

Science Portfolio Thematic Goals and Program Descriptions

Thematic-Area (2) Aquatic	GOAL: Be able to quantitatively describe current and future hydrologic and structural habitat conditions and aquatic population trends, and set conservation goals for both, in order <u>to maintain</u> native habitats and endemic aquatic species in their current locations <u>or support these as they migrate with land use and climate changes</u> in the future.
	<p>Description: (Foundational Resources) #s _0 - _3 Work with partners to identify existing foundational resources and develop a centralized repository to make those resources universally available to partners and stakeholders.</p> <p><u>Foundational Resources:</u></p> <ul style="list-style-type: none"> 2.0. Pre-Existing: Tools, Portals, Datasets, Data layers, Resources 2.1. Database / Information Management 2.2. Baseline Data / GIS Layers & Standardization of Data Collection 2.3. GeoSpatial Status Assessment
	<p>Description: Develop and compile data to help partners and stakeholders better understand threats to surface and subsurface water quality and quantity within the App LCC and provide a forum to help to help partners collaborate on ways to address regional water issues and multiple-use conflicts.</p> <p>Program Level:</p> <ul style="list-style-type: none"> 2.4. Water Quality & Quantity/Availability
	<p>Description: Develop and compile data to help partners and stakeholders better understand the types of aquatic habitats that occur within the LCC, the distribution and condition of those habitats, issues threatening the quality of those habitats, the relative importance of those habitats for species conservation within each of the states, and techniques that can be used to restore those habitats after they have been degraded.</p> <p>Program Level:</p> <ul style="list-style-type: none"> 2.5. Habitat
	<p>Description: [Partial] Develop and compile data from various sources regarding the most effective methods of propagation and reintroduction of aquatic species within the LCC.</p> <p>Program Level:</p> <ul style="list-style-type: none"> 2.6. T&E Species - Recovery + Captive Propagation/Reintroduction
	<p>Description: Develop population models, research modeling techniques, and population goals for the conservation of priority aquatic species.</p> <p>Program Level:</p> <ul style="list-style-type: none"> 2.7. (Fisheries) Population Models / Goals

	<p>Description:</p> <p>Program Level: 2.7. Landscape-level Species-Habitat (Modeling / Sp-Habitat Relationships / Assessment)</p>
	<p>Description: [Partial] Develop and compile climate change models for the LCC that can: help managers predict likely impacts to the region's water resources, aquatic species, and human systems that rely upon those resources; facilitate the development of more robust regional mitigation and management plans; and help managers provide meaningful input to future revisions of state and Federal water regulations.</p> <p>Program Level: 2.8. Species/System Response - Major Drivers (CC, Energy/Development, Urban, etc.)</p>
	<p>Description: Develop and compile planning tools to support the recovery of endangered aquatic species.</p> <p>Program Level: 2.9. Landscape-level (Integrated) Planning Tools (Recovery / T&E / SGCN)</p>

<p>Thematic-Area (3) Terrestrial - Subterranean/Cave/Karst</p>	<p>GOAL: Work to inventory significant regional subterranean/cave/karst habitats, evaluate the condition and importance of those habitats, and identify regional threats impacting these so that LCC partners and stakeholders can develop and implement cohesive regional management strategies <u>to protect and manage</u> those resources across jurisdictions.</p>
	<p>Description: (Foundational Resources) #s _0 - _3 Work with partners to identify existing foundational resources and develop a centralized repository to make those resources universally available to partners and stakeholders.</p> <p><u>Foundational Resources:</u></p> <ul style="list-style-type: none"> 3.0. Pre-Existing: Tools, Portals, Datasets, Data layers, Resources 3.1. Database / Information Management 3.2. Baseline Data / GIS Layers & Standardization of Data Collection 3.3. GeoSpatial Status Assessment
	<p>Description: Develop and compile data regarding the status and distribution of subterranean resources, threats impacting associated species, and work with partners to develop management strategies needed to address habitat threats and assist in the recovery of threatened and endangered species.</p> <p>Program Level: 3.4. T&E Species - Recovery</p>
	<p>Description: Develop and compile data regarding the status and distribution of subterranean resources, threats impacting priority cave species or other resources, and work with partners to develop management strategies needed</p>

