Summary Document

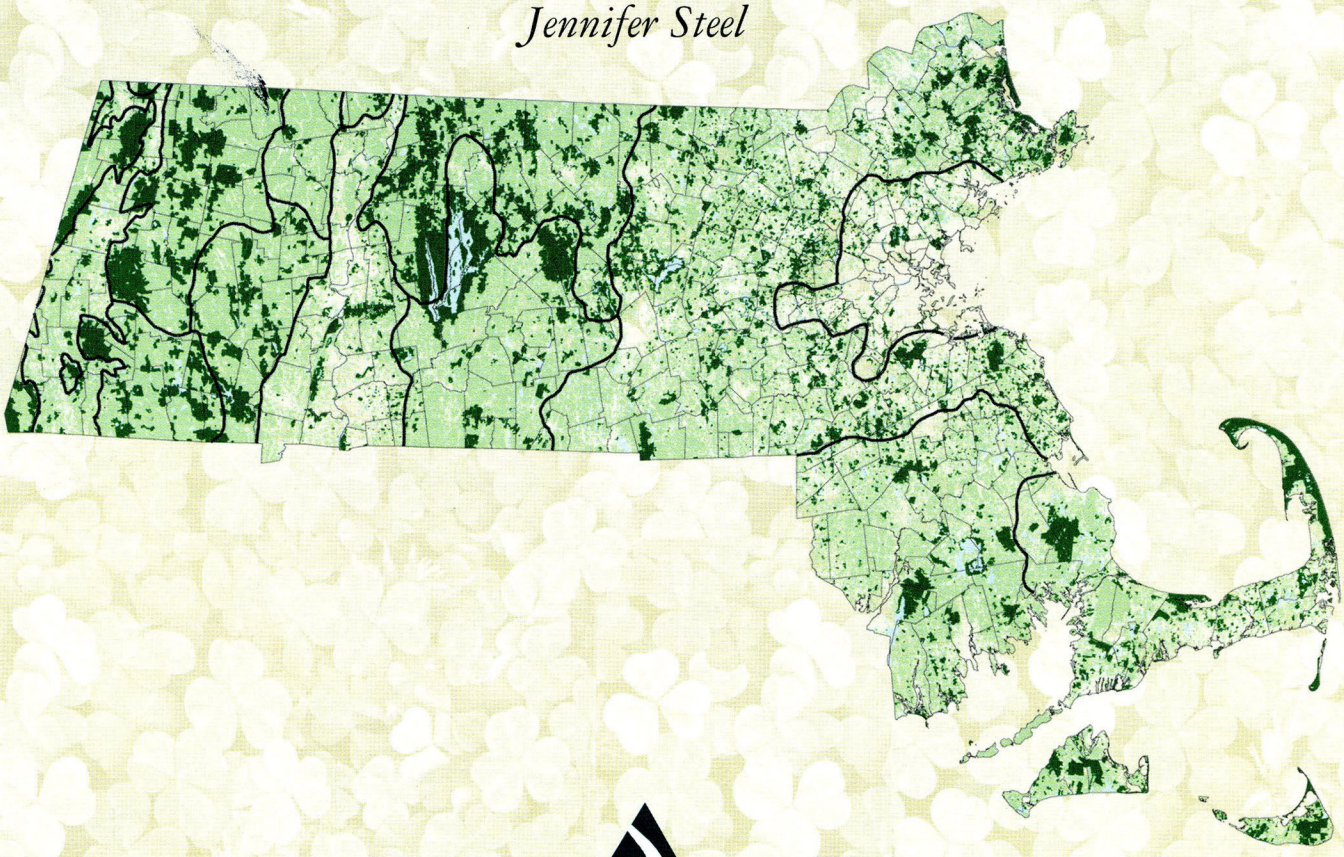
Losing Ground

(Second Edition)

An Analysis of Recent Rates and Patterns of Development and Their Effects on Open Space in Massachusetts

by

Jennifer Steel



Massachusetts Audubon Society

Protecting the Nature of Massachusetts

Advocacy Department

John J. Clarke, Director

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1. SUMMARY

Massachusetts continues to lose open space to development at an alarming rate. Every day 44 acres of woods, fields, or farms are converted to residential, commercial, or industrial lands. That is 16,000 acres or 25 square miles of open space lost every year. That trend will continue unless we, as a commonwealth, take determined action now.

- 1.23 million acres of land in Massachusetts (23.8% of the Commonwealth) are already developed. Sprawling development is causing an unprecedented amount of open space to be converted to residential, commercial, and industrial uses; between 1972 and 1996 the Commonwealth's population increased roughly 6%, but the amount of developed land increased roughly 59%.

- 890,701 acres of land in Massachusetts (17.3% of the Commonwealth) are truly protected wildlife habitat – a good start, but an amount inadequate to ensure the long-term survival of all native species of plants and animals and the overall well-being of our communities.

- 12.7% of the Commonwealth is "other open space" and protected agricultural land.

- 2.4 million acres of land in Massachusetts (46.2% of the Commonwealth) are unprotected wildlife habitat (36.2%) and unprotected agricultural land (10%) – the land that represents our remaining conservation options.

Areas experiencing the most rapid development include:

- Cape Cod and the Islands,

- The northern portion of southeastern Massachusetts and the Winchester/Stoneham/North Reading area,

- A broad band along the Route 495 corridor including the greater Worcester area, the Lawrence/Methuen areas, and portions of the North Shore, and

- The southern portion of the Connecticut River valley.

The concentration and pace of development in these areas may be endangering the integrity of three unique ecoregions – Cape Cod and the Islands, the Southern New England Coastal Plain and Hills, and the Bristol Lowland. The Cape Cod and the Islands ecoregion harbors the greatest density of rare species in Massachusetts. Recent patterns of develoment are threatening the survival of some of the Commonwealth's rarest species.

We must work to protect critical portions of these lands to ensure the long-term survival of the nature of Massachusetts. To develop an adequate land protection strategy, as a commonwealth we must identify and pursue the protection and management of high-priority currently unprotected open space, address the root causes of current patterns of sprawling development, and encourage patterns of development that are less environmentally damaging.

2. INTRODUCTION

Addressing the Plague of Sprawl

The Massachusetts Audubon Society is concerned with the patterns and practices of sprawling development (see Chapter 3 for a definition) and its effects on wildlife habitat. Buoyed by a growing population, a thriving economy, and ever-increasing market demand, sprawl and the resulting loss and degradation of wildlife habitat in Massachusetts are of ever-more pressing concern. If current trends of sprawling development continue, Massachusetts will become an incoherent patchwork of cities, suburbs, isolated shopping malls, roadside strip developments, and abandoned infrastructure, with few, remnant, open spaces. Many of our natural wild places will be destroyed, severely fragmented, surrounded by traffic-filled roads, degraded by chemical contamination, or overtaken by invasive species. Water quality will be degraded as more impervious surfaces concentrate polluted runoff. Community character and quality of life in our cities and towns will be diminished.

Only by understanding the complex problems causing and being caused by sprawl and prioritizing threatened habitats and species of greatest value, can we develop effective solutions and ensure that the nature of Massachusetts will be protected for generations to come.

Goals of this Report

This report, *Losing Ground* (Second Edition) developed for state and local public officials, conservation organizations, and conservation activists, weaves together analyses of the scale of recent losses of wildlife habitat to development, the patterns of that development, and the implications of those patterns on the biological fabric of the Commonwealth.

3. DEFINITIONS: THE SPECTRUM OF LAND

Quantity vs. Quality and Protection

Discussions of open space conservation and development often deal solely with *acres* of "open space" and "developed land." Such acreage estimates give a rough indication of the status and trends of land use. Unfortunately, they mask critical subtleties in the ecological characteristics of the land and the efficacy of protection afforded it.

Not all open space is equally valuable or healthy habitat; not all developed land is equally degraded. Not all protection is equal or equally effective.

To effectively address the long-term health of the biological fabric of Massachusetts, the emphasis in land accounting, public discussions, and planning must shift from a simple quantitative perspective to a more refined balance of quantitative and qualitative characteristics that account for ecological function and levels of protection.

