



Full (“103-Report”) Synthesis Report

Summary: Goals and Gaps as Identified in the key planning documents of the many Conservation & Resource Mgmt Agencies/Organizations across the Appalachian Region

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INTRODUCTION: Steps - Assessment Process for Plan Review & Analysis

1. Developed base list of ISC Members and potential partners (Sectors: federal, state, tribe, NGO, established partnerships);
2. Compilation and review of existing plans or documents that addressed: 1) Goals/Mission, 2) Species Priorities, 3) Climate Change Plans Goals;
3. Reviewed over 100 plans or documents and recorded stated Goals (priority actions identified) and Gaps (unmet needs impeding achievement of Goals);
4. Referenced B. Taggart (USGS, 2010) for Summary Information Regarding States/SWAPs (Attachment 1);
5. Created database to allow analyses of these results;
6. Categorized Goals and Gaps, analyzed and summarized Results.

STRUCTURE/DEFINITIONS: Goal and Gap Definitions and Categories for each

GOAL Definition: The priorities, mission, vision, or actions articulated by the partner in a published plan or document as those things most important to their success.

GOAL CATEGORIES:

Manage Forests (for habitat, silviculture, fire management, etc)
Manage Open Lands (grasslands, ag, etc)
Manage Aquatic Habitats (wetlands, streams, rivers, karst)
Manage Species/Populations
Research/Monitor/Model Abiotics (temp, water quality, climate trends, etc)
Research/Monitor/Model Biota (flora and fauna; species-habitat interactions)
Understand Human Dimensions/Values
Improve Landscape Planning
Enhance Outdoor Recreation
Predict Climate Change Influences
Manage Water Resources (water planning, supply, dam/reservoir mgt)
Energy Production/Management (hydropower, nuclear, etc)
Improve Practices for Energy Development (shale, coal, oil, wind)
Enact Regulatory Authority (CWA, Mining, ESA, etc)
Increase Public Outreach/Education
Increase Land Protection
Maintain Cultural Resources

GAP Definition: A lack of action, information, tools, products, coordination, relationships, or understanding that impedes the successful fulfillment of that partner's Goals.

GAP CATEGORIES:

Research/Science Need {Scientific Information Needs}

Standardize Protocols/Methods (e.g. for surveys, data collection)

Execute Landscape Planning Approach

Up-scale a Tool or Current Action {i.e. increase use of a promising approach e.g. shale development best management practices (BMPs)}

Increase Human Dimensions/Values Understanding

Conduct Popn Assessments (e.g. collate survey data, species models)

Conduct Habitat Assessments (e.g. surveys, predictive models)

Obtain Key Info Need (Non-Scientific Info Needs, e.g. identify fracking chemicals, planned location for transportation or energy corridor)

Coordinate/Expand Abiotic Monitoring (i.e. establish new programs, coordinate across geography)

Improve Sharing of Existing Data

Forge Professional Relationship (e.g. with new or non-traditional partner)

Improve Climate Forecasting (to include down-scaled models, habitat conditions, etc.)

Coordinate Water Management

I. ISC Membership Results

Executive Summary Table:

TOP 3 Ranked GOALS = Primary Goals	TOP 3 Ranked GAPS = Primary Gaps
Improve Landscape Planning	Execute Landscape Planning
Manage Species/Populations	Conduct Population Assessments
Enhance Outdoor Recreation	Conduct Habitat Assessments
Primary Gap	Action Recommended
Gap 1. Execute Landscape Planning	Address Tribal fisheries resource issues (brook trout, sicklefin redhorse) Note: EBTJV also prioritizes conservation planning for brook trout.
	Conduct water supply forecasts as they impact future water quality
	Plan for conservation of rare species and communities (Note: majority of at-risk species and habitats are aquatic)
Gap 2. Conduct Population Assessments	Develop popn sustainability models [popn viability indices (PVI) and other models]
	Identify representative/surrogate species
Gap 3. Conduct Habitat Assessments	Evaluate threats of land use change, including conversion and fragmentation of habitats
	Conduct ecosystem resilience assessments

A. **Goals** - In order of importance to ISC Members, there were three Primary Goals:

1. Improve Landscape Planning
2. Manage Species/Populations
3. Enhance Outdoor Recreation

Once the field of Goals was narrowed in focus, we were able to assess what Gaps were most important as unmet needs of the ISC. It is important to note that in most examples, action taken to fill any single Gap category might in fact support multiple Goal needs.