	<p>to address those threats and assist in the recovery of those species.</p> <p>Program Level: 3.5. Other Priority Cave Species</p>
	<p>Description:</p> <p>Program Level: 3.6.</p>
	<p>Description:</p> <p>Program Level: 3.7. Landscape-level Species-Habitat (Modeling / Sp-Habitat Relationships / Assessment)</p>
	<p>Description:</p> <p>Program Level: 3.8. Species/System Response - Major Drivers (CC, Energy/Development, Urban, etc.)</p>
	<p>Description:</p> <p>Program Level: 3.9. Landscape-level (Integrated) Planning Tools (Recovery / T&E / SGCN)</p>

<p>Thematic-Area (4) Terrestrial - Wetlands</p>	<p>GOAL: Work to inventory significant regional wetland habitats, evaluate the condition and importance of these habitats, and identify regional threats impacting those resources so that LCC partners and stakeholders can develop and implement cohesive regional management strategies <u>to protect and manage wetlands across jurisdictions.</u></p>
	<p>Description: (Foundational Resources) #s _0 - _3 Work with partners to identify existing foundational resources and develop a centralized repository to make those resources universally available to partners and stakeholders.</p> <p><u>Foundational Resources:</u></p> <ul style="list-style-type: none"> 4.0. Pre-Existing: Tools, Portals, Datasets, Data layers, Resources 4.1. Database / Information Management 4.2. Baseline Data / GIS Layers & Standardization of Data Collection 4.3. GeoSpatial Status Assessment
	<p>Description:</p> <p>Program Level: 4.4. Wetland Community, hydrology (incl. contaminants)</p>
	<p>Description:</p> <p>Program Level: 4.5.</p>

	<p>Description:</p> <p>Program Level: 4.6.</p>
	<p>Description:</p> <p>Program Level: 4.7. Landscape-level Species-Habitat (Modeling / Sp-Habitat Relationships / Assessment)</p>
	<p>Description: [Partial] Develop and compile climate change models for the LCC that can: help managers predict likely impacts to the region's wetland resources, wetland species, and human systems that rely upon those resources; facilitate the development of more robust regional mitigation and management plans for wetland resources; and help managers provide meaningful input to future revisions of state and Federal wetland regulations.</p> <p>Program Level: 4.8. Species/System Response - Major Drivers (CC, Energy/Development, Urban, etc.)</p>
	<p>Description:</p> <p>Program Level: 4.9. Landscape-level (Integrated) Planning Tools (Recovery / T&E / SGCN)</p>

<p>Thematic-Area (5) Terrestrial - Forests</p>	<p>GOAL: Work to inventory significant regional forest habitats, evaluate the condition and importance of these habitats, and identify regional threats impacting those resources so that LCC partners and stakeholders can develop and implement cohesive regional management strategies <u>to protect and manage</u> forest resources across jurisdictions.</p>
	<p>Description: (Foundational Resources) #s _0 - _3 Work with partners to identify existing foundational resources and develop a centralized repository to make those resources universally available to partners and stakeholders.</p> <p><u>Foundational Resources:</u></p> <ul style="list-style-type: none"> 5.0. Pre-Existing: Tools, Portals, Datasets, Data layers, Resources 5.1. Database / Information Management 5.2. Baseline Data / GIS Layers & Standardization of Data Collection 5.3. GeoSpatial Status Assessment
	<p>Description: Develop and compile data regarding the utility of prescribed burning as a management tool for a wide assortment of terrestrial habitats, and implement research to consider how fire might facilitate habitat conservation under changing climatic conditions.</p> <p>Program Level: 5.4. Forest Management (incl. Prescribed Burning)</p>

