The Gulf Coastal Plains and Ozarks Landscape Conservation Cooperative

2010 - 2017

A foundation for the future

Introducing the GCPO LCC

Who?

The Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative (**GCPO LCC**) is a partnership of 26 separate organizations, including 10 state agencies, who recognize the value of looking together beyond individual jurisdictional, budgetary, and property boundaries to gain understanding of large-scale issues and how to address them. The LCC has been staffed by a diverse group of experts from 7 partner organizations. The LCC Network, of which the GCPO LCC is a part, uses science, big data, cutting-edge technologies, and partnerships to secure the future of our natural world in all 50 U.S. states and our protectorates.

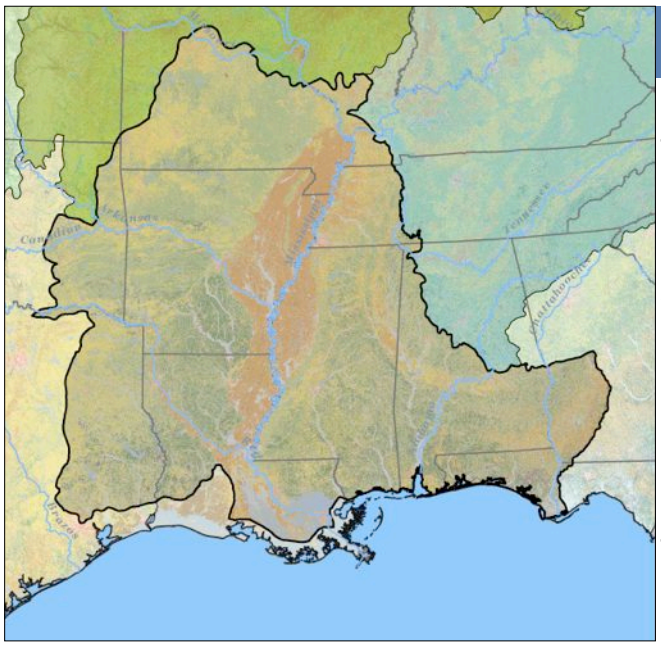
What?

The mission of the GCPO LCC is to ❖ define a shared vision for sustainable natural and cultural resources in the face of a changing climate and other threats; ❖ design strategies to achieve that vision; ❖ and deliver results on the ground through leadership, partnerships, contributed resources, evaluation and refinement over time.

Our vision of success is to ensure natural and cultural landscapes capable of sustaining healthy ecosystems, clean water, fish, wildlife, and human communities in the 180-million-acre Gulf Coastal Plains & Ozarks region through the 21st century.

Where?

The GCPO's 180 million acres include all of Arkansas and Mississippi and parts of 10 other states, spanning 5 major subregions: the East Gulf Coastal Plain, West Gulf Coastal Plain, Ozark Highlands, Mississippi Alluvial Valley, and Gulf Coast.



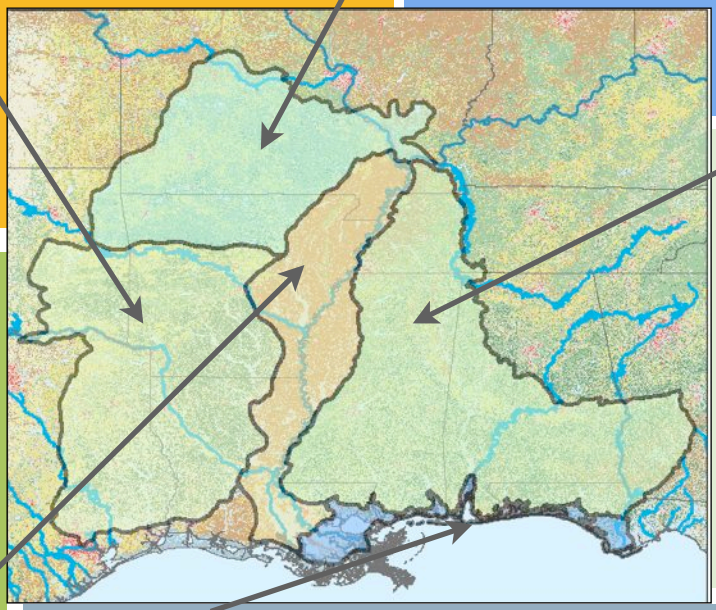
Why?

In the GCPO region, human populations are on track to increase by as much as 60% by the year 2060, and with that will come greater demand for energy, water, recreation, and almost a tripling in the land devoted to development. At the same time, average temperatures will increase, storms will increase in strength, rainfall is likely to become more episodic, and the Gulf Coast will continue to experience sea level rise. Almost 90% of the bottomland forests of the Mississippi Alluvial Valley have been lost to agriculture, and one of the world's most diverse aquatic fauna in the Tennessee River Basin is threatened by sedimentation, barriers, and projected climate-related changes in flow. These are the large-scale challenges that the GCPO LCC has sought to address.

Meet the Habitats

West Gulf Coastal Plain: The WGCP encompasses 39 million acres and is ecologically similar to the EGCP. The region is ~71% forested with nearly ~42% in **Open Pine** and the greatest proportion of **Grassland-Prairie-Savanna**, with almost 11.9 million acres. The WGCP has the lowest proportion of land in row crops or pasture, but the greatest fraction of developed land. The region has approximately 58,400 miles of **Medium-gradient Streams**.

Ozark Highlands: The OZHI includes the Ozark and Boston Mountains. With altitudes to 2,700 feet, this region holds 66% of **Upland Streams** miles and 39% and 68%, respectively, of **Upland Hardwood Forest** and **Upland Hardwood Woodlands** within the GCPO. Also ~25% (10 million acres) is **Grassland-Prairie-Savanna**.



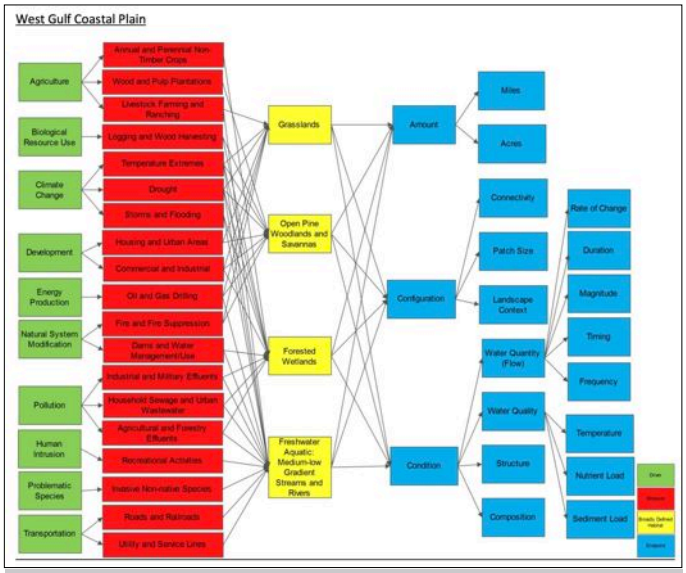
Mississippi Alluvial Valley: The MAV has 28 million acres and is an ecosystem created by the Mississippi river and its flood pulses. This area encompasses the vast majority of **Mainstem Big River** habitat within the GCPO, as well as **Forested Wetlands**. Pre-settlement forested wetlands covered 22 million acres, but today only ~22% remain. Agricultural development has resulted in a land base that is 50% row crops.

East Gulf Coastal Plain: The EGCP at 65.5 million acres is the largest sub-unit of the GCPO. More than 127,880 miles of **Medium-gradient Streams** course through this region (more than 1/3 of GCPO river miles), including areas of very high aquatic biodiversity. The EGCP also contains a large proportion of **Grassland-Prairie-Savanna**, with more than 9.7 million acres, while approximately 35% is in **Open Pine**.

Gulf Coast region: The GC sub-region includes marshlands in Louisiana and the entire coastline of Mississippi, Alabama and the panhandle of Florida. **Beaches and Dunes** and **Tidal Wetlands** are restricted to the GCPO's Gulf Coast. Tidal Wetland marshes in this area make up a large portion of the northeast Gulf Coast's marshes, which constitute 60% of the continental US. total.

