

The Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative:

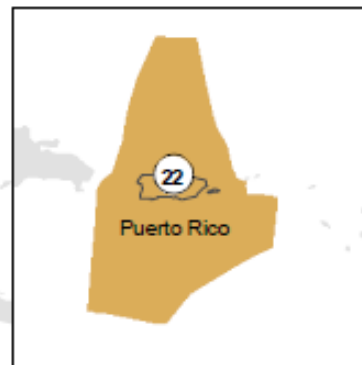
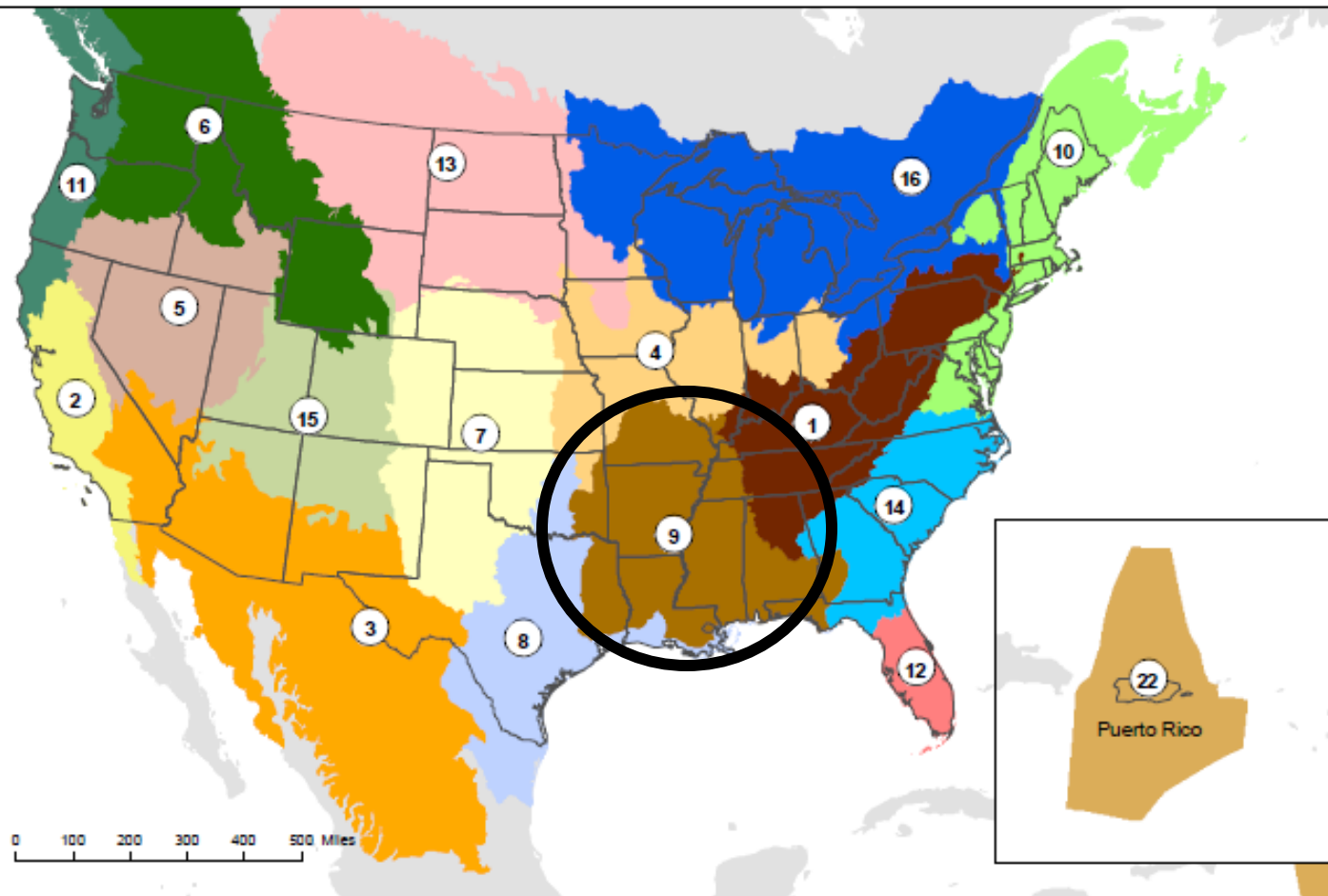
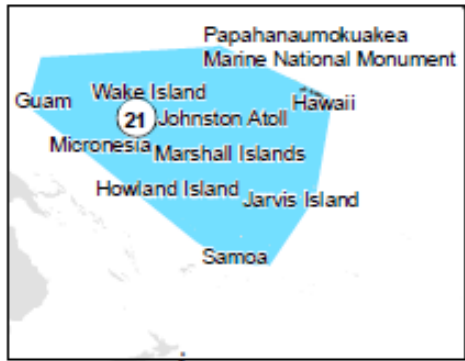
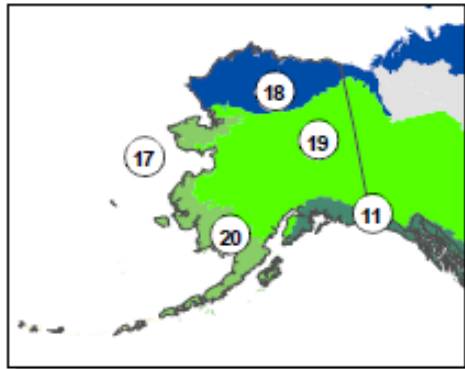
*Defining Desired Ecological States to Guide
Restoration and Conservation*



John Tirpak
Science Coordinator
U.S. Fish and Wildlife Service
Lafayette, LA

Conference on Ecological and
Ecosystem Restoration
New Orleans, LA
July 30, 2014

Landscape Conservation Cooperatives

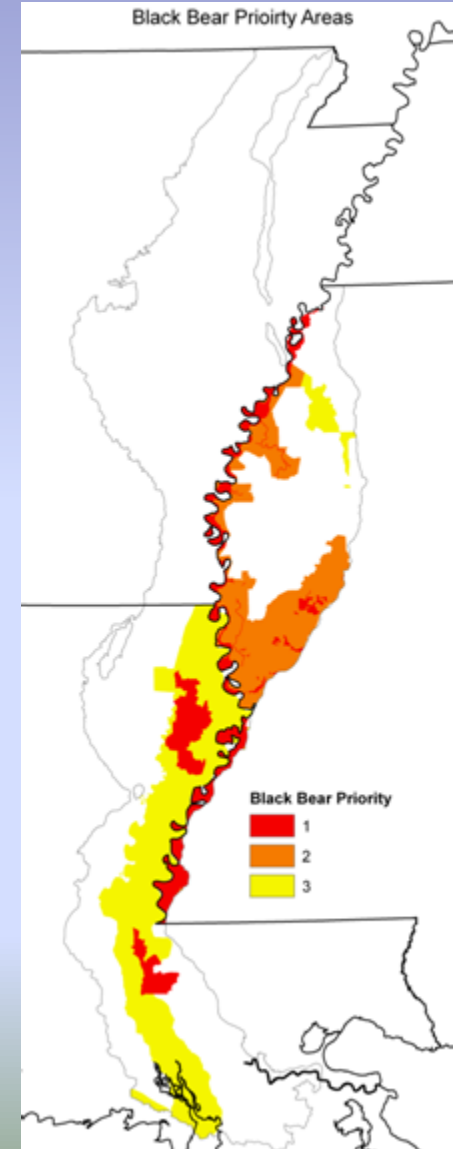
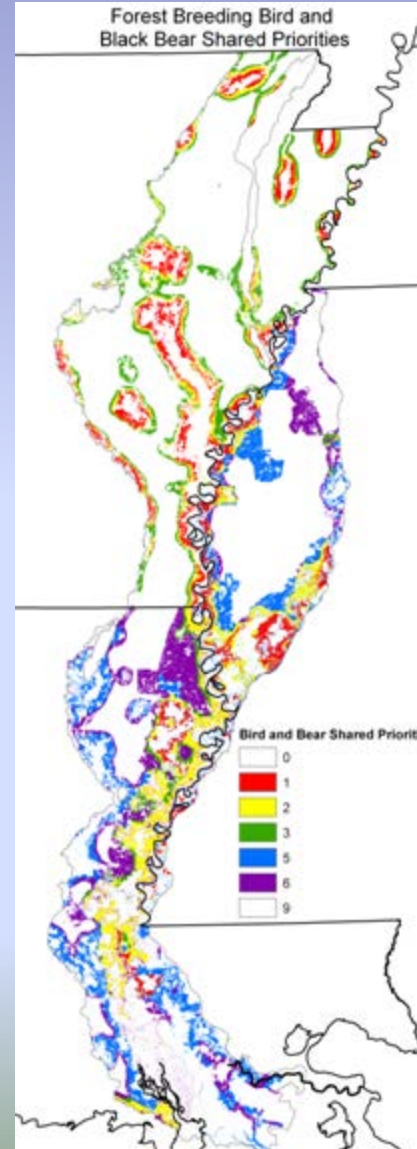
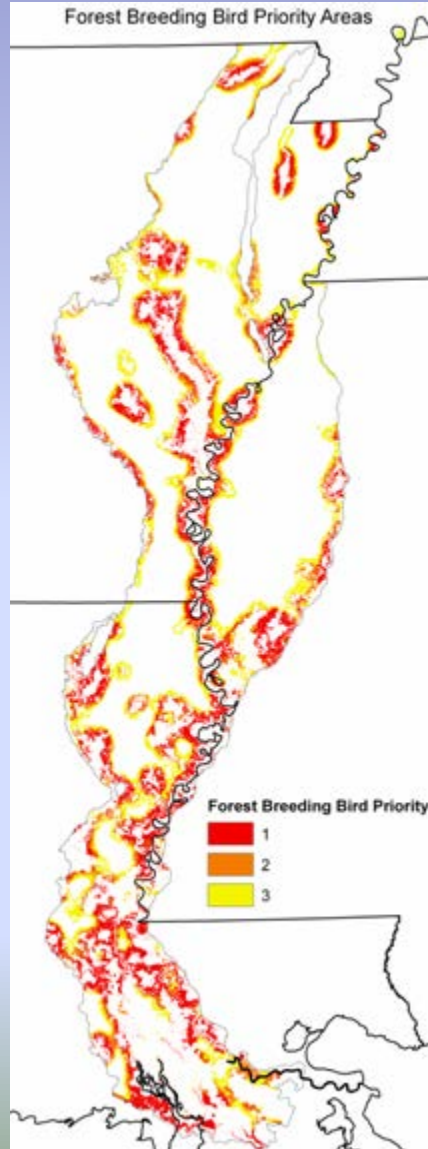