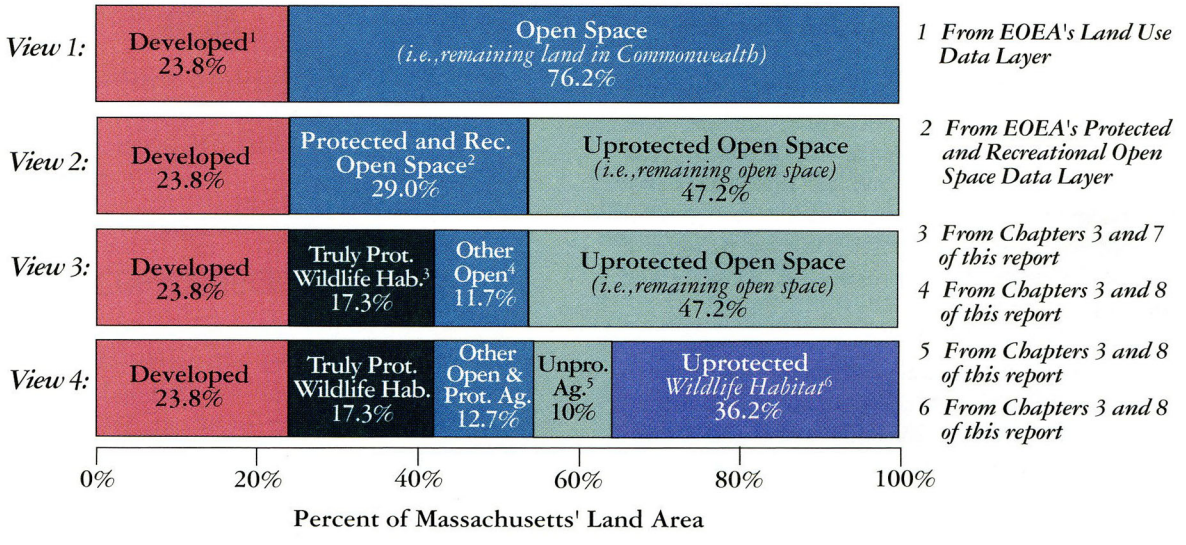
The Spectrum

The categorization of land described below and used throughout this report – based on a dichotomy between "developed" and "open" – is a subjective one superimposed on the full spectrum of land characteristics and qualities. It is just one way of describing the Massachusetts landscape.

- **Developed Land:** Built land.
  - **Appropriate development:** Relatively sustainable alteration of the natural environment – i.e., development at a scale and density and otherwise in such a manner that the net effect allows for the continued survival of all species and processes that naturally occur in the area.
  - **Sprawl:** Development that is relatively low density; has separate residential and commercial components, and is, therefore, largely automobile-dependent; and is poorly integrated with existing infrastructure and the environment.
- **Open Space:** All land that is either unbuilt or used for recreational purposes.
  - **Truly protected wildlife habitat:** Healthy ecosystems that are in a predominantly natural state and support a robust array of native plants and animals (i.e., dedicated conservation areas and other areas) that carry substantial, enforceable, and long-lasting legislative or regulatory limitations on the potential for alteration or development and that have ecosystem-appropriate ecological management regimes in place.
  - **Unprotected wildlife habitat:** Predominantly privately owned, unprotected forested land and wetlands that support native wildlife.
  - **Unprotected agricultural land:** Pasture and cropland with no legal means of keeping it from being developed.
  - **Other open space:** Agricultural land protected under the APR program and land that we consider to be of low ecological value or to have limited protection.

See Figure 1 for an illustration of the development of this characterization. The ever-more refined categorization and accompanying nomenclature reflects the progression of understanding and management-oriented concern.

Figure 1. Development of Land Characterization Scheme in Massachusetts (as of 1997)



4. DEVELOPED LAND

How quickly is land being developed? How quickly are we destroying native wildlife habitat, valuable agricultural land, and the cultural character of our communities?

Using all available data sources, we can chart the progression of the amount of developed land in Massachusetts from 1971 to 1996 (Figures 2 and 3). Note that residential land accounts for the vast majority of developed land in the Commonwealth.

From Figure 2 and the subsequent source notes we can discern some distinct trends and draw some conclusions – both promising and alarming.

Promising is the following fact.

- The average annual rate of land consumption has decreased recently from over 21,000 acres per year in the mid-1980s to just under 16,000 acres per year in the late 1990s.

Alarming are the following facts.

- Almost one-fourth (23.8%) of the Commonwealth is already developed or significantly altered.
- We continue to convert open land to developments at a brisk pace. By 1971, only 15% of Massachusetts was developed. By 1985, 20% of Massachusetts was developed. By 1996, almost 24% was developed.
- Even at the lower rates of recent years, we are consuming roughly 44 acres of open space every day (2 square miles every month; 25 square miles every year), with impacts that are ever-more encompassing.
- Despite the severe recession of 1989 to 1992, the decrease in the rate of development between 1985 and 1996 was relatively small.
- If data were available for 1997 and 1998, they would likely indicate a higher annual rate of land conversion than that shown for the periods 1985 to 1990 and 1991 to 1996 (which incorporates the recession).

Figure 2. Developed Portion of Massachusetts (1971-1996)

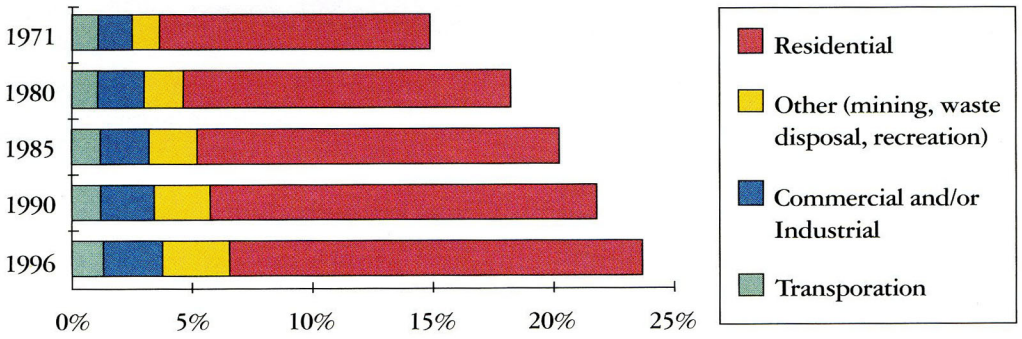


Figure 3. Data and Sources for Figure 2 (Developed Portion of Massachusetts)

	Developed Land Type (acres)				Total	
	Residential	Com./Ind.	Transport	Other	Total	%MA
Total acres of developed land (1971/72)	584,314	75,806	53,869	60,921	774,910	15.0%
Average acres lost to development annually (1973-1980)	15,623	2,084	580	3,428	21,715	0.4%
Total acres of developed land (1980)	709,294	92,474	58,509	88,345	948,622	18.3%
Average acres lost to development annually (1981-1985)	14,830	2,430	580	3,428	21,268*	0.4%
Total acres of developed land (1985)	783,444	104,624	61,415	105,483	1,054,966	20.0%
Average acres lost to development annually (1986-1990)	10,184	1,803	580	3,428	15,995	0.3%
Total acres of developed land (1990)	834,364	113,639	64,315	122,623	1,134,941	21.2%
Average acres lost to development annually (1991-1996)	10,184	1,803	580	3,428	15,995	0.3%
Total acres of developed land (1996)	895,464	124,459	67,795	143,191	1,230,909	23.8%

5. SPRAWLING RESIDENTIAL DEVELOPMENT

The most dramatic force at work on our landscape is that of increasing residential development. Each year, residential development consumes more land than commercial, industrial, and transportation development combined. Sprawling development occurs in patterns that lead to abandonment of the housing stock in our city and town centers and is greatly threatening the health of our natural communities.

Population

Massachusetts is the third most densely populated state in the nation after New Jersey and Rhode Island.

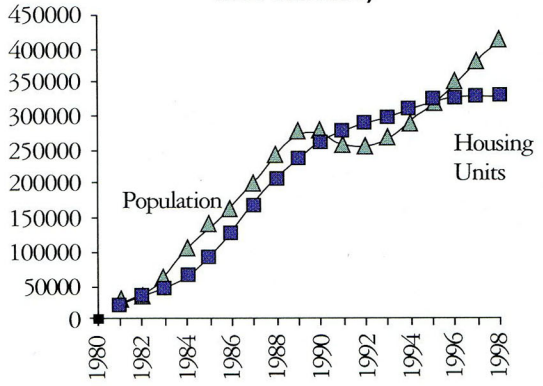
- The Massachusetts population increased from roughly 5,700,000 in 1970 to 6,151,000 in 1998. Note that even though the rate of population growth over the past 26 years has been relatively low, the absolute change in the total population (413,963) has been significant.

- The most rapid growth has been between 1980 and 1998 when the Massachusetts population increased from roughly 5,737,000 to 6,151,000.

Residential Housing Units

Since there has been a profound decline in the average number of residents per household in the past generation, a discussion of land consumption should focus on changes in the number and density of residential dwelling units. Figure 4 shows that the number of housing units has increased roughly in pace with the population – for every new person in the Commonwealth, there has been roughly one new housing unit developed.