Open pine is one of the most beautiful forms of southern pine forests, known for its open structure -- maintained by fire or other disturbance -- that allows dappled sunlight to support a diversity of grasses and flowers in the understory as well as a suite of open pine-dependent wildlife species. **Grassland-Prairie-Savanna** ecosystems in North America are considered critically imperiled, having been reduced from their pre-European settlement extents by about 98%, with associated declines in grassland-dependent wildlife. **Medium-gradient Streams** is a very broad designation that relies on gradient to define it and generally excludes the smaller, steeper **Upland Streams** located in mountainous areas. The GCPO's **Mainstem Big Rivers** include eight of the ten largest rivers (by discharge) in the lower U.S. Large rivers are characterized by deep channels, often used for navigation, and extensive and complex connections to their floodplain, often altered by dams and levees. **Upland Hardwoods** include forests and woodlands located primarily in the Ozark Highlands. **Forested Wetlands** associated with the Mississippi River were once one of the largest expanses of bottomland hardwood forest in North America, and now one of the most impeded due to a vast network of protection levees. These forests include oak-dominated bottomland, cypress-tupelo, and riparian forests. **Tidal Wetlands**, or salt marshes, are complex, dynamic, and transitional systems that provide habitat for a myriad of wildlife species, filtration that supports water quality, and natural barriers that contribute to the security of inland coastal areas. **Beaches and Dunes** constitute large accumulations of sediment (i.e. sand), and both beaches and dunes are extremely dynamic systems that buffer the interface between land (including coastal communities), sea, and atmosphere. *(See page 3 for an explanation of the process for selecting priority habitats).*

Biological Planning: The Integrated Science Agenda



Conceptual model of priority habitat systems in the West Gulf Coastal Plain. This model was used to identify drivers of change, how the the drivers create specific stressors that affect habitats, and how these habitats can be measured in terms of specific targets that, together, describe their amount, condition, and configuration.

The Science Agenda also identifies a suite of representative species for each priority habitat type. The species shown above are representative of grasslands, clockwise from top left: LeConte's Sparrow, Eastern Cottontail Rabbit, Ornate Box Turtle, and Pygmy Rattlesnake.

The Integrated Science Agenda

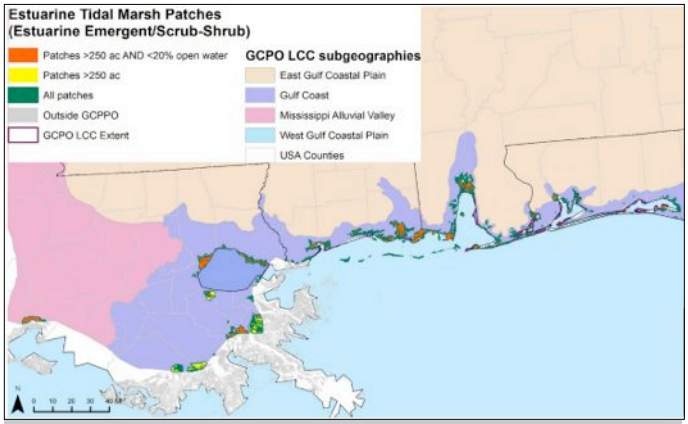
The GCPO LCC assembled an **Adaptation Science Management Team** (ASMT) of ~40 experts to integrate science across disciplines, scales, and resources as well as the different aspects of conservation. They did this by providing guidance and expertise in development of an **Integrated Science Agenda** (ISA), the LCC's foundational planning document.

The LCC adopted universally recognizable Broadly Defined Habitats (developed by NatureServe and the U.S. Fish and Wildlife Service) as a habitat framework because they are applicable to both terrestrial and aquatic systems. In addition, they are readily mappable to many existing classification systems. The ASMT identified 12 broad habitat types within the GCPO and selected one priority terrestrial and one priority aquatic habitat for each of the 5 subregions, for a total of nine (grasslands and open pine are represented twice).

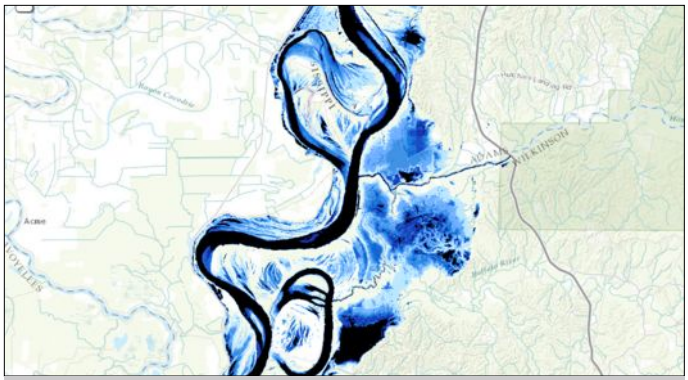
Biological planning also entails establishment of specific and measurable outcomes that, taken together, define success. The Science Agenda links the nine priority habitat systems to Species of Greatest Conservation Need (which are identified and managed by state wildlife agencies). General desired ecological states for terrestrial and aquatic habitat types reflect three primary landscape attributes: amount, configuration, and condition. In addition to spatial attributes, temporal aspects are also important: for example an appropriate distribution of successional stages in terrestrial habitats or attributes of flow in aquatic habitats.

Target conditions attempt to quantify the desired ecological states, and they were often developed by identifying species' limiting factors within each system. Finally, the draft ISA identifies data and information gaps that represent barriers to successful conservation planning. These gaps guide investments in science.

Biological Planning: The Ecological Assessment



The Ecological Assessments represent the LCC's current state of knowledge about habitat conditions as of 2016. Each Assessment reviews individual target conditions that characterize a healthy habitat, e.g. the extent of tidal marsh remaining in various patch sizes (shown above), the extent to which forest patches are connected, or the quality of water in a river. Each Assessment is composed of sophisticated analyses that combine multiple datasets to show what is known about the current landscape.



More than 47 datasets were developed by GCPO LCC staff, and many others by LCC-sponsored research, to assess target conditions defined in the Science Agenda. The map above shows Inundation Frequency, an LCC original dataset with many applications.

Ecological Assessment

To achieve the broad goal of desired ecological states for each priority habitat system, the GCPO LCC first had to determine how far current conditions are from the ideal. Therefore, GCPO LCC staff undertook an assessment of the current condition of the priority habitat systems. The nine priority habitat systems identified in the Science Agenda are ❖ Upland Hardwoods ❖ Upland Streams ❖ Open Pine Woodlands ❖ Medium-low Gradient Streams and Rivers ❖ Grasslands, Prairies, and Savannas ❖ Forested Wetlands ❖ Mainstem Big Rivers ❖ Estuarine Tidal Marsh ❖ Beaches & Dunes

The **Ecological Assessment** (EA) focuses on using existing LCC-wide digital geospatial datasets and protocols for mapping individual target conditions defined in the Science Agenda for each of the nine priority habitat types. In addition, 47 original or customized datasets were developed by LCC staff with many more from science projects. The target conditions assess three basic themes as they relate to desired ecological states of each habitat system:

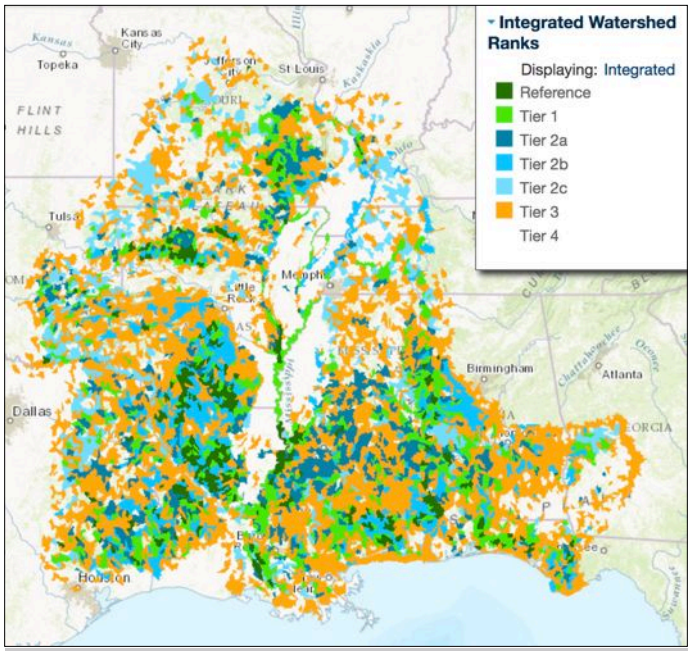
- How much habitat is in the desired ecological state?
- How much more is needed?
- Where is the habitat already in the desired ecological state and where are opportunities to manage for these conditions?