Landscape Conservation Cooperatives

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|---|-----------------------------------|-------------------------------------|----------------------------------|
| 1. Appalachian | 7. Great Plains | 13. Plains and Prairie Potholes | 19. Northwestern Interior Forest |
| 2. California | 8. Gulf Coast Prairie | 14. South Atlantic | 20. Western Alaska |
| 3. Desert | 9. Gulf Coastal Plains and Ozarks | 15. Southern Rockies | 21. Pacific Islands |
| 4. Eastern Tallgrass Prairie and Big Rivers | 10. North Atlantic | 16. Upper Midwest and Great Lakes | 22. Caribbean |
| 5. Great Basin | 11. North Pacific | 17. Aleutian and Bering Sea Islands | Unclassified |
| 6. Great Northern | 12. Peninsular Florida | 18. Arctic | |

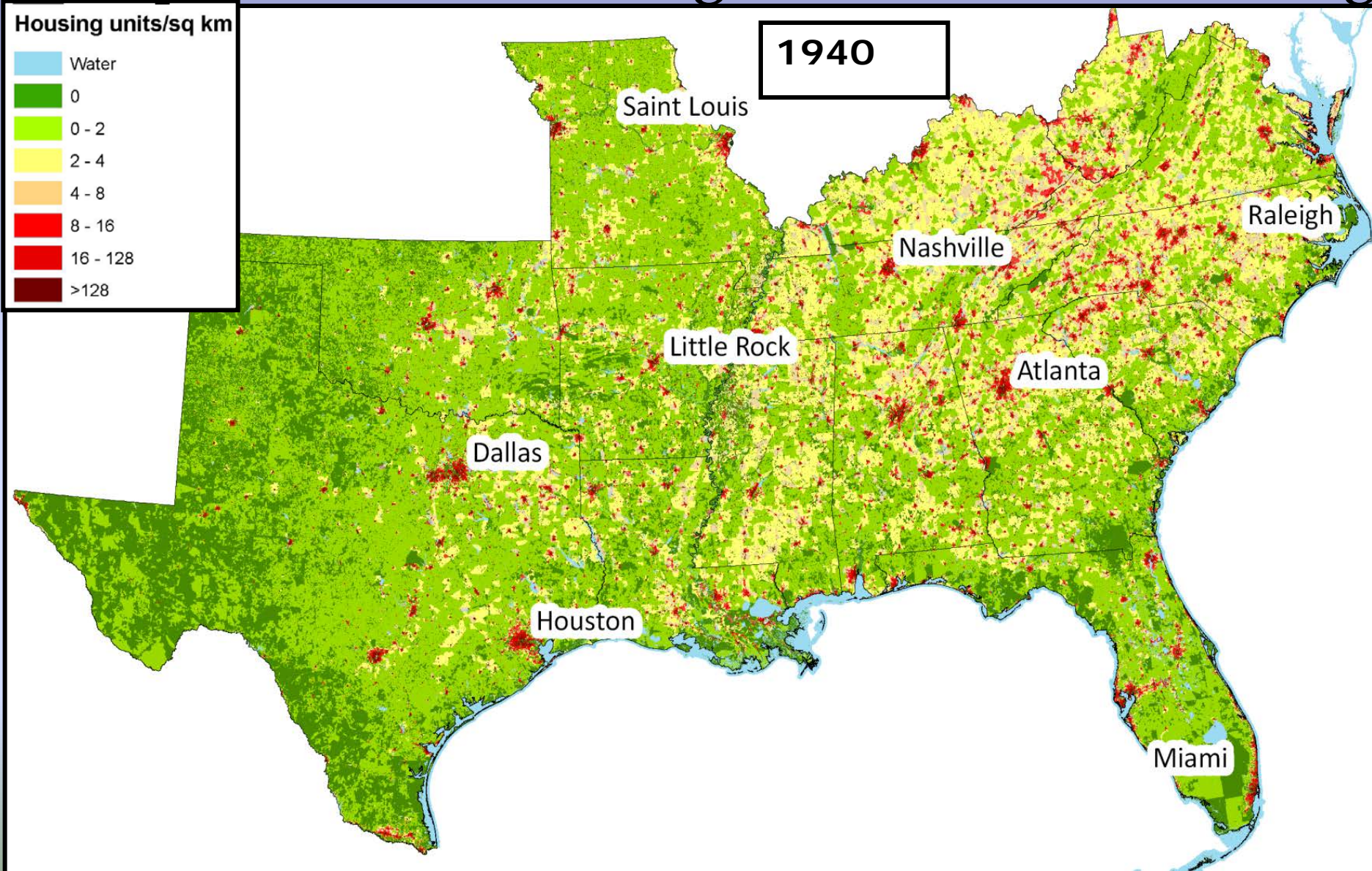
GCPO LCC Function

Integrate Priorities across Resource Perspectives



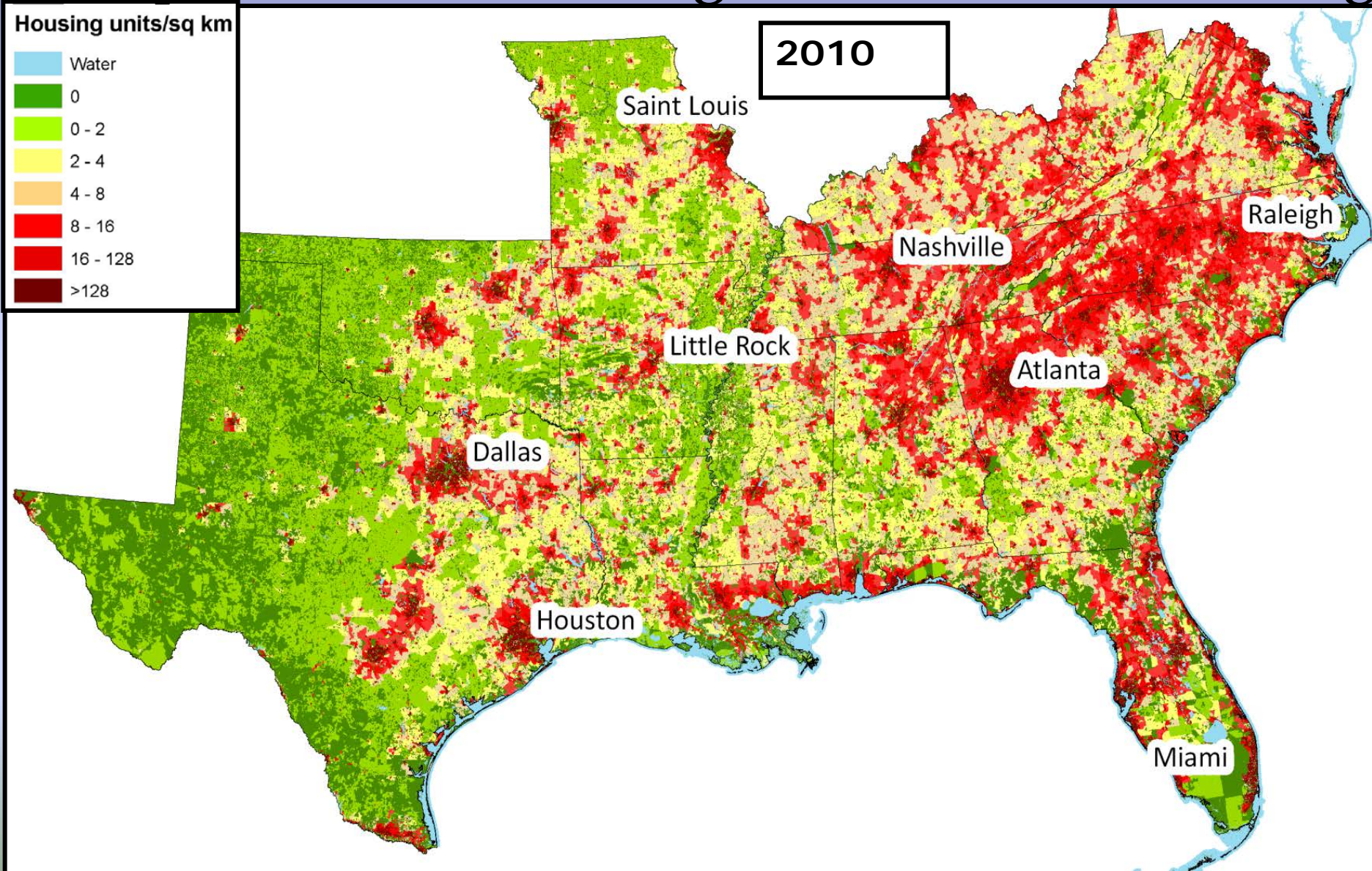
GCPO LCC Function

Incorporate Future Change into Current Planning



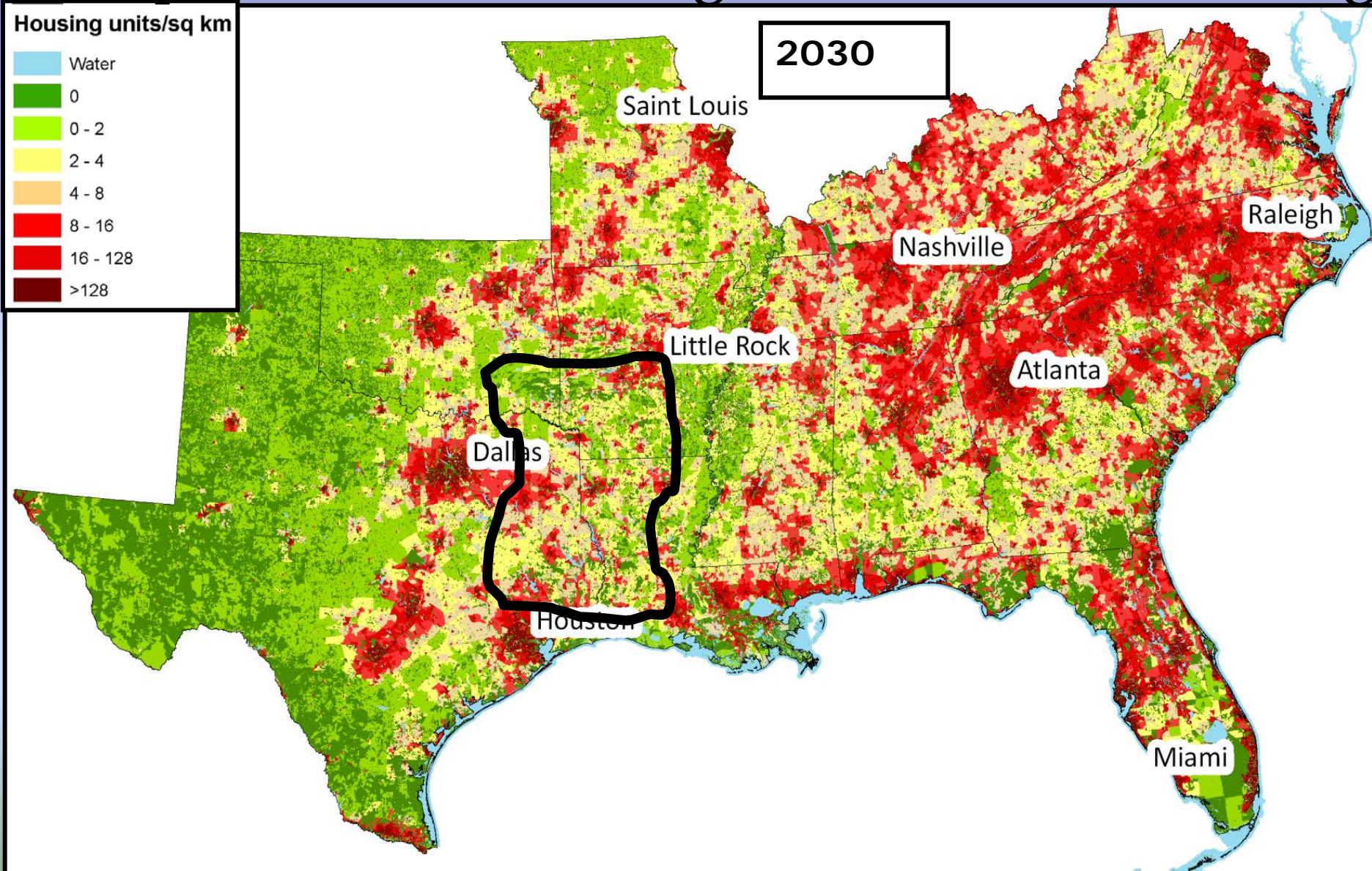
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GCPO LCC Function

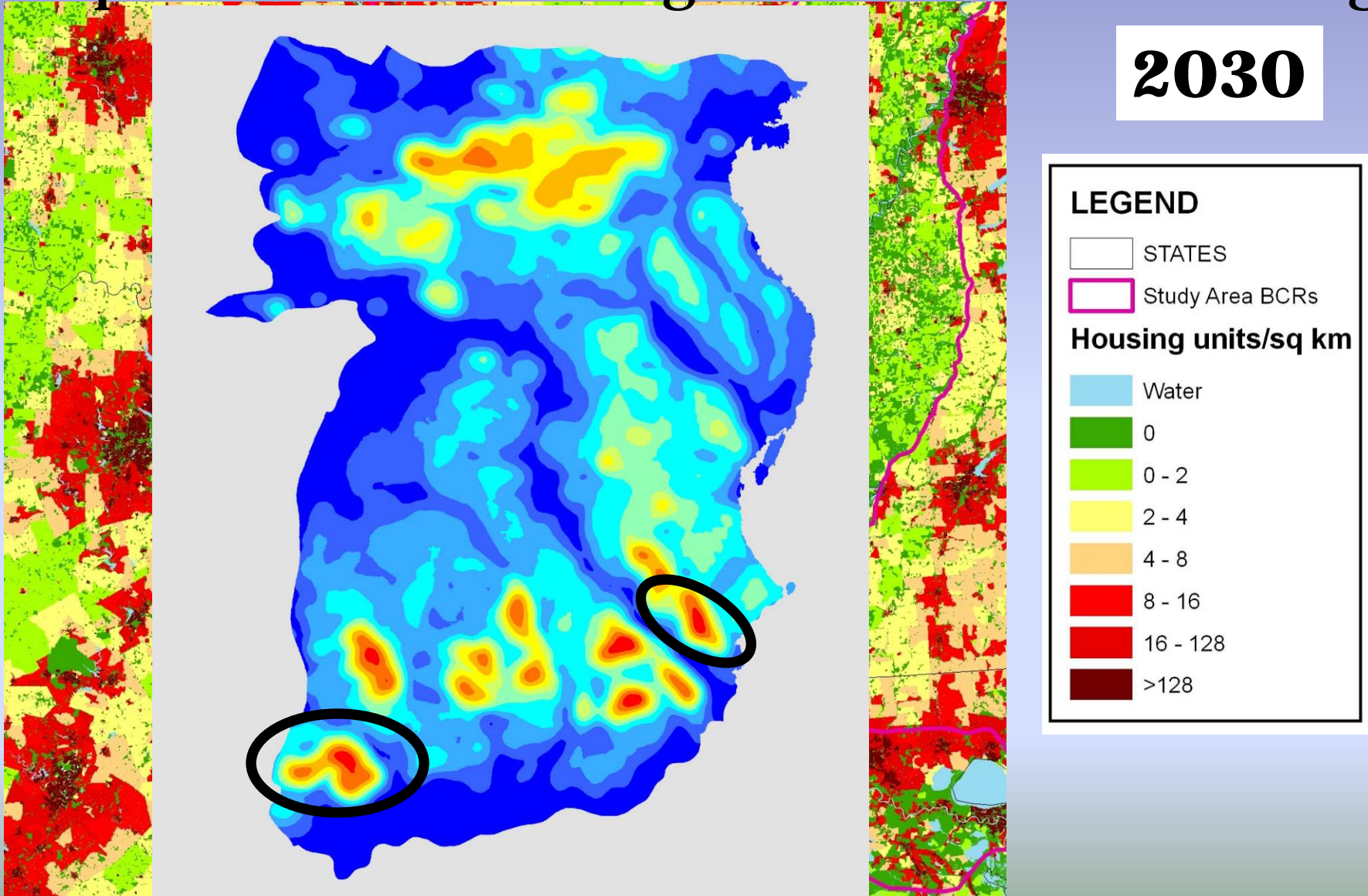
Incorporate Future Change into Current Planning



