APPALACHIAN
LANDSCAPE CONSERVATION COOPERATIVE

CONSERVATION PLANNING/DESIGN PHASE II AQUATIC METRICS: WEST

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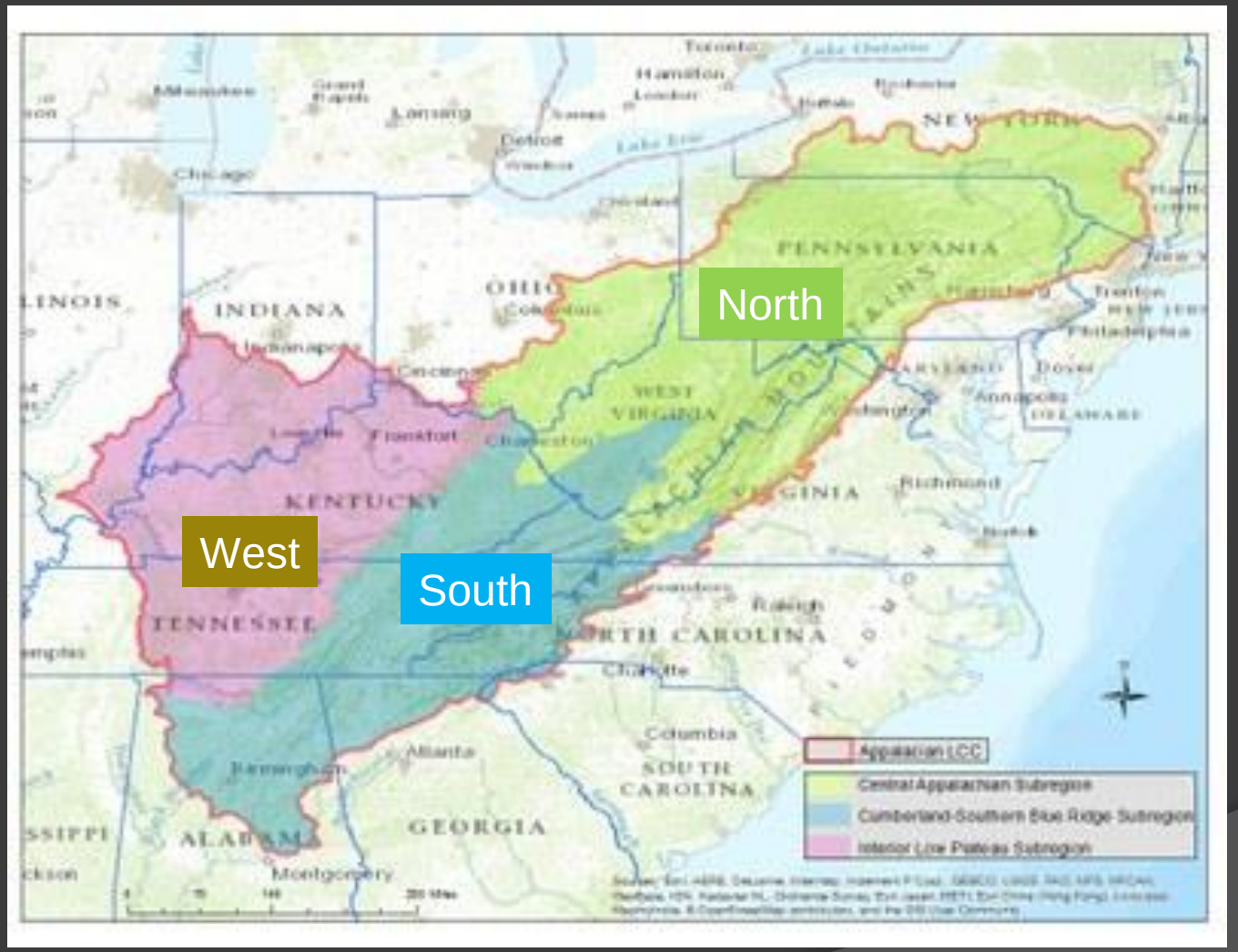
App LCC Subregions



Webinar Outline

- Review Goals for LCD Phase II - Aquatics
- Discussion of Aquatic Needs for Phase II
- Present preliminary metrics
- Open Discussion and Round Robin

Round Robin Questions

- Which aquatic integrity metrics do you think should be included?
- Which aquatic integrity metrics do you think should NOT be included?
- Are there specific metrics that are idiosyncratic to the western region of the LCC geography?
- Should river classification be used in the aquatic assessment?
- If yes, which river classification attributes should be used?

