GCPO LCC Ecological Assessment



Steering Committee Update

October 21, 2014 GCPO LCC Steering Committee Fall Meeting Destin, FL

Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative

GCPO LCC Mission



Defin e

DRAFT v4

Integrated Science Agenda

Gulf Coastal Plains & Ozarks

Landscape Conservation Cooperative

BACKGROUND

The moster of the Gulf Gastrial Haim & Orashs Landscape Conservation Cooperative (ICONUCC) is for define, design, and deliver landscapes capable of sustaining natural and sultural resources at desired facult into and into the Mura.

To achieve this mission, the GCPGLOC has adopted litrategic Hobitat Genannation (EHC) as an executing conservation framework and identified her specific relia: - Integrating priorities across resource perspectives and intergrowting future change that surrent amountation planning. To serve these relies and make SHC operational in the Guil Genetal (Pains & Genits (GCHG) region, the Steering Committee stabilized the Autgatorian bioreal Management Faan (RGMT).

That group met in Starfwile, MS in September 2012 to outline the technical approach for meeting the GCPOLIC's mission. This document is a product of that meeting and subsequent discussions.

PURPOSE OF THIS DOCUMENT

Because the Landscape Conservation Cooperative 3.003 enterprise encompanies multiple disciplines. scales, and resource interests, many regard LCC science as a similarly broad enterprise - one that can encompass nearly any question of interest to anyone anywhere. However, to be effective, the GCPOLCC recignizes that it must facus its investments an a specific subset of science needs must relevant to achievement of its mission. Using IAC as a guiding principle, the science needs identified by the IDEPOLICE through its ADMT seek to integrate science acress disciplines, scales, and resources as well as the different superts of conservation - playing, delivery, monitoring, and research. The purpose of this decument is to articulate the initial subset of science needs that are the specific priorities of the dCROCC and the legic behind their identification, illy identifying, justifying, and communicating the needs and knowledge gaps explicitly, the GCPOLCC saeks to provide a more tangible definition of the functions of the LCC to the broader conservation community (i.e., THD is adult the LCC does). In addition, the GOPOLOC seeks to share its planning framework, enable partners to see and understand how their needs fit and are met within the LCC (and how they can influence, support and/or derive benaft from a partnership with this type of science as its goals and finally, to goide investment of its assets in accordance with the direction outlined by the Meeting Committee in the BCPOLIC Minings Stat.

GEROLES partners should recognize that nother conservation nor science is a linear process - by necessity and value it operators on multiple frants simultaneously. However, this reality may also make a

5/6/2003

Ranked catchments Design Desig

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Integrated Science Agenda Gulf Coastal Plains & Ozarks

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How do we get from define to design?



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GCPO Science Priorities



GCPO Science Priorities



Rapid Ecological Assessment

State of the Gulf Coastal Plains and Ozarks

Phase I: An Ecological Assessment of Priority Landscape Endpoints of the Integrated Science Agenda

Gulf Coastal Plains and Ozarks Landscape Conservation Cooperative

hear your broughts and suggestions for seprovements



Objectives

- How much habitat is in desired ecological state?
- How much more habitat is needed?
- Where is habitat in desired ecological state?
- Where are opportunities to manage?

Phases

- Phase I Landscape Endpoints
- Phase II Species Endpoints

Outcomes

- Comprehensive "State of the GCPO" report
- Baseline information for conservation design

Ingredient s



Cake

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Ingredient





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Ingredient



Cake





Swainson's warbler/ Hooded warbler

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Report Structure

3-tiered report structure:

- Comprehensive (200+ pgs)
 Abbreviated (~20 pgs) examples in SC boardbook
 Executive Summary (<4 pgs)

Chapter structure:

- Subgeography Intro
 - Ecological System Intro
 - Landscape Endpoints
 - 1. Data Sources and Processing Methods
 - 2. Summary of Findings
 - 3. Future Directions and Limitations
 - 4. Tables and Figures
 - 5. Linkages to GCPO LCC CPA





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Phase I Progress Update

- Terrestrial Landscape Endpoints (Evans/Gray)
- Aquatic Landscape Endpoints (Allen)
- System-specific initial review

Subgeograph	System	Staff	1 st Draft Timeline
MAV	Forested Wetlands	Evans	Aug 2014
	Big River Systems	Allen	Dec 2014
E/WGCP	Open Pine	Gray	Nov 2014
	Prairie Grasslands	Gray	Jan 2015
	M-L Gradient Streams/ Rivers	Allen	Aug 2014
GC	Tidal Marsh	Evans	Dec 2014
	Beaches/Dunes	Evans	Feb 2015
оzні	Upland Hardwoods	Evans/ Grav	Mar 2015
	High Gradient Streams/ Rivers	Allen	Feb 2015