The EA team produced full individual reports and Assessments-in-Brief for 8 of 9 priority habitat systems (Beaches & Dunes still in process in fall 2017).

State of the GCPO

The first State of the Gulf Coastal Plains & Ozarks report was issued in October 2017, culminating four years of work in assessing current conditions of the region's nine priority habitats. The State of the GCPO gives a snapshot overview of broad habitat conditions, as well as restoration/protection opportunities.

Landscape Conservation Design: Conservation Blueprint 1.0



Habitat-specific maps were integrated into a single map ranking watersheds according to both terrestrial and aquatic conservation priorities across the region.

In the spring of 2016, a series of eight workshops were held at locations throughout the GCPO region. More than 125 stakeholders from over 50 organizations provided their input to GCPO LCC Blueprint 1.0. Blueprint 2.0 was in process in 2017.

Conservation Blueprint 1.0

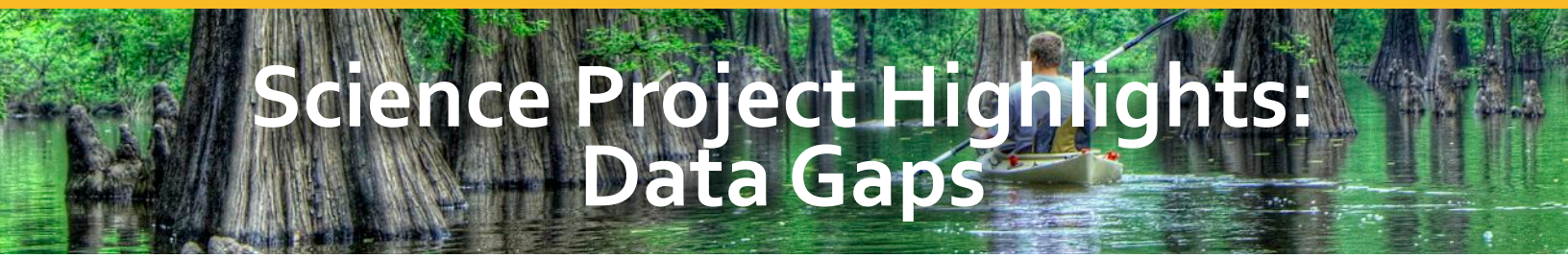
Designing for landscape-scale conservation has been at the core of the GCPO LCC's work from its inception. The Integrated Science Agenda, the science projects responsive to research needs identified in the Agenda, and the baseline habitat conditions determined via the Ecological Assessments all served as building blocks in developing **GCPO Conservation Blueprint 1.0**, released in 2016.

Ecological Assessment findings on individual target conditions were combined to create Condition Index maps for each habitat. These maps provide a transparent framework for combining individual target conditions into a single score. They do not, however, directly indicate importance of a particular site or the need for a particular action (e.g. restoration) at that site.

To capture these considerations, GCPO LCC staff developed action opportunity maps. These maps show where the following actions are most optimal on the landscape:

- habitat maintenance (maintain good condition)
- habitat enhancement (improve condition)
- habitat restoration (site potential currently under alternative use)
- protection (these sites take into account current condition, species distributions, partnership opportunities, and risk of landscape change by 2060)

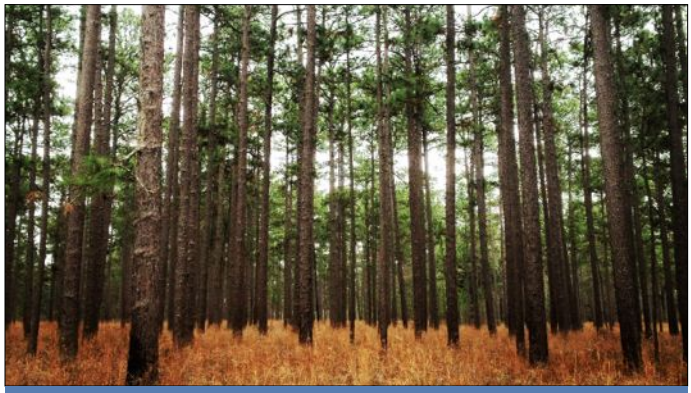
The Draft Conservation Blueprint 1.0 is meant to guide resource allocation and support management decisions across all nine priority systems. The input of more than 125 stakeholders from around the region were incorporated into the Blueprint via a series of 8 workshops. Blueprint 1.0 is the first iteration of what is intended to be an ongoing process to define a connected network of Gulf Coastal Plains and Ozarks lands and waters.



Science Project Highlights: Data Gaps

Inundation Frequency Mosaic

The **IF Mosaic** is the first effort to map floodplain inundation frequency at the landscape scale in the south central United States. Using 15-40 images per Landsat scene, it establishes a wide range of possible flood frequencies and their relationship to rising and falling river stages. The IF can be flexibly applied to help define floodplain habitat availability for terrestrial and aquatic species, identify areas for future flood risk management strategies in large river floodplains, and more.

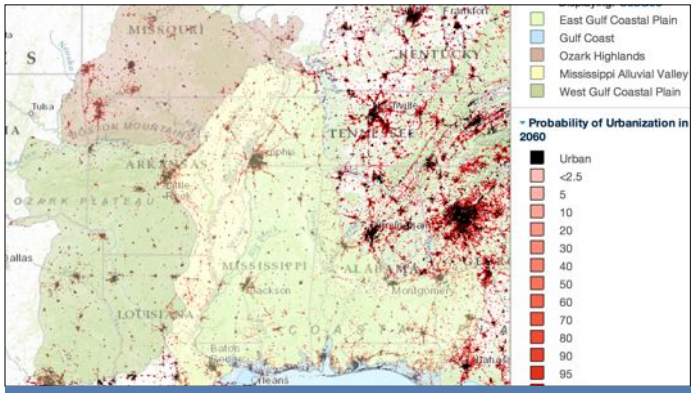


Open Pine Research

Only about 4% of the region's 45 million acres of pine forest, has an open canopy - the historical condition of highest benefit for wildlife. Five GCPO LCC open pine projects have delivered analyses and tools that are (1) improving our ecological understanding of landscape and stand-scale factors of importance to wildlife, (2) assisting landowners and foresters to assess the wildlife value of their forests, and (3) improving the attractiveness of conservation incentives to landowners who harvest timber from their lands.

Private Lands Ecosystem Services

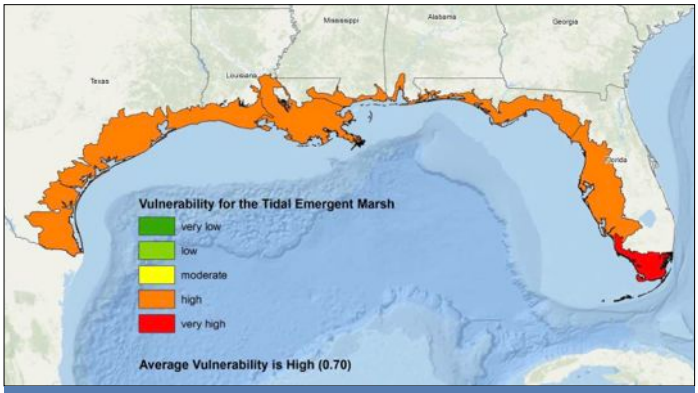
This project on **ecosystem service valuation and attitudes** -- conducted by 3 research institutions -- used existing datasets and polled thousands of landowners and conservation providers to produce (1) a high-level map of ecosystem service supply in the GCPO region; (2) a survey of landowners' reasons for owning lands, concerns, and valuation of conservation programs and key ecosystem services; and (3) a social network analysis of conservation service providers within the region.



