeast District office in Belchertown, MA, with 3 Northeast District staff from Mass Wildlife: District Manager Pat Huckery, Land Agent Anne Gagnon, and Stewardship Specialist Jennifer Jones. The structure of the meeting centered around identified management activities that were considered at a given WMA. The purpose of this design was to encourage the discussion of multiple WMAs when thinking about a specific management activity as well as to ensure that each type of management activity occurring within the District was discussed at least once.

Conversation flowed from specific questions in the CPST to a broader discussion of issues related to climate change to other issues faced by the District, and then back to the tool questions in a cyclical pattern until all questions in the management activity section were asked. An interesting secondary result of this meeting was that other management issues on WMAs were identified. This secondary result was an unintended but beneficial outcome of considering climate change impacts on Agency lands. Those concerns are discussed in this report as relevant, in addition to climate-specific issues.

The CPST allows Districts to document that they are thinking about climate change when making management decisions, whether they then choose to modify current activities or not. Deciding that continuing with the current activities, or lack of activities, for now is sometimes the appropriate choice at the end of the process. The critical step is to take time to consider climate change - within daily activities and larger-scale plans.

Interesting Findings

- District is taking a proactive approach to many aspects of their work, from prioritization of invasive species eradication to attainment of chemical applicator's licenses
- District recognizes the need for public education and buy-in for many of their projects to succeed
- District taking a proactive approach to identify what projects are most crucial to climate adaptation so that time and efforts are utilized effectively and efficiently

Climate Change Adaptation Techniques Already in Use

- District staff are in the process of or have already received their Pesticide Applicator's License so that they can take an active role in controlling invasives
- Working on creating more ideal habitat for Blanding's turtle so that they stay in their current habitats as more droughty conditions occur, rather than moving out of the area and into areas with more anthropogenic threats
- Considering the dates of trout stocking and possibly ceasing to stock trout altogether because of temperature rises in streams, as determined with headquarters staff
- Noticing that wood duck boxes aren't being used so switching efforts to nest boxes of other species, especially those threatened by climate change, as determined with headquarters staff
- Considering climate change and resulting stressors when applying for grants and project proposals

**Using the Climate Action Tool**

When faced with challenges to effective management as a result of climate change, the Massachusetts Wildlife Climate Action Tool (CAT, climateactiontool.org) can be particularly useful to District Managers. The CAT was developed in partnership by MassWildlife, the University of Massachusetts-Amherst, the Department of Interior's Northeast Climate Science Center, and the U.S. Geological Survey's Massachusetts Cooperative Fish and Wildlife Research Unit, so the information within is specifically geared towards the Commonwealth. The CAT

includes information on climate impacts, vulnerability of species and habitats, and adaptation actions that can be taken. It was developed using a literature review of the most recent scientific findings as well as new expert input.

District staff can use the CAT to find species or habitat-specific information that can be relevant to management goals. For example, the Northeast District has a goal to protect the Parker River watershed and manage for wetland species at the William Forward WMA by restoring hydrology and controlling invasive vegetation. If a manager was interested in knowing how to achieve these goals while being mindful of climate change effects, they could utilize the CAT to learn about habitat-specific adaptation strategies.

A number of potential adaptation strategies and actions are included in the CAT that managers could refer to when considering forest management, coastal habitat restoration, or how to promote connectivity among WMAs. Please see Appendix 2: Additional Resources for examples. The CAT points out that invasive plant and animal species are a particular threat to wetland habitat so the work that the Northeast District is doing to control invasives is relevant. Since the CAT is a place to showcase existing expertise and practices, it could be modified to include some of the actions being undertaken by District staff as examples.

For the WMAs that were not discussed, the CPST can be used by District staff without facilitation for future projects and plans. A manager can complete it by themselves or with others on a team; we found great value in having multiple members of the staff present to share their input and often to spark and deepen the dialogue. This also creates buy-in for the implementation of actions. The versatility and simplicity of the CPST allows it to be useful in more than just a few select scenarios and times. A complete copy of the CPST developed for MassWildlife is available with this report.

Lastly, as its name indicates, the purpose of the CPST as a screening tool became apparent when the need for additional time to develop coherent climate change adaptation for some management activities and WMAs was identified. For projects such as these, the Climate Adaptation Workbook (see Appendix 2) was mentioned, and the Workbook passed around. The in-depth nature of the Workbook appealed to attendees and there is interest in planning a training day at the Headquarters office to learn how to use and implement it. The CPST could be considered a first step and its completion can facilitate and enhance the use of the Adaptation Workbook for more detailed planning. In particular, projects that would benefit from more in-depth discussion and planning related to the incorporation of climate science can be identified through the CPST process.

