2012\_ScienceNeedsPortfolio\_(8)\_Human-Dimensions\_Restructured.docx

**Thematic Area: Human Dimensions (Environmental Benefits, Ecosystem Services, Social Expectations)**

**MISSION:** [Suggested by LCC Staff: Establish a new paradigm where ecosystem services become an important and accepted part of the equation when land management and other resource allocation decisions are made that impact natural resource conservation.]

*[science objective]* [Conduct research to gain a better] understanding, valuation and management of ecosystem services (in order)

*[management objective]* to [incorporate ecosystem services considerations into all important resource management decisions in order] to meet public and local resident needs, preferences and conservation goals [with the best information available].

A. Heading: Regional Level

**1. PROGRAM: Landscape-level Disturbances & System-level Response**

[*Examines major disturbances* (*includes climate change) as well as the impacts associated with these, regardless of ecological organization (e.g., community, species, population)*]

(Grouping) – *Foundational/Stock-taking Assessment/Classification System*

(Grouping) – *Climate Change Science and abiotic or mechanical aspects*

(Grouping) – *Climate Change Impacts on Ecological Function and Response to Changes*

* **Project Description:** [Continually measure and assess how] climate change is impacting both biotic and abiotic resources of the Appalachians, [and] ecological functions.
* **Project Description:** Examine how predators sustainability/population status will be impacted by climate change and potential for human-wildlife conflict/interactions increase.

(Grouping) – *Energy and Related Infrastructure and Roads*

(Grouping) – *Urbanization, Population Growth and (Domestic or Industrial) Water Demands*

* **Project Description:** [Model] land use practices to identify vulnerable ecosystem services.
* **Project Description:** [Describe water] quality and supply for the LCC's freshwater resources, the human uses of those resources, and current or future conflicts between human and fish and wildlife needs for water.
* **Project Description:** Model use and inter-dependency of water supply, and limiting factors contributing to potential future shortages to meet human and ecological needs.
* **Project Description:** [Determine protective measures for] maintaining drinking water in the Southeast.

(Grouping) – *Agricultural Expansion and (Ag-related) Water Demands*

(Grouping) – *Effects of Air Pollution*

* **Project Description:** Establish long-term monitoring of air quality parameters across Appalachian LCC due to acid deposition, mercury, sulfur, ozone.

(Grouping) – *Cumulative Impacts*

* **Project Description:** Model cumulative impacts [of lost ecosystem services].

B. Heading: Human Dimensions

**2. PROGRAM: Social Component**

(Grouping) – *Value/Ecosystem Services and Conflict*

* **Project Description:** [Determine] regional public attitudes, values, and opinions related to wildlife and natural resource conservation across the Appalachian LCC.
* **Project Description:** [Determine] methods to communicate complex technical issues to multiple stakeholders including decision-makers, especially information about ecosystem services.
* **Project Description:** Conduct opinion surveys to determine the public’s preferences and priorities in regards to management of natural resources and ecosystem services.
* **Project Description:** Economic analyses to demonstrate the opportunity cost of losing our natural resources [and ecosystem services].
* **Project Description:** [Conduct an economic analysis to] examine land use stressors [and the community] benefits of stream [and wetlands] restoration.
* **Project Description:** Economic valuation of goods and services provided by native bivalves.

(Grouping) – *Recreational, Commercial, Subsistence Use*

* **Project Description:** Evaluate the inter-relatedness of other ecosystem services and recreation: Focus on brook trout and freshwater mussels.
	+ **(related) Project Description:** Evaluate [the implications of] resource management [decisions/policies] on socioeconomic values: especially the relationship between brook trout and socioeconomic benefits.
* **Project Description:** Conduct [opinion] survey to better understand the cultural and overall social value of outdoor recreational activities in the Appalachian Mountains.

C. Heading: System Level

**3. PROGRAM: Ecological Functions of Managed/Human-Altered Systems**

(Grouping) – *Foundational/Stock-taking Assessment/Classification System*

* **Project Description:** [Map] land use practices to identify vulnerable ecosystem services.
* **Project Description:** Measure and track degradation of Soundscapes.
* **Project Description:** Measure and track degradation of Viewsheds.

(Grouping) – *Barriers (flows and species movement)*

(Grouping) – *Mitigating Ag and Forestry Impacts*

(Grouping) – *Protection & Restoration Approaches*

**4. PROGRAM: Ecological Functions of Natural/Intact Systems**

(Grouping) – *Foundational/Stock-taking Assessment/Classification System*

* **Project Description:** Map major ecosystem services provided in the [Appalachians].
	+ **(related) Project Description:** Model individual [ecosystem] services at landscape scales.
* **Project Description:** Map [[the significant]] beneficiaries of ecosystem services.
	+ **(related) Project Description:** Establish metrics for measuring, reporting and verifying environmental performance of ecosystem services.
	+ **(related) Project Description:** Model cumulative [benefits] of ecosystem services.

(Grouping) – *Effects of Fire on Ecosystems*

(Grouping) – *Relationship/ Ecological flows and Nutrient dynamics*

* **Project Description:** [Model] nutrient dynamics as land use alters systems.

(Grouping) – *Ecosystem Integrity / Resiliency*

D. Heading: Community Level

**5. PROGRAM: Community level (description and function or basic community ecology)**

(Grouping) – *Basic Ecology/Ecological Relationships*

E. Heading: Species/Population Level

**6. PROGRAM: Basic Biological Understanding (Species-level)**

(Grouping) *– Basic Biological Information*

* **Project Description:** [Conduct studies that lead to] broadening our understanding of the biology of organisms.

(Grouping) – At-Risk Species/Populations & Endemics

(Grouping) – *Contaminants/Pollutants Effects on Species/Populations*

(Grouping) – *Invasive organisms effect on species and populations*

* **Project Description:** [Establish better tracking and] coordination on the progression of invasive species into Appalachia (e.g. coordination through Aquatic Nuisance Panels).

(Grouping) – *Effects of Disease (on a species or taxonomic group)*

F. Heading: “How (the LCC) Should Do Business”

* Work with partners and stakeholders to identify existing foundational resources that describe the quality and supply of the LCC's freshwater resources, the human uses of those resources, and current or future conflicts between human and fish and wildlife needs for water, so that partners may identify collaborative management opportunities and better anticipate future conflicts.
* [Conservation experts believed that the economic benefits of the] habitat restoration industry, and of emerging opportunities such as carbon sequestration and [other pollution credits] are not always well documented or taken into consideration when resource management decisions are made.

**Notes:** version posted: 2012-12-18