	<p>Description: Develop and compile information about the distribution and status of existing high elevation forests and work with partners to develop management strategies that will either conserve existing forest types under changing climatic conditions or will facilitate successional transition to other forest types, if appropriate to public and management needs.</p> <p>Program Level: 5.5. High Elevation Forests (ex., Red Spruce-Fir, etc.)</p>
	<p>Description: Develop and compile information about the LCC's terrestrial endemic species, work with partners to better estimate their current degree of imperilment, and coordinate the development of regional management strategies that will help conserve these species in the face of changing land-use and climatic conditions.</p> <p>Program Level: 5.6. Endemics and T&E (Terrestrial)</p>
	<p>Description: Work with partners and stakeholders to develop and compile information about species within the LCC, their habitat requirements, and changes in the distribution of those species and habitats to facilitate the regional management of those resources.</p> <p>Program Level: 5.7. Landscape-level Species-Habitat (Modeling / Sp-Habitat Relationships / Assessment)</p>
	<p>Description:</p> <p>Program Level: 5.8. Species/System Response – Major Drivers (CC, Energy/Development, Urban, etc.)</p>
	<p>Description:</p> <p>Program Level: 5.9. Landscape-level (Integrated) Planning Tools (Recovery / T&E / SGCN)</p>

<p>Thematic-Area (6) Terrestrial - Open-land Natural Community (grasslands, meadows, balds, shale barrens)</p>	<p>GOAL: Work to inventory significant regional open-land natural community habitats (including grasslands, meadows, balds, shale barrens, etc.), evaluate the condition and importance of these habitats, and identify regional threats impacting those resources so that LCC partners and stakeholders can develop and implement cohesive regional management strategies <u>to protect and manage</u> important open-lands across jurisdictions.</p>
	<p>Description: (Foundational Resources) #s _0 - _3 Work with partners to identify existing foundational resources and develop a centralized repository to make those resources universally available to partners and stakeholders.</p> <p>Foundational Resources:</p>

	<p>6.0. Pre-Existing: Tools, Portals, Datasets, Data layers, Resources</p> <p>6.1. Database / Information Management</p> <p>6.2. Baseline Data / GIS Layers & Standardization of Data Collection</p> <p>6.3. GeoSpatial Status Assessment</p>
	<p>Description: Develop and compile data to help partners and stakeholders better understand the types of open land habitats that occur within the LCC, the distribution and condition of those habitats, issues threatening the quality of those habitats, the relative importance of those habitats for species conservation within each of the states, and techniques that can be used to restore those habitats after they have been degraded.</p> <p>Program Level: 6.4. Faunal Habitats in Open Lands</p>
	<p>Description: Develop and compile information about the LCC's terrestrial endemic species, work with partners to better estimate their current degree of imperilment, and coordinate the development of regional management strategies that will help conserve these species in the face of changing land-use and climatic conditions.</p> <p>Program Level: 6.5. Terrestrial - Endemics / T&E Management, Recovery</p>
	<p>Description:</p> <p>Program Level: 6.6.</p>
	<p>Description: Work with partners and stakeholders to develop and compile information about species within the LCC, their habitat requirements, and changes in the distribution of those species and habitats to facilitate the regional management of those resources.</p> <p>Program Level: 6.7. Landscape-level Species-Habitat (Modeling / Sp-Habitat Relationships / Assessment)</p>
	<p>Description:</p> <p>Program Level: 6.8. Species/System Response - Major Drivers (CC, Energy/Development, Urban, etc.)</p>
	<p>Description:</p> <p>Program Level: 6.9. Landscape-level (Integrated) Planning Tools (Recovery / T&E / SGCN)</p>