Conservation Planning Atlas

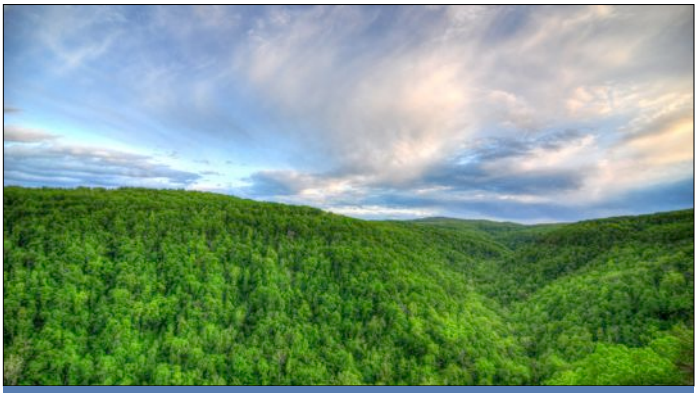
An online portal where spatial data meets dynamic web-mapping, the **CPA** is available to users without desktop GIS. Conservation managers, researchers, and Landscape Conservation Cooperative partners use the CPA to discover, view, retrieve, and perform analyses on spatial information with specific conservation goals in mind. Over 520 datasets were housed on the CPA as of September 2017, including the 114 datasets used to create the GCPO LCC's Blueprint 1.0.

Science Project Highlights: Future of Conservation



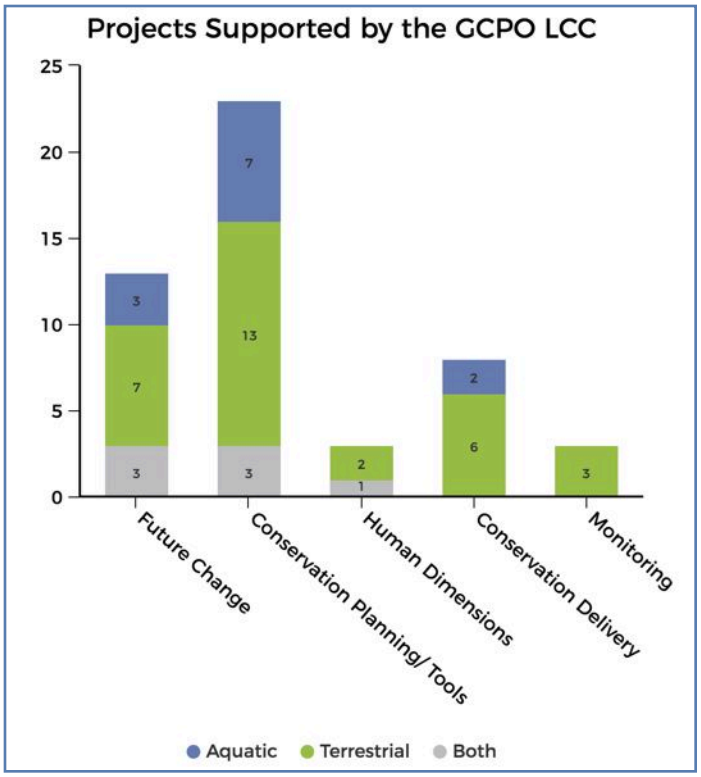
Gulf Coast Vulnerability Assessment

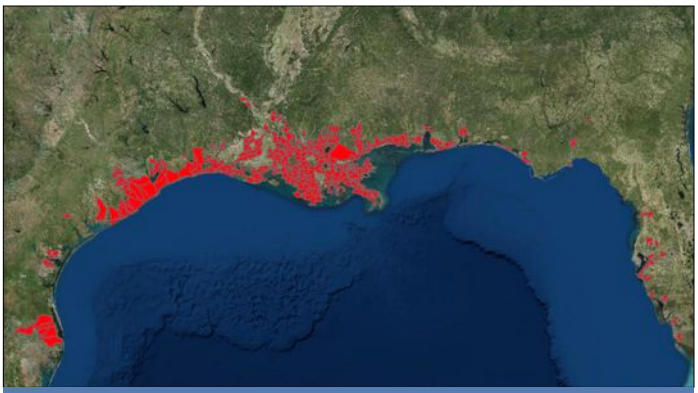
Awarded the inaugural Sam D. Hamilton Award for Transformational Conservation Science in 2015, the **GCVA** was a multi-LCC project conducted in partnership with the Gulf of Mexico Alliance and 50 experts. It assessed mangrove, oyster reef, tidal emergent marsh, and barrier islands, and a suite of wildlife species that depend on them, finding that Kemp's Ridley sea turtle is the most vulnerable species and tidal emergent marsh is the most vulnerable ecosystem.



Forests of the Future

This **Mapping the South's Protected Forests of the Future** project—funded by the U.S. Endowment for Forestry & Communities and the U.S. Forest Service—applies forest Ecological Assessment data combined with planning data from many sources to determine how much protected forest acreage is likely to be added in the Southeast in coming decades. This project focuses on the entire area encompassed within the **Southeast Conservation Adaptation Strategy** (SECAS).





Coastal Resilience

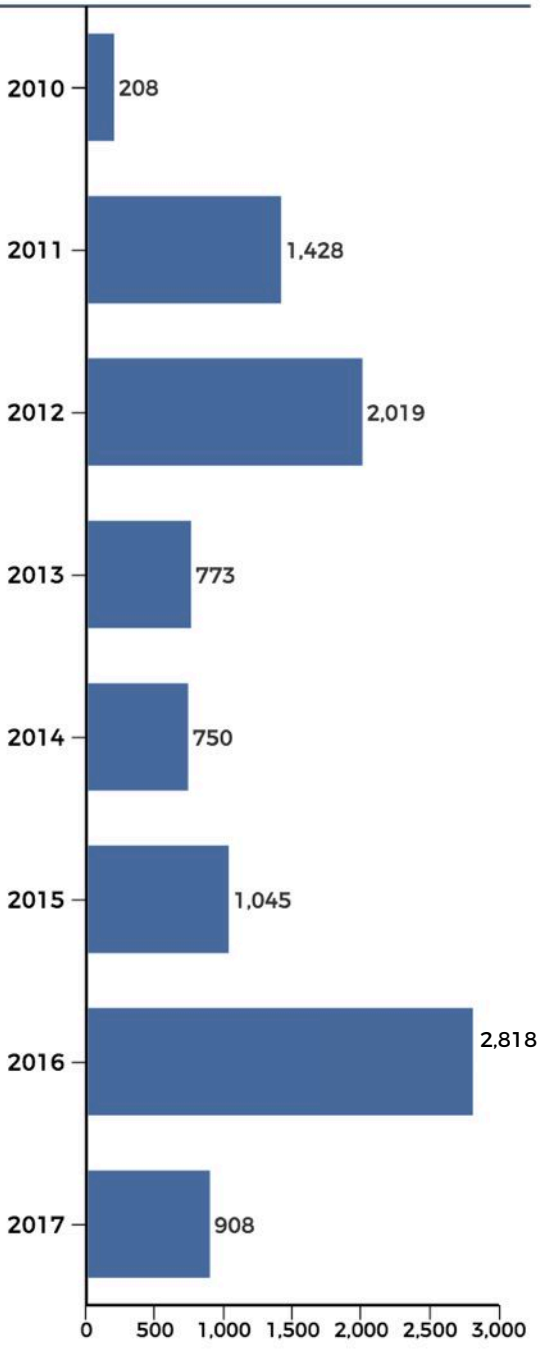
This project on the **economics of open space** supports pilot implementation projects necessary to demonstrate to local, state, and federal officials that investment in open space conservation can be a cost-effective tool to avoid and reduce damage from storms and flooding in the Gulf of Mexico region. The information and tools developed through this project are being used to secure conservation of at least 25,000 acres of coastal land in the Gulf region over the next five years in concert with local partners.