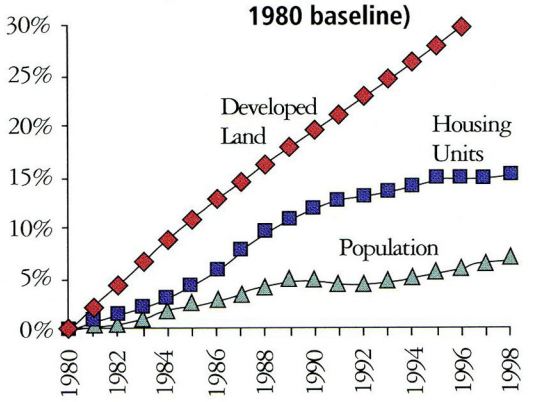
Figure 4. Cumulative Change in Population and Housing Units in Massachusetts (from a 1980 baseline)



Sprawling Residential Development

The real impact of current development trends results from the incongruously large impact those new housing units are having on our landscape.

Figure 5. Cumulative Percent Change in Numbers of Residents, Housing Units, and Acres of Developed Land in Massachusetts (from a 1980 baseline)



Sources for Figures 4 and 5: Population and housing statistics from U.S. Bureau of the Census; developed land information from Figure 3.

Figures 5 shows the following.

- Between 1980 and 1996, the population increased by only 7%, the number of housing units increased by 16%, but the amount of developed land increased by 30%.

If we look further back in time, we see similarly disturbing trends.

- Between 1972 and 1998, the population in Massachusetts increased by 6%, yet between 1972 and 1996 the amount of land consumed by development increased by 59%.

- Between 1950 and 1990, the population of Massachusetts increased by 28% but the area of developed land increased by nearly 200% (EOEA, 1998).

These figures give a clear indication of sprawling residential development (and associated commercial, industrial, and transportation development).

Causes of Sprawl

Sprawl has two root causes. The first is inappropriate zoning regulations and ordinances at the state and local levels that allow conventional "cookie-cutter" subdivisions "by right," but allow cluster subdivisions and compact village centers only "by special permit." Existing compact town centers are almost impossible to recreate or renovate, and environmentally sensitive development is difficult to pursue.

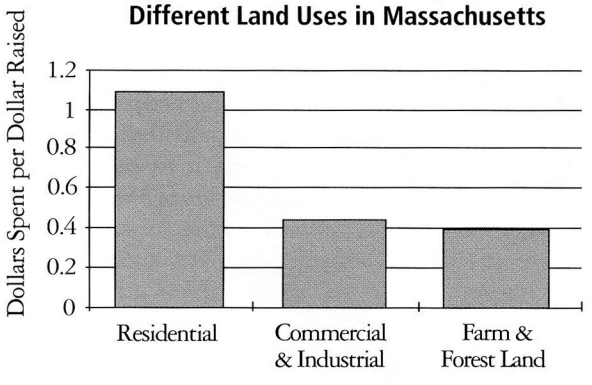
The second is the desire of residents to live "a peaceful life" near high-quality open space (and their ability to pay a premium for such amenities).

Effects of Sprawl

Sprawl, thereby, results in the following.

- The loss of open space, which leads to:
  - Degradation of community character in recently developed exurban areas (e.g., decreased natural amenities, increased construction, increased traffic, longer commutes, longer travel times for routine necessities, and more isolated lifestyles), and
  - Degradation of wildlife habitat and loss of biodiversity.
- The rapid consumption of natural resources.
- The abandonment of existing residential city and town centers, the abandonment of the historic engines of our economic growth and civic life, and the demise of urban open space. Between 1950 and 1995, the population of the Commonwealth's 12 largest cities fell by 280,000. Worcester alone lost 30,000 people (15% of its population), while the suburbs surrounding Worcester grew by 250% (John Lipman, EOEA, pers.com.,1999) The abandonment of population centers, in turn:
  - Fuels increasing demand for residences near other open space and the severe alteration of areas once dominated by farmland and forests, and
  - Leaves a legacy of distressed older communities, degraded urban open spaces, and mounting debts for urban infrastructure services.
- Increased costs of suburban and rural living (Figure 6).

Figure 6. Net Cost of Providing Services to Different Land Uses in Massachusetts



Source: American Farmland Trust - Average of all Cost of Community Service studies conducted to date (1999)

6. BIOLOGICAL IMPLICATIONS OF RECENT DEVELOPMENT

General Effects: Habitat Degradation

Development degrades natural habitats in several ways: direct loss of habitat from conversion of wildlife habitat to homes, parking lots, and other infrastructure; secondary impacts and cumulative impacts of changes in topography, vegetation, and land uses; and fragmentation of once larger expanses of habitat.

Development-induced habitat loss is changing the face of Massachusetts in dramatic ways. As wildlife habitat is converted to subdivisions, commercial malls, and industrial parks, not only are tracts of relatively common (but vital) forested lands being destroyed, but rare habitats and their resident species are being destroyed. There are now only small remnants and isolated patches of pine barrens, sandplain grassland, and coastal heathland. There are now relatively few undisturbed bogs, calcareous fens, coastal plain ponds, and vernal pools. If development continues unchecked, these rare types of natural communities and the species that depend upon them could become ever more threatened or even extirpated.

Development can have numerous, damaging, secondary, indirect, or cumulative impacts on hydrology, vegetational cover, and levels of contamination.

One of the most significant effects of sprawling development is not the total acreage of land converted to development but the fragmentation that such development brings to heretofore intact and functioning ecosystems. To get a *rough* sense of the amount of habitat fragmentation that exists in Massachusetts, we examined the density of roads (feet of road per acre) in each municipality in the Commonwealth (Map 1). Not surprisingly, Map 1 indicates the following.

- The greatest density of roads and so the areas most likely to harbor highly fragmented habitats, exist in and around urbanized areas and in existing and rapidly developing suburban areas, and
- Significant fragmentation exists across the Commonwealth.

Specific Effects: Development at the Local Level

To develop a sense of where the most development is taking place, we looked at the amount of land developed (the total number of acres developed for residential and commercial uses) in each municipality between 1980 and 1996. The data depicted in Map 2 were developed by Philip B. Herr & Associates.

Map 2 indicates the following.

- The most significant increases in developed land have been in:
  - Cape Cod and the Islands,
  - The northern portion of southeastern Massachusetts and the Winchester/Stoneham/North Reading area,
  - A broad band along the Route 495 corridor including the greater Worcester area, the Lawrence/Methuen areas, and portions of the North Shore, and
  - The southern portion of the Connecticut River valley.
- The lowest development pressures have been in already urbanized ("built-out") areas, and portions of central and western Massachusetts.

By essentially "overlaying" the information about rates of development in each municipality (Map 2) with the other maps, the reader can develop clear pictures of the biological resources that are being threatened by recent patterns of development.

What is Development Threatening?

Ecoregions

Comparing the map of the development in each municipality with the map of the U.S. Environmental Protection Agency's ecoregions (Map 3), one sees the following.

- The ecoregions that are suffering the greatest development pressures are: (1) Cape Cod and the Islands, (2) Bristol Lowlands (southeastern Massachusetts), (3) Southern New England Coastal Plains and Hills (a broad band along the Route 495 corridor), and (4) the Boston Basin.
- This means that large blocks of mixed maple forest, scrub oak-pine barrens, coastal heathlands, Atlantic white cedar swamps, sandplain grasslands, and coastal plain ponds are among the natural communities facing the greatest direct and indirect threats associated with development.

Land Cover

We can gain a rough impression of what type of open space is being lost to development by looking at the categories of land cover across the Commonwealth as represented by the U.S. Environmental Protection Agency and U.S. Geological Society's Multi-Resolution Land Cover (MRLC) coverage (Map 4).

Comparing the map of the rate of development in each municipality (Map 2) with the resulting map of land cover (Map 4), we see the following.

- In eastern and central Massachusetts, where recent development is the most prevalent, the open land affected by development is predominantly small tracts of deciduous and mixed forest, wetlands, and agricultural land.
- On Cape Cod and the Islands, the open land affected by development is predominantly evergreen forest, wetlands, and agricultural land.
- In the Connecticut River valley, the open land affected by development is predominantly agricultural land.
- Development in eastern Massachusetts is occurring in areas that are already quite fragmented; those areas are becoming increasingly fragmented.