GCPO LCC Function

Incorporate Future Change into Current Planning

2030



GCPO LCC Function

Incorporate Future Change into Current Planning



“Skate to where the puck is going, not to where it has been”

-Wayne Gretzky

Gulf Coastal Plains and Ozarks LCC Adaptation Science Management Team

Charter

Purpose:

The GCPOLCC Adaptation Science Management Team (hereafter, “ASMT” or “Team”) will serve as the technical forum for coordination and communication among LCC partners in matters pertaining to the achievement of the GCPOLCC’s mission. The Team serves at the nexus of science and management and provides the Steering Committee and Partnership Advisory Council insights into the proper balance of scientific rigor and operational reality in achieving its priorities – particularly development and implementation of a Conservation Adaptation Strategy in support of sustaining trust resources in light of current and anticipated stressors within the Gulf Coastal Plains and Ozarks geography. The Team also serves as core capacity for coordination of achieving technical tasks on behalf of the GCPOLCC Partnership.

Adaptation Science Management Team *Structure*

	Fish	Herps	Birds	Mammals	Aquatic Inverts	Plants	Cultural	Water
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Adaptation Science Management Team

Structure

	Fish	Herps	Birds	Mammals	Aquatic Inverts	Plants	Culture	Water
East Gulf Coastal Plain/ South Atlantic-Gulf, Tennessee	<u>Tim Churchill</u> (TWRA)	<u>Jessica Homyack</u> (Weyerhaeuser)	<u>Barry Grand</u> (USGS- Auburn)	<u>Darren Miller</u> (Weyerhaeuser)	<u>Jeff Powell</u> (USFWS)	<u>Jeff Fore</u> (TNC)	<u>Ken Ppool</u> (MDAH)	<u>Scott Gain</u> (USGS)
Ozark Highlands/Missouri, Ohio, Upper Mississippi	<u>Mike Kruse</u> (MDC)	<u>Bill Sutton</u> (SEPARC-UTK)	<u>Todd Jones-</u> <u>Farrand</u> (CHJV)	<u>Shauna</u> <u>Marquardt</u> (USFWS)	<u>David</u> <u>Bowles</u> (NPS)	<u>Esther Stroh</u> (USGS-CEEC)	VACANT	<u>Dan</u> <u>Magoulick -</u> (USGS-UA)
Mississippi Alluvial Valley/ Lower Mississippi	<u>Hal Schramm</u> (USGS-MSU)	<u>Hardin Waddle</u> (USGS-NWRC)	<u>Randy</u> <u>Wilson</u> (USFWS)	<u>Joe Clark</u> (UTK)	<u>Wendell</u> <u>Haag</u> (USFS)	<u>Sammy King</u> (USGS-LSU)	<u>Margo</u> <u>Schwadron</u> (NPS)	<u>Ed Lambert</u> (USACE)
West Gulf Coastal Plain/ Arkansas-Red-White, TX- Gulf	<u>Lee Holt</u> (USFWS)	<u>Craig Rudolph</u> (USFS)	<u>Anne Mini</u> (LMVJV)	<u>Chris Comer</u> (SFA)	<u>Tony Brady</u> (USFWS)	<u>Jason Singhurst</u> (TPWD)	VACANT	<u>Ralph Godfrey</u> (USFWS)
Gulf Coast/TX-Gulf	<u>Glenn</u> <u>Constant</u> (USFWS)	<u>Keri Landry</u> (LDWF)	<u>Mark</u> <u>Woodrey</u> (MSU)	<u>Jeff Duguay</u> (LDWF)	<u>Meg</u> <u>Goecker</u>	<u>Julie Whitbeck</u> (NPS)	VACANT	<u>Mike Shelton</u> (ADCNR)

Functional
Researcher
Manager
Both

Organizational
Federal
State
NGO/Private
Partnership

DRAFT Science Agenda and Work Plan

- Purpose
 - Articulate the initial subset of science needs that are the specific priorities of the GCPO LCC Partnership and the logic behind their identification
 - Communication tool
 - Context for LCC science

DRAFT

Integrated Science Agenda

Gulf Coastal Plains & Ozarks

Landscape Conservation Cooperative

BACKGROUND

The mission of the Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative is to define, design, and deliver landscapes capable of sustaining natural and cultural resources at desired levels now and into the future.

To achieve this mission, the GCPO LCC Partnership has adopted Strategic Habitat Conservation (SHC) as an overarching conservation framework and identified specific roles for the Partnership – namely, integration of priorities across resource perspectives and incorporation of future change into current conservation planning. To serve these roles and make SHC operational in the GCPO region, the Steering Committee established the Adaptation Science Management Team (ASMT).

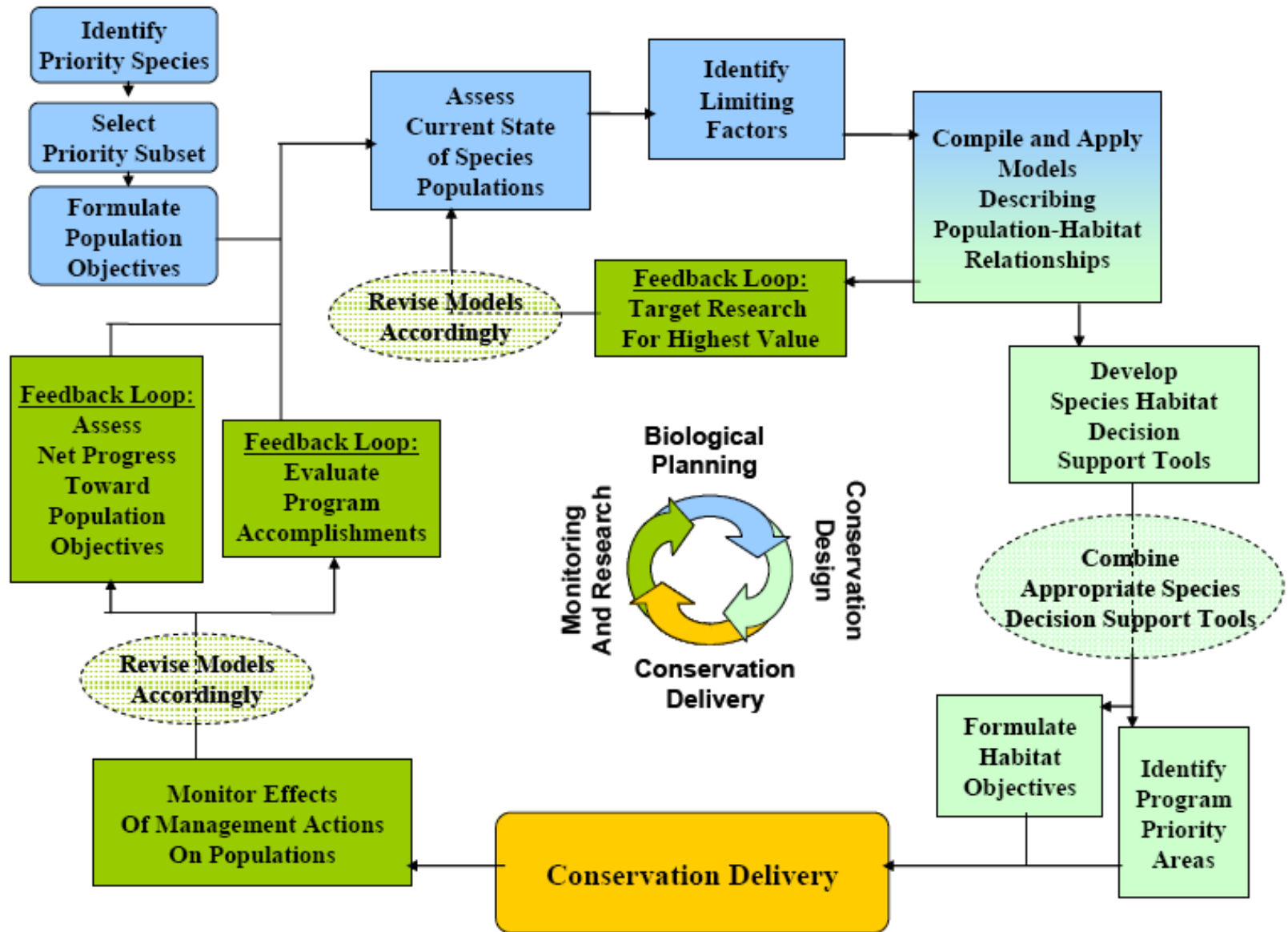
That group met in Starkville in September 2012 to outline the technical approach for meeting the LCC's mission. This document is a product of that meeting and subsequent discussions.