Participation Cooperation Collaboration

GCPO LCC Partner "skin in the game"

Year of partnership | Focus of efforts | In-kind hours of participation

2010 — Recruiting partners
2011 — Defining goals, roles & directions
2012 — Adaptation Science Management Team
2013 — Integrated Science Agenda & RFP
2014 — Landscape Conservation Research Projects
2015 — Ecological Assessments of 9 Priority Habitats
2016 — Workshops & Conservation Blueprint 1.0
2017 — Blueprint Use Cases & the LCC Legacy



MILESTONES & DECISIONS

OCTOBER 2010

First meeting of the Interim Steering Committee

SEPTEMBER 2011

First GCPO LCC newsletter sent to 458 recipients

MAY 2011

TWRA Director Ed Carter proposes a Southeast Conservation Adaptation Strategy to the directors of SEAFWA

FALL 2011

The GCPO LCC has 17 scientific research projects ongoing

FEBRUARY 2012

Begin recruitment for the Adaptation Science Management Team

MARCH 2012

First meeting of the Partnership Advisory Council (10 different partnerships in the GCPO region)

SPRING 2012

The first GCPO LCC Communications Strategy approved, along with a logo, Steering Committee commits LCC support to develop a Southeast Conservation Adaptation Strategy

SEPTEMBER 2012

First Adaptation Science Management Team (ASMT) meeting to begin development of the GCPO LCC Science Agenda

MAY 2013

Draft Integrated Science Agenda completed, outlining desired conditions for 9 key habitats and identifying science gaps; foundational to the Ecological Assessments and Conservation Blueprint 1.0

APRIL 2013

The Conservation Planning Atlas launches, along with GCPO website 2.0 (upgrade)

Landscape Conservation Cooperatives Established

In 2009, the U.S. Department of Interior designed a national strategy to address the unprecedented challenges of large-scale, complex problems affecting wildlife and natural resources—problems such as climate change, sea level rise, and urbanization. The formation of a national network of Landscape Conservation Cooperatives provided a foundational component of that strategy.

Organizing the GCPO LCC - Establishing a Conservation Science Team and Building a Partnership

In the fall of 2009, the Lower Mississippi Valley Joint Venture (LMVJV) Management Board agreed to take responsibility for development of the Gulf Coastal Plains and Ozarks LCC, and by spring of 2010, the JV's Management Board led the formation of an Interim Steering Committee in collaboration with the East Gulf Coastal Plains Joint Venture, Central Hardwoods Joint Venture, Southeast Aquatic Resources Partnership, and others.

In October 2010, the Interim Steering Committee (ISC) of the GCPO LCC met for the first time in Biloxi, MS with the newly hired Coordinator (Greg Wathen, TWRA) and Science Coordinator (John Tirpak, U.S. Fish and Wildlife Service/USFWS). A key feature of the first ISC meeting was an opportunity for Committee members to express their expectations of the GCPO LCC – a common hope was that the GCPO LCC could help to bridge the silos that the conservation community had built for itself over time. They committed the partnership to moving forward quickly, signifying to USFWS leadership that funding the LCC was a priority. Over the next 8 years, the GCPO LCC would hire a total of 10 different staff positions with expertise ranging from geomatics to communications to ecological research, sourced from 7 different

JULY 2013

The LCC releases major RFP making $1.75 million available for projects in 5 topic areas, eliciting 79 proposal submissions

AUGUST 2013

A total of 26 landscape conservation research projects have been initiated with funding, support, or collaboration of the GCPO LCC

JANUARY 2014

The GCPO LCC has 17 scientific research projects ongoing

OCTOBER 20, 2014

LCC releases 2013-2020 Strategic Plan

LATE OCTOBER 2014

Over 650 people attend National Workshop on Large Landscape Conservation in Washington, DC; GCPO LCC Coordinator chairs programs committee resulting in 250+ presentations in 70+ concurrent sessions + 34 posters all focused on large landscape conservation.

FALL 2014

GCPO LCC staff begin Ecological Assessments for 9 priority habitats in the region; Ozark Highlands Comprehensive Conservation Strategy design complete; total LCC projects stand at 42

JANUARY 2015

SECAS Coordinator hired

JUNE 2015

LCC staff attend, present, and host a Conservation Planning Atlas booth at the Gulf of Mexico Alliance All-Hands Meeting in Baton Rouge, LA

NOVEMBER 4, 2015

SECAS Symposium at SEAFWA

NOVEMBER 13, 2015

Gulf Coast Vulnerability Assessment (GCVA) released

organizations located at an equal number of sites spread across the region.

Charting the Course of the GCPO LCC

In June 2011, the Interim Steering Committee held a retreat in Eureka Springs, AR, to focus on strengthening the partnership and establishing initial science priorities, such as geographic constructs, geospatial products, and governance. The LMVJV Management Board elected to re-establish itself as a stand-alone Management Board for the Joint Venture, thus ending its official role as ISC. Many members of the JV Management Board continued to serve as ISC members.

Toward a Future Conservation Landscape in the GCPO

In April 2012, the GCPO LCC held its spring retreat in Spanish Fort, AL. At the meeting, the Interim Steering Committee dropped "Interim" from their name. They also supported development of a Southeast Conservation Adaptation Strategy (SECAS) and committed the LCC's science staff capacity to help lead it. The Steering Committee (SC) also approved establishment of the Adaptation Science Management Team, the GCPO's first Communications Strategy, and a GCPO LCC logo.

In September 2012, the Adaptation Science Management Team (ASMT) met for the first time in Starkville, MS. The workshop began what would become the LCC's draft Integrated Science Agenda, establishing essential components of a landscape-scale conservation framework as well as identifying priority science needs.

In October 2012 in Hot Springs, AR, the SC endorsed the ASMT's desire to use species endpoints to guide conservation design, and approved ASMT recommendations to pursue a modeling approach that incorporates scenario planning and explicitly ties projections to specific conservation decisions. The U.S. Army Corps of Engineers was also accepted onto the GCPO LCC Steering Committee.

DECEMBER 21, 2015

Novel Inundation Frequency dataset for the entire GCPO region released

Throughout 2015

LCC Staff complete 5 Ecological Assessments for Medium-low gradient rivers, Mainstem Big Rivers, Tidal Marsh, Forested Wetlands, Open Pine, Grasslands

JANUARY 2016

GCPO LCC hosts Joint Geospatial meeting to facilitate communication across 21 separate partnerships and identify common geospatial data needs to improve conservation delivery

FEB-MAR, 2016

GCPO Conservation Blueprint workshops held in 8 locations around the region, hosting a total of 130 people from 50 organizations

MARCH 17, 2016

Sam D. Hamilton award for Transformational Science awarded to GCVA team

APRIL 2016

ASMT meets in Lafayette, LA to advance the conservation blueprint process

SEPTEMBER 2016

Draft dataset of known prairie patches in the GCPO released

OCTOBER 17, 2016

SECAS Leadership Summit and unveiling of SECAS Conservation Blueprint 1.0, SC approves new Communications Plan & Human Dimensions charter

DECEMBER 1, 2016

GCPO LCC Blueprint 1.0 released

THROUGHOUT 2016

Staff complete 3 more Ecological Assessments for Grasslands, Upland Streams, Upland Hardwoods; Beaches and Dunes in process due to insufficient data

Creating Synergy across Partnerships in the GCPO Region

In May 2013, the GCPO LCC SC met jointly with the Southeast Aquatic Resources Partnership (SARP) in Memphis, TN. The two steering committees held a facilitated discussion on the functional roles of both partnerships, discussing whether a more effective collaborative framework could be established, with the GCPO's primary focus on science and conservation planning, and SARP's focus on conservation delivery. Both Steering Committees supported developing a document (such as a resolution or MOU) formally declaring such collaboration between the GCPO LCC and SARP.

Staff also presented the draft Strategic Plan and draft Integrated Science Agenda. The SC directed staff to proceed with completing both documents, and to execute the planned Request for Proposals for Landscape Science (issued later in July 2013). In August 2013, the SC approved the 2013-18 GCPO LCC Strategic Plan. In November 2013, the SC approved funding for a **slate of 9 research projects** that were submitted in response to the July 2013 RFP. The SC also approved a letter to the National Fish, Wildlife and Plants Climate Adaptation Strategy, committing the support of the partnership toward the implementation of that Strategy.

