

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Environmental Stewardship

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	15%		32%	
111	Conservation and Efficient Use of Water	0%		1%	
112	Watershed Protection and Management	5%		6%	
123	Management and Sustainability of Forest Resources	19%		0%	
124	Urban Forestry	0%		2%	
131	Alternative Uses of Land	2%		0%	
133	Pollution Prevention and Mitigation	2%		4%	
135	Aquatic and Terrestrial Wildlife	5%		14%	
136	Conservation of Biological Diversity	10%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		31%	
212	Pathogens and Nematodes Affecting Plants	10%		0%	
216	Integrated Pest Management Systems	2%		0%	
307	Animal Management Systems	0%		2%	
605	Natural Resource and Environmental Economics	0%		4%	
608	Community Resource Planning and Development	15%		0%	
609	Economic Theory and Methods	0%		4%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890

Plan	10.6	0.0	2.6	0.0
Actual Paid Professional	14.0	0.0	2.4	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
117292	0	64533	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
556805	0	295494	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1200204	0	822798	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Analytic Tools and Techniques
- Basic and Applied Research
- Diagnostic Services
- Displays and Exhibits
- Facilitated Group Meetings and Conferences
- Printed Materials
- Published Article (Academic)
- Published Article (news, professional, trade)
- Research, Grant, or Policy Report
- Single day workshop, presentation or event
- Survey or needs assessment
- Websites or Other Computer-based Delivery

Workshop series or educational course

2. Brief description of the target audience

- Natural Resource Agencies
- Regional Planning Authorities
- Development and Planning Agencies
- Municipalities
- Conservation Organizations
- Landowners and Land Managers
- Business/Industry

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	13	26	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Analytic Tools and Techniques

Year	Actual
2012	6

Output #2

Output Measure

- Diagnostic Services

Year	Actual
2012	20000

Output #3

Output Measure

- Facilitated Group Meetings and Conferences

Year	Actual
2012	11

Output #4

Output Measure

- Printed Materials

Year	Actual
2012	7

Output #5

Output Measure

- Published Articles (News, Professional and Trade)
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Single day workshop, presentation or event

Year	Actual
2012	118

Output #7

Output Measure

- Survey or needs assessment

Year	Actual
2012	4

Output #8

Output Measure

- Websites or other computer-based delivery

Year	Actual
2012	31

Output #9

Output Measure

- Workshop series or educational course

Year	Actual
2012	4

Output #10

Output Measure

- Applied Research Projects

Year	Actual
2012	4

Output #11

Output Measure

- Displays and Exhibits

Year	Actual
2012	1

Output #12

Output Measure

- Published Articles (Academic)
Not reporting on this Output for this Annual Report

Output #13

Output Measure

- Research, Grant or Policy Report

Year	Actual
2012	4

Output #14

Output Measure

- Basic Research Projects

Year	Actual
2012	19

Output #15

Output Measure

- Published Article, Book or Chapter (Academic)

Year	Actual
2012	13

Output #16

Output Measure

- Curricula/Instructional materials

Year	Actual
2012	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Accurate research to promote Water Quality made available and shared
2	Accurate Research on understanding and assessing the functions of open space in the landscape
3	Participants acquire knowledge and skill to promote, implement or participate in practices or programs that protect natural resources and ecosystems
4	Participants promote, implement or participate in practices or programs that protect natural resources and ecosystems
5	Participants acquire the knowledge and skills to implement pest management practices that minimize the impact on human health and the environment
6	Participants implement pest management practices that minimize the impact on human health and the environment
7	Participants acquire the knowledge and skills to implement sustainable land use and development practices
8	Participants implement sustainable land use and development practices
9	Accurate research on biological control of arthropod pests and weeds done and shared
10	Accurate research on emerging pests of annual bluegrass on golf courses

Outcome #1

1. Outcome Measures

Accurate research to promote Water Quality made available and shared

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Accurate Research on understanding and assessing the functions of open space in the landscape

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry

Outcome #3

1. Outcome Measures

Participants acquire knowledge and skill to promote, implement or participate in practices or programs that protect natural resources and ecosystems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	15395

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Vigorously growing plants require adequate, but not excessive, essential nutrients. These Nutrients must be provided in the right form, at the right time, and at the right place. Management of all nutrients sources within the production system is fundamental to both economic viability and environmental quality. Mismanagement of plant nutrients can lead to economic losses and environmental degradation of soil, air, and water quality.

What has been done

In 2012, University of Massachusetts diagnostic laboratories provided analytical results, interpretation, and recommendations for over 20,000 soil samples. They also tested over 250 compost samples and 1,500 plant tissue samples. Lab staff provided soil fertility and nutrient management guidance to approximately 1,500 landscapers, extension personnel, crop consultants, farmers, and gardeners though telephone, e-mail, and in person consultations.

Results

Through the diagnostic reports that were generated by our laboratory scientists, clients and other participants acquired knowledge and skills for implementing more environmentally sound, and economically viable practices for soil fertility and nutrient management. Note: this narrative and those directly above describe the experiences of only a proportion of the total numbers reported for this outcome measure.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management

123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
608	Community Resource Planning and Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #4

1. Outcome Measures

Participants promote, implement or participate in practices or programs that protect natural resources and ecosystems

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	304

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Massachusetts is the third most densely populated state in the nation. The rate of land consumption for residential development is steadily increasing far out of proportion to its population growth. Haphazard growth has impacted water resources, natural resource-based enterprises, open space, wildlife habitat, and community character. Our initiatives focus on habitat loss and fragmentation, establishing priorities for ecological restoration and mitigating development impacts on wildlife and ecosystems.

What has been done

Research was conducted on tunnel designs to facilitate safe-passage and spawning of native turtles. We conducted the Massachusetts Calling Amphibian Survey. The Massachusetts Herpetological Atlas web site was developed and launched providing natural history and geographic distribution information. We continue to maintain the Massachusetts Snakes web site. Twenty-two educational programs on wildlife conservation topics were conducted, reaching 540 participants.

Results

Participants adopted practices that minimize the impact of development projects on natural resources and ecosystems. In addition, a number of groups are using methods we developed to assess bridges and culverts and set priorities for restoring river and stream continuity in targeted watersheds in five of the six New England states. In the past year, 874 additional road-stream crossings were surveyed and entered into the Crossings Database; the Database now contains over 5,500 road-stream crossing assessments.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
608	Community Resource Planning and Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #5

1. Outcome Measures

Participants acquire the knowledge and skills to implement pest management practices that minimize the impact on human health and the environment

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Participants implement pest management practices that minimize the impact on human health and the environment

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Participants acquire the knowledge and skills to implement sustainable land use and development practices

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Participants implement sustainable land use and development practices

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Accurate research on biological control of arthropod pests and weeds done and shared

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Accurate research on emerging pests of annual bluegrass on golf courses

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

For programs that focus on skills training for key actors involved in implementing projects and programs, many participants adopted practices that minimize the impact of development on natural resources and ecosystems. Several initiatives are focused on providing analytic and decision making tools to a variety of agencies and other individuals who operated in a policy -making as well as an implementation context. An example of evaluation results for these efforts are the various groups who have adopted methods we have devised to assess and implement conservation priorities.

Key Items of Evaluation