PURPOSE OF THIS DOCUMENT

Because the LCC enterprise encompasses 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 LCC Partnership recognizes that it must focus its investments on a specific subset of science needs most relevant to achievement of its mission. Using SHC as a guiding principle, the science needs identified by the LCC Partnership through its ASMT seek to integrate science across disciplines, scales, and resources as well as the different aspects of conservation – namely, planning, delivery, and research. The purpose of this document is to articulate the initial subset of science needs that are the specific priorities of the GCPO LCC Partnership as well as the logic behind their identification. By communicating these needs and knowledge gaps explicitly, the Partnership seeks to provide a more tangible definition of the functions of the LCC to the broader conservation community (i.e., THIS is what the LCC does), share the LCC's planning framework, enable partners to see and understand how their needs fit and are met within the LCC Partnership (and how they can influence, support and/or derive benefit from a partnership with this type of science as its goal), and guide investments of the LCC's assets in accordance with the direction outlined by the Steering Committee in the GCPO LCC Strategic Plan.

LCC Partners recognize that neither conservation nor science is a linear process – by necessity and value it operates on multiple fronts simultaneously. However, this reality may also make a collection of

Strategic Habitat Conservation



Conservation Framework

- **Decision Context**

- Decisions reflect a specific action at a specific place to affect a specific target

Prescribed burn on 40 acres of longleaf pine in Hancock County to promote an herbaceous understory for bobwhites

Reforestation of 200 acres of bottomland hardwoods in Tensas Parish to restore connectivity for black bears

Streambank stabilization on a ½-mile reach of the Kings River to reduce erosion and maintain flow suitable for smallmouth

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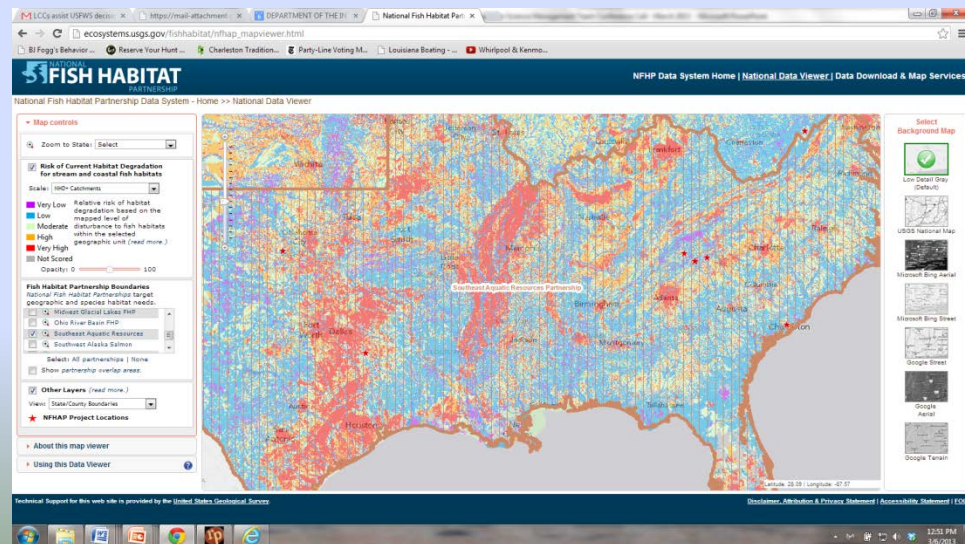
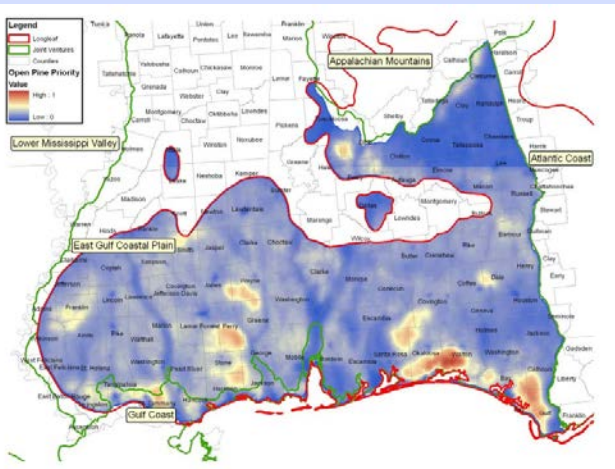
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Conservation Framework

- Decision Context

- Decisions reflect a **specific action** at a **specific place** to affect a **specific target**
- Spatial depiction of this logic is conservation design



GCPO LCC

- Purpose
 - Define, design, and deliver landscapes capable of sustaining natural and cultural resources at desired levels now and into the future

GCPO LCC

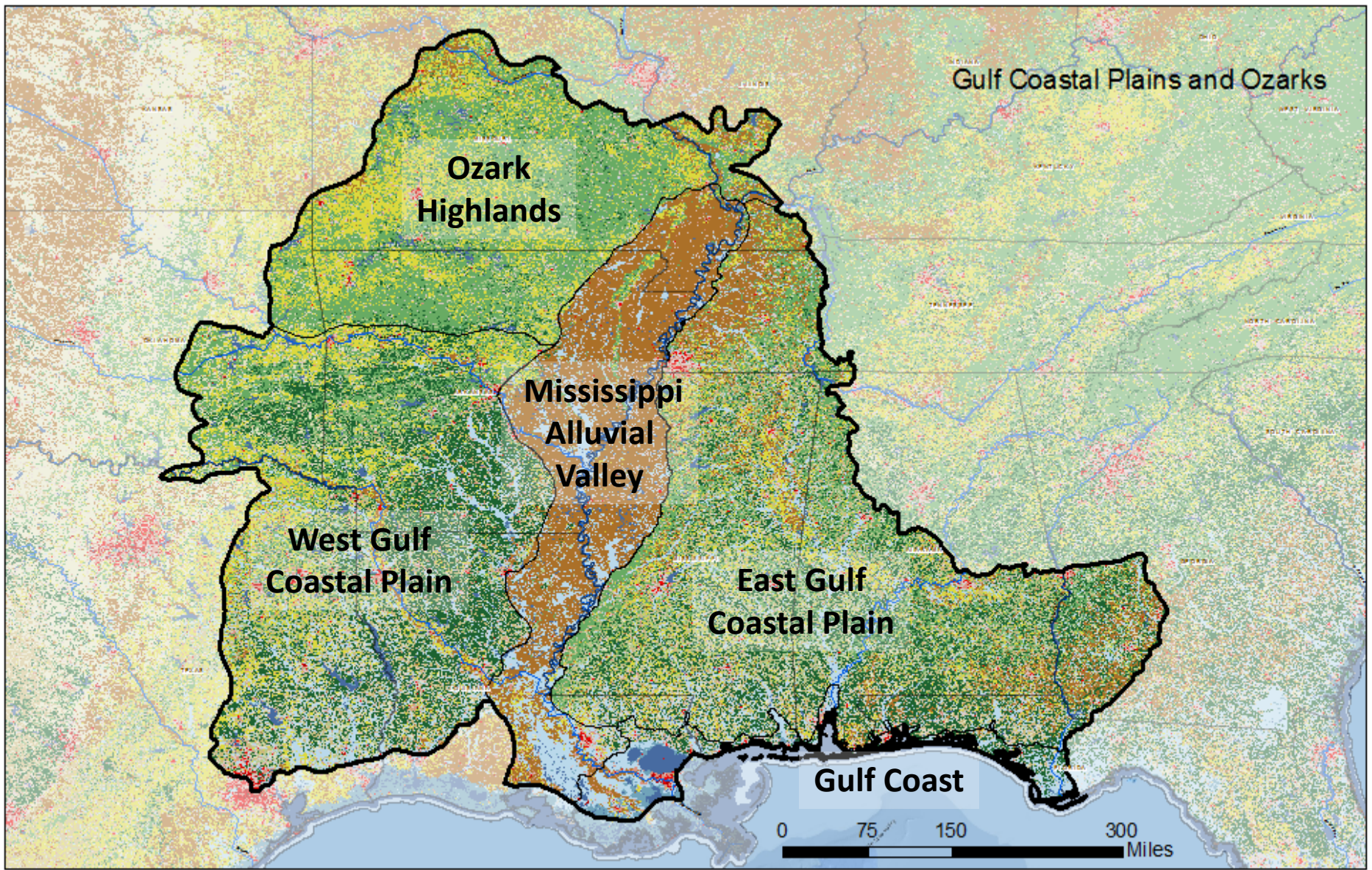
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GCPO LCC

