

# Chapter One: Introduction

## History of the Project

Although the need to update NHESP's original BioMap and Living Waters projects was frequently remarked upon, it wasn't until December of 2008 that the idea began to take hold. That month at the Doyle Center in Leominster, the Open Space Institute held a meeting on its Massachusetts Amplification Program, part of its New England Wildlife Conservation Initiative. The meeting's objective was to explore how private conservation dollars could "amplify" their overall conservation impact. During the wide-ranging discussion among various conservation partners from in and outside of government, the desirability of updating and expanding the original Massachusetts BioMap came up several times.

Then the internal work of how to launch the next BioMap project began. The need to prepare an updated strategic land conservation plan for the Commonwealth was clear. Considerations about a possible new BioMap project quickly lead to the recognition of the need and desirability of addressing the potential impacts that climate change will likely have on the state's biodiversity, and thus the desired land conservation "footprint". In addition, the Division of Fisheries and Wildlife (DFW) had produced their State Wildlife Action Plan (SWAP) in 2005 and, to broaden the scope of the biodiversity conservation plan, we wanted to include both SWAP habitats and SWAP wildlife species. Mary Griffin, Commissioner of the Department of Fish & Game (DFG), contacted the Massachusetts Office of The Nature Conservancy (TNC) about undertaking the BioMap revision project collaboratively. The Conservancy's Massachusetts State Director, Wayne Klockner, agreed with the importance of the project and committed TNC resources to accomplishing a collaborative project. The Commissioner also had discussions with the Executive Office of Energy and Environmental Affairs about the feasibility of bond funding and they were supportive. The *BioMap2* project team then started to submit proposals seeking additional funding to various potential funders such as the Open Space Institute.

By the spring of 2009, the project had the green light. In early July, the Natural Heritage & Endangered Species Program prepared and posted a solicitation for a *BioMap2* Project Coordinator. James DeNormandie of the Massachusetts Audubon Society was selected and a contract was quickly executed with MassAudubon for his services in this critical role. Various other subcontracts were subsequently signed with the following entities: Glenn Motzkin (landscape ecology), Jeanne Anderson (coastal analyses), Joanna Grand (freshwater fisheries), Charley Eiseman (Wetland Core field checking), Gile Beye and Margaret Lowry (protected open space mapping), and UMass Amherst (for CAPS analyses). The total amount of bond funding made available for the project by the DFG was \$400,000 over two fiscal years. The Nature Conservancy also raised money for the project and covered costs such as the printing of the final products. However, most of the work fell to existing NHESP and TNC staff. The project was ultimately slated to be, and largely was, completed in 16 months.

After presenting the developing *BioMap2* project at both the Massachusetts Association of Conservation Commissions and the Northeast Fish and Wildlife conferences during the spring of 2010, the *BioMap2* team held an "external review" session on June 17, 2010, to solicit feedback

from over 25 people in the Massachusetts biodiversity conservation field. (See list of attendees in Appendix A.) This meeting provided important input to the project at a critical stage.

In addition to using their fish data, consultation and collaboration with both the DFW's Fisheries Section and the Division of Marine Fisheries during the summer of 2010 was critical to the development of important subcomponents of the Aquatic Core Habitats. Meetings were also held with the DFW Wildlife section on how to incorporate SWAP wildlife species into *BioMap2*.

The final *BioMap2* summary report and poster were released on October 14, 2010, at a quarterly meeting that the Massachusetts Land Trust Coalition's steering committee held in Grafton.

### **Funding**

Commonwealth of Massachusetts

- MA Department of Fish & Game capital bond funds
- Natural Heritage & Endangered Species Fund
- Open Space Institute

The Nature Conservancy

- The Ackerman Conservation Fund
- Toward Sustainability Foundation
- Elinor M. and Joel L. Siner

### **Staffing**

Massachusetts Natural Heritage & Endangered Species Program

- Henry Woolsey, Program Manager
- James DeNormandie, under contract from the Massachusetts Audubon Society Ecological Extension Service
- Sarah Haggerty, Information Manager

Massachusetts Program, The Nature Conservancy

- Andrew Finton, Director of Science and Conservation
- Jessica Dyson, GIS Manager

### **Purpose of the Project**

Figure 1 shows the different stages of the *BioMap2* process. The initial phase was *identification* of the species and habitats that we are attempting to conserve.

Our conservation targets included species listed under the Massachusetts Endangered Species Act (MESA), additional non-listed species of conservation concern from the State Wildlife Action Plan (SWAP), vulnerable natural communities and species, and the best examples of more common habitat types and ecosystems.

As we *mapped and delineated* the *BioMap2* conservation targets, we paid special attention to their size and connectivity, identifying portions of the landscape large enough to allow ecological processes to function, as well as identifying the critical portions of the landscape surrounding the core habitat that, if protected, will limit stressors.