Rare Species Occurrences

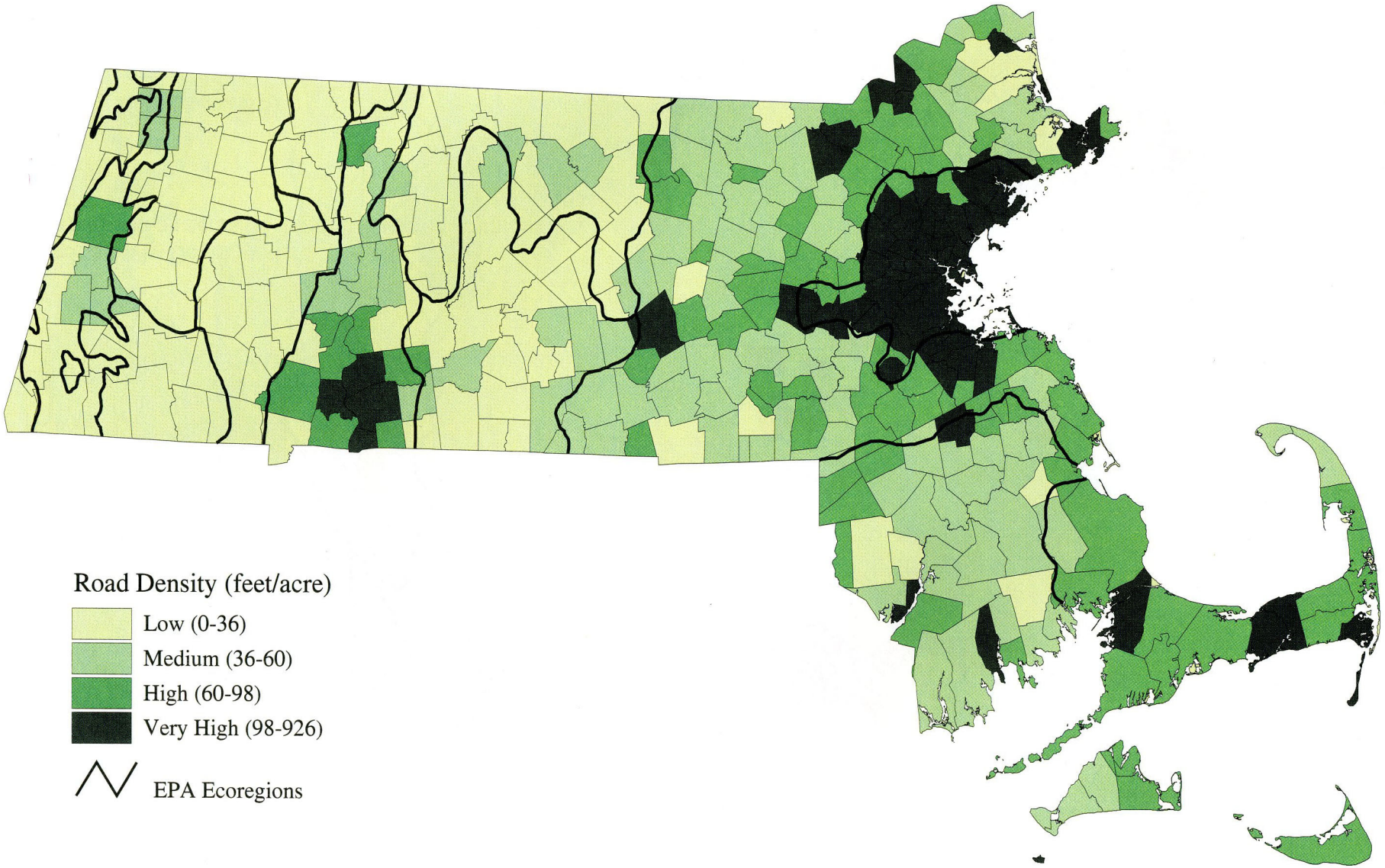
There are currently 424 species of rare (i.e., endangered, threatened, or special concern) plants and animals in Massachusetts – 16% of all native species are now rare. "Overlaying" the map of rare species occurrences (Map 5) with Map 2 shows the following.

- Some of the areas of the Commonwealth that contain the greatest concentrations of rare species have been experiencing the greatest development pressures – Cape Cod and the Islands and southern portions of the Connecticut River valley show an alarming correlation between large numbers of rare species and rapid development.
- The Southern New England Coastal Plains and Hills ecoregion has moderate density of rare species and has been experiencing rapid development.
- Only one area where there is known to be high concentrations of rare species – the Berkshires – is experiencing relatively low rates of development.

Conclusion

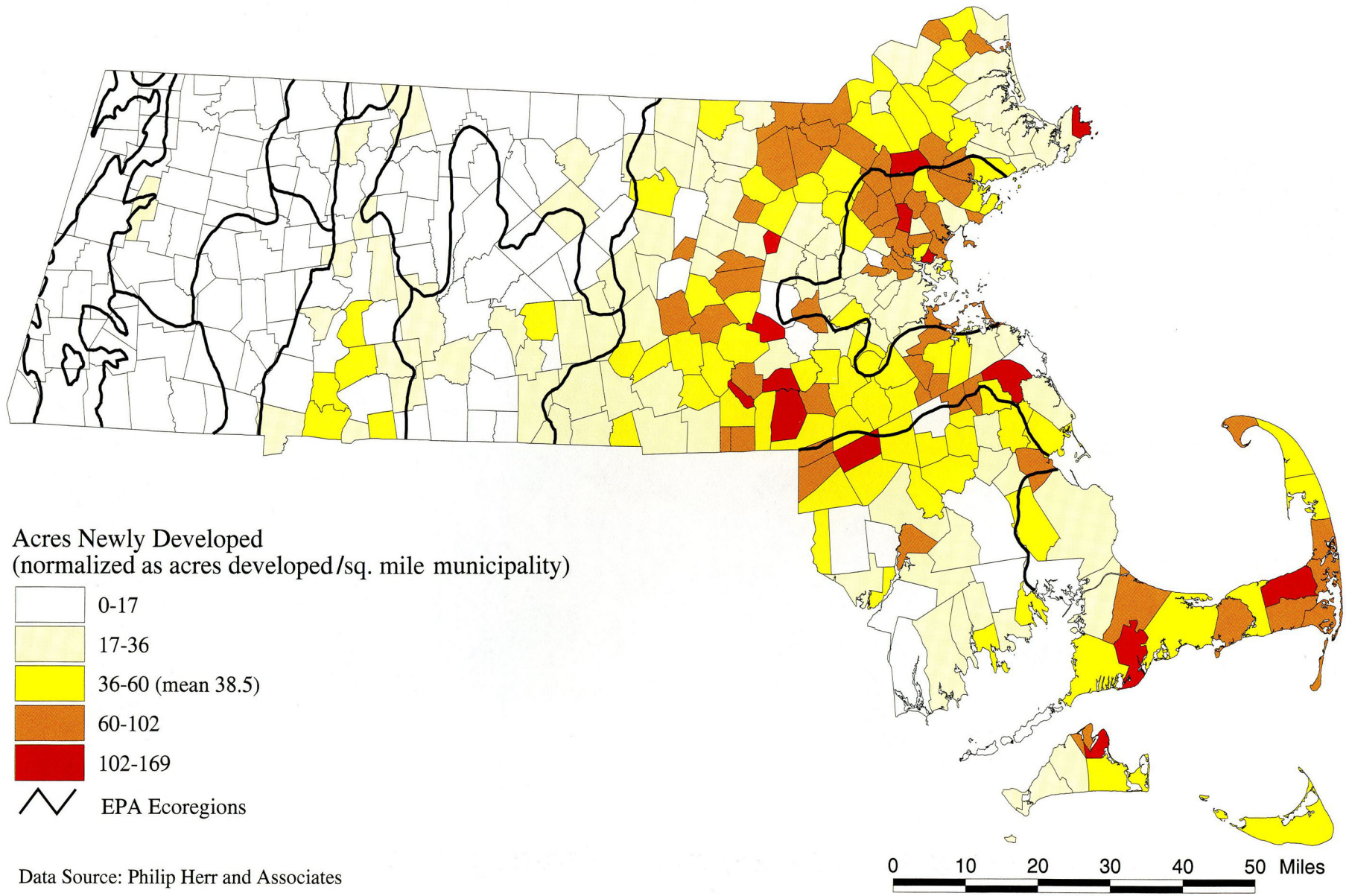
Whatever perspective one has – from the perspective of large-scale ecoregions to the perspective of individual species – it is undeniable that human development is having radical and irreversible effects on the natural habitats of Massachusetts. If the current trends of development – rates, locations, and patterns of sprawl – continue, the face and function of Massachusetts will be radically altered. Currently, several ecoregions are facing dramatic changes, fragmentation, and degradation. Precious remnants of some of the rarest natural communities are facing degradation or destruction. And some of the rarest species native to Massachusetts are facing severe decline or extinction.