- Purpose
 - Define, design, and deliver landscapes capable of sustaining natural and cultural resources at desired levels now and into the future

Biological Planning

- Define
 - Landscapes
 - Natural and cultural resources
 - Desired levels



Gulf Coastal Plains and Ozarks

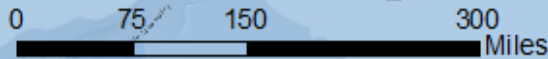
Ozark
Highlands

Mississippi
Alluvial
Valley

West Gulf
Coastal Plain

East Gulf
Coastal Plain

Gulf Coast



Open Water	Developed, Medium Intensity	Deciduous Forest	Shrub/Scrub	Cultivated Crops
Developed, Open Space	Developed, High Intensity	Evergreen Forest	Grassland/Herbaceous	Woody Wetlands
Developed, Low Intensity	Barren Land	Mixed Forest	Pasture/Hay	Emergent Woody Wetlands



Biological Planning

- Define
 - Landscapes
 - Natural and cultural resources

Defining Natural Resources

- Habitat frame of reference
 - Broadly Defined Habitats (Pyne and Hunter)
 - Beaches and Dunes
 - Bogs, Fens, and Seeps
 - Cave, Karst, and Springs
 - Estuarine Systems
 - Forested Wetlands
 - Freshwater Aquatic
 - Freshwater Transitional
 - Grasslands-Prairies-Savannas
 - Marine
 - Open Pine Woodlands and Savannas
 - Scrub-Shrub
 - Upland Hardwoods

Defining Desired Levels

- Endpoints define the desired states for broadly-defined habitats
- Endpoints are hierarchical
 - Ecosystem
 - Ecologically important processes
 - Landscape
 - Spatial and temporal patterns of habitat
 - Community
 - Biotic diversity and composition
 - Species
 - Ecological role (habitat, functional, etc.)

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 - Biotic diversity and composition
 - **Species**
 - **Ecological role (habitat, functional, etc.)**

Defining Desired Levels

- Landscape endpoints – spatial and temporal patterns of habitat
 - Terrestrial
 - Amount (acres)
 - Configuration (patch size, connectivity, etc.)
 - Condition
 - Structure (e.g., stem density, basal area, canopy cover, etc.)
 - Composition (e.g., oak, pine, grass, forb, tree, etc.)
 - Aquatic
 - Amount (acres or miles)
 - Configuration (connectivity)
 - Condition
 - Water quantity (flow)
 - Water quality (e.g., pH, nutrient load, etc.)
 - Structure (e.g., substrate, channel morphology, etc.)

Science Need Theme

- Defining desired states for each habitat in terms of specific endpoints is a top priority

DRAFT v3

Integrated Science Agenda

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Landscape Conservation Cooperative

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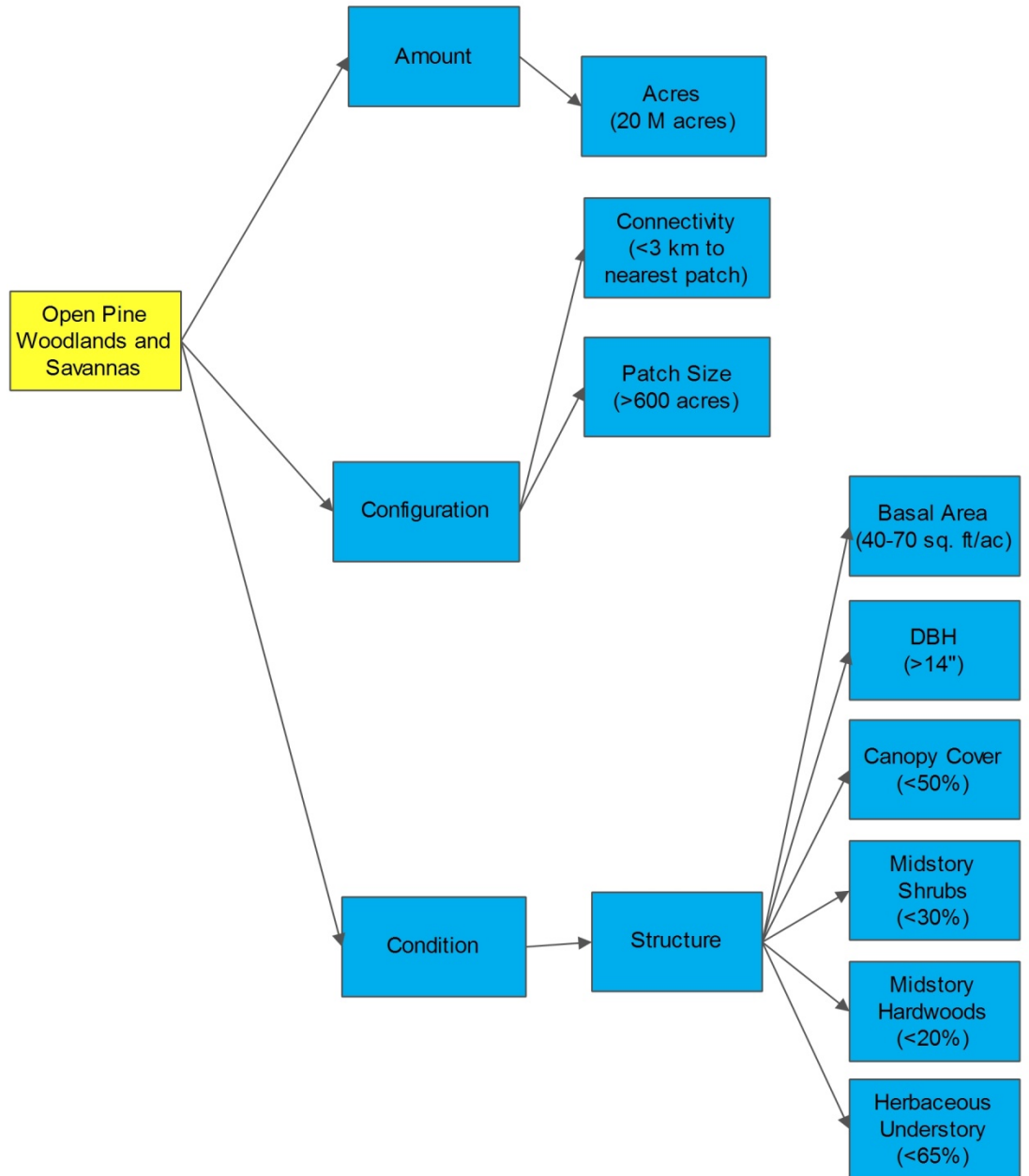
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Surrogate Species

Provide a LENS through which we look at our habitat types and quantify specific values for landscape endpoints





Open Pine Woodlands and Savannas

Amount

Acres
(20 M acres)

Connectivity
(<3 km to
nearest patch)

Patch Size
(>600 acres)

Configuration

Condition

Structure

Basal Area
(40-70 sq. ft/ac)

DBH
(>14")

Canopy Cover
(<50%)