Then, we *selected and balanced* areas across the entire spectrum of the state’s ecoregions and ecological settings. We made sure that we selected biological elements in each of the state’s varied ecoregions to insure that protection efforts account for *representation* of each element in each area of the state. In addition, this will insure *replication* of each element. Both are important components of a climate adaptation strategy. For example, we took great pains to select the least disturbed wetlands in the state across a spectrum of elevation, geological settings, and within each ecoregion. This type of “stratification” by ecoregion was repeated for most of the elements in the *BioMap2*.



**Figure 1. *BioMap2* process.**

The overall goals for the *BioMap2* project were to:

- Update the species and natural community information that were the basis of the first BioMap (2001) and Living Waters (2003) plans.
- Integrate the methodology of the first BioMap (terrestrial) and Living Waters (aquatic) plans.
- Account for recent land protection and land development.
- Enhance the conservation scope to include species and habitats in the Massachusetts State Wildlife Action Plan (2005).
- Target intact ecosystems and landscapes.
- Incorporate resiliency in the face of climate change.
- Balance and stratify targeted biological resources across the state.

## Summary of Results

### Core Habitat

Core Habitat, as identified in *BioMap2*, consists of 1,242,000 acres (see Table 1) deemed critical for the long-term persistence of rare species and other Species of Conservation Concern, as well as a wide diversity of natural communities and intact ecosystems across the Commonwealth.

Core Habitat, which may overlap with Critical Natural Landscape, includes:

- Species of Conservation Concern
- Priority Natural Communities
- Vernal Pool Core Habitats

- Forest Core Habitats
- Wetland Core Habitats
- Aquatic Core Habitats

### Critical Natural Landscape

Critical Natural Landscape (CNL), as identified in *BioMap2*, consists of 1,783,000 acres (see Table 1) complementing Core Habitat, including large natural Landscape Blocks that provide habitat for wide-ranging native wildlife species, support intact ecological processes, maintain connectivity among habitats, and enhance ecological resilience; and buffering uplands around coastal, wetland and aquatic Core Habitats to help ensure their long-term integrity.

Critical Natural Landscape, which may overlap with Core Habitat, includes:

- Landscape Blocks
- Upland Buffers of Wetland Cores
- Upland Buffers of Aquatic Cores
- Coastal Adaptation Areas
- Tern Foraging Habitat

**Table 1.** Acres of *BioMap2* Components.

	<b>Component</b>	<b>Acres</b>
<b>Core Habitat</b>	Species of Conservation Concern	914,361
	Priority Natural Communities	90,535
	Vernal Pool Core Habitats	36,183
	Forest Core Habitats	325,449
	Wetland Core Habitats	93,251
	Aquatic Core Habitats	219,101
<b>Critical Natural Landscape</b>	Landscape Blocks	1,473,593
	Wetland Buffers	237,359
	Aquatic Buffers	375,407
	Coastal Adaptation Areas	80,488
	Tern Foraging Habitat	236,360

### Relationship between Core Habitat and Critical Natural Landscape

The original BioMap included Core Habitats as the highest priority for protection, and Supporting Natural Landscape areas as additional targets for protection in order to help maintain the viability of the Core Habitats. *BioMap2* uses a targeted approach to explicitly include a more comprehensive assemblage of native biodiversity. It specifically addresses both coarse and fine filter elements of biodiversity and incorporates strategies to help ecosystems adapt to the impacts of climate change. These innovations in the creation of *BioMap2* influence its application. **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.**

Core Habitats in *BioMap2* are based on rare species habitat mapped from actual observations, habitat for wildlife of conservation concern, exemplary natural communities, least disturbed wetlands, forest interior habitat, clusters of Potential Vernal Pools, and other conservation targets. They therefore represent the areas in which land protection and stewardship will contribute most significantly to the conservation of specific elements of biodiversity.

Critical Natural Landscapes, on the other hand, are areas that are critically important to conserving a broad range of biodiversity, delineated at a larger scale than the Core Habitats, and the patterns and processes that support it. These areas minimize impacts from development on natural systems, allow connectivity among habitats, and provide adequate area for natural processes that support diverse species.

In addition to differences in scale, Core Habitat and Critical Natural Landscape differ in the amount of human impact each can tolerate and still retain their conservation value. Simple land protection may be the best conservation strategy within most areas of Core Habitat, but portions of Critical Natural Landscape will support moderate levels of compatible human use such as timber harvesting in working forests and specific agricultural practices. By the same notion, conservation efforts within Critical Natural Landscapes should address the requirement to support natural processes for the long term. Therefore targeting small areas of Critical Natural Landscape for land protection without addressing the conservation needs for the entire block fails to achieve the conservation goals represented by the delineation of these large areas.