Map 1: Density of Roads in Massachusetts Municipalites (1998)



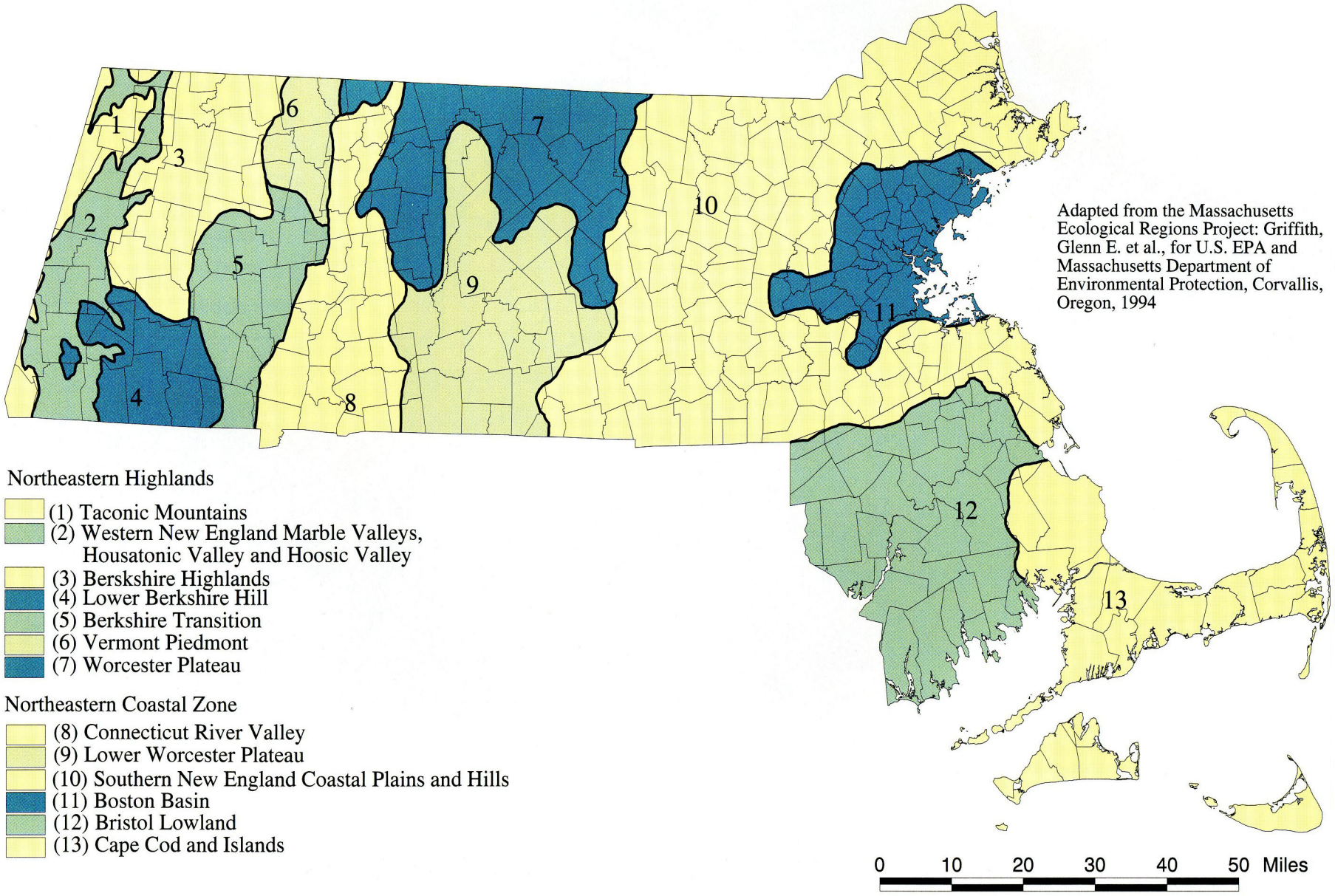
Data Source: Mass. Highway Dept. Roads Datalayer, 1998

Map 2. Newly Developed Land (1980-1996)