B. Gaps - In order to address the Primary Goals, ISC Members recommended Executing Landscape Planning and Conducting Habitat Assessments as the most necessary steps; conducting Population Assessments was important, but less so.

1. Execute Landscape Planning
2. Conduct Population Assessments
3. Conduct Habitat Assessments

C. WORK PLAN Recommended Actions for Consideration

The following actions were articulated by ISC Members as specifics regarding Gaps that would best address Primary Goals.

GAP 1: Execute Landscape Planning – Landscape planning was the most prevalent Goal and Gap ranking. The most urgent landscape planning needs were focused on **Aquatic Habitats**. Climate change is one of the land use change threats; SWAPs will reflect this in future iterations.

Actions Recommended by ISC:

- Address Tribal fisheries resource issues (brook trout, sicklefin redhorse (Note: Eastern Brook Trout JV also prioritizes conservation planning for brook trout.)
- Conduct water supply forecasts as they impact future water quality
- Plan for conservation of rare species and communities (Note: majority of at-risk species and habitats are aquatic)

GAP 2: Conduct Population Assessments – This activity directly addresses Primary Goal 2 (Manage Species/Populations), and in many instances Goal 3 as well (**Enhance Outdoor Recreation**). Population modeling needs are greatest for aquatic, but are also needed for terrestrial species in order to fully support both the Primary Gaps of **Execute Landscape Planning** and **Enhance Outdoor Recreation**. The USFWS has adopted the surrogate (or representative) species approach as an efficient means to model both species guilds and their associated habitats.

Actions Recommended by ISC:

- Develop popn sustainability models (PVI and other models)
- Identify representative/surrogate species

GAP 3: Conduct Habitat Assessments – Filling this Gap will directly support landscape planning efforts, and the recommended focus would be on forecasting land use changes and planning for resilience. Aquatic Habitat Assessments would best support the **Actions Recommended** for landscape planning (in Gap 1 above); assessments for associated terrestrial watershed landscape assessments will be necessary to support those Actions and complement the work of neighboring LCCs as well as the National LCC Network.

Actions Recommended by ISC:

- Evaluate threats of land use change, including conversion and fragmentation of habitats
- Conduct ecosystem resilience assessments

D. Additional Conclusions

- The Primary Goal of **Enhance Outdoor Recreation** will be supported by a Landscape Planning effort and population management; additionally fishing, boating, and water sports will benefit from a focus on aquatic species and habitats.
- A secondary ISC Members' Goal of **Enact Regulatory Authority**, as it related to both the Clean Water Act (CWA) and the Endangered Species Act (ESA), would be enhanced by Actions addressing any of the 3 Primary Gaps (landscape planning, population and habitat assessments). A landscape planning effort focused on aquatic habitats would support CWA and ESA regulation, as it relates to siting mitigation for permitting/consultation. Additional focus on terrestrial landscape planning would support ESA consultations for upland species. Assessments related to both species and habitats have potential to improve conservation outcomes for regulatory actions.

II. Non-ISC Member Results

Executive Summary Table:

TOP 3 Ranked GOALS = Primary Goals	TOP 3 Ranked GAPS = Primary Gaps
Improve Landscape Planning	Execute Landscape Planning
Enhance Outdoor Recreation	Conduct Habitat Assessments
Manage Aquatic Habitats	Forge Professional Relationships
Primary Gap	Action Recommended
Gap 1. Execute Landscape Planning	Land Use Planning
	Assess and model land use changes
	Conduct fire management planning
	Plan adaptive responses to climate change for Chesapeake Bay watershed
	Retain viewsheds and cultural resources, especially near urbanizing areas
	Offer land use planning assistance to rural communities
	Specific Species or Habitat Focus
	Development of PARCAs (amphibian & reptile conservation areas)
	Identify opportunities to reduce fragmentation; integrate planning with non-avian faunal (esp. bats) conservation
	Focus on early successional habitats
	Develop condition analysis for fish habitats nationwide
	Target fish populations for surveys/models
	Energy
	Evaluate renewable energy development potential
	Abandoned minelands (AMLs)/acidic drainage remediation planning
	Conduct watershed-scale reclamation planning for water quality/water supply
	Designate more wilderness areas in Appalachia

