Generating News You Can Use: Building Scenarios of Future Land Cover/Land Use in New Hampshire

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NH EPSCoR
Interactions Among Climate, Land Use, Ecosystem Services, and Society
Research Question: How do changing climate and human land use affect the ability of New Hampshire landscapes to provide essential aquatic and terrestrial ecosystem services to the state and region across multiple scales?

Data and Information
- Headwater intensive sensor network
- Distributed sensor networks (LoVoTECS, CoCoRAHS)
- Airborne hyperspectral
- NH resident perceptions via surveys & interviews
- Evaluation
- Additional data & info leveraged sites met, discharge, census, etc.
- Satellite

Models and Analysis
- FRAMES, PnET, WRF
- Land use/demographics
- Ecosystem valuation
- Stakeholder engagement
- NH resident perceptions
- Land use and climate scenarios
Decision Capacity Goal

To strengthen management and policy decision capacity in New Hampshire regarding ecosystems and their services to, and interactions with, society
Climate Scenarios

- Global Climate Scenarios from IPCC AR4; Downscaled to stations and grid for entire Northeast
- Use model output to drive models (PnET, FrAMES, WRF)
- Use AR5 Representative Concentration Pathways when available
National Climate Assessment
Integrated Climate and Land Use Scenarios (ICLUS)

http://scenarios.globalchange.gov/content/scenarios
Lamprey River Watershed
Build Out Scenario

http://100yearfloods.org
What **would you like** and/or **what do you expect** New Hampshire to look like in the future, 2-4 decades from now?

Please include comments on:

- Water resources
- Dispersed verses concentrated development
- Type of development
  (e.g., pervious verses impervious; planned vs. unplanned)
- Percent land in conservation
Ecosystem Services Studied in this Project

Provisioning Services
• Water supply
• Wood (timber, fiber, fuel

Regulating Services
• Climate (carbon storage, albedo)
• Water regulation
• Water purification and waste treatment

Cultural Services
• Recreation

Supporting Services
• Soil formation
• Photosynthesis
• Nutrient cycling

www.epscor.unh.edu
Narratives for NH Land Cover/Land Use Scenarios
Organized along two major axes:

- Dispersed
- Concentrated

Vertical axis: spatial variable also controlled by:
  - housing classes (urban, suburban, exurban, rural, non-residential developed)
  - population and housing density within each housing class
  - “undeveloped” land cover area (forests, agriculture, wetlands, etc)

Horizontal axis:
Type of development
Interactions Among Climate, Land Use, Ecosystem Services, and Society
Four Primary Goals

1. To better understand complex interactions among climate, land use, ecosystem function, and society (Ecosystem Function Goal)

1. To strengthen management and policy decision capacity in New Hampshire regarding ecosystems and their services to, and interactions with, society (Decision Capacity Goal)

1. To build capacity for competitive research in interdisciplinary ecosystem-related natural and social sciences (Educational Infrastructure Goal)

1. To strengthen and diversify the STEM workforce pipeline in NH (STEM Pipeline Goal)