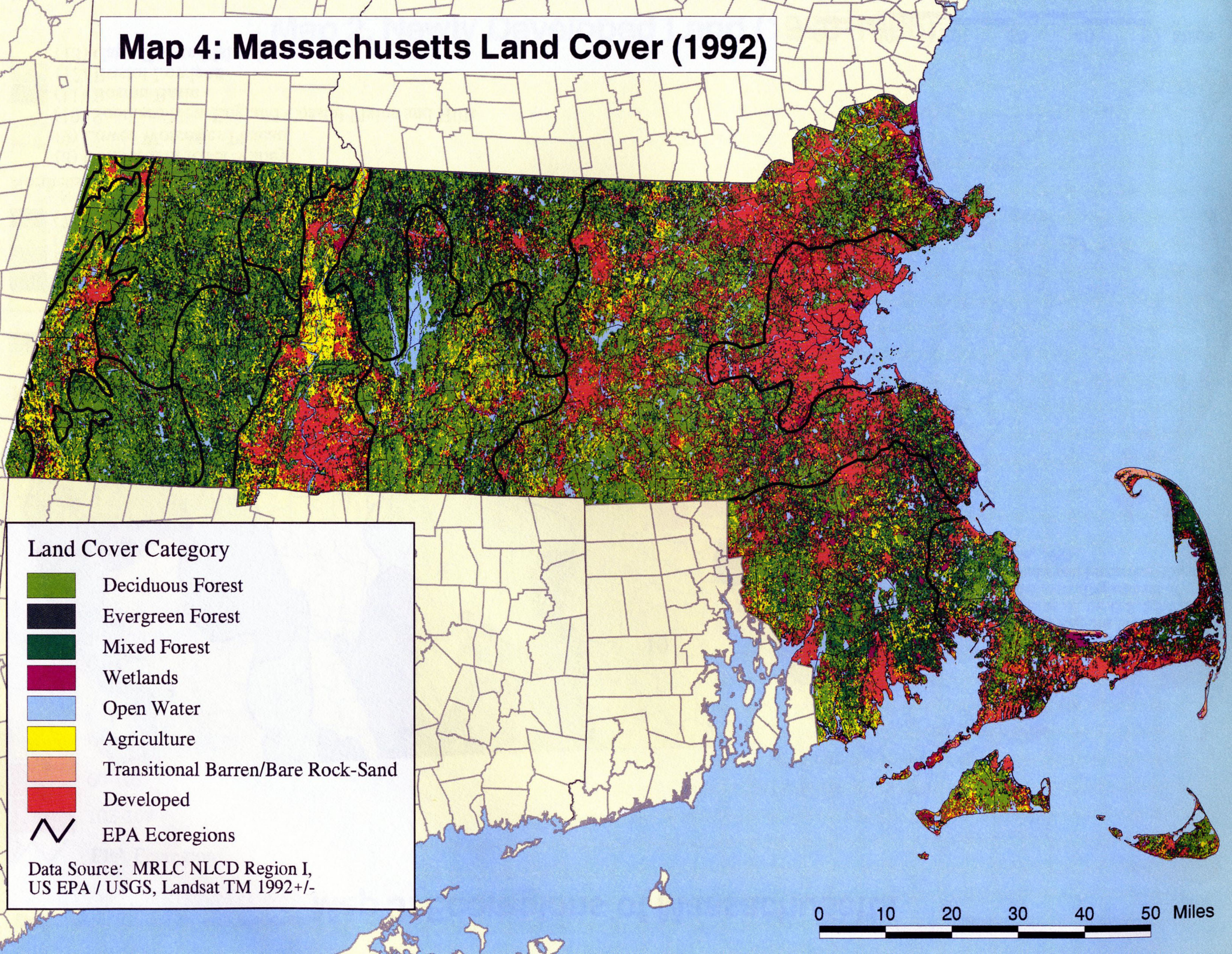


Data Source: Philip Herr and Associates

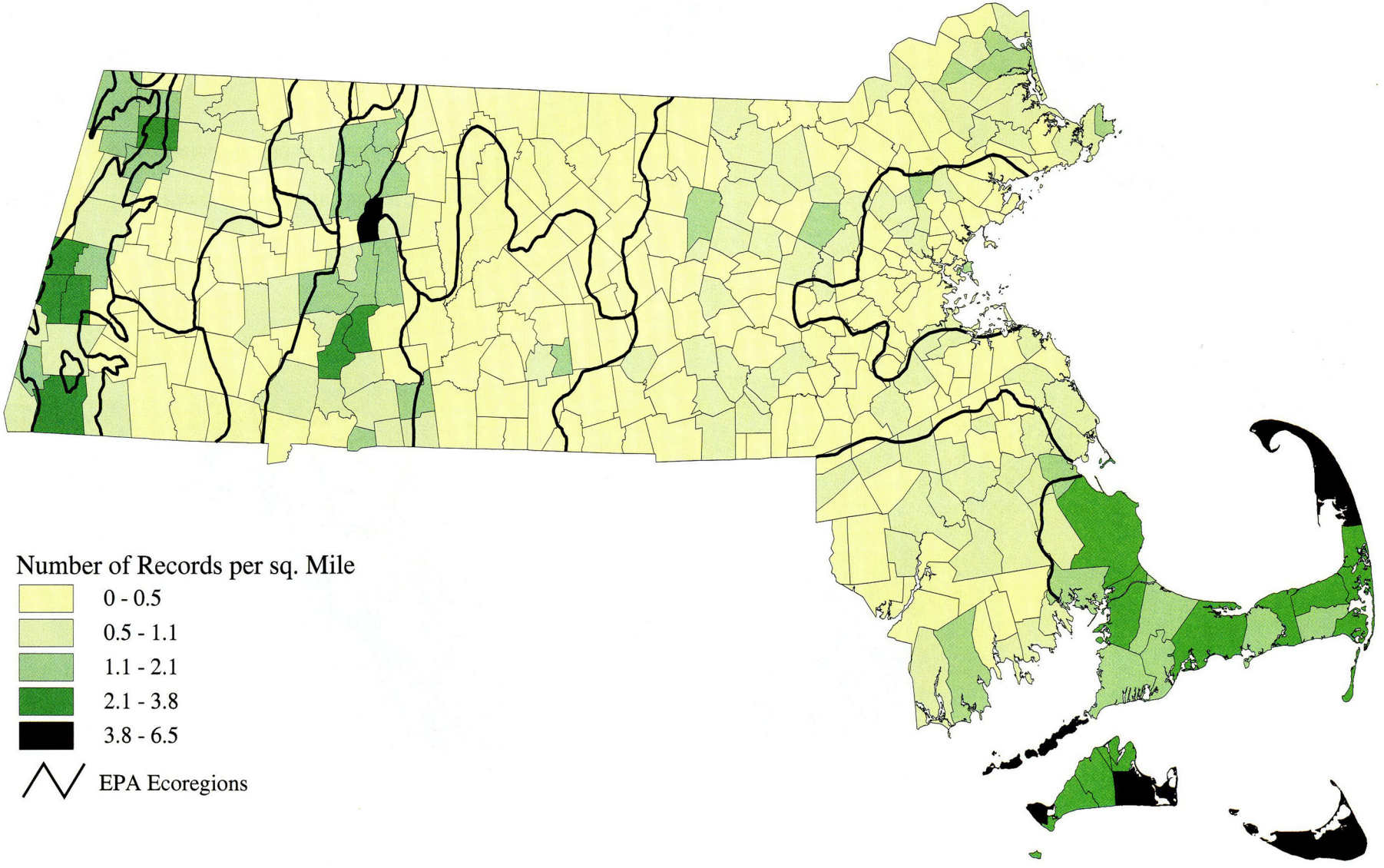
Map 3: Ecoregions of Massachusetts



Map 4: Massachusetts Land Cover (1992)

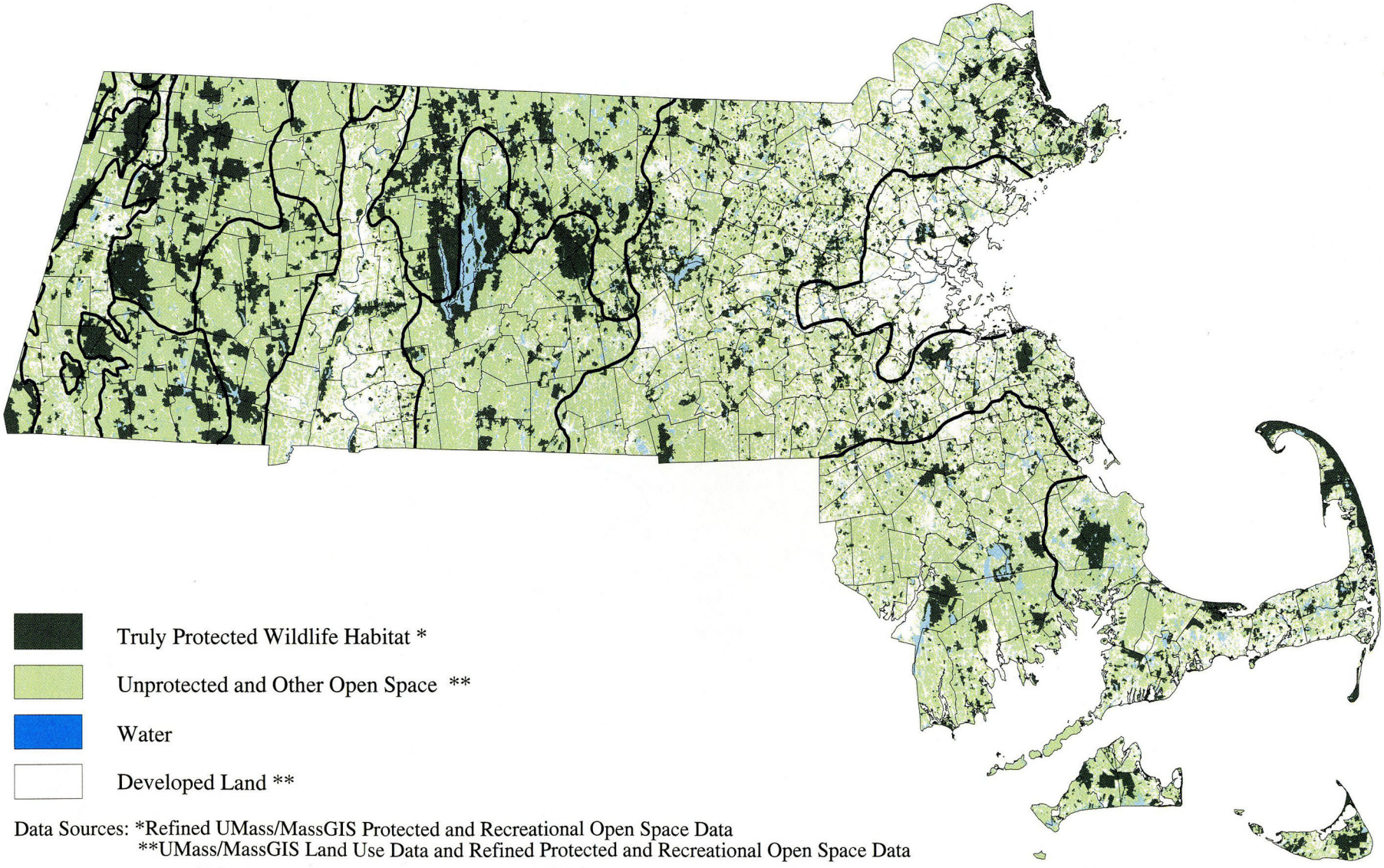


Map 5: Number of State-Listed Endangered, Threatened, and of Special Concern Species in each Municipality (1974-1999)



Data Source: Natural Heritage & Endangered Species Program

Map 6: Truly Protected Wildlife Habitat, Unprotected Open Space, and Developed Land (1998)



Data Sources: *Refined UMass/MassGIS Protected and Recreational Open Space Data
**UMass/MassGIS Land Use Data and Refined Protected and Recreational Open Space Data

7. TRULY PROTECTED WILDLIFE HABITAT

Amount of Truly Protected Wildlife Habitat

To advance our understanding of the conservation of valuable biological resources in the Commonwealth, we refined the MassGIS protected and recreational open space data and calculated that, as of 1997, 890,701 acres (17.2% of the Commonwealth) was truly protected wildlife habitat – viable habitats and ecosystems afforded long-term protection (Figure 7). The difference between truly protected wildlife habitat and protected and recreational open space – 612,907 acres or 11.8% of Massachusetts – represents open space that the Commonwealth considers protected or recreational that is, from the perspective of the Massachusetts Audubon Society, either not truly and permanently protected or not of high ecological quality.

Long-term protection of 17.2% (just over one-sixth) of the Commonwealth as predominantly undisturbed native habitat is a good start for the third most densely populated state in the nation. Connecticut and Rhode Island, neighboring states with similarly dense development and similar demographics, have protected 15% and 15.3%, respectively, of their total land area to date.

But protection of 17.2% of the Commonwealth is not adequate. In that protected acreage, there is not sufficient diversity or robustness in the patterns and quantities of land protected to ensure the long-term viability of the nature of Massachusetts.

- If we were to protect only this land and no other, as development continued we would lose many of our native community types and their resident species.

- Some protected areas are small and, on their own or unbuffered, would be less than fully functional.

- If protected lands were to be fragmented or damaged by natural or human causes (e.g., hurricanes, disease, drought, or new roadways) many of their functions and species assemblages could be irreparably damaged.

- Much of the currently protected areas are comprised of relatively common habitat types, so many rare or threatened habitat types remain entirely unprotected.