Designing Functional Landscapes for the Gulf Coastal Plains & Ozarks

The GCPO LCC held its April 2014 retreat in Nacogdoches, TX. The meeting focused on Landscape Conservation Design (LCD) and the approach that the GCPO LCC should use to design functional landscapes. Presentations from neighboring LCCs (Gulf Coast Prairie, South Atlantic, Appalachian, and Eastern Tallgrass Prairie) provided context to the question of how LCDs could be integrated across the Southeast, and several partners presented on LCD implementation and the benefits of LCD to their conservation actions.

THROUGHOUT 2016

GCPO LCC YouTube channel hosts 7 recorded webinars showcasing 7 completed landscape research projects throughout the year. Combined, the webinars reach 440 registrants, 75% sign up to receive newsletter

JAN-MAY 2017

One-on-one meetings conducted with stakeholders (State partners and USFWS Field Offices) to raise awareness of Blueprint 1.0 and to explore opportunities for applying Blueprint data toward specific conservation issues of interest

FEBRUARY 27, 2017

Southeastern Grasslands Initiative meeting hosted by GCPO LCC in Starkville, MS

FEBRUARY, 2017

GCPO LCC news list surpasses 1,200 subscribers

APRIL 2017

The GCPO LCC landscape conservation science project portfolio reaches a total of 50, of which 12 are ongoing

APRIL 2017

Steering committee membership rises to 27 after incorporating partnerships from the disbanded Partnership Advisory Council

JULY 2017

GCPO LCC announces new website, linked with the LCC Network; the CPA has a total of 526 datasets, organized into 32 galleries of related information and tools

OCTOBER 2017

State of the GCPO Report Released

Providing Partners a Landscape Perspective of the GCPO

In 2014, the GCPO LCC turned its focus to Ecological Assessments of the 9 priority habitat systems identified in the Integrated Science Agenda. At the fall 2014 meeting in Destin, FL, the SC got its first overview of those assessments, endorsing the "ingredients" and "cake" approach in which both individual data layers concerning landscape endpoints as well as analyses that combine layers would be developed and shared via the **Conservation Planning Atlas** (CPA). The CPA, launched in April 2013, would eventually house more than 120 Assessment datasets, organized by system and analysis.

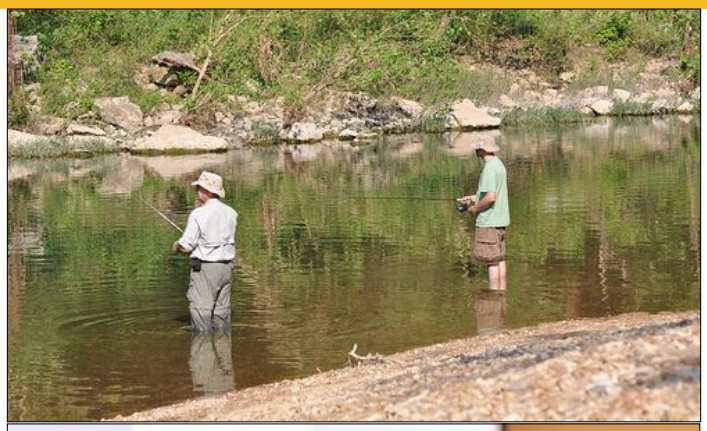
Charting a Course Toward an Ecologically Connected Network of Lands and Waters

In 2015, Todd Jones-Farrand was hired as the GCPO LCC's new Science Coordinator. In March, the SC met in Starkville, MS, where they reaffirmed their support for completing the ecological assessments and landscape conservation design and discussed the process needed to complete the LCC's initial Conservation Blueprint by October 2016

The GCPO LCC Steering Committee met in Asheville, NC, in November 2015. The Committee committed staff resources toward completing the Landscape Conservation Design and supported holding stakeholder workshops to assist in the development of the **GCPO Conservation Blueprint 1.0**. The Science Coordinator organized eight workshops in winter/spring 2016 at locations throughout the GCPO region, soliciting input from conservation partners on the initial Blueprint results. Feedback from more than 150 people representing 50+ organizations informed this process, contributing to the final form of the GCPO LCC's Blueprint version 1.0.

Creating a Shared Vision for Landscape-scale Conservation in the Gulf Coastal Plains & Ozarks

In June 2016, the GCPO and Gulf Coast Prairie LCCs held a joint Steering Committee meeting in conjunction with the annual Gulf of Mexico Alliance



From top: First Interim Steering Committee retreat in Eureka Springs, AR-Greg Wathen; Kenny Ribbeck, the LCC's SC Chair for 4 years, fall 2014-LDWF; Spring 2015 SC field trip to Noxubee National Wildlife Refuge-Toby Gray; Coordinator Greg Wathen reviews the history of the LCCs, fall 2016 SC meeting-Toby Gray

All-Hands meeting in Baton Rouge, LA. Special sessions addressed climate change and bottomland hardwood hydrology. The GCPO LCC SC endorsed the Blueprint process and approved projects to further refine the Blueprint and to inventory stream and river barriers in the GCPO. They also approved a new **2016-2020 GCPO LCC Communications Strategy**, which focused on promoting landscape science and use of the Blueprint, guided by social science best practices. Accordingly, the Committee endorsed a draft Human Dimensions Working Group charter to be used in assembling a group of social science experts to guide the LCC's research, outreach, and communications.

SECAS and the Gulf Coastal Plains & Ozarks LCC: The Next 5 Years

The fall 2016 meeting of the Southeast Association of Fish & Wildlife Agencies saw the culmination of five years of effort on the part of the GCPO LCC, as well as five additional LCCs across the Southeast, to develop draft landscape conservation designs for their priority habitats. At the Summit, the SECAS Conservation Blueprint 1.0 was rolled out to a standing-room-only crowd, which included 15 state and federal agency directors. The leadership praised the Blueprint development effort and encouraged all participants to continue their their collaborations. Also at this meeting, the SC approved new Operational Procedures for the Cooperative, which expanded the SC to include Partnership Advisory Council members, while disbanding the Council.

Toward a Conservation Adaptation Strategy in the Gulf Coastal Plains & Ozarks

In Spring of 2017, LCC partners met jointly with the East Gulf Coastal Plain Joint Venture (EGCPJV) in Panama City, FL. Partners discussed further opportunities for collaboration in developing an Adaptation Strategy for the GCPO. The meeting also provided an opportunity for partnerships including the Lower Mississippi River Conservation Committee, both the Southeast and South Central Climate Science Centers, and the EGCPJV to share perspectives about future landscape conservation science needs.

The Future of Landscape Conservation in the GCPO

Moving Toward an Adaptation Strategy

The work of the past 7 years has helped the GCPO LCC to organize itself, build its scientific capacity, develop innovative science products and tools, assess the functional characteristics of 9 priority habitat systems, and develop a first iteration of a Conservation Blueprint. We have also funded or co-funded groundbreaking research on future changes that will impact the ecosystems of the GCPO. This work was accomplished in partnership with the Climate Science Centers (Southeast, South Central, and Northeast) and many other partners, and it will be integral in helping us to better understand how the landscapes of the GCPO will change in the 21st century and how those changes might translate into impacts on the fish and wildlife of our region. We now have geospatial datasets that provide a visual picture of future urbanization, sea level rise and marsh migration, anticipated changes in forest species composition, and current/future water flow characteristics in the GCPO geography. These datasets and our previous work are important building blocks that will be integral in helping the GCPO LCC to develop an Adaptation Strategy designed to sustain into the future our priority habitats and the fish and wildlife that depend on them.