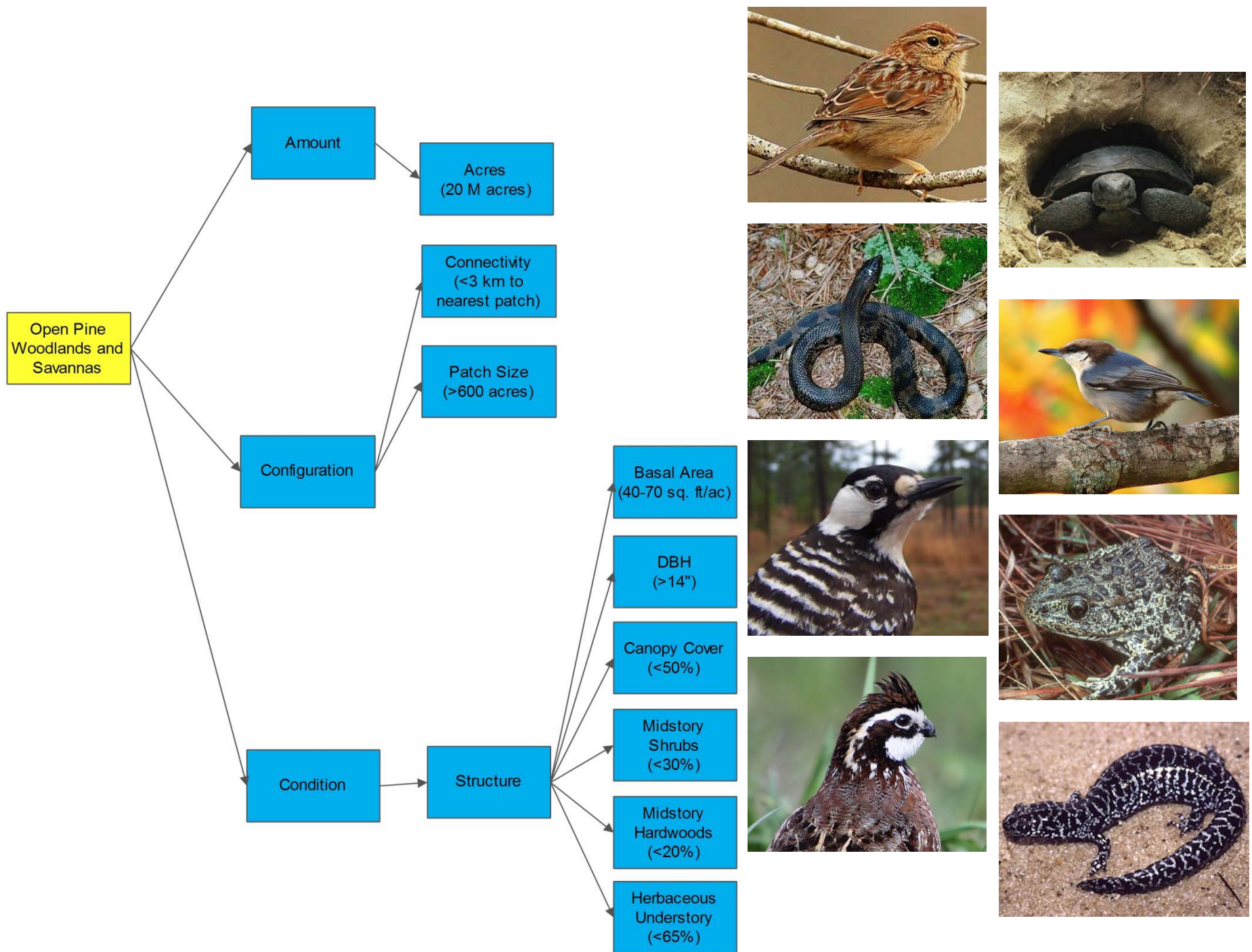
Midstory
Shrubs
(<30%)

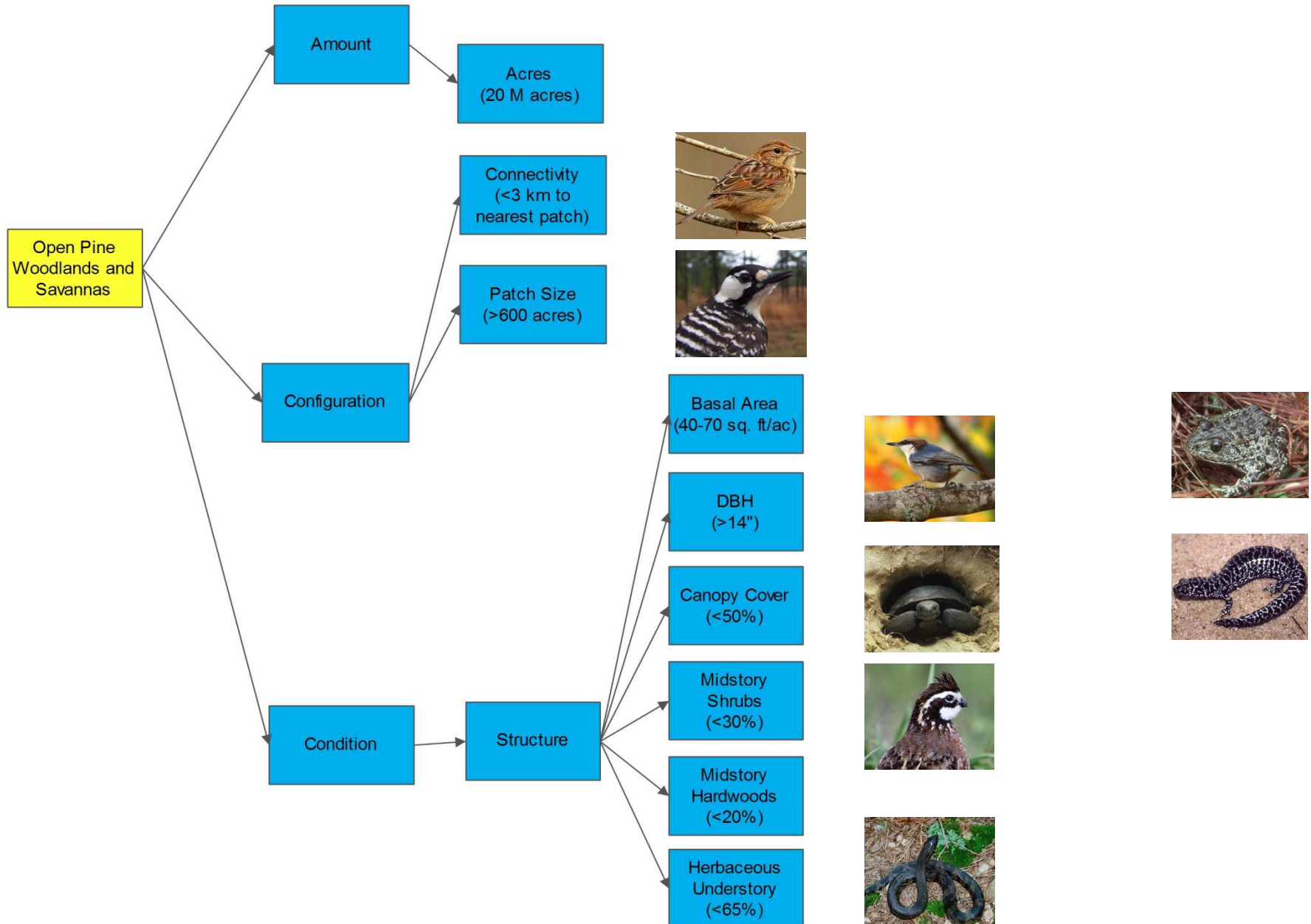
Midstory
Hardwoods
(<20%)

Herbaceous
Understory
(<65%)



Brown-headed nuthatch
Northern bobwhite
Caves and Karst
Dougherty plain cave crayfish
Georgia blind salamander