Figure 7. Acres of Truly Protected Wildlife Habitat (TPWH) (1997)

	P&ROS*	Difference	TPWH** acres 1997	TPWH %of MA
Federal Agencies	107,511	-46.1%	57,924	1.1%
State Agencies	548,019	-10.0%	491,945	9.5%
Local Gov'ts	325,478	-42.6%	186,807	3.6%
Private Non Profits	131,555	-4.5%	125,657	2.4%
Private For-Profits	121,468	-76.6%	28,368	0.5%
Chapter 61 Land	269,577	-100.0%	0	0.0%
Total	*1,503,608*	*-40.3%*	*890,701*	*17.2%*

* *From Updated MassGIS Protected and Recreational Open Space (P&ROS) Data*

***From Revisions to the MassGIS Protected and Recreational Open Space (P&ROS) Data*

Distribution of Truly Protected Wildlife Habitat

Truly protected wildlife habitat is scattered all across the Commonwealth. Most of it is in small isolated blocks, raising concern about its long-term viability as robust and functional wildlife habitat. The largest contiguous blocks of truly protected wildlife habitat are in western Massachusetts, north-central Massachusetts, and Cape Cod (seeMap 6).

8. OUR REMAINING CONSERVATION OPPORTUNITIES: UNPROTECTED WILDLIFE HABITAT AND AGRICULTURAL LAND

If we put together all the information presented in the preceding chapters, we begin to see the overall picture of land and land use in Massachusetts (Figure 8).

Developed Land

- Almost one-quarter (23.8%) of the Commonwealth is already developed or significantly altered.
- While the rate of development of new housing units slowed between 1988 and 1992, it has been on the increase in since 1992.
- The rate of land development has been outpacing the rate of increase in new housing units and population.
- As development continues in suburban areas and continues to encroach on exurban areas, habitat fragmentation and the cumulative impacts of development on habitat health increase.

Truly Protected Open Space

- Just over one-sixth (17.3%) of the Commonwealth is truly protected wildlife habitat.
- Between 1988 and 1997, the annual rate of protection of wildlife habitat was high (31,435 acres per year) compared with an annual average rate of development (21,241 acres per year) – a ratio of 1.48 to 1. The rate of land protection relative to the rate of land development is high and should be lauded, encouraged to continue, and carefully directed so that we leave a diversity of healthy ecosystems for future generations.

Other Open and Unprotected Agricultural Land

- 12.7% of Massachusetts is "other open space" and agricultural land that carries limited protection.

Unprotected Open Space

Almost half of the Commonwealth (46.2%, or 2,392,126 acres) is unprotected open space – land that could be converted to other uses; land that is, essentially, "up for grabs."

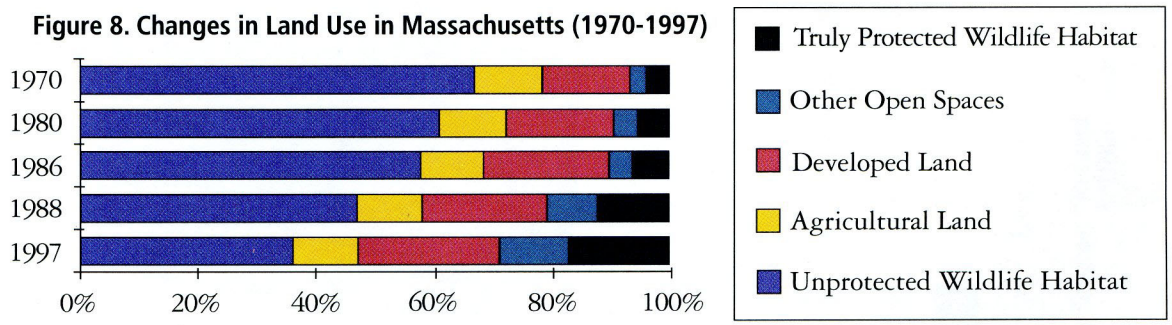
- 36.2% of Massachusetts is predominantly natural viable wildlife habitat, yet unprotected.
- Roughly 10% of Massachusetts is agricultural land that is provided only temporary or no protection from conversion to other uses.

The land that is "up for grabs" – the land on which we can exercise our visions of the future – is diminishing as the amount of developed land, recreational open space, and truly protected wildlife habitat increases.

Map 6 depicts the relationship between truly protected wildlife habitat and unprotected wildlife habitat and agricultural land. Map 6 shows a complex and seemingly random scatter of protected, unprotected, and developed parcels. But closer scrutiny leads us to several conclusions.

- While there are some large tracts of truly protected wildlife habitat in the Commonwealth, the landscape of Massachusetts is dominated by unprotected open space and development.
- Diffuse development creates a highly fragmented landscape, with numerous small parcels of open space.
- Given the recent rates and patterns of development, there will likely be continued and accelerating fragmentation of existing intact tracts of wildlife habitat.
- Opportunities for conservation include targeting municipalities that have a great deal of unprotected open space and the parcels of unprotected open space that abut tracts of truly protected wildlife habitat. Conservation of such parcels could create valuable large tracts of protected habitat and vital wildlife corridors.

Figure 8. Changes in Land Use in Massachusetts (1970-1997)



Sources: Revised MassGIS protected and recreational open space data and land use data.

9. PROTECTING THE NATURE OF MASSACHUSETTS: MAINTAINING OUR COMMON WEALTH

The following is a summary of some of the highest priority goals and actions. The summary is the Masschusetts Audubon Society's contribution to the ongoing "discussion" about land management in Massachusetts and is an expression of our commitment to work with our colleagues on these pressing issues and opportunities.

The framework of goals and recommended actions below reflects the two, often competing, aspects of land management that must be addressed in tandem if we are to achieve a lastingly healthy environment in the Commonwealth: (1) land protection and (2) guidance of development in the most appropriate manner and locations.

As a commonwealth, we must develop a concerted conservation agenda that identifies and prioritizes land protection and development goals and explicitly addresses competing issues such as private property rights *vs.* the public good served by the preservation of open space and the costs and benefits of land protection *vs.* the costs and benefits of development. We must also develop an action plan that identifies legal and equitable means of achieving our goals.

The open space we save now is all we will ever have.

Land Protection: Goals and Actions

We must work together in our regions and across the Commonwealth toward common ends or the devastating patterns of fragmentation will continue. The costs of land protection will only become more expensive as "sprawl zoning" puts ever increasing pressure on open spaces. Investments now will be cheaper and more effective than similar investments in the future.

A Coordinated Land Protection Strategy

Goal: Adequate data and information for developing: (1) a coordinated vision of protected wildlife habitats, open space managed for agriculture and forestry, and recreational open space; (2) land protection goals based on ecological function, representation, interconnectedness, and long-term viability; and (3) a plan of action to ensure achievement of the vision and goals.

- Increase funding for MassGIS staff and resources for planning, collecting, interpreting data, and disseminating GIS information to ensure regular updates of land cover and land use data and better dissemination of the information so that land acquisition and land management can be appropriately tailored to ecological characteristics.

- Provide financial incentives for coordinated data collection, particularly at the municipal level including state support for digitizing municipal assessors' maps so that information can be made available at the parcel scale.

- Complete inventories of all truly protected wildlife habitat to determine which components of biodiversity have been adequately protected and to serve as the basis for improved management plans.

- Complete inventories of all unprotected wildlife habitat to determine what management and protection priorities ought to be developed.

- Prepare a statewide Biodiversity Protection Strategy (with priorities) to address the greatest threats to native biodiversity and guide management practices on protected lands.

State and Local Land Protection Initiatives

Goal: Adequate funding and regulations to foster aggressive and proactive land protection initiatives across the Commonwealth.

- Support local growth management and land use planning initiatives.

- Support the Cellucci Administration's commitment (as cited in the Executive Office of Environmental Affairs' document *The View from Borderland: Preserving the Images and Essence of Our Common Wealth through Land Protection*) to protect an additional 200,000 acres of open space by the year 2010, preserve three acres of open space for every one acre that is developed (more than twice the ratio that exists today), protect working landscapes, and protect the habitat of rare and endangered species.

- Encourage greater cooperation among state agencies and not-for-profit organizations in an effort to maximize efficiency of land protection efforts.

- Support the impending pieces of state and federal legislation that will address many of the issues raised in this report.

  - Support renewal of the Open Space Bond Bill along with: (1) revision of its priorities to address the needs identified in this report and (2) new provisions for closer working relationships with the not-for-profit conservation community to ensure maximal efficiency of fund disbursement.

  - Support full state-side funding for the federal Land and Water Conservation Fund.

  - Support amendments to Article 97 of the amendments to the State Constitution to ensure no-net-loss of conservation land when heretofore conservation lands are converted for other uses. Advocate for the inclusion of more protective language, similar to language in

New York's constitution, that would assist in keeping these lands "forever wild."