Gap 2. Conduct Habitat Assessments	Aquatic
	Conduct ecological flow assessments
	Initiate water quality monitoring for pharmaceuticals
	Assess turbidity as water quality impact on rare endemics
	Terrestrial
	Assess forest condition and management regimes
	Develop recent and detailed land cover data
	Determine forest habitat quality and distributions
	Focus on threats such as wildfires, disease, fragmentation
	Energy
	Conduct contaminants research related to coal mining
Gap 3. Forge Professional Relationships	Data Sharing
	Partner with DOT/FHA on landscape planning efforts
	Establish monitoring network for invasives
	Better coordination across States regarding implementation and tracking of nutrient BMPs
	Include Recreation in landscape planning efforts

A. **Goals** (see Analysis 3) - In order of importance to **Non-ISC Members**, there were three Primary Goals:

1. Improve Landscape Planning
2. Enhance Outdoor Recreation
3. Manage Aquatic Habitats

For ISC Members, Goal 1 and 2 above were Goal 1 and 3 respectively. The third Primary Non-ISC Goal of **Manage Aquatic Habitats** was not an ISC Goal, but instead was replaced with **Manage Species/Populations** which ranked #2 for ISC Members.

B. **Gaps** - In order to address their Primary Goals, Non-ISC Members recommended **Execute Landscape Planning** and **Conduct Habitat Assessments** as the most necessary steps. These Gaps are in agreement with two of the top three Gaps selected by ISC Members. However, Non-ISC Members indicated a difference of opinion regarding the third most important Gap need; they selected **Forge Professional Relationships** instead of **Conduct Population Assessments**.

Primary Gaps for Non-ISC Members:

1. Execute Landscape Planning
2. Conduct Habitat Assessments
3. Forge Professional Relationships

Many partners saw opportunities to improve conservation efforts by developing new or improved relationships that spanned larger geographic areas, involved more same-interest partners, or involved more complementary-interest partners (e.g. transportation agencies). The LCC can serve an important function in facilitating these new relationships through sponsored meetings and conferences, products and tools, funded projects, and our new website (with companion-site capability).

C. WORK PLAN Recommended Actions for Consideration

The following actions were articulated by Non-ISC Members as specifics regarding Gaps that would best address Primary Goals.

GAP 1: Execute Landscape Planning – Both ISC and Non-ISC Members saw this activity as the biggest outstanding area of improvement. The need for inclusion of Cultural Resources was more apparent when reviewing plans of non-ISC Members. Although, this was in part was a function of LCC Staff's deliberate attempt to include Outdoor Recreation Planning agencies in our assessments, cultural resource conservation has been adopted by the ISC membership as a primary Mission function. Non-ISC Members confirmed that Energy should be an important focus of the AppLCC, and restoration of abandoned minelands (AMLs) was mentioned repeatedly as an area that lacked broad landscape planning efforts to date. The importance of including karst and early successional habitats was noted by many Non-ISC Members, as conservation of these habitat types would support a number of rare endemics, some of which are endangered or threatened, as well as some important recreational species such as bobwhite quail. The advancement of white-nose syndrome throughout bat habitats of the North-East and Mid-West is a growing concern.

Actions Recommended by Non-ISC Members:

Land Use Change

- Assess and model land use changes
- Conduct fire management planning
- Plan adaptive responses to climate change for Chesapeake Bay watershed
- Retain viewsheds and cultural resources, especially near urbanizing areas
- Offer land use planning assistance to rural communities
- Develop regional strategies for land conversion
- Expand recreation planning to landscape scales

Specific Species or Habitat Focus

- Development of PARCAs
- Identify opportunities to reduce fragmentation; integrate planning with non-avian faunal (esp. bats) conservation
- Focus on early successional habitats
- Develop condition analysis for fish habitats nationwide
- Target fish populations for surveys/models

Energy

- Evaluate renewable energy development potential
- AMLs/acidic drainage remediation planning
- Conduct watershed-scale reclamation planning for water quality/water supply
- Designate more wilderness areas in Appalachia

GAP 2: Conduct Habitat Assessments – This category had both a strong aquatics and terrestrial component for Non-ISC Members, as well as repeating the need for Energy focus (this time in the form of contaminants research).