Open Pine Woodlands and Savannas

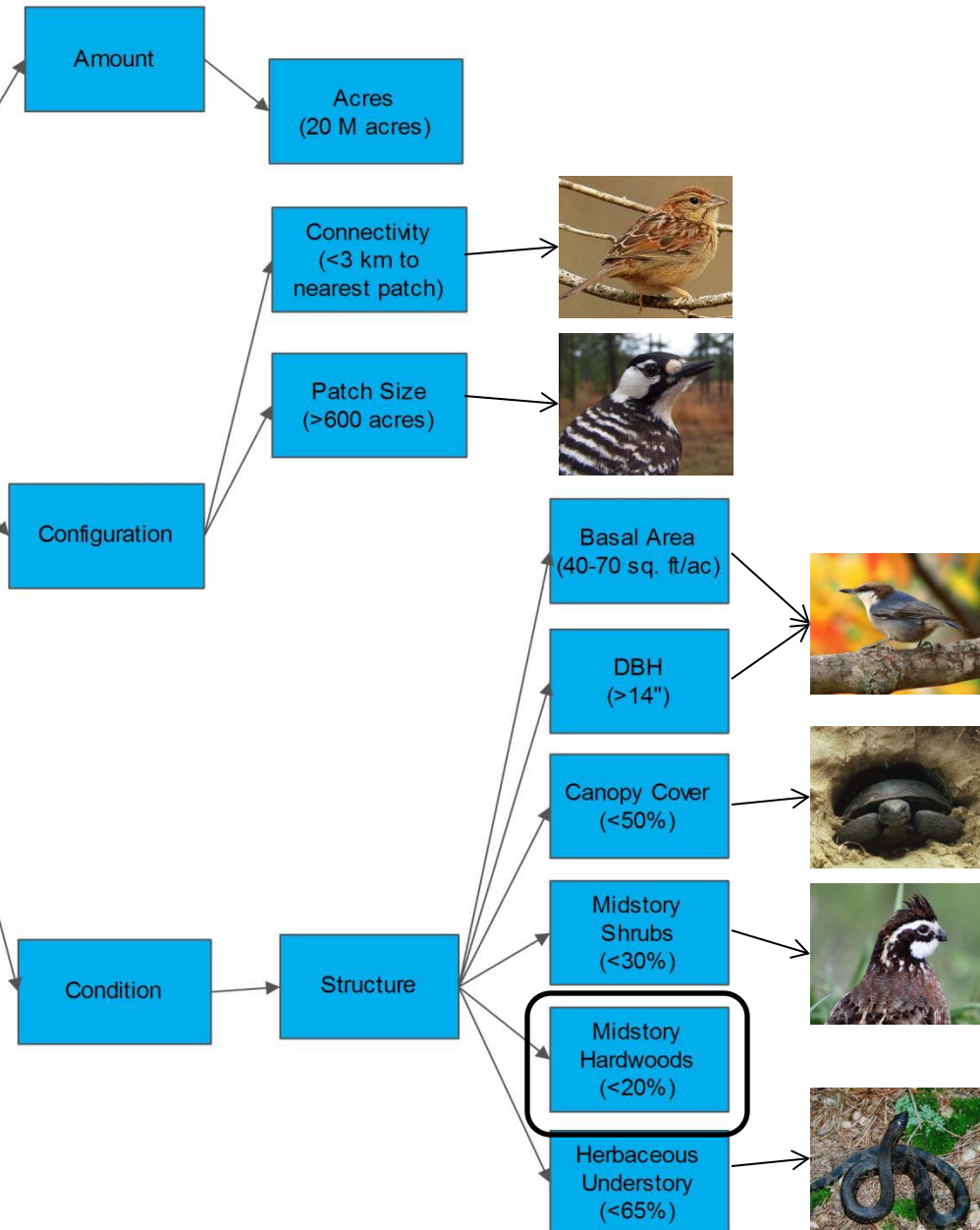
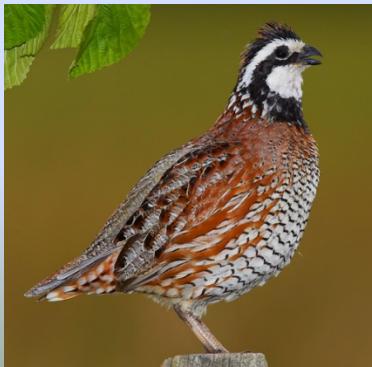


Table 2. Key limiting habitat characteristics of 4 umbrella species, northern bobwhite (NOBO), red-cockaded woodpecker (RCWO), brown-headed nuthatch (BHNU), and Bachman's sparrow (BACS) in open pine habitats in the West Gulf Coastal Plain/Ouachitas Bird Conservation Region.

Habitat Factor	NOBO	RCWO	BHNU	BACS
Large patch size (>230 ha [>585 ac])	X	X		
Low pine basal area (<20 m ² /ha [<90 ft ² /ac])	X	X		
Low hardwood basal area (<5 m ² /ha [<20 ft ² /ac])	X	X		X
Low canopy cover (<60%)	X	X		X
Dense herbaceous ground cover	X			X
Short distance (<3 km [<1.9 mi]) to nearest patch (connectivity)	X		X	X
High snag density (>40 snags/ha [16.2 snags/acre])			X	
Large diameter (>35 cm [>14 inch] dbh) pines		X	X	



West Gulf Coastal Plain Open Pine *Targets to Objectives*

- Setting population objectives for species limited by desired habitat conditions provides habitat objectives as well

Table 6. Estimated 1990s populations (adjusted for sub-regional habitat suitability index [HSI] scores) and medium- and long-term population objectives for open pine umbrella species in the West Gulf Coastal Plain/Ouachitas Bird Conservation Region. Partners in Flight (PIF) estimated landbird populations from the North American Landbird Conservation Plan (Rich et al. 2004), which were based on Breeding Bird Survey data from the 1990s.

Variable	Northern bobwhite	Brown-headed nuthatch	Bachman's sparrow
PIF population estimate (<i>No. of pair</i>)	110,000	120,000	10,000
Percent of population in 'Open Pine' ^a	40%	100%	~100%
HSI adjusted 1992 population (<i>C=No. of pair</i>)	44,000 ^b	120,379	9,913
Average BBS abundance 1999-2003 (<i>BBS2001</i>)	8.59	1.176	0.14
Minimum viable population (<i>N</i> ; pairs)	60	28	46
Breeding density (<i>D</i> ; ha/pair)	6.8	3.55	3
Area for <i>N</i> pair (<i>A</i> ; ha)	408	99	138
Current habitat (ha) ^c	299,200	125,354	29,739
Average BBS abundance 1978-1982 (<i>BBS1980</i>)	38.86	1.542	0.524
Medium-term population objective (<i>P_{medium-term}</i>)	199,050	157,844	37,103
Population deficit for medium-term objective	(155,050)	(37,465)	(27,190)
Medium-term habitat objective (<i>H_{med-term}</i> ; ha)	1,353,540	164,369	111,309
Medium-term habitat deficit (ha)	(1,054,340)	(39,015)	(81,570)
Average BBS abundance 1967-1970 (<i>BBS1969</i>)	51.18	1.866	1.068
Long-term population objective (<i>P_{long-term}</i>)	262,156	56,029	75,622
Population deficit for medium-term objective	(218,156)	(70,631)	(65,709)
Long-term habitat objective (<i>H_{long-term}</i> ; ha)	1,782,661	198,903	226,866
Long-term habitat deficit (ha)	(1,483,461)	(73,549)	(197,127)

^a 36% of birds in the WGCPO (calculated from data in the National Bobwhite Conservation Initiative, Table 20, page 97).

^b 40% of PIF population estimate.

^c Calculated as the product of HSI adjusted 1992 population estimate and assumed breeding density.

LONGLEAF PINE FOREST

FOURTH IN A SERIES



Research Directions

- Testing the robustness of these relationships
 - Joseph W. Jones Ecological Research Center
 - Mississippi State University
- Incorporating economics and landowner preferences
 - Weyerhaeuser and NCASI
 - Mississippi State University, Duke University, NRCS, and Farm Bureau
- Thinking about the future
 - US Forest Service and University of Missouri
 - USGS Climate Science Centers

Take Home Message

- LCCs are conservation partnerships
 - Define shared vision for conservation
 - Desired ecological states
 - Coordinate priorities across place-based and resource-based partnerships
 - Identify science needs shared by multiple partners that address desired states for habitat types
 - Coordinate research to address these science needs

For More Information

www.gcpolcc.org



GULF COASTAL PLAINS & OZARKS HIGHLIGHTS

GCPO LCC Strategic Plan 2013 - 2018



GCPO LCC Strategic Plan 2013-2018 approved

USFWS announces New national LCC Coordinator

Read about remote-sensed Alligator Gar habitat

Welcome to Gulf Coastal Plains and Ozarks LCC

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HOME



Read more about the GCPO LCC.

NEWS & VIEWS



A Post-Shutdown Update on the GCPO LCC RFP Proposal Review Process

Posted by John Tirpak on October 24, 2013 at 11:35am



Wetland Techniques Book (volumes 1-3) published and available online

Posted by Gregg Elliott on October 22, 2013 at 5:11pm

LATEST ACTIVITY



John Tirpak posted News

Contact Info

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