<p>Thematic-Area (7) Human Dominated / Economic Lands (Urban, Ag, Energy)</p>	<p>GOAL: Within the Appalachian LCC's boundaries, build a more detailed understanding of the character, distribution, and intensity of economic interests affecting human and natural resources while also working to develop a more comprehensive understanding of those stakeholders' needs and expectations regarding resource management so that the LCC's partners and stakeholders will be better able to identify and act upon regional socially and economically acceptable opportunities to <u>collaboratively meet both industry needs and conservation management goals.</u></p>
	<p>Description: (Foundational Resources) #s _0 - _3 Work with partners to identify existing foundational resources and develop a centralized repository to make those resources universally available to partners and stakeholders.</p> <p><u>Foundational Resources:</u></p> <ul style="list-style-type: none"> 7.0. Pre-Existing: Tools, Portals, Datasets, Data layers, Resources 7.1. Database / Information Management 7.2. Baseline Data / GIS Layers & Standardization of Data Collection 7.3. GeoSpatial Status Assessment
	<p>Description: Develop and compile information about the ongoing conversion of agricultural land to urban and suburban uses within the LCC and the impacts these changes are having on the character and distribution of human communities and fish and wildlife habitats so that partner agencies may be better able to understand system dynamics and recommend alternatives to minimize future land-use conflicts involving human communities, wildlife, and ecosystem service functions.</p> <p>Program Level:</p> <ul style="list-style-type: none"> 7.4. Landscape-level Land Conversions – Urbanization and Ag-land Conversion
	<p>Description: Develop and compile information about new or expanding energy developments within the LCC and the opportunities and impacts these industries have on the character and distribution of fish and wildlife habitats so that partner agencies may be better able to develop collaborative opportunities and anticipate future land-use conflicts involving human energy needs, wildlife, and ecosystem service functions.</p> <p>Program Level:</p> <ul style="list-style-type: none"> 7.5. Energy Development – New or Expanding Markets - Marcellus Shale, Wind, Biomass
	<p>Description: Develop and compile information about traditional energy developments within the LCC and the opportunities and impacts these industries have on the character and distribution of fish and wildlife habitats so partner agencies may be better able to understand system dynamics and recommend alternatives to minimize future land-use conflicts involving human energy needs, wildlife, and ecosystem service functions.</p>

	<p>Program Level: 7.6. Energy Development – Traditional Market - Coal & AMLs</p>
	<p>Description:</p> <p>Program Level: 7.7. Agland Management</p>
	<p>Description: Develop and compile information about the LCC's changing human distributions and the impacts these changes are having on the character and distribution of fish and wildlife habitats so partner agencies may be better able to understand system dynamics and recommend alternatives to minimize future land-use conflicts involving human communities, wildlife, and ecosystem service functions.</p> <p>Program Level: 7.8. Species/System Response - Major Drivers (CC, Energy/Development, Urban, etc.)</p>
	<p>Description:</p> <p>Program Level: 7.9. Landscape-level (Integrated) Planning Tools (Hum. Dim.)</p>

<p>Thematic-Area (8) Human Dimensions - Environmental Benefits, Ecosystem Services, Social Expectations</p>	<p>GOAL: Within the Appalachian LCC's boundaries, build a more detailed understanding of the public's needs and expectations for the management of human and natural resources so that partners and stakeholders will be better able to identify and act upon regional socially and economically acceptable opportunities <u>to meet public needs and conservation management goals.</u></p>
	<p>Description: (Foundational Resources) #s _0 - _3 Work with partners to identify existing foundational resources and develop a centralized repository to make those resources universally available to partners and stakeholders.</p> <p><u>Foundational Resources:</u></p> <ul style="list-style-type: none"> 8.0. Pre-Existing: Tools, Portals, Datasets, Data layers, Resources 8.1. Database / Information Management 8.2. Baseline Data / GIS Layers & Standardization of Data Collection 8.3. GeoSpatial Status Assessment
	<p>Description: 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.</p> <p>Program Level: 8.4. Ecosystem Serv. – Water</p>

	<p>Description: Work with partners and stakeholders to identify: existing natural and social science tools that describe the character and condition of atmospheric conditions and air quality across the LCC, identify circumstances that either improve or limit the air quality, and describe likely future trends for air quality considering changing human demands and climate change.</p> <p>Program Level: 8.4. Ecosystem Serv. – Air Quality / Local Weather/Temp</p>
	<p>Description: Work with partners and stakeholders to identify: existing natural and social science tool resources that describe the character and condition of the LCC's soils, identify the various human and wildlife uses of soil resources, describe circumstances that either improve or limit the quality of soil resources, and describe likely future trends for those resources considering changing human needs and climate change.</p> <p>Program Level: 8.4. Ecosystem Serv. - Soil / Nutrient</p>
	<p>Description: Work with partners and stakeholders to identify: existing natural and social science tools that describe the character and aesthetic conditions of sites/regions within the LCC; identify circumstances that either improve or limit their quality, and describe likely future trends considering changing human needs, habitat succession, and climate change.</p> <p>Program Level: 8.5. Envr Benefits - Aesthetics / Viewshed / Soundscape</p>
	<p>Description: Develop and compile natural and social science tools to describe the LCC's human population's participation in hunting and fishing, estimate trends in such participation, describe issues driving trends, and other information that will help partners develop new recruitment of hunters and/or develop new strategies to manage species if human harvest becomes insufficient to meet management goals.</p> <p>Program Level: 8.5. Envr Benefitis - Recreation / Harvesting</p>
	<p>Description:</p> <p>Program Level: 8.6. Hum. Dim. -Cultural / Historic Resources / Infrastructure</p>
	<p>Description: Develop and compile natural and social science tools to describe ongoing and potential human/wildlife conflicts involving game, imperiled or invasive species and work with partners to develop regional outreach and management strategies that will help address conflicts.</p> <p>Program Level: 8.7. Hum. Dim. - as Predator (+ H-W Conflict)</p>
	<p>Description:</p> <p>Program Level:</p>