Aquatic Ecosystem Integrity Assessment Factors

- Flow Regime
- Physical Habitat
- Water Quality
- Connectivity
- Energy Supply
- Species Interactions

Aquatic Classification as Foundation

- TNC completed aquatic classification project in 2015
  - 6 Main Themes: Size, Gradient, Temp, Hydrology, Buffering Capacity, Confinement
- > 250 variables calculated for > 849k catchments covering any HUC 8 that intersects with LCC boundary
  - e.g., Baseflow, Groundwater Recharge, Basin Characteristics, Contact Time, Overland Flow, R-factor, Damn Storage, Soil Info, Incremental & Cumulative Flow, Temp, Precip, Geology, Landforms

Aquatic Classification as Foundation

- To organize the classification in a biologically meaningful way (Stream Size, Temperature, Gradient, Alkalinity) used Cluster Analysis for grouping and TITAN Analysis for thresholds.
  - Fish Species (n = 207)
  - Benthic Taxa (n = 433)

Aquatic Classification as Foundation

- Classification is organized around some common habitat types (in streams and rivers)
  - e.g., Perennial Flashy, Warm, Medium Gradient Stream OR Higher Baseflow, Cool, High Gradient, Stream
  - Read more at: tinyurl.com/aquaticclass

Aquatic Goals: Phase II

- Build off LCC-funded aquatic classification to summarize condition measured on a gradient of anthropogenic influence
- Identify indicators for watershed condition and vulnerability to provide a landscape context to classification
- Compute indicator values for all watersheds with available data
- Construct indices of condition / vulnerability

Phase II Target Spatial Framework

- NHD Plus version 2
  - Catchment Scale
    - Within (Local)
    - Network (Cumulative)
      - Allows condition of upstream drainage area to influence scores

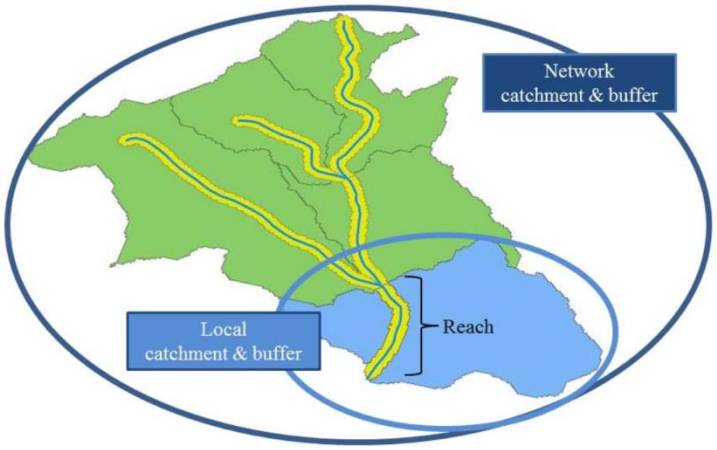


Figure 2. Stream reaches and local and network catchments and buffers (modified from Wang et al. 2011).

National Fish Habitat Partnership 2015 Inland Water Assessment

Initial Metrics for Consideration

Landscape/Hydrologic Condition Theme	Metric	Value-Rank Order*
Dams	Flow Alteration from Storage (total storage/mean annual flow)	↑
	Functional Network Size (total length of free-flowing conditions around the assessment reach)	↓
	Density of small dams: Upstream	↑
	Density of small dams: Downstream	↑
Road/Rail/Utility Crossings	Density of crossings: Upstream	↑
	Density of crossings: Downstream	↑
Land Use	% Impervious Surface in Watershed & Riparian Buffer (active river area)	↑
	% Natural Cover in Watershed and Riparian Buffer (active river area)	↓
	% Crop in Watershed and Riparian Buffer (active river area)	↑
	% Pasture/Hay in Watershed and Riparian Buffer (active river area)	↑

* Up arrows indicate the metric will be ranked in ascending order (i.e. small values are desirable). Down arrows indicate the metric is ranked in descending order (i.e. larger values are desirable.)

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Schedule of LCD Phase II Consultations

- ✓ April 7 - Intro to LCD Phase II Framework and Metrics
- ✓ April 19 - Aquatic Metrics, Models, and Regional Data (North)
- ✓ April 20 –Metrics, Models, and Data (South)
- ◉ April 21 –Metrics, Models, and Data (West)
- ◉ May 10 - Threats to Aquatic Ecosystems, Metrics Scale (North)
- ◉ May 11 - Threats and Metrics (South)
- ◉ May 12 - Threats and Metrics (West)
- ◉ May 26 - Final review of Framework, Metrics, Threats