

Natural Resources & Environment

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V(A). Planned Program (Summary)

1. Name of the Planned Program

Natural Resources & Environment

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			4%	
112	Watershed Protection and Management			6%	
123	Management and Sustainability of Forest Resources			18%	
132	Weather and Climate			1%	
133	Pollution Prevention and Mitigation			1%	
135	Aquatic and Terrestrial Wildlife			20%	
136	Conservation of Biological Diversity			26%	
201	Plant Genome, Genetics, and Genetic Mechanisms			1%	
213	Weeds Affecting Plants			1%	
304	Animal Genome			1%	
313	Internal Parasites in Animals			1%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals			4%	
315	Animal Welfare/Well-Being and Protection			1%	
403	Waste Disposal, Recycling, and Reuse			2%	
602	Business Management, Finance, and Taxation			1%	
605	Natural Resource and Environmental Economics			5%	
608	Community Resource Planning and Development			3%	
609	Economic Theory and Methods			2%	
610	Domestic Policy Analysis			1%	
803	Sociological and Technological Change Affecting Individuals, Families and Communities			1%	
Total				100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	6.0	0.0
Actual	0.0	0.0	7.1	0.0

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

Extension		Research	
Smith-Lever 3b & 3c 0	1890 Extension 0	Hatch 841378	Evans-Allen 0
1862 Matching 0	1890 Matching 0	1862 Matching 841378	1890 Matching 0
1862 All Other 0	1890 All Other 0	1862 All Other 455287	1890 All Other 0

V(D). Planned Program (Activity)

1. Brief description of the Activity

In 2007, the NH-AES had nineteen projects investigating diverse issues in Natural Resources and the Environment. They ranged from biodiversity assessments, to the development of species identification keys, to remote sensing methodology for forest composition, to the detection of environmental hazards to human health, to assessments of the impact of invasive species. Project 1 assessed the increased accuracy of using higher resolution images to create vegetation maps of New England forests. The primary activities associated with Project 2 included field data collection, data analysis, model building to measure, manage and project forest structure in New Hampshire. In Project 3, a field survey of floristic diversity was completed in forests of islands in Lake Winnepesaukee, NH. Project 4 completed field studies to assess the impact of glossy buckthorn, an invasive shrub that is has spread through New England forests. Land management strategies and recommendations were developed. As part of a systematic evaluation of land use on water quality in southern New Hampshire, Project 5 used field studies in early successional habitats to determine site characteristics that affect vulnerability to invasion by alien shrubs. Project 6 completed field and laboratory studies to assess the environmental impacts of agriculture in a fragmented landscape. Project 7 completed field and herbarium studies to assess biodiversity of aquatic plants in the northeastern US. Project 8 sampled the insect fauna of 46 streams and rivers in New Hampshire and developed printed and web based manuals for species identification. Project 9 conducted field sampling and lab analyses to study microcystins in NH lakes and examine localized impacts of blooms and implications for human health. Project 10 conducted field and laboratory studies to examine the effects of chronic warming and nitrogen deposition on the microbial community in forest soils. Project 11 used mesocosm and field studies of vernal pool amphibians to develop integrated wetland and upland management recommendations. Project 12 used field sampling and laboratory genetic analyses to examine the effect of forest fragmentation on dispersal of vernal pool-breeding amphibians. Project 13 engaged and communicated with the public and stakeholders regarding natural and agricultural resource management policies. Project 14 assessed, through surveys, the costs and benefits of natural resource policies affecting public and private lands. Through surveys, Project 15 examined economic considerations in municipal solid waste disposal. Project 16 using new field collections and historic herbarium specimens and records, looked at the alterations of biodiversity patterns as a result of invasive seaweed species in the Gulf of Maine. Project 17 using field collections and DNA barcoding has cataloged 116 marine invertebrates from 8 phyla. Project 18 through field studies and genetic analyses has assessed the influence of trematode parasites on the ecology of nearshore marine communities. Project 19, using electronic tracking and data analysis has studied the home range and habitat preference of the American lobster.

2. Brief description of the target audience

For all of the research projects, the target audiences include other scientists in the respective disciplines and students in university classrooms. For many of the projects related to natural resource management and policy, the target audience also includes state and federal agencies, policy makers, elected officials, conservation groups, town planners and the general public. The target audience for Projects 1, 2, 4 and 5 also includes forest ecologists, Extension personnel, professional foresters and landowners. Project 3 results are of interest to the town of Guilford NH and conservation groups. Project 6 is of particular interest to municipal and state water resource managers as well as the NH Department of Agriculture. Project 13 target audiences also include a number of regional watershed associations and commissions, plus survey practitioners and methodologists. Specific target audience for Project 14 include Cape Wind, Inc., the Alliance to Protect Nantucket Sound, residents of Cape Cod, Martha's Vineyard, Nantucket and other regions where windfarms have been proposed. Project 15 is of interest to construction and demolition waste producers and processors. Projects 16 and 17 are of interest to invasion biologist, fisheries, aquaculture and coastal zone managers. The target audience for Project 18 also includes lobsterman.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	6096	4400	220	4980
2007	0	0	0	0

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

Patent Applications Submitted

Year Target

Plan: 0

2007: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	0	17	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

Peer-Reviewed Publications

Year	Target	Actual
2007	34	17

Output #2

Output Measure

Chapters in Books

Year	Target	Actual
2007	9	4

Output #3

Output Measure

Author of book or editor

Year	Target	Actual
2007	3	4

Output #4

Output Measure

Non-peer reviewed publications including published abstracts

Year	Target	Actual
2007	39	28

V(G). State Defined Outcomes

O No.	Outcome Name
1	Peer Reviewed Publications
2	Number of Graduate Students trained
3	Number of Undergraduate students trained and/or performing investigations
4	Number of presentations/posters at regional, national or international conferences or workshops
5	Number of Grant submissions
6	Number of agencies better informed about amphibian habitat needs
7	Use of more precise biological data in making water quality statements
8	Use of biological data by aquatic entomologists
9	Number in audience of meeting presentations
10	Number of resources managers addressed
11	Number of workshops held
12	Number of websites developed
13	Public service announcement
14	Number of trade publications
15	Lake Management plans that consider biotoxin problems
16	Development of NH state drinking water program with biotoxin control
17	Foresters learning about methods to reduce spread of invasive species
18	Identification of invasive species
19	CZM manager, environmental resource groups/individuals
20	Dissemination of results to land ure planners
21	websurveys
22	Questionnaire
23	Enhance knowledge of lobsters, improve management; educate community

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Other (See Below)

Brief Explanation

Project 1 - Inadequacy of existing data for forest vegetation mapping led to the need to develop a new database with higher spacial resolution in order to complete the project goals.

Project 11 - Lower than expected survival of amphibians in field enclosures led to development of an alternative design.

Project 19 - The original plan was to track lobster movement year round, however the lobsters unexpectedly moved far off-shore and out of the range of tracking antennae and out of the reach of SCUBA surveys.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

Before-After (before and after program)

During (during program)

Time series (multiple points before and after program)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}