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MAV Forested Wetlands



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Mississippi Alluvial Valley **Forested Wetlands** 3.7 M acres -Amount Extensively forested local (>10,000 ac) landscapes Contiguous forest patches Configuration 13 patches >100K ac 36 patches >20K ac 52 patches>10K ac 60-70% overstory canopy 25-40% midstory/understory cover Basal area (60-70 ft²/ac) 60-70% tree stocking Condition >26" dbh snags: 0.2/ac Tree species diversity Cane/overstory vine Natural flow patterns Temporal 10% early successional

Basal Area

Target: 60–70 ft²/ac

Data Sources: NLCD, USFS total live tree basal area

Results:

- ≈444,000 ac MAV forested wetlands in target range.
- ≈2.7 million ac
 >70 ft2/ac
 (≈700K ac on protected lands)





Canopy Cover

Target: 60-70% canopy Date^r Sources: NLCD, NLCD/USFS tree canopy cover

Results:

- ≈205,000 ac MAV forested wetlands in target range.
- 4.5 million ac >70% canopy (~1.1 mill ac on protected lands)

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Other Condition Metrics



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MAV

~18 bottomland/forested wetland FIA plots/county in the

MAV Forested Wetland Amount



Amount: 3.7 million acres

Data Sources: NLCD, USFS total live tree basal area, NLCD/USFS tree canopy cover

Results:

- NLCD Woody Wetlands (all conditions) ~5.3 million ac total ~1 million ac protected
- NLCD Woody Wetlands w/60-70% canopy cover & 60-70 ft²/ac basal area ~12,000 ac total ~1,500 ac protected

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MAV Forested Wetlands



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Mississippi Alluvial Valley Data Availability/ **Forested Wetlands** Quality Good Poor 3.7 M acres -Amount Extensively forested local (>10,000 ac) landscapes Contiguous forest patches Configuration 13 patches >100K ac 36 patches >20K ac 52 patches>10K ac 60-70% overstory canopy 25-40% midstory/understory cover Basal area (60-70 ft²/ac) 60-70% tree stocking Condition >26" dbh snags: 0.2/ac Tree species diversity Cane/overstory vine Natural flow patterns 10% early successional Temporal

Aquatic Landscape Medium-LENCORINER Streams and Rivers - East and West Gulf

Amount: Maintain current river miles Configuration:

- Lateral connectedness
 - functional connectivity to floodplain habitats
- Linear connectedness
 - functional connectivity of a stream network

Condition:

- Temperature below critical threshold
- Adequate magnitude with limited frequency of low flows
- Natural riffle-pool sequences
- Meandering channels with natural sinuosity
- High amounts of small woody debris
- Adequate amounts of large woody debris
- Diversity of substrates, including gravel beds and sandbars

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Aquatic Landscape Medium-LovEnethointreams and Rivers - East and West Gulf Coastal Amount: Maintain current river miles Data Source: NHDPlus v2 Definitions: Include: low-gradient (SARP < 0.02) Results: East Gulf Coastal Plain 111,727km 94,085 km West Gulf Coastal Plain Both approx. 0.44 km/km² Data Limitations:

SLOPE

0 - 0.0002 - very low 0.0003 - 0.0010 - low

0.0011 - 0.0050 - low-moderate 0.0051 - 0.0200 - moderate-high

- medium resolution data
- accuracy of inputs
- temporal change to network

Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative Aquatic Landscape Medium-Lovendo and Bivers - East and West Gulf Coastal

Configuration: Lateral Connectedness – functional connectivity to floodplain Data Source: Inundation Frequency Definitions: Include: 10–90%

Results: East Gulf Coastal Plain 9,65 km² West Gulf Coastal Plain 9,149 km²

Both approx. 4% of total subgeography

Data Limitations: Our commerce on temporal changes Monday, October 27, 14





Monday, October 27, 14

Aquatic Landscape Medium-Lo Foctopoinsteams and Rivers - East and West Gulf Coastal Condition: Temperature - below critical threshold Data Source: PRISM Climate Grid (1980–2010) Definitions: August Mean Air Temp

August Max Air Temp

Results: August Mean Air Temp > 28°C East Gulf Coastal Plain 6 km West Gulf Coastal Plain 23,842 km

Data Limitations:

- endpoint specificity
- ability of air temp to prodict water



Condition: Natural Sinuosity Data Source: NHDPlus v2, Definitions: for each reach: shortest dist /actual dist "Good" < 0.90Results: East Gulf Coastal Plain 58% "Good" West Gulf Coastal Plain 77% "Good" Data Limitations: endpoint specificity

Sinuosity Category

intermediate

good

poor

lake

too short

medium resolution NHD

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Aquatic Landscape Medium-Lo**Fractions** and Rivers - East and West Gulf Coastal

Endpoints with little / no available data source:

Condition: Adequate amounts of small woody debris Data Limitations: flow will greatly affect transport of SWD.

Condition: **Diversity of substrates** Data Limitations: how to scale up local data collection to landscape scale?

(low cost sidescan sonar mapping)

Condition: Natural riffle- pool sequences Data Limitations: how to scale up local data collection to landscape scale?

Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative (bathymetric mapping)



Monday, October 27, 14







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Systems In Progress



On the Horizon



Landscape Endpoint Opportunities

Vague Language:

- "Seasonally appropriate DO"
- "Temperature below critical threshold"
- "Adequate flows"

Uncertain biological basis:

- "3.7 million acres"
- "Diverse tree species composition"
- "Temperature below critical threshold"

Difficult to measure:

- "Dominated by NWSG and forbs"
- "Bare ground > 5% but < 20%"
- "Variety of substrates gravel to boulders"



**Science Agenda and Ecological Assessment = living documents intended to be adaptive

DRAFT v4

Integrated Science Agenda

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5/6/2013

What's Next: Species Endpoints

Forested wetlands

Endpoints, DRAFT - April 2013.

Desired Landscape Endpoints

Canopy Cover (60-70%) Understory Density (25-40%) Large (>26" dbh) Snag Density (1 per 5 ac)

Occurrence of Cane

Landscape Composition (<70% forest) Large Forest Patch Size (>100,000 ac)

- Identify existing data/models and data gaps
- Support development of species-habitat models
 - Targets:
 - GCPO landscape-scale
 - Additive value
 - Poorly understood habitat relationships



Swainson's

Waithler

Kentucky

Warbler

Hooded

Warbler

Table 2. Desired Landscape Endpoints for Forested Wetlands and Initial Assessment of Species Limited by Habitat Characteristics Reflective of These

Swallow-

tailed Kite

Red-headed

Woodpecker

Rafinesque's

Big-Eared Bat

х

Black Bear

х

х



EAST AND WEST GULF COASTAL PLAINS

Freshwater Aquatic: Medium-low gradient streams and rivers

Table 5. Desired Landscape Endpoints for Medium-low gradient streams and rivers and Initial Assessment of Species Limited by Habitat Characteristics Reflective of These Endpoints, DRAFT - April 2013

Desired Landscape Endpoints	Alligator Gar	Paddlefish	River Otter	Mussels	Darters	Crayfish Snake	Hellbender
Connectivity	x	×	х	1.000			
Water temperature	x	0.00		1.01			
Flow				x			
Riffle-pool morphology					X	х	
Substrate diversity							×

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Discussion and Decision Items

1. Landscape Endpoint Specificity

- Endpoints are hypotheses to be tested;
- Some endpoints are vaguely defined, have limited biological basis, or are difficult to measure;
- Recommendation of a reconvening of the ASMT to assess and revise/refine landscape (and species) endpoints if needed.

2. Assessment Expectations: Ingredients vs. Cake

- Individual landscape endpoints (the ingredients) have been assessed;
- We have not combined data from endpoints to identify complete intact systems (the cake).
- Steering committee expectation ingredients or cake or both?

3.Data Acquisition Priorities

- Assessment has identified key data gaps;
- Opportunities for LCC to work with partnership to prioritize data acquisition
- Steering committee guidance on role of LCC generating data, supporting development, guiding partnership development.

4. Snapshot Document

• What is the greatest value of a short snapshot document – an assessment of the state of the data or an assessment of the landscape configuration for each endpoint?

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Landscape Endpoint Opportunities

Vague Language:

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Uncertain biological basis:

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Ecological Assessment Role



Cale



Reporting

3-tiered report structure:

- Comprehensive (200+ pgs)
 - Abbreviated (~20 pgs)
 - Executive Summary (<4 pgs)

What is the greatest value of a short snapshot/executive summary document?

- An assessment of the state of the data? or
- An assessment of the landscape condition for each endpoint?

GCPO LCC East & West Gulf Coastal Plain Snapshot of medium-low gradient streams & rivers					
AMOUNT	CONFIGURATION				
cumulative river length 205,812 km of rivers and streams total East Gulf Coastal Plain (EGCP): 111,727 km West Gulf Coastal Plain (WGCP): 94,085 km	floodplain connectivity 97% of intermittent flooding associated with floodplains (not agriculture) inear connectivity EGCP: 1031 reported dams mean height 20 feet 2262 sq km of permanent open water WSCP: 812 reported dams mean dam height: 32 feet (more large reservoin)				
CONDITION: quality & quantity	5002 sq km of permanent open water CONDITION: structure Coannel structure: ? riffles & pools: insufficient data imposity: Most of EGCP and WGCP streams have				
water temperature EGCP: 99% of rivers & streams 28 degrees C and lower WGCP: 25% 28 of rivers & streams degrees C and higher maximum August air temperature ranges (1981 to 2010) correspond with lethal	high sinuosity. Piigh channelization zones: western TN, north MS <u>Structural complexity instreams</u> (?) small woody debris: insufficient data Age woody debris:				
thermal tolerance limits for many fish species flow: ?	Many EGCP and WGCP streams with greater than 80% forested riparian zones (source of debris) Iow riparian zones: EGCP northerm zone, WGCP: Arkansas & Red Rivers				

Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative

Thanks!

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