- Support passage of the Community Preservation Act that will allow every municipality in the Commonwealth to develop, through one of many possible mechanisms, a fund for land conservation and support the establishment of land banks at the local level.

- Support enactment of the Massachusetts Land Conservation Incentives Act, modeled after successful tax credit programs in North Carolina and Virginia, which would provide landowners with a state income tax credit for a portion of the value of gifts of conservation land or conservation restrictions to public agencies or public conservation charities.

- Support initiatives designed to encourage land acquisition in Priority Habitats as outlined in the The Nature Conservancy and Massachusetts Natural Heritage and Endangered Species Program's recent report *Our Irreplaceable Heritage* and the ecoregions identified as most threatened in this report: Cape Cod and the Islands, the Southern New England Coastal Plain and Hills, and the Bristol Lowland. Such initiatives could include transfer of development rights and a tax incentive program similar to the "Chapter 61 tax abatement program" for land owners who voluntarily manage their land for biological conservation.

Guiding Development: Goals and Actions

More development is inevitable. We must encourage appropriate development and help direct it to the most appropriate areas, fostering widespread economic well-being while protecting sensitive natural resources.

State Planning

Goal: (1) A coordinated vision of development in Massachusetts; (2) a coordinated plan for guiding redevelopment and new development; and (3) regulations, incentives, and disincentives to promote that vision and plan.

- Encourage amendments to the state zoning enabling legislation that encourage new creative patterns of development (such as cluster and conservation subdivision design) and so provide greater habitat protection and more efficient developments.

- Create financial and permitting incentives to encourage private and state or federal projects that: (1) redevelop urban or suburban areas or utilize existing infrastructure, (2) create new developments of an ecologically sensitive variety, or (3) improve or expand public transportation. Create regulatory and fiscal disincentives for development in areas that are ecologically sensitive, require new infrastructure, or would cause secondary growth problems.

- Provide greater legislative, regulatory, and financial support for interagency and private-sector implementation of "Executive Order 385: Planning for Growth" and development in existing urban areas and brownfields.

- Support the Sustainable Development Act, recently introduced into the state legislature. It would provide disincentives for low-density development and sprawl and encourage planning for more sustainable development at the state, regional, and local levels.

- Initiate new state legislation to address priority issues of biological conservation such as: (1) reducing further habitat fragmentation, (2) protecting rare species and their habitats, (3) protecting sensitive upland habitats, (4) protecting terrestrial and aquatic buffers, (5) maintaining natural water flow regimes, (6) minimizing the cumulative effects of small projects, and (7) reducing habitat destruction by exotic and invasive species.

- Increase funding for additional environmental personnel to increase follow-through in review and enforcement of existing environmental regulations.

Local Planning

Goal: An up-to-date growth management plan (that is enforceable and being implemented) for every municipality in the Commonwealth .

- Provide greater state financial and technical support to local planning boards with municipal and regional growth management efforts (open space planning, master planning, zoning, and subdivision control) and implementation.

- Encourage: (1) redevelopment in urban or suburban areas with existing infrastructure rather than new development in heretofore open spaces or ecologically sensitive areas, (2) development that is site appropriate and ecologically sensitive, and (3) "New England Village" development that is centered on pedestrian travel and public transportation rather than reliant on extensive automobile use.

Citizen Understanding and Involvement: Goals and Actions

Without broad-based public understanding and support, none of the goals and actions described will be possible. We must work to educate the citizens of Massachusetts and encourage their participation in the development of visions, the identification of priorities, and the implementation of action plans.

Goal: Public education campaigns that promote awareness about open space conservation and "smart growth" and encourage citizen involvement in decision-making processes.

- Implement a public education campaign designed to increase general knowledge of ecology and public appreciation of the Commonwealth's natural resource base.

- Develop more comprehensive standards for primary and secondary school curricula that address the values of natural resources and appropriate means for managing them.

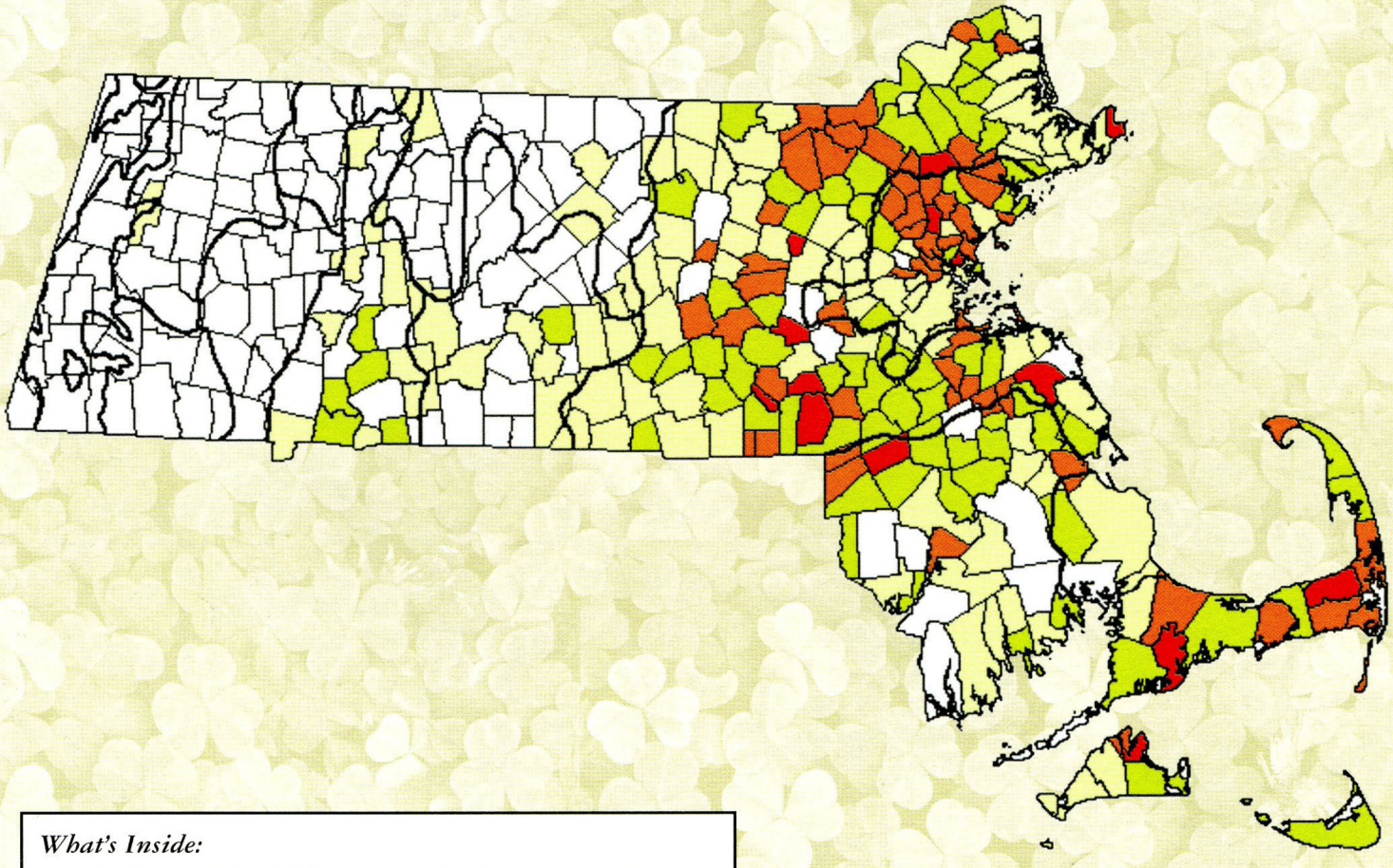
Conclusion

We hope that this report – by providing up-to-date information and analyses of development, land protection, and biological health, and by outlining some suggested goals and actions – will help set the stage for focused dialogue, debate, and action.

As a commonwealth, we must decide what legacy we will leave for future generations. The heritage of Massachusetts that we cherish – livable cities, small towns, and working farms; mountains and streams; forests, rivers, and meadows; rocky shores and sandy coasts – is derived from the richness of our landscape, underpins our rural tradition, and contributes to our current quality of life. We have the responsibility of nurturing that heritage, or we risk losing it, forever.

We must work within our communities all across the Commonwealth to ensure that our stewardship responsibilities support our vision of a vibrant and healthy common wealth now and for years to come.

Massachusetts Audubon Society



What's Inside:

- *An overview of the issues of open space conservation and land development.*
- *Up-to-date information on the status and trends of developed land, truly protected wildlife habitat, unprotected wildlife habitat and agricultural land.*
- *Biological implications of the observed patterns of development.*
- *Goals and actions for land protection and development in Massachusetts.*

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