Aquatic

- Conduct ecological flow assessments
- Initiate water quality monitoring for pharmaceuticals
- Assess turbidity as water quality impact on rare endemics

Terrestrial

- Assess forest condition and management regimes
- Develop recent and detailed land cover data
- Determine forest habitat quality and distributions
- Focus on threats such as wildfires, disease, fragmentation

Energy

- Conduct contaminants research related to coal mining

GAP 3. Forge Professional Relationships – There were many partners who saw the need for Actions Recommended in the area of Data Sharing, data protocols, and better overall data management. Specific Non-ISC Members also suggested their need to increase synergy by establishing or improving their relationships with other conservation entities (e.g. Land Trusts),

with transportation planning agencies, and with the public regarding threats to certain faunal groups.

Data Sharing

- Partner with DOT/FHA on landscape planning efforts
- Establish monitoring network for invasives
- Better coordination across States regarding implementation and tracking of nutrient BMPs
- Include Recreation in landscape planning efforts

D. Additional Conclusions

Regarding Comparison with ISC:

- Non-member Partnerships were in agreement with two of the Gaps identified by the ISC: **Execute Landscape Planning** and **Conduct Habitat Assessments**
- States showed a strong preference for **Execute Landscape Planning** - 5 times that of the next Gap preference.
- Federal agencies were more likely to indicate **Forecast Climate Change** as a Gap.
- NGOs were very interested in filling the Gap of **Forge Professional Relationship**, which was not selected a Primary Gap by the ISC. Their interest was targeted at improving networking among themselves, with transportation agencies, and with outdoor recreation planners.
- Tribes had strong interest in the Gap of **Increase Human Dimensions/Values Understanding**, and although this was not one of the Primary Goals of the ISC, based on review of existing Plans, it certainly is a high priority demand.

Regarding Recommended Actions:

- Not surprisingly, a more diverse set of partners would recommend a greater diversity of Priority Actions for the ISC's consideration. The difference noted through this exercise might encourage consideration by the ISC of whether to decisively expand the diversity of its membership, or other ways to fully take advantage of this broader perspective.
- Although the issue of **Data Sharing** was not as prominent a theme in ISC Members' plans and documents, it came out as a strong Gap need in Non-ISC Members' assessment. The ISC membership has indicated by the conclusions of the Group Solutions telephone interviews their interest in promoting data sharing and working to develop new mechanisms to overcome any impediments.

III. Overall Impressions and Results of ALL Canvassed

Executive Summary Table:

TOP 3 Ranked GOALS = Primary Goals	TOP 3 Ranked GAPS = Primary Gaps
Improve Landscape Planning	Execute Landscape Planning
Enhance Outdoor Recreation	Conduct Habitat Assessments
Manage Species/Populations	Conduct Population Assessments

Overall, the Primary Goals and Primary Gaps were the same when the entire dataset of ISC and Non-ISC Members was analyzed. Landscape Planning was the top ranked Goal and Gap for both ISC and Non-ISC Members. Outdoor Recreation was slightly more important to Non-ISC Members and therefore rose in rank from Goal 3 to Goal 2 in the grouped analyses. However, this is in part a function of the fact that LCC Staff had made a deliberate attempt to review a subset of Outdoor Recreation Plans to assess how their goals and gaps aligned with, complemented, or contrasted with ISC Membership.

Non-ISC Members stressed the importance of their responsibility to Manage Aquatic Habitats by selecting this Goal instead of the Population Assessments favored by the ISC. When all data was analyzed, the aquatics emphasis fell out in favor of Habitat Assessments, however the importance of aquatic species and habitats was such a strong, consistent theme in plans and documents reviewed for Appalachian conservation that the ISC should consider elevating aquatics when making final decisions on Actions Recommended for the current Work Plan.

Group: Non-ISC Members

Goal: Manage Aquatic Habitats (wetlands, streams, rivers, karst)

There were several Gaps prioritized by Sectors of Non-ISC Members that differed from the consensus opinion held on Priority Gap selection by ISC and other Non-ISC Members:

Sector: Federal

Gap: Improve Climate Change Forecasting

Sector: Tribes

Gap: Increase Human Dimensions/Values Understanding

Sector: NGOs

Gap: Forge Professional Relationship (e.g. with new or non-traditional partner)

This exercise yielded a tremendous wealth of information on the views of conservation agencies and partners in the Appalachian LCC region, and demonstrated quantitatively that the landscape planning function and broad landscape assessments of species/populations and habitats that the Landscape Conservation Cooperatives were designed to execute is indeed a critical need. The Appalachian LCC partnership also has the potential to serve an important role in human dimensions research and in enhancing relationships among partners, including the strongly demonstrated outdoor recreation interests and data sharing needs

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