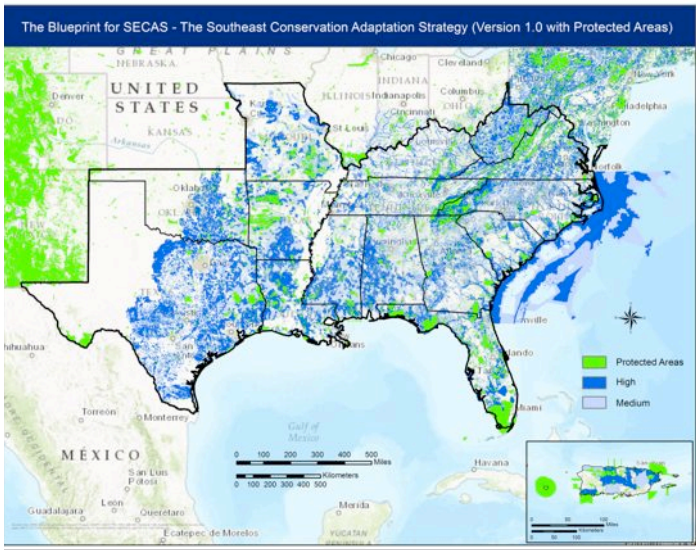
Top: flooded neighborhood-NOAA / Bottom: **Coastal Resilience 2.0 Mapping Tool**-TNC (GCPO LCC-funded outreach)

However, changes in the funding priorities of the Department of Interior have cast a great deal of uncertainty on the future of LCCs, including the GCPO, and thus it is uncertain whether or how the partnership will achieve its Adaptation Strategy goal. Nevertheless, work continues in a variety of areas to benefit the GCPO partnership with important datasets and planning tools that can be applied in a Strategic Conservation Framework to develop an Adaptation Strategy for the GCPO region. Seven GCPO LCC science projects began in 2017, which are scheduled to be completed in 2018 and 2019:

- **Aquatic Connectivity Assessment:** extending the connectivity program of the Southeast Aquatic Resources Partnership into the Mid-South by developing data to assess and prioritize stream barriers region-wide.
- **Terrestrial Species-Habitat Modeling and Aquatic Species-Habitat Modeling:** supporting conservation decisions by developing models for key terrestrial and aquatic species that link population status to current and future habitat conditions.
- **Mapping Future Forests of the South:** improving planning by developing data on planned future protected areas that will result in retained forest and other natural features.
- **At-Risk Species Modeling:** generating intermediate resolution data on wildlife species distributions and responses to future landscape change to address a data gap common to many State Wildlife Action Plans (SWAPs).

- **Terrestrial Connectivity:** assessing the connectivity of landscapes—essential for future species adaptation and migration—within and between priority conservation areas identified in State Wildlife Action Plans.
- **Middle Mississippi River Partnership Landscape Conservation Design:** working with refuges and other partners to develop a comprehensive conservation framework and tools for a focused region in Illinois and Missouri.

In addition to the previous projects, which will facilitate continuing refinement of the Conservation Blueprint, there are several important landscape conservation needs that remain in the Gulf Coastal Plains and Ozarks region and the Southeast. These ideas were presented to the GCPO LCC Steering Committee in October 2016, and are still relevant today:



The Southeast Conservation Adaptation Strategy Blueprint 1.0

- Continue development of economic and other social science information that can clarify the value of natural systems to society and aid in outreach to private landowners, who own the vast majority (about 86%) of lands in the Southeast.
- Continue refinement of the landscape conservation design process, specifically by developing methods for integrating data and priorities across multiple LCC regions and by incorporating future change, such as urban growth.
- Continue integration of landscape conservation designs/data with State Wildlife Action Plans.
- Continue work through the **Southeast Conservation Adaptation Strategy** (SECAS) to (1) connect understanding of complex, large-scale issues such as Gulf hypoxia with conservation action and (2) integrate and learn from other similar regional efforts, such as the Northeast Regional Conservation Framework.
- Continue support and assistance to states and other conservation practitioners in accessing the "super highway" of conservation datasets developed by the LCCs via "on-ramps" such as the Southeast Conservation Planning Atlas.
- Continue development of a collaborative monitoring framework for assessing conservation progress and species/habitat status.

On the Horizon

In conclusion, the opportunity to work on a long-standing GCPO LCC goal is just becoming visible on the conservation horizon: development of an Adaptation Strategy to sustain into the future the region's priority habitats and the fish and wildlife that depend on them. This can best be accomplished by partners collaboratively engaging in a Strategic Conservation Framework that allows users to proactively explore the impacts of potential landscape changes. A Strategic Conservation Framework moves beyond static maps by using dynamic tools that combine habitat assessments with species models and future change data, allowing states and others to "see" natural systems in their entirety, as well as understand, assess, and weigh the future consequences of natural resource and habitat decisions through time. Within the context of a rapidly changing world, a Strategic Conservation Framework will improve the efficiency and effectiveness of conservation actions, and lead to robust Adaptation Strategies to meet the challenges of the 21st century.

The Leadership

Steering Committee

(* indicates served as Chair or co-Chair)

Mike Balboni, U.S. Forest Service
Steve Best, U.S. Forest Service
Laura Bowie, Gulf of Mexico Alliance
*Brian Branciforte, Florida Fish and Wildlife Conservation Commission
Ron Brooks, Kentucky Department of Fish and Wildlife Resources
David Brown, National Oceanic and Atmospheric Administration
Wes Burger, Mississippi State University
Brad Carner, Arkansas Game and Fish Commission
Chris Colclasure, Arkansas Game and Fish Commission
Craig Czarnecki, U.S. Fish and Wildlife Service
Tom Dailey, National Bobwhite Conservation Initiative
Scott Davis, The Nature Conservancy
Thomas Eason, Florida Fish and Wildlife Conservation Commission
Matt Elliott, Georgia Department of Natural Resources
Max Etheridge, U.S. Geological Survey
Dennis Figg, Missouri Dept. of Conservation
*Jeff Fleming, U.S. Fish and Wildlife Service
Kipp Frohlich, Florida Fish and Wildlife Conservation Commission
Scott Gain, U.S. Geological Survey
Gene Gardner, Missouri Dept. of Conservation
David Goad, Arkansas Fish and Game Commission
Jessica Graham,Southeast Aquatic Resources Partnership
Barry Grand, Auburn University
Ray Herndon, The Conservation Fund
Curtis Hopkins, Ducks Unlimited
Louise Hose, National Park Service
David Kidwell, National Oceanic and Atmospheric Administration
Michael Langston, South Central Climate Science Center
Craig LeSchack, Ducks Unlimited
Corey Mason, Texas Parks & Wildlife Department
Gerard McMahon, Southeast Climate Science Center
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Giselle Mora-Bourgeois, National Park Service
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*Mark Musaus, U.S. Fish and Wildlife Service
Cathy Nigg, U.S. Fish and Wildlife Service
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David Pashley, American Bird Conservancy
Ed Penny, Mississippi Dept. of Wildlife, Fisheries, and Parks
Rocky Pritchert, Kentucky Dept. of Fish and Wildlife Resources
Jeff Raasch, Texas Parks and Wildlife Department
*Kenny Ribbeck, Louisiana Department of Wildlife and Fisheries
Angie Rogers, Lower Mississippi River Conservation Committee
Glen Salmon, U.S. Fish and Wildlife Service
Sherri Schwenke, U.S. Forest Service
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Eddie Taylor, U.S. Forest Service
Darrin Unruh, U.S. Fish and Wildlife Service
Paul Wagner, U.S. Army Corps of Engineers
David Weaver, U.S. Fish and Wildlife Service
Bobby Wilson, Tennessee Wildlife Resources Agency
Clayton Wolf, Texas Parks and Wildlife Department
Chris Worth, U.S. Forest Service

The Cooperative

Partnerships

Black Bear Conservation Coalition
Central Hardwoods Joint Venture
East Gulf Coastal Plains Joint Venture
Gulf Coast Joint Venture
Gulf of Mexico Alliance
Lower Mississippi River Conservation Committee
Lower Mississippi Valley Joint Venture
Southeast Aquatic Resources Partnership
Southeast Partners in Amphibian and Reptile Conservation

THANK YOU to the more than 150 research, government, and private institutions who have provided input, expertise, research, capacity, matching funds and other forms of support to the Cooperative. **You ARE the Cooperative**.

