



Natural Heritage & Endangered Species Program

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FOREST CORE

BioMap2 Components

Core Habitat: **Forest Core**
Critical Natural Landscape: **NA**

FORESTS: THE FOUNDATION OF NEW ENGLAND'S LANDSCAPE

Forests are the dominant vegetation type in the eastern US, and Massachusetts has nearly three million acres of various forest types. The higher elevations of western Massachusetts support Northern Hardwood forests dominated by birch, beech, and maple, while central and eastern Massachusetts are characterized by Central Hardwood forests, predominantly oak and hickory mixed with pine and hemlock. The Commonwealth's extensive forests provide valuable habitat for a wide range of woodland plants and animals. In addition, forests serve critical ecological and societal functions such as filtration of drinking water, absorption of greenhouse gases, absorption and retention of heavy rains thereby reducing flooding, provision of forest products such as wood and paper, and opportunities for recreation.

Forest interior habitat is widely recognized as critically important for species sensitive to forest fragmentation and is becoming increasingly scarce in highly populated regions of the country like Massachusetts. Forest interior habitats are the areas least impacted by roads, residential and commercial development, and other fragmenting features. Many bird species that breed in Massachusetts are sensitive to forest fragmentation, including Ovenbirds, Scarlet Tanagers, and many woodland warblers. Negative results of fragmentation include edge effects such as nest predation by species associated with development such as skunks, raccoons, and house cats; and nest parasitism by species such as the Brown-headed Cowbird that lay their eggs in the nests of other bird species and reduce their reproductive success. Forest interior habitats also support a wide range of



Figure 1: Forests in western Massachusetts

native plants, animals, and ecological processes sensitive to other edge effects such as noise and light pollution from roads and development, invasive species establishment, and alterations to wind, heat, and other climate variables.

Within the forests of Massachusetts, several uncommon natural communities are found in uncommon settings, such as on marble bedrock, at high elevations, or near the coast. An important example is Rich Mesic Forest, found on moist, nutrient-rich sites that support a high diversity of plant species including abundant forest wildflowers (spring ephemerals) such as Dutchman's Breeches, Wild Leek, and Blue Cohash. Yellow Oak Dry Calcareous Forests occur on marble bedrock in western Massachusetts and also support unique species assemblages. Spruce-fir forests occupy the highest elevations in the state and are thought to be highly vulnerable to warming temperatures associated with climate change

The Massachusetts Natural Heritage & Endangered Species Program and The Nature Conservancy's Massachusetts Program developed *BioMap2* in

2010 as a conservation plan to protect the state's biodiversity. *BioMap2* is designed to guide strategic biodiversity conservation in Massachusetts over the next decade by focusing land protection and stewardship on the areas that are most critical for ensuring the long-term persistence of rare and other native species and their habitats, exemplary natural communities, and a diversity of ecosystems.

COMPONENTS OF *BIOMAP2*: *BioMap2* Core Habitat identifies specific areas necessary to promote the long-term persistence of rare species, other Species of Conservation Concern, exemplary natural communities, and intact ecosystems. *BioMap2* uses specific data and sophisticated mapping and analysis tools to spatially define each of these components, calling on the latest research and understanding of species biology, conservation biology, and landscape ecology.

FOREST CORES: In *BioMap2*, Core Habitat includes the best examples of large, intact forests that are least impacted by roads and development, providing critical habitat for numerous woodland species. For example, the interior forest habitat defined by Forest Cores supports many bird species sensitive to the impacts of roads and development, such as the Black-throated Green Warbler, and helps maintain ecological processes found only in unfragmented forest patches. Of the approximately 3 million acres of forest and forested wetlands in Massachusetts, the largest and least fragmented forest in each ecoregion were selected based on a GIS-based computer model (the Ecological Integrity assessment). Ecoregions are geographic areas with similar topography, geology, and predominant vegetation, and therefore represent areas of relatively homogeneous ecological setting. Minimum forest patch sizes range from about 500 acres in eastern Massachusetts and Connecticut and Housatonic Valleys, to 1,500 to 2,000 acres on the Worcester and Berkshire Plateaus, to over 3,000 acres in the Taconic Mountains. For *BioMap2*, 325,000 acres of the most intact forest interior habitats across Massachusetts are identified as Forest Core, representing about 10% of the state's forests. Thirty-eight percent of the total Forest Core area remains unprotected; these areas are high priorities for land protection since they provide important habitat for forest interior and other species. Forest Cores are complemented by, and occasionally overlap with, 20 different forested

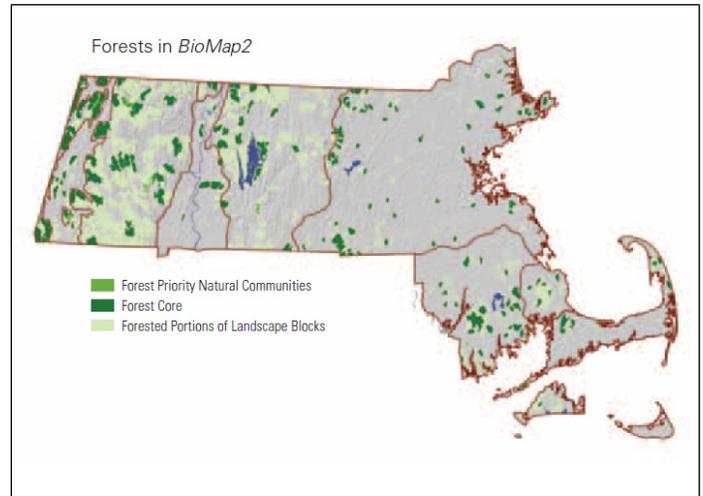


Figure 2: Forest Cores across Massachusetts

natural community types, which support 9,300 acres of unique and irreplaceable plant and animal assemblages, 28% of which is unprotected. Surrounding Forest Cores and other habitats, Critical Natural Landscape identifies extensive and predominantly forested Landscape Blocks. Combined, *BioMap2* forests total 1,232,000 acres, 53% of which is unprotected.

ACHIEVING STRATEGIC CONSERVATION WITH *BioMap2*: In *BioMap2*, the Core Habitat and Critical Natural Landscape are complementary and overlapping, and were delineated based on separate criteria. Each represents a different scale of biodiversity in Massachusetts, yet the protection of both is important to conserve the full suite of biodiversity in the state.

Forest Core Habitats in *BioMap2* are based on an understanding of species habitat requirements, and interpretation of land cover and land use data representing the distribution of ecosystems and patterns of development that affect them. They represent the areas in which land protection and stewardship will contribute most significantly to the conservation of specific elements of biodiversity.

Both land protection and stewardship may be necessary to protect the biodiversity represented by the *BioMap2* Forest Cores. For example, invasive species control may be necessary to maintain the integrity of the biodiversity of the Forest Core, while land protection may be necessary to protect against fragmentation and loss of interior forest habitats within Forest Cores.