**Conclusions**

Using the CPST to facilitate a discussion of climate change impacts on current and planned management activities highlighted multiple results. In many cases, management professionals did not initially identify any ways in which they were modifying their work because of climate change and, in some cases, they did not readily identify ways climate change was affecting their work. However, upon further discussion, it became clear that observations of climate change and modification of activities were occurring, just not explicitly labeled as such. Through the course of the discussion, it also became clear that agency-wide policies on climate change would be helpful or, if already in existence, these could be communicated to Districts in a more comprehensive way. As such, it would be particularly important to have both District and Division headquarters staff present at the meeting.

Overall, the CPST meetings provided a block of time for on-the-ground managers to pause in an otherwise busy schedule and directly consider climate change as it relates to their

daily projects. The goal of these meetings was to facilitate this examination and encourage thoughtful planning for current and future management activities. In this way, work hours and physical resources can be used most effectively to protect and manage Massachusetts' lands and wildlife resources in a changing climate.

**Works Cited**

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Morelli, T.L., S. Yeh, N.M. Smith, M.B. Hennessy, & C.I. Millar. 2012. *Climate Project Screening Tool: An Aid for Climate Change Adaptation*. United States Department of Agriculture, Forest Service. Research Paper PSW-RP-263. 40p.

## Appendices

Appendix 1: WMAs Not Discussed

| | | |
|---|---|---|
| Ashby WMA | Great Marsh North WMA | Salisbury Salt Marsh WMA |
| Boxborough Station WMA | Great Marsh South WMA | Scripture Hill WMA |
| Dunstable Brook WMA | Hauk Swamp WMA | Squannacook River WMA |
| Eagle Island WMA | Hunting Hills WMA | Townsend Hill WMA |
| Elbow Meadow WMA | Martin H. Burns WMA | Trapfall Brook WMA |
| Fessenden Hill WMA | Mulpus Brook WMA | Unkety Brook WMA |
| Flagg Swamp WMA | Nissitissit River WMA | Upper Parker River WMA |
| Whittier WMA | Pantry Brook WMA | |

Appendix 2: Additional Resources

- Massachusetts Wildlife Climate Action Tool http://climateactiontool.org - For specific information on species and habitat vulnerability, climate trends in Massachusetts, and adaptation strategies and actions. Example pages below.
    - Species
        - Brook trout - https://climateactiontool.org/species/brook-trout
        - Moose - https://climateactiontool.org/species/moose
        - American Black duck - https://climateactiontool.org/species/american-black-duck
    - Habitats
        - Vernal pools - https://climateactiontool.org/ecogroup/freshwater-wetlands-vernal-pools
        - Spruce Fir forest - https://climateactiontool.org/ecogroup/forest-spruce-fir
        - Coldwater fisheries streams - https://climateactiontool.org/ecogroup/rivers-and-streams-coldwater-fisheries-resources-streams
    - Adaptation Actions
        - Culvert upgrades https://climateactiontool.org/content/maintain-habitat-connectivity-retrofit-or-replace-culverts
        - Riparian restoration for coldwater streams https://climateactiontool.org/content/ensure-cool-water-temperatures-protect-and-restore-riparian-areas

    - Promote species in the northern and middle edge of their range https://climateactiontool.org/content/promote-drought-and-heat-tolerant-species-encourage-species-northern-and-middle-edge-range
    - Living shorelines https://climateactiontool.org/content/restore-and-protect-natural-shorelines-use-living-shoreline-techniques

- Adaptation Workbook https://adaptationworkbook.org - A process to consider climate change impacts and design adaptation actions. Similar to this CPST, but for a deeper dive into climate change planning for a WMA.
- Vulnerability Assessment of MA Species of Greatest Conservation Need (2017) https://necsc.umass.edu/projects/vulnerability-northeastern-wildlife-climate-change-using-decision-science-inform-manageme-0
- North Atlantic Aquatic Connectivity Collaborative (NAACC) streamcontinuity.org – Database and background information on culvert assessment and prioritization.
- The Deerfield Stream Crossings Explorer SCE.ecosheds.org – Tool to locate and prioritize road-stream crossings. Include ecological data (aquatic connectivity from the NAACC, coldwater streams) and transportation vulnerability data (risk of failure and EMS delays) for Deerfield Watershed. Some of the data will be expanded to the entire state in the next few months.
- Climate Change Resource Center – Website run by the United States Forest Service containing general information about climate change. The website also has a section with specific tools that can be utilized when trying to make decisions in response to or monitor impacts of climate change. There is even a section which allows users to search for specific tools based on needs and geographic location.
- Northeast Regional Invasive Species and Climate Change (RISCC) Management network http://people.umass.edu/riscc - Northeast Climate Science Center initiative to address the question "How can we manage for upcoming biological invasions in the light of climate change?"
- Integrating Climate Change into Northeast and Midwest State Wildlife Action Plans https://necsc.umass.edu/projects/integrating-climate-change-state-wildlife-action-plans
- Climate Change Tree Atlas and Bird Atlas http://www.fs.fed.us/nrs/atlas/ - Includes current and possible future distributions for over 100 tree and bird species in the Eastern US.