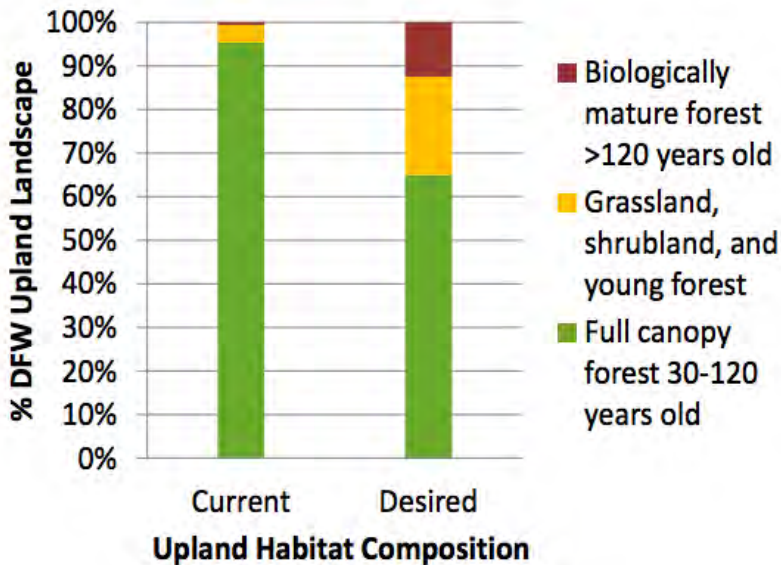


Maintaining Early Seral Habitats

The Division of Fishery and Wildlife’s Biodiversity Initiative (BDI) seeks to maintain and restore the native diversity of flora and fauna in the Commonwealth through active land management. The BDI works to reestablish open grassland, shrubland, and young-forest habitats that benefit rare and declining species of conservation need.

The Habitat Program focuses on creating a distribution of open habitats that were rmerly provided through natural processes, like flooding and fire, across more than 200,000 acres of state wildlife lands. Human land-use change has substantially limited beaver impacts across the landscape, for example, and has greatly reduced the natural occurrence of fire in the coastal regions and major river valleys of the state. The extensive open habitats that formerly resulted from these natural disturbances can be emulated through management of abandoned-field sites, which typically involves some tree clearing, extensive brush mowing, invasive plant control, and limited use of prescribed fire. The BDI Key Sites effort specifically identifies the highest priority sites for management of open habitats, and these critical open areas complement existing DFW Forest Reserve lands to help conserve the biological diversity of species and communities across the landscape.

The Division’s landscape composition goals for the state’s Wildlife Management Areas (Figure2-1) are science-based, have received broad public support, and call for about 20-25% openhabitats (including grassland, shrubland, and young forest sites), and 75-80% full-canopy forest(including 10-15% forest reserves) across approximately 190,000 acres of state wildlife lands. DFW staff conducts tree clearing, brush mowing, invasive plant control, and biological monitoring statewide through a public, competitive bidding process to help move from current to desired conditions.



With passage of the 2014 Farm Bill the WHIP was repealed and under EQIP a minimum of 5% of funding is to be used for managing wildlife habitat. The 2014 Farm Bill also established WLFW as a funding pool under the EQIP. WLFW directs funding assistance to seven species nationwide, two of which occur in Massachusetts; New England Cottontail and Bog Turtle. EQIP specifies wildlife habitat development as a program purpose and the practices required to manage disturbance dependent habitats such as mechanical tree clearing, brush hogging, delayed mowing, and prescribed burning were and continue to be offered under EQIP. In addition EQIP offers such practices as invasive species control, pollinator habitat planting, turtle nest site creation, and nesting structures for birds.

Conservation Actions for Upland Forests

Direct Management of Natural Resources

In Central Hardwoods-White Pine habitats, DFW will continue to employ even-aged forest cutting practices that can successfully regenerate oaks. These efforts serve as a model for private forest landowners with the goal of providing quality fish and wildlife habitat on their lands. Because of the large number of state-listed/SWAP species inhabiting Pitch Pine-Oak communities on state land (and Pitch Pine/Scrub Oak habitats in particular), these areas are a high priority for both additional land protection and increased restoration and management using both prescribed fire and mechanical treatment.

In addition, DFW works under formal partnership with the Massachusetts Natural Resource Conservation Service (NRCS) to plan habitat management projects on privately owned land aimed specifically at benefitting SWAP species. Projects are funded through the United States Department of Agriculture Farm Bill Programs. Funding is offered for tree canopy thinning, firebreak creation, and prescribed burning. In 2012, the U.S. Fish & Wildlife Service and the NRCS established the Working Lands for Wildlife program, which provides funding specifically for managing habitat for New England Cottontail and six other federally listed or federal candidate species. These projects are being completed in conjunction with management on federal, state, and municipal land also taking place under The Conservation Strategy for the New England Cottontail (Fuller and Tur 2012). In addition, DFW is working with staff from the joint Base Cape Cod to manage PPSO habitat and monitor the New England Cottontail population.

The Massachusetts Division of Fisheries & Wildlife (DFW) developed Best Management Practices (BMPs) for Controlling the Spread of Invasive Species (<http://www.mass.gov/eea/docs/dfg/dfw/habitat/grants/bmp-invasives.pdf>). This involves thoroughly cleaning the exterior, undercarriage, and tire/tracks of equipment being used for management with a high pressure washer prior to arriving on a property to reduce the risk of invasives being introduced from other locations. Following the BMPs is required for contractors working on DFW land and recommended for management projects on private land.

Data Collection and Analysis

While New England Cottontail has declined dramatically throughout its historic range, this species has persisted in greater numbers on Cape Cod than elsewhere in Massachusetts. Longterm monitoring of occupied sites such as those on the Cape is necessary to evaluate habitat use over time and the response of populations to various management approaches. Long-term monitoring is also needed to assess abundance and occupancy rates; this will require repeat visits to both managed and unmanaged sites. Because New England Cottontail and Eastern Cottontail are indistinguishable in the wild, the study of New England Cottontail involves intensive effort; DNA is extracted from tissue taken from trapped rabbits or fecal pellets collected during winter off fresh snow (to reduce DNA degradation). Competition between New England Cottontail and Eastern Cottontail is not well understood, and additional research to examine interactions between these species and their respective responses to habitat management is needed.

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Moths, butterflies, and tiger beetles that depend on Pitch Pine/Scrub Oak habitat are among the most frequently surveyed insects in Massachusetts. For example, a two-year study currently underway will result in a significantly better understanding of the distribution and microhabitat needs of the Barrens Tiger Beetle and the Purple Tiger Beetle in PPSO habitat in Myles Standish State Forest. However, for insects,

determining population trends and their causes is generally time and cost-prohibitive. Therefore, most surveys for state-listed/SWAP insects consist of presence/absence data and habitat associations. Future monitoring of these species, to the extent possible, should investigate correlations with habitat management and/or natural disturbance events, and on average should occur every ten years at any given site. The life history and habitat requirements of some state-listed/SWAP species that occur in PPSO habitat (for example, the Barrens *Metarranthis*) are completely unknown. In order to better inform habitat management and other conservation efforts, research to elucidate the natural history of such species is a priority.

Similarly, research on the natural history of rare orchids associated with Pitch Pine/Scrub habitat is a priority. For example, additional information on the natural history of Bayard's Adder's Mouth would be helpful in determining the management needs of these species—for