7.8.	
Description: Work with partners and stakeholders to develop and identify existing natural and social science tools that describe the attitudes, conditions, economic considerations, and needs of human communities and develop a mechanism to share those data sources so that agencies and partners will better understand the social, economic, and political considerations that influence natural resource management.	
Program Level: 8.9. Landscape-level (Integrated) Planning Tools (Hum. Dim.)	

Thematic-Area (9) Climate Change - Impacts, Downscale/Coupled Modeling, Adaptation	GOAL: Work to provide the best available predictions of how the regional climate might change, estimate the impacts those changes might have on the region's natural and cultural resources, and work with partners and stakeholders to determine <u>adaptation and mitigation strategies</u> that can be implemented and coordinated at a regional scale.
Description: (Foundational Resources) #s _0 - _3 Work with partners to identify existing foundational resources and develop a centralized repository to make those resources universally available to partners and stakeholders.	
<u>Foundational Resources:</u> 9.0. Pre-Existing: Tools, Portals, Datasets, Data layers, Resources 9.1. Database / Information Management 9.2. Baseline Data / GIS Layers & Standardization of Data Collection 9.3. GeoSpatial Status Assessment	
Description: Program Level: 9.4. CC – Impact – Cultural /Historic Resources / Infrastructure	
Description: Develop and compile scientific tools to project likely impacts climate change will have on the LCC, how those changes could affect the region's hydrologic resources, and work with partners to develop strategies to help human communities, industry, aquatic species and other conservation management interests, plan for, and adapt to those changes.	
Program Level: 9.4. CC - Impact - Hydrology	
Description: Develop and compile scientific tools to project likely impacts climate change will have on the LCC, how those changes could affect the region's terrestrial species and habitat resources, and work with partners to develop strategies to help government, industry, terrestrial species and other conservation management interests, plan for, and adapt to those changes.	
Program Level:	

	9.4. CC- Impact - Terr Sp / Comm
	<p>Description: Develop and compile scientific tools to project likely impacts climate change will have on the LCC, how those changes could affect the region's aquatic species and habitats, and work with partners to develop strategies to help aquatic species and other conservation management interests, plan for, and adapt to those changes.</p> <p>Program Level: 9.4. CC - Impact -Aq Sp / Comm</p>
	<p>Description: Develop and compile scientific tools that assess the vulnerability of species, habitats, and human resources to changing climatic conditions within the LCC and work to make those tools available to partners to make findings known within the LCC community, provide an opportunity for others to improve upon existing efforts, and limit the duplication of effort.</p> <p>Program Level: 9.5. CC - Vulnerability /Risk Assessment</p>
	<p>Description: Work with partners to develop regional climate adaptation strategies that will, to the extent possible, help ensure the persistence of healthy human and fish and wildlife communities in the face of changing climatic conditions.</p> <p>Program Level: 9.6. CC - Adaptation (incl. Management Response)</p>
	<p>Description: Develop and compile climate science tools that describes future climatic conditions within the LCC and work to make those tools available to partners to make findings known within the LCC community, provide an opportunity for others to improve upon existing efforts, and limit the duplication of effort.</p> <p>Program Level: 9.7. CC - Modeling (Coupled / Downscale)</p>
	<p>Description:</p> <p>Program Level: 9.8.</p>
	<p>Description:</p> <p>Program Level: 9.9. Landscape-level (Integrated) Planning Tools (Climate Change)</p>