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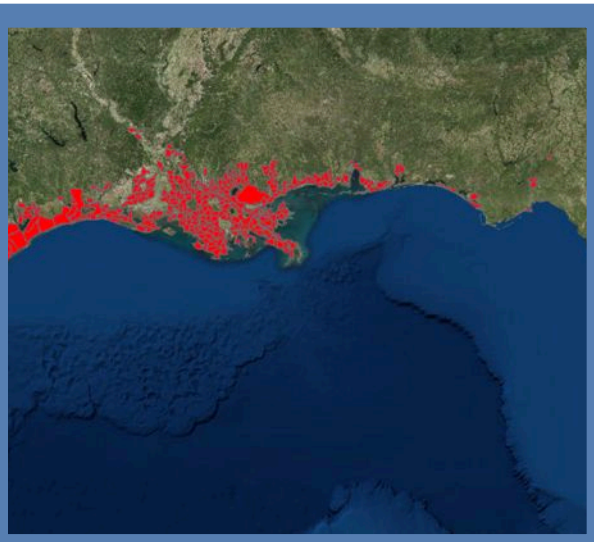
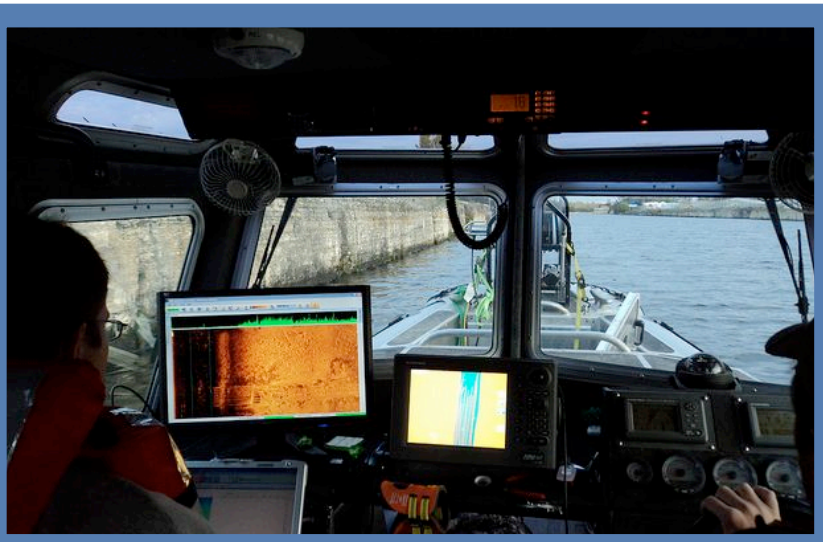
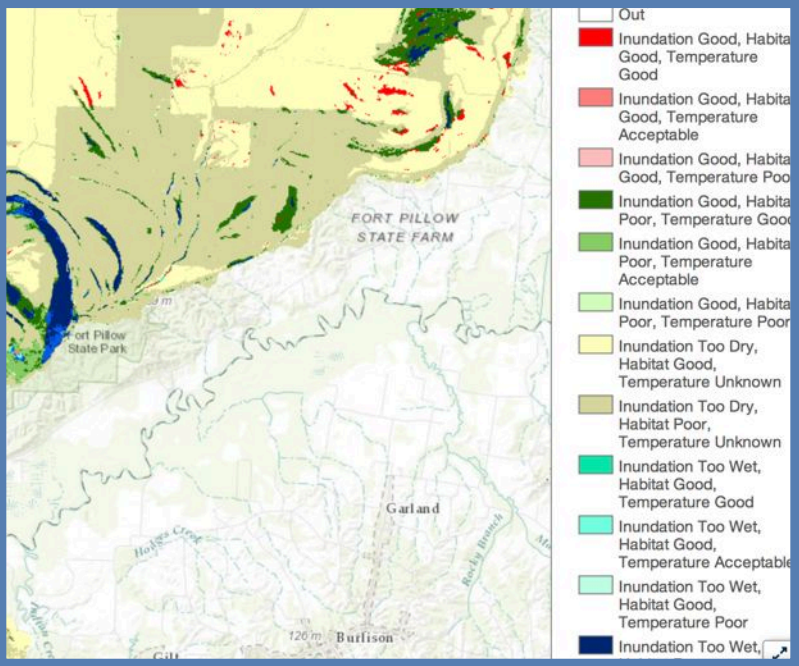
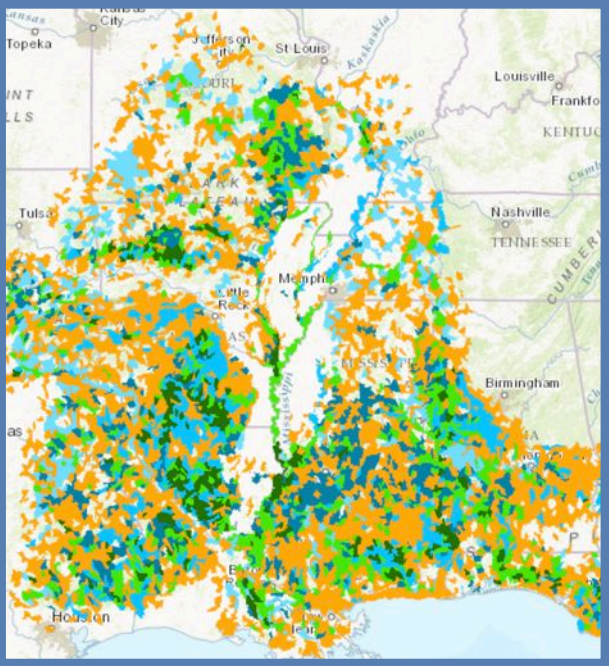
Development & Design: K. Gregg Consulting

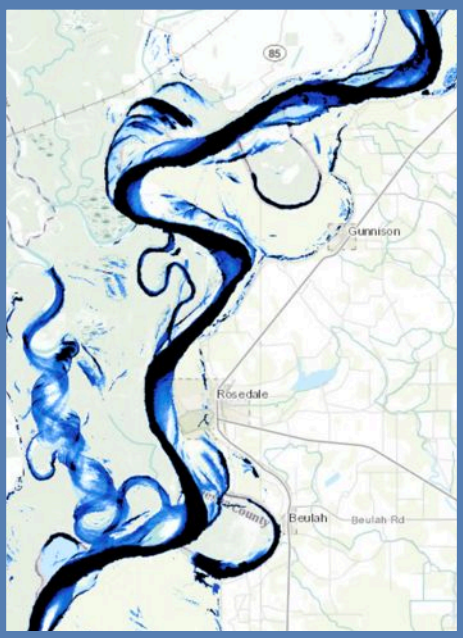
Photo Credits: Cover: Buffalo River overlook - Doug Wertmann, Flickr **Creative Commons 2.0**; p1 **Bluffs of the Buffalo River**-Oakley Originals; p2 Blackland prairie flowers-Toby Gray; diagram-GCPO LCC staff; p3 Cherokee Prairie-AR Natural Heritage; diagram-GCPO LCC staff; LeConte's Sparrow-USFWS; **Eastern Cottontail Rabbit**-Melissa McMasters, **Ornate Box Turtle**-Peter Paplanus; Pygmy Rattlesnake-Rob Colvin, TWRA; p4 Miss Sandhill Crane NWR open pine-Toby Gray; 2 visuals from the CPA; p5 **Forest fragmentation** - Larry Korhnak; Blueprint 1.0 image; Spanish Fort BP workshop-Toby Gray; p6 **Harrell Bayou kayaker**- Finchlake 2000; visuals from IF and SLEUTH; Jones Center longleaf pine-Toby Gray; Farmer in habitat-Georgia Dept. of Natural Resources;p7 Grand Bay tidal marsh-Toby Gray; images from the GCVA & Coastal Resilience reports; **Hawksbill Crag, AR**-Mike Norton; **SECAS Conservation Blueprint 1.0;** p9 Mississippi Riverboat-Gregg Elliott; p14 Native warm season grass on AR private land-Gregg Elliott; p16 **Hawke's Marsh Grand Bay NERR**-Gretchen L. Grammer; p17 Clear Gulf water-Gregg Elliott; Talladega National Forest pine meeting-Toby Gray; Blueprint Workshop in Arkansas-Toby Gray; **Back**: CPA map images; photos: **Sidescan Sonar**-USFWS; **Storm on Gulf**-David Beyer











Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative